Developing participation in water management through water consumers' associations and the "Water workers' school"

Jabbarova Ikbol Khujamuratovna
iqbol.jabborova@gmail.com
PhD, Associate Professor,
Doctoral candidate (DSc) of the Department of History of Uzbekistan,
Karshi State University

Annotation *This article presents a scientific analysis of the development of participatory governance in Uzbekistan's water management system through Water Consumers' Associations (WCAs) and the "Water Workers' School" initiative. The shortcomings of the centralized water management system inherited from the Soviet era and the institutional reforms carried out during the years of independence, including the establishment of WCAs and the regulatory framework governing their activities, are examined in detail. The legal foundations of WCA operations, their role in collective water governance, and the financial, technical, and institutional challenges they face are thoroughly discussed. The practical outcomes of the "Water Workers' School" project are examined in detail, particularly its impact on changing the attitudes of farm managers, water distributors (mirabs), and WCA staff toward water conservation, the introduction of water-saving technologies, the improvement of water accounting and monitoring, and the formation of an ecological culture. Monitoring results obtained from experimental fields a 44 percent reduction in water consumption, a 50 percent reduction in labor costs, and a 31 percent increase in productivity clearly confirm the project's economic effectiveness. The article further analyses advanced international experiences from Turkey, China, and Spain, as well as mechanisms for enhancing the organizational capacity of WCAs and promoting efficient water use through public-private partnership, digital technologies, and training programs. In conclusion, it is scientifically substantiated that the integrated model of WCAs and the "Water Workers' School" represents an effective instrument for strengthening participatory water governance and achieving sustainable development under conditions of water scarcity and climate change.*

Keywords *Water consumers' associations, "Water Workers' School", participatory management, personnel training, water-saving technologies, public-private partnership, water culture*

Suv iste'molchilari uyushmalari va "suvchilar maktabi" orqali suv boshqaruvida ishtirokchilikni rivojlantirish

Jabbarova Iqbol Xo'jamuratovna
iqbol.jabborova@gmail.com
t.f.f.d (PhD), dotsent,
O'zbekiston tarixi kafedrasi doktoranti (DSc),
Qarshi Davlat Universiteti

Annotatsiya *Ushbu maqolada O'zbekiston suv xo'jaligi tizimida suv iste'molchilari uyushmalari (SIU) va "Suvchilar maktabi" tashabbusi orqali ishtirokchilik boshqaruvini rivojlantirish masalalari ilmiy tahlil qilinadi. Sovet davridan meros bo'lib qolgan markazlashgan suv boshqaruvi tizimining kamchiliklari va mustaqillik yillarida amalga oshirilgan institutsional islohotlar, shu jumladan SIUlarning tashkil etilishi*

va ularning faoliyatini tartibga soluvchi me'yoriy-huquqiy baza batafsil yoritiladi. SIU faoliyatining huquqiy asoslari, jamoaviy suv boshqaruvidagi o'rni hamda ular oldidagi moliyaviy, texnik va institutsional muammolar ko'rib chiqiladi. "Suvchilar maktabi" loyihasining fermer va dehqon xo'jaliklari rahbarlari, suv taqsimlovchilari va SIU xodimlarining suv tejashga bo'lgan munosabatini o'zgartirish, suv tejovchi texnologiyalarni joriy etish, suv hisobi va monitoringini yaxshilash hamda ekologik madaniyatni shakllantirishdagi amaliy natijalari batafsil ko'rib chiqiladi. Tajriba maydonlarida olingan monitoring natijalari suv sarfining 44 foizga, mehnat sarfining 50 foizga kamayishi va mahsuldorlikning 31 foizga oshishi loyihaning iqtisodiy samaradorligini yaqqol tasdiqlaydi. Maqolada davlat-xususiy sheriklik, raqamli texnologiyalar va o'qitish dasturlari orqali SIUning tashkiliy salohiyatini oshirish va suv resurslaridan unumli foydalanish bo'yicha ilg'or xorijiy tajribalar, jumladan Turkiya, Xitoy va Ispaniya tajribalari tahlil qilinadi. Xulosa sifatida, SIU va "Suvchilar maktabi"ning integratsiyalashgan modeli suv boshqaruvida ishtirokchilikni kuchaytirish va suv tanqisligi hamda iqlim o'zgarishi sharoitida barqaror rivojlanishga erishishning samarali vositasi ekanligi ilmiy asoslab beriladi.

Kalit so'zlar *Suv iste'molchilari uyushmalari, "Suvchilar maktabi", ishtirokchilik boshqaruvi, kadrlar tayyorlash, suv tejovchi texnologiyalar, davlat-xususiy sheriklik, suv madaniyati*

Развитие участия в управлении водными ресурсами через ассоциации водопотребителей и «Школу водников»

Жаббарова Икбол Хужамуратовна
iqbol.jabborova@gmail.com
PhD, доцент,
Докторант (DSc) кафедры истории Узбекистана,
Каршинский государственный университет

Аннотация *В данной статье проводится научный анализ вопросов развития партисипативного управления в системе водного хозяйства Узбекистана посредством ассоциаций водопользователей (АВП) и инициативы «Школа водников». Подробно рассматриваются недостатки централизованной системы водопользования, унаследованной от советского периода, а также институциональные реформы, проведённые в годы независимости, включая создание АВП и нормативно-правовую базу, регулирующую их деятельность. Анализируются правовые основы функционирования АВП, их роль в коллективном управлении водными ресурсами, а также финансовые, технические и институциональные проблемы, стоящие перед ними. Детально рассматриваются практические результаты проекта «Школа водников» в части изменения отношения руководителей фермерских и дехканских хозяйств, мирабов и сотрудников АВП к водосбережению, внедрения водосберегающих технологий, совершенствования учёта и мониторинга воды, а также формирования экологической культуры. Результаты мониторинга на опытных полях снижение водопотребления на 44 процента, трудозатрат на 50 процентов и рост производительности на 31 процент наглядно подтверждают экономическую эффективность*

проекта. В статье анализируются передовой зарубежный опыт Турции, Китая и Испании, а также механизмы повышения организационного потенциала АВП и рационального водопользования посредством государственно-частного партнёрства, цифровых технологий и образовательных программ. В заключение научно обосновывается, что интегрированная модель АВП и «Школы водников» является эффективным инструментом усиления партисипативности в управлении водными ресурсами и достижения устойчивого развития в условиях водного дефицита и изменения климата.

Ключевые слова *Ассоциации водопотребителей, «Школа водников», партисипативное управление, подготовка кадров, водосберегающие технологии, государственно-частное партнерство, культура водопользования*

Introduction

The centralized water management system inherited from the Soviet era was ineffective in addressing the real needs of water consumers. After independence, one of the important directions of reforming the water management system was the introduction of the participatory principle in water governance. As a practical expression of this, Water Consumers' Associations (WCAs) were established, and in subsequent years, special attention has been paid to improving their activities.

The formation of the WCA system in Uzbekistan is directly related to integration processes at the Central Asian level. In particular, Water Consumers' Associations were established in Central Asia in 1996 based on an agreement between the Central Asian Irrigation Research Institute (SANIIRI) and governments. The first WCAs were implemented on an experimental basis in the Fergana Valley, and later they were expanded throughout the republic. At the same time, by 2019, serious systemic shortcomings had been identified in the activities of WCAs. In particular, Resolution No. 982 of the Cabinet of Ministers of December 11, 2019, noted the following problems: the activities of the associations were not organized proportionally to the tasks assigned to them; the executive bodies of the associations were not provided with qualified managers and specialists in the field; the contractual relations of the associations with water consumers were not established at the required level (Cabinet of Ministers, 2019a).

The activities of WCAs in Uzbekistan are regulated by a number of regulatory legal documents. The main legal basis can be the 1993 Law "On Water and Water Use" and its new version of 2018. As a logical continuation of this normative document, we can include the laws "On Water Consumers' Associations" adopted in 1999 and amended in 2006. Resolution No. 982 of the Cabinet of Ministers of December 11, 2019, fully consolidated these associations and their activities (Cabinet of Ministers, 2019b).

Literature review

First of all, attention was focused on establishing contractual relations in order to regulate mutual water management relations among water consumers. On this basis, water limits and plans were developed. Together with water management and agricultural organizations, water consumption plans and water intake limits were developed and approved. Existing shortcomings were identified and measures to eliminate them were developed. In particular, systematic measures were taken to provide the association and its hydro-sections with qualified personnel.

Obligations were set to repair and restore irrigation networks and hydraulic structures under their control. The introduction of innovative methods in water management and the use of water-saving technologies were supported (Xalq so'zi, 2025).

In recent years, a number of reforms have been implemented to improve the WCA system in Uzbekistan: First, "Suvxizmat" limited liability companies are being established. The main tasks of these structures include summarizing water consumption plans of water consumers, providing water according to approved limits, rational water management and monitoring. Second, the Presidential Decree "On measures to further accelerate and sustainably develop the digitalization process in the water sector" adopted in October 2025, provides for the complete digitalization of water resources accounting and management. According to the decree, information on more than 600 thousand water consumers and 4.3 million hectares of irrigated land will be generated electronically. Third, through the "Water Accounting" information platform, the amount of water used is accurately calculated and notified to consumers electronically. The system is integrated with the "Digital Agriculture" platform. Fourth, the mechanism for setting and distributing water limits is being improved. According to the new procedure, the limit is determined based on the type of crop, land area and other aspects, and standards such as how much water is required in which decade are being developed (Xalq so'zi, 2025).

Water Consumers' Associations are an important link in Uzbekistan's water management system. WCAs play an important role in water distribution among farms, maintaining irrigation networks and providing water management services. However, problems such as unsatisfactory technical condition, low personnel potential and lack of financial stability remain. The ongoing digitalization and institutional reforms in recent years are serving to improve the activities of WCAs. For the sustainable development of the WCA system in the future, training qualified personnel, strengthening the material and technical base, and forming a culture of rational water use among water consumers are of great importance (Xalq so'zi, 2025).

Research methodology

In the context of acute water scarcity and climate change, forming a culture of efficient water use in Uzbekistan has become a pressing task. For this very purpose, in 2023, on the instructions of President Shavkat Mirziyoyev, the "Water Workers' School" project was launched. This initiative is a practical expression of institutional reforms in the water sector and was implemented as a modern educational platform aimed at improving the skills of farmers, water specialists and industry employees (Yangi O'zbekiston, 2022).

The "Water Workers' School" was established on May 29, 2023, in cooperation with the Ministry of Water Management, the "Tashkent Institute of Irrigation and Agricultural Mechanization Engineers" National Research University (TIIAME NRU) and "Agrobank" JSCB. The main goal of the project is to introduce the principle "Water is not free" into practice, to increase the knowledge and skills of farmers and industry specialists on water-saving technologies (Cabinet of Ministers, 2019b).

The strategic tasks of the school are as follows:

- Forming a culture of rational use of water resources;
- Providing practical skills for introducing modern water-saving technologies (drip, sprinkler, discrete irrigation);
- Improving the qualifications of farm and agrocluster leaders;
- Retraining water management system employees and raising their professional level to international standards (Cabinet of Ministers, 2019b).

Analysis and Results

The project was implemented in the following stages. First stage (May-October 2023) – within the framework of the initial stage

of the "Water Workers' School", short-term courses were organized in 155 districts of the republic. 5 specially equipped mobile groups went to the districts and conducted training on site. At this stage, more than 61 thousand farmers and industry specialists acquired modern knowledge and skills. The training programs were developed based on the advanced experiences of Turkey, China and Spain, with the participation of foreign and local experts.

Second stage (from February 2024) – the second stage of the project started on February 3, 2024. At this stage, modern classrooms and 250 hectares of experimental fields were established in 13 regions of the republic. Experimental fields were equipped with drip, sprinkler and discrete irrigation systems, automatic control and agrometeorological stations. A total of 234 teachers, including 35 foreign scientists and specialists, participated. As a result, about 13 thousand farmers were trained and 4 thousand farms introduced water-saving technologies on their land (Agrobank, 2024).

According to TIIAME NRU data, since the establishment of the "Water Workers' School", 25,600 agricultural workers, 18,000 farmers and 6,400 mirabs (water distributors) have been trained. In 2024, these figures were 30,200, 19,100 and 10,400 respectively.

Long-term plans (2024–2030) – in 2024–2030, it is planned to train 10 thousand farmers in depth annually, certifying a total of 60 thousand farmers. Additionally, "Designer" and "Organizer" training courses have been organized at the school, where specialists from contractor-construction organizations are trained on a certification basis (Xalq so'zi, 2026a).

The educational process at the "Water Workers' School" is organized on the basis of a two-stage system: in the first stage, listeners improve their qualifications in increasing the culture of water use and introducing water-saving technologies; in the second stage, they participate in practical exercises and gain experience. Specialists with extensive experience in the water management system, qualified employees of "Agrobank" JSCB, professors and teachers of higher educational institutions, as well as expert specialists from Turkey, Spain, and China were involved in conducting the training sessions (Yangi O'zbekiston, 2022).

In particular, close cooperation has been established with Turkey in the areas of designing, constructing, commissioning and maintaining water-saving technologies. In cooperation with major Turkish manufacturers such as "Akplast", "Acar MAK-SAN", "Ardent plastic" and "Agro new drip", the production of polyethylene pipes, drip tapes, pumps and filter devices has been established in Uzbekistan. According to Chinese expert Shengtian Chen, even China does not have such a systematic and professional educational institution.

One of the most important components of the "Water Workers' School" is the 15–20 hectare experimental fields (total 255 hectares) established in 13 regions of the republic. These fields have undergone laser leveling, modern water-saving irrigation systems have been introduced, management has been fully automated, and the latest type of meteorological stations have been installed (Cabinet of Ministers, 2019b).

According to monitoring results carried out in the experimental fields:

- Water consumption decreased by 44 percent;
- Labor consumption decreased by 50 percent;
- Costs decreased by 21 percent;
- Productivity increased by 31 percent.

These results clearly demonstrate the economic efficiency of introducing water-saving technologies.

Within the framework of the "Water Workers' School", special attention was paid to creating an educational and methodological base. More than 20 training manuals and methodological instructions on water-saving

technologies and efficient use of water resources were developed by professors and teachers of TIIAME NRU. In 2025, as part of "Agrobank's" "Agrobooks" project, the "Water Book Collection" consisting of 30 methodological manuals on the use of water-saving technologies was published (Yangi O'zbekiston, 2022).

Digitalization principles are widely applied in organizing the educational process. Registration of participants, involvement in training courses and certification are fully digitized, with the farm registering itself for training and downloading its certificate at the end of the course.

In addition to the "Water Workers' School", comprehensive reforms are being implemented to develop the system of training qualified personnel in the water sector in Uzbekistan. These include: Water Academy – by the decision of the President in 2022, the establishment of an academy for training and improving the qualifications of specialists in the water supply sector was approved. The academy is planned to operate as a unified scientific center in the field, training scientific and engineering-technical personnel with the involvement of foreign professors and teachers (Xalq so'zi, 2026b).

Conclusion and Recommendations

WCAs play an important role in water distribution and maintaining irrigation networks. However, their financial weakness and low personnel potential remain problematic. The "Water Workers' School" has trained more than 80,000 farmers and specialists based on public-private partnership. Water consumption in the experimental fields decreased by 44 percent. Forming a water culture remains a pressing task.

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