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## **SCIENTIFIC AND THEORETICAL FOUNDATIONS OF ECOLOGICAL SAFETY OF A STATE**

*Abstract. In the article there were investigated the scientific approaches to the definition of a term “ecological safety”, and there was specified its essence.*

*Keywords: government, environmental security, terms, approaches.*

**Statement of the problem.** The main prerequisite for making effective management decisions in the system of ensuring of national security is an objective and timely identification of the greatest threats and risks in all spheres of society. This, in turn, necessitates the performance of detailed analysis and evaluation of all processes relating to the national security of Ukraine, in particular to the environmental security. Since the processes of globalization determine the new parameters of ecological development of the state and ensuring of its ecological safety, taking into account the changing nature of threats and challenges facing the humanity. The unfavorable state of the environment and the need to ensure environmental safety require implementation of adequate legal, organizational and other measures.

**Analysis of recent researches and publications.** The international aspects of environmental security, environmental human rights are observed in the works of S. Bachin, V. Kartashkin, I. Lukashuk, E. Nesterenko, N. Nikitenko, Yu. Platonov, E. Pushkarev, A. Timoshenko, Yu. Tikhomirov, I. Farhutdinov, A. Shishko, etc. In Ukraine, the different aspects of environmental policy were studied by V. Balatsky, I. Bistryakova, A. Veklich, P. Gaman, O. Datzyy, D. Dobryak, S. Dombrovskaya, O. Dragan, T. Ivanova, O. Lazor, L. Melnyk, J. Radish, M. Khvesik, A. Kaczynski, A. Nadezhdenko, V. Tyshchenko, Y. But, Ye. Kartashov etc.

**Statement of the problem.** However, there is a need to systematize scientific approaches to the interpretation of the concept of ecological security, and in comprehensive definition of its nature.

**Presentation of the basic material.** The important factors in the development of the state are the different theories of ecological development. They define the methodological approaches to the implementation of environmental activity and the pattern of environmental safety. It is possible to identify the four models of theories of ecological development: anthropocentric, environmental, radical and the theory of the stability and the integrity of the world [3, p. 9]<sup>19</sup>. In our view, a basic concept in understanding of environmental security is the relationship between man and the environment, that is the anthropocentric theory. The ideological pinnacle of anthropocentrism is the "anthropic principle", according to which the Universe is such, as it is, alleged to it at a certain stage of evolution could appear the observer, mind carrier – a man. However, a larger number of concepts and theories of world development is dominated by technogenic type of economic development. It prerotate (the nature destructive type) which is based on the use of artificial means of production, created without taking into account environmental constraints. The characteristic features of the technogenic type of development is fast depleting and the use of non-renewable natural resources (primarily minerals) and midexpiratory renewable (soils, forests, etc.) at a speed exceeding possibilities of their reproduction and restoration. Thus caused considerable economic damage, which is the valuation of natural resource degradation and environmental pollution resulting from human activities. Thus, the priority areas for the future development of the system of ecological safety in the new integration conditions will be enhanced cooperation by all countries to preserve the environment and system greening of the global economic space on the principles of sustainable development. In our view, the primary presupposition in the analysis of security should adopt the concept of "danger" as one of the most important

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<sup>19</sup> Екологічна і природно-техногенна безпека України в регіональному вимірі : монографія / М. А. Хвесик, А. В. Степаненко, Г. О. Обиход та ін. ; за наук. ред. д.е.н., проф., акад. НААН України М. А. Хвесика. – К. : ДУ «Інститут економіки природокористування та сталого розвитку НАН України», 2014. – 340 с.

characteristics of the system that have the target orientation. Accordingly, it is possible to enter into scientific categories, revealing the concept of "environmental security", namely: "environmental hazard", "catastrophe", "crisis", "environmental hazards," "environmental hazard", and finally the concept of "environmental security".

Environmental hazard is the possibility of adverse or catastrophic events due to the impact of environmental hazards. More specifically, the risk of natural or anthropogenic origin is defined as the probability of occurrence of the phenomena or processes that can harm and affect people, property damage, destructive impact on the environment of a person.

A disaster is considered as the abrupt structural-functional changes in the system, leading to a significant violation of its mode of functioning or destruction of the system.

Such changes can occur as a result of a sharp (short-term) response to smooth changes in actual parameters of its condition, and with a powerful external impact. For example, a long "routine" pollution of the reservoir, even with a relatively small intensity, in the end may lead to the death of aquatic ecosystems.

Catastrophic events will occur in case of toxic release, namely in case of a powerful volley of receipt of toxic substances in the water. The crisis is a sharp aggravation of contradictions in socio-ecological and economic system that leads to its destabilization and initiate the process of transition of a system from significantly unstable (crisis) condition to a qualitatively new state.

Seems to be a promising synergistic interpretation of the crisis according to which it is not only a disorganized phenomenon. The crisis is a disaster or a breakthrough in the future development of any transitional process. There is a sense of crisis conditions of the system that narrows to the point of bifurcation (split) in which there is a choice of the direction of changes in the quality system. Sources of environmental hazards – economic, consumer, military and other activities, as well as natural features that contain important environmental risk factors. Examples of such objects are the enterprises of industry, energy, transport, agriculture, and military training grounds, landfills, etc. These companies can produce as constant, deterministic nature of the emissions and discharges of pollutants, the probability of which is equal

to one, and the emergency of the stochastic nature of the emission with a probability less than one.

The factors of environmental hazard (ecological risk) to human and natural impacts (disturbance) that can lead to negative changes of the environment and human health, in particular, they are man-made factors of production. We are talking about the factors that trigger environmental hazards. For example, the factors of environmental pollution can be divided into the material (gas and dust emissions into the atmosphere, discharges of pollutants into water bodies, solid waste) and energy (heat emissions, noise, ionizing radiation).

By the way, in Encyclopedia of public administration the environmental security is defined as "a composite of national security, which involves the human activities that causes significant damage to the environment, compensates for the deterioration of the environmental situation environmental protection measures and contributes to the protection of man, society, nature, preserves ecosystems, takes into account the need to maintain ecological balance in the biosphere [2, p. 233]<sup>20</sup>. In fact, environmental security is identified with some particular state of the biosphere or its components. Violation of this condition, the losses that are applied to people and nature, or the possibility of such occurrences classified as an environmental hazard.

However, the assignment of environmental safety to objective characteristics of the biosphere removes the problem of explaining the reasons for the emergence of negative changes in it and hides the active human role in these processes. Under ecological security in this case we mean the protection (security) of an object (a person, society, state, etc.), or its habitat (the biosphere, nature, social conditions of human existence) from threats of natural and anthropogenic (human activity) nature.

In addition, in scientific literature one can find this interpretation of environmental security is socio – economically acceptable level of environmental risk

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<sup>20</sup> Енциклопедія державного управління : у 8 т. / Нац. акад. держ. упр. при Президентові України ; наук.-ред. кол. : Ю. В. Ковбасюк (голова) та ін. – К. : НАДУ, 2011. – Т. 1: Теорія державного управління / наук.-ред. кол. : В. М. Князєв (співголова), І. В. Розпутенко (співголова) та ін. – 2011. – 748 с. – С. 52–55.

[1]<sup>21</sup>. In other words, environmental security is defined by an acceptable risk of deviation of the state of environment and human health from the norm. Naturally, the risk of large deviations will decrease as we shall implement the preventive measures and more effective ways of protection, the use of which requires a certain cost.

Thus, environmental safety is determined by optimizing the utility functions and risk. It should be noted that the concept of "environmental security" describes its essence and with a high degree of commonality and its associated concept and a few other categories that reveal the problem of environmental safety:

- safety in the sphere of nature – a set of conditions that ensure minimal adverse effect of the nature and processes of its development on human health. Safety management is considered within all forms of nature and industry in the field of direct and indirect human exposure (globally, regionally and locally);

- environmental policy and scientific direction, which studies the relationship between the processes of anthropogenic changes to the environment and political processes in society, both on a regional and global dimension. Environmental policy is a theoretical system of political, economic, legal and other measures aimed at regulating the state of the environment and rational use of natural resources of any territory or the world as a whole (a global policy) The central place in the forming the general concept of environmental policy is the problem of creating the effective mechanisms of regulation as an important policy tool in environmental management, which are implemented through its social, economic and strictly political basis;

- environment – the complex of all objects, phenomena and processes external to the organism, population or set of organisms. The interaction within the complex through the nutrient cycle. Thus, the environment includes substances and organisms of the biota interacting with the body, as well as population and community of organisms. The environment is characterized primarily by the concentrations of chemical compounds that consume living organisms. With the environment interacts with the external environment, that is, one in which living organisms do not function.

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<sup>21</sup> Державне управління у сфері безпеки соціально-еколого-економічних систем : монографія / С. М. Домброська, В. В. Коврегін, А. Л. Помаза-Пономаренко, О. М. Колєнов. – Х. : НУЦЗУ, 2017. – 244 с.

However, regulating the flows of substances in the environment, biota affects the concentrations of nutrients in the environment;

– natural environment little changed by the action of anthropogenic factor in the totality of the natural conditions of existence of human society, animals, plants and other organisms, which, however, constantly suffer direct or indirect effects of mankind that is linked to economic activity.

Environmental security is the formation and implementation of system control action on socio-ecosystem aimed at preventing of environmental threats and protection from environmental impacts to achieve an acceptable level of security (safety). The essence of environmental security reduces to the optimization of utility functions and risk. The process is the protective response or the cycle of environmental security, contains two aspects of minimizing environmental risk: protection from environmental impacts and preventive protection from environmental threats. In both cases, the aim is to identify the defective degree of protection of objects of environmental security. Protection from environmental hazards means the conduct of activities aimed at the limitation of environmental risk factors that lead to its reduction to an acceptable level.

The prevention of environmental hazards is the implementation of the prevention system of measures aimed at minimizing the probability of occurrence and of the action potential and existing environmental risk in order not to exceed their acceptable levels.

Protection of objects of eco-safety is determined primarily by the fact that relevant parameters of the environmental condition deviates from the norm is not above the maximum permissible values. The maximum allowable values of actual parameters are established in relation to the quality of the environment (water, air, soil, food) in relation to human health (sanitary and hygienic standards), then about the sustainability of natural ecosystems (the permissible limit load). Also establishes regulations concerning the environmental sources of danger (production and economic standards), that define the boundaries of action of environmental risk factors.

Characteristics of eco-territorial natural-social complex is the economic capacity of the territory (bearing capacity), reflecting the self renewing capacity of the ecosystems of the area. The degree of deviation or non-compliance of relevant

parameters of socio-ecosystem in relation to the corresponding standards, defines the severity of environmental problems and can serve as a criterion of priority.

**Conclusions.** Thus, summing up the results of the analysis of the categorical apparatus, it is possible to formulate the following conclusions:

- the concept of environmental security researchers generally seen as an important element of national security;
- the category of "environmental security" in numerous studies studied from the perspective of different conceptual approaches, from the point of view anthropocentric, resource-anthropocentric and anthropo-biocentric approaches;
- however important in the analysis of the concept of "environmental security" is the use of this category in the context of the managerial paradigm in the consideration of issues related to state management aspect of environmental policy.

Analyzing numerous concepts of environmental security, it is possible to formulate a refined definition of the concept of ecological security of the state is the ability of the management system to maintain the equilibrium and balance of relations in terms of "environment – society – economy – management", the ability to withstand internal and external threats and challenges and to ensure acceptable levels of risk of life of the population and sustainability of socio-economic development, and reproduction of natural and socio-economic potential. The ability of the state, of public authorities to control, regulate, reduce and eliminate environmental hazards on different scales, to identify and assess their scientific methods, to ensure the well-being of society and health, political, economic and social stability, ensuring the national security of the state. The study of the role of modern states, public authorities in the provision of ecological and natural-technogenic safety, state management mechanisms for the implementation of state policy in the sphere of environmental security is a very topical issue of our time.

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