

Water Governance and Management at the Level of Water Users Associations

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In recent years, restructuring of large farms (former collective farms and state farms) has resulted in creating a whole army of small private and peasant farms, and institutional reforming of the on-farm system of water distribution becomes necessary.

In contrast to large collective farms that had own governance structure of on-farm irrigation and drainage network, under new conditions, small farms are facing problems of water distribution, repair and maintaining their irrigation and drainage systems, especially, of financing these activities.

Most of countries in the near and far abroad have faced the same problems in different time periods. To tackle these challenges the various institutional approaches were used for establishing proper on-farm water use: through the state structures; local administration, joint-stock companies and co-operative associations etc.

An institutional setup of on-farm water use in the form of water users association (WAU) is considered as the most viable of all listed institutional structures. In broad understanding, a WUA unites a group of water users and, using their financial and material resources and receiving the mandate from them, on behalf of these water users organizes O&M of their irrigation and drainage system.

Under current conditions in the irrigated farming sector in Central Asia, the following problems can be mentioned:

- Land is the state property in all countries in the region; and plots are allocated among the land users based on leasing agreements or in joint ownership. Sizes of plot and a leasing period are considerably vary over countries – from less than 0.5 ha in Kyrgyzstan up to a few hundreds of hectares in Kazakhstan;
- Legislative bases and an extent of state regulation under privatizing the agricultural sector are also quite different;
- Drastic increase in the number of water users, and a complex system of the multi-step irrigation network result in extremely unsustainable irrigation water supply, making water resources one of key factors ensuring crop yield;
- As a result, the need to improve water availability, stability of irrigation water supply and uniformity of water distribution among water users that are located at different distances from a water source;
- There is also the need to rehabilitate on-farm irrigation and drainage systems, which during last years were not properly maintained due to grave economic conditions of farms in the period of transition towards the market relations.

Institutional problems

WUAs were established both according to the territorial approach – within the boundaries of former collective farms and state farms and according to the hydro-geographical approach i.e. establishing of WUAs within the command areas of secondary and tertiary irrigation canals (branches of a main irrigation canal). The first approach was widespread, since it allowed keeping the former system of water governance, only under a new name. Advantages of this approach are obvious: the possibilities for using common hydraulic structures, buildings, machinery in interests of a new formation without property repartition, for keeping skilled management staff, as well as good knowledge of local conditions etc. However, there is the former governance's legacy difficult for overcoming: lack of understanding the new economic conditions and inertia of administrative thinking, but the most important is the complexity of equitable and fair water delivery and distribution under strip holding of land and striped pattern of water users. The second approach enables a WUA to supply irrigation water from a single source and to use additionally internal water sources. Such an institutional set-up enables a WUA to manage available water resources in more effective manner.

The pilot WUAs established in the frame of the IWRM-Fergana Project in Uzbekistan, Tajikistan and Kyrgyzstan may be cited as examples of such an institutional set-up. For example, in Kuva District of Fergana Province in Uzbekistan, the WUA “Akbarabad” was established covering command areas of secondary irrigation canals RP-1, “Akbarabad-1,” and “Akbarabad -2” that divert water from the South Fergana Canal. In this case, integrated water resources management spreads from the main canal (the SFC) through WUAs to irrigated fields inclusive.

At the same time, most of WUAs in Uzbekistan are being established according to the territorial-administrative principle i.e. based on the institutional set-up of former large collective farms. Therefore, the problems of WUAs established according to this principle are related to the need of their restructuring based on the hydro-geographical principle. The hydro-geographical principles of establishing WUAs should be stated in the Law on WUAs.

Applying appropriate procedures for transferring the secondary canals to a WUA, which prior to establishing a WUA have played a role of inter-farm irrigation canals and O&M of which were financed by the Ministry of Agriculture and Water Resources, is a quite important matter under establishing a WUA. Two options can be used for solving this issue.

First option: For the five-year period after establishing a WUA i.e. for the initial period when water users strengthen their economic capacity (mainly based on water and land reclamation services that must be provided by a WUA), above water infrastructure (inter-farm irrigation canals) are handed over to a WUA on the contractual base for temporary use with annual payments for operation and maintenance of this water infrastructure.

The legislations of the Republic of Uzbekistan (Article 31 of the Law on Water and Water Use) and Tajikistan (Article 35 of the Water Code) state the possibility for transferring water infrastructure for temporary and continued operation.

Second option: A state water management organization becomes one of WUA co-founders. Its contribution is water infrastructure transferred to a WUA. In addition, the WMO, as the co-founder,

assumes a liability to finance operation and maintenance of water infrastructure transferred to a WUA within the normative requirements.

Selecting of any option is the prerogative of water users and key officials of the Ministries of Agriculture and Water Resources. The practice of establishing WUAs in the Fergana Valley shows that the WMO can be a co-founder, transfer water infrastructure (irrigation canals) registered in its book to WUAs, and respectively provide its maintenance.

As a result of this transferring both a WUA and the WMO are the gainers: a WUA, on the one hand, provides complete hydro-geographical coverage – the opportunity of effective water management from the secondary irrigation canals up to off-takes of water users – on the other hand, a WUA does not finance O&M of that inter-farm irrigation canal which is registered in the book of WUA. Under transferring water infrastructure to a WUA, the WMO also hands over all concerns for its maintaining and repairing to a WUA and only assists a WUA by providing special machinery in the period of large-scale operational works. A water management organization, as a co-founder, is represented by a certain number of votes at the Constituent Assembly and in the WUA Council.

A WUA is in charge for the following:

I. To organize water use:

- Drawing up a water use plan for the served area that covers farms - members of a WUA and its coordination with the state water management organization based on the Agreement on irrigation water supply;
- Uniform water distribution among all members of a WUA in amounts and in terms that are established in the water use plan;
- Monitoring the correctness of flow rate measurements at the gauging stations established on irrigation and drainage canals;
- Record keeping of irrigation water supply and drainage water disposal within the area served by the WUA.

II. To organize repairing and maintenance works:

- Drawing up a business plan;
- O&M of irrigation and drainage systems within the WUA service area; and
- Rehabilitating on-farm irrigation and drainage systems.

III. Land reclamation services and drainage.

A WUA represents and defends the interests and rights of its members in mutual relations with state and public organizations, and provides economic and operational contacts with the water management organizations, on the one hand, and between water users – members and non-members of a WUA, on the other hand.

Certification of WUA activity is one of key pillars. Usually, it means receiving the authorization for executing economic, financial, legal, and production activity.

Under establishing and operation, a WUA solves the following matters:

- Overcoming the resistance of water users by means of conducting social mobilization and raising their awareness regarding the necessity of establishing and operation of the WUA;
- Receiving the authorization for establishing the WUA as noncommercial organization;
- Receiving the rights for crediting and taxation on preferential terms;
- Equipping the WUA's irrigation and drainage networks with water-gauging posts;
- Procedures for imposing sanctions on water management organizations, the WUA and WUA's members under infringing the rules of water use;
- Financial and moral incentives for WUA's personnel under achieving target indicators of irrigation water supply, O&M, and land reclamation practice resulting in the rise of crop productivity;
- Establishing and upgrading the material and technical basis of the WUA with assistance of water users, water management organizations, and the Government;
- Rehabilitating the hydrometric network and establishing the water record keeping in the WUA; and
- Establishing the system of differential fee for service of WUA's members those who use various waters (surface fresh water, drainage water, mixed water) and, due to this fact, who have different profitability, generated from to their agricultural activity.

Social mobilization of water users for WUA establishing and operation has to be organized by a group of initiators consisting of water users and representatives of water management organizations (WMOs), local authorities, environmental NGOs and, finally, mass media.

A group of initiators should disclose to water users the existing problems and opportunities for their successful solving using the capacities of WUA, as well as considerable benefits available to all stakeholders due to WUA establishing and operation.

A WUA is established as noncommercial organization exempted from taxation. As a rule, water users themselves, represented both by individual persons and legal entities, are founders of a WUA. However, the WMOs and other stakeholders also can be co-founders.

The status of WUAs as non-governmental noncommercial organizations should be stated in the Law on WUAs, and until it is absent it is necessary to include this provision into other normative and legal documents. This status allows a WUA:

- to execute its functions;
- to establish the procedures of relationships with WUA's members;
- to exclude the direct interference of governmental bodies into WUA operation activity;

WUA's relationships with water authorities are based on contractual relations. Field survey of irrigation and drainage networks conducted in the pilot WUAs under the IWRM-Fergana Project has shown that irrigation and drainage networks handed over from former owners to WUAs are insufficiently equipped with hydrometric means. This impedes equitable water allocation within WUAs, and creates opportunities for disputes and conflicts between WUAs and WMOs and between WUAs and water users.

Installation of gauging posts at off-takes into WUAs on the main irrigation canals has to be financed by the WMOs, and at off-takes into farms on secondary irrigation canals by WUAs.

For improving WUA operation it is necessary to create incentives for its personnel, but at the beginning, find answers on the following questions:

1. What indicators for assessing WUA personnel activity and what amounts of bonuses should be accepted for creating these incentives?
2. What financial sources can be used for creating these incentives?

WUA personnel should be encouraged due to achievement of the following indicators:

- Reducing unproductive water losses due to WUA personnel activity on the way from the WUA water intake to off-takes into farms of water users;
- Implementing all planned works including repairing and maintaining of irrigation and drainage network, and uniform and sustainable irrigation water delivery to WUA members both in the growing season and in the dormant season;
- Saving funds against the estimated finances under implementing the planned works;
- Improvement of soil and hydro-geological conditions within the service area, in comparing with their status in the previous period; and
- Raising productivity of major crops - cotton and grains.

Financial sources for encouraging WUA personnel can be the following:

- Funds of the WMOs under specific contractual relations, for example, if unproductive water losses were reduced providing water conservation;
- Funds of water users under implementing all planned measures by the WUA personnel resulting in improvement of soil and hydro-geological conditions and raising productivity of major crops - cotton and grains;

WUAs, as organizations that provide O&M of irrigation and drainage networks, should have appropriate machinery. Machinery and equipment are supplied to WUAs by different ways. In Uzbekistan, under restructuring the shirkat farms (large co-operative farms –former collective-farms) part of machinery were handed over to WUAs. **Short-term and long-term credits on preferential terms** with a “soft” interest rate (less than 5% a year) can be another source of funds for procuring machinery and equipment.

The Ministry of Agriculture and Water Resources, Ministry of Finance, National Bank, and Ministry of Justice of the Republic of Uzbekistan should elaborate the mechanism for granting such credits, specifying a guarantees and interest rates and developing the legal base (the Decree issued by the Government or another normative document).

There is one more way for procuring machinery and equipment – accumulation of funds in the emergency fund. Under conditions of sufficient accumulation of funds in this fund it is possible to procure machinery and equipment for WUAs.

WUAs can provide services of different quality to water users; for example, some water users receive surface fresh water for irrigation while others only brackish drainage water. Water users have different revenues from agricultural activity due to its specialization (some water users grow cotton while others - grains or fruits). In these cases, differentiated tariffs are used for WUA services that are agreed with WUA members. For example, the tariffs for servicing the cotton-growing or grain-growing farms amount to Uzbek Soum 13,000 per hectare, while the tariff for servicing horticultural farms makes up Uzbek Soum 26,000 per hectare. A similar differentiation of tariffs for WUA services takes place under using surface water and drainage water.

Issues of water use are considered more or less in detail under discussing WUA’s functions, and often another important function of WUAs (land reclamation services to water users) is lost sight. This activity is especially topical under conditions when, for example, in Uzbekistan, more than half of irrigated lands are salt-affected. This problem is also topical for other countries in Central Asia.

Drainage networks have different owners: farms and land reclamation agencies. At present, WUAs are servicing the on-farm drainage systems. An amount of O&M works on the on-farm drainage system, in the last analysis, depends on an area serviced and specifies a level of economic relations between WUAs and their members.

WUAs together with farmers, based on an assessment of land reclamation conditions of irrigated lands (water and salt balance of an irrigated area, groundwater table and salinity, soil salinization, water availability for irrigation and leaching operations, salts content in irrigation water, and drainage capacity) develop a set of measures related to improving irrigation practice, land reclamation operations, agricultural practice, and O&M activity, including the following:

- Drawing up the action plan of water use and allocation among water users;
- Adjusting the plan of water allocation among water users according to actual water use quotas;
- Planning works for cleaning and repairing irrigation and drainage networks;
- Scheduling winter-spring leaching operations and irrigations for replenishing soil moisture in the farms serviced by WUAs; and
- Coordinating the terms of agricultural operations and repairing works on the irrigation and drainage network.

Cleaning and repairing works on the irrigation and drainage network are planned based on the report of field inspection and surveys jointly drawn up by representatives of WUA and water users. They also together make decision on a scope of work and executors (WUA using own production capabilities or together with subcontractors etc.).

Implementing of all planned works is distributed between the WUA and water users and approved at the general meeting of the WUA. In the process of implementing the planned works, in case of some departures from the schedule, the WUA together with water users establish appropriate executors' guilt in slower execution or in an incomplete scope of works implemented. Based on results of an audit, an extent of WUA's or water users' guilt and also a size of damage are specified; and disciplinary actions are imposed.

To evaluate the serviceability of drainage system or its components and to plan necessary technical and soil-reclamation interventions, the WUA land reclamation service needs to have the following information:

- Meteorological data (rainfall, potential evaporation, moisture deficit, air temperature etc.)
- Data of field auditing of the technical state of drainage system;
- Drainage discharge and drainage water salinity;
- Amount of irrigation water supply and irrigation water salinity;
- Amount of drainage water reused for irrigation and soil leaching;
- Amount of seepage losses in irrigation canals;
- Data on soil salinization;
- Amount of irrigation water releases;
- Information on necessary land-leveling operations and retiring of agricultural land; and
- Data on crop yields.

Under establishing WUAs, different scenarios and model for restructuring the agricultural sector should be reviewed. For example, the Kyrgyz model of restructuring the agricultural sector resulted in breaking up

into smaller units of large collective farms and creating numerous small private farms. As a result, there are 6 WUAs with thousands of private farms with an average size of irrigated area less than one hectare in the command area of Aravan-Akbura Canal. Under these conditions, not only water allocation but also any other services rendered to private farms, including land reclamation, inputs procurement, marketing etc, are difficult. In addition, mechanized cultivation of small plots, less than one hectare, is also quite difficult or even impossible.

In this case, it is possible to adopt the Japanese model of land use, which creates the opportunities for co-operation and keeping large-scale agricultural production under existing of many farms with small irrigated plots (less than one hectare). A core of this model is the establishing of the large cooperatives (2500 to 15,000 hectares in area) that take upon themselves all responsibilities related to O&M of agricultural infrastructure under support of the Government.

In compliance with the contracts, the cooperatives provide to farmers:

- Machinery and equipment necessary for all kinds of land treatment and ameliorative works (tillage, preparation of fields for basin check irrigation, installation of polyethylene baffles within basin checks, land leveling etc.);
- Extension services that provide recommendations on fertilizer application rates, use of herbicides and other agricultural chemicals, as well as information on know-how and introduction of the agricultural passports for fields and farms;
- Seeds of high quality and the most suitable for specific agricultural areas;
- Packaged fertilizers and agricultural chemicals in accordance with recommendations of extension services;
- Marketing of agricultural output: procurement, transportation and sale, including co-ordination of prices with farmers; and
- Irrigation water supply and allocation, waste water disposal, monitoring and O&M of irrigation and drainage network, since practically all the network is inter-farm network.

Farmers enter into an agreement on delivery of their output to cooperatives. Output delivered to a cooperative is evaluated according to internal prices approved by the Council of the cooperative in which the cooperative's services are also taken into account besides a price of producer. Thus, the internal prices include both the process costs and profit of farmers, process costs and profit of the cooperative.

In its turn, the cooperative enters into contractual relations with the outside world (suppliers and customers) based on the business plan approved by the General Assembly of the cooperative and in coordination with the Council of Cooperatives, as well as takes credits from the government and private financial institutions and then repays credits. Thus, the Japanese model successfully combines personal interests of all farmers in improving of land productivity with advantages of large-scale agricultural production.

This approach seems can be successfully developed in Kyrgyzstan, under governmental support. At the same time, water users associations that were already established could be used as the basis for these cooperatives.

What problems exist in new-established WUAs in Central Asian countries?

Unfortunately, the legislative base for establishing and operation of WUAs exists not in all Central Asian countries. The Law on WUAs was not yet adopted in Uzbekistan and Turkmenistan. In other Central Asian countries, the Law on WUAs *makes no provisions for state support in establishing the material and technical basis of WUAs and in rehabilitating on-farm irrigation and drainage systems.*

Issues related to *granting short-term and long-term credits on the preferential terms to WUAs*, which could enable WUAs to procure necessary specialized machinery and equipment and to rehabilitate water infrastructure or to cover running costs, also were not solved.

At present, the quite limited number of specialists having a degree is working in new-established WUAs. For attracting such specialists to WUAs, it is necessary to provide sufficient incentives, for example, allow them to cultivate crops at plots within water protection zones along irrigation canals or develop lands earlier excluded from the irrigation schemes as unsuitable for irrigation, as well as it is possible to create a bonus fund for personnel of WUAs at the expense of deductions from farmers' incomes. In addition, it is necessary to develop the special curricula related to WUAs' activity in the educational institutions covering agricultural and water management topics, as well as to prepare the advanced course on various aspects of WUAs activity in the ICWC Provincial Training Centers.

Not always, where there are land reclamation problems WUAs have a special ameliorative unit. Well-organized and coordinated work of all stakeholders in the field of land reclamation (water users, Hydrogeological & Ameliorative Expedition¹, and Pumping Stations Administration²) depend on proper activity of this unit.

Existing practice of water allocation at the inter-farm level does not envisage the participation of WUAs in this process, representing the interests of their members. Provisions concerning participating WUAs in inter-farm water allocation should be entered into new legislative documents that regulate activity of water management organizations at the level of inter-farm irrigation canals (the Law "On Water and Water Use", regulations and charters of WMOs, CWUC etc.)

Most surprising is that laws "On Water" in the Kyrgyz Republic, "On Water and Water Use" in the Republic of Uzbekistan, and the Water Code in the Republic of Tajikistan do not state the liability of the WMO that inflicts losses to WUAs (WAU members) due to infringing the agreed schedules of irrigation water supply.

A WUA has to establish good relations with water management organizations regarding two aspects of its activity: i) with the Canal Administration (or the Irrigation System Administration) in the field of irrigation water delivery to farms serviced by the WUA; and ii) with Provincial Hydrogeological & Ameliorative Expedition (PHAE) in the field of rendering land reclamation services.

A plan of water use covering all necessary aspects: crop pattern, zoning of irrigated lands according to water requirements, and an efficiency factor of on-farm irrigation system should be the basis for signing the agreements between the Canal Administration (or the Irrigation System Administration) and WUAs. However, under acting the system of water use limits (quotas), amounts of water included into the plan of water use can be decreased according to a certain percent, which is stated under signing the agreement between the WUA and the WMO.

¹ Hydrogeological & Ameliorative Expedition is the unit in the frame of the Ministry of Agriculture and Water Resources responsible mainly for monitoring irrigated land conditions, O&M of drainage systems, and leaching of salt-affected soils within the irrigated area.

² One of the responsibilities of this organization is O&M of drainage tubewells within the irrigated area.

As a rule, the Agreement between the WUA and the WMO contains the following provisions:

- Rights and duties of contracting parties;
- Procedures for monitoring and record keeping of delivering irrigation water and services' quality;
- Procedures of payment for water services;
- Sanctions and penalties for infringement of agreement obligations for both parties;
- Procedures for settling conflicts and claims of contracting parties; and
- Procedures for termination or prolongation of contractual relations.

At present, there are not contractual relations between WUAs and the Hydrogeological & Ameliorative Expeditions. However, the specific character of maintaining both the inter-farm and on-farm drainage network requires their joint work in the field of drainage water disposal and land reclamation operation.

According to the agreement between WUAs and the PHAE on land reclamation services in the frame of the IWRM-Fergana Project, the following activities are recommended to implement:

At the expense of budgetary funds, the PHAE is under an obligation to:

- Monitor and maintain the inter-farm drainage network in operable condition, providing the design cross-sections and depths to ensure problem-free drainage water disposal beyond the irrigation area;
- Collect and analyze information on irrigated land condition and technical state of inter-farm drainage network, since this information is the basis for scheduling necessary interventions at the inter-farm and on-farm level.

In addition, the contractual relations based on specific types of services for a fee can be established between WUAs and the PHAE.

Contractual relations between WUAs and the PHAE related to land reclamation services should take into consideration:

- Rights and duties of the Client (WUAs)
- Rights and duties of the Contractor (the PHAE);

- An agreement value and procedures for mutual settlements;
- Execution of an agreement;
- Liability of Parties;
- Procedures for disputes resolution;
- An agreement period; and
- Final provisions of an agreement.

Arrangement of water distribution among WUGs

Current reforms in the agricultural sector in Central Asia resulted in arising of new water users represented by private farms. As a result, an attitude of new water users towards issues of water distribution has considerably changed. The right to receive irrigation water in the amount specified in a plan of water use or by water use quotas (limits) is guaranteed for new water users by the state. In addition, all rights of water users and their requirements to WUAs are sustained by appropriate legislative documents, and if they will be infringed the criminal proceedings against WUAs can be instituted or administrative responsibility may be inflicted.

In point of delivering irrigation water to water users according to the irrigation schedule of crops, WUAs have to meet all normative requirements in the sustainable, equitable and well-timed manner. However, the execution of this key task is impossible without involving water users in planning and without implementation of agreed plans by water users by themselves. Moreover, undisciplined water users neither clean their irrigation network in proper time nor meet requirements of the irrigation schedule and nor manage properly water applications on their fields but, at the same time, they attempt to receive more water than envisaged in the agreed plan of water use. Additional field irrigators (mirabs) are necessary for arranging proper and effective water use in the WUGs that consist of tens and, sometimes, hundreds of water users. However, WUA personnel are limited; and WUAs are therefore unable to organize water delivery to an off-take of each water user within the GWU.

Nevertheless, WUA management has to develop, propose to water users and advocate the best options of water distribution that can be put in practice through establishing the WUGs. You can't take a laissez-faire attitude towards water distribution in the GUV, and, all the more, hope that water users themselves are able to organize water distribution within the GWU. Frequently, water users are not acquainted with a water management practice, and many of them even do not know how properly to organize a water application. In addition, stereotypes related to ill organization of water applications (protracted water applications, longer furrows etc.) and improper agricultural practice (ill-timed inter-irrigation soil treatment) are widespread among water users.

Water users and planning water use

First of all, water users have to submit reliable information on planned crop pattern in the command area of their distribution canal for consideration of WUAs. Some water users conceal information on crops

growing on row-spacing strips in orchards and about sown areas under secondary crops (after harvesting of cereal crops).

There are also some difficulties related to planning a crop pattern. As known, Uzbekistan employs the state orders on production of cotton and wheat, but some farms are engaged in horticulture or livestock farming; and owing to this situation, often an accuracy of information on a crop pattern makes up 70-80% early in the year.

Numerous armies of water users with irrigated plots over the range of 0.3 to 0.8 ha aggravate this problem in Tajikistan and Kyrgyzstan. It is necessary to keep in mind that the composition of water users is quite diverse – from teachers and physicians up to construction workers who were never busy in agricultural activity. Most of water users are the poor and cannot purchase stock seeds of different crops; and therefore in April, May, and June they sow those seeds which they were able to get.

A severe deficit of water takes place in the command area of the Khoja-Bakirgan Canal in Tajikistan in the period since March until July; and under planning a crop pattern, this important factor should be taken into consideration. However, as often happen in practice, water users, first, sow some kind of water-loving crop, and then wait for water that is not provided for in the plan of water use.