

LEVEL OF STUDY OF THE LANDSCAPE AND ECOLOGICAL CONDITIONS OF THE AREAS OF INFLUENCE OF RESERVOIRS

Annotation. Anthropogenic water structures are an important factor in the formation, transformation and emergence of new types of natural landscapes. Reservoirs are one of the water structures that have the greatest impact on changes in natural landscapes on a local and regional scale, and the study of their impact on the natural environment is one of the most pressing issues in natural geography, especially landscape science.

Аннотация. Антропогенные водные структуры являются важным фактором формирования, трансформации и возникновения новых типов природных ландшафтов. Водоемы являются одними из водных сооружений, оказывающих наибольшее влияние на изменение природных ландшафтов в местном и региональном масштабе, а изучение их воздействия на природную среду является одним из наиболее актуальных вопросов естественной географии, особенно ландшафтоведения.

Key words: landscape, reservoir, dam, hydraulic engineering, hydroelectric power station, reconstruction.

Ключевые слова: ландшафт, водохранилище, плотина, гидротехника, гидроэлектростанция, реконструкция.

Large water structures (reservoirs, canals, dams, etc.) have been built on Earth since ancient times, their impact on the landscape and

environmental conditions is different, they were one of the main factors in the development of the economic and social conditions of different regions and countries.

An important issue is the study of the geography of hydraulic structures, their distribution in space and time, all processes and events associated with their activities, the definition, analysis and assessment of their characteristics with the geographical environment, the determination of their practical and scientific nature. meaning.

Reservoirs have been built in many regions of the globe, mainly to make full use of the water and energy resources of rivers. The construction of reservoirs began very early: Ancient Egypt (3000 BC), Babylon (2500 BC), Iran (600 BC), small reservoirs - ponds in the countries of Central Asia 3 BC. - was built in the 5th century and the beginning of the new era.

In the Middle Ages (500-1500 AD), large and small reservoirs were built in different regions of the world (South Asia, Central Asia, China, Central and South America). In Europe, they were created much later and mainly to manage river beds and water regimes. In most cases they were used to generate mechanical energy. In Europe, the construction of reservoirs is also associated with the development of river water transport (England, Germany, Russia).

The construction and use of reservoirs became widespread in the 20th century and rose to a planetary level. This was due mainly to the economic and social nature of their use. On the one hand, reservoirs are one of the factors of economic development (the population's need for water, energy sources, agriculture, transport), on the other hand, they have become one of the landscape-ecological factors and have had a negative impact on nature (swamping, salinization, flooding large areas,

diseases, changes in flora and fauna). This is due to geography, water content, area and shape of reservoirs.

The construction of reservoirs and the management of river flow radically change its natural hydrological regime and, as a result, affect the flow of other natural phenomena and create different conditions. These changes may be different in upstream and downstream water uses, and can be completely different in areas controlled by water management, i.e. in areas where river flow is used. Reservoir areas affecting the environment can be identified as follows:

- Reservoir and surrounding areas;
- The lower reaches and delta of the river are exposed to water, runoff, their chemical and biological properties are controlled by the reservoir;
- Valley area, which uses water taken from the river and returns it to it;
- The area is irrigated by river water;

The degree and direction of environmental changes in the upper part of a reservoir are influenced, first of all, by its size, shape, morphology of the reservoir, the rocks that form its bottom and banks, the operating mode of the reservoir and the climatic conditions of the region. , shows. The natural regime of river flow is regulated and changes over many years, seasonally and even within a day, reducing the amount of water flowing from the river bed, adding water from its tributaries, as well as the physiographic characteristics of the river valley. The change will affect the bottom of the tank.

One of the largest reservoirs in the world is the Owen Falls Reservoir (Victoria), built on the Nile River in the state of Victoria, located in Kenya, Tanzania and Uganda. It has a water volume of 205 km³ (including Lake Victoria) and is designed to regulate the flow of the Nile River. More than 130 very large reservoirs have been built in

Europe, Asia, Africa, North and South America, Australia and Oceania. The Daniel Johnson Reservoir in Canada (water volume 142 km³), Bratsk in the Russian Federation (169 km³) are examples and are considered the largest reservoirs in the world.

In Central Asia, reservoirs were built mainly to irrigate crops and improve energy and water supplies. There are 75 reservoirs in the region, their total volume is about 50 billion cubic meters. According to archaeological data, among the large reservoirs built in the Middle Ages (XVI century), Abdulla Khanbandi, built near the village of Okchob, Samarkand region, Gishband (XII century), built on the Omondara stream flowing from the Zeravshan ridge, the dams of some reservoirs have survived to this day, one of them is the Sultanband reservoir in Osmonsoy (volume 65 million m³). By the second half of the 19th century, the Russian Empire paid special attention to the repair of irrigation stations and the construction of new ones for more efficient use of the lands of Central Asia. For these purposes, in Central Asia in 1910-1911, the Murgob and Iolatan reservoirs were built in the valley of the Murgob River in the territory of the neighboring Republic of Turkmenistan.

The 20th century also required the development of new lands and the application of new methods of their use. In this regard, the development of agriculture throughout the world, including Russia, especially in its southern parts, and the republics of Central Asia, is represented primarily by the development of extensive forms. That is, plantations are established over very large areas, and rainfed and irrigated agriculture is developed on them. The main branch of agriculture in Central Asia is cotton growing, and in all countries located here, cotton growing occupies the main sown areas. This, of course, has

a great impact on the development of new irrigation networks. As a result of the development of cotton growing in Central Asia in the second half of the 20th century, the development of irrigated agriculture over large areas required a large amount of water resources. Therefore, much attention is paid to new irrigation structures, canals and reservoirs, and their construction in this region.

The area of irrigated land in Uzbekistan increased significantly in the 20th century (1809.5 thousand hectares in 1914; 4238.6 thousand hectares in 2014). In subsequent decades, much attention was paid to irrigation and reclamation work. The area of irrigated arable land per capita decreased from year to year as a result of the growth rate of the republic's population exceeding the rate of expansion of irrigated land. Land Code of the Republic of Uzbekistan (April 1998, from July 1, 1998) in order to create conditions for the rational use of land, their protection, restoration of soil fertility, preservation and improvement of the natural environment, development of all forms of economic activity. management on the basis of equality is carried out) is regulated. To this end, it has long been known that the construction of reservoirs on large rivers and canals is one of the most important issues.

In the second half of the 20th century, reservoirs were built on almost all major rivers of Central Asia, and many hydraulic structures were built and are being built. The largest of them are the Tokhtagul reservoir in the Syrdarya basin, the hydrotechnical system of the Fergana Canal, the Chordara reservoir, the Tollymarjon and Tuyamoyin reservoirs in the Amudarya basin. A number of reservoirs have been designed and built, and new ones are still under construction. is being built in the region. This can be clearly seen from the table below (Table 1).

Table 1

The largest reservoirs of water in Central Asia

Reservoirs	River	Quantitative indicators		
		Water capacity, mln m ³	Area, km ²	Average depth m
Toxtagul	Norin	19500	284,0	68,7
Rogun	Vaxsh	12400	160,0	77,5
Norak	Vaxsh	10500	98,0	107,0
Tuyamoyin	Amudarya	7300	790,0	9,2
Chordara	Syrdarya	5700	900,0	7,9
Qayroqqum	Syrdarya	4200	513,0	8,2
Charvak	Chirchiq	2000	40,3	50,0
Andijan	Karadarya	1750	60,0	29,1
Tallimarjan	Amudarya	2530	77,4	19,8
Sardaba	South Mirzachol	922	58,7	17,2
Todakol	Zarafshan	875	225,0	3,8
Kattakorgan	Zarafshan	845	83,6	10,1
South Surkhan	Surkhandarya	800	65,0	12,3

In the second half of the twentieth century, many reservoirs of various sizes were built in Uzbekistan, which are mainly used to regulate the water regime of river waters and generate energy. Their construction and operation today are aimed at providing the population with drinking water, using water in agriculture and energy, and leading to the design and construction of new reservoirs.

In 2018-2019, President Sh.M. Mirziyoyev gave a number of clear instructions on measures to develop irrigation and improve the reclamation of irrigated lands, and 4,487 kilometers of irrigation system canals and 5,259

kilometers of irrigation networks were laid in our country. noting the need for reconstruction and construction of 3,636 hydraulic structures, 495 pumping stations and 1,500 vertical irrigation wells, as well as 7,500 kilometers of collector-drainage stations, 13 reclamation pumping stations and 185 vertical drainage wells.

Conclusion

As a result of reservoirs and their construction, it is observed that the landscape-ecological condition of many river valleys changes, the processes here have an impact not only within the direct influence of the reservoir, but also on the natural conditions tens or even hundreds of kilometers away from them. As a result of the construction and operation of reservoirs natural landscapes are changing, their new types, human-controlled hydrotechnical structures (dams, canals, dams, etc.), hydrogen landscapes associated with flooding, saline, swampy areas, natural-anthropogenic types of natural landscapes are observed

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