

JEL Classification: O180

UDC 334:732:631.115.8

FORMATION OF THE MECHANISM OF REGIONAL SUSTAINABLE DEVELOPMENT ON THE BASIS OF ENVIRONMENTAL AND ECONOMIC RISK

L. HANUSHCHAK-EFIMENKO¹

¹ Kyiv National University of Technologies and Design

Introduction and objective: Ensuring sustainable development of regions is closely correlated with the implementation of the doctrines of reducing ecological and economic threats to life and health of the population and to prevent economic damage to the environment. A comprehensive solution to these problems is possible through the development and implementation of the mechanism of sustainable development of socio-ecological-economic system of the region and the reproduction of its natural environment by a substantiation of tools and management processes of ecological and economic risks.

The aim of the study – the development of tools of management of ecological and economic risks as an immanent element of a mechanism to ensure the sustainable development of regional, social and economic system.

Research methods: systems analysis was used to study the system of indicators of rural development; Cluster analysis - analysis of rural development

Results: developed a system of funds of instrumentality and methodological support strategies for sustainable ecological and economic development of regions, based on the account of the interdependence of economic, social, environmental and demographic factors, algorithmic model of the process of management of ecological and economic risks of regional development.

Conclusions: detailed process of the operation of the three-tier system of "reducing environmental and economic risks - preventing the economic damage to the environment - sustainable regional development", the coordinates of which complement the strategic orientations of the regional environmental and economic policies and are responsible for the implementation of an innovative approach to the formation of an ordered vector of environmental development priorities of regional socio-economic system.

Keywords: environmental and economic risks; sustainable development; social, ecological and economic system of the region.

Formulation of the problem. The study of environmental and economic risks of the behavior of economic agents and their causes, as well as possible adverse effects on the industrial and economic systems of the region and the people living on their territory, covers a wide range of issues of social, economic and environmental well-being related to the interests of the entire regional community. Such an understanding of the relationship of three systems began a regional environmental-economic policy (reducing damage to the environment, to achieve superior living environment, sustainable development) affects the formation of the foundations of the modern theory of environmental economics and builds in a number of environmental values and economic preferences of the totality of scientific knowledge, considering various aspects of the phenomenon of ecological and economic risks.

Lack of attention when considered in the tradition of the classical approach to the study of ecological-economic risks as a phenomenon accompanying the dynamics of reproduction processes, actualizes various aspects of theoretical, methodological, empirical and factual study of risks in the context of ensuring the sustainability of socio-ecological-economic system of the region.

Promising approaches to the formation of the organizational-economic environmental management mechanism at the regional level, necessarily entails consideration of likely environmental and economic risks of the development, the occurrence of which is generated by the processes of economic entities of the regional economy.

At the same time encouraging of eco-oriented behavior is the basis of a control system to reduce social, economic, environmental, economic risks of the region's population living. Today, ecological and economic risk has become an objective phenomenon, affecting the formation of a regional environmental-economic policy, so the demand for the introduction into scientific circulation category "ecological and economic risk" was dictated by the necessity and full its use as an epistemological tool of regulation of economic relations in the region.

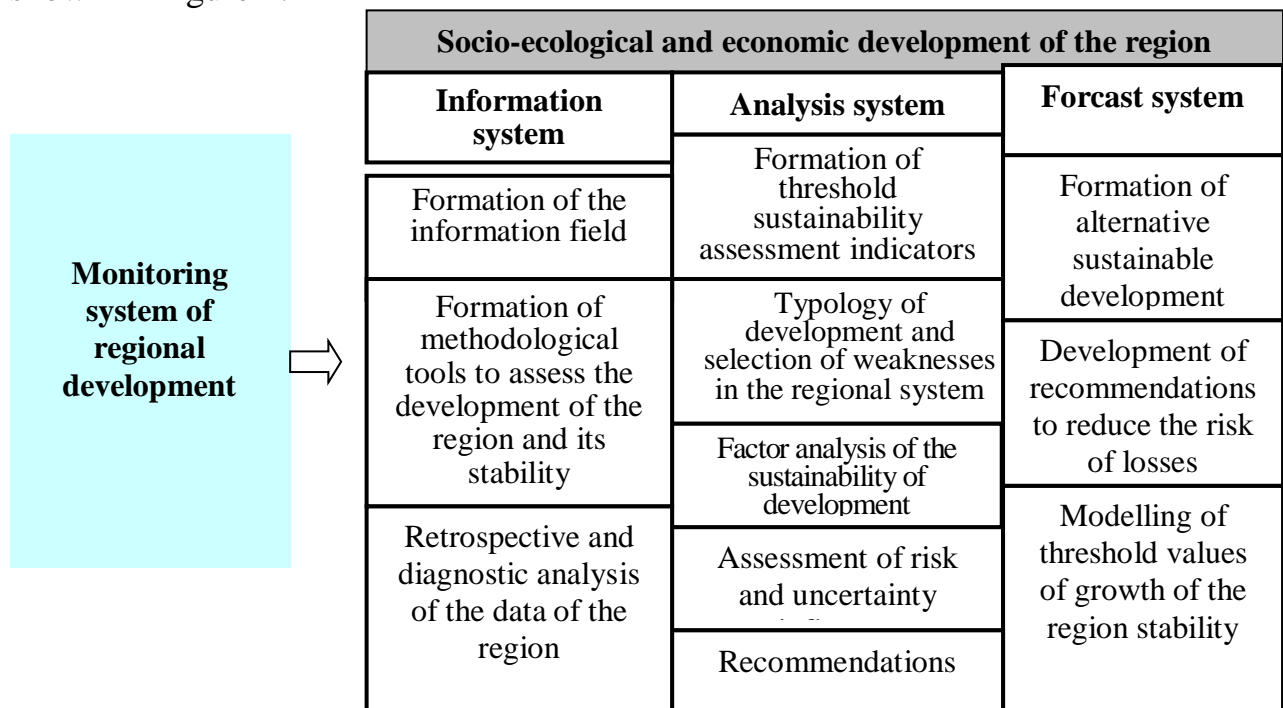
Based on the above considerations, clearly leads us to the conclusion about the relevance of the study of theoretical and practical problems of reducing the environmental and economic risks, the causes of which are closely related to the irrational behavior of participants of rural activities at the regional level.

Analysis of recent research and publications. The development of the chosen problem involves a comprehensive analysis of the socio-economic and economic-environmental aspects of sustainable development of the region. Analysis of monographs and periodicals on the subject in question showed that the overall scientific publications on sustainable development in general, as well as the assessment and management of environmental and economic risks, in particular, are very diverse in approach and topics and cover a wide range of issues: the conceptual features of regional development specific to the process, features and limitations in the studies were analyzed by: M.K. Orlatogo [7], I.B. Prokop [8], P.T. Sabluka [9], V.V. Yurchishin [10]; to scientific substantiation of the concept of ecological and economic sustainable development at the regional level were devoted fundamental scientific works of O.A. Bittera, O.G. Bulavki, P.I. Gaydutskogo [5], I.F. Gnibidenka [11], J.E. Gubeni, O.D. Gudzinskogo, D.F. Krisanova, M.F. Kropivko, E.M. Libanovoy [6], A.V. Lisovogo, M.J. Malika, V.M. Nelep, O.I. Pavlov, K.V. Prokopishak, V.P. Riabokon, V.K. Tereshchenko, D.V. Shiyan, K.I. Yakubi.

The purpose of the article – development of a conceptual model, instrumentation tool, methodology and organizational-economic mechanism of formation of algorithms of sustainable, social, ecological and economic development of regions on the basis of reducing the environmental and economic risks to the functioning of all business entities and population.

Results. Developed algorithmic model of the mechanism of formation of the sustainable development of the region, based on the involvement of the Institute of monitoring of ecological and economic risks of regional development and decision-making on its basis, contributing to minimize them.

Monitoring is an important tool of information support of mechanism for sustainable regional development, and of effective management of this process. Conceptual model of regional development of monitoring of the system is shown in Figure 1.



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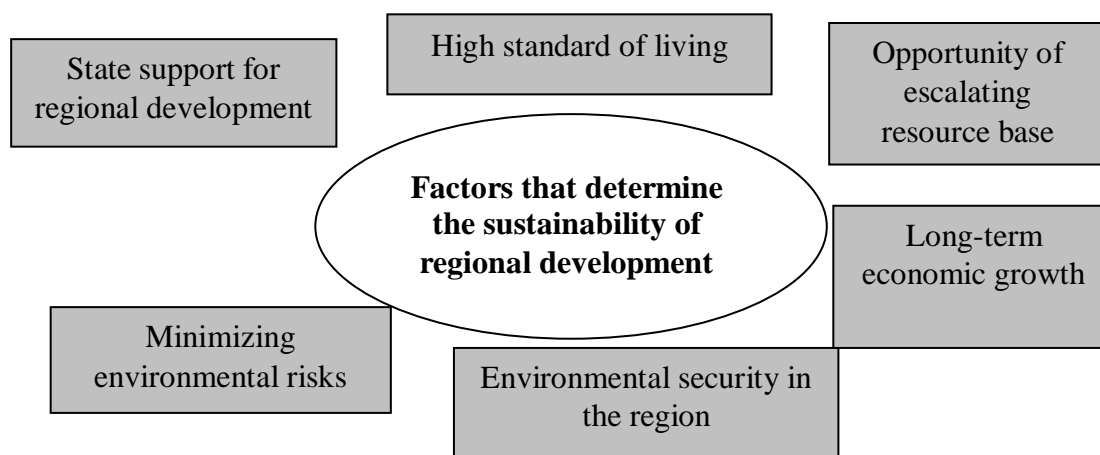
Figure 1. Conceptual model of the system for monitoring the sustainable development of the region

The proposed monitoring system, we believe, should cover monitoring, analysis, evaluation and prediction of the risk factors that are present in the region, in order to prepare management decisions and recommendations aimed at improving the ecological and economic situation.

The algorithm for generating sustainable development in the region management system includes the following stages: development of regional scenarios for sustainable development; improvement of organizational structure of management of natural resources through the optimization of existing structures; choice of a system of indicators that adequately reflect the current trends in the development of social, ecological and economic system; economic development measures for the implementation of the developed strategy; evaluation of the effectiveness of the proposed sustainable development management system.

The effectiveness of the regional strategy is evaluated from the standpoint of the ability of social, ecological and economic system to use all available resources, supporting the normal reproduction of the environment and the scope of the region's population living. The model of sustainable development of the region should be based on a fundamentally new mechanism for the redistribution of environmental benefits. The main objective of this mechanism is maximum satisfaction of social needs by achieving optimal proportion of the allocation of scarce resources.

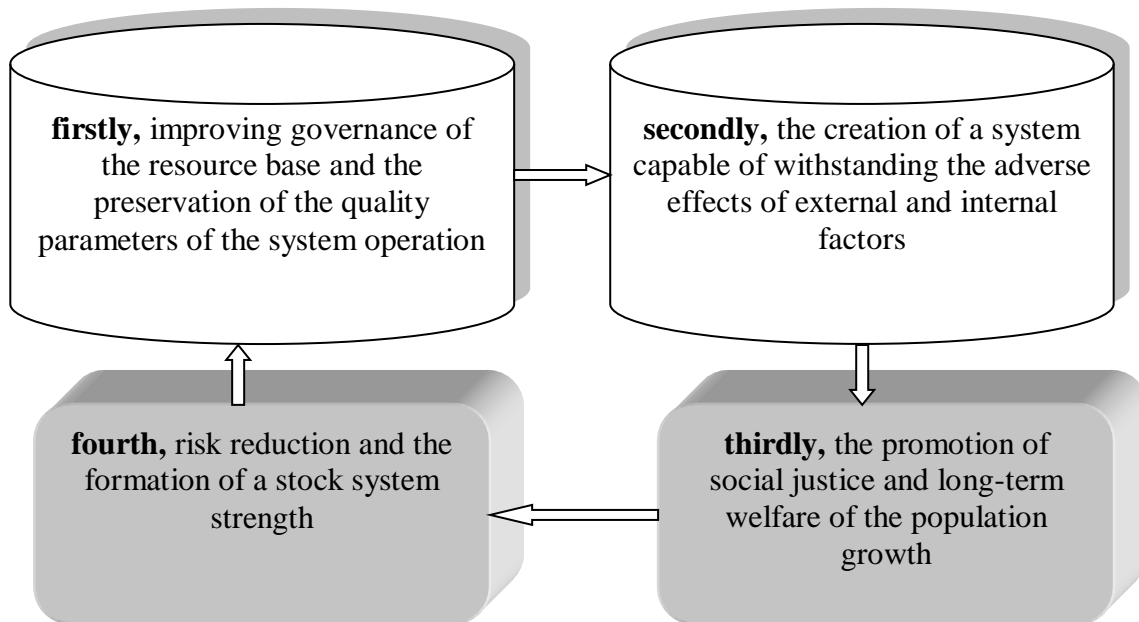
Therefore, in relation to the forecast of development of the region puts forward the following requirements: firstly, to ensure its economic development; secondly, to ensure the reproduction of the resource base; Third, improve the welfare and safety of the population. The totality of the factors that determine the sustainability of regional development are illustrated in Figure 2.



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Figure 2. **Factors that shape regional development sustainability**

With the achievement of stability in the region forms abilities of development through the implementation of its objectives, in accordance with the algorithmic model of the functioning of the mechanism of its software, as shown in Figure 3.



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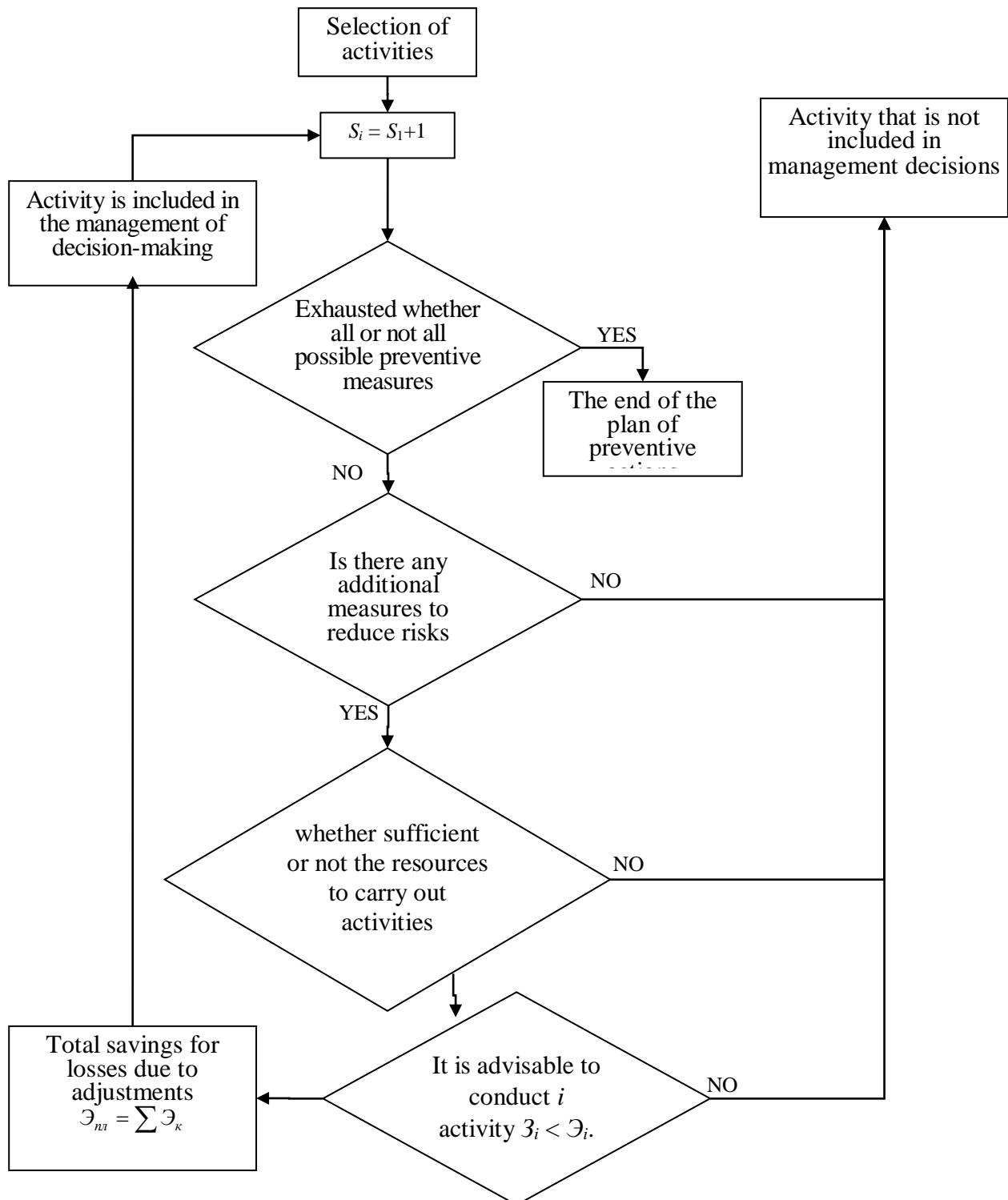
Figure 3. **The mechanism of sustainable development of the region**

Formed on the proposed conceptual basis of the mechanism of management of sustainable development in the region gives to its social, ecological and economic system, the vector of development, contributing, on the one hand, the preservation of the system itself and its best qualities and achievements, and on the other - further capacity changes corresponding to the imperatives of sustainable development .

The objective of reducing environmental and economic risks of life of the population of the region can be solved by forming instrumentality and methodological framework as the basis for the development of the system of targeted measures on prevention of risks. Proposed the following algorithm of forming a system of measures to prevent the development of ecological and economic risks of life of the population of the region (Figure 4.), according to which the event is included in the process of management decision-making under the following conditions:

1. Ability to implement measures.
2. The availability of resources for implementation of activities.
3. The economic feasibility of the event.

Formation of institutional, instrumentational and methodological support system to reduce the environmental and economic threats in general and the health of the population, in particular, its first objective is to consolidate the regional rules of environmentally oriented behavior of businesses and individuals in approving legal documents, regulate their activities towards ensuring environmental safety.



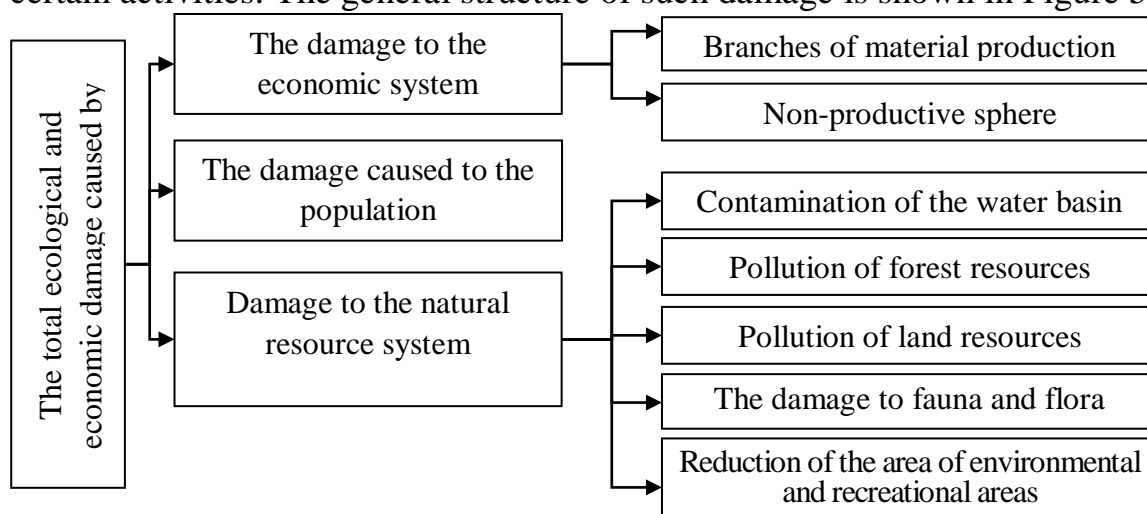
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Figure 4. **Block diagram of the selection of measures for inclusion in the strategy of prevention of environmental and economic risks of life of the population of the region**

In this regard, ecological and economic mechanism for sustainable regional development must contain the following functional units of reducing the environmental and economic risks of life of the population: reducing environmental and economic risks; prevent economic damage; ensuring environmental safety.

The task of reducing the environmental and economic risks of life of the population, in fact, is one of the main conditions to prevent economic damage to human health and the environment of the region and is based on the following principles: the principle of ecological and economic governance - the desire to ensure the growth of social welfare and comfortable living conditions of the population of the region with the necessary positive balance "benefit - harm". For practical realization of this principle is proposed to characterize the risk of deterioration of the health of the population by the size of the reduction in life expectancy, and the benefit - the size of its extension; the principle of striving for an increase in life expectancy, for which a person can lead a full and active life in a state of physical, mental and social well-being; the principle of reducing the risk to public health - risk management can be an effective and consistent, taking into account all of the total range of factors potentially harmful to human health; the principle of limitation of undesirable effects – activity in the field of risk management should be implemented within the constraints of the impact on natural ecosystems.

The total ecological and economic damage caused by pollution of the environment is an integral generalizing assessment of negative effects of economic activities. Quantitatively, it is defined as monetary (value), the expression of all kinds of negative effects of environmental pollution caused by certain activities. The general structure of such damage is shown in Figure 5.



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Figure 5. The structure of the general ecological and economic damage caused by environmental pollution

The ecological and economic damage to human health is understood as a two-dimensional value including the likelihood of undesirable random event for the person and the associated economic losses. All becomes more urgent through the analysis of the factors affecting the quality of human capital, including environmental factors. There is a link between environmental pollution and the deterioration of health of the population, the weakening of immunity, genetic changes. The poor state of the environment determines up to 20% of the population morbidity, including up to 50% of cancers.

One of the most difficult issues with which professionals face during solving the problem of assessing environmental damage to public health, is how to evaluate the cost of lost human lives and the loss of population morbidity. In addition, it is often the justification of expediency of construction of industrial facilities, implementation of security systems in production, the creation of expensive medicines, and in some other situations, when you have to compare the costs for the development and implementation of projects to reduce and prevent the occurrence of environmental and economic human activity risks the magnitude of the positive effect obtained as a result of their implementation.

A similar situation occurs in the proof of the effectiveness and selection of priority of environmental protection measures, intended to protect not only the environment but also human health, protect and extend its life. In this case, generally, the environmental expenditure are compared with the effect of their implementation, which is calculated based on the cost of the quality of the saved assessment process (the value of natural resources, public and private property, etc.), including increased with their help, the duration of human life .

What kind of content can be embedded in the concept of "value of human life", "the cost of the risk of death," "cost of illness" when trying to solve, the environmental challenges? In our opinion, there are two approaches to solving this problem: methods based on the analysis of the effects already manifested; methods based on the concept of risk is assessed as expected number of casualties for the year on the basis of determining the probability for an individual to become a victim of the impact of any factor (exposure of chemical pollution, biological and physical influence, etc.) and the total number of people exposed to this influence.

Due to the large number of existing approaches it seems appropriate to create an approach that uses a single set of principles for the evaluation of damage to both the health and lives of people.

An objective assessment of a unified methodology of ecological and economic risks will allow to adequately reflect the overall effectiveness of environmental measures targeted programs and environmental focus routines that, in general, allow to make effective management decisions at different levels of government, including at the regional.

For the optimization of the system of making effective management decisions it is necessary to move from indicators of risk of damage to the natural and economic units of measurement. This transition may be based on the concept of social and economic damage, according to which it is assumed to have a linear relationship between natural (the risk of death, etc.) and economic indicators of damage.

Economic evaluation of damage to health is based on the conversion effects, measured in real terms, in monetary terms. The social component of damage from the impact on health of environmental pollution is measured by the monetary amount that society is willing to pay to reduce, avoid or prevent exposure. If the health improves, then the willingness to "pay" for the prevention of damage in some way characterizes the "benefit".

The concept of socio-economic damage and produced on its basis the economic assessment is based on customer value theory. The underlying idea is to determine the economic value of the effect of health is to construct an indifference curve "environmental quality - other consumer goods". Consumers (or population) have a set of preferences, how to market goods and environmental quality and the related health quality (or non-market goods). Taking this assumption as the basis, it is possible to measure how individuals assess the quality of the environment and their health in relation to other benefits by determining how they are willing to sacrifice other benefits in order to get the benefits of better health. The expression of these benefits in monetary terms is the most appropriate way to determine people's willingness to donate by alternative consumer goods.

Conclusions. The system of environmental initiatives to solve regional problems by reducing the environmental and economic risks, formed on the basis of situational modeling as a basic tool, which determines the orientation of environmental and economic policy of imperative sustainable development. The most important area to ensure regional sustainable development is the formation of an ordered vector environmental priorities of socio-economic system based on the environmental threats that will segment the environmental activities by groups that implement specific tasks to reduce the environmental and economic risks. Such ecological and economic structures, which represent a specific action plan aimed at increasing the level of environmental safety and ensures reduction of ecological and economic risks in a particular area, the initiators of which may have different participants in the economic process (governments, citizens, businesses, non-profit organizations), it is advisable to call "environmental initiatives".

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