

## THE IRRIGATION AND MELIORATION SYSTEMS IN BUKHARA: PROBLEMS AND OUTCOMES

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**Abstract.** In this article, the problems of irrigation and melioration systems in the Bukhara region of 50-60 years of the last century, the measures to prevent them, the measures to reconstruct, repair, salinity and waterlogging of irrigation systems, the historical experience of the construction of collectibles, ditches, drainage systems are revealed based on the archive materials.

**Keywords:** irrigation, land reclamation, collector, ditches, drainage, system, project, land fund, new land, mechanization

**Introduction.** In the early years when Soviet power was established, the irrigation systems of Central Asia were in a deplorable state. The Soviets did not have enough means and machinery to improve the situation. Because the problems of the Second World War, which caused the elimination of the complications of the first World War, the end of the aggression of European countries, as well as the increased risk of rapid outbreak, attracted their attention. The victory in the Second World War inspired the leadership of the USSR and the people. Large-scale projects for the development of each sphere and network are developed and applied to practice by the Soviet government. In particular, the development of the agricultural sector took one of the leading places in this regard. The natural – climatic conditions of the republics of Central Asia indicate that there is a great opportunity to use the land. But, due to the water problem, the existing land fund was coming without productive use. It remains only to say that in the region there were many lands virgin suitable for planting, unused.

**Methods.** On August 26, 1950, the Council of Ministers of Uzbekistan and the CPSU adopted the resolution №1579 “On the transition to a new irrigation system and the development of Agriculture for the purpose of more productive use of irrigated lands[1, 96].

Undoubtedly, the decision also took into account the existing water problem in the Bukhara region, including the Uzbekistan SSR. The decision instructed the reconstruction of irrigation systems and the transition to new irrigation systems. After the Second World War, the Bukhara region became a major irrigation and melioration construction site. A large number of irrigation channels, a reservoir and a collector-drainage network were built. The construction of the Kamikasaba canal, Mirzamumin, North, West, South, North-Buxoro collector, Kattakurgan reservoir was completed, a water reservoir was built. The measures taken served to improve the water supply in the Bukhara region. In particular, it has been stipulated to improve the melioration condition of the landfon and to reclaim new land for 20 thousand hectares. However, the water reserve has to be created on account of the flow management of the Zarafshan River. But, in the impact of increasing water consumption in the high flow of the river, steam did not give the expected result for Bukhara region.

In the resolution adopted by the Soviet of Ministers of the USSR and the VKP(B) of Uzbekistan, all the regions of the Republic were assigned the task of multiplying crop areas. In particular, the Bukhara region should have new irrigation system transferred to lands a in 1950 to 25 thousand, in 1951 to 70 thousand, in 1952 to 49 thousand, in 1953 to 41 thousand hectares[2, 96].

In order to ensure the implementation of this decision, the oblast has developed a practical plan of major programs. In connection with the transition to a new irrigation system, chunanchi noted that in the region there were lots that were being watered and planned for new irrigation. Improve the melioration condition of crop areas, the new appropriation plan lands planes project documentation.

For example, in 1955, a map of irrigation for 3,7 thousand hectares will be developed, in 1951-1955 reconstruction works will be carried out in irrigation and melioration networks providing water to 10,000 hectares of land in Zarafshan irrigation system[3, 29].

The regional leadership promoted the essence of the decisions coming from above with a fierce enthusiasm among the general public. Great achievements were obtained in the field and work began intensively. The main attention was paid to Coordination of activities of related and official organizations. Initially, it was necessary to clear the essay of irrigation and melioration, timely completion of the washing of land saline. In connection with the transition to a new irrigation system, 18 million rubles were allocated for irrigation and melioration systems. It was determined that the cost-effective irrigation systems will increase the coefficient of profitable work, the construction of hydrothentic essays, purification of irrigation systems with the help of irrigation systems via mechanization[4, 96].

However, since the 1990s in Central Asia, there has been a widespread decrease in the productivity of irrigated land from 1.5 to 2.0 times compared to 1980-1985. The reasons for this lie in:

deterioration of the material base and potential of farms;

inconsistency of prices for agricultural products with prices for production resources, especially fuel and agricultural machinery;

weak infrastructure and financial system;

deterioration of the reclamation condition of irrigated lands due to the complete or partial refusal of the state to participate in the operation of systems and the inability of farmers to maintain it, as a result of which there was a partial loss of operability of irrigation and drainage systems, especially on-farm.

The process of deterioration of the reclamation condition of irrigated lands was affected by the violation of the requirements of the irrigation wash regime and the irrational use of a limited water resource on

It was aimed that the tasks set for 1950-1955 years will serve to improve the water supply in the region. After all, the need for water should have been met with great financial resources, modern techniques and a scientific approach. When analyzing the figures on irrigation-melioration, it can be seen the opposite. It is worth noting that despite the fact that the water supply in the region has improved, the increase in the volume of crop areas has led to an increase in water consumption. For example, in 1950 year the oblast Land Fund increased from 19,200 ha to 24.000 hectares[5, 296].

The situation was alarming and errors and omissions were considered by the relevant departments. The analysis showed that there were no specialists with sufficient qualifications to carry out work in the field of oblast irrigation and melioration, irrigation systems were not cleaned on time, and basically the lack of access to water, etc., was a hindrance. This is due to the fact that water resources were wasted by the agricultural authorities, cotton fields were irrigated 1,2 times in the case of 20 June due to the lack of rational use of water. From 10 may to 20 July 1950, the Bukhara region received 4852,8 m<sup>3</sup>/sec of water per day, which is 43,1 percent. Compared to the same period last year, the region received 7887,5 m<sup>3</sup>/sec water per day or 67 percent of the planned [6, 16].

The plans for the transition to a new irrigation system have yielded positive results on steam compared to a number of other regions of the Uzbekistan SSR. Bukhara region completed 63 percent of the tasks assigned to the transition to new irrigation systems [7, 17].

On January 31, 1951, a regular meeting of the Council of people's Deputies of the Bukhara region was organized. The meeting was dedicated to the execution of resolution 1816 of the Council of Ministers of the CPSU and the USSR of Uzbekistan [8, 36]. The results achieved in the last year (63%) could be seen absolute reflection in this year. In particular, the district executive authorities, the oblast cotton department, water farms and local government agencies were cold-blooded on the tasks set by pratia and the government. As a result, the measures for the transition to new irrigation systems were not completed on time. The project estimate documentation for the optimization of irrigated land areas was not developed in its own way.

Construction tasks were done several times less than in the plan. As a result, the volume of land prepared until the end of 1950 year and the crop season 1951 year was not satisfactory. In the case of 31 January 1951 year, instead of 48,200 hectares of irrigated land in the plan, 9455 hectares have been optimized, which makes only the 19,4 percent of the plan [9, 37].

Transition to new irrigation systems jaryonida the issue of optimization of the Republic's crop areas was prioritized. Only 2.2 percent of the Lands of Bukhara Fund was vomiting in official documents watering the land. And optimizing it was a difficult task. The reason is that lots of watered alohid-separated into separate parts-are formed from regions convenient for water, and natural-Ki its generalization requires a long time and a lot of Labor. This situation can also be observed at the level of implementation of the rayonlarda plan. In the region situation among the districts of the region was sad. The plan to optimize the irrigated land areas in the district was implemented at a rate of 12% (650 hectares). The fulfillment of the targets met by Sverdlov district -13,3 percent, Qarakul – 12,4 percent, Shafrikan-13,5 percent fulfilled [1, 37].

The Brigades formed by the district executive branch were engaged in the useless activities. The brigade was not attracted by specialists who did not have enough capacity and qualifications. As a result, part of the projects were made without quality, without taking into account technical requirements. These projects do not necessarily meet the requirements established by the USSR Council of Ministers in the resolution of August 17, 1950. For example, 12 of the 32 projects, which developed a landfill zone, designed to reconstruct irrigation systems, were prepared without quality. The size of the work in the project is not determined, the problem of mulberry planting is not specified. Total in the region: 278 out of 155 collective farms project documents were approved by the district executive. This is 23016 hectares in the region, equal to 47,8 percent of the plan [1, 78].

The decision to switch to new irrigation systems clearly demonstrated the existing water problem in the Bukhara region. Irrigation systems had become almost unusable. For example, such structures as Kharkhur, Duoba, Mokhonkul, which existed on the Zarafshan River, were in a state of emergency. These facilities required immediate transportation and manpower. Warn the leadership of the Bukhara region of the Ministry of water resources of the Republic that otherwise the amount of precipitation in 1951 would be several times higher than the norm, eventually the rise in water levels of the river would incur a great loss of water inclusions [1, 83] . The above example shows that even in the years when there is plenty of water, there is no possibility of equal and stable taqsimlash of water to the crop areas of the region. Cleaning of waterways, collectibles and ditch networks is not at the required level. According to the data in the case of 20 January 1953 year, palan according to the region was fulfilled by 52 percent. According to the plan, only 6.5 thousand people participated in this work, with the participation of 30 thousand people every day. Excavator park and other land

excavation works were carried out in the cleaning of the kolkhozlararo collector network [2, 30]. Despite this, the scope of measures aimed at improving water supply has been systematically improved.

On April 12, 1952, the obkom party adopted a resolution “On measures to further increase the cultivation of cotton production in Bukhara”. In it, the task was to improve the melioration condition of the lands to be irrigated in the region, to increase the yield of cotton to 22 centners in the next 2-3 years on the basis of the introduction of irrigation and Exchange planting. The main part of the tasks set out was related to the issue of water supply. The Oblast agricultural and agricultural organizations will attract a total of 15 horsepower: more than 3200 tractors, 69 excavators and many other types of land excavation and leveling mines machinery for water supply, land reclamation, land reclamation and land reclamation plans [2, 33].

In the future, it was planned to build a central Bukhara collector, to extract the South-Bukhara dump ground water from the Karakul Oasis, and to build modern engineering facilities in the Mokhonkul. In 1954-1955 it was decided to complete the construction of a water reservoir for the collection and drainage networks 8.5 mln<sup>3</sup>, 300 units of water intake from the Zarafshan River, as well as the construction of a water reservoir [2, 33]. Although large-scale activities aimed at water supply of Zarafshan Oasis yielded its results, there was a lot of work to be done in the area. In particular, the unification of water intake channels from Zarafshan darayos and the construction of gateways in them; carrying out reconstruction work in the Vabkent, fur and Khayrabad water facilities; on the Left Bank of the Zarafshan River in the Southern Ditch zone of Bukhara, on the Right Bank of the Zarafshan River in the Northern Ditch zone of Bukhara, the Karakul Delta; Such requirements as the construction of the torabad water pipeline on the Zarafshan River are reflected.

At the beginning of the 50-ies of the 20<sup>th</sup> century, measures aimed at the development of the oblast irrigation and melioration systems contributed little to the improvement of water supply later. But, in accordance with the complete elimination of the problem was not divided. The hydrotechnical facilities were built, cleaned and put under control. But the volume of water coming to the region above decreases from year to year.

On June 3, 1954 the Soviet of Ministers of the USSR adopted the resolution “On the distribution of water between Samarkand and Bukhara regions”. The decision required serious attention from both leaders of the region to the issue of water distribution:

-Meet the need for large-scale water supply from Kattakurgan in case of reduction in the volume of water coming to the Bukhara region;

- From August 1954, the Bukhara region will be transferred to the use of the waters of the Tudakul and the Quyimazar;

- Mighty workforce with a view to providing 24-hour service to the dambslocated on the Narpay channel and VS to attract specialists [2, 173];

The accident was observed as Narpay canal was given a large volume of water without taking into account the water transfer ability of the mite. In order to prevent such accidents from repeating again, a special trust was placed on the damgba in the above decision.

Despite the difficulties, in the late 50-ies, somewhat positive results were achieved in the field of irrigation. In 1959, the 53328 hectares of lands irrigated to the region were transferred to the new irrigation system. In 1649 hectares irrigation-melioration works were carried out, of which 1223 virgin lands, 87512 tree seedlings were planted in accordance with the plan of new irrigation systems in the same year [6, 75].

In connection with the transition to new irrigation systems, water evaporation decreased, land salinity and swampiness were prevented, as well as irrigated lands were optimized. As a result of the optimization, the region of the region was merged into large plots with an irregular land fund from 5 to 25 hectares. In the conditions of generalization of the irrigation card, there was an opportunity to use the existing techniques efficiently and to develop irrigation farming. The development of irrigation systems led to the improvement of the melioration condition of crop areas. In order to prevent salinity and waterlogging of the lower Zarafon Oasis, large collages were commissioned: Central Alat 16 km long Alat rayononida, Northern Bukhara 28 km long Gijduvan rayon, Nakib 20 km long Romitan rayon, Kattazaur 16,5 km long Kyzyltepa rayon, Khargush 23 km long Galaasiya rayon and others [9, 52].

To create in almost all regions of the development of artificial drainage the drainage of the territory that meets the requirements of reclamation of saline lands. The drainage of the territory in individual regions varied from 2.5-3.0 to 6-7 thousand m<sup>3</sup>/ha per year, which made it possible to manage the water-salt regimes of soils and achieve a reclamation and economic effect. With a normal level of operation of drainage systems and compliance with the requirements of the irrigation flush regime, a negative water-salt balance of irrigated territories is formed. The highest effect is observed in the zones of development of perfect drainage types, such as Ferghana, Vakhsh, Chui valleys, Bukhara oasis. In these areas, over several years of operation of drainage systems with a flushing irrigation regime, soil desalination of the aeration and desalination zones of groundwater has been achieved;

**Results.** By the end of the 50-ies, positive changes in the field of oblast irrigation and melioration began to be noticeable. However, there was no opportunity to provide the need for water to grow steadily. If irrigation systems could not withstand high water pressure in the spring, they could not afford to get the required water from the river in the fall. At the top of the water bodies in this case stands out direktiv assignments, which indicated the saving of water and more productive foyadalanish. In particular, each collective farm and farm is assigned to take measures of the use of domestic water resources during the period of vegetation.

**Discussion.** It emphasizes the use of water collected in the existing collections and swamps with the help of pumps for irrigation of fields [1, 151]. The above examples show that the problem of water in the region still remains urgent. Since the elimination of the water malassal, it became known to all that it was practically impossible to implement the plans set by the Soviet government. The government of the Republic was able to draw the attention of the leadership of the USSR to the situation in the Bukhara region.

**Conclusion.** In 1958, in order to radically improve the water supply of Zarafshan valley to the Bukhara region, the implementation of the projects for the removal of the Amudarya water to the Bukhara region was launched [9, 15]. After all, the Amu-Karakul, Amu-Bukhara (first and second turns) channels began to make a great contribution to the irrigation of crop areas of the Bukhara region of the Amudarya water. Many years of dreams-desires were fulfilled. The Bukhara region water

supply was shifted to the irrigation system in Amudarya by one hundred percent in 1975 year. In its place, the problems were solved positively and began to make a worthy contribution to the development of agricultural sectors.

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