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# IMPLEMENTATION OF WATER RESOURCES MANAGEMENT IN THE FERGANA VALLEY.

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**Abstract.** The article pays special attention to the reforms implemented in the post-independence period in the Fergana Valley to protect water resources, improve water management and irrigation infrastructure, and use water resources efficiently and rationally.

**Keywords.** water management, irrigation system, land reclamation and irrigation, modernization, water resources, water facilities, modern technology, reform.

## I. Introduction.

The Fergana Valley has long been a fertile oasis, known as the "Golden Valley" for its favorable natural and climatic conditions and fertile land. The valley is the most densely populated region in Uzbekistan and Central Asia (6.8 million people): Andijan region is 10 times more densely populated than the national average. 907,000 hectares of irrigated land is the main source of income for the rural population of 4.5 million people. One person living in a village has 0.19 hectares of irrigated land. In the country, this figure is 0.27 hectares. However, the production of cotton and wheat per hectare is 1.3-1.5 times higher than the national average.

The diversity of the irrigation system in the valley is a distinctive feature of this area. Many large and small systems cross the connecting channels. With their help, the low-water systems of Naryn, Karadarya and Syrdarya will be supplied with water. The efficiency of the irrigation network is low: more than 57% of main and inter-farm canals and almost (90%) of all inter-farm water networks are self-sufficient and in need of reconstruction, repair and maintenance. Since 1994, changes in the operation of the Toktogul Reservoir have led to a sharp decline in water output for summer irrigation and an increase in winter water output. According to the Ministry of Agriculture and Water Resources of Uzbekistan (2005), the summer water shortage in Namangan region alone is 0.9 km. In a year when water is moderate, water shortages range from 57-61% (June-August) to 85% (September). The flow of the Naryn River in the autumn-winter period is 2 times higher than the natural index, and in the summer it is 1.9 times lower. Lack of balance in water supply affects the use of canals and structures, causing them to constantly operate in extreme conditions. This leads to their early dismissal. Especially in the summer, guaranteed access to the Northern Fergana Canal (NFC), the Big Namangan Canal (KNK), the Big Fergana Canal (KFK) and the Akhunboboev Canal will be problematic. The total area that will experience such a problem with water supply during the growing season is 200,000 hectares.

Due to the low water supply, grain yield will drop to 0.04-0.06 tons per hectare, and cotton to 0.07-0.1 tons per hectare. The incomes of farmers and ranchers are also declining, and orchards and vineyards are drying up. Failure to meet the raw material needs of the food processing industry as well as the food processing industry will lead to serious socio-economic tensions. However, the existing economic problems in the country relatively limit the state’s ability to rehabilitate outdated and costly financial irrigation and drainage infrastructure.

According to the Syrdarya Basin Water Management Association (2001), the average annual demand for operation and maintenance of the basin is $ 1.4 million. Reconstruction of the Greater Fergana Canal alone will cost $ 21.6 million. However, in the Fergana Valley there are about ten such canals. In order to stabilize the situation, the government is taking urgent engineering measures to increase the level of water supply in Namangan region.

The discharge of groundwater and the processes of swamping, salinization and flooding of soils associated with the same water are another serious problem for irrigated crops on the right bank of the Syrdarya and in the central part of the valley. The main reasons for this are the high water loss due to infiltration in the highlands (especially in the Burgundy district of the Kyrgyz Republic and the foothills of the Fergana Valley) and the incompatibility of existing infrastructure and facilities. Agricultural lands become unusable in agriculture due to regular flooding, and farm and residential buildings are damaged. The situation is particularly bad in Rishtan, Baghdad and Altiariq districts. In these areas, groundwater rises to the surface during the growing season.

All this has led to some pollution of fresh groundwater and the destruction of the water reservoir in the lower reaches of the Sokh River, where the water comes from. The level of negative impact of the Sokh River on the central part of the groundwater freshwater area is increasing. There is an increase in total mineralization and water hardening. The loss of some of the remaining water resources will also limit the region's 1.5 million people from accessing high-quality drinking water. In addition, due to population growth, the Sokh deposit will increase the need for groundwater for fresh water by 1.5-1.6 times.

According to the Resolution of the President of the Republic of Uzbekistan Sh. Mirziyoyev dated 16.09.2017 No PP-3282 with the participation of the World Bank "Water resources management in the Fergana Valley. Measures have been taken to implement the "Phase 2" project. The strategic goal of the project is to improve water supply and water use in three districts of the Fergana Valley, to develop technically sound and cost-effective solutions for the protection of groundwater deposits in the lower reaches of the Sokh field.

Karkidon Reservoir is a tributary of the Quvasoy River, located 4 km south of the village of Talmozor in the Quva district of Fergana province and 8 km south of the city of Quvasoy on the banks of the Quvasoy River. According to the method of feeding, the source of nutrition is water from the Kuvasay River and from the Koradarya via the South Fergana Canal. Seasonal adjustment of water flow The main task is to provide irrigation water to crops. In terms of seismicity, the reservoir area is included in the seismic zone of 8 points according to the project. All facilities are Class 1. The reservoir was built in 1962-67 and commissioned on December 23, 1968. The book value of the reservoir is 1,552.3 thousand soums (as of 2000).

The climatic conditions of the area where the reservoir dam is located are temperate continental. Winters are cold, summers are hot, nights are much cooler, and days are hot. The average annual rainfall is 175 mm. The average annual air temperature is + 13 ° C. The air temperature in summer is + 42 °, in winter -10 ° C (January), the average perennial evaporation from the surface of the reservoir is 1480 mm per year. Freezing period: early freezing in December, late January, melting of ice in February, late March. According to the observations, the height of the wave is 40 cm, and the duration of the muddy cover of the dead volume of the reservoir is set at 150 years in the project. The project defines the area to be irrigated by the reservoir as 112.0 thousand hectares. Water discharge should not exceed 10 cm / day up to 610.0 m and 42 cm / day below 610 m.

The lithological structure of the rocks consists mainly of healthy soil, sandy loam, pebbles, rocks, conglomerate-gravel layer. The shores of the Quvasoy Valley consist of a conglomerate layer of rock, gravel as a filler, fine-grained soil, gypsum, clay as conglomerate cement, and sometimes a layer

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of carbonate salt with a thickness of more than 35 meters. The conglomerates on board are located under gravel of varying depths. Depth 1 m on steep peaks, 3-9 m on small peaks. The conglomerate is spread in a layer with an alluvial siprol on the modern and plinth terrace below the dam, which contains a mixture of gravel, sand and sandstone. The thickness of the proluvial-alluvial layer is 12-17 m. The thickness of the conglomerate layer is several hundred meters. According to the granulametric composition, 40% of the layer and 60% of gravel deposits. Groundwater in the Tugan basin lies at a depth of 16.4 m in the upper basin and 11.7 m in the lower basin. Groundwater is as fresh as Quvasoy water and has a weak sulphate effect on concrete. The filtration coefficient of dam-based soils is Kf = 1.32 m / day, that of coastal soils is Kf = 1.47 m / day, the filtration coefficient of healthy soil-supes - fine-grained sand layer is Kf = 0.7 m / day, and that of conglomerate layer is Kf = 0 , 89-1.98 m / day; the filtration coefficient of healthy soil Kf = 0.66-1.4 m / day.

The Rhinoceros Reservoir consists of 2 dams: high pressure, low pressure, drainage and drainage facilities. - Dam. The body of the high-pressure dam blocks the local soil gravel-sandy grdit Quvasoy valley. The screen is built of healthy soil. The upper slope is covered with 20 cm thick monolithic reinforced concrete. Under the cover there is a 10 cm thick concrete pavement. The coating was extended to 2.0 m below the useless volume level and bounded by teeth. Screen thickness: top t1 = 6m; lower part t2 = 25m. To extend the path of leaving a hole to release the filtration pressure in the upper slope cover, concrete aprons were made on the high-pressure slope side of the reservoir banks, which were placed inside the dam, 10 m thick at the bottom of the screen. The berms are installed every 10 m of dam height. The highest berm dam was built 15 m below the top mark. The lower dam structure is constructed similar to a high pressure dam construction. It is built on the ridge of a mountain in the form of a dam. The maximum height of the dam is 71m, the height of the low pressure dam is 30m. The length of the dam is 420 and 210m. Dam mark ▼ TU630.0 m. The width of the upper part of the dam is bt = 10 m. The maximum width of the dam bottom is 520 m and 155 m. The width of the berms is 2.0 m in the upper bay and 4.0 m in the lower bay, the slope coefficients are m1 = 2.5-4.0; m2 = 2.5-3.0. The water pressure is N1 = 64.15 m and N1 = 14.0 m. 17.0m Water outlet. The drainage consists of a metal pipe located in the body of the dam. The diameter of the pipe is D = 244cm. The wall thickness is 12 mm. The pipe operates in pressure mode. The length of the pipeline is 330m. At the end of the drain, the pipe is divided into 2 networks. The diameter of each network is from 2.2 m. The steam generator is equipped with 3 sets of nozzles.

In short, the main cause of the various problems that exist today is water. Therefore, it is necessary to study the existing water consumers 'associations, increase their responsibility for each irrigation network, create associations of water consumers' associations for each inter-district canals and ensure their participation in water management through these canals - rational management of water resources in their territories, water efficiency allows After all, in our country, it is our duty to protect every drop of water like the apple of an eye.

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