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Research on Ecological and Economic Development and it is Impact on Ecology

Abstract. Introduction. *The beginning of the 21st century for the world population became an obvious approach of a global catastrophe associated with large pollution of the natural environment, the destruction of the ozone layer of the biosphere, the increase in climate change, and the dangerous degeneration of flora and fauna. Scientists predict that if society does not change the directions of socio-economic development, technological methods of mastering nature, then the beginning of irreversible destruction of the biosphere is predicted in the near future.*

Purpose. *Ensuring the economic growth of the country at present is accompanied by the growth of environmental pollution and degradation, depletion of natural resources, disruption of the balance of the biosphere, climate change, which leads to the deterioration of human health and limits the possibilities of further development This means that the level of well-being of the population is tight related to ensuring the quality of the environment.*

The development of industrial society gave rise to new needs, and the need to satisfy them required a new increase in production, the consequences of such development became a heavy yoke for the environment. Along with the growth of labor productivity and the improvement of the efficiency of the economic activity of enterprises, today the question is their willingness to apply advanced technologies capable of reducing the negative impact on the environment and more rationally using natural resources, increasing the level of waste processing and mastering zero-waste technologies.

Conclusions. *This testifies to the relevance of the conducted research, the purpose of which was analytical work on the interrelationship of environmental and economic factors of the development of society with the position of the unity of these processes. The solution to the given task was performed on the basis of the interrelationship of resource and environmental factors. It is stated that one of the components of the modern development of the economy is the substantiation of the economic and scientific relationship to environmental safety. A possible association is economic activity with indicators of the economic state and the nature of the impact on it.*

Keywords*: ecology; economics; balance; social development; implementation mechanism; educatio; science.*

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Дослідження еколого-економічного розвитку та його вплив на екологію

Початок 21 століття для світового населення став очевидною наближенням глобальної катастрофи, пов'язаної з великим забрудненням природного середовища, знищенням озонового шару біосфери, наростанням зміни клімату, небезпечним виродженням флори й фауни. Вчені прогнозують, що якщо суспільство не змінить напрямки соціально-економічного розвитку, технологічні способи освоєння природи, то початок незворотного руйнування біосфери прогнозується в недалекому майбутньому.

Забезпечення економічного зростання країни зараз супроводжується зростанням забруднення та деградації середовища, вичерпанням природних ресурсів, порушенням балансу біосфери, зміною клімату, що веде до погіршення здоров'я людини та обмежує можливості подальшого розвитку. Це означає, що рівень добробуту населення тісно пов'язаний із забезпеченням якості довкілля.

Розвиток індустріального суспільства породило нові потреби, і необхідність їх задоволення потребувала нового зростання виробництва, наслідків такого розвитку сталися важким ярмом для навколишнього середовища.

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Наряду з ростом продуктивності праці та підвищенням ефективність економічної діяльності підприємств сьогодні стає питання їх готовність застосовувати передові технології, здатні знизити негативний вплив на навколишнє середовище і більш раціонально використовувати природні ресурси, підвищити рівень перероблення відходів і освоїти безвідхідні технології.

Це свідчить про актуальність проведеного дослідження, мета якого була проведена аналітична робота в питаннях взаємозв'язку екологічних та економічних факторів розвитку суспільства з позицією єдності цих процесів. Розв'язання поставленої задачі виконано на основі взаємозв'язку ресурсного та екологічного факторів. Наведено, що одна зі складових сучасного розвитку економіки є обґрунтування економічного та наукового відношення до екологічної безпеки. Можливим об'єднанням є господарська діяльність з показниками економічного стану та характеру впливу на нього.

Ключові слова: *екологія, економіка; збалансованість; суспільний розвиток; механізм реалізації..*

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Formulation of the problem. The beginning of the 21st century has a rapidly developing scientific and technological processes, along with which the economy is rapidly developing. In modern conditions of globalization and digitalization of the economy, strengthening of information links and development of communication technologies, scientific and technological achievements become the necessary basis for the transformation of the economic system.

The growth of the economy, the desire to satisfy their needs and desires, a person must fit into the limits of the ecological possibilities of our planet. The outlined ways are called "sustainable development", i.e. such a development of mankind that would satisfy the needs of the present generation of people and at the same time would not jeopardize the ability of future human generations to satisfy their needs [2].

In modern conditions, in the context of sustainable development, theories and models of economic development have been developed, which are based on the use of environmental factors. These include the "green" economy, the circular economy, etc. The "green" economy includes those types and results of economic activity that contribute to the improvement of the environment, the rational use of natural and energy resources, their savings. In a narrower interpretation, the "green" economy can be understood as the development and application of technologies, equipment to reduce the negative impact on the environment in order to reduce emissions of pollutants into the atmosphere, waste recycling, as well as energy and resource saving technologies.

Nowadays, an important condition for the sustainable development of an individual country, the world economy as a whole, and increasing the efficiency of the mechanism of international economic relations is the greening of production processes, the transfer of the entire system of economic reproduction of mankind to principles that meet the objectives of environmental conservation [3]. Such a formulation of the question means a radical optimization of the use of resources during economic activity and consumption, the production of such development priorities that organically combine the financial performance of economic activity with its environmental studies. This is especially true of the Ukrainian economy, which is characterized by extremely irrational and inefficient consumption of resources, extremely unfavorable environmental conditions of life, the complication of the functioning of economic systems through their energy and raw material costs.

In this context, it is important to analyze the international practice of nature management and environmental conservation in solving the problems of dynamizing production mechanisms and ensuring their global competitiveness. It is obvious that the interests of the economy and conservation of nature must be balanced and must be oriented towards the future.

All this determines the relevance of the research topic, the need for a conceptual justification of the main directions of the greening of modern economic development, scientific and technological progress both at the global level, on a country-wide scale, and at the regional level.

Formulation of research goals. The purpose of the study is to conduct an analytical analysis of the relationship between environmental and economic factors in the formation of society from the standpoint of combining these processes.

Analysis of recent research and publications. The development of a green economy is now widely considered in the world. It would seem that they should be directly related to the ecological and economic balance. Practice shows that this is not so. The papers on this topic provide an analysis of the state and trends in the development of the "green" economy both in general and in individual sectors of the economy and areas of activity, an analysis of documents and recommendations of conferences on environmental protection and sustainable development is given, all questions are given in the traditional approach, and ecological and economic balance, taking into account the position of the resource factor, is not here either.

The most widely used and developed concept of a socio-ecological and economic system, as a balance of these three elements, takes place in territorial management: “Strategy and mechanism for sustainable development of the region” [5], “Management of the balanced development of territorial systems: issues of theory and practice [10]. The authors consider territorial

systems as socio-ecological and economic systems, identify their imbalances and disproportions, give a simulation of the balance of the socio-economic development of the territory, but there is no study of the interaction of resource and environmental factors.

In modern science, much attention is paid to the study of technological changes and the study of various innovative processes that affect the sectoral structure of the economy, transformational processes that occur under the influence of scientific and technological progress. However, despite a significant degree of study of most problems, individual various processes and phenomena associated with the development of scientific and technological progress, further study requires a number of relationships and dependencies that determine the structure of technical and economic development in order to obtain a holistic view of the impact of scientific and technological progress. on the processes of economic transformation.

From the analysis of the studies, we conclude that further, deeper studies of the problems of the ecological and economic balance of social development are needed, and the ecological and economic balance based on the relationship of resource and environmental factors has not been previously carried out.

Outline of the main research material. Currently, one of the central problems of the 21st century is the lack of balance between environmental and economic factors in the development of society, starting from the moment they appear and ending with the procedures for eliminating environmental consequences.

The essence of the ecological and economic balance of the development of society is to achieve a balance: economic growth, on the one hand, and the absence of environmental pollution, on the other. Only such an approach can ensure sustainable development [4].

Human economic activity, the economy of the world as a whole at the present stage are characterized by increasingly complex relationships between their system elements. A statement of rapid negative changes in nature can lead to significant reassessments of the goals and natural limits of economic development. In this regard, fundamentally new requirements arise for international economic science, which should develop goals and criteria for ensuring the sustainable development of mankind, individual countries and peoples of the world. The reassessment of development values allows us to state the emergence of a mechanism of disproportionate development of the countries of the world in accordance with models of specialization in the production of products, processing or raw materials [1].

Ecological innovation is a necessary factor for preventing a global environmental catastrophe. Violation of the natural balance and deterioration of the interaction between society and the environment are a consequence of the development of the technogenic economy in the world. Enterprises are often created without taking into account environmental requirements, and the existing restrictive measures for harmful emissions into the atmosphere and wastewater pollution are neglected. Penalties in many cases do not stop business entities that put their commercial interests above environmental responsibility, which indicates a low environmental culture of society [5].

The key direction for solving the problems described above is the use of the concept of "green growth", which contributes to sustainable economic development and allows redirecting funds to meet the needs of society. Introduction of knowledge-intensive innovative "green" technologies significantly reduces the cost of environmental protection and minimizes the need for penalties. For example, it is advisable not to initially to build treatment facilities, but to create waste-free or low-waste enterprises, the emissions of which are immediately utilized. The introduction of environmental innovations involves reducing the energy intensity of production, the use of resource-saving technologies, as well as reducing the impact on the environment in the process of consuming environmentally friendly goods. This means greater use of solar panels, wind energy (especially offshore), hydropower, tidal energy, and biofuels [3].

A number of researchers believe that the combination of biotechnologies with nanotechnology can provide a breakthrough in such areas as the creation of biosensors for monitoring the environment. As promising fundamental research, one can single out genetic studies of microbial cultures, ecosystems at the molecular level [6]. Scientists believe that by the middle of this century, the use of so-called molecular robots will allow organizing environmentally friendly food production, while molecular orderly robots will turn the waste of this activity into raw materials, and use waste-free nanotechnological methods in industry and agriculture [10].

The importance of resource and raw material issues in the modern world is determined by a number of important factors. These are the limited resources, their exhaustibility, over time a more tangible negative impact of the extensive economic model and the growth in the volume of production processes. Such characteristics of modern agricultural development lead to massive environmental pollution; they worsen the living conditions of people, cause the disappearance of natural species and entire ecosystems.

An important task on a global scale is the use of so-called alternative energy technologies, an important feature of which is that they do not adversely affect the temperature balance of the planet. It can be stated that in Ukraine, although slowly, but environmentally friendly types of energy are developing [1]. A necessary condition is the development of a program for the energy

development of Ukraine, which would provide for reaching certain indicators of the share in the country's energy sector - wind energy, sea tides, the sun, etc. Based on this, we can talk about the need to develop such an energy sector in the country, which is based on the energy processing of organic substances, especially considering the agrarian potential of the state.

Further degradation of ecosystems, pollution of the atmosphere, the upper reaches of dry land and soils, and the World Ocean necessitate urgent measures regarding the greening of the model of economic reproduction by mankind. The key issue is the distribution of responsibilities and powers of countries in accordance with the volume of environmental pollution, the tasks of preserving biosystems and eliminating the consequences, and preventing negative impacts on the environment. It is necessary to take into account both the total volumes of pollution of various types of pollution, calculated in terms of a country's inhabitant, and estimates of production volumes and the dynamics of the processes of ecologization of economic reproduction, in particular, the reduction of the negative burden on nature [2].

The main areas of research in ecological economics are:

- sustainability as the maintenance of life support systems;
- assessment of natural resources and natural capital;
- macroeconomic accounting in the ecological and economic system;
- creation of innovative tools for environmental management;
- environmental and economic modeling at the local, regional and global levels.

It should be said that the volume of industrial activity in the world is such that its consequences qualitatively increase not only the reproductive possibilities of nature, but also the total potential of environmental institutions in relation to its control. The impossibility of solving global problems exclusively at the local, national levels necessitates the creation and use of the capabilities of all mankind or its predominantly most economically and technically developed part. And this, in turn, actualizes the tasks regarding the organization of international, global forums, which were either specially devoted to environmental policy issues, or considered environmental issues along with other urgent problems of modern development [3].

To change the situation, you need to understand the patterns of its development well. Currently, society is in a state of bifurcation (bifurcation, division). There is a bifurcation, branching: ecology is considered as if by itself, the economy - by itself. However, ecology and economy are a single process. Ecology is the consequences of economic activity: how resources are used - such is the ecology. These two factors - ecology and economy - must be in balance. The balance can be achieved by combining the efforts and innovative approaches of different areas of economic activity. It should be stated that the result of a fragmented approach is the instability of the system as a whole and the presence of a large number of local environmental problems.

At the heart of the unification of efforts and innovations are three pillars: education, science, industry (innovation, business, etc.). In the near future, they will have to work together to solve these problems.

It is advisable not only to link the economic results of production and marketing, marketing activities with its environmental characteristics, but also to develop an assessment system that integrates economic and environmental resource-intensive indicators [5].

It is necessary to improve the mechanism of interaction between science, education and production, the introduction of the experience of leading countries in supporting agents of commercial activity in the scientific and industrial sphere, technology transfer, protectionist protection of high-tech industries [8].

The state must constantly monitor economic facilities for their compliance with international environmental safety standards, both national and European. In particular, the subject of assessment should be the level of environmental hazard of operating enterprises or economic facilities, the degree of environmental risk and safety of planned or ongoing activities, including during the construction of facilities; compliance of imported and manufactured products with environmental standards, a comprehensive assessment of the state and prospects for the development and interaction of ecosystems with the processes of economic reproduction, the sphere of human life; control and evaluation of the effectiveness of measures to protect the environment [10].

Conclusions. In essence, environmental consequences are the consequences of economic activity, the result of the use of resources. Resource use and ecology are a single process: how resources are used, so is ecology. An important tool for greening the economic model is the modification of the mechanism of international economic relations in accordance with the principles of equitable distribution of environmental responsibility, financial obligations and powers of countries. Dangerous volumes of anthropogenic impact on the environment necessitate broad concerted action by the world community to limit the destructive impact of humans on ecosystems.

It is necessary to develop and establish a clear system of environmental standards, and link the environmental impact of economic activity with financial results with the complex of tax, customs, credit, depreciation, and organizational levers involved.

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