https://doi.org/10.36719/2789-6919/43/67-70

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Ecological Globalistics and Sustainable Development at the Stage of Technogenic Transformation of the Biosphere

Abstract

The main threat to sustainable development at the stage of technogenic transformation of the biosphere is a complex of global crisis processes and the contradictions of the national ecological interests of different states. These phenomena are due to the uneven distribution and scarcity of food and fresh water resources, as well as the overpopulation of some regions. Attempts to resolve global crises through the provision of humanitarian assistance give only short-term results. Geoecological studies of technogenic transformation of the biosphere can change the situation. The results of these works will allow developing methods of formation of large-scale controlled natural-technical systems. Such actions are already being implemented by some countries in solving the problem of water scarcity through moving river flows. However, this activity may cause contradictions in the field of national interests of various states and regions of the world. In order to consolidate efforts, it is necessary to create a special area of scientific and practical activity, i.e., ecological globalistics.

Keywords: *sustainable development, ecological globalistics, national ecological interests, global crisis, biotechnosphere*

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Biosferanın texnogenik transformasiyası mərhələsində ekoloji qlobalistika və davamlı inkişaf

Xülasə

Biosferin texnogen transformasiyası mərhələsində dayanıqlı inkişaf üçün əsas təhlükə qlobal böhran prosesləri və müxtəlif dövlətlərin milli ekoloji maraqlarına ziddiyyətlər kompleksi yaradır. Bu hadisələr ərzaq və şirin su ehtiyatlarının qeyri-bərabər paylanması və çatışmazlığı, eləcə də bəzi regionlarda əhalinin həddindən artıq çox olması ilə əlaqədardır. Dünya böhranlarını humanitar yardımlar vasitəsilə həll etmək cəhdləri yalnız qısamüddətli nəticələr verir. Biosferin texnogen çevrilməsinin geoekoloji tədqiqatlarının aparılması vəziyyəti dəyişə bilər. Bu işlərin nəticələri irimiqyaslı idarə olunan təbii-texniki sistemlərin formalaşdırılması üsullarını işləyib hazırlamağa imkan verəcəkdir. Artıq bəzi ölkələr çay axınlarının hərəkəti ilə su qıtlığını aradan qaldırmaq üçün belə tədbirlər görürlər. Lakin bu fəaliyyət planetin müxtəlif dövlətlərinin və regionlarının milli maraqları sahəsində ziddiyyətlərə səbəb ola bilər. Səyləri birləşdirmək üçün elmi və praktik fəaliyyətin xüsusi bir istiqamətini - ekoloji qlobal tədqiqatları yaratmaq lazımdır.

Açar sözlər: *davamlı inkişaf, ekoloji qlobal tədqiqatlar, milli ekoloji maraqlar, qlobal böhran, biotexnosfer*

Introduction

The basic principle of the concept of sustainable development, put forward by the UN in 1987, is the choice of paths of economic development that allow for the preservation of favorable

environmental conditions for the existence of future generations on Earth. The emergence of this concept and its further development were caused by the deterioration of the environmental situation at the planetary level, which poses a threat to the existence of human civilization. Initially, the concept of sustainable development contained a contradiction, which became the main obstacle to its practical implementation. The contribution of individual states to the deterioration of global environmental conditions (technogenic transformation of the atmosphere, transboundary pollution of the hydrosphere, etc.) varies significantly. It is determined by the level of development of their production sector, the specifics of the economy and socio-political conditions. For this reason, in order to implement the concept of sustainable development, countries must sacrifice their economic, and in some cases geopolitical interests for the sake of the common good. At the same time, the leadership of countries often uses any opportunity to avoid fulfilling such altruistic obligations. An example is the situation with the signing and implementation of the Kyoto Protocols. The only real way to solve this problem is to achieve parity of national and international interests. This is one of the main tasks of environmental globalistics – an interdisciplinary scientific discipline that studies the causes and consequences of global environmental transformation, as well as the development of mechanisms for managing this process.

Research

Despite the frequent use of the expressions “our common future” and “maintaining favorable conditions for future generations”, their content is not clearly defined (Janoušková, Hák, Necas, Moldan, 2019). In most cases, examples of successful implementation of the concept of sustainable development are given as individual and, as a rule, short-term successes of activities to improve social conditions or environmental protection measures. Often these are simply actions to provide financial or humanitarian aid (Gambetta, Azadian, Hourcade, Reyes, 2019), the significance of which for the lives of future generations is questionable. Much more important for future generations are those global negative trends of deterioration of life of the majority of humanity, which have not yet been changed. Moreover, they are constantly getting worse (Report, 2019). Such phenomena inevitably lead to an aggravation of the socio-political situation, gradually covering the entire world. For this reason, they are designated as world or global crises. It is the result of the development of these trends that forms the conditions in which future generations will exist. Consequently, the concept of sustainable development can only be realized by managing global crises. Almost all modern global crises are caused by the growing imbalance between the population and the limited resources of the environment, i.e. the available areas for development of the geosphere. Thus, despite the diversity of external manifestations, global crises are based on global geoecological processes, which constitute the subject of study of environmental globalistics. The deterioration of human conditions is occurring simultaneously in several directions, of which the most significant are: the global food crisis, the global water crisis or water consumption crisis, and the global overpopulation crisis. An overpopulation crisis is one of the forms of demographic crises, which is understood as a critical disruption in population reproduction, destabilizing the socio-political situation. In some countries this is manifested in a decline in the birth rate and a catastrophic decline in population, while in others the opposite phenomenon is observed, called a population explosion. It consists of a rapid growth of population density, for whose normal life the resources of a given country become insufficient. The development of all crises is interconnected and has a systemic nature. Thus, the shortage of fresh water resources does not allow agricultural production to develop, which intensifies the food crisis. The same factor influences the development of the demographic crisis. The limited water resources do not allow the development of the rest of it. In turn, overpopulation almost always leads to a reduction in the amount of available fresh water resources due to pollution of water supply sources and their depletion. The development of crises occurs unevenly. They are most acute in countries with underdeveloped economies and high population growth rates. In economically developed countries, global crises are less obvious: they cause an increase in the burden on the economy due to the uncontrolled influx of unwanted migrants and increasing deliveries of humanitarian aid to distressed regions. In the current circumstances, the moment when developed countries (donor countries) will no longer be able to play the role of a buffer, containing the spread of global crises, is

only a matter of time. The result will be a leveling and significant reduction in the standard of living, accompanied by intellectual and moral degradation of society, as well as a general deterioration of the environmental situation. If events develop in this way, calls to preserve favorable environmental conditions on the planet for future generations will lose their relevance, since they will not correspond to the national interests of almost any country. The ongoing global climate change is accompanied by a critical reduction in water availability in a number of regions. In some of them, water shortages have caused a decline in agricultural production, famine, and mass migration of the population. This is happening against the background of an increase in the total amount of atmospheric precipitation falling on the Earth's surface, associated with the intensification of evaporation of the waters of the World Ocean due to an increase in their temperature. For this reason, along with abnormal droughts, catastrophic floods occur. In the near future, the frequency and intensity of both phenomena, according to experts, will increase several times (Osipov, 2009). The enormous funds spent on eliminating floods could go to building water storage facilities on our territory, and its subsequent sale to other countries experiencing water shortages. For example, neighboring China is projected to increasingly suffer from droughts (Agriculture Organization of the United Nations, 2019). The conditions for sustainable development would be ensured if solutions to prevent the global water crisis were taken from a creative paradigm. In this case, it is the creation of water resource logistics systems for transporting excess water from flood-prone regions to regions experiencing a deficit. Similar projects are already being developed and even implemented in a number of countries. The incentive for the development of such activities is the national interests of only individual states. If this trend continues, it will lead to serious interstate conflicts in the near future. The prerequisites for this already exist. The task of environmental globalistics in this case is to form a civilized international market for fresh water resources (Suzdaleva, Gorunova, 2017). Its basis is the achievement of agreements that simultaneously satisfy the national economic and environmental interests of water resource donor countries, water resource consumer countries, and countries through which their transit is carried out. The economic side of the problem is solved on the basis of giving surplus water resources the status of a commodity, with certain rules for purchase and sale. The solution of national problems and the protection of national environmental interests must be carried out on the basis of the creation of controlled natural and technical systems on all sections of the water resource logistics route. Thus, for the stable supply of water to the territories of transit countries, it is necessary to create reservoirs-depositories. But unlike intermediate gas and oil storage facilities, they can be used as a basis for creating controlled natural and technical systems that bring additional financial benefits (hydropower, agriculture) and improve social and environmental conditions (recreation, afforestation, etc.). It is obvious that the development of water resource logistics systems and the formation of a corresponding segment of the international commodity market cannot instantly solve the problem of the global water crisis, as well as the associated problems of growing food shortages and overpopulation. This can only be achieved through the implementation of long-term programs, the conceptual and methodological basis for which is called upon to create environmental globalistics. Thanks to it, a vision of the prospects for sustainable development emerges. Their implementation should be carried out using the bottom-up design method, i.e. designing objects taking into account the possibility of subsequent unification into systems that create conditions for sustainable development (Suzdaleva, 2017). Thus, an intermediate reservoir-depository should be designed taking into account: - its ability to be recharged in the future from other regions, - expansion of the range of water consumers, - connections with other reservoir-deposits in order to increase the stability of water resource supplies. Consequently, a water resource route delivering water from a specific donor to a specific consumer can gradually turn into a continental network of water resource logistics. It is obvious that the implementation of such programs will require enormous expenditures and can only be carried out after a long period, at each stage of which the decisions taken must be economically justified and correspond to the national interests of all states involved in this activity. Thus, on the basis of the formation of water resource logistics networks, it becomes possible to create a hierarchical system of controlled natural and technical systems that actually implement the concept

of sustainable development, namely: solving modern problems taking into account the interests of future generations.

Conclusions

1. The main threat to the sustainable development of human civilization is created by a complex of interconnected global crises caused by the growing imbalance between the size of the Earth's population and the quantity, as well as the uneven distribution of available resources necessary to ensure favorable living conditions.

2. Effective solutions to prevent further development of global crises of water consumption, food and overpopulation can be implemented only on the basis of studying geoecological processes of technogenic transformation of the biosphere. To accomplish this task, it is necessary to develop a special direction of interdisciplinary scientific and practical activity – environmental globalistics.

3. The basic principles of environmental globalistics in the field of ensuring sustainable development are: - the combination in the long term of national and international environmental interests on an economically mutually beneficial basis; - the priority of the creative paradigm in solving the problems of global technogenic transformation of the environment, i.e. targeted active influence on geoecological processes provoked by human activity with the aim of creating controlled natural-technical systems.

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Received: 13.12.2024
Accepted: 24.03.2025