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ORGANIZATIONAL BASIS FOR SUSTAINABLE WATER RESOURCES MANAGEMENT IN WATER CONSUMERS ASSOCIATIONS

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Аннотация

Суғорма деҳқончилик ҳамма даврларда Ўзбекистоннинг иқтисодий ва ижтимоий тараққиётида муҳим аҳамият касб этиб келган. Бугунги, иқтисодиётнинг барча тармоқларида, жумладан чекланган ер ва сув ресурсларидан фойдаланиш билан боғлиқ соҳаларда олиб борилаётган кенг қамровли ислохотлар шароитида суғорма деҳқончилиكنинг мамлакат иқтисодий-ижтимоий тараққиётидаги роли янада муҳимроқ аҳамият касб этмоқда. Янги ваколат ва вазифаларга эга бўлган сув истеъмолчилар уюшмаларининг (СИУ) ташкил этилиши ирригация ва сув ресурсларини (қуйи бўғинда) барқарор бош-қариш соҳасида амалга оширилган институционал туб ўзгаришлардан бири бўлди. Аммо турли СИУларнинг фаолияти натижалари самарадорлиги турлича бўлмоқда. Мақолада мазкур фарқлар сабаблари ва қуйи бўғинда сув ресурсларини бошқаришни ривожлантириш йўлидаги мураккабликларни Бухоро воҳаси шароити мисолида ўрганиш бўйича олиб борилган тадқиқотлар натижалари келтирилган. Маҳаллий даражада ташкил этилган сув истеъмолчилари уюшмалари фаолияти самарадорлигини белгиловчи омиллар ҳамда улар сув ресурсларини қуйи бўғинда бошқариш жараёнида дуч келаётган мураккабликлар муҳокама қилинади. Олиб борилган эмперик тадқиқотлар ва ташкилий мавжуд тузилмага асосланган ҳолда қуйи бўғинда сув ресурсларини бошқаришни яхшилаш бўйича тавсиялар келтирилган.

Abstract

Irrigated agriculture plays a major role in Uzbekistan for both economic and social reasons. The state has remained the key player in irrigated agriculture by implementing various land- and irrigation-related reforms. In particular, the establishment of Water Consumers Associations (WCAs) in place of former shirkats has been one of several institutional changes in the irrigation sector. However, the performances of these associations have provided mixed results. As a means of discovering why this is so, this paper discusses possible constraints that have been hampering water resources management in Uzbekistan, with special reference to the Bukhara region, derived from analysis of expert interviews. We seek to provide a thorough discussion of the rationale behind the mobilization of the formation of local-level irrigation management associations (i.e. WCAs) and analyze current challenges that these associations are encountering with respect to water resources management, focusing on irrigation management. Based on empirical findings, the organizational structure to improve water resources management is outlined.

Аннотация

Орошаемое земледелие всегда имело большое значение, как в экономическом, так и в социальном развитии Узбекистана. В условиях широкомасштабных реформ осуществляемых в отраслях связанных с использованием ограниченных земельных и водных ресурсов как и во всех отраслях экономики роль орошаемого земледелия в устойчивом социально-экономическом развитии приобретает еще большую важность. Организация ассоциаций водопотребителей (АВП) с новыми полномочиями и задачами стала одним из основных институциональных изменений в секторе управления водными ресурсами (на нижнем звене водохозяйственного комплекса) и ирригацией. Однако эффективность функционирования АВП оказывается различной с существенными отличиями друг от друга. Данная статья посвящена анализу возможных причин такого различия и сложностей в развитии управления водными ресурсами на уровне полей на примере специфических условий Бухарского оазиса на основе результатов экспертной оценки. Обсуждается рациональное зерно за мобилизацией формации такой как ассоциации водопотребителей, организованной на местном уровне и вызовов управления водными ресурсами на уровне полей в условиях которых эти организации функционируют. Приведены предложения по улучшению управления водными ресурсами на уровне полей основываясь на результатах эмперических исследований и организационной структуре АВП.

Introduction

Uzbekistan is a landlocked country with an area of 447,400 km², larger than most Western European countries, and comprised largely of desert or semi-desert. The population was about 30.5 million in 2014, over 60% of who live in densely populated rural communities. Administratively, the country is divided into 12 regions and one autonomous Republic of Karakalpakstan. With an educated population and a growing young labor force, it has significant economic potential in the Central Asian republics (United Nations 2008).

Uzbekistan's climate is continental, with hot, dry summers and short, extremely cold winters. According to the regional hydro-meteorological station, the annual evaporation rate in the study region of Bukhara (about 1,600 mm) greatly exceeds the annual rainfall (about 150-200 mm). Thus, large-scale irrigation for cultivated crops is essential for agriculture.

Contributing to 19% of overall gross domestic product, agriculture still remains an important sector for the Uzbek economy and, most importantly, provides almost 40% of the rural population with employment (World Bank 2013). As a result of the country's arid climate, almost all agriculture depends on irrigation. About 97% of crop production is carried out on irrigated land. There is an estimated 4.2 million ha of land suitable for irrigation, a figure significantly larger than in other four Central Asian republics (0.77 million ha in Kazakhstan; 0.42 million ha in Kyrgyzstan; 0.72 million ha in Tajikistan; and 1.73 million ha in Turkmenistan).

Cotton is one of the main cultivated crops in the country. Uzbekistan ranked 5th among ninety cotton-growing countries and 2nd largest exporter in the world (Djanibekov et al. 2010). Additionally, wheat is considered to be essential to achieve food security and is the second largest irrigated

crop. Other significant irrigated crops include grains (corn, rice and oats), fodder crops, and fruits (grapes, apples) and vegetables (potatoes, tomatoes). As of end-2013, around 43% of cultivated land is devoted for cotton, about 37% for grains (including wheat), 17% for fruit and vegetables, and the remaining for fodder crops (e.g. alfalfa, barley, maize) (Figure 1).

During 1991-2000, there was a significant deterioration of the secondary and tertiary canal systems (also called on-farm) in Uzbekistan because the kolkhozes and sovkhoses could not regularly maintain them due to lack of financing. This resulted in low yields and subsequently, low incomes for farmers. Meanwhile, the distribution of irrigation water became severely unequal, especially for downstream farmers. Disputes among farmers over water increased. According to the UNDP report, as of 2007 most irrigation facilities in Uzbekistan were largely deteriorated, property rights on the infrastructure were ambiguous, and water loss in the system amounted to 50% due mainly to un-maintained water facilities and water stealing (UNDP 2007).

In order to address these challenges, WCAs were established in place of liquidated shirkats on a territorial basis. The Water and Water Use law – adopted in 1993 – and revised on 29th of December 2009 encouraged water consumers to shift to water basin principles and establish water user groups along the irrigation canal following hydrographic (canal) principles. As a result, most associations have been

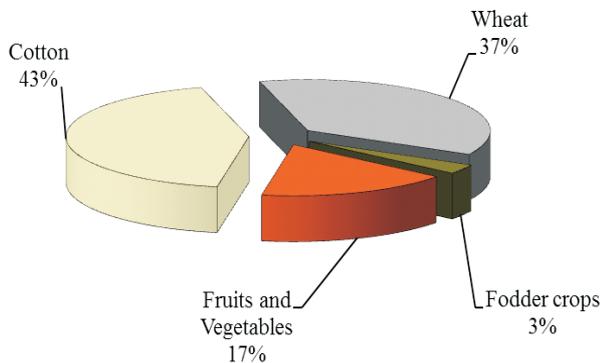


Figure 1. Crop pattern of irrigated arable land in Uzbekistan

Source: Ministry of Agriculture and Water Resources of Uzbekistan (2014)

re-established based on the hydrographic principles and re-registered at the Ministry of Justice as a non-governmental and non-profit organization. However, without any initial financial, technical, legal or administrative support, some of the associations have fallen into a state of collapse. The particularly weak link here is the institutional one, as rules are still unclear and a law on WCAs have yet to be issued that could protect their rights. The impact of climate change is expected to aggravate the situation, resulting in reduced snow and glacial reserves in the mountains – virtually the only source of water for most of the irrigated croplands throughout Central Asia (Hagg et al. 2007; Aleksandrova et al. 2014). The current paper discusses the rationale behind the mobilization of the formation of local-level WCAs and analyzes current challenges that these associations are encountering with respect to natural resources management, focusing on irrigation management. Based on the analysis, an organizational structure to improve water resources management is proposed.

Materials and Methods

The focus of this research is the Bukhara region, in central

Uzbekistan. The selection of Bukhara, for this study was based on reviewing secondary data obtained from MAWR and the advice of knowledgeable people who reported that the region is less studied by researchers in comparison to other regions of the country. The Center for Development Research (ZEF) at the University of Bonn, for example, had been active during 2000-2011 in promoting sustainable management of land and water resources in the northern part of Uzbekistan, primarily in the Khorezm region. Meanwhile, the International Water Management Institute (IWMI) has been very active in promoting research activities in the Ferghana Valley of Uzbekistan (eastern part) to implement an integrated water resources management (IWRM) approach, where most projects are dedicated to studying the experiences of WCAs and identifying best practices among them. In addition, comparatively little research work has been done in the central region, and only a small fraction of that body of work has attempted to use an institutional economics perspective.

In Bukhara, the Amu-Bukhara BISA, based in Bukhara city, was established in the third quarter of 2003 to manage water resources based on hydrographic (basin) principles. The BISA replaced the previous Bukhara regional water resources management department (Oblvodkhoz) office, which had managed water resources based on territorial boundaries. Under the Amu-Bukhara BISA, five ISAs were established.

Expert interviews were carried out in Tashkent with individual key experts from the Ministry of Agriculture and Water Resources (MAWR), the World Bank, the United Nations Development Program (UNDP), the International Water Management Institute (IWMI), the German Agency for International Development (GIZ), the Tashkent Institute of Irrigation and Melioration (TIIM), the Irrigation and Water Problems Research Institute (former SANIIRI) under the TIIM, as well as individuals from private consulting firms – such as Nazar Business and Technology (NBT) and Holis Group Audit Consulting Valuation – who were involved or had considerable knowledge on irrigation sector reforms in Uzbekistan. In the study region, in-depth expert interviews were conducted with officials from regional state water agencies, such as the Amu-Bukhara BISA, the Bukhara Oblselvodkhoz, two ISAs (Kharkhur-Duoba and Toshobod-Jilvon), as well as the Bukhara branch of the TIIM which involved in irrigation management in the region. At the local level, we were able to interview a representative from the Shofirkon Rayselvodkhoz (district department of agriculture and water resources under MAWR) and the heads of two local Village Citizens' Assemblies: Tezguzar, located in Karvonboshi Tezguzaro WCA territory, and Sarmijon, located in Sarmijon Mirishkori WCA territory. In total, expert interviews were conducted with 19 representatives from 15 organizations that have some role in the process of irrigation management reforms in Uzbekistan. These experts represent various levels of decision-making agencies influencing the irrigation management reforms. A semi-structured interview format was employed during the interview process.

Results and Discussion

The research findings indicated that the most commonly discussed topic among the various experts was payment for irrigation services (ISF) under different contextual conditions (Figure 2). Many experts in the field stressed that, when one discusses water resources management in Uzbekistan, particularly at the on-farm level, it is important to recognize the essence of ISFs as part of the long-term survival strategy of WCAs. For instance, the Amu-Bukhara BISA representative asserted that the main reason for impeded WCA development in the Bukhara region has been lack of payment for irrigation services by the members. In theory, these members (i.e. resource users) should not receive water in due time if they do

not contribute such payments. However, this official admitted that the social structure is constructed in such a way that, when farmers do not receive water in required amounts to cultivate state production quota crops (i.e. cotton and wheat), they directly communicate with higher authorities. As a result of external interventions from these higher authorities, WCAs are then forced to provide water without respecting their own internal rules requiring payment before water is delivered. So, unless legal mechanisms towards rule-breaking individuals are properly enforced, it will be difficult to achieve long-term functioning of WCAs.

Meanwhile, the second most important findings of the interviews is the reference made to the leadership skills of WCA chairmen. More than 50% of the interviewed experts stated that leadership is an important condition for achieving successful cooperation within a group of users for managing the CPR at the local community level. In the context of WCA structures, good leadership is identified as having a chairman who has considerable experience, has a university degree in irrigation water management, is charismatic, and manages the association in a transparent manner as well being accountable to its members. However, interviewees in the state water agencies as well as the donor community reported that the heads of WCAs are currently incapable of enforcing rules and sanctioning those who break the rules. Most chairmen are young and incompetent persons, they claimed, having limited ability to make members and other water consumers comply with the rules. Such chairmen are also unaware of up-to-date technological solutions for given problems, due mainly to an absence of a higher education. As noted by the representative of the Amu-Bukhara BISA, "previously farmers and households used to listen to the kolkhoz director and came to mutual agreements on water schedule and irrigation system maintenance. There was discipline among different resource users and the head was a very respectable leader. Unfortunately, the present WCA heads are unable to reach that level. We are not supposed to

get involved in their daily activities due to their NGO status, but since they lack key expertise, we are fully engaged in their daily work, recommending appropriate candidates for the chairmen positions and even helping with calculation of their water use plans".

The empirical insights gathered through the interviews for this study reveal that the study region has undergone a transformation process seeking to improve the organizational structure of water resources management (Figure 3), in light of the problems outlined above. The introduction of new rules was initiated in late 2011 to ensure that local water organizations (i.e. WCAs) receive their financial shares in due time. It is important to emphasize that the model (called an otryad) was introduced with the idea of extending it to other regions of the country, if it produces a positive outcome in Bukhara. The Rayselvodkhozes have been assigned to monitor the implementation of this model. The Bukhara Oblselvodkhoz represents the MAWR in the Bukhara region. The department mainly consists of agronomists on staff and generally manages the whole cycle of the agricultural crop production process – from land preparation to end-product delivery. At the same time, the department has some role in the water sector, particularly in providing information to farmers on the recommended frequency and best periods for irrigation and leaching.

According to the new sets of rules, a WCA officially employs 20-25 mirabs to help farmers in carrying out irrigation and agriculture-related activities. All of these mirabs receive their salaries through the WCA, and the Oblselvodkhozes and Rayselvodkhozes need to ensure that WCAs have a higher priority of getting the mirabs their monetary shares from the farmers. The main tasks of these new mirabs include preparing farmers' fields for leaching, helping with irrigation and leaching activities, and maintaining an irrigation system within the territories of a WCA. Upon submission of a farmer's written request, mirabs will assist a farmer with irrigation and agricultural work.

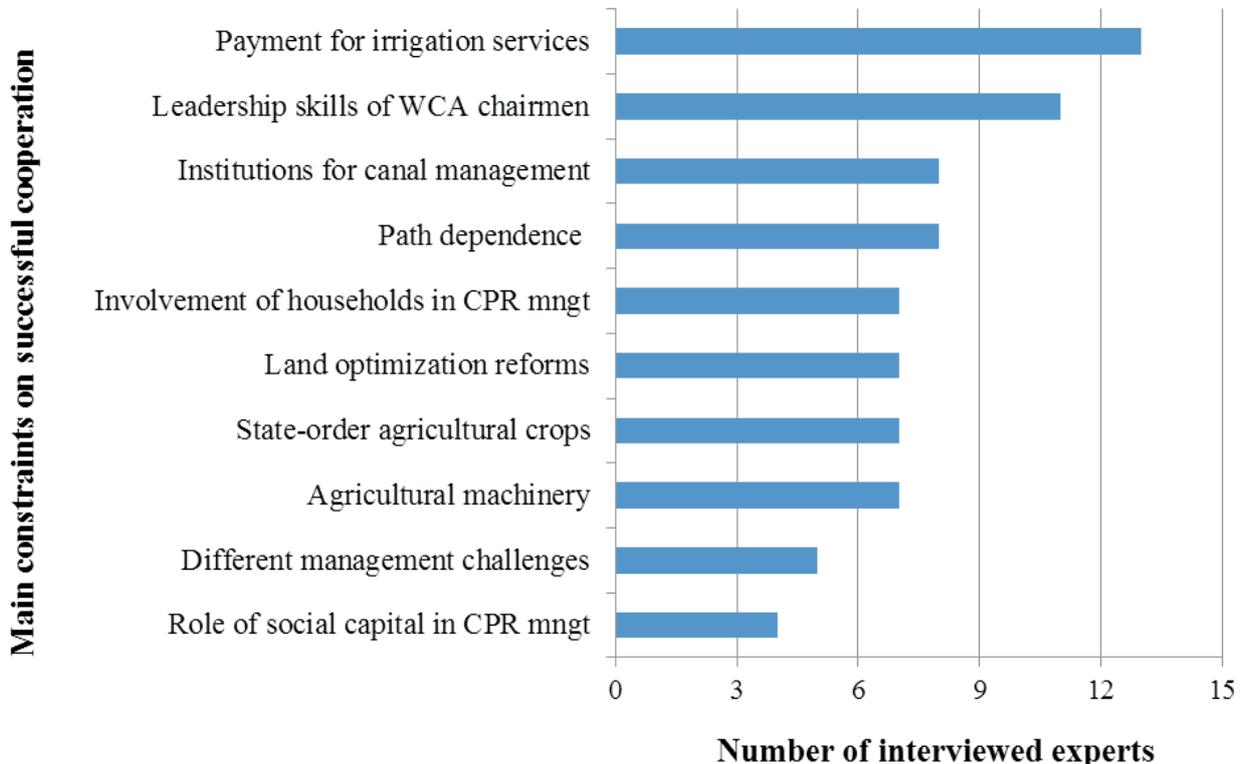


Figure 2. Analysis of expert views on irrigation management in Uzbekistan, derived from Atlas.ti software analysis

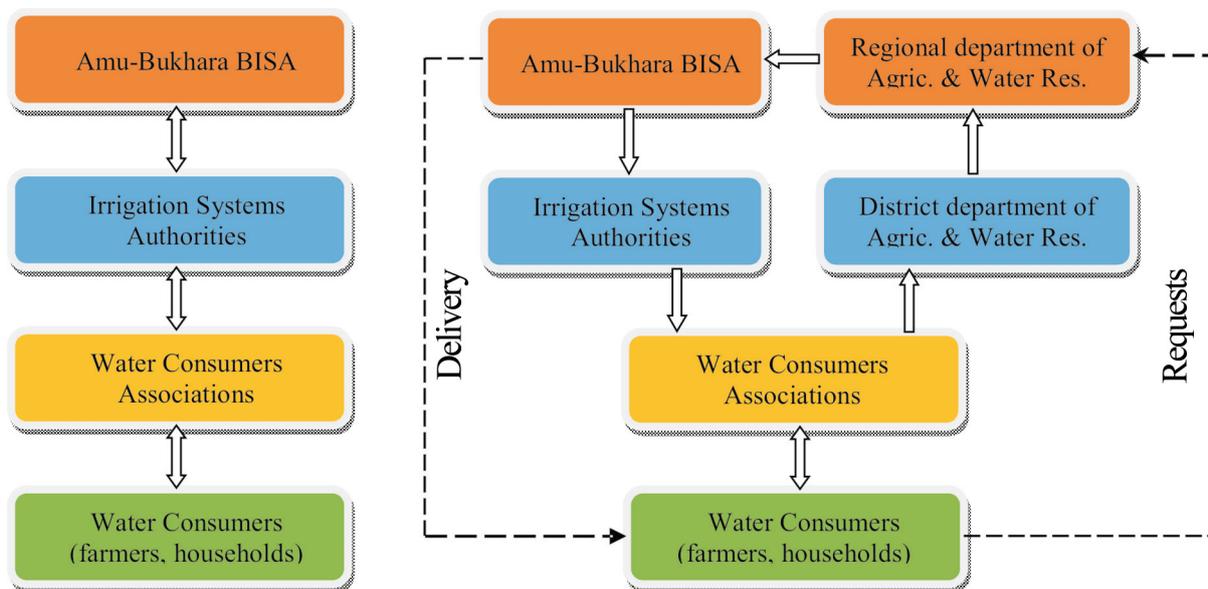


Figure 3. Water allocation structure in the Bukhara region (left = old, right = new systems)

Source: Own graphic

An additional rationale behind this reform is to bolster water conservation efforts. It was underlined by the regional water agencies that, normally, a mirab is required to maintain a rate of five to eight liters per second of water flow within a farm, whereas farmers usually receive at least 80-100 liters per second from a canal during an irrigation period. Therefore, the mirabs are hired by WCAs to assist in irrigating and leaching the irrigated farms with limited water loss. During irrigation, farm fields receive water in a sequential order. Each farmer is responsible for monitoring the process and signs a form that serves as a legal agreement between the WCA mirabs and the farmer. Based on this agreement, a farmer is responsible for transferring the payments to WCA account and the local Oblselvodkhoz may get involved in case of disputes.

Conclusion

There are always challenges related to the use of natural resources, and this is particularly the case with the management of irrigation systems, especially in the transitional contexts of post-socialist countries. Overcoming such dilemmas requires careful institutional design. Since declaring its independence from the Soviet Union in 1991, Uzbekistan has undergone substantial reforms in the area of irrigated agriculture through exogenously imposed institutional change. However, in some cases this institutional design has

not produced the expected results of successful cooperation in irrigation management, and most WCAs have been undergoing a difficult transformation. This paper analyzed current challenges with respect to irrigation management at the water consumer’s association’s level, derived from expert interviews. The findings indicated that payment for irrigation services, lack of leadership skills of WCA chairmen, and path dependence are few examples that constraint successful irrigation management at Uzbek WCAs.

The empirical research from the Bukhara region indicates that the new organizational structure has been introduced to improve local cooperation as well as assure local WCAs’ long-term financial capability. If that does happen, then farmers would have adequate time for constructing or maintaining their irrigation canals or requesting otryad to support them with canal maintenance. If all farmers contribute to their WCAs, they can improve their financial status and even become able to purchase machinery (e.g. excavators, bulldozers, and cranes) for improving the maintenance of irrigation canals within their territories. In the long-run, WCAs can also form a federation to exchange goods and services, as the Law on Water and Water Use (1993) provides a legal basis for establishing such WCA federations.

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