

Water Allocation and Water Distribution in Central Asia: History, Present and Perspectives

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ABSTRACT

Reliable and equitable water allocation policies and distribution procedures has become one of the important issues for improved water resources management in irrigated agriculture in the developed and developing world. Governments authorize water use, but allocations and priorities are often vaguely stated or are absent, resulting in rent seeking and unequal allocation among in-stream uses and ignorance of environmental needs. The proper institutions to achieve effective water allocation and distribution are often not in place or are not operating properly. Water rights in many parts of the world are not always integrated into the operational procedures of water allocation and water management. Therefore, the delivery and distribution of irrigation water may be based on "good will" of the water managing organizations, with local customs and/or agreements amongst users playing a role, and therefore frequently resulting in inequities. In such situations users not only became unsatisfied, but their economic progress and livelihoods are badly affected. Therefore, fair and equitable water allocation rules and their enforcement can be considered as a human rights issue and must be taken as seriously.

Central Asia has had a long history regarding evolving water rights issues, in both positive and negative ways. Before the soviet era, until about the early 1920s, the water rights in Central Asia were mainly based on "sharia" or Islamic law, which basically perused equal water rights for every human being. The water authorities of Central Asia in many cases started to fail in water allocation because of increased number of water users and technological weaknesses, such as outdated and unregulated irrigation infrastructure. The water users started to replace water right systems by convenient agreements and customs. While on one hand this has contributed to harmonious water distribution, on the other led to dreadful inequities between upstream and downstream users. This was especially problematic in drought years, the water rights of downstream users were fully ignored. As a result, thousands of people in the tail-end of rivers and canals lost their crops, and in many cases even their lives.

During the soviet times water rights seemed to belong to the "technical" terminology. Annual and seasonal water use plans seemed to turn into a guarantee of water rights. Technical improvements of irrigation infrastructure jointly with strict water discipline led to improvements in equity and timeliness of water supplies. However, the creation of collective and state farms dispersed again the right of common people for receiving water for their needs. Attention and priority was given to delivering water to those large production units - kolkhozes and sovkhozes. For a long time, until the mid 1980s the water rights of small water users (family farmers or "dehkans" in local language) were practically ignored.

After 1991, the collapse of Soviet Union led to the beginning of reforms, which in agriculture meant creating new economic conditions. Many countries of the region introduced water fees as a demand management tool and water rights as part of the

newly developing water regulation system. However, perusing water rights in irrigated agriculture was not a simple and easy task after Central Asian States became independent. Interstate water allocation decisions and changes in agricultural practices have made administering and securing of water rights rather difficult. Poor people located in tail-end systems in particular felt chronically short in water supply. This paper describes the history of water allocation and distribution in Central Asia up to the present and provides suggestions for improvements.

Key words: water rights, water allocation, Central Asia

Introduction

Weak and Vague Water Rights- Major Obstacle on Improved Water Resources Management

Water allocation and distribution in the Soviet era was supply-driven. Since the Central Asian states used to be a part of a single interdependent system, no major economic or allocation implications seemed to arise in the region. Amu Darya and Syr Darya rivers, two main surface water sources were freely flowing across the invisible borders. The goods and commodities, including water exchanged amongst the Republics freely. After the Central Asia states became independent, the water management organizations continued allocating water in the same way as it was in the former Soviet Union. However, problems did start to arise, given that the disparities in socio-economic policies increased and more multiple competing demands, e.g. between irrigation and energy sector started to disturb water allocation decisions.

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In general, the water allocation principles as applied in the FSU had two major problems. First, they were lacking realistic and equitable water rights. It is only recently the issues of water rights and equitable water allocation have started to come into play through internationally funded projects. Gradually, the governments have come to realize the need for developing a reliable water rights system as a pre-requisite for the sustainable water allocation and distribution. Though implementation of the water rights system will yet require proper capacities to be built, a process which along with an effort to modify the legal basis is now under way in each Central Asia state.

Secondly, no considerations in the physical water allocation and distribution system were given to water conservation or any incentives to save water. In many cases the actual water supply has been 2-3 times higher than the recommended water needs. The lack of such incentives has led to overexploitation of available water resources.

Present Water allocation system: complicated and conflicting

In the late 1980s, "restricted water demand" was introduced in Central Asia, as the demand for water was almost equal to the available water resources in the region. Under this principle, a plan for water allocations to all individual water users was still to be made as before but later required proportionate adjustments in accordance with actual water availability in the sources (rivers, reservoirs, etc.). After the collapse of the Soviet Union, virtually no changes have been made to the water allocation principles in Central Asia. Only in Kyrgyzstan, which is an up-stream country, the restricted water demand principle was abolished, because water demands required by the local water users were normally met in full. Restrictions to planned water allocations do still apply in the more water-scarce down-stream states such as Uzbekistan, Kazakhstan and Turkmenistan.

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Restricting the planned water allocations has made the whole process more complicated. In fact there are two separate processes in irrigated agriculture - planning and then adjusting water allocations. The first process consists of collecting the water demands bottom-up from all water users such as collective, cooperative, private and family farms, or water users' associations towards the highest water management levels (district-province-state). The second process involves making the adjustments to initially planned water allocations for each water user which goes top-down from the highest hierarchy levels (Ministries of Agriculture and Water Management) to the lowest ones (district water management organizations). Thus, the "restricted" water demands versus the initially expressed ones are translated into water use plans at the district level, according to which water is finally allocated to the end users.

At present, water management organizations in Central Asia are struggling to collect data from water users concerning water demands, which precede the approval of water use plans. A water use plan is prepared for each primary water user for each season. There are 2 irrigation seasons in Central Asia: vegetation - April to September, and non-vegetation - October to March. The demands for water as initially expressed take into account climatic zones, size of irrigated area, crop type, as well as soil and groundwater conditions. There is an elaborate "hydromodule zoning" classification for the entire irrigated areas of the Central Asia. The recommended crop water requirements for each particular type of crop are calculated, using this classification. The full water allocation entitlement also accounts for all water losses occurring above the user's gate (at main or secondary canals) by dividing the allocation entitlement by the "conveyance efficiency" of the higher systems. However, since nothing is done to verify those conveyance indices from time to time, they have become outdated though still used for water use planning calculations as "standard" values.

Thus, the whole process for planning and implementing water allocation and distribution based on collecting and restricting the expressed water demands is mostly "top-down" with all major decisions to be made by irrigation authorities without public involvement. In contrast, if water allocation is based on a clear water rights the process would encourage and empower water users to make decisions on their own, individually or in groups, at the level where such rights are assigned and protected. This though requires a lot to be done in order to build required capacities in all the states.

WHAT CAN BE SUGGESTED FOR BETTER WATER MANAGEMENT

Concepts to Improve Water Allocation and Distribution

There is a recent concept of applying management capability, combination of staff numbers and staff skills. The technology used in irrigation system should be related to the available level of management capacity (Horst, 1990). According to Horst (1987, 1990) the water distribution must be simplified. The quality of decisions is likely to decline, if designers or decision makers have to make too many decisions (e.g., by installing more control facilities).

Abernethy (1988) noted that the absence of efficient communication systems, decisions on continuously adjustable structures may default downwards to the local gate-operators, who may then act on the base of what they know at any given moment, which may be limited to direct observation of local conditions such as upstream water level. The summation of independent local decisions may lead to a kind of anarchy and variability of canal conditions.

Anarchy or rent seeking can occur also if the rules do not seem appropriate to those who are expected to implement them, and if their implementation would cause difficult relationship between managers and the farmers who use the irrigation system.

Morabito et al. (1998) describes strong irrigation organization as the one delivering water according to the rights of each association. The organization does not become involved in the distribution of water to individual farmers. That is done within each irrigators association.

The equitable water distribution according to Morabito et al. (1998) characterized by three aspects: a) long established system of water rights, with both traditional and legal enforcement; b) long established organizations among the irrigators, which take over

the lower levels of water distribution; c) structures explicitly designed and installed for water measurement.

Central Asia is one of the world's oldest irrigated regions, history of which estimates thousand years. In the early 20s century Central Asians had clear set of the rules for water distribution, recognized by the water users/landowners. Each landowner had certain rights on water, these rights mainly based on size of the land. Water distribution was organized by elected mirabs (waster masters) and rules were based on "sharia" – Islamic law. According to the "sharia" water can not be private good and all canals and ditches were owned by public. The main principle of water distribution was that each land owner received water equal to the volume for filling his/her field. Water rights measured by so called "ditches", for example for filling of 1 hectare one need 3 full ditches of water, it was his/he water right. However, this all then translated into time for irrigation (Mukhamedjanov 1986, Bartold 1970). Historically, in Central Asia time-based principle was applied for water distribution. Even, after the introduction of collective farming in the mid 1930s, whenever water was in deficit, the distribution of water was based on time schedules. In Fergana valley "avron" system - water rotation between canals and water users was very popular. However, there was no unique or recognized water distribution principle applied for the overall on-farm level in Central Asia.

Since mid 1960s in Central Asia water distribution approach has been based on water use plans, applying regulated normative principle as major path for water distribution. Water supply rates, tested in the specific pilot areas for specific crops were suggested as normative means and irrigation should be based on those normatives. For the collective farms, where mainly monoculture crop was grown, this approach was justified. But, water requirements of farms were overlapped due to the cotton monoculture, normative principles superseded again by the time based water turns.

Research community and water managers of the Central Asia keep defending the normative approach to water distribution. There is reason behind this position. Three large cotton-growing countries (Uzbekistan, Tajikistan and Turkmenistan) of the Central Asia are trying to keep large size agricultural units and cotton as major crop. Even in the most reformed countries of the region (Kyrgyzstan and Kazakhstan) cotton is the prevailing crop. In this situation the normative-based principle for water distribution is the only way for securing high crop yields. Contrary to this, under the rotation/time delivery farmer receives water not according to the crop requirements, but on the fixed time or turn. Ignorance of the crop water requirements in the case of time-based water delivery may lead to lower yields.

Nevertheless, the application of the normative principle requires some instrument to control the delivery of norms. One of the ways of controlling may be introduction of the water measuring system (instruments and monitoring) for all levels of water use (Figure 1).

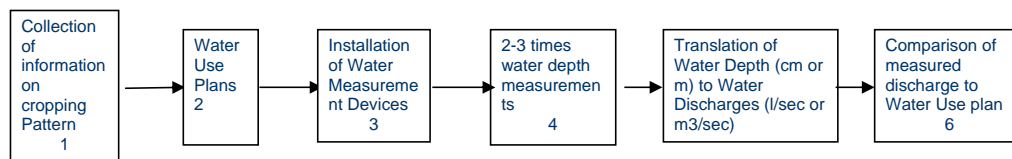


Figure 1. Algorithm of normative based water distribution principle (Abdullaev I, UI. Hassan.2004)

Analysis of water distribution around the world showed, that there are indicators of “best” water distribution (Figure 2). Water distribution rules must be clear and agreed with water users; request or need for water should be stable and forecastable. The major requirement of “best” water distribution is that the water users are entitled to make water distribution decisions at different levels. From an organizational point of view the technology and approaches for water distribution must be fitting into the “management capability” of the water users’ organizations, which are responsible for water distribution.

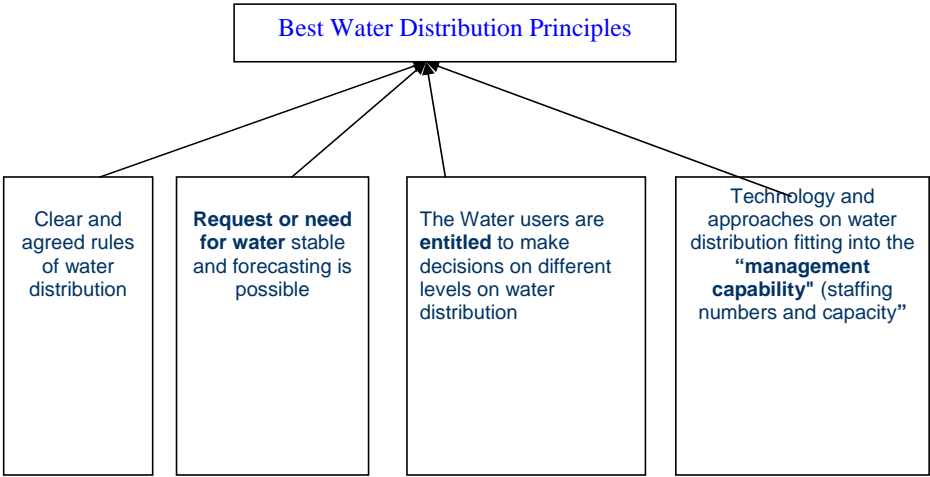


Figure 2. Best Water Distribution Principles (Abdullaev I, UI Hassan.2004)

Approach for water distribution must be based on two principles: the first is clarity and simplicity and the second – satisfaction of the crop water requirements. These two indicators may be combined into irrigation time with the volumes calculated as water requirements. Irrigation time, which is the calculated on the basis of water use plans, takes into account both crop type and its irrigation regime (Figure 3). This, at the same time is very easy and clear water distribution indicator.

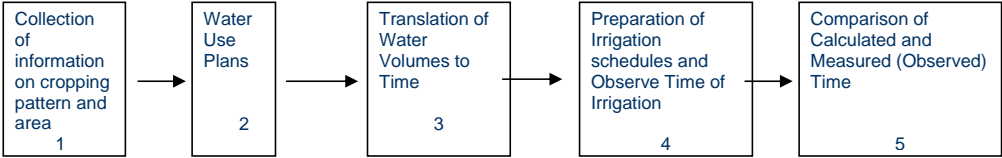


Figure 3. Algorithm of time based water distribution principle (Abdullaev I, UI Hassan.2004)

For securing achievements of the started reforms in the legal documents, related to the water resources management: laws and resolution clear time, area or crop based water rights must be integrated. For the water scarce zones, such as Karakalpakistan, the water rights must be defined by time of the water supply.

CONCLUSION AND PERSPECTIVE

The Central Asian countries are experiencing problems related with environment, water allocation and distribution, water quality, ground water and salinity, technically outdated infrastructure, on-farm water management and mainly with institutions.

There is a world-wide recognition that clear water allocation/distribution rules make implementation of sound irrigation water management feasible, and therefore securing also water rights of poor people. Distribution of water to users involves decisions on who gets water, how much each user is entitled and at what time water will be delivered. Such system, however, needs a proper administration, regulation and enforcement of the rules to become equitable. This can happen only if users, either individually or as an association, can legally obtain their share of water and/or can officially receive a permit or license for withdrawal.

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The efforts to reform water management sector have mainly concentrated on transferring of state responsibility to water users in the on-farm level. The planning, distribution and managing water in on-farm level will be business of Water Users Associations. Therefore, a major push is being given to the development of Water Users Association and capacity building, so that these farmers' organizations can administer their water rights given by the new legislation.

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