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GLOBAL PROBLEMS OF MANKIND. REALITIES AND PREDICTION FOR THE FUTURE

Review

Abstract

Global problems are generated by the contradictions of social development, the sharply increased scale of human impact on the environment and are also associated with the uneven social, economic, scientific and technological development of countries and regions. The purpose of the work was to designate the relevance of global environmental disasters on a global scale, the reasoning and figures give the scale of these disasters, their impact on the human body, and the planet's climate in the future.

Keywords: ecology, disasters, natural resources, environmental problems, energy consumption, anthropogenic impact, pollution.

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ГЛОБАЛЬНЫЕ ПРОБЛЕМЫ ЧЕЛОВЕЧЕСТВА. РЕАЛИИ И ПРОГНОЗЫ НА БУДУЩЕЕ

Обзор

Аннотация

Глобальные проблемы порождены противоречиями общественного развития, резко возросшими масштабами воздействия человечества на окружающую среду и связаны также с неравномерностью социально-экономического и научно-технического развития стран и регионов. Решение глобальных проблем требует развертывания международного сотрудничества.

Ключевые слова: экология, катастрофы, природные ресурсы, экологические проблемы, энергопотребление, антропогенное воздействие, загрязнения.

1. Introduction

Mankind has repeatedly encountered difficult problems in the course of the development of a civilization, sometimes of a planetary nature. But compared to today's realities, this was a distant prehistory, a kind of “incubation period” of contemporary global problems. They were fully manifested in the second half, and especially in the last quarter of the 20th century. and continue to develop in the XXI century. Such problems were brought to life by a complex of reasons that clearly manifested themselves in the last 50-60 years.

In fact, never before has humanity itself increased quantitatively by a factor of 2.5 during the lifetime of only one generation, thereby increasing the strength of the “demographic press”. Never before has humanity entered the period of scientific and technological revolution, has not reached the post-industrial stage of development, has not opened the way to space. Never before has so much natural resources been required for its life support, and the “waste” returned to the environment was also not so

great. Finally, never before had such a globalization of the world economy, such a single global information system [2, p.227-230].

The most important global environmental problems facing modern man are as follows: environmental pollution, greenhouse effect, depletion of the "ozone layer", photochemical smog, acid rain, soil degradation, deforestation, desertification, waste problems, reduction of the biosphere's gene pool and not unimportantly low environmental levels education.

In the modern world, the global problems of mankind have become an important object of interdisciplinary research, in which participate both the social, natural, and technical sciences. Among these sciences, it is possible to single out economics, sociology, biology, ecology, geology, oceanology, chemistry, agricultural and other sciences. In the 70s-80s of the last century, many scholars and researchers in their writings viewed our world as a whole, as a system of interacting processes: demographic, industrial, exhaustion of natural resources, environmental pollution, food production, etc. Their calculations and models led to the conclusion that a serious crisis in the relationship between man and the environment was inevitable, which could have been expected at the beginning of the 21st century [3, p. 116-118].

In our time, the problem of the relationship of man to nature attracts close attention. There are important reasons for this. The unprecedented growth of scientific and technical potential has raised a person's ability to transform the surrounding natural environment to a qualitatively new level and opened up extraordinary prospects for him. At the same time, in the interaction of man with his natural habitat, there are more and more alarming symptoms of danger that threaten the existence of the planet Earth and the entire human race.

2.1. The current level of world ecology

A wide range of issues related to the interaction of modern society with the natural environment, is united under the common name of the environmental problem. Forecasts of researchers of the 60-70s of the last century foreshadowed unprecedented global catastrophes, but fortunately, in general, they did not materialize. Scientists have found that over the past century, the average temperature near the earth's surface has increased by 0.6 ° C. At the same time, the level of the World Ocean rose by 15–17 cm, which was caused by the melting of glaciers and the thermal expansion of ocean waters. In this regard, the forecasts have become more relaxed and balanced, although different estimates for the future still differ quite significantly. Typically, such forecasts have three-time levels: 2025, 2050, and 2100.

Some scientists believe that if the current rate of temperature rise of 0.3 ° C for ten years continues, by 2025 it will rise by 1 ° C. Since the land surface will heat up faster than the ocean, the greatest changes will affect the landscapes of northern latitudes. The sea level rise will be approximately 6 mm per year and, therefore, will be 15 cm. There are also scenarios in which the average temperature will increase only by 0.1–0.2 ° C over ten years [7, p. 117-118].

It is the high quality of the natural environment that is the main wealth of mankind and an unconditional value category, the essence of global environmental interests. According to the WHO, already today 80% of all diseases in the world arise due to the consumption of poor-quality drinking water. Every year, 5 million people die from diseases associated with the consumption of polluted and poor-quality water. Water may well become almost the main cause of future armed conflicts, the same as now arising from oil.

There are many examples of death and large material losses associated with floods, landslides, landslides, mudflows, avalanches. In recent years, major flooding has been observed on almost all continents. According to UNESCO, over the last century, 9 million people died from floods. Damage from floods in various countries around the world in the 21st century is estimated at hundreds of billions of dollars. Large losses due to the mass nature of the spread bring gravitational processes. Thus, in the United States, about 20 million landslides have been established by aerial photography. Only in the San Francisco Bay area, more than 88,000 landslide areas have been identified. The annual damage from landslides in the United States is 2-2.5, Japan - 1.5, Italy - 1.1 billion dollars.

The development of gravitational processes is often synergistic in nature and is initiated by powerful endogenous phenomena, primarily earthquakes and volcanic eruptions. The total number of people killed in the 20th century and the first decade of the 21st century from natural environmental disasters was more than 1,500,000.

2.2. Degradation of the global ecological system

Until recently, the main problem of the survival of mankind was the problem of war and peace, and nowadays most experts agree that this has become a global environmental problem associated with the degradation of the natural environment.

Describing the general state of the environment, scientists from different countries usually use such definitions as "degradation of the global ecological system", "ecological destabilization", "destruction of natural life-support systems", etc. In the latest annual reports of the American Institute of Worldwide Observation ("Worldwide ") Directly refers to the" terrible "environmental situation in the world.

Human activity changes the nature of the environment, and in most (not always, but most) cases, these changes have a negative impact on the person. And it is not difficult to understand why: over millions of years, his body has adapted to quite specific living conditions. But at the same time, any activity - industrial, agricultural, recreational - is the source of human life, the basis of its existence [8].

On the surface of the Earth and in the layers of the atmosphere adjacent to it, a multitude of complex physical, physicochemical and biochemical processes are developing, accompanied by the exchange and mutual transformation of various types of energy. The source of energy is the processes of substance reorganization occurring inside the Earth, the physical and chemical interactions of its outer shells and physical fields, as well as helio-physical effects. These processes underlie the evolution of the Earth, its natural environment, being a source of constant transformation of the appearance of our planet or its geodynamics. Man is not able to suspend or change the course of evolutionary transformations, he can only predict their development and in some cases influence their dynamics [4, p. 186-187].

Man has to solve the problem of great practical significance: how to survive on a depleted Earth? And only a sober rationalistic world view can serve as a clue in that terrible maze where evolution has driven us. And help cope with the difficulties that await humanity. As for the modern, truly global environmental crisis, it began to manifest itself at the beginning of the 20th century, but it became especially frightening in the 21st century.

With a certain degree of conditionality, the whole problem of the degradation of the global ecological system can be divided into two parts:

1) the degradation of the environment as a result of irrational environmental management;

2) the degradation of this environment as a result of its pollution with human waste.

Vivid examples of environmental degradation as a result of irrational use of natural resources can be data on violations of the global balance of non-renewable and renewable natural resources, violations that have already led to such negative consequences as depletion of some mineral resources, soil erosion, salinization, waterlogging and desertification. Deforestation is one of the most important global environmental problems of our time. The forest absorbs atmospheric pollution of anthropogenic origin, protects the soil from erosion, regulates the flow of surface water, prevents the reduction of groundwater levels, etc. The decrease in the forest area causes a disturbance of the oxygen and carbon cycles in the biosphere. Although the catastrophic effects of deforestation are widely known, their destruction continues. Deforestation entails the death of their rich fauna and flora.

Due to accidents of tankers and oil-producing installations, at least 5 million tons of oil a year gets into the ocean through different sources, causing the death of many aquatic animals and seabirds. In July 2000, over a million gallons of oil (about 3,180 tons) flowed into the Iguaçu River in Brazil as a result of a disaster at an oil refining platform. On November 13, 2002, near the coast of Spain, the Prestige oil tanker, in the holds of which there were more than 77,000 tons of fuel oil, fell into a violent storm. As a result of the storm, a crack about 50 meters long formed in the hull. On November 19, the tanker broke in half and sank. As a result of the disaster, 63,000 tons of fuel oil fell into the sea. Cleaning the sea and the coast from fuel oil cost $ 12 billion; the total damage to the ecosystem cannot be estimated [5, p. 320].

The second reason for the degradation of the world ecological system is pollution by its waste from production and non-production activities of man. The amount of this waste has recently taken on dimensions that have begun to threaten the very existence of civilization. It should be noted that no living species is able to live in an environment formed by the garbage of its vital activity.

Under the anthropogenic pollution of the environment understand the complex of the various impacts of human society on this environment, which lead to an increase in the content of harmful substances or increase the concentration of existing ones. Such pollution threatens human health, the state of the environment. It limits the possibilities for the further development of human civilization. In terms of composition and effects, two categories should be distinguished - quantitative and qualitative pollution.

Quantitative pollution can be called the return to the environment of those substances and compounds that are found in it in its natural state (iron, copper, zinc, lead, etc.), but in much smaller quantities, and due to the growth of various kinds of anthropogenic waste increase in many time.

Another example of this kind is the increase in carbon dioxide emissions (carbon dioxide, CO), which threatens humanity with global warming as a result of the greenhouse effect. The greenhouse effect is the heating of the inner layers of the Earth's atmosphere, due to the transparency of the atmosphere for the main part of the solar radiation (in the optical range) and the absorption by the atmosphere of the main (infrared) part of the thermal radiation of the planet's surface heated by the sun.

In the atmosphere of the Earth, radiation is absorbed by molecules H2O, CO2, O3, etc. The greenhouse effect increases the average temperature of the planet, mitigates the differences between day and night temperatures. The change in the gas balance of the atmosphere due to an increase in the content of CO2 and other greenhouse gases led to a situation in comparison with the end of the 19th century. mean annual air temperature at the Earth's surface increased by about 0.6°C. Today, the scale of pollution is so great that the natural ability of the biosphere to neutralize harmful substances and self-purification is close to the limit [6, p. 317].

Mankind felt and realized techno-genic dangers and threats later than natural ones. Only with the development of the techno-sphere, man-made disasters invaded his life, the sources of which are accidents and man-made disasters. Every year in the world there are dozens of man-made disasters of various sizes. This is not a complete list of large technological disasters that occurred in the 21st century:

On March 11, 2011, as a result of the earthquake which was the strongest in the history of Japan and the tsunami that followed it, a major radiation accident of the maximum, 7th level according to the International Nuclear Event Scale at the Fukushima-1 NPP occurred. Financial damage, including the costs of mitigation, decontamination and compensation costs, is estimated at $ 100 billion.

On August 26, 2004, a gasoline tanker carrying 32,000 liters of fuel fell from the Wiehltal bridge 100 meters high, not far from Cologne in western Germany. This accident is considered to be one of the most expensive man-made disasters in history - temporary repair of the bridge costs $ 40 million, and full reconstruction - $ 318 million.

October 4, 2010 in the west of Hungary there was a major environmental disaster. At an aluminum plant, an explosion destroyed the dam of a tank with toxic waste - the so-called red mud. About 1.1 million cubic meters of caustic substance flooded the city of Colontar and Dechever with a 3-meter flow 160 kilometers west of Budapest.

The analysis of technogenic dangers and threats, which is one of the most important security problems of the technogenic sphere, as a crucial area of the livelihood and human life, society and the state, as well as the habitat, deserves attention.

In figure 1. you can see the main components of environmental pollution, the sources of this pollution, the spread of pollutants and the consequences of their impact.

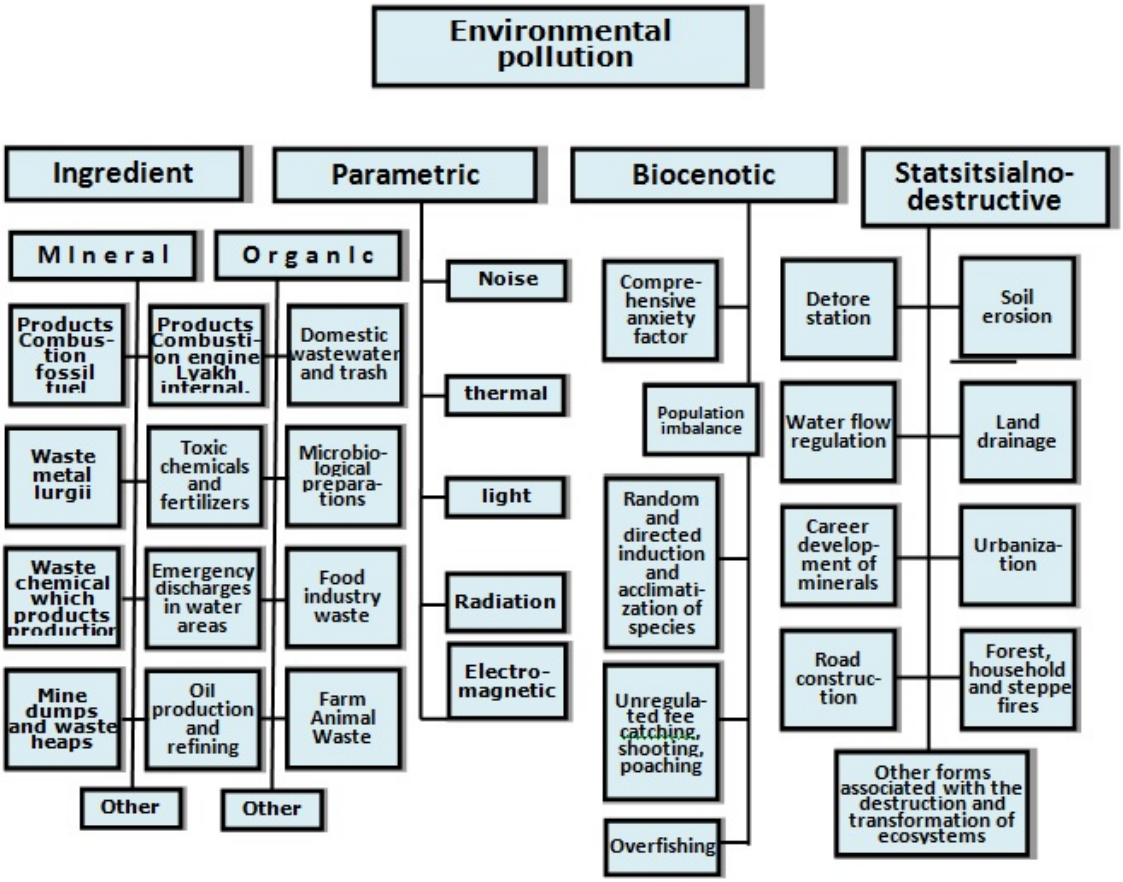

Figure 1 – Sources of pollution, the spread of pollutants and the consequences of their exposure

Despite scientific and technical progress and economic growth, the protection of people and the material sphere from natural hazards does not increase, but systematically decreases. Based on world statistics, the annual increase in the death toll from natural disasters on Earth is 4.3%, of those affected - 8.6%, and the magnitude of damage - 10.4%. It is also impossible to disregard man-made disasters that lead to numerous human casualties and enormous material damage.

2.3. Population explosion and its consequences

The demographic problem occupies a very important place among the global problems of our time, as another priority problem of the survival of humanity. Some authors even call it Problem No. 1, pointing out that the solution of most other global problems largely depends on its solution. In this connection, demographic forecasts are very important - scientifically based predictions of the main parameters of population movement and the future demographic situation or, in other words, the change of phases of the "demographic transition".

The main source of population projections have been and remain the specialized units of the United Nations - such as UNESCO, FAO, WHO, and especially UNFPA - the UN fund in the field of population. c– The conference in Cairo in 1994 was of great importance. It was attended by 179 states. During the Cairo forum, along with the work of government delegations, 1,500 non-governmental organizations from 133 countries also discussed the global demographic problem. And the final document of the Cairo Conference was the "Program of Action in the Field of Population", designed for 20 years and consisting of 16 chapters. It provides a general overview of population problems, defines the basic principles for drafting this document, discusses the relationship between population growth and the economy, and addresses the problems of family, fertility, mortality and natural population growth, health care, financing, etc.[5, p. 218]

Some of the provisions of the final document of the Cairo Conference caused sharp disagreements and disputes. For example, on the part of Muslim states, the provision on gender equality was criticized. An even more stumbling block was the provision of an artificial interruption of pregnancy. As a result, no agreement was reached.

Along with world conferences, other important international meetings on population issues are held regularly. Thus, in 1989, an international forum "Population in the 21st Century" took place in Amsterdam, which outlined a wide range of measures for the development of population programs. In 1992, the world population policy was discussed at the UN Conference on Environment and Development in Rio de Janeiro. It was noted that the solution of demographic problems in each country should be an integral part of its national strategy for sustainable development.

The demographic forecast for 2025 and 2050 provides even more food for thought. According to a UN forecast made in 2005, the Earth's population will reach almost 9.1 billion people by this time. At the same time, the number of children will increase to 2 billion, able-bodied - to almost 6.1 billion, and the elderly will exceed - 1 billion people. UN experts believe that by the middle of the XXI century. approximately 30 countries of the world will see a decrease in population; among them are

the majority of countries in foreign Europe, Russia, Ukraine, and Japan. And the population of India, Pakistan and Nigeria will grow at the highest rate [8].

All authoritative international forums proceeded in their work from one main position - that in terms of population the greatest threat to humanity is fraught with the continuation of the population explosion. And their decisions were aimed primarily at "extinguishing" this explosion as quickly as possible. In this regard, the analysis of long-term demographic projections (for 2025 and 2050) is of particular interest. Each country must define its own demographic goals and programs based on the livelihoods of a growing population.

3. Conclusion

At present, the development of inexhaustible (and, moreover, environmentally friendly) energy sources, whose potential is very significant, is an alternative and perhaps the only way out of the current situation. According to some estimates, the annual cost of humanity to solve global problems should be at least $1-2 trillion If we proceed from the fact that the entire global gross domestic product in 2006 was estimated at 66 trillion dollars, then the world community hardly has such means. Consequently, the available funds should apparently be distributed in accordance with the rating of one or another global problem [7, p. 117].

Today it is very difficult to prioritize the global problems of mankind. Some researchers believe that the environmental problem is now in the first place, others call it demographic, others - food, fourth - overcoming the backwardness of developing countries. As a result of the development of world civilization, the continuation of those economic tendencies in the prevailing destructive model of nature, multiplied by the "predatory" human qualities that had already formed by the beginning of the 21st century, humanity has every chance to destroy itself in the current century.

Conflict of Interest

None declared.

Конфликт интересов

Не указан.

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