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## **ECONOMIC PREREQUISITES FOR THE DEVELOPMENT OF THE ECOLOGICAL CULTURE OF FUTURE TRANSPORT PROFESSIONALS**

**Abstract.** The aim of the article is to study the economic prerequisites for the development of ecological culture of future transport professionals and analyze foreign experience of ecological education of students to adapt their best practices to Ukrainian realities and productive use of achievements in training future transport professionals.

The theoretical significance of the article is to determine the economic prerequisites for the development of ecological culture of future transport professionals; to summarize the results of theoretical and comparative analysis of ecological education in foreign countries, establish opportunities to adapt best European practices in the educational context of Ukrainian realities; to determine the preconditions for the development of ecological culture of students of vocational and pre-higher professional educational institutions; to reveal the challenges facing the field of vocational education and training in foreign countries, which address the greening of education. The practical significance of the article is that based on the study of foreign experience, the authors offer recommendations for the introduction of foreign experience during the process of development of ecological culture of future transport professionals in Ukraine.

It was found that the state of ecological consciousness of society directly depends on the economic prerequisites for the development of ecological culture of future professionals in various fields of industrial production, the state's attitude to the development of ecological culture of every citizen. The level of ecological culture of society is positioned as one of the determining factors of economic development of the state, health of the nation, unity of positions on preservation of the natural environment, prevention of its pollution by harmful wastes of production and human life.

The study proved that ecological education is designed to provide future professionals with scientific knowledge about the relationship between nature and society, to help understand the multifaceted importance of nature for society in general and each person in particular, to form an understanding that nature is the basis of human existence and significant part of nature, to cultivate a conscious and caring attitude to it, a sense of responsibility for the environment, to develop creative activity for the effective use, restoration and protection of the environment.

**Keywords:** ecological culture, economic culture, vocational education, pre-higher professional education, foreign experience, transport professionals, green economy.

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## **ЕКОНОМІЧНІ ПЕРЕДУМОВИ РОЗВИТКУ ЕКОЛОГІЧНОЇ КУЛЬТУРИ МАЙБУТНІХ ФАХІВЦІВ СФЕРИ ТРАНСПОРТУ**

**Анотація.** Метою статті є вивчення економічних передумов розвитку екологічної культури майбутніх фахівців сфери транспорту та аналіз зарубіжного досвіду екологічної освіти учнівської молоді задля адаптування її кращих практик до українських реалій і продуктивного використання досягнень у процесі підготовки майбутніх фахівців у сфері транспорту.

Теоретичне значення статті полягає у визначенні економічних передумов розвитку екологічної культури майбутніх фахівців сфери транспорту, узагальненні результатів теоретико-порівняльного аналізу екологічної освіти зарубіжних країн, установленні можливостей адаптування кращих європейських практик в освітній контексті українських реалій, пов'язаних із професійною підготовкою майбутніх фахівців сфери транспорту; визначенні передумов формування екологічної культури здобувачів професійної фахової передвищої та вищої освіти; осмисленні викликів, що постають перед сферою професійної освіти і навчання у країнах світу, на вирішення яких спрямована екологізація освіти. Практичне значення статті полягає в тому, що на основі вивчення зарубіжного досвіду запропоновано рекомендації щодо запровадження зарубіжного досвіду формування екологічної культури майбутніх фахівців сфери транспорту в Україні.

У ході виконаного дослідження встановлено, що стан екологічної свідомості суспільства безпосередньо залежить від економічних передумов розвитку екологічної культури майбутніх фахівців у різних галузях промислового виробництва, ставлення держави до розвитку екологічної культури кожного громадянина. Рівень екологічної культури суспільства позиціоновано одним із визначальних факторів економічного розвитку держави, здоров'я нації, єдності позицій щодо збереження природного середовища, запобігання її забруднень шкідливими відходами виробництва і побуту.

У результаті дослідження доведено, що екологічна освіта покликана забезпечити майбутніх фахівців науковими знаннями про взаємозв'язок природи і суспільства, допомогти зрозуміти багатогранне значення природи для суспільства в цілому і кожної людини зокрема, сформувати розуміння, що природа — це першооснова існування людини, а людина — частина природи, виховати свідоме й бережливе ставлення до неї, почуття відповідальності за навколишнє природне середовище, розвивати творчу активність щодо ефективного використання, відновлення й охорони навколишнього середовища.

**Ключові слова:** екологічна культура, економічна культура, професійна освіта, вища освіта, зарубіжний досвід, транспортна галузь, зелена економіка.

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**Introduction.** In the context of the state economy, the transport sector is seen as a powerful source and means of ensuring social stability, prosperity and well-being of its citizens, connecting internal and external market centers, ensuring human access to basic social services (health, nutrition, education, employment and leisure etc). For a long time, the transport sector has been evaluated exclusively in a positive light all over the world. However, in recent decades, humanity has suffered from extremely negative consequences associated with the growth of passenger traffic and freight traffic. These consequences are primarily in the nature of negative impact on the environment, which in turn highlights the need to develop an ecological culture of future professionals in the field of transport during their initial professional training.

**Analysis of research and problem statement.** The authors of numerous scientific publications have predicted that continuous scientific and technological progress and corresponding economic growth will ensure the formation of «common prosperity» and the creation of a «society of prosperity». At the same time from the end of the twentieth century the ecological consequences of the functioning of the world economy within the framework of the formed technosphere are visibly revealed. In particular, harmful emissions from transport infrastructure, pollutants and greenhouse gases have a negative impact on the climate (over the past four decades, air temperature has been steadily increasing by 0.11 °C per year), causing variability of inflows and outflows of heat on the planet, the dynamics of its storage over the planet etc.

The negative environmental consequences caused by the functioning of the transport sector cause serious concern in the societies of developed countries about the correctness of the chosen vector of economic development. 25% of carbon dioxide emissions into the Earth's atmosphere were produced as a result of various modes of transport [1]. According to the IEA, by 2050 this number will double and continue to grow in developing countries, where the number of passenger cars will increase. In addition to carbon dioxide, nitrogen oxides, which are responsible for increasing the incidence of asthma, sulfur oxides, which are responsible for acid rain, etc., are released into the atmosphere. In this regard, there is need for transition to a «green» economy, modernization of public consciousness, study and implementation of the experience of international environmental organizations, etc. One of the manifestations of the engineering solution to the issue of transport ecology is the increase of interest in hydrogen transport [1].

The «green» economy balances the environmental and economic interests of society for sustainable development. This trend in economics, formed in the last two decades, in which the economy is considered to be a dependent component of the natural environment within which it exists and is part of it. Moreover, speaking of the greening of the modern economy, scientists around the world use several terms, such as «circular economy», «green economy», «bioeconomy». Having studied different approaches to defining the essence of the concept, we can say that the «green» economy is an economic activity aimed at economic growth and social development, based on the development, production and operation of technologies and equipment for environmental management, as well as climate monitoring and forecasting changes. «Green» economy is seen as an economy of sustainable growth dominated by clean industries that use alternative energy and resource-saving technologies that enable economic growth and development of environmental culture [2].

Environmental policy of each of the developed countries provides for the implementation of the economic mechanism of environmental management, aimed at developing management methods that create material interest of entities involved in transport to the most economical exploitation of natural resources, ensuring the most efficient mode of reproduction and taking into account perspectives. There are three types of economic mechanisms of modern environmental management: development of a «soft» mechanism for regulating environmental protection, which is associated with the creation of environmental values and the establishment of restrictive

environmental frameworks; development of a «stimulating» mechanism focused on the development of environmentally friendly industries of the regional economy; development of «hard» mechanism — shifts the vector of development of environmental relations towards administrative and market instruments (with the help of strict tax policy inhibits the development of environmentally hazardous industries) [2].

Professional training of future specialists in the field of transport should take into account all three types of economic mechanisms of modern environmental management. The transport industry must be safe so as not to endanger human health. In this regard, there is an urgent need to train transport professionals with a renewed spiritual consciousness, develop their environmental culture, in order to identify and apply rational ways to solve environmental problems in future professional activities.

**Research results.** The emergence in pedagogical science of such areas as ecological education and ecological pedagogy, indicates a high degree of elaboration of the problems of development of environmental culture in general and ecological competence in particular. However, the high dynamism of socio-political and economic transformations of states and communities requires a constant search for new solutions in the field of environmental problems. On the one hand, the media is increasingly forcing audiences to believe that environmental problems are caused solely by an increase in the world's population. Numerous humankind consume too many resources, mostly food, taking them away from other species. It is proposed to solve the environmental problem by reducing the population of the Earth. Moreover, the authors of such ideas do not seek to «reduce themselves» or at least the population of their country. «Someone else» must be reduced — residents of «third world» countries, citizens of undemocratic totalitarian states, people who have failed to adapt to the conditions of a modern market economy, and so on. It is unfortunate that this, primitive, idea has not lost its relevance and is positioned as «the ultimate truth» [3].

Representatives of the world community are aware that industrial production causes significant damage to the biosphere, threatening not only human life but also flora and fauna. Scientific research has radically changed the perception of intelligent people, showing the negative side of what was previously considered an absolute good. The provisions of the Club of Rome laid the foundation for the first, extremely important and strongest in its emotional impact on human components of environmental culture — «alarm» (disturbing) environmental discourse. Alarmic discourse has shown the failure of the principle of a modern market economy — to get the maximum profit at any cost. What «environmental price» this profit is achieved, nature users do not think — environmental requirements are perceived by them, not as a vital necessity, but as part of administrative pressure from the state, which is desirable to circumvent in any legal way. Analysis of the research of the Club of Rome shows a number of features of its activities. The latest methods are widely used in prognostic research of the Club of Rome — computer modeling, synergetics, foresight, brainstorming, etc. [4—7].

The key results of research of the Social institute of science (social way of organizing joint activities of scientists, which are a special socio-professional group) are of key importance for clarifying the essential characteristics of ecological culture of a person and developing effective ways and mechanisms of development of its elements in future specialists of different specialties. The negative processes taking place in the world society, in fact, turn scientists, especially environmentalists, into some «disadvantaged couples» (according to M. Weber) of society. All over the world, uneducated politicians and entrepreneurs take scientists' warnings lightly about current environmental problems and the global biosphere crisis [4—7].

Instead, scientists claim that in recent years, most of the economic activities currently carried out by Ukrainian business structures in their purely economic interests, creates a significant man-made load, which leads to the degradation of nature. In recent years, total emissions into the atmosphere have increased significantly (7067.6 thousand tons). A significant level of pollution is accounted for by water resources. The quality of natural waters is constantly declining. 26—30% of water in natural water bodies does not meet sanitary and hygienic standards. The volume of water use tends to decrease annually, and the degree of anthropogenic pressure on the water potential is



constantly increasing. Reservoirs receive more than 4.2 billion m<sup>3</sup> of polluted wastewater per year, and the share of polluted wastewater in total drainage increases almost threefold: from 16 to 44% [8].

The development of an ecological imperative in the form of awareness of each person's belonging to the planetary community and the biosphere requires control by understanding the natural component of the human psyche and behavioral instincts. The role of motivations that contribute to the development of an ethical attitude to nature is extremely important. It is believed that the main motivation for the development of the ecological imperative is the very natural conditions in the territory of human habitation. In their lives, people are forced to study the natural features of their area, as it is associated with the conditions of their survival [9, p. 49]. Based on this provision, we can conclude that the modern powerful technosphere, especially megacities, vehicles, completely isolating man from the natural environment, prevent the development of ecological culture.

At the heart of the ideology of foreign concepts of ecological education is the idea of coevolution of nature and society. In Germany and Japan, ecological education of preschool children has been widely developed. The leading idea is the education of morality and love for nature, their participation in solving environmental problems. US ecological education is characterized by a technological focus on the environmental problems of the area where the educational institution is located. In recent years, the development of ecological education in Central Asia has begun. At the same time, there is an undeveloped continuing ecological education at all its levels, the lack of a comprehensive program covering all age groups, the lack of discipline «Ecology» as a separate course, teaching materials, etc. In many countries, ecological education still does not pay enough attention to industrial and regional aspects of ecology, ethnoecology, ethnolandscape, which play a significant role in the development of ecological culture of society [9].

The process of greening education abroad began much earlier than in Ukraine. In Western Europe and the United States, there is a shift in the focus of environmental activities from monitoring the state of the environment to preventing its pollution. There is a wide inclusion of environmental issues in all areas of domestic and foreign policy, attention is drawn to the fact that human economic activity in the environment must strictly comply with the principles of sustainable development.

In Austria, the Ministry responsible for education and the environment has set up a special working group (WG) within the framework of the Austrian Society for Nature and the Environment. The main activities of this group are: the organization of special school projects, environmental campaigns, development of textbooks and teaching materials, organization of seminars and more. In Denmark, environmental education, especially in primary school, is linked to natural, sociological and humanitarian approaches. It is believed that knowledge of ecology should be a part of a system of values, a component of some environmental code of modern ethics. In Ireland, the Center for Environmental Information (EN-FO) has been established, which provides all stakeholders and organizations with reliable information on the state of the environment, as well as on the methods of ecological education of student youth. The establishment of this center became a source of general interest in Ireland's environmental problems.

The most important tasks of the German system of ecological education are to change perceptions and improve young people's knowledge of the environment, to develop their willingness to protect nature, to develop environmentally responsible behavior in the growing model. Ecological education is based on man, as man is the cause of catastrophic pollution. Ecological education in Greece focuses on specific requirements: to provide an understanding not only of the real existence of environmental problems, but also the realization that they are the result of the interaction of many financial, social, political and economic reasons, both urban and rural; give each student the opportunity to acquire knowledge, a sense of the value of nature, relationships, active interest, as well as understanding and skills necessary to protect and optimize the local environment; motivate individuals, social groups and society as a whole to learn new patterns of behavior that allow better management of the environment.

Sweden's ecological education has a priority status in the interstate cooperation of the Scandinavian countries. Its purpose is to inform the public and shape public opinion and thus contribute to the sustainable development of society. This emphasizes the fundamental importance of the moral and ethical aspect of ecological education. The long-term goal of ecological education in the Netherlands is to make it an integral part of school curricula based on the interest and voluntary choice of each student. Under Dutch law, schools have the right to choose the content and methods of ecological education. In general, ecological education is seen as an important tool to modify the behavior of citizens, make them more interested in nature. The UK government has identified ecological education as the «heart» of sustainable development policies. The goal of sustainable development, according to British experts, is to support the joint actions of all segments of society and the economy and move «smoothly», bypassing various crises. According to the National Education Program, schools must perform the following socially important tasks: give all students the opportunity to acquire knowledge, values, attitudes, decision-making experience, skills and abilities that are necessary to protect and improve the environment; support students in their quest to observe nature and explore the environment from different perspectives; to encourage children's interest in the environment, as well as their desire to take a practical part in solving real environmental problems.

In France it is emphasized on the importance of mastering environmental knowledge, especially scientific environmental concepts, important for understanding the biophysical, economic and social mechanisms of the environment. Official documents state that respect for the environment also means respect for all those around you [10].

Environmental education in Belgium aims to address the following issues: understanding the environmental characteristics of a changing environment; development of social and communicative skills that allow for effective cooperation between different groups of people interested in solving environmental problems; use of various methods and techniques for research and protection of the natural environment; awakening in the individual the desire to learn the rules of personal responsibility in order to ensure the sustainable development of society. The leading task of environmental education in the United States is the education of environmental literacy of students. The system of ecological education of the United States of America is designed to solve the following problems: to ensure extensive contact of children with the environment; provide opportunities for the study of living organisms in their natural habitat; to contribute to the development of environmentally friendly styles of behavior and activities in nature; to form a set of knowledge about the unity of man, society and the environment, the relationship of local, regional and global environmental problems, the environment as a system of natural, economic and social factors; involve each student in solving local environmental problems, etc. Teaching ecology in China is an essential part of compulsory education, although ecological education is conducted mainly in the form of electives or workshops within the allotted time for school. Students master the basics of knowledge about the environment, skills and abilities to protect the environment in the process of field or laboratory classes [10]. The high ecological culture of the national economy of Japan is the result of the implementation of educational programs, the content of which covers all areas of national training. The attitude of the Japanese to nature is a special national psychology, which is based on group consciousness. That is why ecological education in the country begins long before school [11].

Thus, the world education system, its basic principles have been significantly restructured and further reformed in line with the demand of labor markets. The huge support from the governments of the leading countries allows educational institutions to quickly and effectively update the educational technical and methodological base, actively improve the educational process, expand and modernize the basic scientific training in the field of development of ecological culture.

The development of ecological culture in vocational education institutions in Ukraine is one of the most important areas of implementation of the laws of Ukraine «On Environmental Protection», «On Education», «On Higher Education», the National Doctrine of Education Development of Ukraine, and others. The Concept of Environmental Education of Ukraine (2001)

states that one of the main levers in solving Ukraine's environmental problems is the training of citizens with a high level of environmental awareness and culture. The document emphasizes the importance of interuniversity, regional and international contacts of teachers and students (listeners); participation of specialists of the Ministry of Natural Resources in the development of State standards of environmental education; cooperation with public organizations; regular exchange of experience, internships, implementation of joint environmental projects, research programs and publication of textbooks and manuals; retraining of pedagogical staff of higher educational institutions in the field of ecological education [12]. The Concept of Environmental Education of Ukraine states that one of the main components of environmental culture is the environmental worldview, and one of the tasks of higher education is the development of students' high ecological culture, deep environmental knowledge and environmental worldview [12].

At the same time, in Ukraine, researchers diagnose the state of education and the environment as a crisis. The system of ecological education in Ukraine continues to be fragmentary (unsystematized), weak conceptually, declarative, and, therefore, inefficient. Environmental issues do not fit well into the system of market relations, as the market is one of the means of stimulating needs, and most importantly — to meet them. The ecological worldview is focused on other values — human life in a clean environment, the preservation of all forms of life. The critical situation in the field of ecological education is explained by the fact that the consumer attitude to nature has formed and continues to dominate; ignorance and destruction of folk traditions of rational environmental management; underestimation of ecological knowledge in the education system; low level of implementation of pedagogical science achievements in practice; weak material and technical and methodological support of the educational process [13, p. 120].

The results of the analysis of scientific research indicate a significant limitation of economic preconditions for the development of ecological culture both in Ukraine and in the world. One of the promising areas of overcoming the crisis and establishing positive interaction between the economy and ecology, creating the necessary conditions for the interaction of economic development and environmental culture can be large-scale greening of human activity and social consciousness, penetration of environmental ideas into all spheres of social development. Economic conditions must be created for the establishment of ecological culture in the production and consciousness of the people. For now it is obvious that Ukrainian sphere of vocational education and training is able to provide conditions for the development of social and environmental responsibility of future professionals-future subjects of economic activity.

**Conclusions.** The state of ecological consciousness of society directly depends on the economic preconditions for the development of ecological culture of future professionals in various fields of industrial production, the attitude of the state to the development of ecological culture of every citizen. Solving environmental problems requires state funding for environmental measures and the introduction of environmentally friendly technologies, the implementation of structural economic changes based on environmental factors, requirements and restrictions. And, from these positions, the more acute the ecological situation in Ukraine, the more today and in the future there is a need to focus on the protection and improvement of the environment, the rationalization of environmental management. The level of ecological culture of society is one of the determining factors of economic development of the state, health of the nation, unity of positions on preservation of the natural environment, prevention of its pollution by harmful wastes of production and life. The decisive factor is the creation of economic preconditions that increase the level of ecological education designed to ensure the development of environmental culture of future professionals, mastering scientific knowledge about the relationship of nature and society, to help understand the multifaceted importance of nature for society as a whole and nature is the basis of human existence, and man is a part of nature, to cultivate a conscious and caring attitude to it, a sense of responsibility for the environment, to develop creative activity for the effective use, restoration and protection of the environment.

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