

Organizational and Economic Mechanism for the Environmentally Sustainable Development of an Industrialized Region

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Abstract – Insufficient attention to environmental factors and their role in the Russian economy when developing programs for the socio-economic development of territories led to a decrease in the efficiency of using natural resource potential in crisis conditions and had a negative impact on the ecology of the regions. The current situation required a detailed consideration of the theoretical and methodological issues of the formation of the organizational and economic mechanism of the environmentally sustainable development of the region, which determined the subject of the study. The work uses the methods of scientific knowledge, induction, deduction, systemic and integrated approach. The methods of multidimensional economic and statistical analysis, expert assessments, economic and mathematical modeling are also used as an instrumental and methodological apparatus. The study gives a theoretical idea of the nature and content of the environmentally sustainable development of industrial-developed territories, clarifies the place and role of rational use of the natural resource potential of the territory in shaping the environmentally sustainable development of the region. The paper outlines the structural scheme of the regional organizational and economic mechanism of environmentally sustainable development of the territory. The reasons, forms, consequences of the relations imbalance between society and nature were also clarified. Directions for solving regional environmental problems of the sustainable development of industrialized territories were determined.

Key words – industrial areas, sustainable development, environment-friendly industry

I. INTRODUCTION

The development of man, society and nature are closely interrelated. And the more a society is saturated with material goods, the more actively increases the growth of contradictions in the development of social production and environmental well-being. Solving this problem requires the development of the concept of sustainable development, which implies a balance of economic, environmental and social interests.

Modern regional economic conditions allow economic entities to choose various strategies for using natural-resource potential to ensure their socio-economic development. However, the goals and objectives of the regions do not always coincide with the interests of the center in matters of environmental management. In this situation, the results of the environmental and economic assessment of the state of the

territory are important. Such an assessment serves as the basis for the formation of the organizational-economic mechanism for the sustainable development of regions [1, 2]. This mechanism involves the harmonization of the interests of the center, regions and economic entities, which subsequently contributes to the identification of priority areas of economic development.

II. PROBLEM STATEMENT

The issues of sustainable development of industrialized regions in the Russian Federation were studied by few scientists, among them L. Yakobson, A. Akishin, P. Kasyanov, E. Arustamov, O. Balatsky, Ya. Yandyganov [3]. Many scientists and practitioners were engaged in the development of conceptual foundations and methodological tools for assessing environmental management in the context of the need to ensure the sustainable development of the regional economy [4–6]. However, in their works it is necessary to note the absence of systemic approaches to the formation of the organizational and economic mechanism of the ecologically sustainable development of industrially developed regions based on the rational use of the natural resource potential.

This problem necessitates the formation of a territory assessment system that is adequate to the modern environmental and economic conditions, the development of innovative strategies for the sustainable development of industrially developed regions based on the rational use of the natural resource base.

III. MATERIALS AND METHODS

The theoretical and methodological basis of the research is laid by the works of national and international scientists, which reflect the problems of sustainability of the socio-economic development of the regions and the greening of the economy, the formation of the organizational and economic mechanism of the environmentally sustainable development of industrial-developed regions, as well as the problems of rational use of natural resource potential territories. The research is based on the systematic, process and strategic approaches.

The use of the systematic approach was dictated by the need to consider the regions as a set of complex,

heterogeneous and dynamic components in the system-forming structure of the economy and its management with a clear justification of resource, material, technical, organizational, personnel, financial and investment support for regional development. The study of the regional development from the perspective of the process approach allowed analyzing the structure of regional processes, to study the features, forms and directions of relations between processes and their groups.

The strategic approach ensured the validity of developing mechanisms for self-determination of regional socio-economic systems in the external environment, orienting the strategic attitudes of systems to development, and not exclusively to growth, in addition to managerial rationalism associated with the identification of internal reserves of economic growth based on improving the efficiency of using all types of resources.

To achieve the required quality of work, the following methods were used: methods of strategic planning; expert assessment method; methodical approaches of welfare economics, neo-institutional economics and environmental economics; comparative dynamics method; economic and mathematical method; statistical methods; complex target method.

IV. COMPONENTS OF THE ORGANIZATIONAL AND ECONOMIC MECHANISM FOR THE ENVIRONMENTALLY SUSTAINABLE DEVELOPMENT OF AN INDUSTRIALIZED TERRITORY

The organizational and economic mechanism of a territory is the interrelated functioning of social, ecological and economic regional subsystems [7, 8]. In the process of changing the elements of the regional system and processes of interaction of economic phenomena, this mechanism is constantly changing and improving.

The following structural elements of the organizational-economic mechanism can be identified: resource support (internal and external sources), legal regulation (federal, regional, municipal), organizational support (organizational structures, organizational actions).

The organizational component contributes to improving the management of sustainable development in the region. It is designed to monitor the compliance of the organizational and technical capabilities of the territory with the conditions for the development of innovations. This component involves the conduct of such actions as analysis, comparison, identification of inconsistencies and the formation of measures to overcome them [9–11].

The economic component serves to maintain integrated sustainability within the framework of existing resource constraints, taking into account the annual cyclical nature of demand.

Thus, the organizational and economic mechanism of sustainable development of territories is an organizationally ordered system of interrelated functioning of social, environmental, and economic phenomena, based on institutional stability and effective management, aimed at

achieving goals, sustainable economic growth and improving competitiveness.

In the course of the study, regions were grouped according to the integral level of sustainable development; the choice of regions was made on the basis of indicators of GRP, quality of life of the population and sectoral indicators of development [12].

At the second stage, criteria indicators were determined that most characterize the level of regional development, as well as indicators which values are available in official statistical sources.

The selected indicators were combined into groups of economic, social, environmental, infrastructural indicators, which, in our opinion, allow us to assess the degree of sustainability of the studied territories.

At the fourth stage, the indicators led to a comparable indicator using the multidimensional average formula, which is used in many regional economic studies. Moreover, the weight of each factor is equal to one. Thus, the integral indicator is the sum of particular criterion indicators:

$$I_i^0 = \sum_{k=1}^{10} I_i^k \cdot W^k$$

where I_i^0 is integral indicator of the i -th region; i is the number of the region in the selection; k is the number of the indicator in the array of criterion indicators, $k = 1, \dots, 10$; I_i^k is the private index of the i -th region in k -th criterion indicator; W^k is the weight of the private index in k -th criterion indicator: $\sum_{i=1}^{10} W^k$.

The table shows the calculated integral indicators for the outsider regions.

TABLE I. VALUE OF INTEGRAL INDICATOR FOR THE LEVEL OF REGIONAL DEVELOPMENT IN 2014–2017

No.	Region	Economic	Social	Environmental	Infrastructural	Integral indicator	Rank
	Kabardino-Balkar Republic	3.286	5.778	3.500	3.500	4.583	1
	Republic of North Ossetia	4.000	5.222	7.000	2.333	4.583	1
	Republic of Buryatia	4.000	5.000	8.000	2.167	4.667	2
	Chechen Republic	4.429	3.778	3.500	4.500	4.708	3
	Ivanovo Oblast	3.714	5.889	8.500	1.500	4.750	4
	Kurgan Oblast	3.429	6.111	8.000	2.667	5.083	5
	Republic of Tyva	5.286	4.444	5.000	3.667	5.292	6
	Karachay-Cherkess Republic	5.286	5.444	6.500	3.500	5.333	7
	Republic of Ingushetia	7.000	4.000	1.500	4.833	5.417	8
	Republic of Kalmykia	6.714	6.111	3.500	4.167	6.000	9

^a Calculated by the authors according to Rosstat.

The analysis revealed criteria with a minimum value of the indices reflecting problem areas. They are divided into two groups: economic indicators and indicators of standard of living.

Low values of selected indicators mean a low rate of re-equipment of production, which contributes to a decrease in the standard of living of the population of the constituent entities represented as a key indicator of sustainable development of the territory [13, 14].

The study showed that the subjects listed in the table significantly lag behind other regions of Russia.

The existing problem lies in the low level of regional development and, consequently, the lack of sustainability of the region's economy and the capacity for self-development.

According to the analysis of the integral indicator of the development of lagging regions, the deeply depressed regions of the Russian Federation in 2014-2017 included: the Republic of Kalmykia, the Republic of Ingushetia, the Karachay-Cherkess Republic, the Republic of Tyva, the Kurgan Oblast.

Based on the above, it can be noted that in these regions there are a lot of overlapping problems, despite the different affiliation to the federal districts, location, etc. In general, all the analyzed regions have certain problems that are of top priority not only for them, but also for other regions.

The used methodology for assessing the level of regional development is universal, it is efficient, convenient in conducting research; it can use information only from public sources. This method allows assessing the level of development of all the constituent entities of the Russian Federation and, based on the results obtained, to develop proposals for managing the stability of the territory.

The governments of the regions under study should take into account the specifics of the development of the subject and the preferences of the population when developing a policy for sustainable development, and on this basis start to develop programs for the socio-economic development of the subject. The main strategic goal of development of each region is to improve the quality of life of the population of the territory to a level not lower than the national one, based on the realization of its geographical, industrial, scientific, cultural and tourist potential.

The organizational and economic mechanism of sustainable development of the territory includes organically related organizational, economic and informational measures designed to create the conditions that are necessary to ensure the effective functioning of regional socio-ecological-economic subsystems [15].

It is possible to achieve environmentally sustainable development in industrially developed territories by increasing the functional and targeted effectiveness of the environmental goals of economic entities. At the same time, it is necessary to take into account the causal relationships of the goals and objectives of large economic agents with the possibilities of environmental management and the availability of resources to improve the energy efficiency of the new economy [16]. This necessitated the formation of an organizational-economic

mechanism for the environmentally sustainable development of industrialized territories, based on the principles of: ensuring a balanced economy and ecology; ensuring harmonization of economic and social spheres; making decisions that affect the development of not only the existing society, but also the future generation, which has the same rights to use resources.

Active use of natural resources in industrialized areas leads to their gradual depletion, degradation of the natural environment, reducing the possibility of reproduction and further development. Therefore, in order to objectively assess the level of sustainability of the economic system, the traditional system of indicators should be supplemented with indicators of the consumption of natural potential in the course of economic activity. Of course, the models of the organizational and economic mechanism of environmentally sustainable development of the territory should be based on innovative methods of interconnecting indicators of socio-economic development and environmental characteristics of energy saving and resource saving.

V. CONCLUSIONS

The organizational and economic mechanism for the environmentally sustainable development of industrialized regions should reflect the ecological status of the nature management area. Meeting the needs of the population of the region should be based on a combination of economic growth and environmental management. Ecologization of the economy should be carried out through the development and implementation of investment projects and programs with an active innovation strategy of environmental management. Management of sustainable development should proceed from the principles of combining market mechanisms and government regulation, taking into account environmental factors, and preserving the region's natural-resource potential.

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