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SOME ASPECTS OF THE DEVELOPMENT OF THE IRRIGATION AND MELIORATION SYSTEM OF NAVOI REGION

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Abstract. The article analyzes some aspects of the formation and development of the irrigation and melioration system in Navoi region. It covers irrigation sources under conditions of a dry climate and limited water resources, the state of the network of canals and pumping stations, the efficiency of land and water resource use, and problems in improving the meliorative condition of lands. It also shows the role of Water Users Associations (WUAs), established within the framework of water sector reform, in maintaining irrigation networks, distributing water fairly, and keeping water records.

Keywords: Navoi region, irrigation, melioration, Water Users Association (WUA), irrigated lands, water resources, collector-drainage system, meliorative condition of lands, soil salinization, water-saving technologies, pumping stations, water management.

Introduction. In the first years of independence, the agricultural and water sectors still suffered from systemic problems inherited from the Soviet era, the difficulties of the economic transition period, and disorder in the use of water resources. Despite these difficult economic conditions, the state paid special attention to systematically preserving the irrigation and melioration infrastructure in Navoi region, as well as the system protecting farmland and industrial facilities from floods and mudflows.

Because Navoi region is located in an arid zone, issues of water scarcity and meliorative condition have been especially pressing here. Nevertheless, it can be seen that the formation of WUAs in the region and the changes in its irrigation and melioration system have not been specifically studied from a historical perspective.

Results and Discussion. Historically, irrigated agriculture in Navoi region has relied on the Zarafshan River as its water source. Therefore, studying the state of the water management system in the period before the establishment of WUAs helps in understanding why these associations became necessary. One of the most conspicuous shortcomings in this regard was the state of water accounting and control. In the Soviet period, local water management organizations had inadequately equipped hydraulic structures. They lacked special water-measuring gauges (hydrometric staff gauges) for accurately measuring water volume, and water discharge tables were also lacking. In addition, staff turnover and weakened labor discipline led to widespread negligence in water accounting. In particular, although the established procedure required water volume in the “Armijon” canal to be measured every 10 days, from the beginning of 1994 until July not a single measurement was carried out, and water discharge calculation tables were not compiled at all. As a result, water consumption exceeded the norm and discharge outlets were left dry. For these abuses and irresponsible acts, O. Norov, acting head of the district water management department, was given a reprimand; I. Namozov, acting head of the Water Use Division, and M. Khudoykulov, water inspector of the “Arabsaroy” canal, were given severe reprimands; and T. Kalanov, the hydrometric engineer, was dismissed from his post.[1]

Improving the meliorative condition of lands is likened by farmers to "restoring the health of the land." Optimizing the placement of agricultural crops, adjusting plans without harming the economy, reducing the risk of losses in water-scarce and drought years, and organizing effective control over the use of water resources are among the state's main agrarian policies.[2]

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In 1997, a total limit of 36,718 million m³ of water (including 17,347 million m³ for the second quarter) was allocated for irrigation during the crop growing period. Water use efficiency showed low indicators. In particular, the water use efficiency coefficient was 0.75 in the Republic of Karakalpakstan, 0.60 in Jizzakh, 0.59 in Navoi, 0.65 in Kashkadarya, 0.72 in Syrdarya, and 0.78 in Surkhandarya region. At the same time, it was observed that these regions received more water for irrigation than other regions.[3]

In 2002, attention to efficient water use increased somewhat, and water control was strengthened. Across the republic, 103,100 water-measuring posts were set up within the on-farm network. During the irrigation season, the water use coefficient averaged 0.82 across the republic, and 0.89–0.92 in Andijan, Bukhara, Navoi, and Namangan regions. On average, 54 hectares were irrigated per cubic meter per second of water, and 62–63 hectares in Andijan and Fergana regions.[4]

Navoi region is an industrialized area, and the deterioration of its environmental situation poses a serious threat to public health and agriculture.[5]

The Zarafshan River basin plays a decisive role in the development of agriculture and in the water supply of cropland in Navoi region. Therefore, in order to ensure the water quality and ecological sustainability of this source, the Cabinet of Ministers adopted Resolution No. 401 of October 4, 2001, "On improving the ecological and sanitary-epidemiological situation in the Zarafshan River basin."[6] To stabilize the ecological and sanitary situation that had arisen in the Zarafshan basin and to protect the health of the population of Samarkand, Navoi, and Bukhara regions, a number of inspections were carried out under this resolution.

Decree No. PF-3226 of the President of the Republic of Uzbekistan, dated March 24, 2003, “On the most important directions for deepening reforms in agriculture,”[7] became a turning point in the fundamental reform of the country's agricultural and water management system, especially in modernizing the mechanisms for the efficient use and management of water resources. Under this Decree, economically unviable and unpromising shirkat farms (collective farms) were liquidated, and independent farms were established on their basis.[8]

In implementing the Decree, Water Users Associations (WUAs) were formed in order to establish fair and orderly water distribution at the local level. These associations developed a mechanism for delivering water to farm and household (dehkan) enterprises, keeping on-farm irrigation networks in good working order, and collecting payments for the services provided.

Under a special resolution of the Cabinet of Ministers in 2003, nearly 11,000 farms were established on the basis of 177 economically unviable and unpromising shirkat farms, 483,000 hectares of land were allocated to them, and service infrastructure was created. Water-measuring devices were installed on 83,600 units (59.4%) of the on-farm irrigation networks. To provide water management services to the newly formed farm and dehkan enterprises, 88 Water Users Associations were established. As a result of the measures taken, over the reporting period gross agricultural output grew by 25.6%, industrial output by 20.2%, and consumer goods production by 0.4% compared with the same period of the previous year. The export target was overfulfilled.[9]

However, in some regions the assignments were not completed on time. In particular, the establishment of fuel-selling outlets and mini-banks in Surkhandarya and Samarkand regions, and of Water Users Associations in Jizzakh and Syrdarya regions, was delayed without justification. The organization of WUA activities and the collection of payments for their services were left outside the attention of the regional and district agriculture and water management departments in the Republic of Karakalpakstan and in Bukhara, Navoi, Samarkand, and Surkhandarya regions.[10]

Over 1999–2005, a total of 820 Water Users Associations (WUAs) were established across the republic in order to liquidate low-profit and loss-making shirkat farms and develop farms in their place. Of these, 31 WUAs were put into operation in Navoi region: 23 were established between

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1999 and 2004, and the remaining 8 were formed in 2005. The 31 WUAs established in Navoi region make up 3.78% of the republic's total (820). This figure is explained by the relatively small irrigated area and the small number of districts in the region. In this indicator, Navoi region stands quite close to Andijan (30) and Namangan (40) regions. Growth rate and stability: in 2005 the number of WUAs in Navoi grew by 34.7%. A sharp jump was observed in Fergana (257% growth) and Khorezm (262% growth) in 2005, whereas in Samarkand region, on the contrary, not a single new WUA was established in 2005.[11] In this respect, Navoi region showed moderate and stable growth without sharp changes.

In 2006, 49 Water Users Associations (WUAs) were operating in Navoi region in the field of water resource management, accounting for 4.63% of the republic's total of 1,036 WUAs.[12]

On average, each WUA in Navoi region concluded contracts with 111 farms. This is higher than the republican average (93), which indicates that there are few WUAs and many farms per WUA. The total value of services provided by WUAs was 194 million soums. In Navoi, the average value of WUA services provided per farm was 346,000 soums, one of the lowest figures in the republic (the republican average was 808,000 soums; Andijan, 787,000 soums; Jizzakh, 1 million 33 thousand soums; Surkhandarya, 1 million 51 thousand soums).[13]

Overall, because the number of WUAs in Navoi region at the beginning of 2006 was relatively small compared with the number of farms, the workload on them (the number of farms under contract) was high, but the monetary volume of services per farm remained considerably lower than the figures for the republic and other regions.

Conclusion. The comprehensive development of the irrigation and melioration system in Navoi region, namely renewing infrastructure, strengthening the activities of Water Users Associations, introducing water-saving technologies, improving the meliorative condition of lands, and digitalizing management, is the main direction for ensuring the rational use of land and water resources and the sustainability of agriculture. Carrying out these measures will make it possible to reduce water losses, lower the level of soil salinization, increase crop yields, and ensure the sustainable development of agriculture in the region.

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