

VISION
of the national development of IWRM
in the Republic of Tajikistan
based on the IWRM-FV Project experience

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INTRODUCTION

Tajikistan is located in the Aral Sea basin, where water resources are the basis of economic development, social welfare and food security, and environmental conservation. The mean long-term runoff formed in Tajikistan is 64 km³/year, of which 62.9 km³ come from the Amudarya basin and 1.1 km³ from the Syrdarya basin. The rivers in Tajikistan account for 55.4% of the mean long-term runoff in the Aral Sea basin.

Actual water withdrawals in Tajikistan account for about 20% of the runoff generated in the republic and up to 12% of the mean long-term runoff of the Aral Sea basin. The return flow is approximately 30-35% of the water withdrawal.

In Tajikistan, 90% of agricultural output is produced in irrigated area. Agriculture is the largest water consumer, which accounts for about 85% of the total water use. Agriculture employs approximately 70% of economically active population and generates about 25% of GDP. The total irrigable land area is 1.6 Mha, of which 743.6 thousand ha has been developed by present (2010).

The following users dominate in the water use system by their water withdrawals: irrigated agriculture – 84%; household-domestic sector – 8.5%; industry – 4.5%; and, fishery – 3%.

Given the availability of huge hydropower resources and lack of hydrocarbon fuel sources, the major and prioritized water use in the republic is hydropower.

Since independence, the Republic of Tajikistan has been paying more attention to water management issues. Upon initiative of the President, the Tajik Government has developed and is implementing the “Program for improvement of drinking water supply to population of the Republic of Tajikistan for 2008-2020”, the “Plan of new irrigated land development in Tajikistan for 2008-2012”, “Measures for improvement of irrigated agricultural land in Tajikistan for 2010-2014”, “Program for rehabilitation of pump stations’ pressure pipelines in Tajikistan for 2010-2015” and others. In addition to centralized financing from the state budget, these initiatives are supported by international financing institutions, such as the World Bank, Asian Development Bank, international agencies and non-governmental organizations that give loans and grants.

Consequently, irrigation water supply was increased, irrigated land conditions were improved, equipment was replaced in a number of pumping stations, recession in the water sector was stopped and positive trends in sectoral development were taking shape in the recent years. The sector is implementing 5 projects at the total cost of 145.9 M\$. The positive tendency in improvement of drinking water supply to rural population also begins to show.

However, despite undertaken measures, the situation in the national water sector is still problematic. Reformation process in the water sector unfortunately takes longer than expected. The operation of pump stations exploiting outworn pressure pipelines comes very expensive. While financing of capital construction, modernization and re-equipping of the sector are kept under old styles and assignments cannot ensure adequate development of the sector.

Water management in Tajikistan is based on a mix of basin, boundary and administrative-territorial management principles. Multiple functions of water management are divided among various ministries and agencies.

Transition to market-driven principles in management should be accompanied by appropriate reforms in all sectors, including the water sector. However, this is not easy to do. This requires parallel reformation for improvement of the management system, while ensuring sustainable water supply of irrigated lands, farmers, and rural area.

1. STATE-OF-AFFAIRS IN IWRM IN TAJIKISTAN

At given stage of development, it is difficult to say definitely to what extent Tajikistan is ready to implement the integrated water resources management. As is well-known, implementation of IWRM is very long process that requires huge investments. Although the current national water legislation, in general, is not precluding the implementation of IWRM in the republic.

1.1 Water legislation development and IWRM

The Tajik Government is paying particular attention to the improvement of use, development, and integrated management of water resources in agriculture, water supply, hydropower, and environment. This policy for organization of water management and use proceeds mainly from the Constitution of Tajikistan. According to this Constitution, water is an exclusive public property, and the state guarantees its effective use and protection to the benefits of the people.

Since 1991, after gaining independence, 290 laws and 19 codes¹ have been adopted. Many of those laws contain some elements related to implementation of IWRM in the country. However, it should be noted that the improvement of water law is a continuous process and there is still much needs to be done in order to achieve sustainable water and land use. The process of developing water legislation addresses, for example, the improvement of water management system, the problem of double taxation in the water sector (for electricity plus for water services), etc. The water legislation needs to be systematized and adjusted since the same laws are connected with several areas at once. The laws relating to the water sector is discussed below.

1.1.1 Laws on regulation of water relations

The Constitution of the Republic of Tajikistan

The Constitution consists of 10 chapters (1. Fundamentals of the constitutional structure; 2. The rights, freedoms, and basic obligations of individuals and citizens; 3. Parliament; 4. The President; 5. The Government; 6. Local government; 7. The Gorno-badakhshan autonomous region; 8. Courts; 9. The procuracy; 10. Procedures for amending the constitution) and 100

¹ National Law Center at the Government of Tajikistan. <http://mmk.tj/ru/legislation/legislation-base/2011/>

articles. As stated in the Article 5 (the individual, his/her rights and liberties are sacred. The rights and liberties of the person and citizen are recognized, observed, and protected by the state) and the Article 14 (the rights and freedoms of individuals and citizens are regulated and protected by the Constitution and laws of the republic, as well as by international legal acts recognized by Tajikistan), this is effective starting point for dialogue about the major human right of access to safe drinking water.

The first chapter of the Constitution (Article 10) states that the Constitution of Tajikistan has supreme legal authority and its norms have direct application. Laws and other legal acts that run counter to the constitution are of no legal validity. Since gaining independence till present, Tajikistan has ratified many internationally accepted tools, and if national laws do not comply with the accepted international legal documents, the norms of international documents are applied. The Article 13 stipulates that land, bowels of the earth, water, atmosphere, flora and fauna, and other natural resources are the exclusive property of the state, and the state guarantees their effective utilization in the interests of the people. The Article 38 states that every person has the right to health care and the state takes measures aimed at improving the condition of the environment. The Article 44 reads that the protection of nature is the obligation of every person.

Water Code of the Republic of Tajikistan

One of the important documents in area of water relations is the Water Code of the Republic of Tajikistan adopted by Majlisi Oly (the Parliament) in November 2000. The purpose of the Water Code is aimed at regulating water relations in order to ensure rational use of water for the needs of the population, branches of economy and the natural environment, protection of water from pollution, damage and exhaustion, preventing and liquidating adverse impact of water, improvement of condition and protection of water bodies, strengthening of lawfulness and protecting the rights of individuals and legal entities in the field of water relations.

The Water Code describes economic mechanisms of water use, including payment for special water use and free-of-charge general water use, payment for use of water resources within the established limits (except irrigated agriculture and forestry), payment for above the limit and irrational use of water resources, for services on accumulation and transportation to boundaries of the user.

The Code consists of 5 sections, 24 chapters, and 146 articles. Water resources are the reserve of surface and ground water. Water is under exclusive property of the state. Water use is classified as general water use without applying constructions or technical devices influencing the condition of water and special water use with the application of such devices. The special water use should be paid. The first section of the Code gives general provisions: Chapter 1 formulates principle provisions (Articles 1-13). Chapter 2 considers allocation, designing, construction and commencement of enterprises, facilities and other projects that influence the quality of water (Articles 14-18). Chapter 3 deals with works on water bodies and in water protection zones (Articles 19-22). Section II formulates the use of water. Chapter 4 makes classification of water uses (Articles 23-26). This refers to general and special water use (Articles 23-26). Chapter 5 deals with water users and water use projects (Articles 27-29). Chapter 6 determines procedures and conditions for giving water bodies for use (Articles 30-41). Chapter 7 sets rights and obligations of water users and water-management organizations (Articles 42-48). Chapter 8 deals with cessation of water use rights (Articles 49-52). While

Chapter 9 addresses use of water bodies for drinking, household and other needs of the population (Articles 53-60).

In 2006, 2008, and 2009 the following amendments were introduced into the Water Code of Tajikistan:

Law of RT of 3 March 2006: Such concepts as “permission for special water use”, “Water users association”, and “Basin water organization” were included in the Code. The Code was added by a new article 5¹ about water facilities of strategic importance. The term “license” was replaced by “Permission for special use”.

All physical and legal entities were granted a right: a) to own the water supply system, which is constructed by them; b) establish non-governmental organizations in order to achieve sustainable water supply.

Law of RT No. 381 of 20 March 2008 revised: a) goals and objectives of the Code; b) the jurisdiction of the Government of Tajikistan; jurisdiction of local executive authorities; c) tasks of state control in area of water accounting, use, and protection; and contents of the State register of water entities. Law of RT No.572 of 3 December 2009: amendments were aimed to strengthen flood control measures.

The Water Code divides the competence of the Government of Tajikistan, the local executive authorities, the water use and protection regulation authority, ministries, departments and other agencies. It also sets the rights and responsibilities of different water users, including water user associations, as arise due to liquidation of the former collective and state farms and formation of the farmers and water operating organizations (water suppliers).

The State governance in the field of management, use and protection of water is based on the combination of basin, territorial and administrative-territorial principles.

The Government, on a tender basis, may assign a right of management of water supply projects under state ownership within a defined (limited) territory to specialized local and foreign legal persons on a contract basis.

State control over the use and protection of water resources consists in ensuring observance of water legislation requirements by individuals and legal entities with the purpose to effectively use and protect water. The Government entrusts these functions to the State Committee for environmental conservation.

There is classification into two water use types - general water use without applying constructions or technical devices influencing the condition of water and special water use with the application of such devices. The special water use by economic sectors will be implemented on the basis of permissions given by special authorized state agencies on regulation of use and protection of water.

The state policy is primarily aimed at achieving food security and energy independence. In this context, development of drinking water supply, hydropower, and irrigated agriculture is prioritized in the area of water use.

The Government recognizes the rights to different forms of ownership of water projects, while centralized and non-centralized drinking water supply systems may not be privatized.

The use of water for agricultural needs is based on on-farm and system water use plans, according to the water use contracts.

One element of successful management is accounting and control; therefore, according to the national policy, water use planning is implemented, State water cadastre and State register of water facilities are maintained, water balances are made, and regions, belts and zones of water protection are established. In addition, database and information system of water resources and their use are developed and maintained.

The Tajik Water Code and the Law of environmental conservation set an economic mechanism for giving water resources for use. Special water use in the Republic of Tajikistan should be paid. Charges should be paid by all water users, except general use, regardless of departmental subordination, citizenship, types of property and forms of management, except cases envisaged by the legislation of RT. Such cases include, for example, irrigation water use.

Charges will be paid for:

- use of water resources within the established limits (as for natural resource). The charges will not be paid by irrigated agriculture and forestry. For other water users this type of charges has not been set yet;
- above the limit and irrational use of water resources. In irrigation, the multiplying coefficient is 1.2 for above the limit use and 3 for unauthorized use;
- services on accumulation, transportation to boundary of users, distribution, and purification of water;
- giving a right to use water resources (for license).

Water pricing in industry was introduced in 1982, and water tariffs always were set in order to cover full standard costs. Charges for services of irrigation water delivery from state irrigation systems were introduced by the President's Decree No.460 "About procedure of charging for services of water delivery from state irrigation systems" of 8 April 1996.

The water tariffs are developed and approved by the Ministry of land reclamation and water resources of RT upon agreement with the Ministry of economic development and trade of RT. The established tariffs do not reflect the actual cost of provided services and do not cover the operating costs. At the same time, collection of irrigation water fees amounted to 15-17% of the established charges in 1996-1999, 40% in 2000, 56% in 2001, 59% in 2003, and 27% in 2008.

The payment for special water use license has not been set yet. The Government of Tajikistan adopted the Resolution No.40 of 4 February 2001 and approved a program for development of a package of regulations (25 draft decrees) related to the revised Water Code of RT. By present, most documents from this list have been developed and approved by the Government. However, it is necessary to elaborate departmental normative acts as former methods are outdated to a large extent and were not revised since the Soviet time.

Subordinate acts to the Water Code

In 2002, a number of subordinate acts to the Water Code were adopted by the Resolutions of the Government of Tajikistan, including “Provision about division of powers of specially authorized public agencies on regulation, use and protection of water” (No.39 of 4 February 2002), “About procedure of recording the State water cadastre of RT” (No.193 of 30 April 2002), “About encouraging water users who take beneficial measures for rational water use and protection” (No.349 of 31 August 2002), “About approving the Procedure on use of groundwater, which is not referred to drinking and therapeutic water” (No.421 of 4 November 2002), and “About approving the Procedure on drawing up, registration, and issuance of permissions for special water use” (No.485 of 3 December 2002).

Instructions to the Water Code “About approval and issuance of permissions for special water use” were developed as well.

The procedure on drawing up, registration, and issuance of permissions for special water use

Given procedure was approved on 20th January 2005 for drawing up, registration, and issuance of permissions for special water use (use of water through applied structures and technical devices; in separate cases, other water projects affecting the condition of water can be considered as special water use). This procedure sets a list of necessary documents for coordination and getting of the permission; gives guidelines on making amendments and nullification of conditions for special water use; the procedure gives guidelines on consideration of projects for construction (reconstruction) of water supply structures irrespective of forms of ownership. The permissions are given by the Committee for environmental conservation at the Government of Tajikistan (nature protection area), the Ministry of land reclamation and water resources (irrigation), and local authorities (groundwater, non-centralized water supply less than 50 m³/day). Coordination for obtaining permission for special use should be made by public sanitary inspection agencies, geological authority (groundwater), public agencies responsible for thermal water control, water supply and sanitation system providers, veterinary service and others.

Procedure for encouraging water users who take beneficial measures for rational water use and protection

The instructions adopted on the basis of the Water Code (article 46) are aimed at providing incentives to water users who take measures for rational water use and protection. The procedure for and level of incentives are determined by upper-level water users agencies, according to standard-legal acts of RT. Monetary rewards are granted from the water users' funds saved at the end of each year, according to proposals made as a result of activity monitoring/reports by specialized public authorities.

State water cadastre

The Water cadastre is adopted on the basis of the Water Code (articles 12 and 135) and is aimed at improving efficiency and effectiveness of water supply, based on actual water demand, regime and quality of used water, and at better keeping documentation on water users through development of automatic system for data collection and analysis. The principle ministries responsible for development and follow up of this cadastre are the Committee for

environmental conservation (surface water) in coordination with the central Geological authority (groundwater) and the Ministry of land reclamation and water resources (water use).

In general, the Water Code sets all prerequisites for implementation of integrated water resources management in the Republic of Tajikistan.

Concept on Rational Use and Protection of Water Resources

Another important step towards implementation of IWRM was the Government Resolution No.43 of 25 January 2001 “About the development of Concept on rational use and protection of water resources”. This Concept was adopted upon its finalization by the Resolution No.551 of 1 December 2001.

According to this Concept, in order to optimize the water resources management system at national level, it is necessary to make gradual transition to systems management within hydrographic boundaries rather than within administrative units, speed up the establishment of water user associations, practice demand management, ensure differentiation of water service fees depending on context, and develop various forms of private, collective, and corporate water use on the basis of market water economy.

The law of RT “On water user associations”

The adopted Law No.213 on water user associations (WUA) of 21 November 2006 is the key document for responding to water challenges in agriculture, promotion of IWRM, and finally for increasing crop yields.

The Law regulates the legal framework of the organization, activity and management of WUAs as a non-profit organization for operation and maintenance of irrigation system for the public benefit. The law consists of Chapter 1: General Provision (articles 1-4); Chapter 2: Establishment and Liquidation of WUA (articles 5-7); Chapter 3: Legal Status of WUA (articles 8-11); Chapter 4: WUA Management (articles 12-17); Chapter 5: WUA Property (articles 18-19); Chapter: Final Provision (articles 20-25). According to the art. 3 of this law, the purpose of establishing WUAs is to protect, use the on-farm irrigation system shared or used by single individual, for fair, effective, timely distribution of water among their members and other water consumers, collection of water supply charges, resolution of disputes between members and other water consumers on distribution and use of water.

In this context, more than 220 WUAs were established in the republic and supported by the WUA support division at the Ministry of Land Reclamation and Water Resources.

However, full conditions for successful functioning of WUAs have not been provided yet:

- imperfect taxation system;
- imperfect economic mechanism of charging farmers for WUA’s services;
- imperfect economic mechanism of charging farmers for irrigation water services by Rayon water organizations (Rayvodkhoz);
- WUAs have no ownership right to on-farm irrigation and drainage infrastructure;
- Cotton-growing farms have high debts to agroservice providers;
- Other factors influencing negatively on development of WUAs in the rural area.

These conditions hamper successful formation and development of WUAs in Tajikistan. Most established WUAs exist nominally and do not fulfill their obligations. One of prerequisites for successful reformation of the water sector is the establishment of WUAs in all irrigation zones. However, while forming new WUAs, one should follow the principles of voluntariness (bottom up) and hydrographic boundaries. If these principles were not followed in already established WUAs, the latter should be re-organized according to such principles.

The preconditions of WUA development are the availability of effective economic mechanism of their functioning, solution of the issue related to double taxation (VAT for electricity + VAT for water delivery services), and the development of simplified scheme of tax accounts and solution of many other economic issues.

The Law on drinking water and drinking water supply of 29th December 2010

The Law is aimed to regulate legal and institutional framework in the sphere of drinking water and drinking water supply and establishes state guarantees for provision of the population with drinking water. The main objectives of this Law are as follows: - establish legal guarantees and meet demands of physical and legal entities for drinking water; - establish economic basis for drinking water supply; - establish state guarantees for sustainable drinking water supply, as well as responsibility for law-breaking in area of drinking water supply. Besides, the law sets the principles of drinking water supply and determines jurisdictions of the Government, the authorized agency, and the local authorities in this sphere. According to this law, drinking water supply systems can be in public (republican and utilities) and private (private physical and legal persons) ownership.

The Law on dehqan farms

This Law numbered 48 was adopted on 10th of March 2002. This law reads that the dehqan farm along with commercial organizations and individual entrepreneurs is the equal chain of economic system. All its business transactions are made upon agreement of the parties in form of cash or non-cash payments.

Dehqan farm independently determines production patterns and methods, based on its interests, and can do any kinds of activity that are not prohibited by the Tajik legislation.

It is not allowed to interfere in activities of dehqan farm by public agencies and officers, except cases envisaged in national legislation.

Law of the Republic of Tajikistan on Nature Protection

This Law secures the legal framework for the following basic principles in the field of environment: prevention of the destruction of natural ecosystems and the beginning of irreversible changes in the natural environment; adopting acceptable degrees of environmental impact; quality standards of natural environment ensuring environmental security and conservancy of natural resources; quantitative and qualitative registration of harmful impact on natural environment; enforcing environmental impact assessment. Law regulates water relations with the goals of rational use, protection of water resources and providing a legal framework to protect the rights of physical and legal persons in water relations. The Law consists of 16 Chapters and 90 articles. According to the article 5, water resources are under special protection. Chapter 6, articles 38 – 42 should be taken into consideration for design,

construction, reconstruction and exploitation of projects (water supply systems in particular). Chapter 7 stipulates ecological requirements during exploitation of projects. Chapter 11 describes civil society's roles and opportunities to take part in nature protection measures.

In 2007, the following amendments were introduced into the Law of RT on nature protection: (Law No.284 of 13 June 2007) revision of jurisdictions of: a) the Government of RT; b) authorized agency in the sphere of nature protection; and c) local authorities; revision of issues on state and departmental supervision and control, etc. However, chapters 6, 7, and 11 were not revised.

Land Code of RT

The Land Code makes provision for the regulation of "land relations" and its purpose is to secure rational use and protection of land, the protection of the environment, and "the equal development of all forms of economic activity in Tajikistan"(Preamble). Other laws regulating land relations may be enacted on the basis of this Code. Land is declared to be in exclusive ownership. In article 2 national land resources are divided into categories listed in article 3 and including farming lands, lands of national wood reserves, lands of national water reserves, and state land reserves. These categories are stated in the land cadastre, the land use register; in land allocation decisions of executive bodies. Chapter 16, articles 95 - 98 specify water resources conservation issues.

Law of RT on ensuring sanitary-epidemiological safety of the population

The Law regulates public and legal relations as regards ensuring sanitary and epidemiological well-being and radiation safety of the population securing the right of the citizens to favorable environment. The Law consists of 7 Sections composed of 39 articles dealing with the following matters: 1) general provisions (sect. 1, arts. 1-4); 2) the rights and the duties as regards sanitary and epidemiological well-being of the population (sect. 2, arts. 5-10); 3) requirements for the ensuring sanitary and epidemiological well-being of the population (sect. 3, arts. 11-25); 4) liability (sect. 4, arts. 26-27); 5) the state sanitary and epidemiological supervision and public control (sect. 5, arts. 28-31); 6) the state sanitary and epidemiological service (sect. 6, arts. 32-38); 7) international agreements (sect. 7, art. 39). The citizens shall be granted access to the following information: 1) the state of environment; 2) quality and safety of foodstuffs and potable water (art. 5). Water quality used for centralized and decentralized water supply must comply with the established sanitary requirements (art. 16).

Law of RT on fish breeding of 2006

The Law regulates legal, economic, and institutional frameworks for full development, conservation, and augmentation of fish stock, improvement of fish productivity in water bodies, and meeting of population's demand for fish products.

Law of RT on safety of hydraulic structures

In order to ensure safety in design, construction, capital repairs, commencement, operation, reconstruction, rehabilitation, conservation, and abandonment of structures, set responsibilities of public authorities, owners of hydraulic structures and operators for safety of hydraulic structures, the law on safety of hydraulic structures was adopted on 29th of

December 2010. According to the law, safety of hydraulic structures should be ensured through:

- keeping admissible risk level of accidents at hydraulic structures;
- provision of safety declarations;
- state supervision of safety;
- continuity of operation of structures;
- special measures, including setting of criteria of structure safety, equipping of structures with technical devices for permanent control over conditions of these structures, staffing with qualified operational staff;
- preventive measures to reduce maximally the risk of accidents at hydraulic structures;
- liability for action (inaction), which led to decrease in structure safety below the admissible risk level.

Rules and Regulations for water body use for fisheries and hydroelectric need

These rules were developed according to the Water Code of the RT, art 91 and aimed to regulate relations for protection of water bodies (according to the article 2: all rivers, lakes, ponds and its tributaries) which are used or could be used for fishery purposes. According to the art. 16, diversion of water from fishery waters for irrigation can be made after approval of special state agencies for nature resources control.

Water Sector Strategy (WSS) for the period of 2006 – 2020

This document addresses problems related to water resources, their integrated management and water utilization systems with respect to economic development and poverty reduction. Increasing effectiveness in the water utilization system is the goal of the present Strategy, which includes short-, mid-, and long-term interventions. The main strategic objectives include: a) Satisfaction of water users and consumers' demands with due consideration of inter-state water divisions; b) Rehabilitation of the existing water infrastructure and its productive base; c) Instituting full cost recovery for the water supply sector; d) Reclamation of lands suited for irrigation; e) Integration of new, economically efficient technologies; f) Implementation of an effective water-saving program; g) Gradual transfer to a systematic management approach with regard to hydrographic and administrative units, wider establishment of WUAs, water demand management, differentiation of water payment and its water supply depending on context; h) Implementation of the rehabilitation, expansion and construction of new water supply, sewage, and water-treatment facilities; integration of updated technical devices and technologies, water meters and quality control. The Section 6: Water Supply and Sanitation specifies that the infrastructure deteriorated by an estimated 70 percent, while water losses in it equal 50 to 60 percent. The main problems of water supply mentioned in WSS are: a) poor legal framework - the Water Code does not sufficiently deal with the issues of water supply and sanitation; it is necessary to elaborate a specific law concerning water supply, to develop drinking water standards and to allow the privatization of water supply and sewerage facilities; b) absence of water meters and limited ability for users to make service payments; c) absence of a body which could coordinate technical policy, design, rehabilitation, construction and operation of water supply and sanitation systems; d) inconsistent power supply and high depreciation of capital assets, as well as a deficit of hydro-power equipment; e) low public awareness about proper water use and sanitation practices.

National Development Strategy of the Republic of Tajikistan for the period of 2007 – 2015 (NDS)

This document provides an overview of the Republic of Tajikistan in relation to its long-term development and the directions of action required to implement projected economic reforms. The goal of these reforms is to guarantee a stable high rate of economic growth and thereby reduce poverty levels, with the aim of achieving the Millennium Development Goals (MDGs). Water and sanitation are described under the Social Block of the Strategy (section 7.5, p. 84). Basic direction of actions in the Water Sector are: a) Reform the system as a whole by improving the policy in the sector and setting up new organizations of proprietors; b) Creation of favorable conditions for investments in the sector, and for attracting the private sector; Development of local water supply systems in rural settlements.

Expected results: the number of people without secure access to drinking water will be halved and new associations of owners of water supply, sanitation, and municipal services will be set up that will regulate the sector.

Poverty Reduction Strategy Paper of the Republic of Tajikistan for the period of 2007–2009 (PRSP)

This document, the Poverty Reduction Strategy of the Republic of Tajikistan for 2007-2009 (PRS), is intended to serve as a medium-range socio-economic development program for the country. The actions outlined in the PRS take into account the results of the implementation of the Poverty Reduction Strategy Paper (PRSP) for 2002-2006 and the lessons learned from that process. Under the Section 2.1.1 “The status of poverty. Dynamics and key tasks” it is laid down that “...A significant proportion of the population in Tajikistan has problems with access to clean drinking water. Only one-third of the population has access to chlorinated water from a public utility, 29% of the population uses water from centralized sources, and the rest of the people collect water from cisterns and irrigation ditches. As much as 40% of the water consumed is not potable and 41% of the population uses water from public utilities that is of poor quality” (page 11). The plan is to increase the provision of regular access to high quality safe drinking water from 93 to 96 percent in urban areas and from 49 to 51 percent for rural population.

As to guidance documents regarding water and land management, the following State Programs were adopted:

Resolution of the Government of Tajikistan on measures for improvement of conditions of irrigated agricultural land in the Republic of Tajikistan for the period of 2010-2014

In order to improve conditions of irrigated agricultural land, increase productivity and effective use of land, and achieve high crop yields, the Resolution of the Government of Tajikistan numbered 612 was adopted on 31st of October on measures for improvement of conditions of irrigated agricultural land in the Republic of Tajikistan for the period of 2010-2014.

Program on rehabilitation of pump stations' pressure pipelines in Tajikistan for 2010-2015

This program was adopted in order to provide irrigation water to agriculture and drinking water to rural population.

Program on improvement of clean drinking water supply to the population in the Republic of Tajikistan for the period of 2008-2020

Given the low level of provision of the population with clean drinking water (52.3%), especially in the rural area (20%), and more than 70% deterioration of current water supply systems, significant losses in them, poor maintenance of waterworks, and potential risk of infectious diseases, and in order to reduce poverty and achieve Millennium Development Targets regarding access to water and sanitation, the Government of Tajikistan by the Resolution No. 514 of 2nd December 2006 approved the Program for improvement of clean drinking water supply to the population in the Republic of Tajikistan for the period of 2008-2020.

1.1.2. Environmental legislation

One of the main features of environmental legislation is its all-inclusiveness within the system of Tajik legislation. The legal norms of environmental legislation are reflected in different sectoral norms. Along with the special environmental laws, these norms are included in the acts of constitutional, civil, entrepreneurial, criminal and other laws.

Identification of acts of environmental legislation involves significant difficulty since a lot of normative-legal acts are issued at different levels. To this end, classification of these acts is applied. This can be made on a number of grounds.

In terms of legal force – classification into laws and subordinate acts.

- a) Laws – normative-legal acts adopted by representative agencies of State power.
- b) All other normative-legal acts are subordinate. These are acts adopted by the President, the Government, local executive authorities, ministries and departments, and agencies of local self-government.

In terms of regulation subject, the environmental legislation is classified into general and special acts.

The general acts regulate wide subjects and cover both environmental and other social relations. Such acts, for example, are the Constitution of the Republic of Tajikistan.

Special acts are dedicated entirely to environment or its elements (Law on nature protection, Water Code of RT, Law on animal world conservation and use, etc.)

In terms of legal regulation, the environmental legislation is divided into substantive and procedural rules.

Normative-legal acts of substantive law are the substantive rules. These rules set rights and responsibilities, as well as liabilities of parties entered in respective relations (Laws of RT on animal world conservation and use, on protected areas, etc.).

Procedural rules regulate relations in area of nature use and environment protection. Most of substantive rules can be enforced only through implementation and accordingly regulation of a sequence of procedural actions. For example, this relates to allotment of land, the procedure of state environmental expertise, environmental licensing, protection of ecological rights and interests, etc. The acts of procedural law include the Civil procedure code of RT, the Criminal procedure code of RT, the Resolution No.619 of the Government of Tajikistan on adoption of the procedure for setting of payment and its maximum amounts for pollution of natural environment, adopted on 23rd December 1993, and others. Substantive and procedural rules in the field of nature use and environmental protection are envisaged often in similar acts.

The system of environmental law sources is formed by:

The Constitution of RT, international treaties of RT, generally recognized principles and norms of international law, laws, regulatory resolutions and orders of the Government RT, normative-legal acts of ministries and departments, normative-legal acts of agencies of local self-government, local normative-legal acts, and constitutional foundations for regulating environmental protection.

Constitution of the Republic of Tajikistan

As in any other sphere, the Constitution of RT plays a fundamental role in regulation of ownership relations regarding natural resources, nature use, protection and conservation of environment, recognition and protection of ecological rights and legitimate interests of individuals and citizens. This role is predefined since the Constitution sets forth rights and freedoms of individuals and citizens, guarantees of their observance and protection, and lays the basis of legal system and the limits of governmental power.

When analyzing the Constitution of Tajikistan (of 6 November 1994, amended and added in 26.09.99 and 22.06.2003) as the source of environmental law, one may select two groups of norms: the general norms that are important for coherent ensuring of environmental protection and rational nature use and the “purely” environmental norms.

According to the Constitution, Article 1, Republic of Tajikistan is also a social state whose policies are directed towards creating conditions to ensure a decent life and the free development of the person. This norm is related directly to environmental law, first of all in part of ensuring observance and protection of ecological rights of everybody. The “decent life of human”, which should be ensured in social terms, includes along with material security and well-being the ecological components also. Inasmuch as environmental problems concern ecological interests of human, these problems are of social nature as well. Accordingly, their coherent solution to the benefits of human and society through environmental law is a tool for ensuring social state in Tajikistan.

The Constitution contains many other general norms that relate to issues of natural use and environmental protection and to protection of human rights. For example, in article 79 representative organs (provincial, city, and district madjilis of people’s deputies) and their chairs (province, district, and city), without exceeding their powers, adopt legal acts, which in

the event that these acts are counter to the Constitution and laws, they are repealed by higher organs and courts.

The Constitution sets forth the right of everybody to health care (article 38). Environmental protection is an important factor for ensuring health care. The guarantees of this, according to article 38), include free medical assistance in governmental health care institutions, measures to improve the condition of the environment, development of mass sport, physical training, and tourism.

By determining the ecological-legal status of individuals and citizens, the Constitution, along with their rights, sets the duty to protect nature (art.44).

Thus, the Constitution of RT sets foundations and laws of development of the Republican environmental legislation structure.

Law of RT on nature protection

The Law on nature protection adopted on 27th of December 1993 (amended and added in 1996 and 2002) sets the basis of progressive development in this sphere, with regard to changed political, ecological, economic, and social conditions of the society and the state at present stage.

This law determines tasks for the whole environmental legislation, including regulation of relations between the society and the nature in order to preserve natural resources and natural habitat of the human, prevent ecologically harmful impact of any activity, improve the quality of natural environment, and strengthen law and order to the benefits of present and future generations (art.1).

For the first time in Tajik environmental legislation, the set of ecological rights of citizens was determined. The major one is the right to health care against adverse impact of the natural environment (art.11).

The central place in the law is devoted to the prevention of environmental damage, encouragement and ensuring of meeting the ecological demands. In this context, it formulates a number of new provisions and approaches to solution of environmental problems in the country. Those include: developing economic mechanism of environmental protection; regulating state environmental expertise; setting requirements regarding ecological education and attitude development, liabilities for ecological offences, and compensation of damage caused by ecological offences.

Nature conservation legislation

The nature conservation legislation is a series of laws and subordinate acts that regulate relations forming the subject of environmental law.

Along with the Law on nature protection, this legislation includes Resolutions of the Government of Tajikistan:

No.189 of 24 April 2008, on the Committee for nature protection at the Government of Tajikistan;

On State control of environmental protection and use of natural resources in the Republic of Tajikistan, of 24 January 1994; etc.

A series of laws regulating relations in use and protection of natural resources:

- Law on Nature Protection;
- Law on Protected Areas;
- Law on Ecological Monitoring;
- Law on Ecological Information;
- Law on Air Protection;
- Law on Animal World Conservation and Use;
- Law on Production and Consumption Waste;
- Law on Plant World;
- Law on Ecological Expertise;
- Land Code of RT;
- Law on Land Valuation;
- Law on Mineral Resources;
- Water Code;
- Forest Code; etc.

Civil, constitutional, administrative, entrepreneurial, criminal and other kinds of legislation as the source of environmental law.

Inasmuch as the acts of the above-mentioned legislations regulate relations in the sphere of society-nature interactions, they serve as the sources of environmental law. Regulatory directions in this sphere are envisaged in most branches of Tajik legislation. Thus, these are set by:

- Law on health care of the population;
- Law on protection of consumer's rights;
- Law on standardization;
- Law on state sanitary supervision;
- Customs Code of RT (adopted on 18 June 1993); etc.

Law-enforcement agencies (police, public prosecutor's office, Constitutional court of RT, courts) should ensure protection of natural resource ownership rights, ecological rights and legitimate interests of individuals and citizens and ensure compliance with regulatory requirements of nature use and environmental protection.

Moreover, their activities are based on the following acts:

- Law on police;
- Code on administrative offences (2009);
- Criminal Code;
- Civil Code, Parts I and II; etc.

Normative-legal acts of the Government of RT, ministries and departments within the system of environmental law sources

The above mentioned types of normative-legal acts are subordinate. They are located in certain hierarchy and occupy considerable place in the system of environmental law sources. The role of subordinate acts in the mechanism of law enforcement is important.

- a) According to the Constitution of Tajikistan, the law-making competence of the Government was set. The Government issues resolutions and orders on the base and in pursuance of the Constitution, laws, and normative edicts of the President.
- b) In case that resolutions and orders of the Government are counter to the Constitution, laws and decrees of the President, the former can be revoked in accordance with the Constitution.

The Government of Tajikistan takes very active part in regulation of relations in the sphere of natural use and environmental protection. For example, the following resolutions were adopted:

- No.619 of 23 December 1993 on the procedure for setting of payment and its maximum amounts for pollution of natural environment, disposal of wastes;
 - On Republican Fund of nature protection of 12 September 1993;
 - On better use of hydrometeorological information and data on pollution of environment in economic activity of 3 August 1992;
 - No.120 of 14 March 2000 on formation of public nature reserve “Zorkul”;
 - No.428 of 7 September 2001 on further functioning of state natural sanctuaries; and many others.
- c) The environmental law sources also include normative-legal acts of ministries and departments. Within their jurisdictions, ministries and departments have the right to adopt acts obligatory for execution. Moreover, the acts of specially authorized state agencies in area of nature use and environmental protection that have non-departmental competence are obligatory for other ministries and departments, legal and physical persons, community associations. The acts of ministries and departments that control the sector are obligatory within their respective sectors.

The Ministry for nature protection (Minpriroda) and other specially authorized state agencies in area of nature use and environmental protection have adopted a number of departmental normative-legal acts, including:

- Instruction on regulation of pollutant emissions (discharges) into the atmosphere and water bodies, approved by the Order of the Minpriroda of 11 September 1989;
- Procedure for issuing permissions for burial (storage) of industrial, domestic and other wastes (except for radioactive wastes) adopted by the Ministry for nature protection on 3rd of February 1993 and approved by Ministry of Health, Gosgortekhnadzor, Tajikgeology, and Tajikzhilkomkhoz;
- Temporal procedure for assessment and compensation of environmental damage as a result of accident, approved by the Order of the Minpriroda of 27 June 1994;
- Procedure for issuing licenses for survey in order to identify degraded and polluted lands, approved by the Order of the Minpriroda and State Land Committee of 1 December 1993;

- Provision on assessment of environmental impact in the Republic of Tajikistan, approved by the Ministry for nature protection in July 2000;
- On republican special tools of nature protection of 23.11.1998, adopted by the Ministry for nature protection and approved by Ministry of Finance;
- On local special tools of nature protection of 23.11.1998, adopted by the Ministry for nature protection and approved by Ministry of Finance; etc.

The important sources of environmental law are normative acts adopted by specially authorized state agencies in area of environmental protection: sanitary and epidemiological supervision services – sanitary protection of environment; State Standard of Tajikistan – ecological standardization of produced products; State technical supervision – industrial safety and safe mining.

Acts of agencies of local self-government and local acts in area of nature use and environmental protection

The sources of environmental law include normative acts of representative and executive agencies of local self-government if, according to the Constitution, the law grants to them appropriate powers. Such powers are determined by a range of legislative acts, including the Law on local authorities. Local authorities are in charge of adoption and change of statutes of local entities, as well as of ensuring sanitary well-being of the population, regulation of design and site development in municipal area, improvement of territory, organization of utilization and processing of wastes, and protection and environment.

The law on nature protection also sets the subjects of responsibility for agencies of local self-government: development of ecological programs, accounting and assessment of the state of environment and natural resources in their respective areas, etc. (Art.10). The above-mentioned lines of activity of those agencies are implemented through special normative-legal acts.

The lowest level of acts as sources of environmental law are local normative acts adopted in enterprises. These acts become the source of environmental law if they are sanctioned by the state.

Special acts are programs, strategies, and plans of organizational-technical measures for environmental protection and rational nature use, job descriptions, etc. The force of environmental legal norms contained in these local normative acts is bound by limits of enterprise or any other entity.

1.1.3. Land use legislation

The Law of the Republic of Tajikistan on Land reform numbered 594 was adopted on 5th March 1992. The objectives of land reform in Tajikistan are creating conditions for equal development of various forms of land management, forming multisectoral economy, achieving rational use and protection of land for agricultural output expansion. The law also aims to set economic, social, and legal bases of activity and establish the procedure of land allocation for dehkan farms.

Law of the Republic of Tajikistan on state regulation of agricultural land fertility maintenance of 2004. This law determines legal framework of state regulation of agricultural land fertility maintenance. “Agricultural land fertility maintenance” means conservation and improvement of agricultural land fertility through systematic implementation of agrotechnical, agrochemical, land reclamation, and phyto-sanitary, anti-erosion and other measures.

Law on land valuation No.18 of 12 May 2001. This law determines legal frameworks of land valuation in the Republic of Tajikistan and degree of complexity in valuing land.

Law on protection and use of plant world of 2004. Given law sets forth public policy principles in the sphere of protection and rational use of the plant world, determines legal, economic, and social bases in this sphere and aims to conserve and ensure reproduction of plant world.

Law on grain of 2006. This law regulates relations arising in production, cleaning, storage and trade of grain, in grain quality control and stocking of food, forage, and seed grain in Tajikistan.

Law on seed farming of 2008. This law sets legal framework of activity on production or reproduction, processing, certification, trade of seeds, seedlings, and plants, as well as organization of registration of varieties and seed control.

Law on land management No.356 was adopted on 5th January 2008. Given law regulates relations in land management between the Government of Tajikistan, local executive authorities, agencies of local self-government, authorized state agency on land management, land users, and physical and legal persons interested in land use planning.

Law on soil conservation No.555 of 16 October 2009. This law determines main principles of public policy, legal framework of activities of public authorities and physical and legal persons aimed at rational and safe use of soil, protection of soil quality and fertility, protection of soil from negative effects, and regulates relations as regards soil conservation.

Law on dehkan farm No.555 was adopted on 16th of October 2009. It determines legal framework for establishment and functioning of dehkan farm. According to article 5 “Forms of dehkan farm”, the dehkan farm can be created in the following forms:

- individual dehkan farm – farm, which activity is based on entrepreneurial activity of one individual;
- family dehkan farm – farm, which activity is based on family entrepreneurial activity and joint property;

- collective dehkan farm – farm established on the basis of joint tenancy and which activity is determined by the contract on cooperative activity.

Article 9. Interference in dehkan farm activity.

1. It is not allowed to interfere in activities of dehkan farm by public agencies and officers, except cases envisaged in national legislation.

Law on food security No.641 was adopted on 29th of December 2010. This law determines main lines of public policy in area of food security as a component of national security, according to the generally recognized international principles and norms. In this law, food security is such a state of national economy, when food security and physical accessibility that are necessary for active and healthy life and demographic growth in the republic are ensured through domestic production. Before the adoption of this new law, relations in area of food security were partially regulated by laws of RT, such as law on grain of 28 July 2008, law on state material reserves of 22 December 2006, law on public purchases of goods, works, and services of 3 March 2006, and law on seed farming of 5 January 2008. According to the new law, food security should be provided in the following lines:

- determining a list of major food stuff;
- ensuring physical access and affordability of major food stuff;
- ensuring production of agricultural raw materials and ready food that meet technical regulations, standards, and norms;
- ensuring safe import, according to requirements of technical regulations, standards, and norms; - intensification of foreign economic activity, including balancing export and import; - implement effective agrarian policy;
- organizing quick purchase, delivery, and distribution of major food stuff among the population in case of food crisis or threat of this crisis;
- monitoring the state of food and agricultural raw material market;
- developing information-communication technologies in trading food and agricultural raw material.

Civil code of RT – part 1 adopted on 30 June 1999 - regarding land use issues gives definition of ownership, types of ownership rights, the notions of legal person and individual entrepreneur.

Labor code of RT – adopted on 15 May 1997 (amended on 14 May 1999) – determines conceptions of labor ability, employment of workers, labor contract (agreement).

Land code of RT – adopted on 13 December 1996 – is aimed at creating conditions for rational use and protection of land, the conservation of fertility, and the equal development of all forms of economic activity.

Water code of RT – Chapter 11 deals with the use of water projects for agricultural needs (articles 66-79).

President's Decree on reorganization of agricultural enterprises and organizations allows withdrawal of significant areas of land from state regulation and their transfer to newly established farms for tenure.

1.1.4. Legislation on water-related emergencies

The Committee for emergencies and civil defense at the Government of Tajikistan is a central executive body responsible for implementation of public policy, normative-legal regulation, provision of public services and management of public property in the sphere of emergencies control and civil defense. This Committee guides the common public policy in area of preparation and protection of the population, the economic projects and the territory of the Republic of Tajikistan from consequences of emergencies in peace and war time, organizes coordination of state-wide, legal, defense, and other measures aimed to protect population, economic projects and territories from emergencies. The Committee is guided by the Constitution of Tajikistan, By-laws of the Committee adopted by Government's Resolution No.611 of 28 December 2006, and other normative-legal acts in area of elimination of emergencies and civil defense.

Law of RT on protection of the population and territories from natural and anthropogenic emergencies of 2004

This law determines institutional-legal norms in area of protection of Tajikistan's citizens, aliens, non-citizens situated in the territory of Tajikistan (hereinafter – population), as well as land, the bowels of the earth, water, air, fauna and flora, and other natural resources within the boundaries of the Republic, industrial and social objects, and well as the environment (hereinafter – territories) from natural and anthropogenic emergencies (hereinafter – emergencies). The law regulates public relations for prevention of occurrence and progression of emergencies, reduction of damage and losses from emergencies, elimination of emergencies and early warning of population in risk zones.

Law of RT on civil defense of 2004

This law determines objectives, legal framework for organization of civil defense within the boundaries of Tajikistan, as well as competencies of public authorities, organizations, irrespective of institutional-legal form, officials and citizens, and defines forces and facilities of civil defense.

Law of RT on rescue services, search-and-rescue establishments, and the status of rescuers of 2005

This law, by determining general institutional-legal framework for establishment and functioning of rescue services in the territory of Tajikistan, sets rights, obligations and liabilities of rescuers, regulates foundations of public policy in area of legal and social protection of rescuers and other citizens of Tajikistan taking part in elimination of natural and anthropogenic emergencies (hereinafter – emergencies).

The law of RT No.572 of 3 December 2009: on introducing amendments and addition in the Water Code of Tajikistan. These amendments and additions are aimed at strengthening of flood control measures.

1.1.5. Legislation in area of education

By present, the Government of Tajikistan has adopted a wide range of laws and normative-legal acts that determined public policy in education. These are aimed at updating the education system, achieving equal access to education, solving gender problems, improving

quality of education, eradicating poverty through the increase of level of education among the population.

Since 2000, National reports on EFA (education for all) have been prepared regularly – Assessment of 2000 and 2005; Strategy of poverty eradication in Tajikistan 2010-2012 and National education concept of the Republic of Tajikistan (2002) have been drawn up.

Law on education

In 2004, a new law on education was adopted. This law determines legal, institutional, social-economic frameworks of education development in the Republic of Tajikistan, sets structure of education system, principles of its regulation and management, powers and activities of responsible agencies and serves as a legal basis for other normative-legal acts of Tajikistan in area of education.

In 2010, Report on achievement of Millennium Development Goals in various social sectors, including education, was prepared. In 2004, the Government of Tajikistan approved the Plan of education system reformation for 2004-2009.

Provisions on master, bachelor, and technician were developed and approved. The Ministry of education annually takes active part in the development of Mid-term program of public expenses.

The adopted Concept for transition to a new system of general secondary education in RT, State program for provision of educational and scientific institutions with education and research facilities, State program on development and publication of textbooks for 2007-2010, State program for development of vocational education for 2008-2015, and State program on computerization of educational institutions of general secondary education for 2008-2010 played important role in the improvement of education system. As a result, merely in 2010, 195 schools in the Republic we connected to Internet. At present, the State program on computerization of general educational institutions for 2011-2015 have been adopted and is implemented.

The year 2010 was declared by the President's Decree the Year of Education and Technical Knowledge (Government's Resolution No.707 of 15 September 2009). Transition of general educational institutions to per capita financing started in 2005 was finished in 2010. The Government's Resolution of 1 October 2007 on adoption of the rules of per capita financing for educational institutions was implemented.

The national education development strategy (NEDS) of Tajikistan until 2020 was adopted. According to this strategy, the main priority directions are: provision with material and technical facilities; new education technologies; strengthening of human capacities; modernization of education system management; utilization of new financing mechanisms; and, social partnership in education sphere.

Significant financial resources are needed for implementation of NEDS. Amount of these resources is determined on the basis of long- and mid-term implementation plans of NEDS. The main financing source of NEDS is the government budget. For implementation of key projects on infrastructure development and institutional reforms, domestic budget funds will be supplemented by external support of international organizations and donors. Private investments are also attracted to this end. These three main financing sources should allow mobilization of resources for NEDS.

For ensuring feasibility of NEDS and increasing effectiveness of resource use, it is important to concentrate resources on the most important policy directions. To this end, priority directions and measures in implementation of NEDS are identified.

Additional spending for financing the education system as a result of NEDS implementation would require to increase education costs up to 6% of GDP by 2015 and not less than 7% of GDP by 2020.

During the years of independence, the regulatory framework for development of education in the Republic was formed. The parliament of Tajikistan (Madjlisi Oly) adopted the Law on education (1993), the Government of Tajikistan approved Provisions on pre-school institutions (1995), Standard statute of general education school in the Republic of Tajikistan (1995) and State Standard of general education schools, Standard statute of secondary and higher professional education institutions (1996), State educational standard of secondary and higher professional education (1996), and National education concept in the Republic of Tajikistan (2002). The Government of Tajikistan approved the State program of environmental education by 2000 and for the future by 2010 and the Measures for implementation of this program (1996), as well as the Program for computerization of general secondary schools until 2007. Another two documents were considered: on the national program of education development until 2010 and on the program of teaching staff training in the republic.

The Government of Tajikistan and the Ministry of Education adopted more than 150 normative-legal documents determining the status of educational institutions and state standards in education.

The second reformation stage involves the improvement of education quality at all levels of educational institutions by establishing new types of educational institutions (such as gymnasium, lyceum, and college), improving curricula, providing with textbooks and manuals, strengthening physical infrastructure of general education schools and their staffing with teachers.

For implementation of the Tajik law on nature protection and the State program on environmental education in Tajikistan, special measures were developed for raising environmental awareness and education among the population.

Special subject "Ecology" was included in curricula of 8th forms in 2002-2003. Ecology study program was prepared and "Ecology" textbook for 8th form of general education school was issued.

The improvement of the current state of multilevel educational system, which was destroyed due to the civil war and economic crisis, is one of topical problems in Tajikistan. Moreover, access to up-to-date education methods for rural population is of particular importance. This problem could be solved through the use of computers and information technologies.

1.1.6. Legislation on financing of the water sector

Law on state finances of the Republic of Tajikistan

This law on state finances of the Republic of Tajikistan No.77 was adopted on 2nd of December 2002. Given law determines legal framework, institutional principles of state finance management, budget systematization and its classification, preparation, formation, allocation, and use of centralized funds, regulates financial relations. The law sets competencies of public authorities and local authorities, other actors of budget process in preparation and review of draft budgets, approval, control over their implementation, and responsibilities for violation of laws on state finances. (Law No.395 of 18.06.08).

According to article 63 “Agencies for state finance management of the Republic of Tajikistan”, the following agencies manage state finances in the Republic:

- Madjilisi Milly Madjilisi Oly of the Republic of Tajikistan;
- Madjilisi namoyandagon Madjilisi Oly of the Republic of Tajikistan;
- Government of Tajikistan;
- Ministry of finance;
- Tax committee at the Government of Tajikistan; (Law No.308 of 30.07.07)
- Customs service at the Government of Tajikistan; (Law No.308 of 30.07.07)
- National bank of Tajikistan;
- Local representative and executive authorities. (Law No.395 of 18.06.08)

Law on additional state budget of the Republic of Tajikistan of 2007

The main law in area of water sector financing is the Law on state budget of the Republic of Tajikistan.

For financing of budget organizations and budget programs, Law on state budget of the Republic of Tajikistan is adopted annually. The law sets financial expenses for financing of budget programs, including financing of agriculture, land management, and water sector.

1.1.7. Legislation in the sphere of energy

The following legislative and legal acts are in force in the area of energy development in the Republic of Tajikistan:

Law on energy No.33 of 29.11.2000. This law determines main institutional-legal principles and methods for regulating economic activity in the sphere of energy in Tajikistan. The purpose of the law is legal coverage of public policy in the area of energy sector of the Republic on the basis of market, institutional, and information mechanisms in order to ensure reliability and development of energy and to protect interests of energy consumers.

Law on natural monopoly of 13.12.1997. This law determines legal framework of public policy concerning natural monopolies in the Republic of Tajikistan and is aimed at achieving balance of interests of consumers and natural monopoly entities to ensure access to provided by them goods (works, services) for consumers and effective functioning of natural monopoly

entities. This law regulates relations in the market of goods (works, services) related to functioning and activities of natural monopoly entities.

Provisions of this law apply to actions (inaction) of natural monopoly entities and their founders (actors) undertaken outside the Republic of Tajikistan in cases that these actions (inaction) are counter to this Law and cause damage to consumers of goods (works, services) provided by natural monopolies of the Republic of Tajikistan.

This law is not applied to individual entrepreneurs and legal persons conducting activity, which falls by this law to the sphere of natural monopoly, but only is related to construction and operation of structures designed for their own needs.

For market entity conducting activity, which falls by this law to the sphere of natural monopoly, the state regulation and control apply only to this activity.

Law on amending the Law on natural monopolies and its enactment of 12.05.2001.

Law on energy saving No.29 of 10.05.2002. This law regulates relations in the process of legal and physical persons' activities in area of energy supply in order to increase effectiveness of energy resource and product use.

Resolution of the Government of Tajikistan No.484 of 29.12.2000 on the Ministry of energy

“Strategy of small-scale hydropower development in the Republic of Tajikistan”, Dushanbe 2007. This strategy was developed by the Ministry of Energy and Industry of Tajikistan under support of UNDP Mission in Tajikistan. The purpose of this strategy is reliable and sustainable supply of electricity to the population in isolated and marginal zones of the republic and to the small- and medium scale business. In addition, the main tasks of strategy implementation are the following:

- Develop market relations in the sphere of energy;
- Attract wider strata of the population and businesses to development and management of energy sector;
- Development of design and construction components of energy sector;
- Development of national manufacturing of processing equipment and its repair-operation base.

“Program of economic development in the Republic of Tajikistan until 2015”. The Program was approved by the Government's Resolution No.86 of 1 March 2004. According to this program, the main ways of solving fuel-energy problems of Tajikistan include the following:

- speed up construction and commencement of Sangtuda HPP and commencement of first blocks of Roghun HPP;
- upscale construction of small HPP in mountain regions of Tajikistan, manufacturing of all equipment for such HPP in the republic;
- intensive development of oil and gas fields, increase of oil and gas production in the republic;
- multifold increase of black coal production, which should meet demands of the population in mountain and submountain areas for domestic fuel;

- construction of plants for coal gasification, processing of high-grade coal for motor and domestic fuel;
- extensive creation of energy plantations in order to ensure meeting in the future of the population's demand for fuel wood and bio-energy resources;
- improve technical capacities for utilization of non-conventional sources (solar, wind, biological, geothermal), creation of conditions for large-scale production of equipment for production of solar ovens at republican machinery plants; building of energy-smart houses.

Concept of fuel-energy sectors development in the Republic of Tajikistan for the period of 2003-2015

The primary purpose of fuel-energy complex development is the balanced use of fuel-energy and water resources and ensuring of stable energy and fuel supply in the republic.

For reliable supply of fuel and energy resources over 2003-2015, the following tasks need to be solved:

- develop long-term forecast of energy demand in the republic and possible ways to meet it;
- develop fuel-energy and water resources, create appropriate infrastructure by attracting public and foreign investments;
- based on long-term forecast, conclude long-term bi- and multilateral interstate agreements among producer-countries and consumer-countries for supply of energy resources, with mutual obligations of the parties to fulfill these agreements;
- renew business and economic relations in the area of fuel and energy, energy mechanical engineering, energy equipment and other associated sectors on the basis of interstate scientific and technological programs between the countries of Eurasian region and training of staff for their implementation;
- restore the functioning of unified gas, oil, coal, and electricity supply systems;
- increase reliability and technological safety of pipeline transportation, high-voltage lines and other facilities;
- use more intensively environmentally-friendly and ecological power plants and non-conventional sources.

Long-term Program for construction of small power plants for the period of 2007-2020

Thus, real reduction of poverty is possible only through general recovery in republican economy. To this end, first of all, it is necessary to develop export potential of the republic, increase the share of export in GDP, and speed up accession to WTO. The development of small- and medium-scale business is very important. All this is possible only in case of sustainable development of multipurpose hydropower as the economic base and an export source. One may note very high effectiveness of the republican energy sector on the basis of hydroenergy. The general electric energy production cost in Tajik energy system is 0.4 cents per kWh. Therefore, even given the available capacities and the tariff of 1 cent/kWh, the total revenue of energy system will be 90 million USD. The revenue will increase to 240 million USD at the tariff of 2 cent/kWh and to 400 million USD at the tariff of 3 cent/kWh. If new capacities are put into operation, the revenue of energy system will increase proportionally to them. This is more than the whole republican budget, which recently equals to about 200-300 million USD. The Tajikistan's hydropower is very highly competitive not only in the world market but also in regional markets. Without fuel factor in its structure of production cost, as

already as today, this energy is at least by 2 cents per kWh cheaper than that in Kazakhstan, Turkmenistan, and Uzbekistan. Therefore, it can be one of the main export branches in the republic.

To this end, Tajikistan is interested, first of all, in establishing strong, long-term and mutually beneficial relationships with its neighbors, the Central Asian countries.

The shared use of water and energy resources can ensure stable agricultural development in the region, the joint development of hydro-resources would release mineral fuel for its more effective usage in industry and thus, would reduce load on environment.

CONCLUSIONS

Thus, in summary one may say that currently each sector is undergoing its separate reformation, and for integration in the water sector, it is necessary to revise laws and resolutions in terms of orientation towards integrated water resources management.

It should be also noted that currently the process of agricultural reformation, including the improvement of market mechanisms in irrigated agriculture, is underway. This would allow improving agricultural production and creating appropriate economic mechanism to ensure acceptable financing of O&M of irrigation and drainage systems in the near future. Sustainable functioning of irrigation systems, in turn, would contribute to stability and effectiveness of irrigated agriculture.

By paying regular attention to the improvement of the normative-legal base of water legislation, the Government of Tajikistan issues Resolutions and Orders for efficient regulation of water relations in the republic. In the Constitution - major law of our republic - water resources, like other natural resources, are the exclusive property of the state, and the government guarantees their effective utilization. All legal upgrading is aimed at improving conditions of water use by consumers and protecting water resources, while keeping to the main principles of water legislation:

- public property of water resources;
- priority of drinking water needs;
- paid services of water delivery from source to consumer;
- government support to management of water resources, maintenance and operation of irrigation and drainage systems;
- state control over use and protection of water resources.

1.2. Earlier taken measures in the area of water and land use, with partial implementation of IWRM

Project on privatization of farms and rehabilitation of rural infrastructure

The project was started in 1999 and completed in 2007. After reformation of collective and state farms, the main objective of the project aimed at comprehensive or even fragmentary implementation of IWRM was to create an institutional mechanism for preservation and utilization of on-farm irrigation systems. To this end, in 1999, for the first time in Tajikistan, 50 WUAs were established. For sustainable functioning of the established WUAs and public awareness, trainings were conducted for 1200 rural dwellers and representatives of state agencies. In addition, technical assistance was rendered to these WUAs. As regards legal support of WUA, a number of draft Decrees and Resolutions on the improvement of water use, including the Law on WUA (adopted in 2006) were prepared.

WUA support program

Winrock International with the financial support of USAID implements the WUA support program. The main purpose is to create a platform for joint management of irrigation system and improve effectiveness and stability of irrigation systems. About 30 WUAs were established within the framework of this program. Multiple trainings were conducted in joint management, water accounting, contracting of water delivery, drafting of water use plans for WUAs, etc.

One should note here that for successful implementation of integrated water resources management, it is also necessary to improve water infrastructure and apply water-conservation technologies in irrigated agriculture.

Dangara Valley Irrigation - Phase II

The main purpose of the project is to improve living standards of the people in the Dangara Valley, including the increase of agricultural production through irrigation and provision of permanent job places for the rural population. After completion of the project, 1750 ha of agricultural land, where the project planned production of cotton on 845 ha, grain on 359 ha, vegetables on 82 ha, forage crops on 401 ha, and orchards on 63 ha, will be supplied with water.

Irrigation system rehabilitation project

This project is implemented in the six pilot areas of Sogd province, Region of Republican Subordination, Khatlon province, and GBAO. As a result, 9 pump stations were rehabilitated, 19 electric motors were installed, main and subordinate canals were rehabilitated in pilot areas, bank protection measures were implemented, 9 intake structures were rehabilitated and collector-drainage network was cleaned, thus leading to lowering of groundwater level on an area of 47 500 ha. In addition, the project planned to rehabilitate the drinking water supply system in the six pilot areas. Consequently, now 57 000 people have access to clean drinking water. During implementation, a WUA support division was established at the Tajik Ministry of Land Reclamation and Water Resources. 28 WUAs were established in the pilot areas. All

these WUAs were equipped with necessary office equipment and provided with training. Only in 2007-2009, 1635 representatives of dehkan farms and WUAs got training.

Agriculture rehabilitation project

By present, the project has finished its activities. The main purpose of the project was to improve living conditions of the rural population through rehabilitation of three large irrigation systems in the Republic of Tajikistan. Those were:

- Khojabakirgan irrigation system in B.Gafurov and Dj.Rasulov rayons, Soghd province;
- Vakhsh irrigation system in Bokhtar and Vakhsh rayons, Khatlon province;
- and Kyzylsu-Yakhsu irrigation in Vosei rayon, Khatlon province.

The project also planned to rehabilitate drinking water supply in the above-mentioned areas. This provided access to clean drinking water for 87000 people in the rural area.

The Fergana Valley Water Resources Management Project

The main objectives of the projects are as follows:

- increasing agricultural production on irrigated land and raising incomes of rural population through better water and land management in the Fergana Valley;
- implementing bank-protection and improving the safety of the Kayrakkum Dam.

The project is implemented in Kanibadam and B.Gafurov rayons of Sogd province. The eastern part of Kanibadam rayon is subjected to cleaning of collector-drainage networks, rehabilitation of wells, including substations and transmission lines, rehabilitation of embankments of the Kayrakkum reservoir. The western part of Kanibadam rayon undergoes rehabilitation of pump stations, including substations and transmission lines to improve water supply to the pump station Makhram-1, rehabilitation of wells, coating of some sections of the Big Fergana Canal, improvement of inter- and on-farm irrigation systems, and rehabilitation embankments of the Kayrakkum reservoir.

In the north and south of B.Gafurov rayon, also measures are taken to clean inter- and on-farm drainage systems, rehabilitate pump stations and wells, including substations and transmission lines, and embankments of the Kayrakkum reservoir.

Flood control project in Khatlon province

The main objectives of the project are implementing institutional and legal measures, performing bank-stabilization work, reducing economic losses of the rural population and damage to infrastructures subjected to floods in Khatlon province. The first and second project phases finished bank-protection on 5790 m. The third phase provides for bank-protection on 4655 m in order to prevent the risk of floods along the Pyandj river for 3010.35 ha of land in Khatlon province.

Besides, 2 meteo-structures were reconstructed and amendments were introduced to the Water Code of Tajikistan.

Program “Transboundary water management in Central Asia”

Within the framework of the GIZ-UNECE project “Regional dialogue and cooperation in water management”, the GIZ Program for transboundary water management in Central Asia is implemented. This program is a part of Central Asian Water Initiative declared as a “Berlin process”, which was launched in 2008 by the German Federal Foreign Office. It is implemented by GIZ in cooperation with national counterparts, UNECE, and International Fund for Saving the Aral Sea (IFAS). The program duration is 2009-2011. An important component of this program for Kyrgyzstan and Tajikistan is the development of institutional capacities for management of transboundary basins of Isfara river and Khodjabakirgan river. To this end, a draft of “Agreement between the Governments of Kyrgyzstan and Tajikistan on cooperation in international rivers sharing” was developed. Under this Agreement, it is planned to establish Basin Commissions for Isfara and Khodjabakirgan and permanent Secretariat. The project is also open for Uzbek counterparts since the Isfara river borders Uzbekistan also. The database and GIS on the Isfara river basin were developed under the project as well.

Project “Promoting integrated water resources management and fostering transboundary dialogue in Central Asia”

The joint project of the European Union, UNDP, and the Governments of Kazakhstan, Kyrgyzstan, and Tajikistan on “Promoting integrated water resources management and fostering transboundary dialogue in Central Asia” is implemented also to support sustainable human development. The project aims to promote transboundary dialogue and sustainable water resources management in Central Asia. The purpose of the project at national level is to develop and implement integrated water resources management in Tajikistan. To this end, the project sets the task to develop and implement national integrated water resources management and water efficiency strategies at national and basin level in order to improve irrigated agriculture, the rural water supply and sanitation situation, and small-scale hydropower service delivery. By the moment, six WUAs have been established in the pilot project area of Isfara river basin. In the near future, the project is to develop Feasibility Study on rehabilitation of interstate gauging stations - “Tanghivorukh” and “Matpari” - in order to improve accuracy of water allocation in the Isfara river among consumer-states.

Integrated water resources management project in the Fergana Valley (IWRM-Fergana)

Since 2001, integrated water resources management (IWRM) has been implemented widely in the area of three Central Asian countries. The IWRM-Fergana Project selected the following pilot zones: Aravan-Akbura canal in Kyrgyzstan; Khodjabakirgan canal in Tajikistan; and, South-Fergana canal in Uzbekistan. Thus, the project develops, adapts, and implements IWRM principles on an area of more than 130 thousand ha. As the base of IWRM, the project implies “a management system, based on taking into account all kinds of water resources (surface water, groundwater, and return water) within hydrological units, and coordinating the interests of different economic sectors and hierarchical levels of water use, involving all stakeholders in decision-making, and promoting the effective use of water, land and other natural resources to meet the requirements of ecosystems and human society through a sustainable water supply.”²

² Integrated Water Resources Management: Putting Good Theory into Real Practice. Central Asian Experience. T., 2008, 363 pp., SIC ICWC, Editors: Dukhovny V.A., Sokolov V.I., Manthritilake H.

The key principles formulated in this work are the following:

- water resources management is implemented within the hydrological units in concordance with geomorphology of the drainage basin under consideration;
- management takes into consideration assessment and use of all kinds of water resources (surface water, groundwater, and return water) and the climatic features of the regions;
- close coordination of all kinds of water users and organizations involved in water resources management, including cross-sectoral (horizontal) coordination and coordination of hierarchical levels of water governance (basin, sub-basin, irrigation system, WUA, and farm as the end user);
- public participation not only in the water management process, but also in financing, planning, maintaining and developing water infrastructure;
- setting the priorities of eco-systems' water requirements into the practice of water management organization;
- participation of water management organizations and water users in activity related to water saving and control of unproductive water losses; water demand control along with resources management;
- information exchange, openness and transparency of the water resources management system; and
- economic and financial sustainability and sufficient staffing of water management organizations.

1.3. Current situation in water sector and its relevance to implementation of IWRM

Institutional structure

The state governance of the use and protection of water is based on the combination of basin and administrative-territorial principles and is performed by the Government of the Republic of Tajikistan, local executive bodies and specially authorized government bodies regulating the use and protection of water³:

- The Ministry of Land Reclamation and Water Resources is the central executive authority in the field of water resources and land reclamation, which is responsible for elaboration of a common national policy and normative-legal regulation in the area of land reclamation, operation and maintenance of water structures, and generation, use, and protection of water resources;
- The Committee on Environment Protection at the Government of Tajikistan which implements the common national policy in the sphere of environmental protection, hydrometeorology, rational use of natural resources and is responsible for state control over environmental protection and nature use;
- The Central Geology Authority implements national policy and is responsible for management and coordination in the sphere of geological survey of groundwater, and maintains State water cadastre in part of groundwater;
- The State Committee on the safe industrial works and mountain control, which regulates the rational use of healing, mineral, thermal and industrial groundwater and therapeutic mud.

³ See The Water Sector Development Strategy in Tajikistan

There are also a number of the ministries and institutions that carry out specific functions:

- Ministry of Agriculture develops proposals on the improvement of agricultural land conditions;
- The Ministry of Economy and Trade is responsible for tariff policy of the water sector;
- The Ministry of Energy and Industry is responsible for policy and activities in the area of hydropower;
- OSHC “Barki Tojik” for accumulation and evacuation of water in water reservoirs for hydropower and irrigation purposes and other economy sectors;
- The Ministry of Emergencies and Civil Defense, for prevention and response to harmful water impacts;
- The Central Administration Tochikobdekhhot, which is involved in designing, construction and operation of the rural water supply systems, including watering of pastures;
- State Unitary Enterprise “Khojagee Manziliu Kommunalii” – water supply and sewage systems in the cities and district centers;
- Khukumats (city municipal councils) of Dushanbe, Khudjand, Rogun and other cities – water supply and sewage systems;
- “Tajikstandart” – control over observance of standards and meteorological regulations in the water sector;
- The Hydrometeorological Service - provision of public services in the area of hydrometeorology, maintenance of State cadastre in part of water resources formation;
- Local executive bodies, responsible for coordination of water resource use in their respective areas, development of water use regulation, conservation and improved status of water objects, prevention and elimination of harmful impacts and water contamination;
- Sanitary and epidemiological supervision service of the Ministry of Health of the Republic of Tajikistan, responsible for monitoring of the drinking water and drinking water sources.

Generally, Tajikistan has a complex, hierarchical, multifunctional system for the use and protection of water resources (regulation, forecasting, use and protection, planning, analysis, policies, and strategies), as well as a multi-sector framework of water-use and diversity of water requirements in terms of quantity, quality and regime. There is also obvious duplication of tasks and functions and lack of coordination between water use sectors. Water management is based on administrative-territorial units and this therefore excludes the possibility of effective and cross-sectoral management of water. In this context, the thorough institutional reformation is needed. At present, there is clear understanding that for effective water management on the basis of integrated approach, we need to establish a National water council with Secretariat handed greater scope of authority as a political body. With the support of its Secretariat, the Council would provide political control, national water policy, approve national water strategy and river basin plans, supervise reform processes, etc. The Council should be comprised of the representatives of all ministries and agencies involved in the water sector.

Legal framework:

Basically, the legal framework does not impede implementation of the integrated approach to water resources management; however, it is necessary to improve the normative-legal base for transition to IWRM.

Below the matrix estimating the legal framework (LF) of IWRM at different water hierarchical levels is given in tabular form⁴

Hierarchy level	IWRM principle	Achievements	Shortcomings	What to do
<i>Tajikistan</i>				
Sub-basin	Hydrographization		LF has not been created	Build up LF
	Integration of water users	LF does not impedes the integration of water users		
	Public participation		Regulations are developed only for the project zone	Build up LF at the national scale
Irrigation system	Hydrographization		Regulations are developed only for the project zone	Build up LF at the national scale
	Integration of water users	LF does not impedes the integration of water users		
	Public participation		Regulations are developed only for the project zone	Build up LF at the national scale
WUA	Hydrographization	LF does not impedes hydrographization		Provide for mandatory observation of the hydrographization regulations in changing boundaries of land and water users.
	Integration of water users	LF supports		
	Public participation	LF supports		

Thus, in the past period, the main changes in normative-legal regulation of water management included adoption of Law on WUA, amendment of the Water Code of RT, and adoption of a number of Decrees and Resolutions, as well as other normative-legal acts as mentioned at the beginning of this chapter. Moreover, a WUA support division was established at the Ministry of Land Reclamation and Water Resources.

Economic base:

⁴ Final regional report "Report on comprehensive hydrographic study" prepared under IWRM-Fergana Project, Tashkent, 2011

As was already mentioned, the Ministry of Land Reclamation and Water Management is a national management body responsible for land reclamation, agricultural water supply pastures watering. The structure of management is shown in Figure 2. One of the main functions of the ministry is operation and maintenance of irrigation-drainage systems, large hydraulic structures, pump stations, and reservoirs.

Out of 743.6 thousand ha of irrigated land, 47% is served by pump stations and wells. In the total quantity of vertical drainage wells that maintain 50 thousand ha, 60% is not operated on any reason. Although since 1996 irrigation water fees has been adopted in the irrigation sector, these fees do not consider many natural and economic factors and do not cover O&M costs of irrigation and drainage.

The largest problem of water infrastructure is further quality deterioration of irrigation, collector-drainage systems and pump stations that were constructed in 1957-1961 mainly. Insufficient financing of infrastructure O&M has led to deterioration of more than 50% of capital assets that were under responsibility of the Ministry. Annually, on average 3-4 million USD are allocated from the state budget for O&M of water infrastructure and about 8-12 million USD are collected from consumers as payment of irrigation water fees. However, this is 3-5 times lower than required for sustainable functioning of irrigation systems. Consequently, the irrigation infrastructure keeps deteriorating rapidly.

The conditions of pump stations, especially of multi-stage ones are of serious concerns since their critical service life has expired long ago. The area of 300 thousand ha under pumped irrigation serves as a habitat and provides livelihoods for about 2 million people (more than 30% of the republican population).

At present, 87 thousand ha are unsatisfactory due to high water-table (48 thousand ha), salinization (24.4 ha) and combination of these two factors (14.6 ha). 142 settlements suffer from permanent water-logging.

The great challenge for improving effectiveness of water use is water losses in inter- and on-farm irrigation systems, coefficient of efficiency of which is 0.5 and 0.6, respectively,

Major losses are observed in earthen channels that account for more than 70% of irrigation network.

Given all its shortcomings, water management at the inter-farm level is still more or less satisfactory unlike management of on-farm irrigation system. In that part of land, which was given to farms, irrigation and drainage infrastructure virtually is left unattended since owner of the on-farm irrigation infrastructure was not identified during the process of land reform. These problems also remain unsolved when establishing Water user associations. To overcome this situation, assistance and financial support are needed so that to complete the process of establishment, development, and sustainable functioning of WUAs.

Evidently, WUA in Tajikistan remains the only lowest-level institution in agricultural water management. Meanwhile, the issue of all-round use of irrigable lands in the

republic has not been solved yet since sustainable production on these lands is also one of management problems. First of all, this is connected with the fact that WUAs do not have full right to on-farm irrigation and drainage systems. Their owner has not been identified yet. It would be advisable to give the on-farm irrigation and drainage system under ownership of farms and oblige the latter to join WUA and transfer to WUA these capital assets for full management according to relevant laws. If necessary, the laws should be improved accordingly to create a basis for sustainable functioning of WUA.

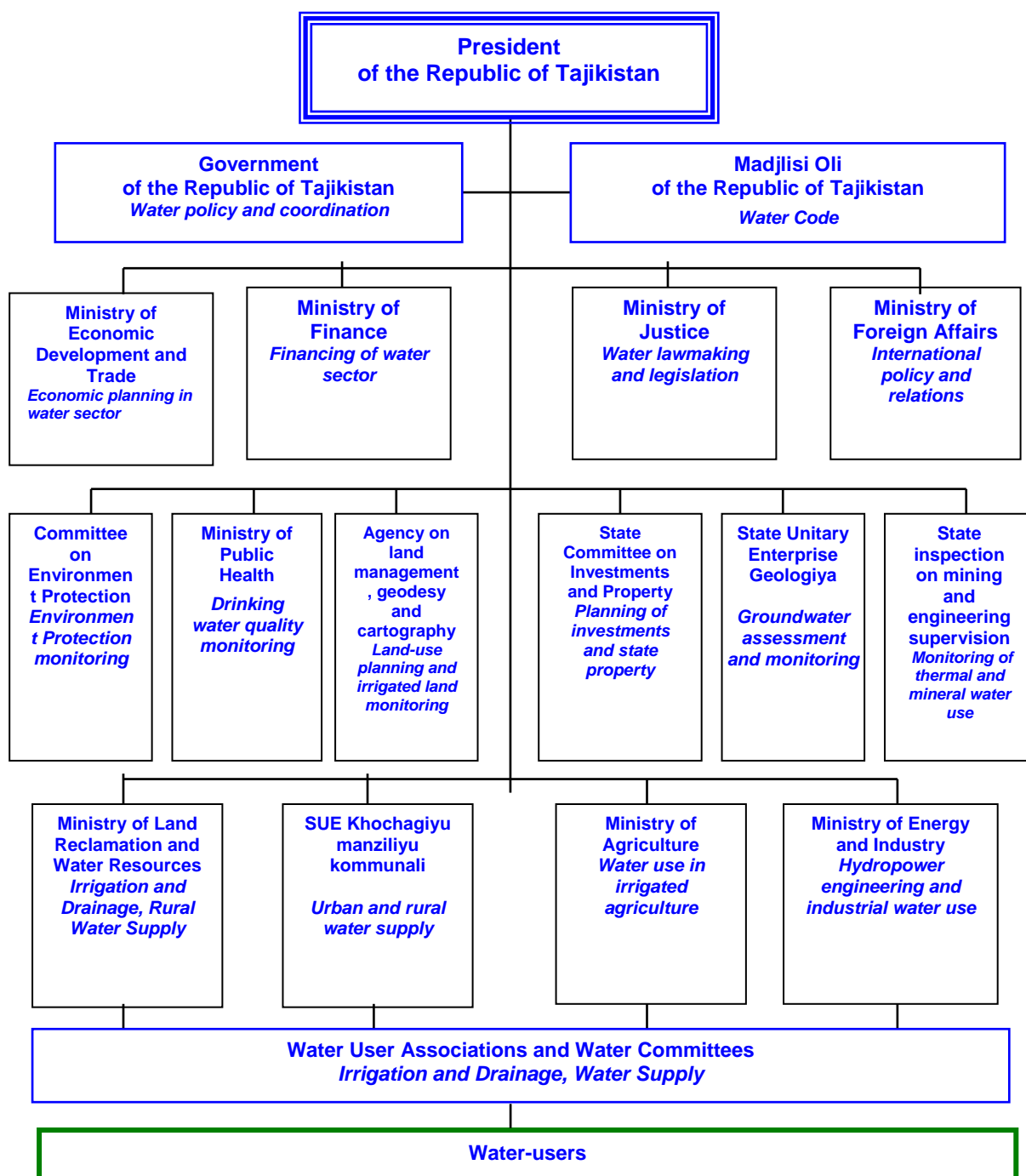
All these problems affect negatively the reliability of rural water supply and worsen conditions of land, thus exacerbating the environmental situation and, at the same time, reducing crop yield. The funds from the state budget are not enough for rehabilitation of water infrastructure, and therefore the Government of Tajikistan is seeking external investments.

Year	Budget financing, M somoni	Accounts receivable, M somoni		Accounts payable, M somoni	
		Total	of which agricultural debts	Total	of which debts for electricity
2007	27.9	84.6	76.8	87.4	28.8
2008	25.5	154.8	140.6	165.4	41.5
2009	29.5	205.2	185.6	217.7	92.1
2010	28.3	240.4	189.1	257.5	131.3
2011	38.3	227.8	175.9	268.1	157.0

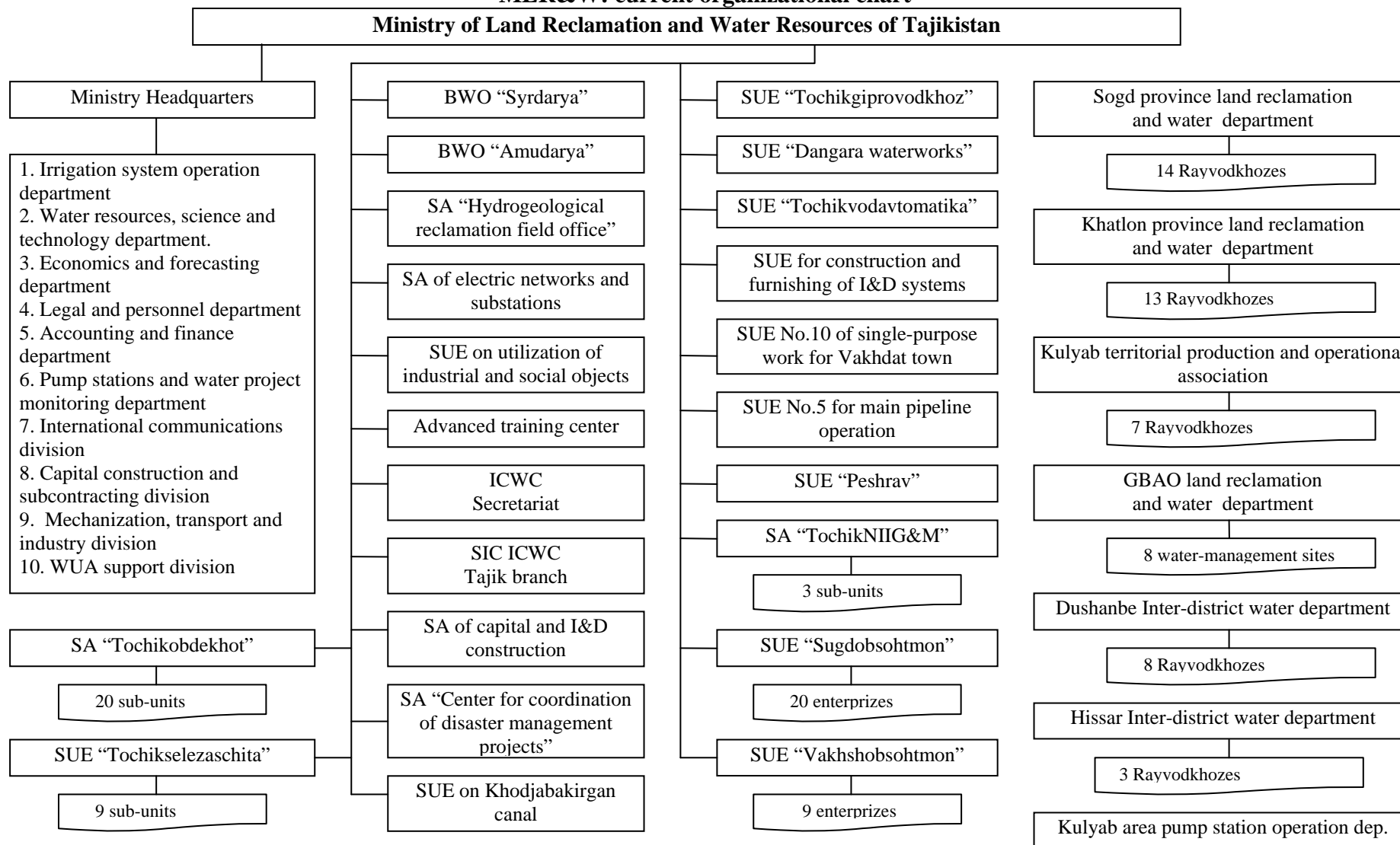
Note: Data of MLR&W for October 2011, based on regularly updated reports (subject to change)

The financial indicators show a need for improvement of economic mechanisms for functioning of water management system at all levels: farmers – WUA; WUA – Rayvodkhoz; Rayvodkhoz – MLR&W, including tariff and taxation policies for water sector at the level of the Government of Tajikistan. Instability of water sector's economic base leads to deterioration of infrastructure not only in this sector but also in associated economic sectors, especially energy sector, and to lack of high-skilled staff in the water sector.

Obviously, current state benefits to the water sector, including seasonal reducing coefficient on electricity consumption for irrigation purposes during growing season and use of approximately 70% of land tax for land reclamation purposes are not sufficient and applied ineffectively. Therefore, along with the improvement of current state benefits, it is necessary to introduce state subsidies to agriculture, for payment of irrigation service fees, similar to other developed and developing countries.



MLR&W: current organizational chart



1.4. Experience of IWRM implementation in a pilot zone, including the results of HGS

In the fifth phase of the IWRM-Fergana Project, which is implemented since March 1, 2011 till February 28, 2012, it was planned to carry out a hydrographic study (HGS) by comparing pilot rayons, B.Gafurov and J.Rasulov, and non-pilot rayons, such as Zafarabad, Isfara, and Kanibadam.

The tasks of the hydrographic study were the following:

- assess organizational, legislative, and financial and economic changes that took place in each country since 2001 and, based on this, analyze degree of the progress with implementation of IWRM in the countries; at the same time, identify social changes through the gender analysis;
- compare with the results of initial detailed study, conducted at the project beginning in 2001-2002 both in pilot zones and in the Fergana Valley as a whole;
- develop proposals at local level with their following submission to national teams for transformation into “Visions of IWRM development at national level”.

The conducted HGS showed that implementation of IWRM in the pilot rayons of J.Rasulov and B.Gafurov gave a number of positive results as compared to non-pilot rayons. For example, the area of poor land conditions decreased, accuracy of inflow measurement and effective water distribution increased, water diversions were decreased, and crop yield were improved in the pilot rayons.

Besides, the degree of fee collection by WUAs in project area, taking into account debts of the past years, has achieved 364%.

Thus, one may conclude that implementation of IWRM gives positive effects as regards achievement of high financial results, improvement of irrigated land productivity and better irrigated land conditions. One should particularly note arisen interests of all actors of water hierarchy in the improvement of water and land productivities. Therefore, it is proposed to develop IWRM in the following directions:

- development of institutional structure (reformation of water sector, establishment of community-based organizations, including Councils of Water Users and Water Committees);
- technical support (all-round equipping with water meters, rehabilitation of hydraulic structures, irrigation and drainage networks);
- comprehensive training of water users and stakeholders in IWRM principles.

2. PROPOSALS ON IWRM DEVELOPMENT IN TAJIKISTAN

2.1. Hydrographization

Currently the process of reformation in agricultural and water sectors is underway in the Republic of Tajikistan.

At present stage, the Ministry of Land Reclamation and Water Resources in cooperation with donors and with involvement of international experts developed a draft “Water sector reformation strategy in the Republic of Tajikistan”⁵.

The main purpose of water sector reformation according to this Strategy is to build-up the basis for implementation of integrated water resources management through transition to water management by river basin boundaries and transfer of water management at farm level to Water user associations as the representatives of civil society.

Taking into account hydrological boundaries and other aspects of river basin systems in Tajikistan, it was agreed with MLR&W to form 5 basin water organizations and 4 sub-basins:

- Syrdarya basin: consists of the Syrdarya river inside Tajikistan and its tributaries, including the Zarafshan river sub-basin (transboundary).
- Hissar basin: includes the whole system Elok, Sarvo, Varzob-Kapharnigan, lower marks in the Kapharnigan sub-basin. The basin also includes the Karatag sub-basin, the Karatag river and one tributary of the Surkhandarya river in Uzbekistan; this sub-basin is of transboundary nature (to a certain degree);
- Vakhsh basin: consists of the whole Vakhsh river and its tributaries, except those ones that flow in Kyrgyzstan and the upper reaches of Badakhshan. The basin upper reaches, upstream of the Nurek dam, form the Surkhob sub-basin;
- Pyandj basin: consists of the command zone of river basin, which includes the Kyzylsu river and Yakhsu river, the Obiminob river and all tributaries of the Pyandj river. It also includes the reach from the Pyandj river flowing upstream to junction with the Obiminob river (borders the Badakhshan basin) till foothills upstream of Vakhsh river tributary (borders the Vakhsh basin in area of Kumsangir).
- Badakhshan: includes all tributaries of the Pyandj river in Badakhshan.
- Badakhshan basin: all tributaries of the Pyandj river upstream of the Obiminov river in Badakhshan.

Transition to new hydrographic approach in water management envisages establishing of new independent self-financing agency, supposedly referred to as “MIROB”. This agency will coordinate and manage all matters related to operation of irrigation and drainage systems at national level. Basin operating organizations (BOO) will be established at the level of large basins and sub-basins.

⁵ Final national report of Tajikistan “Results of hydrographic studies” prepared within the framework of IWRM-Fergana Project, Dushanbe, 2011.

Later on, the functions of BOOs will be extended to implementation of main principles of integrated water resources management.

Rayon water authorities (rayvodkhoz) also will be reformed and operational sections will replace them. Each section may include a few rayvodkhozes or one rayvodkhoz can be divided into several sections. This process will also follow the hydrological principles based on sub-basin and watershed boundaries. After organization of Operational sections, rayvodkhozes would be liquidated. Local system management will be performed only through such Operational section, which does not report to rayon authorities or any other local public authorities. These sections will function and operate the irrigation systems at the lower hydrological level.

Dehkan farms will be integrated into WUAs that will be also formed within a command zone of one canal or pump station. Dehkan farms will conclude contracts via WUA or directly with Operational sections that provide water supply services.

The ministry level will cover policy, legal, and institutional matters, while basin organization level will deal with water use regulation, licensing, water monitoring, planning, and protection, and support of WUAs and WUAs federation.

Thus, the hierarchy of water management looks like that shown in Figure 1.

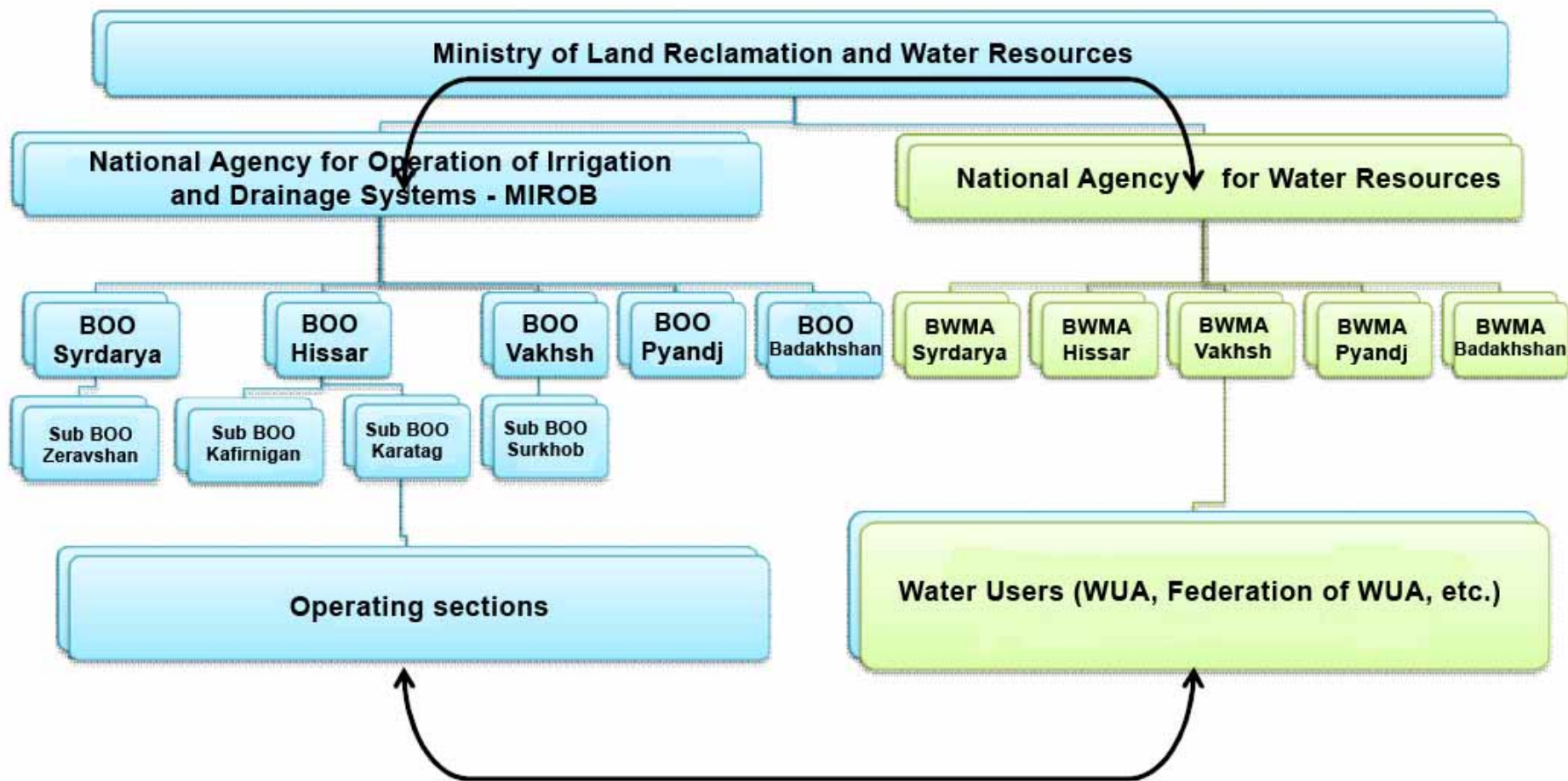


Figure 1. New hydrographic structure of water management and irrigation and drainage system operation in Tajikistan.
 BOO - Basin operating Organizations; BWMA - Basin water management authorities.

2.1.1. Main steps towards transition to basin principle of water resources management⁶

Draft documents developed by MLR&W envisage the following main steps to transition to the new basin principle of water management organization:

1. Create a group for implementation of reforms, consisting of experienced staff from different departments of MLR&W;
2. Develop and organize awareness campaign to focus attention of the public on advantages of IWRM within basin boundaries, WUA capacities and integrated water resources management, positive effects of institutional transformations in water management (better services, transparency, accountability);
3. Analyze activities of different departments of MLR&W, its subordinate agencies and determine their work scopes within the framework of a) water policy, legislation and regulation of relations, b) management and organizational aspects, c) operation;
4. Define more precisely and divide the functions of water policy, legislation, regulation of relations, management and organizational aspects between national and basin levels;
5. Make proposals on division of operation functions among national, basin, and structural levels;
6. Develop various scenarios on how to implement such division of functions mentioned under item 4 at basin level and determine time period for implementation of selected scenario;
7. Develop scenarios on organization of National water council (NWC) consisting of the representatives of all relevant ministries and government agencies related to the water sector, NWC Statute and determine time frame for this work;
8. Develop scenarios and tasks on the water sector and approve final program for reformation of institutions and organizations at basin level within the framework of NWC;
9. Prepare various scenarios for transformations at national level. Here, first of all, priority should be given to establishment of MIROB agency and later to transformation of MLR&W into the Ministry for integrated water resources management;
10. Analyze current legislation and water code and make decision on necessary amendments in these documents to meet the proposed reforms and prepare draft President's Decree and Government's Resolutions and favor their adoptions and approval through relevant procedures⁷;
11. Draw up new founding documents, with more detailed definition of tasks and powers of MLR&W, MIROB agency, basin operating organizations (BOO) and basin water management authorities (BWMA), operational sections and other new organizations that would need to be established in the process of water reformation;
12. Identify which new professional staff members would be needed and for what functions, and what functions would be fulfilled by transferred staff;
13. Draw up capacity building plans and training plans for newly established organizations;
14. Establish basin organizations such as MIROB and BALR&W;

The time frame for transition to IWRM in Tajikistan is from 2011 till 2015.

⁶ Plan of irrigation sub-sector reformation in the Republic of Tajikistan. Appendix 2 to draft Water sector reformation strategy.

⁷ To be decided during the process

2.2. Public participation

Tajikistan has broad experience in ensuring public participation in the management of water resources. Public participation is supported by Government policy, current legislation, and on-going projects, including good results of the IWRM-Fergana Project.

2.2.1. River basin councils

Under the proposed reform, water users and other stakeholders will be represented at the level of River basin water management organizations by establishing River basin councils (RBC) in order to mobilize wider public participation in decision-making at administrative, basin, and national levels.

RBC will include the representatives of various water users in given basin (drinking water supply, industry, irrigation, civil and non-governmental organizations, fishermen and other users). RBC should be found on democratic principles. RBC will be formed and supported by River basin water management organizations (RBWMO) and gradually be transformed into more independent agencies. Exact powers of RBC and legal effect of their decisions should be determined during reformation of the water sector. The roles and responsibilities of RBC are shown below:

- Regular meetings to get support and guidelines from RBWMO;
- Submit proposals on regimes of water distribution between different users in the basin for RBWMO's consideration;
- Propose basin or sub-basin development plans on water management and then has a right to get information on feasibility and viability of these plans;
- Articulate problems in water management, water distribution, water quality, service provision and has a right to get answers to raised questions;
- Receive updates on basic planning and give feedback;
- Has a right to view records and annual reports provided by RBWMO and MIROB or commercial divisions operating under umbrella of MIROB and to comment on them;
- Render assistance to unions (federations) of WUA⁸.

2.2.2. Water User Associations and Federations

These organizations are considered as the base of institutional irrigation hierarchy. Structure and operation rules of WUAs should be further improved to ensure their sustainability. The basis of this sustainability is empowering WUAs in decision making and management. This way WUAs would be able to fulfill their responsibilities successfully. One of first reform steps will be to continue establishing WUAs/their Federations (Unions) and avoid any legal constraints in this process. Organization of WUAs/Federations implies pushing of socio-economic changes among the population and this will take some time. WUAs/Federations should focus exclusively on operation and maintenance of irrigation system rather than on other general aspects of farmers' activities that could be dealt with by other organizations. The draft WUA Concept was developed on the basis of 6-year experience and contained

⁸ As WUA may be established around different water uses, their unions can be various.

description of sustainable WUA development process. This document could be used as a ground for future actions.

Water user association is a non-governmental non-profit organization, which is founded and governed by a group of water users situated along one or several hydrological sub-systems (for example, tributaries (branches) located upstream of river channel, irrespective of types of farms that join into WUA. The purpose of WUA is to provide efficient irrigation and reclamation services to users, for example, equitable and reliable distribution of irrigation water and creation of favorable land conditions for better productivity through efficient use of irrigation and drainage systems.

Roles and responsibilities of WUA

- Conclude contracts with water-management organizations for water supply from various sources within WUA's territory and for discharge of return water in the same territory;
- Collect charges and fees for water delivery and disposal of wastewater;
- Control irrigation and drainage systems in their respective territories and distribute water in the field, according to contracts, among members and non-members;
- Control, operate and maintain irrigation systems in their respective territories;
- Buy, rehabilitate, maintain and improve hydraulic infrastructure in their respective territories;
- Settle disputes occurring during water use between WUA members and other water users;
- Improve agricultural land conditions in their respective territories;
- Represent water users at higher levels (for example, in WUA Union or River Basin Council).

WUA Federation is formed by a few WUAs within particular hydrological boundary that decided to establish a joint organization in order to operate and maintain main (secondary) canal, which supplies water to each WUA from one source. The area of Federation covers the total territory of all WUAs that are the members of Federation and, therefore, may vary, where hydrological boundaries may become the common governing factor. Development of Federations should be the main objective of RBWMO or of basin agency MIROB.

The basic services of WUA Federations include timely and guaranteed supply and distribution of irrigation water among water users. The main objective of this organization is distributing water on the basis of equitability, reliability, stability, and effectiveness.

Roles and responsibilities of WUA Federations

- Develop annual and seasonal water use plans and consider and incorporate proposals on limits of water diversion and water distribution, according to users' requests and upon approval by higher administrative bodies;
- Develop, correct, and fulfill water distribution plans;
- Maintain irrigation and drainage infrastructure;
- Operate irrigation and drainage systems;
- Apply water conservation technologies;

- Monitor and analyze water distribution and return water;
- Represent in higher participatory bodies, such as WUA Union and River Basin Council.

2.2.3. Basin Union (Federation) of WUAs

WUA Unions are non-governmental non-profit organizations, in which all water users at basin or national level (agriculture, environment, drinking water supply, energy generation, fishery, etc.) may participate in water governance in order to achieve equitable, effective and environmentally safe water distribution. The Union may attract attention of the government and parliament to general issues. Assistance will be rendered in the process of its formation and training will be provided for capacity building of the organization and its members. This will be an independent association, which closely cooperates with MIROB agency, Basin MIROB, RBWMO and River Basin Council (Fig.2).

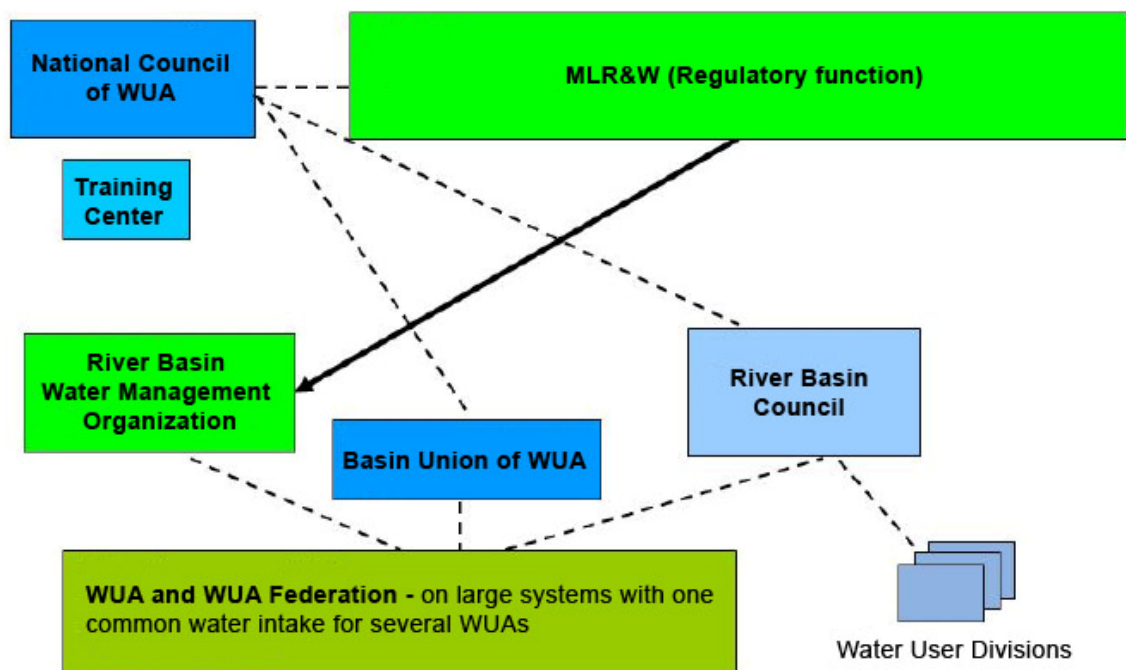


Fig.2. Diagram of public participation in water management at different hierarchical levels

In order to ensure public participation, the following tasks need to be solved:

1. Introduce amendments and additions to Tajik laws to ensure legal status of community organizations in area of water management.
2. Develop and adopt model statutes of River Basin Council, Water User Union, and Water User Federations.
3. Prepare draft guiding documents of local authorities and the government for identifying status and rights of those organizations;
4. Develop appropriate schemes of organizations, with indication of their relationships with state agencies.

5. Organize community councils, unions and federations at pilot basin level and using this as a case-study and experience of the IWRM-Fergana Project develop more precisely and finalize procedural and legal documents.
6. Develop and disseminate recommendations on organization of community councils, unions and federations and on achievement of their sustainable functioning.

2.3. Use of all types of water

In Tajikistan, amount of return water is 3.5-4.0 billion m³, of which collector-drainage water (CDW) is about 3.0 billion m³, household-domestic water is 0.5 billion m³. Return water accounts for almost 30% of the total water withdrawal, and this is important reserve for increase of water supply for crop production.

Salinity of CDW in most rayons is less than 1 g/l; however, in some rayons (Asht, Vosei, Kolkhozabad, B.Gafurov, Matchan, and Zafarabad), salinity of CDW exceeds 1.5-2.0 g/l and more.

The use of water from vertical drainage well (VDW) depends on its salinity and technical conditions of this well, whereas the use of CDW is connected with many other factors, the main of which are:

- Salinity of CDW;
- Technique of water abstraction (gravity, water lift, or other methods);
- Construction of special pump stations, transmission lines, pipelines, etc. for return water use;
- Availability of irrigated lands for use of CDW;
- Technologies for mixing with water of better quality.

For organization of return water use, it is necessary:

1. to determine more precisely quality and quantity of return water in all collectors and escapes.
2. to determine potential volumes of return water use within each drainage system;
3. to develop technical measures for use of return water and make their economic justification;
4. to propose/develop technologies of non-conventional renewable energy sources use for lifting of return water to command heights.

2.4. Priority of environment protection requirements at WUA level

Measures aimed at control of salinity and water-logging, prevention of soil cover deterioration, and avoidance of pollution of groundwater with wastes at WUA level include the following:

- make inventory of conditions of collector-drainage and irrigation network, structure of CDW formation, and CDW quality for each WUA;
- assess soil fertility and identify main causes of soil degradation;
- assess conditions of groundwater and identify potential damage to its quality within the territory of WUA;

- develop plan of actions and their implementation on improvement of collector-drainage network maintenance, reduction of impact on groundwater, increase of soil fertility (field leveling, weed and disease control, crop rotation, and fertilization);
- take measures to improve knowledge of WUA members.

Measures for protection of water in canals from untreated wastes and conservation of water-protection belts:

- assess conditions of canals in terms of discharge of untreated wastes into them, make their classification (silt, industrial-household wastes), particularly in sections, where canals pass through cities or settlements;
- assess availability and conditions of water-protection belts;
- develop and adopt legal, technical, and organizational measures at the level of ministries and departments for prevention of discharge of untreated wastes and restoration of water-protection belts;
- implement measures at pilot basis for any canals (preferably, for Khodjabakirgan canal);
- ensure all-round application of developed measures.

Measures for meeting of ecological and sanitary releases at the level of basin organizations;

- make inventory of existing regulations for setting of sanitary releases;
- determine more precisely indicators of sanitary releases in time;
- analyze water use and assess possibility of meeting sanitary releases;
- develop measures to ensure meeting of sanitary releases;
- analyze releases along rivers.

2.4.1. Availability of water for environmental purposes

The ecosystem of natural and artificial water bodies has been subjected to huge changes due to construction of a number of artificial water bodies and reservoirs over the last 30-35 years.

This has visible impact on ecological objects located within the area of these reservoirs; consequently, new ecological objects are formed with their characteristic flora and fauna.

In order to provide environmental objects with water, it is necessary:

- to define more precisely quantity of ecological objects in river basins, assess their status and state (this work is to be done jointly with the Committee on Nature Protection);
- to clarify methodological approaches to estimation of water demand of these ecological objects;
- to estimate volume of water needed for each object, taking into account climate change;
- to assess water availability of ecological objects and develop technical measures for their supply with water;
- assess the impact of ecological object on natural environment.

2.5. Cross-sectoral coordination of all kinds of water users

This question was addressed partially in Section 2.2. It is planned to establish River Basin Councils, within which water use divisions (sectors) are to be formed for dealing with various users (drinking water supply, irrigation, industry, fishery, etc.).

These divisions will be responsible for development and approval of rules for determining water requirements, water use planning, bringing water use plans to water users and getting their requests, etc.

It is necessary to develop a procedure for formation of such divisions, selection of sectoral representatives into these divisions, and relevant provisions and working order.

2.6. Aiming at water conservation

Water conservation in Tajikistan can be reached at different levels - from main canals to irrigated fields.

Huge water losses are observed in irrigated fields and distribution canals. These losses come from irrigation regimes, watering technique and technology, and water management at canal level.

Experience of the IWRM-Fergana shows that certain success is achievable in water conservation, when implementing IWRM. Based on this, Tajikistan can achieve water conservation through the following lines: 1) organizational measures; 2) technical measures; 3) adoption of best irrigation methods.

1. Organizational measures should include:

- updating of hydromodule zoning and application of new software for calculation of crop water use, for example CROPWAT, taking into account planned crop yields;
- updating of “Regulations on charges for irrigation water services” based on the changes and the realities of the present day;
- development and adoption of a new technique for water tariff calculation based on O&M costs of the on-farm network;
- development of a mechanism enforcing penalties as provided for in the Regulation on charges for irrigation water services. (The Regulations envisage penalties to be taken for above-plan use of water or for unauthorized diversion of water);
- application of differentiated and water-saving encouraging tariffs of irrigation water;
- revision of cropping patterns and introduction of drought-tolerant varieties;
- organization of training courses.

2. Technical measures

- improvement of furrow irrigation technique;
- creation of conditions (equipment rent stations) for land reclamation operations, including field leveling;

- development and implementation of moisture-retaining tillage technologies;
- development of new cheap water meters and completion of the equipping process for gauging stations at all inlets;
- equipping of gauging stations in the key stretches of small transboundary rivers;
- wider application of recharge irrigation in early spring, application of snow-accumulation methods and winter irrigation with deep tillage;
- improvement of the performance indicator of irrigation canals by coating the canal bed, particularly in area of high percolation.

3. Adoption of best irrigation methods

- zoning of the area by types and application scale of modern irrigation techniques (micro-irrigation, sprinkling, closed irrigation systems);
- planning of construction of the facilities for production of equipment for water-conservation technologies;
- formation of private design, development, construction, and operator organizations specializing in adoption of best irrigation methods;
- development of the long-term strategy for wider application of water-saving irrigation technologies.

If necessary, draft guidelines should be drawn up on all lines of water conservation.

2.7. Capacity building

Currently, about 10,000 people work for this sector. The sector is suffering from difficult financial situation. The salaries are low; therefore inflow of new professionals, especially into operating organizations, is very limited. Collection of irrigation water fees is about 50-60% by the agencies of the Ministry of Land Reclamation and Water Resources as a whole.

Irrigation water tariffs do not correspond to actual costs of irrigation system O&M. In this context, technique of setting tariffs needs to be revised to include costs of O&M for the on-farm network. It is also necessary to review methods for accounting inflow and outflow. Under multiple water users (about 40 thousand dehqan farms), double accounting of water receipt and transfer three times a days consumes a lot of labor and human resources. Thus, simplified and more accurate accounting of water receipt and transfer may also have significant impact on collection of irrigation water fees.

One component of O&M costs is depreciation charges for capital repairs and full rehabilitation that also need to be revised according to current costs experience.

The staffing pattern of operating organizations still follows the regulations of the Soviet period, although now we have computers with up-to-date software, mobile communication, new water meters, etc. that improves management. Application of these innovations allows improving substantially labor productivity in operating organizations.

In order to improve capacities of water-management organizations, it is necessary to do the following:

1. Assess current staffing and financial situations in operating organizations, equip the latter with office equipment, communication facilities, transport, and water measuring stations.
2. Analyze situation as regards conclusion of contracts with water users, implementation of these contracts, and identify main causes of non-payment.
3. Develop and adopt new standards of depreciation charges for different conditions in Tajikistan.
4. Improve irrigation water tariff calculation technique, based on O&M costs of the on-farm network. The introduced tariffs should consist of two parts: 1) tariffs for inter-farm network; and 2) tariffs for on-farm network. Contract is signed with water consumers with account of full tariff, while organization (WUA, DF association), which operates the on-farm network, gets its share of the tariff, etc.
5. Prepare proposals on state support of WUAs located in low-productive lands.
6. Develop and adopt new rules of accounting and receipt-transfer allowing simplification of this process and increase reliability of accounting.
7. Develop new management structure, based on achievements in the management science and technology, and test it in a pilot irrigation system.
8. Identify the need for personnel of different specializations based on newly established organizations; ensure further training and retraining of existing personnel.
9. Taking into account IWRM requirements and establishment of new organizations, estimate needs for training and retraining in the institutes of higher education and for advanced training.
10. Estimate more precisely the quantity of needed office equipment, communication facilities, transport and machines for operation of irrigation systems under new conditions.
11. Prepare proposals on the development of national sectoral MIS, taking into account the IWRM-Fergana experience in order to improve management at different hierarchical levels.

3. IMPLEMENTATION AND DEVELOPMENT OF IWRM IN TAJIKISTAN

The water sector reformation is aimed at creating pre-requisites for integrated approach to water resources management (IWRM). The watershed boundaries of most rivers will determine the scale of water management and planning⁹ on five main river basins: Syrdarya, Hissar Valley rivers, Kafirnigan, Vakhsh, and Badakhshan. The boundaries of management organizations were determined not only on the basis of hydrography. Communication capacities, existing managerial relations, and road infrastructure were also taken into account.

3.1. Institutional capacity building

As was mentioned in the previous chapter, the lowest chain of water management hierarchy is Water User Association (WUA). By present, more than 200 WUAs covering about 30% of the total irrigated area have been established in the republic. The coming reform envisages increase in quantity of WUAs and full coverage of the whole republican irrigated area with

⁹ Water resources involve surface water and groundwater, as well as ecosystem through which they flow.

WUA services. However, this task is very difficult and consumes a lot of time and funds. The experience of established WUAs shows that structure, financial mechanism of WUA's activity and its legal aspects in Tajikistan have not been yet fully adapted to real conditions of agricultural production. The analysis made by WUA Support division of MLR&W shows that only about 10% of WUAs are successful in fact.

The issue of property rights of WUA for the on-farm irrigation and drainage systems has not been solved yet. These systems left unattended are deteriorating and failing. Consequently, conditions of land worsen. The water sector reform envisages making of an inventory of the whole on-farm infrastructure before its transfer to WUA's ownership.

The transition period of the water sector reformation, which is to last 3-5 years, envisages formation of hydraulic sections responsible for operation and maintenance of primary and secondary canals and their hydrostructures on the basis of existing Rayvodkhozoes. Tertiary canals and in some places secondary canals are transferred under responsibility of WUAs.

The newly established WUA Federations with the irrigated area of tens of thousand hectares covering one or more rayons located in river basin or large canal will replace former Rayvodkhozoes.

At the first stage of reformation, one of the main issues is capacity building of newly established water-management institutions. Since some planned water-management institutions have not been established yet or capacity building measures are only being created, this stage will also include formation of these institutions themselves. This would require the development and implementation of the following measures:

1. Establishment and capacity building of WUA

- Improvement of WUA Law, taking into account new conditions formed as a result of water sector reformation;
- Revision of boundaries of existing WUAs to meet hydrographization principles;
- Making of an inventory of on-farm irrigation and drainage network for its transfer to the ownership of WUA;
- Equipping of WUAs with water meters and a minimal set of equipment for operation of the on-farm irrigation and drainage network;
- Improvement of economic mechanism for ensuring sustainable activities of WUAs;
- Training of WUA's staff and farmers.

2. Formation and capacity building of WUA Federations (WUAF)

- Development of criteria of WUAF establishment;
- Distribution of functions of WUAs and WUAFs;
- More detailed definition of WUAFs rights and responsibilities;
- More detailed definition of relationships between WUAFs and BWOs¹⁰;
- Equipping with necessary office and other equipment;
- Training of staff in new requirements.

¹⁰ State basin water organization (BWO - MIROB) is responsible for operation and maintenance of main canals and their hydraulic structures, large pump stations and other key structures of the water sector within the basin of a particular river. MIROB has hydraulic operating sections covering one or more rayons and delivers water to WUAs to pre-determined hydraulic structures.

3. Formation and capacity building of Basin water organizations

- Topographic identification of the scope of activity of BWO and WUA (WUAF);
- On the basis of inventory data, clarification of ownership of each structure in the basin;
- Legal division of powers, rights, and responsibilities of BWOs and its hydraulic sections, on the one side, and of WUA and WUAF, on the other side;
- Development of optimal structure of BWO, Regulations about functions of divisions and staff members;
- Procedure of organization of Basin Water Council, including its rights and responsibilities;
- Development of measures to ensure economic sustainability of BWO;
- Distribution of functions and order of interaction of BWO with the National organization on water resources management;
- Equipping of BWO with office equipment, transport and necessary facilities for operation and maintenance of water infrastructure.

The above-mentioned measures are needed for establishment and capacity building of other management institutions to be formed at national and basin levels.

3.2. Development of legal framework for IWRM implementation

The current legislation framework on regulation of water relations was developed with account of changes in the economy of transition period. However, prolonged transition period from the Soviet resource-distribution system to the robust market economy, especially in irrigated agriculture, has influenced development of water legislation in the Post-Soviet period. Nevertheless, the current Water Code of Tajikistan contains a number of articles, enforcement and observance of which would improve significantly the state and performance of the water sector.

The experience in the improvement of water legislation in Tajikistan shows that many problems in this sector occurred at the interface with other economic sectors and are associated with other issues of state management, such as irrigated agriculture and its effectiveness, rationalization of taxation in agricultural and water sectors, decentralization of rights and authorities of water management, energy supply, etc.

The expected reform of the water sector needs significant changes and updating of water and other related laws:

- Water Code;
- Law on drinking water and water supply;
- Law on Water user associations;
- Land Code;
- Law on dehkan farms;
- Tax Code;
- Law on nature protection.

A separate chapter should be added to the Water Code about basin management of water resources, including a number of articles dedicated to detailed building of this approach.

Amendments and updating of a range of articles plus new articles to the existing chapters will be needed.

Other laws and codes also need to be amended and added in order to develop the legal framework of IWRM, clarify issues related to property rights of infrastructure in command areas allocated for farms, define more precisely taxation mechanisms in the water sector, and divide functions of authorized state agencies in area of water use and protection management.

Thus, water legislation development would take relatively long time in order to create coherent legal framework for implementation of IWRM, covering all aspects of water use and protection in all economic sectors.

3.3. Development of financial-economic mechanism in the water sector

The current financial-economic mechanism of the water sector is the result of transformations in the planned economic system of water sector influenced by market mechanisms in other economic sectors. Attempts to reform dedicatedly the economic mechanism in the water sector have not been undertaken yet in the republic. The economic foundations evolved but not systematically. This led to a number of problems, on solution of which depends sustainability of operation in the whole water sector.

In general, improvement of the economic foundations in the water sector is associated with enhancement of the whole economy, and this is a very difficult challenge. Evidently, it is impossible to improve economic foundations in one single economic sector without nationwide approach. Therefore, this section may only expose current economic problems in the water sector and propose ways to solve them.

The main economic problem in the water sector at present stage of transition to sustainable economic basis is the breach of reproduction cycle: water delivery services - payment for services - investment of capital in operation and maintenance in order to ensure timely provision of water services. This cycle of reproduction in the period of Soviet planned economy was forced by the powerful compulsory economic mechanism, up to the land reform in 1996, when all circulating assets were spent in one or another way.

The main objective of the water sector reform is forming the up-to-date feasible economic system to ensure sustainability of the remaining water infrastructure through simple reproduction and later on extended reproduction. It should be recognized that under conditions of poor economy, lack of state support, and wider public participation, this objective is hardly achievable at present.

Currently, the state covers about 10% of operation costs of water infrastructure (mainly irrigation and drainage). Capital investments are made through loans of international financing institutions (mainly WB and ADB) and international grants. However, it is necessary to bear in mind that for good operation and maintenance, 4-6 times more funds are required. The current system of cost compensation leads to gradual deterioration of capital assets and withdrawal of some irrigated lands from agricultural production.

The on-farm irrigation infrastructure has been left without state subsidizing of its operation for many years. Although the legislation envisages allocation of most land tax (about 70%) to

reclamation of agricultural land (cleaning of collector-drainage network), these funds are used ineffectively in the field. Probably, transfer of the on-farm irrigation and drainage network to WUA ownership and allocation of those funds to WUA accounts would increase effectiveness of usage of the funds.

While water delivery tariffs in Tajikistan are highest in Central Asia, they are not enough to cover all costs of irrigation and drainage network O&M. Therefore, the annual collection of irrigation water fees by WUAs is not more than 30-40%. Higher collection rate is observed in the north of the country, where pumped irrigation systems were constructed primarily. Nevertheless, water users receive from the state considerable subsidies in form of reduced electricity tariffs. At present, the state established electricity tariffs for water delivery are as follows: 0.015 somoni/kWh for lift irrigation zone during growing season, and 0.057 somoni/kWh during non-growing season. The tariffs include 18% VAT.

WUA concludes contract with Rayvodkhoz for water and its distribution among its members. Collected fees are transferred to Rayvodkhoz. WUA's services are decided at a general WUA meeting, and their service fees are collected in form of additional payment to the established state tariff. Rayvodkhoz has a right to conclude contracts both with WUAs and with individual water users.

Farmers themselves consider the level of established tariff for water delivery services as high. However, assessment of irrigation water fees per one hectare, given the irrigation norm of 8000 m³/ha, for instance, indicates that as compared to the retail price of agricultural output, this tariff is not very high: 1.5 sacks of flour or 4 sacks of wheat (200 kg); 4 kg of meat; 20 apples; 80 kg of potato, etc. The irrigation water fee on average is not more than 1% of the retail price of agricultural output. Poor paying capacities of farmers show that the economic mechanism in irrigated agriculture needs significant enhancement.

It is necessary to underline that the water charges system is the effective incentive for water saving. Thus, since 1996, when water charging was adopted, irrigation water withdrawals have been decreased, actually by no less than 10%.

Slightly better situation is in drinking water supply system, where the payment is received more regularly despite higher tariffs. Agricultural and domestic-household use from this system pays according to established tariff for drinking water. Currently, accounting and payment for supplied water on the basis of readings of water meters is adopted. Water meters are already started to be installed in rayon centers. In the rural area, the payment is collected by local water controllers.

At present, another incentive to save water by users is double payment for services in case of exceeding of the established limit on water delivery or irrigation norm. However, it is difficult to monitor exceeding of these norms. Moreover, this needs additional expenses from the side of Rayvodkhoz.

The coming water sector reform envisages considerable improvements in the system of water delivery charging. This system should become clear for both water users and water suppliers. The main financing source of the water sector will be payments for services provided to water users. The state will support only those elements of water-management activity that are under competence of the Government of Tajikistan, such as:

- implementation of internal and external water policies of Tajikistan;

- regulatory functions - development and adoption of various rules;
- integrated water resources management at the level of large and medium river basins;
- maintenance of water cadastre and development of basin plans;
- development and management of database and information system of the water sector, provision of stakeholders with information;
- other functions relating to the competence of the Government of Tajikistan.

3.4. Measures for developing technical and management tools

The system of water use accounting should be modernized through state-of-the-art equipment and devices. It is necessary to automate water measuring not only at large hydraulic structures but also at medium-size structures distributing water to WUAs. At present, it is practically impossible to measure water four times in thousands of structures scattered throughout the vast area. This requires colossal labor inputs. Only automation and remote monitoring of water quantity and quality may help in drawing the real picture of water use.

It is necessary to mark out the following hierarchy of the canal and collector-drainage network system, which will be formed in the course of irrigation sub-sector reformation:

- State canals:
 - main canals,
 - secondary (inter-farm canals).
- Non-state canals:
 - farm, on-farm canals and delivery ditches.
- State collector drains:
 - collector drains.
- Non-state:
 - field drains,
 - collector drains.

The water sector reform envisages transfer to the ownership of WUAs and WUAF the farm, on-farm canals and delivery ditches and their structures. These non-governmental organizations also will have property rights to field drains and collector drains. While the main and inter-farm canals, as well as large collector drains and their structures will remain as the property of state water agencies.

At present, the automated water distribution and accounting system, similar to that implemented along the Khodjabakirgan canal¹¹, is difficult to be adopted throughout the republic due to financial constraints.

The automated water monitoring system based on SCADA, using the Management-Information System (MIS), and implemented in the head structures of BFC and SFC along the Syrdarya river showed its high effectiveness. The next project stage will cover pump stations and hydraulic structures located along the Syrdarya river within the boundaries of Tajikistan. This system generates reliable real-time information on quantity and quality of water

¹¹ Automated water distribution control was implemented by the project “Integrated water resources management in the Fergana Valley”, SDC, Switzerland in 2010. This system also allows automatic accounting of water delivered in distributors.

resources from gauging stations equipped with measuring devices, with every 10 minute inputting of measurement readings into DB, and allows control of water distribution on real-time basis.

It is necessary to note that currently in Tajikistan all major hydraulic structures are equipped with mobile communication. The next stage of communication development should involve complete equipping of staff in the national water-resources utilization system with communication facilities.

3.5. Measures for capacity building in IWRM

The integrated water resources management implies such level of water management development, when economic water use achieves certain degree of effectiveness and different users begin to compete with each other for increase of their water share. In this process the Government is to regulate water relations between users in order to further improve water productivity and preserve sustainability of affected environment.

Under conditions of low cost-effectiveness of water use, it is difficult to implement IWRM. However, another IWRM encouraging factor in such conditions is unequal water distribution and scarcity of water resources at regional and national levels. Although there are much literature and discussions about exhaustion of water resources in the region and their scarcity in the Central Asian countries, even in case of modest water saving, there will be by 10% more water for the next decades. If effective water-conservation technologies are adopted, the water shortage will not threaten the Central Asian countries in this century.

In Tajikistan, IWRM is implemented in parallel with economic development: mainly, agriculture, industry, and municipal economy. At the same time, human resources involved in water management should be developed. The republic has the following state training system in the area of water resources management:

- Secondary school: initial information about water resources and their use in economy; water supply, hygiene and sanitation;
- Technical vocational school: training of technicians for water supply and sanitation system;
- Specialized secondary educational establishments, including colleges (divisions of hydraulic engineering and land reclamation, water supply and sanitation): specialized courses;
- Higher education establishments - universities: faculties, divisions: specialized courses for training of engineers and specialists on water resources management;
- Post-graduate and doctoral water training: professional training of high-qualified professionals.

Training of water sector's staff is also conducted under cooperation programs between international public agencies and non-governmental organizations implementing the projects on water management improvement in the republic. They carry out various water training programs and assist with getting training in developed countries. One should particularly

underlie the ICWC Training Center¹² established in 2000. This Center provided advanced training for scores of Tajik specialist along with specialists from other CA countries.

In cooperation with international organizations, specialized school lessons are developed to foster an attitude of care towards water and educate on hygiene and sanitation¹³, as well as lectures for university students on international water law¹⁴.

Evidently, the current water training system needs significant improvements. The Government of Tajikistan supports any efforts of governmental and non-governmental organizations aimed at enhancing the system of water education and training.

Basin planning is an integral part of IWRM. Under present conditions, planning and management in any economic sector, including river basin water, are inconceivable without appropriate database and information system. First attempts to develop national DB and Information system on water resources in Tajikistan were made as early as in the mid-nineties of the last century. However, only now serious efforts are taken in this direction. Based on experience of the regional information system - CAREWIB, with the support of the GIZ Program "Transboundary water management in Central Asia", the MLR&W develops DB for the Tajik part of the Isfara river basin. The Kyrgyz counterparts develop DB for the Kyrgyz part of the basin. Further on, it is planned to develop similar DB on all main river basins in Tajikistan.

Formerly the well-developed network of gauging stations in Tajikistan has lost most of its stations over the last 20 years. Now observations are made only at the main gauging stations, especially those of interstate importance. It is expected that the situation would be improved much as a result of the WB's project on modernization of meteoservice in Tajikistan. The total amount of technical assistance is 13 million USD. The process of national hydrometservice modernization will last until 2015. Besides computer technologies, the meteoservice will be equipped with automated meteorological and hydrometeorological stations and a high-resolution satellite to receive cloudy images, and its staff will get advanced training.

The most complex task is to rehabilitate and develop the system for water accounting and ensuring balance of water use and supply. Without water accounting, it is difficult to develop basin DB and information systems and ensure effective coordination of water management among different economic sectors. Preliminary calculations show that it is necessary to equip with modern water measuring devices about 500 intake structures and importation works, 3 thousand offtakes of former collective and state farms that now serve group of farms, 15 thousand inlets of farms, more than 1.5 thousand irrigation and vertical drainage wells, and over 3 thousand drinking water wells. Obviously, the enhancement of water accounting system will last a number of years.

¹² ICWC Training Center was established in cooperation with the McGill University (Brace Center for water management, Montreal, Canada) and the MountRoyal College (Calgary, Canada) with assistance and financial support of the Canadian International Development Agency (CIDA).

¹³ UNICEF Tajikistan, OXFAM Tajikistan, Safe Children US&UK.

¹⁴ MLR&W, Ministry of Education and Ministry of Justice are developing in cooperation with OSCE Tajikistan a training course on international water law for the students of water faculties and legal specialization at the national university.

Although mobile communication has slightly improved the abilities of communication between water-management organizations, the modern system of water management should use Internet technologies. This communication technology, which is widely spread in other economic sectors, has not been yet applied everywhere in the national water sector.

One of important IWRM aspects is involvement of women in water management. In Tajikistan, like in other Central Asian countries, women more than men spend their time for care and fostering of their children and for family household. Women more than men use water in household and farming. However, involvement of women in water management and decision making still remains very low. Thanks to a number of projects, more and more attention is paid to gender issues. Now in Tajikistan one may see women occupying positions of WUA heads, chiefs of divisions of water management organizations at different levels, engineers, and managers of farms. The Government of Tajikistan also encourages participation of women in governance of various economic sectors, including water governance.

3.6. Vision of further IWRM development in Tajikistan

This section does not imply official expression on further process of IWRM implementation in Tajikistan as final decisions on the implementation are made by the Government of Tajikistan. For the same reason, materials in this section cannot be disclosed as those approved by any official agency of the Republic of Tajikistan in the public media or disseminated in any other form as presentation of the national Tajik IWRM policy. Materials of this section present an experts' vision of IWRM development, based on on-going reformation in the water sector of Tajikistan.

Elaboration of the Water Sector Reformation Strategy, as charged by the Government of Tajikistan, virtually has been continuing since 2009. The Tajik Ministry of Land Reclamation and Water Resources in cooperation with the international experts working under technical assistance of the Donor Coordination Council in Tajikistan keep improving and detailing the Strategy. However, planning and implementation of reformation in such vital sector such as the water sector should be shaped thoroughly and without mistakes. Therefore, the process related to development of the Strategy is still on-going and only after official approval by the Government of Tajikistan, it can be said affirmatively that elaboration of this Strategy is finalized.

Apparently, the beginning of reformation process does not mean that the republic is transferring to IWRM the next day. This requires efforts of many years for step-by-step implementation of IWRM principles. The Government of Tajikistan and the Ministry of Land Reclamation and Water Resources rely on close cooperation with the donor community carrying out their activities in the republic.

The proposed Vision was drawn up using materials of the Water Sector Reformation Strategy. Currently the Ministry of Land Reclamation and Water Resources is cooperating with the Donor Coordination Council represented by UN FAO, World Bank, EU, SDC IWRM-Fergana Project, UNDP, UNECE, USAID and others in development and implementation of the water reform. However, the support provided is limited and aimed at solving only some issues of water management system improvement. Taking into account the long list of measures for implementation of the reform, the MLR&W will invite donors and international

organizations for cooperation on concrete tasks of water sector reformation. As the process of Strategy elaboration has not been completed yet, below you will find the list of measures to be taken in the mentioned tentative time frames.

Vision on further development of IWRM in Tajikistan

No.	Measures	Tentative time frame
1	Elaboration of a Strategy for IWRM implementation within the framework of the Water Sector Reformation Strategy	2012
2	Approval of the Strategy for IWRM implementation by the Government of Tajikistan	2012
3	Development of Regulations for Basin operating organizations and their approval by the Government of Tajikistan	2012-2013
4	Determination and approval of boundaries of Basin operating organizations	2012-2013
5	Establishment of Basin operating organizations	2013-2014
6	Inventory of capital irrigation and drainage assets in order to determine scope of O&M responsibilities of operating organizations at different hierarchical levels	2012-2013
7	Transfer of capital irrigation and drainage assets to newly established basin operating organizations and Water user associations	2013-2014
8	Re-organizing of existing and establishment of new WUAs, their uniting into Basin WUA Federations (Unions)	2011-2015
9	Development of recommendations for improvement of management structure and achievement of sustainable WUA functioning	2012-2014
10	Joint decision on differentiation of functions between WUA and basin operating organization on operation and maintenance of inter- and on-farm irrigation and drainage networks in river basin	2012-2014
11	Transfer of the on-farm and, if applicable, a part of the inter-farm irrigation and drainage network to WUA ownership	Progressively as WUAs are established (since 2012)
12	Development and approval by the Government of Tajikistan of the Regulations on National Agency for Water Resources	2012-2013
13	Establishment of the National Agency for Water Resources and its branches in river basins	2013
14	Improvement of water legislation in light of water sector reformation	2011-2015
15	Development of recommendations for the Government of Tajikistan on implementation of IWRM in water cooperation among riparian countries of international river basins in Central Asia	2012-2014
16	Development of database and management information system IWRM-Tajikistan	2011-2015
17	Follow-up of National policy dialogue on integrated water	2011-2015

	resources management	
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As was mentioned above, this list is not final and probably will be changed. However, we can underlie priority tasks for improvement of the water management system in Tajikistan. These tasks can be proposed with confidence to international organizations, including SDC, as further directions for cooperation.

No.	Measures	Tentative time frame
1	Development of recommendations and strengthening of capacities of basin operating organizations in Tajikistan	2012-2015
2	Implementation of automated system of control for water diversion and monitoring of water quantity and quality on the basis of SCADA in Tajik river systems	2012-2020
3	Assessment of conditions of capital irrigation and drainage assets by using modern technologies (GIS, DB, RS) within basin operating organizations	2012-2014
4	Development of recommendations for the Government of Tajikistan on the improvement of economic mechanisms of water management	2012-2013
5	Adapted mechanism of public participation in water management in Tajikistan: WUA Federations (Unions), Basin Water Council, National Water Council	2012-2013
6	Re-organizing of existing and establishment of new WUAs, their uniting into Basin WUA Federations (Unions)	2011-2016
7	Development of recommendations for improvement of management structure and achievement of sustainable WUA functioning	2012-2014
8	Improvement of water legislation in light of water sector reformation	2012-2016
9	Development of recommendations for the Government of Tajikistan on implementation of IWRM in water cooperation among riparian countries of international river basins in Central Asia	2012-2015
10	Development of database and management information system IWRM-Tajikistan by using Internet and GIS technologies	2012-2017
11	Follow-up of National policy dialogue on integrated water resources management, implementation of IWRM Roadmap of the NAP Steering Committee in cooperation with UNECE	2011-2015

Successful implementation of IWRM depends on effective implementation of the above measures. Evidently, it is impossible to implement IWRM without transition to basin approach in management; however, this transition will change all inter-departments administrative and functional relationships, territorial responsibilities of new organizations, etc. On the other hand, the current situation forces to transit to IWRM, and the Government of Tajikistan expects that this would create a solid base for revival of the national water sector and its strong contribution to improved well-being of the Tajik people.