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# WATER SHORTAGES ARE ONE OF THE NEGATIVE FACTORS OF OUR TIME

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**Abstract**
This article examines drinking water shortages as a contemporary negative factor in the context of socioeconomic development, energy and food production, healthy ecosystems, and human survival. It also examines issues related to improving clean water supply in various countries. Furthermore, it highlights the challenges of water shortages in light of global population growth, which has significantly increased water consumption. It also highlights the factors that contributed to water shortages, which subsequently led to deteriorating living conditions and slowed the economic development of water-stressed countries.

**Keywords:** UN General Assembly, poor-quality water, Sustainable Development Goals, water disasters, population migration, interstate conflicts, dehydration, contaminated water, unsanitary conditions, disease spread.

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## INTRODUCTION

Water is crucial for sustainable development, as well as for socioeconomic development, energy and food production, healthy ecosystems, and human survival. Water also underpins adaptation to climate change, serving as a vital link between society and the environment.

A significant milestone in modern history was the recognition of the human right to water and sanitation. According to a resolution adopted by the UN General Assembly in July 2010, everyone has the right to access sufficient water for personal and domestic use (50 to 100 liters per person per day). Water must be safe, acceptable in quality and affordability (the cost of water should not exceed three percent of household income), and physically accessible (the water source must be within 1,000 meters of the home and collecting it should take no more than 30 minutes).

Along with the planet's growing population, the production of industrial goods and agricultural products is increasing. As a result, drinking water consumption is rapidly increasing in all regions of the world. This used drinking water is returned to rivers as wastewater, and then ends up in seas and oceans. The expansion of wastewater treatment plants is currently lagging behind water consumption. The problem of drinking water on Earth is becoming increasingly pressing. This problem is common to all of humanity, as the movement of water masses knows no national boundaries. The global freshwater problem stems from the lack of replenishment of water resources.

## LITERARY RESEARCH

Drinking water has become the most vulnerable resource in nature, becoming one of the most damaging factors of our time. Wastewater, pesticides, fertilizers, mercury, arsenic, lead, and much more are leaking into rivers and lakes in enormous quantities. Experts believe that pollution levels in rivers such as the Danube, Volga, Rhine, Mississippi, and the Great Lakes exceed maximum permissible levels. Experts estimate that in some regions of the world, approximately 80% of all diseases are caused by poor-quality water. Considering that water intake structures and pipelines, which typically draw water from open

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bodies of water, show nearly 30% contamination in tests, both microbial and chemical, which in turn directly impacts public health.

Today, drinking water shortages are felt worldwide. The problem of drinking water shortages on Earth is becoming one of the negative factors of our time. Along with other global problems, drinking water shortages and public health are pressing issues. The global freshwater crisis stems from the failure to replenish water resources. Since the last decade of the 20th century, drinking water shortages have been considered one of the global problems of our time. As the global population grew, water consumption and, consequently, water shortages increased significantly, leading to deteriorating living conditions and slowing the economic development of countries experiencing water shortages.

As noted in the source [1], between 1990 and 2015, 2.6 billion people gained access to improved drinking water sources, including 42% of the population in the least developed countries. As of 2015, 96% of the urban population and 84% of rural residents use such sources. However, the number of people on the planet who still lack access to clean drinking water is 663 million people, 80% of whom live in rural areas. In 2015, the Millennium Development Goals were completed; although not all of them were fully achieved, significant progress was made. New goals for future international cooperation were adopted – the Sustainable Development Goals (SDGs) for the period up to 2030. This time, access to clean water and sanitation was highlighted as a separate goal under number 6. Among the tasks to be accomplished are improving water quality, increasing the efficiency of water resource use, and protecting water-related ecosystems.

According to [2], water scarcity is a growing concern in many parts of the world. Population growth, urbanization, increasing demand for irrigated agriculture, and poor water management are important factors driving water scarcity, exacerbated by the impact of climate change, which is leading to an increase in the frequency and severity of droughts. Today, approximately 2 billion people live in water-stressed areas. By the end of 2025, half the world's population is expected to face this situation. It is projected that every 1°C increase in temperature caused by global warming will reduce renewable water resources by 20%. Water scarcity has serious consequences for society and threatens the sustainability of development. For example, water scarcity can negatively impact the provision of

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water supply and sanitation services and affect human health. Insufficient safe drinking water can compromise adequate hygiene and increase the risk of diarrhea. Water scarcity can also limit economic growth by reducing agricultural production, impact the environment and biodiversity by reducing environmental flows necessary for ecosystem health, and lead to conflicts within and between countries and increased migration flows.

In the materials of the 8th World Water Forum [3], UN experts noted that the world is on the brink of a water catastrophe. They also noted that one in ten people on Earth, nearly 884 million people, are experiencing an acute shortage of drinking water. UN experts predict that by 2050, water demand will increase by 20%. Many countries have already reached their maximum water use capacity. And in the near future, the problem of water shortages will become a political issue, according to UN experts. If nothing is done, nearly 5 billion people (about 67% of the planet's population) will remain without adequately treated water by 2030. Water shortages in desert and semi-desert regions will trigger intense population migration. This is expected to affect between 24 million and 700 million people. In 2017, over 20 million people worldwide fled their homes due to a lack of drinking water. The website [4] provides statistical data on water resources by country. Latin America has the best water reserves, accounting for one-third of the world's total, followed by Asia with one-quarter. Next come the OECD countries (20%), sub-Saharan Africa, and the former Soviet republics, each accounting for 10%. The Middle East and North America have the most limited water resources (1% each).

According to France24 [5], drinking water reserves in the Iranian capital are rapidly depleting; experts estimate that Tehran could face a severe water shortage within the next two weeks (Fig. 1). The report also cites information in which the Iranian president complained about a water and energy crisis. The Iranian leader reported shortages of water, electricity, and gas, noting that "there is no water behind the dams, and the wells are empty." His words drew criticism; some Iranians accuse the president of fear-mongering, pointing out that resource shortages have been occurring in the country for over 15 years. The Iranian president warned of a possible evacuation of Tehran due to drought. Masoud Pezeshkian stated that if rainfall does not fall in the capital by the month of Azar

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(November 22 – December 21), the authorities will be forced to impose water rationing. And if there is no rain after that, preparations for the evacuation of Tehran will begin.


Figure 1. Illustration of information about a possible drinking water shortage in Tehran.

According to the WHO (World Health Organization) [6], nearly 3 billion people worldwide use poor-quality drinking water. Consequently, approximately a quarter of the world's population is at risk of illness annually, with approximately one in ten people falling ill and causing approximately 4 million children and 18 million adults to die annually. The mineral balance of water is an important indicator; an excess or deficiency can lead to the following serious consequences:

• Excessive fluoride intake through drinking water can cause fluorosis, which affects teeth and bones;

• Long-term exposure to arsenic can lead to cancer and skin lesions;

• In addition to iron deficiency, a number of infectious diseases associated with poor drinking water hygiene and sanitation are important factors in the development of anemia. Waterborne diseases also include hepatitis A, diarrhea, typhoid fever, and cholera.

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

According to source [7], the 1967 Arab-Israeli War was largely due to growing water needs in the Middle East. The issue remains relevant today. The Jordan River is controlled by Israel, and during dry periods, Israel restricts water supplies to the Palestinians. During the hot summer of 2016, approximately 2.8 million Arab residents of the West Bank and local leaders repeatedly complained about being denied access to fresh water. Israel accuses the Palestinians of refusing to sit down at the negotiating table to decide how to upgrade their aging infrastructure. The Jordan River, which flows through Lebanon, Syria, Israel, the West Bank, and Jordan, is at the center of one of several ongoing interstate conflicts over water. It has been a source of tension between Israel and Arab states for over 60 years. Source materials [8] note that the fall of the Gaddafi regime in Libya was due to the fact that the Libyan Jamahiriya possessed large reserves of drinking water. Gaddafi wanted to implement a water project that could improve the water situation in North Africa, but the intervention in Libya began during the project's launch. After Gaddafi's overthrow, the water issue was not raised in Libya.

## Methodology

Experts believe that drinking water supplies are limited and already running low. According to the Washington-based World Resources Institute, approximately one-third of the planet's population—approximately 2.6 billion people—live in countries with "severe water stress," while 1.7 billion people in 17 countries face "extreme water stress." About a dozen countries in the arid Middle East are experiencing severe shortages of drinking water, and in India, drinking water shortages have reached critical levels. This could have dire consequences for all sectors of the national economy, from economic development to declining public health. Countries such as Pakistan, Botswana, Turkmenistan, and Eritrea are also experiencing extreme water shortages.

It's worth noting that the population of arid regions suffers acutely from a lack of drinking water. Endless epidemics, chronic diseases, social tensions, and territorial conflicts over water sources plague people, forcing them to leave their

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homelands in search of a better life. The consequences of water shortages have already been felt by Europeans, as migrants from Africa and the Middle East flood the streets of their cities.

Experts believe that the global water crisis is primarily a wastewater crisis. One of the biggest problems is water pollution from urbanization, industrial runoff, and waste. This leads to irreversible damage to the environment and destroys already scarce drinking water supplies. More than 90% of wastewater and 70% of industrial waste in developing countries are discharged directly into bodies of water, contaminating drinking water supplies. The Mediterranean Sea is also one of the most polluted seas in the world, receiving 2 million tons of oil, 800,000 tons of nitrates, and 60,000 tons of detergents annually.

A shortage of drinking water can have serious health consequences in a variety of ways, from deteriorating living conditions and the development of diseases to dehydration and death. Contaminated water can contain pathogens that cause the most dangerous diseases. The potential for dangerous contamination has become increasingly recognized not only by specialists but also by ordinary citizens. This is evidenced by the increasing demand for purified bottled and tap water worldwide. People are purchasing such water to ensure they avoid exposure to dangerous pathogens.

All living organisms, including the human body, require clean drinking water as a key component of their cells and tissues. Not only do we need sufficient water for cellular and tissue function, but it is also essential that the water be free of harmful substances that can be toxic, such as metals and thousands of other organic and inorganic substances that enter the aquatic environment. Water pollution, even at low levels, can lead to ecosystem instability and negatively impact human health.

A constant and consistent water level is essential for the survival of living organisms. Changes in the amount of water consumed and its salt composition disrupt digestion, absorption, blood formation, and other processes. Without water, the body's ability to regulate heat exchange with the environment and maintain body temperature is impossible. Humans are acutely aware of changes in water levels and can survive without it for only a few days. A loss of less than 2% of body weight (1-1.5 liters) causes thirst; a loss of 6-8% causes fainting; and

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a loss of 10% causes hallucinations and difficulty swallowing. It turns out that a loss of 10-20% of water is life-threatening for humans. Animals die from a loss of 20-25% of their water.

In terms of its importance to human life, water cannot be considered separately from sanitation. Together, they are vital for reducing the global burden of disease and improving healthcare, education, and economic productivity.

Contaminated water and lack of basic sanitation undermine efforts to eradicate poverty and disease in the world's poorest countries. Currently, 2 billion people worldwide still lack access to modern sanitation systems that prevent contact with excreta.

In 2022, 2 billion people worldwide lacked access to basic sanitation facilities, such as toilets or latrines. And 653 million people lacked access to sanitation services. According to the WHO-UNICEF Monitoring of Access to Safe Water and Sanitation, at least 1.2 billion people worldwide are forced to drink water contaminated with feces. Even more people receive their drinking water from systems that do not meet basic sanitation standards.

Contaminated water and unsanitary conditions are major factors in child mortality in developing countries. Poor water supply and the presence of infectious agents in water, as well as a lack of basic hygiene and sanitation, lead to diarrhea in children. It is estimated that this disease kills up to 1.5 million children under the age of five each year in the poorest regions.

Water is directly linked to the realization of human rights. As the global population grows, there is a growing need to balance all competing commercial demands for water resources so that communities have sufficient resources to meet their needs. In particular, women and girls must have access to separate, clean sanitation facilities to meet their menstrual and pregnancy needs in a dignified and safe environment.

A shortage of drinking water can further trigger:

1. Development of diseases. Unclean water and its absence lead to poor sanitation and hygiene, causing and spreading diseases that pose an extremely high health risk.
2. Food shortages. A water crisis quickly turns into famine, as agriculture and livestock farming are directly dependent on water supplies.

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3. Conflicts. Water shortages in some regions are already leading to political disputes and local conflicts within and between states due to unclear water rights.

**Conclusions**

As we can see, water shortages in the modern world are becoming increasingly problematic and can be considered one of the negative factors of our time. Reducing water consumption is no longer feasible, as this would require cutting back on material production and foregoing many of the benefits of civilization. Pollution also plays a role, as the volume of potable water is declining. Therefore, greater attention must be paid to maintaining the purity of water resources. It is commonly believed that water supplies are inexhaustible. However, fresh water is, and will remain, one of the most important resources worldwide for the next several centuries.

Therefore, we can conclude that drinking water may soon become a strategic resource. Experts are seriously discussing the possibility of water wars and conflicts. Furthermore, a shortage of drinking water can lead to famine, disease, political instability, and armed conflict. To ensure that future generations do not experience a shortage of fresh water, we must urgently fight for the purity of water resources. Each of us can play a part in solving this problem.

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