



Republic of Uzbekistan

Ministry of Agriculture and
Water Resources

Country Report

for Workshop on Eco Efficient Water Infrastructure

Juraev Ilhom Usmonovich

*Head of the Foreign Division "Uzvodremekspluatatsia"
Republican Association under Ministry of the
Agriculture and Water Resources
of the Republic of Uzbekistan*

*E-mail: djuraev_5454@mail.ru
Telephone number: Office: **+99871 241 08 53***

November 2008

INTRODUCTION

Water is fundamental to human survival and development. Both people and ecosystems depend on common water resources and so it is important to protect their mutual interests, especially the productive functions of ecosystems, which are the basis of public welfare. Recent estimates of the increasing demand for water show clearly the scale of future problems and threats and the need to be well-prepared for “life in a changing world”.

Water is the key factor in the socio-economic and environmental well-being of the Central Asian countries, which in recent years have faced the problem of shared *water resources management* in conditions of frequent drought, natural disasters, dust storms, flooding, and other especially dangerous phenomena. All the Central Asian countries experience shortages of water but Uzbekistan is the most vulnerable because it has the largest demand for water in order to meet the socio-economic and ecological requirements of its growing population, natural ecosystems, and sustainable development.

The main priority of the Republic of Uzbekistan in all stages of the current economic reforms is to ensure reliable social security for its population and measures to protect the environment. In order to do this the Government pays special attention to liberalization and deepening of economic reform through institutional reorganization, development of WUAs, and expansion of the rights and economic independence of the agricultural producers.

Society already recognizes the need to take drastic steps for the solution of water problems and the mitigation of water shortages. Rethinking outdated water use principles and searching for acceptable and adequate measures and actions for overcoming worn out stereotypes in natural resources management is an ongoing process. It is noteworthy that the water shortages of recent years have increased people’s sense of the value of water and forced them to think what they can do to improve the situation themselves without outside support. In many respects the shortages have ensured a return to the traditions of the past.

The national programs and planned measures in the area of water resources management and environment protection are not limited to the national framework alone. They envisage integration into regional strategies for cooperation and strengthening of mutually beneficial partnerships in the Aral Sea basin on the basis of experience and achievements.

GENERAL INFORMATION

The Republic of Uzbekistan is one of the key Central Asian countries in the Aral Sea basin in terms of its size, location, the wealth of its natural resources, and historical heritage. Uzbekistan is a cultural mosaic with its roots in the ancient Sogdian, Bactria, Margelan, Shash, Khorezm and Turan civilizations. At different times it has been influenced by Persia, Arabia, China, Greece, and other countries. Today it is an independent state with more than 130 ethnic, tribal, and linguistic groups in its

population. The indigenous people are Uzbeks, making up more than 3/4 of the total population.

The landscape of Uzbekistan is extremely diversified. There are plateaus, lowland plains, piedmont plains, mountain spurs and ridges.

The climate of Uzbekistan (marked continentality, aridity, plenty of light and heat) is determined by its southern location within the vast continent and by its great distance from seas and oceans.

The average monthly air temperature for January ranges from +30C in the south (Termez) to -80C in the north (Ustyurt plateau); the maximum air temperatures in the summer months (July) reach 45-490C, with the soil surface reaching 60-700C. The average precipitation in the desert zone of the country is less than 200 mm/year, while in the piedmont and highland zones it varies from 400 to 800 mm/year with a maximum in the high mountains of up to 2,000 mm/year. Annual precipitation varies significantly in all zones and in some years it may be half the average. The country's territory is divided into two agro climatic provinces (plains and piedmont/highland), and 10 agro climatic zones which differ from each other in terms of natural moisture content, sum of the effective temperatures, duration of the frost-free period and other factors important for agriculture.

THE AVAILABLE RESOURCES

The main water resources of Uzbekistan are the surface runoff, formed by the trans boundary Rivers the Amudarya and Syrdarya with their tributaries and also the Kashkadarya and Zarafshan Rivers. The main flow of the Amudarya and Syrdarya Rivers is formed in Tajikistan and Kyrgyzstan respectively.

The Syrdarya River Basin

The total area of the Syrdarya River basin is approximately 345 thousand km². The main Syrdarya River is formed by the confluence of the Naryn and Karadarya Rivers. It is 2,8 km long, about 2,000 km out of the territory of Uzbekistan.

The Syrdarya and its tributaries are glacier/snowmelt fed Rivers. The water resources of the Syrdarya average 41.6 km³. Approximately 70% of the main flow volume is formed within the upper watershed down to the River's exit into the Fergana valley. Most of tributaries join the River along its right bank in the eastern part of the Fergana valley. Numerous small streams with insignificant total flows join the River along its left bank.

The Amudarya River Basin

The Amudarya River is the largest in terms of runoff which accounts for 2/3 of the total water resources of the Aral Sea basin. The length of the Amudarya from the source of the Pyandj River to the Aral Sea is 2,540 km, including about 1,000 km within the territory of Uzbekistan. The basin covers a vast territory (approximately 1,327 thousand km²). After the confluence of the Pyandj and Vakhsh the River is called the Amudarya. Then the River flows along the border between Afghanistan and Uzbekistan, crosses Turkmenistan, returns again to Uzbekistan and discharges into the Aral Sea, creating at the approaches to it a huge delta up to 300 km wide. Two large right bank tributaries (Kafirnigan and Surkhandarya) and one left bank one (Kunduz) flow into the River in its

middle reaches. Then there are no any tributaries on the way down to the Aral Sea. Over its course the River crosses deserts and semideserts flowing between the Karakum and Kyzylkum deserts. While flowing through the plain from Kerki to Nukus, the River loses most of its runoff through evaporation, infiltration, and irrigation. The waters of the Amudarya River are the most turbid of any in Central Asia and among the most turbid in the world.

The Amudarya River is the glacier/snowmelt fed type of River and its water resources are 68,63km³ on average. The main flow volume (85%) is formed by the Vakhsh and Pyandj tributaries. The share of the Surkhandarya, Kafirnigan, and Kunduz Rivers is only 15%.

Underground Water

Underground water forms a significant part of the country's water resources and plays an important role in supplying water for drinking, as well as for agriculture, including pasture irrigation. Underground water of the Aral Sea basin, which lies within territory of Uzbekistan, is formed by precipitation and filtration from water bodies, River beds, canals, lakes, and irrigated territories.

The total volume of natural underground water in Uzbekistan is 24.35 km³. Out of this amount 20.79 km³, 2.92 km³, and 0.46 km³ lie in the Quaternary, Upper Pliocene-Quaternary, and Upper Cretaceous deposits respectively.

River Basin	Natural Underground Water	Used Underground Water	
		Total	With mineralization up to 1 g/l
	km ³	km ³	km ³
Amudarya	10,73	9,93	3,11
Syrdarya	13.62	14,09	5,84
Total	24,35	24,02	8,95

Use of Water Resources

The largest user of water resources is irrigated agriculture which accounts for 90% of the total volume used.

The use of water by consumers is based on the principle of equal water supply. Priorities in water delivery amongst the sectors of the economy are as follows:

- .-Drinking and municipal water supply;
- .-Industry;
- Sanitary releases to irrigation systems and small Rivers.
- .-Agricultural and rural water supply.

POLICY AND REFORMS IN WATER SECTOR

The main aim of the Government's policy in the water sector is to promote the rational use of water and to protect water resources. It also aims to improve the efficiency and reliability of the country's water sector management, ensuring guaranteed water delivery and providing essential services both to society and natural ecosystems for the reconstruction, operation and maintenance of the existing infrastructure.

The main priorities of activities in the water sector are as follows:

- .-Water saving in all types water consumption and improving water quality;
- .-Development of systems for supplying the population with good quality drinking water;
- .-Restoration of soil fertility and maintenance of a favourable water-salt balance in the rooting zone of soil;
- .-Prevention of water and wind erosion of soil, and rational use and protection of the vegetation cover in the piedmont-highland and desert pasture zones;
- .-Mitigation of the negative impacts of the ecological and economic crisis in the Aral Sea littoral zone through an integrated approach to decision-making on interrelated regional and national issues.

The process of water sector reform began with the adoption of the Decree of the Cabinet of Ministers on the transition from an administrative territorial approach to a two level system of basin irrigation management involving the introduction of market relationships at all levels of water use:

- .-Decree of the Cabinet of Ministers of the Republic of Uzbekistan of 21.06.2003, No 290

“On improvement of the activities of the Ministry of Agriculture and Water Resources of the Republic of Uzbekistan”;

- Decree of the Cabinet of Ministers of the Republic of Uzbekistan of 21.07.2003, No 320 *“On improvement of water sector management”*.

The transition from the territorial principle of management with its strict centralized approach, to the more flexible systems approach based on hydro graphic (basin) principles, is fundamental to these decrees. The creation of the two-level system of national water resources management through the establishment of the Basin Administration of Irrigation Systems (BAISs) and WUAs has become the most important component of the on-going reforms. The Main Department of Water Resources of the Ministry of Agriculture and Water Resources (MAWR) was established at the top of hierarchical structure (Annex 3).

The first WUAs in Uzbekistan were set up in 1999-2000, when the reform of the unprofitable collective farms led to the establishment of private farms, which in turn were integrated into farmers’ associations. These associations formed the basis from which the first 13 WUAs emerged.

The development of the WUA saws further boosted by the Cabinet of Ministers Decree No 8 of 5 January, 2002, *“On measures for the reorganization of agricultural enterprises into private farms”*, and also *“Procedure for regulation of water interrelationships on the territory of reorganized agricultural enterprises”*.

National Programs and Investments

The national policy and approach to transition to sustainable development is an integral part of the strategic programs and sectoral action plans. The conceptual basis and approaches to transition to sustainable development are reflected in program documents of the Government⁸. In accordance with these documents, various programs and projects, financed by the national and local budgets, as well as by enterprises and foreign investment, bank loans and credits, are being implemented in Uzbekistan. The contribution of national programs and projects was assessed in the previous chapters and is also detailed in recently conducted reviews [55,56]. Therefore, here we will concentrate only on certain key documents in the area of water-land and energy resources use.

INSTITUTIONAL ASPECTS OF WATER RESOURCES MANAGEMENT

The Responsible and Management Structures

Water use and water protection at the national level is overseen by the Main Department of Water Resources of MAWR. Management of underground water is carried out by a body approved by Goskomzemgeodezcadestr. In 1999, Gosvodkhoznadzor was established with the main task of inspecting the countries huge I&D infrastructure and making recommendations to the Government on how it can be renovated and improved.

The Ministry of Agriculture and Water Resources (MAWR) is the state body for water resource management. It plays the key role in implementing state policy on water (as well as forest resources) management and use, and coordinating the work of the water management bodies in Uzbekistan. As was mentioned above, from the beginning of reorganization in 2003, the total number of organizations in the MAWR system was reduced 2.5 times, and their roles and legal responsibilities towards water users were also changed.

The main tasks of MAWR relating to water management are:

- .-Development of policy in the agriculture and water resources sector;
- .-Introduction and development of new technologies in the area of agriculture and water resources;
- .-Coordination of the activities of commercial service enterprises and organizations;
- .-Making investments in the irrigation and drainage systems to improve water resource management;
- .-Development of policies and procedures for the basin organizations;
- .-Assistance to development of WUAs;
- .-Introduction of integrated water resource management at the River basin level;
- .-Creation of strong research institutions and training courses for the improvement of on farm irrigation.

Basin Administration of Irrigation Systems (BAISs) are regional bodies under MAWR which were established on the basis of existing structures. The main tasks of BAISs are:

- managing the purposeful and rational use of water resources;
- implementing an integrated technical water management policy;
- ensuring uninterrupted and timely delivery of water to users;
- rational management of water resources within the basin;
- ensuring the reliable measurement of water use.

The Irrigation System Administration in each region is a structural subdivision of the BAIS and MAWR. In addition, financially independent and state financed enterprises and construction administrations, as well as design and scientific research institutes are subordinated to MAWR.

The State Committee on Irrigation and Drainage is the intersect oral and interregional body coordinating irrigation and drainage activities in Uzbekistan. Members of this committee are the heads of the large water management organizations, and deputy khokims of oblasts responsible for water management issues.

The Water User Associations (WUAs) are associations of the newly established private farms and other commercial entities providing services in water distribution and the operation and maintenance of the on-farm irrigation and drainage systems. The

WUAs are a new type of nongovernmental organization in the area of land and water use, but they already serve around 3,9 million ha.

JOINT ACTIVITIES TO STABILIZE THE SITUATION IN THE ARAL SEA LITTORAL ZONE

The possibility for the coordinated management and use of water resources in the region, and the capacity of joint actions and initiatives for cooperation have been demonstrated by the measures adopted by the countries to restore the disturbed natural ecosystems of River deltas and the dried up bed of the Aral Sea.

All five Central Asian countries consider the Aral Sea littoral zone as an independent water user so its demand for water will be taken into account along with the demands from the countries. These water demands should be established on the basis of the intergovernmental concept for saving the Aral Sea littoral zone taking into account the annual variations in River runoff. At the same time, all countries admit the importance of coordinating demands in order to ensure both quality of water and conservation of the biodiversity and bio productivity of the deltas.

The Intergovernmental Concept for Saving the Aral Sea Littoral Zone

In the Intergovernmental Concept, adopted by the Heads of the Central Asian countries in 1994, it was admitted that in the current conditions it is impossible to restore the Aral Sea itself, and therefore, the task is not to restore the Aral Sea, but to save its littoral zone. Chapter IV of the Concept emphasizes: *“...to create the active zonal controllable ecosystem that ensure stability of restoration of the disturbed natural development in the Aral Sea littoral zone”*. Activities aimed at creating artificial ecosystems in the deltas and on the dried bottom of the sea are of high priority from the viewpoint of nature protection and should include:

- .-Creation of a controllable pond system on the dried bottom of the Amudarya River and control over part of the Small sea for the Syrdarya River;
- .-Creation of a polder system on the dried sea bottom;
- .-Carrying out phyto - ameliorative works to fix the drifting sands;
- .-Discharge of the collector and drainage waters into the sea aquatorium through the scattered zones in sands.

In addition, the remaining water areas of the Aral Sea with increased salt concentration should be identified their salt and water balance and levels should be forecast. Measures to prevent the pollution of coastal areas should also be taken.