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EVALUATION OF THE DYNAMICS OF WATER WITHDRAWAL FROM THE ZEPAVSHAN RIVER BY THE ESKI ANKHOR CHANNEL

Annotation: *The article is devoted to the study of the dynamics of the amount of water intake from the Zeravshan River through the Eski Ankhor canal. The role of this water management measure for increasing the hydrological potential of irrigated lands of the Kashkadarya oasis is shown.*

Keywords: *river, river basin, runoff, hydrological regime, hydroelectric complex, canal, carrying capacity, hydrological potential, irrigated lands.*

Introduction. In the conditions of Uzbekistan, the skillful organization of the rational use of water resources is important for the development of various sectors of the economy. In particular, this problem is of particular relevance for the sustainable development of the country's agricultural sector. For this purpose, numerous hydraulic engineering structures have been built and are being operated in the Republic, including more than 50 reservoirs, water distribution hydroelectric facilities, canals and other hydraulic structures. These premises are fully related to the Zeravshan basin.

Today, it is of particular importance to study the mode of operation of hydraulic engineering structures, as well as the hydrological mode of water intake sources, i.e. those rivers where these facilities operate and where the water is taken from.

As is known, since ancient times, the water resources of the Zeravshan

River have been distributed between the Samarkand, Navoi, Kashkadarya and Jizzakh regions. For this purpose, the canals Dargom, Kalkanata, Shahrud, Ramitanrud, Tuyatartar and others were built. For example, water intake through the Dargom canal is carried out at the Ravatkhodzhin hydroelectric complex.

About this channel, i.e. About Dargoma, there is a mention on a map compiled by Claudius Ptolemy in the second century. The components of the Dargom channel are Yangi Dargom, Eski Dargom and Aylanma Dargom, Eski Ankhor and other channels.

The Eski Ankhor canal is also one of the ancient canals that draws water from the Zerafshan River. According to historical data, the canal was built in the 1st century BC. The initial length of the channel was 300 km. At the end of the first quarter of the 13th century, the canal was destroyed by the Mongol conquerors, and during the period of the Temurids it was restored.

At the beginning of the 50s of the past century, repair and restoration work was carried out on the Eski Ankhor canal, and its re-construction was carried out in 1974. As a result, through this canal, 184 km long with a head pack of 45 m^3/s, it became possible to annually transfer 240-300 million m^3 of Zepavshan water to the Kashkadapinsky oasik (Rubinova et al., 1987; Yunusov et al., 2010; Yunusov and others, 2015). In the future, the annual volume of water transfer from this canal gradually increased and in the high-water year 1998 reached 600 million m^3.

In this work, we have studied long-term oscillations, i.e. dynamics of water intake from the Zeravshan river through the Eski Ankhor canal for the period 2000-2020. The dynamics of the volume of water intake along the Eski Ankhor canal is compared with the annual runoff of the Zeravshan River, recorded at the Ravatkhodzhinskaya dam (Fig. 1).

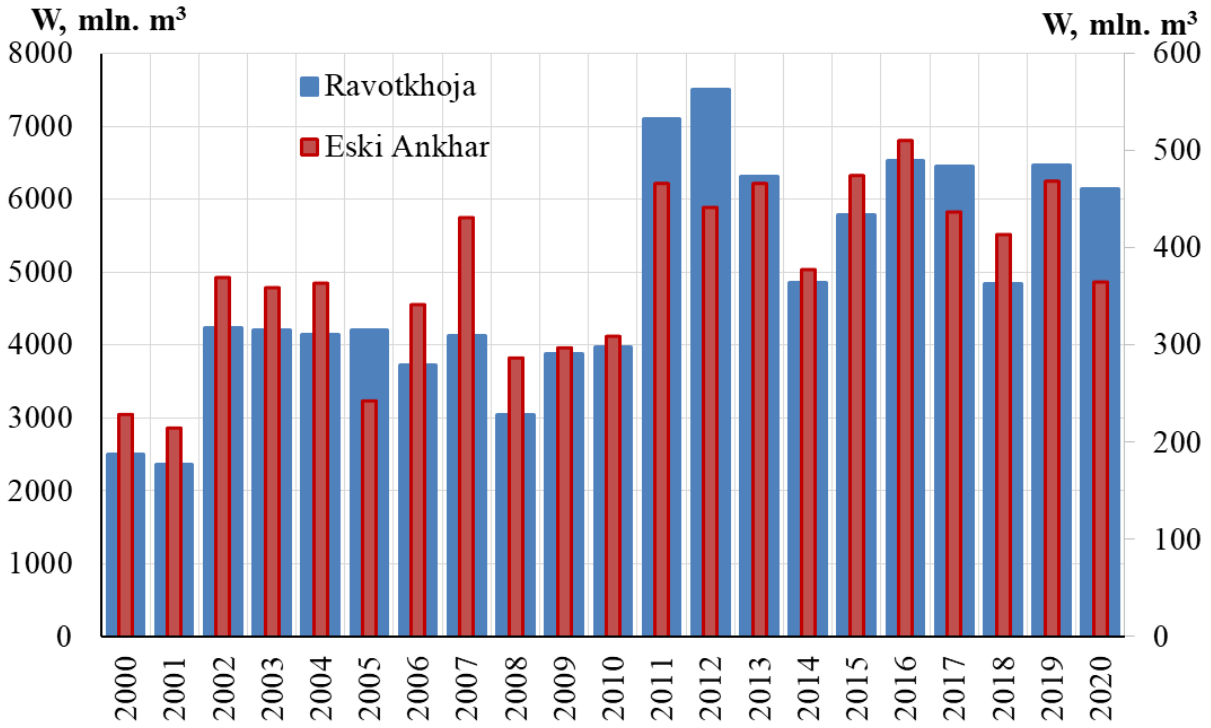

Figure 1. Long-term fluctuations in the runoff p. Zeravshan (Ravatkhoja) and the volume of water intake through the Eski Ankhar canal

Fluctuations in the annual runoff of the Zeravshan River, taken into account at the Ravatkhodzhinskaya dam and the annual volume of water intake through the Eski Ankhor canal, are almost synchronous. Only in a single case, i.e. in 1998, the synchronism of these oscillations was broken.

The high synchronism of fluctuations in the runoff of the Zerafshan River, measured at the Ravatkhodzhinskaya dam and the volume of water intake through the Eski Ankhor canal, was observed especially in 2000-2014. This is evidenced by the graph of the dependence of the volume of water intake through the Eski Ankhor canal (W_{EA}) on the volume of the runoff of the Zerafshan River (W_P).

As noted above, water intake from the Zeravshan River, in addition to the Samarkand and Navoi regions, is also carried out to the Jizzakh region. The work studied the dynamics of the distribution of the runoff of the Zeravshan River between water consumers - regions for the growing season in 2000-2020.

The amount of water withdrawal by regions depends on the water content of

the Zeravshan river. As is known, in 2000 and 2001, low water was observed on all rivers of the Aral Sea basin. So, in these low-water, i.e. In 2000 and 2001, the absolute values of water intake in all regions sharply decreased. For example, in the low-water year 2001, the values of water withdrawals in all regions constitute the smallest values, on the contrary, in the relatively high-water year 2002, their values increase sharply.

An assessment was made of the relative average distribution of the Zeravshan river runoff between the regions - water consumers for the considered calculation period, i.e. 2000-2020 (Fig. 2).

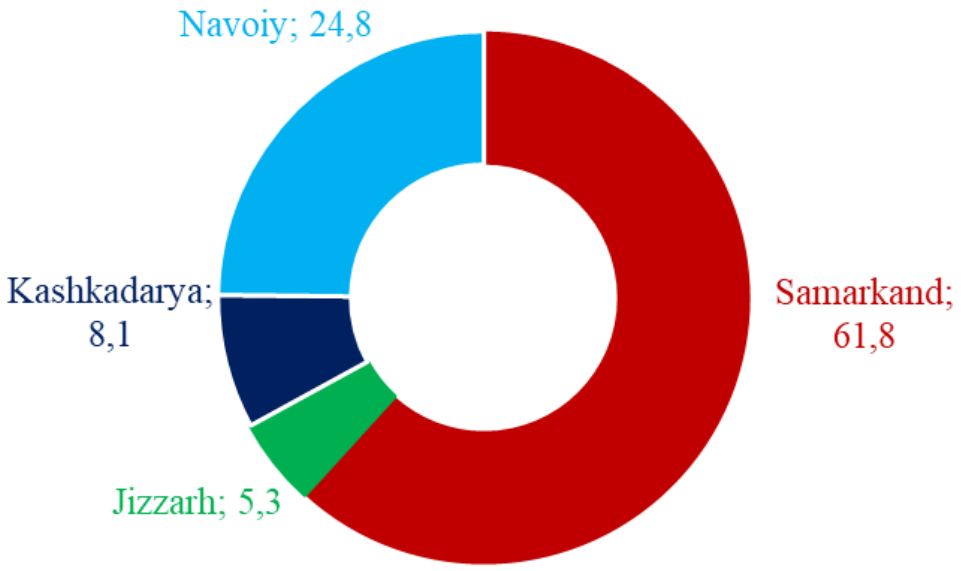

Figure 2. Distribution of runoff of the Zeravshan River between regions - water consumers on average for 2000-2020

At present, the main consumers of the Zeravshan river water are Samarqand, Navoi, Jizzakh and Kashkadarya regions. According to the volume of water intake from the Zerafshan River, the leading position is occupied by the Samarqand region, whose share is 61,8%. Next come Navaii (24,8%), Kashkadarya (8,1%) and Jizzakh (5,3%) regions. Only return waters from the upper part of the oasis enter the territory of the Bukhara region.

In general, we note that thanks to favorable natural conditions, in the pool

r. Kashkadarya irrigated agriculture has existed since ancient times. However, the total runoff of surface waters formed within the basin p. Kashkadarya is clearly insufficient and varies from 600 million m^3 to 1.9 billion m^3 per year, and taking into account temporary watercourses, it is only 1.18 billion m m^3. The shortage of water resources in the oasis is covered by water intake from the Zeravshan River through the Eski Ankhor canal, and from the Amu Darya River through the Karshi main canal.

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