

Water Rights in Central Asia: History, Present and Perspectives

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ABSTRACT

Reliable and equitable water distribution 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 overlooked in-stream users and environmental needs. The right institutions to achieve balance in water resources development 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 was affected. Therefore, fair and equitable allocation water rights and their enforcement can be considered a human right and must be taken as seriously.

Central Asia³ 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. Central Asia in many cases started to fail in water distribution because of increased number of water users and technological weaknesses, as well as outdated and unregulated irrigation system management. People started to replace water right systems by convenient agreements and customs. While on one hand this can contribute to harmonious water distribution, on the other may lead to dreadful inequities between upstream and downstream users; especially in drought year 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 to 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 situation. Many countries of the region introduced water fee as a demand management tool and water rights as part of the newly developing water regulation system. However, perusing water rights in the 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. Especially poor people located in the tail-end systems fell chronically short in water supply. This paper describes the history and analysis of the developing water rights up to the present situation and provides suggestions for improvements.

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³ The Central Asia Region is fed by two rivers -the Amu Darya and the Syr Darya, forming the Aral Sea Basin, and encompassing Uzbekistan, Turkmenistan, Kyrgyzstan, Tajikistan and major portion of Kazakhstan

INTRODUCTION

Traditionally, water management in the Soviet era was based on the supply principle. Since the Central Asian states have become a part of the interdependency-based system, no major economic seemed to arise and water in the Amu Darya and Syr Darya was kept flowing. Commodities were exchanged amongst the Republics under Moscow rule and water was one of them. After the Central Asia States became independent, the water management organizations maintain the water allocation similar to what it was under the FSU. Nevertheless, problems arose, since the demand exceeded the supply. The delivery on demand of the users was kept in the format of traditionally large norms, according to the type of crop and planted area.

The water allocation principles applied in the FSU had two major problems. They were lacking realistic and equitable water right administration system, and only lately under the internationally funded irrigation improvement projects the water rights system and equitable allocations have come into play. Gradually, the governments have become more aware of the need for developing a reliable water rights administration system, as a pre-requisite for the development of water rights market, but only after all water users have been registered (or given a title). Capacity building is important for achieving sustainable implementation and that is going on in each Central Asia state, along with an effort to modify the legal basis.

Second, the physical water allocation and distribution system has not considered any principles for water conservation or an incentive for saving water. In many cases the real water supply rates were 2-3 times higher than recommended water needs. The absence of incentives for conserving water resources led to overexploitation of available water resources.

Efforts to limit water use

In late 1980s, "limitation of water demand" was introduced in Central Asia, as the demand for water was almost equal to the available water resources within the region. Under the limitation principle, the water shares to users were adjusted in accordance with water availability in the sources (rivers, reservoirs, etc.). After the collapse of the Soviet Union, the Central Asian states did not change any of the water allocation principles. Only in Kyrgyzstan, an up-stream country, the limits were abolished, and in fact water has been delivered according to the users' demand. In the water-scarce down-stream states (Uzbekistan, Kazakhstan and Turkmenistan) the limited demand principle of water allocation is still operational.

The principle of limited demand made the process of water allocation more complicated. In reality there are two separate processes of planning and allocating water in irrigated agriculture. The first process consists of collecting the demand from water users, collective/cooperative and private farms, or from water users' associations towards higher water management levels (district-province-state). The second process includes the preparation of limits for users; it comes from a higher hierarchy of water management (Ministries of Agriculture and Water Management) to the lower units (district water management organizations). The "limiting" demands and the collected demands are translated into water use plans at the district level, according to which water is allocated to the users.

At present, the water management organizations in Central Asia states are struggling with the delivery of water based as demanded by the users, although this is happening prior to the approved water use plans. The water use plans are prepared for each primary water users 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 are determined according to climatic zones, size of irrigated area, crop type, and soil and groundwater conditions. There are so called "hydromodule districts" within the irrigated zones of Central Asia. For each type of crop, within each hydromodule district recommended water demand norms are calculated. The collected demand for water includes all losses above the on-farm level (in main and secondary canals) by dividing the demand by the "delivery efficiency coefficient" of the higher systems. However, the delivery efficiency coefficients of the systems do not seem monitored, and only "normative" values are used for the calculations.

Therefore, the needs-based planning of water distribution is essentially a “top-down” mode of management, in which detailed decisions are taken in the government bureaucracy. By contrast, water rights-based management empowers water users to make their decisions, individually or in groups according to the level at which rights can be assigned and protected in each particular situation. A lot needs to be done in capacity building in this regard in all states.

Concepts to Improve Water 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.

Main Water Distribution indices and Parameters

In Central Asia /Aral Sea Basin the water allocation rules and governing elements are similar to what it was during the FSU era. The water allocation has to follow several steps in the organizational structure. In the first step, interstate water allocations agreements are to be implemented, considering water allocation from the sources (rivers, water reservoirs and interstate canals) to each state. The BVO Syr-Darya and BVO Amu-Darya, respectively, are responsible for water allocation from the two main rivers (Amu-Darya and Syr-Darya) within the region. The second step constitutes water allocation in the irrigation systems within each state, including inter-state, inter-district, interfarm canals. For this step the water-related ministries of each state - either Ministry of the Agriculture and Water Management, a special Water Resources Committee are responsible.

The next three steps constitute distribution at and below the province - from the province /province (oblast) management unit via district management unit to the farm. Management units for provinces (or province (oblasts) are called Oblvodkhoz, which distribute water further amongst the districts (rayons). Water resources at the district level are managed by Rayvodkhoz, which are responsible for water delivery to all different farm units. Each farm and its management are then responsible for distributing the water within the farm boundaries. Generally, in all five states allocations followed similar steps as above. In Uzbekistan the *shirkats* (*form of collective-cooperative unit*) are responsible for on-farm water distribution. The private farms should sign an agreement on water supply with shirkats.

There are 3 elements or indices of the water allocation used in the Central Asia as a whole, including the Syr-Darya River basin. These are: Irrigation Water Demand (IWD), Limit, and Irrigation Water Supply (IWS). Each of these elements has a water application purpose. The Irrigation Water Demand is calculated as a demand for water, taking into account the crop type, climatic and soil conditions. The calculated IWD does not guarantee the volume of water to be supplied. It is an optimal volume of water, calculated for a given type of crop and the area conditions. The mean of IWD is projected by the Research Institutions with a long-term validity. For example, the last calculation of IWD for Uzbekistan was done in 1990s. Research on projecting of IWD is ongoing, but the main principle has remained for the time being.

The Limit is the restricted amount of water to be supplied to the irrigated area, by taking into account forecasted water availability of the water source. In fact the Limit is a corrected IWD, taking into account the change on availability of water in the source. This element was introduced at the end of 1980s, because of environmental changes in the Aral Sea Basin and relatively high deficit of water resources. The Limit, up to an extent, provides for a water right of users. The limits are calculated seasonally for vegetation period (April-October) and for winter season (November-March) and must be approved by the authorities at different levels: at the interstate level by ICWC, at the state level by the relevant Ministry, and at the Province (oblast) and Rayon levels by governors.

Illustration of water distribution problem: Case from Kyrgyzstan

Since 2001 the International Water Management Institute (IWMI) and Scientific Information Center (SIC) are conducting a pilot project towards “Integrated Water Resources Management of Fergana Valley”-IWRMFV project⁴. One of the goals of the project is to improve water management, specifically its distribution among irrigation water users. The illustration below is based on data collected under the scope of the IWRMFV project.

In year 2003 the tertiary pilot canal “Sokolok” was selected for introducing time-based water distribution. The pilot canal, which is a typical for the tertiary and the quaternary canals of Central Asia, is receiving water from a trans-boundary Aravan-Akbura canal, one of the largest irrigation systems of the Osh province in south Kyrgyzstan. The command area of Aravan-Akbura canal is 25,000 ha in Kyrgyzstan and 5,000 ha in Uzbekistan.

“Sokolok” canal feeds the central part of water users association (WUA) “Japalak”. The WUA “Japalak” was founded in 1996, with total irrigated area of 2112 ha. The command area of the pilot “Sokolok” canal within the WUA is 290 ha and the length is around 6 km, having 14 registered outlets. Maximum head capacity of the “Sokolok” is 250 l/sec. However, in 2003 the maximum allowance according to the approved water use plan (Annex 3) was 126 l/sec, resp. 50% of the canal capacity. The total number of water users receiving water from the “Sokolok” is 473 people, including small family plots.

Figure 1 illustrates water supply situation in the “Sokolok” canal for the vegetation season (April-September) of 2003. During 18 irrigation decades (10 day unit), only in 3 decades the full water right (limit) was supplied. In the 15 decades or 5 month out of the 6 months water supply the rates were lower than water rights. The water users’ ignorance of their water rights resulted in the absence of institutionalizing their right for water allocation.

⁴ Project (2002-5) is funded by Swiss Development Cooperation (SDC) and covers tri-country areas of the Ferghana Valley (Kyrgyzstan, Tajikistan and Uzbekistan).

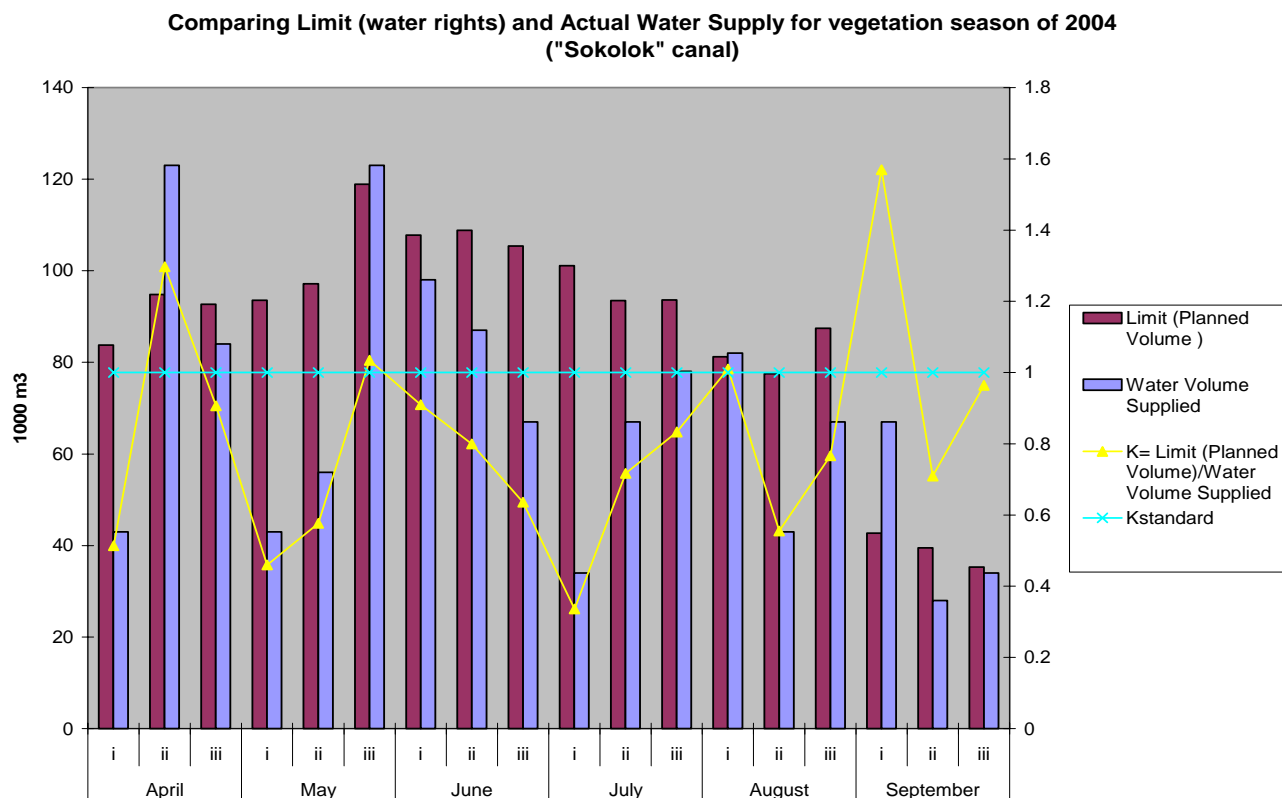


Figure 1.

WHAT CAN BE SUGGESTED FOR BETTER WATER DITRIBUTION?

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 2).

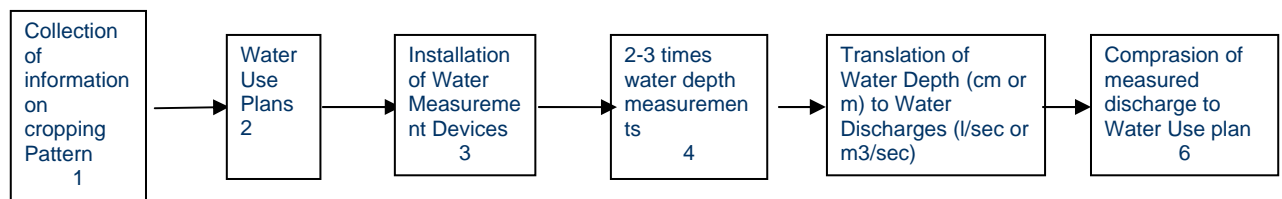


Figure 2. Algorithm of normative based water distribution principle (Abdullaev I, Ul. Hassan.2004)

Analysis of water distribution around the world showed, that there are indicators of “best” water distribution (Figure 3). 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.

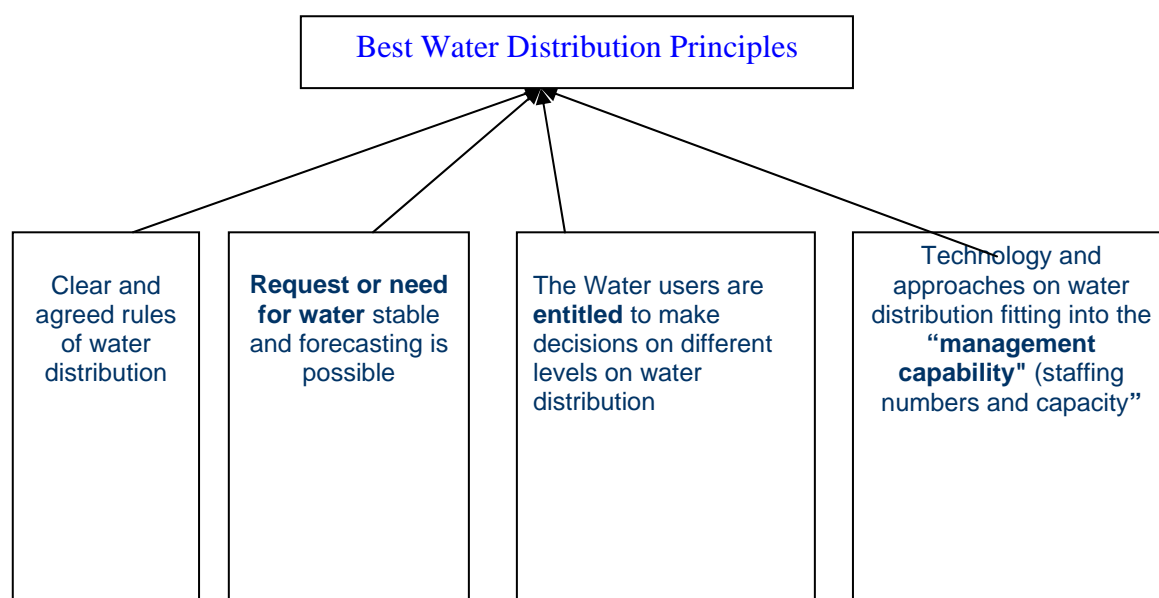


Figure 3. Best Water Distribution Principles (Abdullaev I, Ul Hassan.2004)

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 4). This, at the same time is very easy and clear water distribution indicator.

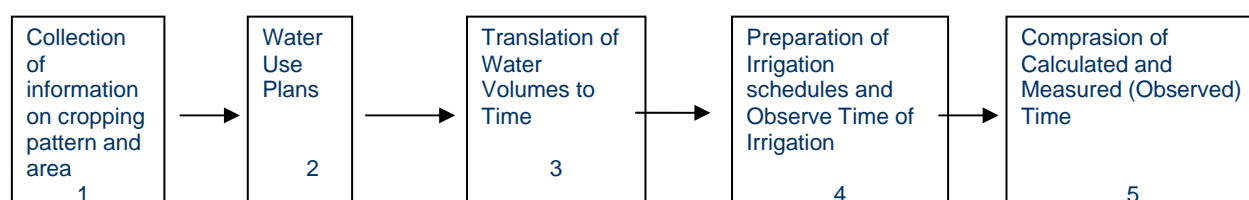


Figure 4. Algorithm of time based water distribution principle (Abdullaev I, Ul Hassan.2004)

CONCLUSION AND PERSPECTIVE

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.

In Central Asia, the water distribution principles are based on operational water distribution practices. For a long time the supply-side water management was practiced. From about mid 1980s a distribution principle “of limited demand” was introduced. The major reason of changing the water distribution principle was to decline water withdrawals for irrigation. This principle of “limited demand” worked quite well for collective set up of farming during soviet times. Centralized state control and large sizes of

farming units made easy delivery of water for irrigation. Especially in on-farm level large size farm consisted several production units. Water delivery was scheduled accordingly with strict agro-technical operations plan. Competing interests for irrigation water in the on-farm level was not common.

After collapse of FSU reforms also affected agriculture, particularly the land privatization, leading to a creation of thousands of private farmers in Central Asia. By changing the set-up of land ownership one would expect a change in water distribution principles at least at the on-farm level. However, it was not case and water distribution principles remain as they were before. The loosening of state control over water and land management, caused an organizational vacuum in the on-farm level, which made it very difficult securing of water rights of newly created farm units.

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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