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Problems of Shortage of Drinking Water at the Present Stage

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ABSTRACT

This article deals with the problem of drinking water shortage at the present stage. The issues of lack of drinking water and the health problems associated with it have been studied. The article also analyzes the problem of shortage of drinking water and gives recommendations for their elimination.

INTRODUCTION

It is no secret that one of the dangers threatening modern civilization and humanity is an ecological catastrophe with its many components, including global climate change and a shortage of drinking water. At the present stage of human development, perhaps, the hottest problem is how to preserve nature and civilization, since no one knows when and in what form this or that catastrophe can occur.

At the present stage, the shortage of drinking water is felt all over the world. The problem of shortage of drinking water on Earth is becoming more and more urgent every year. Since the last decade of the 20th century, the problem of drinking water shortage has been considered as one of the global problems of our time, and as the population of our planet grew, the scale of water consumption and, accordingly, water scarcity increased significantly, which subsequently began to lead to deteriorating living conditions and slowed down the economic development of countries. lacking water resources.

Water is essential to improve the well-being of the world's peoples and ecosystems, to produce agricultural products, to generate electricity, and to improve human health. No one will deny that water is essential to life and access to it is becoming increasingly difficult, especially for the poor and communities who survive on the fringes of society with scarce resources and no political influence. However, it is very important to note that water crises occur in industrialized and developing societies in terms of the quality of water for human consumption (eg in Flint, Michigan, USA) and in terms of the amount of water (eg in Cape Town, South Africa).

It should be noted that along with the increase in the population of the planet, the process of production of industrial goods and agricultural products is increasing. As a result, there is a rapid

increase in fresh water consumption in all regions of the world, including in the territory of the Republic of Uzbekistan. The most deplorable thing is that used fresh water is returned by man to rivers as wastewater, and then ends up in the seas and oceans. The growth of sewage treatment plants today lags behind the norm of water consumption. The problem of drinking water on Earth is becoming more and more urgent every year. This problem is common to all mankind, because the movement of water masses does not know state borders. The global problem of fresh water is that there is no replenishment of water resources.

LITERARY RESEARCH

At the present stage, drinking water has become the most vulnerable part of nature and society. Waste water, pesticides, fertilizers, heavy metals and much more flow into rivers and lakes in large quantities. According to experts, the level of pollution of such rivers as the Danube, Volga, Rhine, Mississippi, Amudarya, Syrdarya, as well as the Great American Lakes exceed the maximum permissible standards. According to experts, in some regions of the world, about 80% of all diseases are caused by poor-quality drinking water. Considering that water intake facilities, water pipes, which, as a rule, receive water from open reservoirs, show in samples almost 30 percent of pollution both in terms of microbial and chemical state, which in turn directly affects the health of the population.

An analysis of the study of problems associated with the shortage of drinking water shows that for a long historical period in regions with natural fresh water reserves, a person fully satisfied his needs for water without feeling a lack of it. However, due to the intensive growth of the population and its industrial activities, the need for water has steadily increased. At present, it has reached such proportions that in many regions of the planet, and especially in developed industrial areas, there is an acute problem of shortage of drinking water. There is another problem: pollution from runoff and industrial emissions, fertilizer runoff from fields, and intrusion of salt water in coastal areas into aquifers due to groundwater pumping. This also significantly reduces the supply of drinking water. There is evidence that 1.5 billion people in the world do not have access to clean water.

At the IX World Water Forum (March 2022, Dakar) [1], the focus was on the following four priority tasks, which were considered relevant for both Africa and the rest of the world:

- ✓ security of water supply and sanitation;
- ✓ rational use of water resources in order to ensure the development of rural areas;
- ✓ cooperation;
- ✓ the use of appropriate tools and means, in particular the solution of issues of financing and management.

It has also been noted that water shortages, poor quality water or lack of sanitation facilities have a negative impact on food security, health, gender equality and the living conditions of the poor. Thus, according to the latest UN estimates, in 2020, 2 billion people still did not have access to drinking water at home. 771 million people had to travel at least half an hour from home to a place with safe water, and more than 100 million people around the world drink untreated and poor-quality water. Water is a vital resource that must be conserved. It is essential for food security, biodiversity, health and even the world. It is this vision that dominates many of the water management and access projects that France supports around the world, in particular in the African continent, a priority region for France in its International Water Supply and Sanitation Strategy 2020-2030 years.

In the materials of the 8th World Water Forum [2], UN experts noted that the world is on the verge of a water disaster. Along with this, it was stated that every tenth inhabitant of the Earth is experiencing an acute shortage of drinking water, and this is almost 884 million people.

According to UN experts, by 2050 the need for water will increase by 20%. Many countries have already reached the limits of water use. And in the near future, the problem of lack of water resources will turn into a political problem, UN experts point out. If nothing is done, then by 2030 almost 5 billion people (about 67% of the world's population) will remain without satisfactorily purified water. The lack of water in desert and semi-desert regions will cause intensive migration of the population. This is expected to affect between 24 million and 700 million people. In 2017, over 20 million people around the world fled their homes due to a shortage of drinking water. The main achievement of the World Water Council is its contribution to raising awareness of global water issues and political mobilization, which it has achieved through the World Water Forum. This water forum serves as stepping stones to global cooperation on water issues, the Forum is a unique platform where the water community and policy and decision makers from all regions of the world can come together, discuss and try to find solutions to achieve water security.

Water scarcity [3] is a growing concern in many parts of the world. Population growth, urbanization, increasing demand for irrigated agriculture and mismanagement of water resources are important contributors to water scarcity exacerbated by the impact of climate change, which is increasing the frequency and intensity of droughts. Today, about 2 billion people already live in areas with water scarcity. By 2025, half of the world's population is expected to be in this situation. Each 1°C rise in temperature caused by global warming is predicted to reduce renewable water resources by 20%. The scarcity of water resources has serious consequences for society and threatens the sustainability of development. For example, water scarcity can adversely affect the provision of water and sanitation services and affect human health. Insufficient safe drinking water can jeopardize adequate hygiene and increase the risk of diarrhoea. Water scarcity can also limit economic growth through reduced agricultural production, affect the environment and biodiversity by reducing the environmental flows needed for ecosystem viability, and lead to conflicts within and between countries and increased migration flows.

Markov V.V. and co-authors [4] believe that the importance of drinking water cannot be overestimated: the life and health of all inhabitants of the globe depend on its quality. The lack of drinking water can have a variety of health consequences for the population, from the deterioration of living conditions and the development of diseases, to dehydration and death. Polluted water may contain various pathogenic microorganisms that are capable of causing the most dangerous diseases. Based on the data of these authors, we can state that if there is not enough water and in case of pollution of water bodies, the following negative processes can begin in the human body:

- coronary heart disease, atherosclerosis, and diabetes mellitus caused by viscous "thick" blood, which is deprived of sufficient water;
- kidney disease;
- the process of bile thickening, which leads to the formation of sand and stones in the gallbladder, which irritates the liver;
- some metabolic products can linger in the bones, joints, which causes a crunch and severe pain (for example, pain with gout);
- the state of chronic dehydration threatens with osteochondrosis, arthritis, arthrosis, as well as problems with the spine;
- dehydration of the lens and impaired blood microcirculation in the vessels of the eyeball is the cause of cataracts, age-related farsightedness and even retinal detachment;
- allergies occur against the background of dehydration of the body, and lack of enzymes;

- bronchial asthma (you need to drink clean water, sputum liquefies and comes out).

The same authors in their studies cite facts related to the symptoms of dehydration of the human body, in particular, it is noted that they include dry skin, fatigue, poor concentration, headaches, increased pressure, poor kidney function, dry cough, back and joint pain. , high stress levels. If the body receives enough water, then the person becomes more energetic and resilient, digestion improves, the circulatory system improves, reducing the likelihood of a heart attack. • ingestion, through drinking water, of excessive amounts of fluoride compounds can cause fluorosis, which affects the teeth and bones;

- long-term exposure to arsenic can lead to cancer and skin lesions;
- in addition to iron deficiency, an important factor in the occurrence of anemia is a number of infectious diseases associated with non-compliance with the hygiene of drinking water and sanitation. Also, water-borne diseases are hepatitis A, diarrhea, typhoid fever, cholera.

According to the UN, almost 80% of diseases in developing countries, which kill almost 3 million people every year, are associated with poor water quality.

According to the WHO (World Health Organization) [5], almost 3 billion inhabitants of the planet use poor-quality drinking water. In this regard, approximately a quarter of the world's population is at risk of falling ill every year, approximately one in ten inhabitants of the planet is ill, and for this reason, about 4 million children and 18 million adults die every year. An important indicator is the balance of the mineral composition of water, an excess or deficiency of which can lead to the following serious consequences:

- ingestion, through drinking water, of excessive amounts of fluoride compounds can cause fluorosis, which affects the teeth and bones;
- long-term exposure to arsenic can lead to cancer and skin lesions;
- in addition to iron deficiency, an important factor in the occurrence of anemia is a number of infectious diseases associated with non-compliance with the hygiene of drinking water and sanitation. Also, water-borne diseases are hepatitis A, diarrhea, typhoid fever, cholera.

According to the UN, almost 80% of diseases in developing countries, which kill almost 3 million people every year, are associated with poor water quality.

As noted in the source http://www.circleofblue.org/2010/ [6] issues related to the problem of drinking water scarcity and public health are being discussed around the world, and many ideas have been proposed on how to prepare for a predicted shortage of drinking water resources. water in many countries if climate change continues at the same pace.

According to the source [7], the Arab-Israeli war of 1967 was largely connected with the growing demand for water in the Middle East. This problem is also relevant at the present stage. The Jordan River is controlled by Israel, and during dry periods Israel restricts the supply of water to the Palestinians. During the hot summer of 2016, some 2.8 million West Bank Arabs and local leaders repeatedly complained about the denial of access to fresh water. Israel accuses the Palestinians of not wanting to sit down to negotiate to decide how to upgrade outdated infrastructure. The Jordan River, which flows through Lebanon, Syria, Israel, the West Bank and Jordan, is at the center of one of several ongoing water-related interstate conflicts. It has been a source of tension between Israel and the Arab states for over 60 years.

In the materials of the source [8], it is noted that there is an opinion that the fall of the Gaddafi regime in Libya was due to the fact that large reserves of drinking water are concentrated in the Libyan Jamahiriya. Gaddafi wanted to implement a water project that could improve the water situation in North Africa, but during the launch of the water project, an intervention began in Libya. After the overthrow of Gaddafi in Libya, the water issue was not raised.

Based on the data of @Qoraxabar (December 2022) [9], with reference to the materials of the World Resources Institute (Economist Intelligence Unit), we can state that, according to forecasts, Uzbekistan is among the 33 countries that are expected to face the largest water shortage by 2040 year (Fig.1).

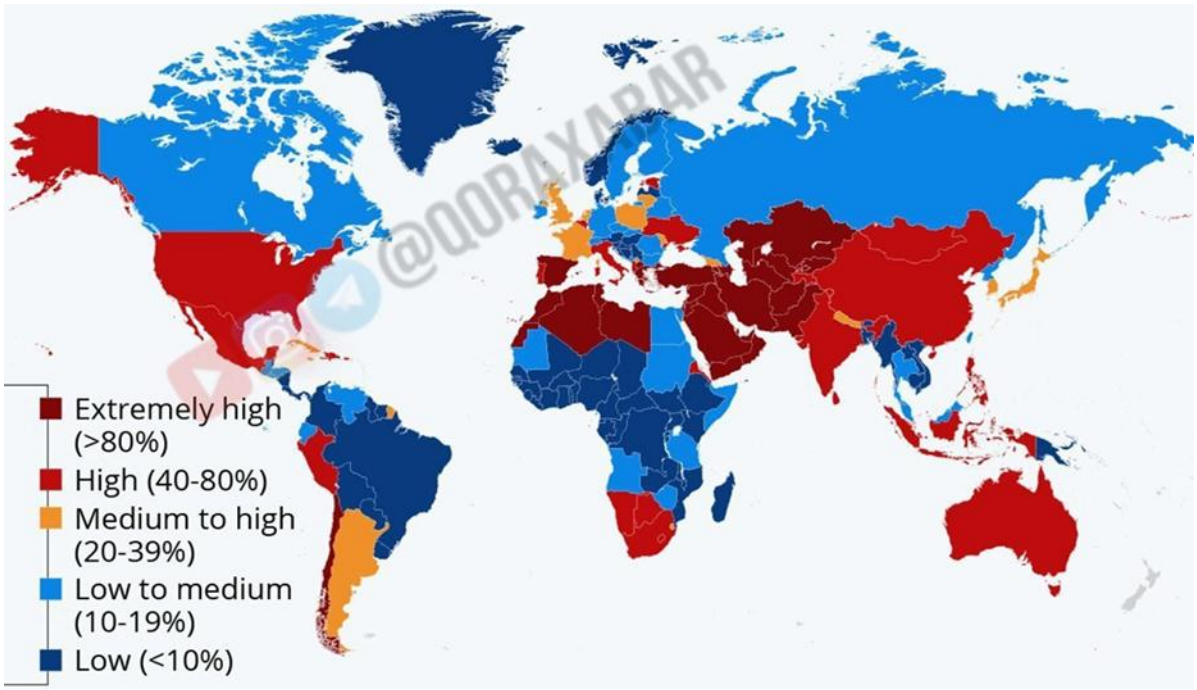

Figure 1. Illustration of growing water scarcity in countries around the world by 2040.

The increase in water scarcity in the countries of the world by 2040 is highlighted in different colors: dark red - countries with the greatest deficit (more than 80%), red - with high (40-80%), yellow - above average (20 -30%), blue -below average (10-19%), dark-low (less than 10%).

It should be noted that the main reason for the aggravation of the water problem of all mankind is urbanization. In order to adapt the Earth to their needs, humanity violates and pollutes the ecosystem, which leads to a worsening of the situation. Population growth also affects the problem, and it is in regions with the most unfavorable situation. The greenhouse effect also contributes - expanses of water evaporate without a trace from the surface of the planet. In addition, each person spends water thoughtlessly in much larger volumes than he needs.

According to experts, drinking water supplies are considered limited, and they are already coming to an end. According to data from the World Resources Institute in Washington, about a third of the world's population - about 2.6 billion people - live in countries with "severe water scarcity", and 1.7 billion people in 17 countries face "extreme water scarcity". About a dozen countries in the arid countries of the Middle East are experiencing a very acute shortage of drinking water, and in India, the process of shortage of drinking water has reached a critical level All this can lead to fraught consequences in all areas of the national economy - from economic development to the deterioration of the health of the country's population. Countries such as Pakistan, Botswana, Turkmenistan and Eritrea also experience extreme water scarcity.

METHODOLOGY

Scientists warn that over the past 50 years, the amount of fresh water on the planet has decreased by more than 60%. Today, more than 2 billion people live with limited drinking water, and the industry with the highest water consumption is only increasing its output. The problem of discharging raw sewage from enterprises is further complicated by the fact that fines for such violations are very low and environmental measures are expensive. Prospects for the rational reproduction of technological water consumption are associated with the creation of repetitive-

sequential, circulating and closed water supply systems at enterprises.

According to world statistics, in the whole world there is an excessive and unplanned consumption of drinking water. The main reasons for this are the rapid development of production and the growth of the world's population. The process of reducing unscheduled water consumption is no longer possible, since in this case it would be necessary to drastically reduce the production process for the production of material goods and would have to give up many of the benefits of civilization. Pollution factors also affect the shortage of fresh water, because the volume of water suitable for consumption is reduced. Therefore, more attention should be paid to maintaining the purity of water resources. In this regard, we can note that the life and health of all the inhabitants of the planet Earth depend on its quality.

The lack of drinking water can have negative consequences on the health of the population in various ways: from the deterioration of living conditions and the development of diseases, to dehydration and death of a person. Polluted water can contain pathogens that cause the most dangerous diseases. The possibility of dangerous infection began to be realized not only by specialists, but also by ordinary residents. This is evidenced by the increase in demand for purified bottled and bottled water around the world. People buy such water to ensure that dangerous pathogens do not enter the body.

Rivers have always been a source of fresh water. But in the modern era, they began to transport waste. Waste in the catchment area flows down the riverbeds into the seas and oceans. Most of the used river water is returned to rivers and reservoirs in the form of wastewater. So far, the growth of wastewater treatment plants has lagged behind the growth in water consumption. And at first glance, this is the root of evil. In fact, everything is much more serious. Even with the most advanced treatment, including biological treatment, all dissolved inorganic substances and up to 10% of organic pollutants remain in the treated wastewater. Such water can again become suitable for consumption only after repeated dilution with pure natural water. At the same time, attention should be paid to the fact that for a person the ratio of the absolute amount of wastewater, even if it is treated, and the water flow of rivers is important.

There is an undeniable axiom, according to which there is a close relationship between water quality and public health. Bacterial contamination of water increases under conditions of higher temperatures and is reflected in an increase in the number of gastrointestinal diseases in summer. As a rule, the number of cases of bacillary dysentery increases in summer. In this regard, all measures should be taken to raise the awareness of the local population about the health risks associated with climate change, and how to take independent preventive measures against diseases that are sensitive to climate change and lack of drinking water.

As you know, due to climate change in the territory of the Republic of Uzbekistan, there will be a process of an increase in the duration of the dry hot period, an increase in the number of days with temperatures above 40 ºC, a reduction in snow reserves in the mountains and degradation of glaciation, an increase in the frequency of climate dependent hazardous phenomena, such as mudflows, floods, drought and low water. According to experts, global warming will continue to contribute to an increase in the frequency of periods with droughts and high summer heat, a change in the mode of formation of water resources. Such extreme manifestations of climate variability can lead to increased water scarcity and increased risks associated with a lack of water in agricultural production and a lack of drinking water in the arid regions of Uzbekistan. All this can lead, along with a shortage of fresh water, to a decrease in crop production.

Purification is an important part of the drinking water conservation program. In many regions of the world, there is a shortage of safe water, free from infections and harmful substances. There are several ways to neutralize impurities. The traditional chemical method is gradually giving way to the physical one, when water is purified using membrane technologies. In Japan, where "auxiliary water" is used particularly effectively, rainwater is sterilized by ozonation. We know

that there is a water cycle. Moisture evaporates from the surface of water bodies and enters the atmosphere. In the process of evaporation, water is purified, which then falls into the soil in the form of precipitation, forming groundwater. A large part of them again ends up in rivers, lakes, seas and oceans. Part of the precipitation enters water bodies immediately, bypassing intermediate stages. As a result of such a cycle, water returns in a purified form, so the environmental problem of water pollution is solved by itself.

The issues of providing the population with clean water are directly related to the quality of water supply systems. Due to old pipes, tens of thousands of cubic meters of fresh water are wasted and polluted. Now many projects of new plumbing systems are being developed based on scientific discoveries of recent decades. For example, the Japanese company TORAY is researching nanofibers and creating carbon-based nanotubes. In Russia, many Far Eastern enterprises are gradually switching to the use of modern pipes made of high-strength cast iron with a spherical graphite structure, which makes it possible to keep water from pollution. The timely introduction of advanced technologies will allow more rational use of the remaining water resources of the planet.

The preservation of existing fresh water reserves depends on strict adherence to global environmental standards. The activities of many enterprises in the light, heavy, metallurgical, chemical and other industries cannot be stopped, however, modern industrial cleaning systems make it possible to process waste from industrial enterprises without harming the environment. Deviations from environmental standards and their violations must be suppressed by serious fines.

Society is already aware of the need for radical action to solve water problems and mitigate water scarcity. There is a rethinking of the principles of water use and the search for acceptable and adequate measures to overcome the established stereotypes in the management of natural resources. It is noteworthy that it is the lack of water in recent years, when the value of water is felt very sharply, that makes each of us think about what he can do personally to improve the situation and in many ways ensures a return to the traditions of caring for water.

CONCLUSIONS

In conclusion, I want to note that all countries of the world community need to change their water use strategy at the present stage. Necessity forces us to isolate the anthropogenic water cycle from the natural one. In practice, this means a transition to recirculating water supply, to low-water or low-waste, and then to “dry” or waste-free technology, accompanied by a sharp decrease in water consumption and treated wastewater.

In my opinion, one of the ways to solve the problem of reducing the problem of drinking water shortages is to carry out a number of organizational and technical measures to introduce mutually agreed water resources management, reduce unproductive water losses and increase the efficiency of using water and land resources. At the same time, it is necessary to improve the technical condition of irrigation and collector-drainage networks and improve the ameliorative condition of irrigated lands, introduce progressive irrigation methods and techniques, and introduce drought-resistant and productive varieties of agricultural crops. In addition, every inhabitant of the earth can contribute to solving this problem of water conservation and rational use of available water resources.

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