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THE STATE OF WATER RESOURCES UNDER PRESENT GLOBAL CLIMATE CHANGE

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Abstract: The publication studied general issues of the impact of global climate change on the hydrosphere, noted the difficulties of predicting such an impact on water resources and the lack of reliability of such forecasts. It is substantiated that the consequences of climate change for water resources do not give rise to new problems, but only exacerbate existing ones. Ever-growing threats to the environment require more information about the world's water resources.
Keywords: climate change, water resources, water management, water use, hydrology, ecology, global state of the environment, greenhouse effect.

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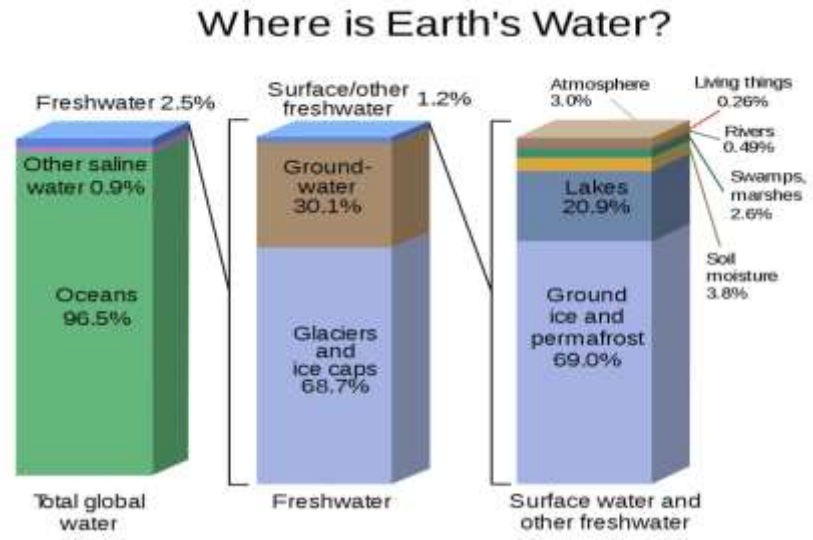
Introduction. Changes in the global climate, which have been occurring at a high (for climatology) rate in the last century and a half, have already led to significant consequences in nature. The effects of climate change, including natural disasters, pollution and environmental degradation, negatively affect the health of many people around the world. There is some uncertainty in predicting climate change at the global level; although this uncertainty increases significantly at the regional, national and local levels, it is at the national level that the most important decisions need to be made. Rising temperatures and reduced precipitation can reduce water supply and increase water demand; this could cause a decline in freshwater water quality and create even more difficulties in the already fragile balance between supply and demand in many countries. Even where an increase in precipitation is possible, there is no guarantee that it will fall at the time of the year when it can be used; in addition, the likelihood of floods increases. Any increase in sea level often causes saltwater intrusion into estuaries, small islands and coastal aquifers, and flooding of low-lying coastal areas; this threatens a danger for countries located in lowland areas increased likelihood of floods[1]. Any increase in sea level often causes saltwater intrusion into estuaries, small islands and coastal aquifers, and flooding of low-lying coastal areas; this threatens a serious danger for countries located in lowland areas [2].

Ever-growing threats to the environment require more information about the world's water resources. Water is one of the main resources on earth. Even drinking water is used domestically for cooking, laundry, gardening and cleaning. At the

same time, it is widely used in operations, industrial processes and agriculture. Water is of economic importance. In fact, this is the only substance that is in solid, liquid and gaseous states. Perhaps Earth is the only planet that has water. Water is a liquid that has the ability to dissolve many organic and inorganic substances in greater quantities than others. It has the highest heat of vaporization than other liquids. It takes energy to evaporate even a large amount of heat. This is due to the high heat capacity and the presence of water in all parts of the earth, which prevents sudden changes in local temperature. The global climate is determined by the properties of both water and air.

There are about 1.866 billion cubic kilometers of water on Earth. About 97% of it is in the form of seas and oceans containing salt water. More than 2% exists as ice sheets and glaciers, and about 1% exists as scattered rivers, lakes, groundwater and water vapor. Only 3% of the water on Earth is fresh water. If you look at the further distribution, then almost 66.7% of only fresh water is in the form of glaciers. About 30.1% is available as groundwater. Only 0.3% of surface water is located directly on the Earth's surface, the remaining 0.9% is available in the form of water vapor and soil water. 0.3% of surface water is water that flows like lakes, swamps and rivers. There is very little of it as biological water. If all the water on the surface of the earth were combined, then it would be spherical, so the diameter of this water ball would be about 1385 km. If we take into account the volume, then in front of this amount, the earth will be a very small sphere. To use water resources effectively, you need to know how they are used.

It is known that water resources are consumed in two ways: by natural and economic human activities, that is, under the influence of anthropogenic factors. Natural consumption of water resources occurs in the following ways: from riverbeds, lakes. In the form of evaporation from the surface of the water, transpiration from the bodies of moisture-loving wild plants, etc. Due to the human factor and industrial development, water resources on earth are sharply reduced. In connection with this problem, the science of hydrology faces the following new tasks related to water resources and environmental protection:



1- Drawing. World water distribution (www.wikipedia.com)

1) saving the quantity and protecting the quality of water resources;

2) to study the patterns of their change under the influence of natural and anthropogenic factors;

3) ongoing water management activities include land reclamation, irrigation, hydropower, distribution of water resources by region and water resources.

Global climate change is caused by the combined action of various causes, the main of which is the anthropogenic increase in the concentration of greenhouse gases in the atmosphere, and has a number of manifestations, the main of which is global warming, characterized by an increase in the global mean surface temperature (GMST). This growth inevitably leads to an increase in evaporation in the World Ocean, which covers almost 71% of the Earth's surface, and in other surface water bodies located in areas where the climate will warm (there are obviously a significant majority of these). The same applies to land areas. The dominant role in this process belongs to the ocean. If at present the atmosphere contains approximately 13 thousand km3 of water (in all three phases - gaseous, liquid and solid, in terms of the liquid phase), by the end of the century.

However, the point is not only in the entry of water vapor into the atmosphere due to increased evaporation, but also in the fact that when heated, the atmosphere can hold a larger amount of this gas. Therefore, it is naive to believe that precipitation will increase by exactly the same amount as evaporation will increase. The global characteristic - the amount of water contained in the atmosphere - is only the background against which such a quantity as the volume of precipitation is formed. Its value also depends on another global characteristic - the time of replacement of water in the atmosphere, that is, the duration of the period of time during which as much water enters the atmosphere as it contains [5]. More precisely, these three quantities - the global amount of precipitation (per year), the

time of replacement of atmospheric water and its volume - are interconnected, but the nature of the relationship depends on a huge number of factors,

An increase in the concentration of greenhouse gases has led to an increase in the natural greenhouse effect and warming of the Earth's surface. If no action is taken, the temperature will rise by 0.30^0C every decade of the next century. Warming, in turn, will lead to the melting of polar ice and an increase in the level of the world ocean by 20 cm on average by 2030. At the end of the 21st century, it will increase to 65 cm. The data obtained as a result of measurements indicate that the average temperature air since the end of the 19th century has increased by 0.6 ± 0.2 °C. These observations are consistent with the predictions made by the models used to predict the level of climate warming to date. In general, the following can be noted as the most adverse consequences of global climate change in the future:

• many tropical and subtropical regions are experiencing sharp declines in crop yields;

• in many areas of temperate latitudes, there is a gross decline in yields with certain fluctuations, the main reason for this is an increase in the average annual temperature by several degrees;

• increasing soil erosion;

• In many dry regions, especially in the subtropics, the amount of water per capita will decrease further;

• the quality and quantity of water resources are declining;

• the extent and extent of floods and droughts;

• increases damage to temperate and tropical regions of Asia;

• increased damage from floods, landslides, avalanches and floods;

• increased risk of forest rains;

• Coastal erosion and damage to coastal buildings and infrastructure will increase;

• an increase in summer temperatures increases the need for energy used for air cooling;

• Increasing pressure on public and private insurance systems to provide assistance in case of floods and natural disasters;

Environmental change is affected by long-term changes in external conditions associated with climate change, various local exogenous natural processes, weather conditions and factors, anthropogenic factors, poor management of public policies, use of natural resources and environmental protection, lack of skills of employees in the field of natural resources and nature conservation, the lack of necessary information about the natural environment and the insufficient attention of government officials who make managerial decisions, it turns out that

environmental programs and their staff in the field of natural resources and nature conservation can have an indirect impact on instability and insufficient funding[6].

The consequences of climate change in Uzbekistan and its neighboring regions include, first of all, changes in agro-climatic and water resources. Changes in them negatively affect the productivity of agricultural crops and the ecological state of the Aral Sea, especially in the Aral Sea region. At the present stage of development, water resources consist of all fresh and moderately mineralized, naturally or artificially sweetened, purified waters, are currently used in all sectors of the national economy and can be used in the future.

Humans have been collecting and managing water since ancient times. In recent years, as a result of the negative effects of global climate change in our region, there have been cases of low annual precipitation compared to standard indicators. This directly requires the use of specific water and resource-saving technologies in the care of crops. Therefore, it is necessary to allocate the amount of water to irrigated lands. Irrigated fields should be cultivated and weeded as soon as the soil is strong.

Irrigation of irrigation water through resource-saving technologies and reuse of bioremediation of wastewater using existing domestic facilities is considered an urgent problem of our time. In this regard, the scientists of our republic carried out a number of scientific works. Their scientific work is devoted to biological treatment by selecting algae and aquatic plants for biological wastewater treatment based on the study of the hydrochemical composition of wastewater [3-4].

The reliability of climatological forecasts leaves much to be desired and decreases along with the geographical scale of the water body, the regime of which is being studied. Changes in the global climate significantly affect the water regime; from an economic point of view, this leads to negative consequences more often than to positive ones. Water availability is a critical factor for a number of regions of Uzbekistan. The global nature of the shortage of water resources, the commonality of tasks to improve water management for countries with different hydrological conditions dictate the need for the development of international cooperation. Meanwhile, among the existing international agreements and treaties relating to water relations, there is no document comparable in terms of the breadth of coverage of the problem and the depth of its elaboration with the Framework Convention on Climate Change.

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