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Developing Regional Collaboration to Manage the Aral Sea Basin Water under International and Inter-Sectoral Competition

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Abstract

Although collaboration for using the water of the Aral Sea basin has a long history and tradition even before the Soviet era, the recent transfer of power to the five newly independent Central Asian States has required transformations in all interrelations, in the system of management, and in the creation of sustainable mechanisms and conditions for mutual operation, development and usage of transboundary waters. This report describes the main results and future aspirations which are developing with the joint effort of local and foreign specialists in close cooperation with decision makers from the Inter-State Coordination Water Commission of the Aral Sea Basin.

Previous Conditions and Actions

The peoples living in the Aral Sea region which now straddles most of Kazakhstan, the Kyrgyz Republic, Turkmenistan, Tadjikistan and Uzbekistan, inherited a great respect for water and an understanding of its importance for human survival in this severe arid area in the middle of one of the biggest deserts in the East. For many centuries, local traditions and Muslim law required the whole population to consider the sanctity of water and obliged everyone to participate by his own labour or financial contribution in community measures for water management, water protection and appropriate water usage (*hoshar*).

This sense for the interrelations was strengthened in the last 70 years under the leadership of the former Soviet government which financed the water farming system of the Central Asia region and transformed it into a large-scale water management complex. Irrigated agriculture reclaimed over 7.5 million ha of unproductive land, using annually 120.10^9m^3 of water for the benefit of 35 million people. The water was distributed by extensive networks from 50 large and middle sized

reservoirs, thousands of waterworks, hundreds of large pumping stations, and hundreds of thousands of kilometres of irrigation and drainage canals, roads, communication and power lines. This expansion had negative consequences, namely the depletion of the Aral Sea, the desertification of the Aral Sea coast, and overall worsening of water quality in the downstream areas.

After the collapse of the Soviet Union, the maintenance, support, and operation of this huge infrastructure complex, which had been managed and financed principally by federal government, were taken over by the Inter-State Coordination Water Commission of the Aral Sea Basin (ICWC), which immediately announced (18 February 1992) that it would take full responsibility for water management on the inter-state level.

International Collaboration

Since the establishment of the ICWC, through annual meetings of the heads of the five riparian states, the following results were achieved:

- A range of principle agreements were signed that demonstrate the common aspiration of the Aral Sea basin states to collaborate in areas related to the management of transboundary waters and to their development and protection.
- Inter-state bodies were established including: the Inter-State Council for Aral Sea Basin (ICAS) at ministerial level and its Executive Committee as a supreme body of inter-state management; the Inter-State Fund for the Preservation of the Aral Sea as a united body for joint financing of regional maintenance and construction projects and research programs; and the Commission for Sustainable Development for the elaboration of socioeconomic issues and ecological sustainability in the region. The Executive Committee, the Fund and the Commission are located in Tashkent (capital of Uzbekistan), Almaty (capital of Kazakhstan) and Ashghabad (capital of Turkmenistan), respectively.
- A "Concept for Improvement of the Ecological Situation in the Aral Sea Basin, Taking into Account Socioeconomic Development" was approved, which determined the main directions for future improvement in water management and environmental protection.
- A "Program of Concrete Actions on Environmental Improvement in the Aral Sea Basin" was prepared and approved. It consists of seven components and 19 sub-programs, covering all main priorities. The purpose is to elaborate joint action plans, which would address practically all bottlenecks of the problem. Some contributions to the development of capacity building for sustainable water development have already been stipulated in the program, including: a regional water resources strategy; an information system; and technical strengthening of the existing basin water organizations (BWO) for the two main tributaries to the Aral Sea, i.e. the Syrdarya and Amudarya Rivers. The BWOs do not have

the mandate to manage the river basins, but they forecast flows, and are responsible for construction and operation of the hydraulic structures that regulate the flow.

The Program of Concrete Actions received support at the donors meeting in Paris, 1994, through the efforts of the World Bank, the Netherlands Development Cooperation, and in particular the European Union, which for 1994-1996 has allocated about US\$21 million. As a result, some activities within this program could be executed:

- Preparation of *national* water strategy provisions, a corner-stone for capacity building of water management at the *regional* level. They are considered and recommended by the governments for ICAS approval in order to endorse further development of these provisions within the first period of work.
- Preparation of three legal agreements in the frame of the Water Resources Management in the Aral Sea Basin Program (WARMAP), financed by the European Union. They are directed towards the further development and elucidation of the existing framework agreement of 18 February 1992, on extending the rights and obligations of the mentioned international organizations, and on international waters usage agreements and the planning of infrastructure on transboundary waters. A computer-based GIS has been launched as part of the Water Resources Management Information System (WARMIS), an information system for water management and regional economic development. A number of field pilot projects in various subprograms have been developed.

The main achievement since 1994 is that the region succeeded, using funds and experts from the international community, in clarifying the interdependency of the riparian countries and the sectors, and in strengthening the collaboration between these countries in the Program of the Aral Sea Basin (PAB). Critical factors in achieving this first success were the high scientific and engineering quality of the local experts in the water, environmental and agricultural sectors, and the intensive interaction with the policy- and decision-makers from the onset of the program, for example during the drafting of terms of reference.

Similarly, the existing network among water professionals in the region proved extremely important to maintain a pragmatic communication and a shared sense of responsibility, which were instrumental to set the course of the ICWC from the beginning. This network was a legacy of the Soviet era, and survived the political discussions caused by the emergence of the five new country states in the region

Current Problems of Water Management in the Region

The strategy for the Aral Sea basin water management rests on the basic assumption that it is possible to maintain, and increase over time, the economic potential of the whole basin. The strategy consists of four components, to be used simultaneously: the production, financial,

natural and human resources. These consist of: the capital stock, biomass (plants), and "production" infrastructure; the system to acquire, manage and disburse financial resources; renewable natural resources such as water, land and environment; and the professional level of staff.

Capacity building is important to create and maintain this potential. It includes generic elements, a methodological framework and analytical system to collect and access information, including computer-based simulation and models, a legal and regulatory framework, and also a sound institutional base.

This involves, for example:

- access to modern equipment and technologies to maximize the production potential with minimal use of resources;
- a financial system, that relies on charges for water as a resource, for pollution, and for service; and
- a system of training and educating new personnel, and providing incentives (salary, living conditions, etc).

The Aral Sea basin region is now under transition to a market economy. It faces many challenges: a reduction of its economic production potential resulting from physical obsolescence and poor maintenance of infrastructure and a lack of renovation; a rather insufficient financing potential due to the decline in government participation and the low paying capacity of water users, particularly in irrigated farming; a degradation of natural resources due to ineffective usage and environmentally unsustainable techniques; and a reduction of human potential due to brain drain, ageing personnel which cannot always be replaced, a training system which was practically halted five years ago for lack of funds, weak preparation of new specialists and, especially alarming in the short term, a demotivating standard of living for professionals due to a more than tenfold loss in salary.

Although the level of resource stress varies among the basin countries, the tendencies are the same. Counter measures need to be developed both at the national and at the regional inter-state level.

The above causes for unsustainable water management are common for all countries in the region because of the specific character of the transition period and the new political independence of the states. Similarly, there are specific zones of conflicts, some of which already existed and others which are potential. Conflicts are presently under some degree of control owing to cooperative measures, but they do require a fundamental resolution, notably:

- between national and regional interests,

- between upper zones of watersheds and the lower reaches,
- between irrigated farming and power engineering,
- between water quantity, the aspiration to use more return waters, and deteriorating water quality, and
- between socioeconomic development in the states of the basin, and the survival of the Aral Sea proper and its coastal zone.

Regional Water Strategy as a Basis for Conflict Resolution in the Aral Sea Basin

Though a regional water strategy is in itself not included in capacity building, the strategy does articulate the main provisions for sustainable development, conflict resolution, short-term, medium-term and long-term action plans, and also for the complex of institutional, economic and legal activities, and agreements, that in turn determine the structure of capacity building as a basic mechanism for supporting the strategy in a sustained manner.

Taking into account the competition between national and regional interests, a regional water strategy first aims at the development of the following main provisions:

- Defining the object of management, planning and development at the regional level, namely transboundary waters of all types (surface water, ground water, and return flows); and at the state level, namely the national waters. Such provisions are adopted and included in draft agreements.
- Quantifying the volume of transboundary waters.
- Acknowledging the Aral Sea and its coastal zone as the sixth individual "water user" that should at least receive the minimal necessary volume of water required to maintain the natural environment, independently of the overall water availability in the basin and the appropriations of the riparian states (the five other "users"); assessment of the local demands for water and the role of reservoirs.
- Rights and obligations of each state to use its own native water resources and its established share of transboundary water most efficiently for its own interest.
- Water saving mechanisms to achieve a higher water productivity in terms of gains in ecological integrity of the region and of satisfying the growing economic development expectations in the region's countries.

- Pilot projects of regional significance, allocated over the basin, in order to obtain and demonstrate standards of potential water productivity, and to demonstrate how to minimize losses under realistic socioeconomic conditions that mark a transition to a market economy.
- General right and responsibility of each country in the region to maintain the inter-state managerial bodies, and the inter-state water streams.
- Elaborating the unified criteria for proper water sharing, water usage, ecological integrity and quality, and protection of water resources.
- Creation of a general set of mathematical optimization models for the whole basin for the management and development of the water complex, which includes models for managing the river water-salt balance; water distribution among water management regions and national and zonal planning units; optimization of development within these units (irrigation and water supply systems); models to simulate hydraulic flow in the reservoir cascade on the main rivers allowing for power generation and perennial and seasonal flow regulation; and models of the Aral Sea and its coastal zone with their demands for water and their ecological functioning.
- Strict limits not only for water abstraction, but also for return flow discharge (and intra-system use), and for a series of pollutants.

These provisions, developed and calculated to fit an appropriate strategy for the regional and the national levels, form the basis of a regulatory mechanism that will define the requirements for building capacity in water resources management.

Strengthening Capacity Building of the Aral Sea Basin Water Management

Information analysis system

The creation of an information analysis system for land and water resource management in the Aral Sea basin relies on the first stage of a newly developed regional database, equipment, and a horizontal communication system between the regional and national bodies (WARMIS). The type of information and its analysis procedure is to be reconciled with a set of models for strategic planning and management. It is supposed that this first stage, based on the five national information centers, will be developed further into more detail to also cover lower administrative levels (represented only by pilot projects at present). This would gradually serve the lower, more local levels on the management hierarchy, with small systems, water user associations, and farms, and connect them with administrative units at oblast level. The system is assembled on the principle of an "information sieve" and aggregation of indices "from the bottom to the top" with obligatory exchange of the aggregated information between the five countries.

Institutional management structure

Improvement of the institutional management structure encompasses notably:

- regional bodies adopting the full scope on all functions of water resources management and development, including the water quality problems concerning ground water and return flows that so far have been neglected;
- territorial extension of the accountability and responsibility extending to the Aral Sea and its coastal zone, the delta areas of both tributary rivers, and also the protection of ecological systems;
- creation of a unified regional service for measurement standardization;
- improving the present system of observation transects in terms of quality and quantity;
- attribution of international status to all management bodies including the two basin water organizations, BWO Syrdarya and BWO Amudarya, the ICWC, and others;
- organization of a permanent training system for high and mid-level staff at the regional level, and for the low-level at the national level, as a basis for raising professional skills and to continuously exchange options between those who develop the strategy and those who implement it; and
- involvement of NGO representatives in regional bodies, and of representatives of all major water consumers and interested sectors in the process of discussion and decision making at inter-state, basin, and zonal levels.

Legal and normative management base

The establishment of a legal and normative management base composing a set of agreements and regulations, would determine the "rules of the game" among the riparians on international waters. This would need to extend to flexible mechanisms to address new situations, conflict mitigation measures, and a process for the negotiation of all routine and extraordinary questions.

The most complicated issue is the reconciliation of the three main principles of international water rights and water sharing:

- presumption of previous use;
- mutually profitable and equitable water sharing; and
- observance of the rule "do no harm".

An approach was proposed which tries to reconcile these principles on the basis of analysis of the damage caused in the basin by poor water use, the assessment of security (in the past), the level of minimally required water consumption, projected demographic changes, changes of quality, and also the possibilities for each country to achieve its preferred water use level. These aspects are articulated in economic terms.

The process for conflict resolution in water use is to be based on an analysis of former and prospective possible demands with reference to the original state of the natural water regime. Further, as demands outstrip supply capacity, a mutually beneficial consensus is to be achieved on the basis of minimal damage for all water consumers, taking into account reciprocal compensations by those who stand to gain most. Such a mechanism has operated since 1995 for hydropower generation and some regional water sharing along the Syrdarya River.

The regional agreements take priority over national water rights in legislation of all countries. Nevertheless, correction in the national laws will be required, particularly for the development of market instruments in water management and water usage.

Economic relations

Due to the transition of the economic system, new economic mechanisms need to be established to govern the interrelations among the basin countries, and inside them, with respect to water use. These mechanisms are based on:

- a combination of, on the one hand, strict limitation to a country's share of water, and on the other, the facilitation of local initiatives to have access to and make best use of financial resources to optimize land and water use; and, for the purpose, the introduction of market-based water allocation mechanisms, water use rights, and water pricing;
- a combination of limitation to water withdrawals and the "polluter pays" principle;
- introduction of a progressive, block-stepped system of charges for water abstraction and pollution, which encourages the user to stay within the abstraction permit, and penalizes the user who exceeds his limit;
- equitable distribution of the expenses for the operation of the regional organizations and for the fulfilling of regional obligations, in proportion to delivered water quantities, damages imparted, etc.; and
- allocating to all new water users in the basin the costs not only for the water service functions, but also for developing the water resource for the required quantity.

Taking into account the large slump in the regional economies, there is a need to involve foreign donors and use credit for establishing sustainable management in the water sector. It will

promote regional security and yield considerable economic benefit as the region has a great potential in natural, human, and economic resources.

Conclusion

International and national organizations in the Aral Sea basin recognize their responsibility for the management and development of the most deficient natural resource in the region, namely water, and they are determined to provide for sustainable progress with the help of the measures outlined above. These intend not only to strengthen the potentials at the regional level, but also at national levels. We would like to emphasize the importance of financial and technical cooperation between the basin's countries and the international community, headed by the United Nations and the World Bank.

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*Recomendable. *Ingenieria del Agua*, Vol.6, June 1999.

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