

Integrated Water Resources Management in the Aral Sea Basin

Prof. V. A. Dukhovny
Director
Scientific-Information Center, Interstate Committee
for Water Coordination

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Integrated Water Resources Management in the Aral Sea Basin

Integrated water resources management (IWRM) has been increasingly applied all over the world as a tool of rational water use to cope with the growing water shortage. IWRM is based on an accurate analysis of the shortcomings in the current water management system and the subsequent application of principles and experiences gained in advanced countries to eliminate these shortcomings. Some examples of the shortcomings are as follows:

- The water management system in Central Asia is based on administrative boundaries such as oblasts (province), rayons, districts, as well as rural communities and their water use boundaries.
- Each sector water user tries to pursue and keep its own sectoral interests, whether it is power engineering, agriculture, or water supply, and as a result this affects the interests of the whole society with no regard to equity and the environment.
- Water sector management is based on a top-down hierarchical system, which used to be quite effective because of strong financial and administrative support. However, at present it has considerably weakened and has therefore become ineffective. A multihierarchical management system leads to a lack of coordination between management levels, thus causing huge organizational losses.
- Consumer's priority over the environment is one of the main characteristics of the current water management system.
- Unstable water supply and unequal water distribution are the consequences of all the above causes, which are further aggravated by the lack of involvement of interested persons, organizations, water users, etc. The existing system promoted the development of hydro egoism and a situation where each sector or hierarchical level pursues its own selfish interests, resulting in a very unsustainable water supply for everyone.

On the other hand, IWRM promotes the following fundamental features and basic principles:

- strict basin, sub-basin or system management within hydrographic boundaries—interested administrative and social stakeholders should form entities on a parity basis and set conditions for equal and clear distribution;
- interconnection of different hierarchical levels involved in water supply management, to make coordination easier;
- intersectoral approach;

- taking account of all water resources, including surface, ground, local, and return waters to determine how they could be used in the most optimum way within the boundaries of the source;
- public participation in water management, operation, and maintenance, using a combined “bottom-up” and “top-down” approach;
- Keeping and recognizing basic environmental requirements; and
- sustainable financing.

IWRM is not new to Central Asia. In 1927 the Zerdolvodkhoz or Basin Management Authority for Zerafshan Valley was established to manage water supply in several oblasts of this valley and in all rayons. There was also the Upradik—which managed the lower Amudarya canals among oblasts, rayons, and states and arranged water supply between Turkmenistan and Uzbekistan. Lastly, the Kirov canal authority provided water supply and distribution to collective and state farms in the oblasts and rayons of Kazakhstan and Uzbekistan.

A notable example of the IWRM in the 1960s was the comprehensive development of the Golodnaya Steppe, which included IWRM in the Southern Golodnostepskiy Canal in Golodnaya Steppe and later of main canal systems in Karshi Steppe and in other integrated irrigation zones. The following elements of IWRM were introduced and had considerable effects on the steppe:

- management of hydrographical boundaries with no intervention from oblasts, rayons and other organizations;
- integration of all types of water resources, both surface and ground waters and return waters;
- integration of irrigation and drainage systems and all other water uses. To the credit of developers of this integrated method it must be mentioned that for more than 20 years it has served as an example of rational water use in huge hard-to-develop salinized land areas. An efficiency of 0.78 has been obtained under the high level of irrigation technique. The unit of water use in such areas range from 8.6 to 9.5 thousand m³ per ha compared to the average republic use of 13-14.5 thousand m³/ha. It should be noted that here irrigation was based on big farms with large sub-divisions and irrigation plots of 6-10 ha that were oriented to machine treatment.

However, there was a big shortcoming that became apparent during the transition of the economy from an underdeveloped socialism to a primitive form of market reforms under independence—the lack of public participation? i.e., the lack of involvement of direct water users in this system of management. This system was characterized by tough disciplinary and command principles, inadmissibility of any interventions, and high operational costs supported by the government. However, perestroika and the subsequent transition to independence and market reforms, on the one side, intensified administrative tendencies in oblast, rayon, and local municipal authorities; and, on the other side, abruptly reduced

economic subsidies to the water sector and irrigated agriculture. In 1980 operational costs ranged from US\$130 to US\$160 per 1 ha of irrigated land in different zones of Central Asia; however, at present these costs only vary between US\$4 and US\$35 per 1 ha. At the same time, for example, the highest specific costs are observed in Uzbekistan, where in general about US\$30 is spent per 1 ha, but 50% of these costs go to increased electric energy. As a result the drainage system, especially 70% of the vertical drainage, was stopped and put out of operation.

Lack of public participation in setting parameters for management and selecting irrigation methods during the Soviet era and the Government's inability to continue to give subsidies caused farmers to become incapable of bearing huge loads which, together with reduced government support, led to deterioration of all irrigation systems. In such conditions transition to IWRM became more complex than if it had been developed on a large-scale basis the 1970s with the participation of direct stakeholders.

On the other hand, the IWRM pilot project in Ferghana Valley, which was developed with SDC support by the Ministries of Water Resources and Agriculture of Kyrgyz Republic, Tajikistan, and Uzbekistan and the International Water Management Institute, turned out to be very promising and gained wide support among water user groups. This pilot project directed its efforts toward the wide involvement of water users and interconnection of all interests from bottom-up to top-down. As early as the preparatory stage, the project encompassed four levels of water management: basin management, system of canals, water users associations (WUAs), and farm management. With the support of the Swiss Government, the selection of this chain from farmer through canal up to basin was made on a democratic basis by involving all the seven oblasts in Ferghana Valley. As a result three pilot sites were selected: the Aravan Akbura canal in Osh oblast in the Kyrgyz Republic, the Gulya-Kandoz canal in Sogd oblast in Tajikistan, and the Southern Ferghana canal, which crosses the Andizhan and Ferghana oblasts in Uzbekistan. Within the boundaries of each canal a chain was selected, such as experimental private farms, WUAs, and canals and outlets to existing basin levels of BWO "Syrdarya".

The main aspects of this IWRM pilot project are as follows:

- *Organizational aspects.* The whole management is oriented toward reforms in canal management, irrespective of administrative boundaries, but not in the area of rayon and oblast water organizations. WUAs, which were not created on the basis of geographical boundaries, had to give up former boundaries, as indicated by the experience in the Osh oblast, and had to adapt to the new organizational structure.
- *Legal aspects.* For the time being the project is based on existing legislative acts in all three republics. It should be noted that legislation of the Kyrgyz Republic is more adaptable to such reform, but nevertheless new regulations have been developed to allow appropriate changes in the legal system of Tajikistan and Uzbekistan.

- *Water users' initiatives to reform the organization.* The main principle of IWRM development is not to impose from the top any patterns, but to develop these patterns bottom-up through wide discussion and gradual understanding by all stakeholders and interested parties on the application of the IWRM system. Water users should unite and agree how they should work to create both general interest and common responsibilities in introducing such an integrated method.
- *Integration from top to bottom.* The development of clear regulations, interrelations and responsibilities at the lower level in relation to the higher level and vice versa is important with regard to water supply and sustainability. Elaboration of specific regulations to implement these requirements is a top priority.
- *Economic instruments.* The role of economic instruments that promote the interest of all hierarchical levels to minimize losses and at the same time maximizes the interest of farmers and other water users through maximum water productivity, and the bottom-up dissemination of these instruments, cannot be overemphasized.
- *Equality in water use and sustainable water supply.* To this end public managerial bodies that were established in the form of boards, canal committees, and councils at all hierarchical levels at the first stage should become advisory and controlling bodies. Later they should change into bodies that will assume the administrations of all of the water hierarchy.

The first year of the project year has been completed—80 water user group representatives summed up the first year of activities, clearly identified tasks, and took the potential first step toward practical application of IWRM principles at pilot canals. As early as the first year more attention was given to evaluation of opportunities to increase land productivity in experimental private farms. These farms were assessed, their basic reserves for achieving potential productivity were studied, and at the same time farmer training workshops were conducted. The workshops, which demonstrated advanced technics, were held directly on the fields and at an especially established training center in Osh.

The new experience will be difficult and complex, but positive results can be gained by learning from past mistakes and from reaching a common understanding of IWRM objectives. Moreover, water management organizations and water users are eager to try these methods. Donors could support the proposal submitted by ICWC on the development of IWRM in the lower reaches of Amu Darya and Syr Darya, as well as in other regions. The experiences gained from activities started in the Ferghana Valley show that IWRM can be applied to other zones.

Wide public involvement is very important. In this context, the holding of seminars by ICWC and its organizations together with OSCE, CIDA, USAID and other donors to involve wider social groups is a step in the right direction. The numerous campaigns of donors to involve NGOs in this process are expected to create partnerships between the donors, NGOs, the government, and the people.

There is a need to increase the role of NGOs in the application of this type of management. Much is expected from the creation of the Global Water Partnership network in the Central Asian republics, which was initiated by Denmark in 2002, and is currently being successfully developed.

Understanding the need for strict and equitable management at basin level is also of big importance. Here it should be frankly and fairly noted that the negotiation process and elaboration of basic legal regulations that should create a basis for sustainable water allocation and equitable water supply have come to a standstill and currently there exist some difficulties in creating reliable water resources management. Besides, international water law is not quite clear and it allows, if can be said, in some cases persons interested in hydro egoism to find pretexts in international regulations.

It is of big importance that the United Nations adopted in late 2002 a resolution on the securing water rights and demanding from international organizations and governments to strictly keep these water rights for all water users, to ensure access to water at all levels, and to remove any obstacles in the way of achieving fair and equitable water supply. It is desirable that international legal organizations develop clear recommendations on the criteria for fair and equitable water use since the present criteria are complex. The IWRM experience in the Ferghana Valley and in other Aral Sea basin organizations can also contribute to the formulation of an international water law, to improve and create a more solid and clear framework of interstate organizations.

Current water resources management at the interstate level in the Aral Sea basin is unique since the basin organizations not only plan future development but are also involved every hour and everyday in the continuous allocation of water resources. From this point of view the experience of ICWC and two other basin water organizations is quite unique because it increases mutual understanding and consensus and leads to a clearer and fairer solution of all issues related to the survival of the region under the water crisis.