

## CLIMATE CHANGE AS ONE OF THE NEGATIVE FACTORS OF MODERN TIMES

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Article history:		Abstract:
Received:	24 <sup>th</sup> January 2025	This article is devoted to the study of the problem associated with climate change as one of the negative factors in the modern world. The issues of global warming are considered in the context of air pollution and water shortages, which negatively affected the health of the population. A comparative analysis of the causes of climate change due to natural and anthropogenic factors that had consequences in the form of floods and droughts is given.
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### INTRODUCTION

As is known, one of the dangers threatening modern civilization and humanity is an ecological catastrophe with its numerous components, including global climate change and shortage of drinking water. At the present stage of human development, humanity has faced, perhaps, the most pressing problem - how to preserve nature and civilization, since no one knows when and in what form this or that catastrophe may occur.

One of the negative factors of our time is that scientists have predicted the destruction of humanity due to global warming. In this regard, I would like to draw public attention to climate change as one of the negative factors of our time. In recent years, there has been an increase in the process of climate warming in all countries of the world. It is no secret that due to climate change, reductions in renewable water resources are possible. A shortage of water resources can negatively affect the provision of water supply and sanitation services and affect human health. Along with this, a shortage of water can provoke desertification of vast territories, which in turn can lead to migration flows of the population from arid regions.

### LITERARY RESEARCH

People of all countries understand perfectly well that today one of the significant problems at the present stage is global warming. It is worth considering that there are factors that activate and accelerate this process. First of all, the negative impact is caused by the increase in emissions of carbon dioxide, nitrogen, methane and other harmful gases into the atmosphere. This occurs as a result of the activities of industrial enterprises, the operation of vehicles, but the greatest impact on the environment occurs during environmental disasters: accidents at enterprises, fires, explosions and gas leaks.

The modern world is characterized by accelerated rates of technological development and the introduction of high-performance technologies for the production of material goods, as well as the creation of comfortable living conditions for the population. Meanwhile, along with the introduction of high-performance technologies, the reverse sides of these achievements are beginning to emerge. In this regard, I would like to draw attention to the negative aspects of these advantages. In particular, one of the negative sides of these achievements is considered to be the inability of humanity to obey the laws of the biosphere. It is these wrong actions committed by humanity that can lead to an unpredictable abyss, that is, Man wants to dominate Nature. This in turn can have a detrimental effect on the existence of the human population.

The materials of the site [1] provide information that people have been using their planet for selfish purposes for thousands of years. They built cities and factories, mined tons of coal, gas, gold, oil and other materials. At the same time, man himself barbarically destroyed and continues to destroy what nature has given us. Thousands of innocent birds, insects, and fish die due to human fault; the number of endangered animal species is constantly increasing; thousands of hectares of forest are destroyed, etc. Soon, man may experience the wrath of Mother Nature on his own skin. We will talk about global warming, which is gradually coming to our earth. Man is already beginning to experience the consequences of this cataclysm. It will turn into a tragedy for both man and all living things on our planet. Nature is able to live without man. It changes and evolves over the years, but man cannot live without nature and its resources. Based on data from the website [2], it can be stated that the average global surface temperature in 2024 was 1.55 degrees Celsius above the average for the period 1850-1900, with an uncertainty of 0.13 degrees, according to a

consolidated analysis by the World Meteorological Organization (WMO). This means that the world has likely experienced the first calendar year when the average annual temperature exceeded the pre-industrial period level by more than 1.5 degrees. "Today's analysis by the World Meteorological Organization once again proves that global warming is a harsh reality," said UN Secretary-General António Guterres. He also noted that "Exceeding the 1.5 degree Celsius mark in some years does not mean that this goal cannot be achieved in the long term. It means that we need to work even harder to get back on track. Record temperatures in 2024 require transformative climate action in 2025. We still have a chance to avoid the worst of the climate emergency, but leaders must act – and act now." Guterres called on governments to submit new national climate plans this year to keep long-term global temperature rise to 1.5 degrees Celsius and help the most vulnerable communities cope with the devastating impacts of climate change.

Water scarcity [3] is a growing concern in many parts of the world. Population growth, urbanization, increasing demand for irrigated agriculture and poor water management are important drivers of water scarcity, exacerbated by the impact of climate change, which is increasing the frequency and severity of droughts. Today, about 2 billion people already live in water-stressed areas. By 2025, half the world's population is expected to be in 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 societies and threatens the sustainability of development. For example, water scarcity can negatively affect the provision of water and sanitation services and impact human health. Insufficient safe drinking water can compromise adequate hygiene and increase the risk of diarrhoea. Water scarcity can also limit economic growth by reducing agricultural production, impact the environment and biodiversity by reducing environmental flows essential for ecosystem health, and lead to conflicts within and between countries and increased population migration. Citing a NASA report, Stefanie Waldek [4] states that 2024 was the hottest year (climate change map) on record. The world map below (Fig. 1) shows where on Earth the average temperature in 2024 was higher or lower than in the 20th century. Red indicates higher-than-average temperatures, and blue indicates lower-than-average temperatures. Scientists largely attribute this increase in temperature to the increase in greenhouse gases, including carbon dioxide and methane, in the Earth's atmosphere since the Industrial Revolution. In pre-industrial times, in the 18th century, atmospheric carbon dioxide levels were approximately 278 parts per million (ppm). Today, they are 420 ppm.

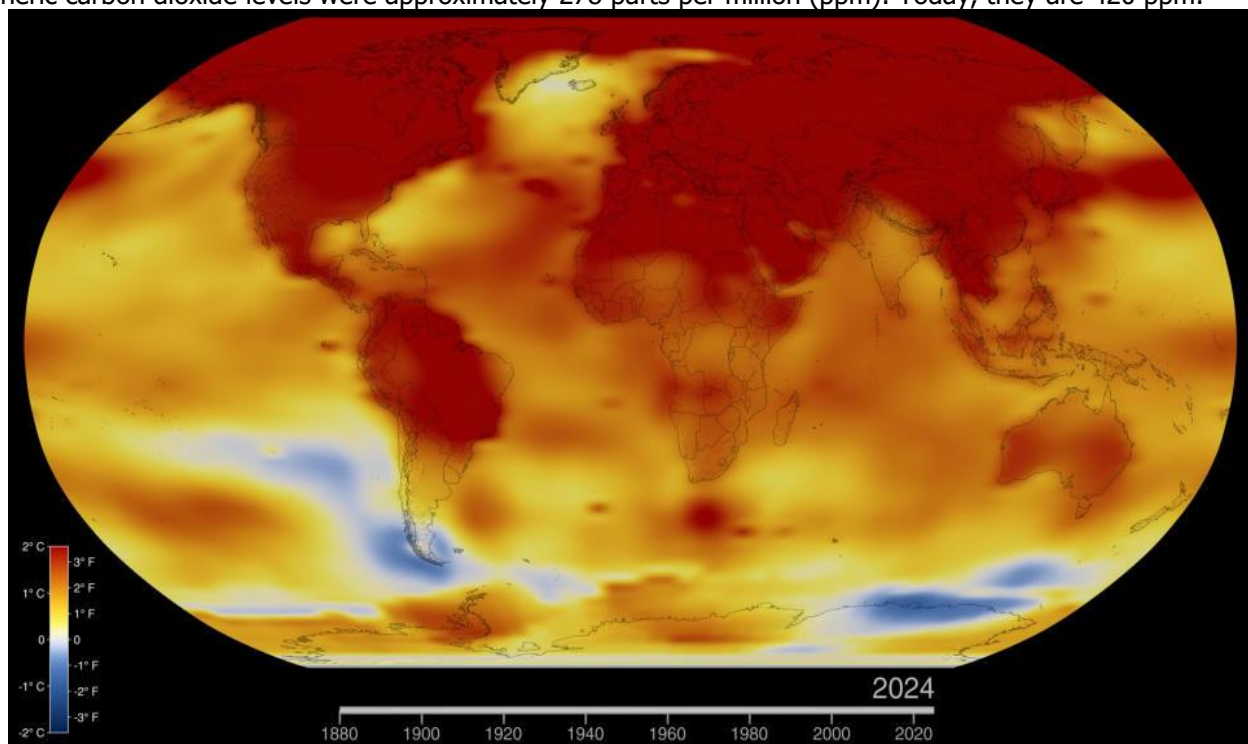


Figure 1. Illustration of the warming of the Earth's climate in 2024.

Scientists from George Mason University (USA) [5] made a forecast that tells about the global change of the Earth's climate zones by about 2100. The study also talks about the risks associated with these possible changes, writes Science Alert. According to the researchers, "fundamental gradual changes in temperature and precipitation could change the climate at the local level so significantly that it will be necessary to redraw maps first compiled in the 1880s." Thus, from 38% to 40% of the world's land will be in different climate zones than today, scientists say. George Mason, one of the authors of the work, added: depending on specific climate models, the estimate can grow to 50% - half of the land on the globe will end up in unfamiliar conditions. However, the note adds: the predicted shifts in climate zones represent only a "spectrum of possibilities", because it is more difficult to model the behavior of some variables (for example, precipitation) than others (temperature). And yet: the analysis shows that by 2100, tropical climates will expand from 23% to 25% of the Earth's land area. And overall, 34% of the planet's surface will become arid (currently 31%). This, according to scientists, "could shake up food production systems and lead to the spread of mosquito-borne

diseases to other areas." The greatest changes are expected in Europe and North America. These zones, based on the work, will move into a different climate zone by 89% and 66%, respectively.

As the site [6] believes, everyone has a role to play in the fight against climate change. At the United Nations, we call on people everywhere to work together to address climate change and deliver on the commitments made in the 2015 Paris Agreement. This website provides up-to-date information on actions being taken by governments, businesses, civil society, youth and others in every region of the world. This is our planet, and while we know it is in crisis, we also know that the problems it faces can be solved. Action to achieve the goals – from more clean energy to more secure food supplies – is already underway. The benefits, such as green jobs, cleaner air and healthier economies, are also clear. A more sustainable and prosperous world is within reach. Join us in our work to make it happen today.

### METHODOLOGY

The World Meteorological Organization (WMO) has confirmed that 2024 was the warmest year on record, based on six international data sets. The past decade has been included in the top 10 warmest years on record, breaking a series of temperature records. The global average surface temperature in 2024 was 1.55 degrees Celsius above the 1850-1900 average, with a margin of error of 0.13 degrees, according to a consolidated WMO analysis. This means the world is likely to have experienced the first calendar year where the average annual temperature was more than 1.5 degrees above pre-industrial levels.

The role of humans in the ongoing climate change is also evidenced by the results of comparing the data of modeling the increase in global temperature with the data of real observations. Currently, various models of past and future changes in the temperature of the Earth's surface have been developed. Some of them took into account only the natural causes of warming, while others took into account the anthropogenic factor. When the data of direct meteorological observations were superimposed on the results of modeling, it turned out that they coincided with those models that took into account the influence of humans. This indicates that, according to the models, without the influence of the anthropogenic factor, the temperature on Earth would be lower than observed today. And yet, an unambiguous answer about the role of the anthropogenic factor in climate change is still impossible. It is only clear that humans influence the climate through their economic activity. It is quite likely that this influence will be decisive in the long chain of causes that determine climate change.

Scientists, based on modeling the consequences of climate change, have come to the conclusion that one of the negative factors is the process of flooding a number of countries around the world under water. According to forecasts by the Intergovernmental Panel on Climate Change, by 2100, sea levels may rise by 1.1 m. By 2050, about one billion people will suffer from floods more often. Among the cities most at risk of flooding are Bangkok, Amsterdam, Ho Chi Minh City (Vietnam), Cardiff (United Kingdom), New Orleans, Manila, London, Shenzhen (China), Hamburg, Dubai. Extreme heat in the summer of 2022 led to the death of at least 20 thousand people in France, Germany, Spain and the United Kingdom alone. Drought undermined agricultural production, and low water levels in European rivers disrupted the transportation of goods along the Rhine River, the most important waterway in Western Europe. In addition, it was necessary to significantly reduce the volume of nuclear energy production in France. These events have exacerbated the energy and financial crises, making it more difficult for people to heat their homes and pay for essential goods.

Climate scientists suggest that climate change may have caused the deadly floods in Pakistan in 2022. Record rainfall has occurred, with rains inundating about a third of the country. The UN estimates that the floods have affected 33 million people. More than 2 million buildings have been destroyed. About 8 million people have been forced to flee their homes. At least \$16.3 billion will be needed to rebuild homes and farms, as well as rehabilitate people affected by the floods.

In order to eradicate the negative factor associated with climate change, certain work is being carried out. Unfortunately, this can be either a serious crisis or a massive transition in the energy sector to other technologies. But this transition is always made for economic reasons, and almost never for environmental reasons. For example, Russia, along with other post-Soviet and Eastern European countries, made a huge contribution to the fight against global warming, when a significant part of the economy was destroyed in the 90s. In recent years, Great Britain has been actively replacing coal in its energy sector with gas and renewable energy sources - the effect was immediately felt. It is impossible to overestimate the efforts of France, which built almost six dozen nuclear reactors in the 70-90s. They built them without thinking about climate problems at all. The French, who do not have significant reserves of hydrocarbon fuel, simply decided to strengthen their energy independence in this way.

It should be noted that in the period from 2005 to 2017, no one reduced their greenhouse emissions more than the Americans. But this is not explained by the special love of the American leadership for the earth's climate. In 2005-2007, the United States began to reduce energy consumption. And, probably, this provoked the 2008 crisis. At least, it coincided with it. And since 2010, this process was superimposed by a massive transition from coal to shale gas in electricity generation. Also caused not by the desire to save our planet, but by the fact that using gas to generate electricity has become more economically profitable.

As a result of global climate change, which has become one of the negative factors of our time, it has led to deforestation, a shortage of fresh water, intensive use of fertile lands, which has led to their depletion and transformation into deserts. As a result, there is a danger of hunger, and the lack of water is manifested in the growth of infectious diseases. People are forced to migrate to more prosperous areas, which leads to social conflicts and the spread of epidemics.

## CONCLUSIONS

In conclusion, it should be noted that climate change as one of the negative factors of our time will entail air pollution and shortage of drinking water, accompanied by the spread of infectious diseases. In general, all these factors can ultimately have a negative impact on the quality and life expectancy of humanity, especially on the health of the younger generation. Long-term exposure to polluted air can lead to respiratory and cardiovascular diseases, stroke and lung cancer. According to WHO, the combined effects of outdoor and indoor air pollution are a factor in the premature death of 6.7 million people per year. As can be seen, climate change as one of the negative factors of our time has secondary consequences that will negatively affect primarily the health of the population.

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