

**IMPORTANCE OF WATER FOR LIVING ORGANISMS AND NATIONAL ECONOMY, PHYSICAL AND CHEMICAL METHODS OF WASTEWATER TREATMENT**

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<b>ABSTRACT</b>	<b>KEYWORDS</b>
<p>Water erodes mountain systems made of hard rocks. When the water between the rocks freezes, it expands the cracks and cracks even the granite and basalts. Water slowly erodes the minerals contained in the rocks, dissolves them and carries them to the valleys. Nowadays, keeping water clean is one of the problems of serious concern to all mankind. What is the average amount of water needed for Uzbekistan per year? To answer this question, we will analyze the data on the use of water resources in various sectors of the economy in Uzbekistan</p>	<p>Most of the world's fresh water is stored in the Antarctic,. It is impossible to imagine the weather of a place without atmospheric waters, It should be noted that an average person consumes 58 kg of rice per year. It takes 550 liters of water to grow wheat to produce 400 grams of bread, 1,500 liters of water to produce 100 grams of meat in developing countries, and 7,000 liters in developed countries.</p>

**INTRODUCTION**

- Water is of inestimable importance for human society. Water is a complex mineral, found in nature in gas, liquid and solid (ice) states. As mentioned above, the water resources of the globe include oceans, seas, rivers and lakes, artificial water bodies, mountain and polar glaciers, underground. includes water, soil, atmosphere and water contained in living organisms.[2] The total area of the ocean and seas on the Earth is almost 2.5 times more than the surface of the land, that is, the world's ocean waters occupy ¾ of the globe, and its average its depth is 4000 meters.[1] River and lake waters occupy 3% of the land surface. Glaciers occupy an area equal to 11% of the land. 4% of the land surface is swamps and wetlands. The main part of the total water reserves of the globe, i.e. 94%, is accounted for by the World Ocean.

97.2% of the total water on our planet is salty, and 2.8% is freshwater. The largest amount of fresh water is collected in natural glaciers. Most of the world's fresh water is stored in the Antarctic, Arctic and Greenland ice sheets. Most of the fresh water resources are accounted for by river waters. This water is one of the most suitable for human use.[4] Nowadays, the need for clean water in human development is increasing day by day very fast, because human economic activity cannot be imagined without clean water. Water is one of the main factors in creating the climate on the earth's surface, and water vapor is of particular importance [3].

- It is impossible to imagine the weather of a place without atmospheric waters. The amount of water vapor in the air depends on the latitude of the Earth's surface: water vapor is the most in the equatorial air, and the least in the polar regions. Also, depending on the seasons, the amount of water vapor in the atmosphere changes. Clouds contain a lot of moisture, some of them contain hundreds of tons of water[6]. These giant water masses move from one place on the surface of the earth to another, bringing moisture to the places, which also affects the air temperature of the place. 'secret shows[8]. Water has such a powerful force that the current relief of the Earth was formed as a result of such continuous activity of water, and this relief has changed and become more complicated in the future[5]. Water erodes mountain systems made of hard rocks. When the water between the rocks freezes, it expands the cracks and cracks even the granite and basalts. Water slowly erodes the minerals contained in the rocks, dissolves them and carries them to the valleys[7]. Nowadays, keeping water clean is one of the problems of serious concern to all mankind.

- The total area of the glaciers in the mountains of Central Asia is 9.5 times larger than the area of the Great Caucasus glaciers, and about 28 times larger than the Altai glaciers[9]. One of the largest mountain glaciers in the world is the Fedchenko glacier (the length of the glacier is 77.8 km, the width is 1500-3000 m, the area is 907 km<sup>2</sup>, thickness 700-1000 meters) fresh water reserve is equal to 250 billion m<sup>3</sup>. In the following years, underground water is used more and more for economic purposes. Groundwater is especially abundant in Russia, Kazakhstan and Central Asian republics[10].

- According to experts, after a few years, "black gold" will be neglected, and fresh water will take the leading place in the world market. 2.0 bln. more than 100,000 people live in conditions of lack of fresh water. By 2025, their number will be 3 billion. it is noted that 40% of the population of the planet may suffer from a lack of moisture [11].

- If the increase in the number of the population of the countries of the world is in the same picture, it is clear that the demand for water resources will increase year by year (Table 1). If we analyze the table, the main part of water use by continents falls on Asia[12].

Table 1.1 Dynamics of water use by continents (km<sup>3</sup>/y)

T.r.	Continents	1940 year	1970 year	2000 year
11	Asia	682	1417	2357
22	North America	221	555	705
23	Europe	96	325	463
34	Africa	49	124	235
55	South America	33	87	182
66	Australia and Oceania	7	20	33

- What is the average amount of water needed for Uzbekistan per year? To answer this question, we will analyze the data on the use of water resources in various sectors of the economy in Uzbekistan[13].  
 - According to the data in the table, on average, 67 km<sup>3</sup> of surface and underground water is used in Uzbekistan for various purposes per year. In 2007, in Uzbekistan, when rural and urban residents were taken together, per capita per day was 415 liters of drinking water[14].

- In order to determine the annual amount of water resources of Uzbekistan per capita, it is necessary to take into account the river flow generated in the area (Table 3)[15]. On average, 9,701 km<sup>3</sup> of water is produced in the territory of Uzbekistan per year, and 362 m<sup>3</sup> of water per person. This indicator is in other countries, for example

It was determined that it is equal to 609319 m<sup>3</sup> in Iceland, 316689 m<sup>3</sup> in Guyana, 292566 m<sup>3</sup> in Suriname, 30522 m<sup>3</sup> in Russia, 58 m<sup>3</sup> in the United Arab Emirates, 52 m<sup>3</sup> in the Gaza Strip, and 10 m<sup>3</sup> in Kuwait[16].

Table 1.2  
**Water use in the public sector**

Sectors of the national economy	cm <sup>3</sup>	%
Drinking water supply	4,054	6,0
Production	1,202	1,8
Water supply for agriculture	0,906	1,3
Irrigation	57,0	84,2
Energy	4,073	6,0
Fishing	0,368	0,5
Others	0,102	0,2
Total	67,705	100

- We can see how important water is in human life through the following simple examples. For example, in developing countries, 70-90% of fresh water reserves are used for irrigation of agricultural crops. 3000 l of water is required to grow every 1 kg of rice [17].

- It should be noted that an average person consumes 58 kg of rice per year. It takes 550 liters of water to grow wheat to produce 400 grams of bread, 1,500 liters of water to produce 100 grams of meat in developing countries, and 7,000 liters in developed countries[18].

Table 1.3 **Water resources of the Republic of Uzbekistan**

Basin and area	Q, m <sup>3</sup> /s	W, cm <sup>3</sup> / year
Surkhandarya basin (Surkhandarya region)	96,2	3,033
Kashkadarya basin (Kashkadarya region)	42,4	1,336
Zarafshan River Basin (Samarkand Region)	7,96	0,251
Total for the Amudarya basin	146,6	4,620
Fergana Valley (Andijan, Fergana, Namangan regions)	6,12	0,193
Rivers starting from the northern slopes of the Turkestan and Nurota mountain ranges (Jizzakh, Navoi regions)	4,49	0,142
Ohangaron river basin (Tashkent region)	38,5	1,214
CHirchik river basin (Tashkent region)	112,0	3,532
Total for the Syrdarya basin	161,1	5,081
Total for Uzbekistan	<b>307,5</b>	<b>9,701</b>

Despite the fact that water resources are limited on our planet, little attention is paid to its economical use and protection. As a result, most of the water is wasted. The majority of experts offer the following main options for the rational use of water resources[19]:

- 1. Economical use of water resources, that is, use of technologies that require less water in the production process;
- 2. Protection of water resources[20]. To do this, reduce the amount of wastewater and bring it to the end of the treatment process.
- The more we practice the effective use of water resources, the more we will reduce the risk of global problems that can be expected in the future. After all, water is the fundamental basis of living and production, healthy and beautiful life, as well as human development[21]
- In recent years, the pollution of internal water bodies, seas and oceans has been worrying humanity. Because the natural environment is also damaged due to water pollution[24]. Fish, various birds and animals, as well as plants, are affected in polluted waters. Water has a wonderful property of self-healing and cleaning. This feature is mainly due to the influence of solar radiation, mixing of polluted water with clean water mass and subsequent mineralization of organic substances and death of bacteria in polluted water.
- One of the factors of self-purification of water is the process that takes place primarily due to the activity of bacteria, fungi and algae. As a result of self-bacterial purification of water, 50% of bacteria remain in it after 24 hours, and 0.5% after 96 hours. This process slows down sharply in winter, that is, up to 20% of bacteria remain after 150 hours. To ensure self-cleaning of polluted waters, it is necessary to add several times more of them to clean water. If the water is too polluted, it cannot clean itself[22].
- Currently, internal water bodies, especially some rivers, are becoming so polluted that they cannot clean themselves naturally. Polluted river and lake waters are unfit not only for consumption, but also for household, living and industrial needs, causing people to fall ill with various diseases. The main causes of fresh water pollution are related to the rapid development of urbanization and industrial production. In large industrial enterprises and urban areas, polluted runoff is formed due to various mineral and organic substances dissolved in large quantities and present in the suspension, and this waters are usually discharged into rivers.
- Among the main sources of pollution of fresh water basins are industrial enterprises, wastewater from households, wastes from the production of ore and non-ore mineral resources. Waters released after use in mines and oil plants, waste water from railway transport, water flowing from urban areas and fields where fertilizers and toxic chemicals have been used, untreated water flowing from livestock farms and complexes, etc. [23].
- In particular, wastewater polluted by industry contains various acids, phenolic compounds, hydrogen sulfide, ammonia and other compounds, as well as various biogenic substances. Many polluted river and lake waters are unfit not only for consumption, but also for household and industrial needs. An example of this is the rivers of some countries in Western Europe. Water in these areas cannot be recycled without thorough cleaning. The Zarafshan River is the only water source that flows through the territory of Samarkand, Navoi and Bukhara regions. The concentration of large industrial enterprises in the river basin, the presence of more than 600,000 hectares of irrigated land, and the lack of improvement of the irrigation system cause a sharp decrease in the quality indicators of the river water. In particular, the presence of heavy metals in the waste water of the mountain beneficiation

plant of the Republic of Tajikistan in the headwaters of the river is 1.5 times more than the norm, which also affects water pollution. The level of river water pollution is increasing year by year.

- According to the experts' proposal, a number of concrete measures have been developed on the international scale and in our country in connection with the ecological health of the water of the Zarafshan River. They include:

- - to see the conditions for the establishment of a water protection zone on the river bank and its rapid implementation;

- - to stop the discharge of untreated wastewater from the mining and beneficiation plant into the river;

- - to control and drastically reduce all sewage discharged into the river, to improve sewage systems;

- - prevention of bacteriological pollution and solving a number of similar problems.

- Pesticides, herbicides, fungicides, insecticides used in agriculture in recent times fall into rivers, lakes and canals, and pass to aquatic organisms and through them to human organisms, causing bad consequences in some cases.

- Polluted running waters are divided into two groups: waters polluted with mineral and organic substances.

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