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FUNCTIONAL ECONOMIC

AND ECOLOGICAL STRUCTURAL DEVELOPMENT AS AN OBJECT
OF A SUSTAINABLE REGIONAL ENVIRONMENT

DESARROLLO ESTRUCTURAL ECONÓMICO Y ECOLÓGICO FUNCIONAL COMO UN OBJETO DE UN AMBIENTE REGIONAL SOSTENIBLE

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ABSTRACT: The potential resource of regions that are subject to economic and environmental stress and the nature of their environmental regulation should be of great importance to the development of the economic and social potential of Azerbaijan. The theoretical study of this problem from an interdisciplinary approach is important to ensure the implementation of integral projects. The present work analyses how this problem should be address taking into account economic, environmental and social sciences. According to research, the use of modeling projects, first of all, creates the need for regional development and functional activities of the country. It is seen that the stability of this need from a theoretical point of view is to a certain extent related to the activity of functional structures.

Keywords: Sustainable development, interdisciplinary, resource management.

RESUMEN: El potencial de recursos de las regiones que están sujetas a tensiones económicas y ambientales y la naturaleza de su regulación ambiental deberían ser de gran importancia para el desarrollo del potencial económico y social de Azerbaiyán. El estudio teórico de esta problemática desde un enfoque interdisciplinario es importante para asegurar la implementación de proyectos integrales. El presente trabajo analiza cómo se debe abordar este problema teniendo en cuenta las ciencias económicas, ambientales y sociales. Según la investigación, el uso de proyectos de modelización, en primer lugar, crea la necesidad de desarrollo regional y actividades funcionales del país. Se ve que la estabilidad de esta necesidad desde un punto de vista teórico está en cierta medida relacionada con la actividad de las estructuras funcionales.

Palabras clave: Desarrollo sostenible, interdisciplinariedad, gestión de recursos.

INTRODUCTION

The economic and ecological geographical factors are especially complex and important in the socio-economic development of regions. The main sign of complexity is manifested when the natural environment consists of closely interrelated elements, coordination, mutual substitution of regional resources and conditions. Complexity in scientific sources consists of solving the problems created by the reactions of various elements of natural production structures in connection with the expansion of economic and geographical objects or operating enterprises.

In this regard, each business activity has a complex effect on different environments. For example, thermal power plants manifest their impact on the environment in different ways. So, the release of harmful substances into the atmosphere and the evaporation of water from water collection plants leads to soil salinity, the land is polluted by slags. The creation of cooling water storage facilities leads to an increase or decrease in the water table. Ultimately, it contributes to the degradation of agricultural land.

The problem of nature management, first of all, is characterized by components as complex as re-production, economic efficiency, interconnectedness of various sectors of the economy, etc. The principle of complex nature management is manifested more clearly in a clear example of the use and protection of water and land resources (Mammadov, 2013).

The classification of the optimal variants of the dialectical approach includes environmental protection, interregional interdependence, etc. The implementation of an integrated approach in solving the problems of environmental options necessarily involves the use of the system analysis method (Figure 1).

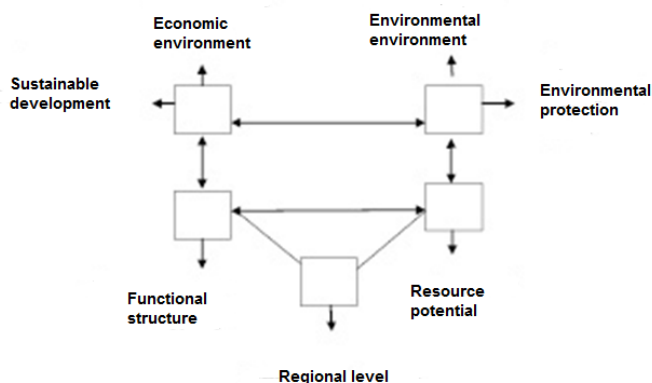


Figure 1. Systemic interrelation between economic and environmental development.

Because of this the goal of this paper is the analysis and improvement of the use of resources in Azerbaijan in order to create an economically and environmentally developed region. For this purpose, the optimal variants of economic and ecological functional structural changes taking place in the strategy of the country's socio-economic development over the past 10 years have been studied. Also factors of the production, resource, social and political nature of the country's internal regions have been investigated and clarified. In the course of analyzing the concept of sustainable development on the basis of the principle of the complexity of the economic and ecological functional structure, the scientific and theoretical provisions of economic and social geography were taken as a basis. Economic-geographical models and other methods were used, and analyzes were carried out based on various methodological materials and standards.

DEVELOPMENT

The social ecological-geographical approach determines in advance the important issues of ecological analysis and dialectical planning of regions. As well as the development and distribution of productive forces in the territory complements the connection of the problem of maintaining a balance between the socio-economic plans of settlements and the regional ecological system (Subbotina, 2009).

Features of ecological planning are associated with the specificity of its object, the processes occurring in the natural environment, with their sufficient study, as well as the actual results of anthropogenic impacts, including indicators of areas with very severe economic and environmental stress, corresponding to landscape types, have not been fully developed.

Therefore, the most important condition for the effectiveness of environmental planning in the study is the assessment of the results of the mutual influence of the economy and the environment, accurate accounting of the natural and economic-geographical features of the territory. The combination of natural and economic-geographical factors to a large extent requires an analysis of the level and nature of the results of economic activities, as well as measures to assess the harm they could provoke. Thus comprehensive accounting of natural and economic-geographical features provides more opportunities for efficient allocation of funds for environmental protection measures.

In our opinion, the assessment of the natural potential of the region under study from a geographical point of view has a scientific and practical effect in the function

of economic and environmental planning. The potentials of the geosystem, represents the results of the mutual influence of natural processes and objectively exists independently of the use by people. This is divided into the following groups:

- the potential of accumulated (accumulation) and modified substances: - the ability to transform the natural system and natural substances of the regions into a technically suitable state, for example, minerals, energy carriers, building materials;

- Hydro potential: - the ability of the natural system to transform precipitation to supply plants with moisture and create groundwater and hydrologically closed surface waters;

- Productivity potential: - to establish the source of organic substances of bioclimatic potential by photosynthesis and the duration of this process;

- the potential for destruction, degradation and self-cleaning: - the ability of the natural environment to a certain extent, to isolate and assimilate on the territory natural and foreign substances, that is, waste gases, waste water, dust, garbage wastes, to eliminate their harmful effects on the territory and production areas and after some time to bring them back to natural circulation;

- The potential of recreation: - the ability of the natural system to provide a certain useful, new physical, psychological, aesthetic and other impact on people. It is true that, this potential, as a rule, is unevenly distributed over the territory, and primarily depends on natural conditions, various biomasses and relief.

The significance of the above-mentioned natural potentials is to a certain extent determined by zonal conditions. For example, the potential for self-cleaning of soil in wet areas across the country is 6–8 times lower than in dry areas. In the alpine zone, the soil potential is created in a harsh climate, a long cold and frosty period, where the humidity coefficient is greater than unity. The amount of annual precipitation is more than 1200–1400 mm, the humidity increases and, depending on the weak evaporation, soil formation here occurs under the conditions of the leaching regime. Under the influence of bioclimatic features, the decomposition of plant residues is delayed, the process of peat formation and the accumulation of coarse humus occurs. As a result, an acidic reaction occurs in the soil environment, the saturation of the soil with bases is prevented.

In the modern era, in the regional environmental analysis, the sectoral aspects of the socio-economic territorial system are quite widely developed. However, at the micro- and macro-level, in the practice of organizing the territory

of the socio-economic system, due attention is not paid to the effective use of natural resources and the protection of the natural environment.

Various social, ecological and geographical indicators of the territorial organization of the regional economy are given and indicated in scientific sources. At the same time, in the studied regions, the level of efficiency in the use of natural resources and environmental protection is not sufficiently characterized. Because the essence of the problem is associated not only with the definition of measures for environmental protection, but also with the identification of the completeness of the complex links between existing production sites and the environment.

The socio-economic development of regions is associated with the coordination of complex ecological cycles. And also the idea of establishing a connection between a balanced cycle of resources and needs arises. Analyzes show that in the process of regional economic and environmental planning, the coordination of sectoral plans, the development and placement of industries engaged in the extraction of natural resources, the integrated use of resources and the creation of sites on their basis is provided (Mammadov, 2013). Studies also show that in planning the socio-economic development of regions, the indicators of the state, quality of the components of the natural environment, as well as indicators of the complex state of the natural environment have not yet been sufficiently reflected.

In our opinion, the issues of determining the economic and environmental efficiency of regions are of great importance for planning the socio-economic development of the territory. The essence of regional economic and environmental efficiency is manifested in the nature of the conditions of production and population. Its level is determined by the quality of the living environment of the population, the surplus of vital natural resources and the nature of the production balance and the relationship between the types of use of the territory. Regional economic and environmental efficiency is one of the important effects that make up the social development of regions. Special generalizing indicators can be recommended as coefficients of the level of prevented damage (the ratio of the produced clean product to the prevented damage). The system of indicators of the socio-ecological efficiency of the region can include both absolute indicators, for example, the amount of economic expenditures, and the relative indicators of the basic price of the cost. Relative indicators include the specific total of economic costs in the sum of production costs, the share of enterprises equipped with treatment facilities, the level of integrated use of natural resources, the specific total of reused water, etc.

The scale of application of waste-free technology in assessing the development of regional economic and environmental efficiency as a whole should be reflected. A promising approach to solving environmental problems of the regions, optimizing the mutual influence of nature and society at the regional level, first of all, ensures the creation of a common waste-free system. However, as already noted, the organization of a geochemical closed ecological cycle can be realized not under the institutional potential of individual specialized enterprises, but by combining the capacities of all production enterprises. Utilities solutions, both in industry, agriculture, and the territory of the region can be reflected in the creation of closed regional systems in the territorial production complex (Mammadov & Khalilov, 2006).

The dialectic of the “ecological revolution” in the protection of the natural environment is supplemented by territorial units, which are the “area” of the main struggle, that is, industrial centers, territorial-production complexes. The creation of highly developed from the technical point of view and geochemical closed territorial-production complexes is associated with a relative increase in the isolation of the economic point of view (Subbotina, 2009). The creation of territorial-production complexes allows creating conditions for organizing the return of waste to the natural environment in order to utilize waste and expedient development of part of it. All this is connected not only with the improvement of technology, but also with the need for restructuring, management and planning of socio-economic development, or rather, an increase in the role of territorial factors in the production works themselves (Chistobaev, 2009).

The modern methodology of the socio-economic development of regions provides for the optimization of the relationship between society and the environment and analysis of the functional economic and ecological cycle. Logically, regional economic and ecological cycles, possessing a certain spatial dimension, cover the scale of complex territorial systems. It is known that the distribution of a system and its subsystems is one of the tasks of economic geographical science. The essence of this method is to determine not only quantitative indicators, but also the relationships between elements and their characteristics (Mammadov, 2014). In our opinion, any regional economic and ecological system includes three autonomous subsystems. According to the actual analysis, the structural features are determined, functions of the economic and ecological cycle of the regions. Thus, their types, the degree of participation in the territorial division of labor, the nature of activity in the natural subsystem

and their place in natural subsystems at a higher level are determined.

It should be noted that the sustainability of the economic and ecological environment acts as a special type of regional territorial functional structure. Regional economic ecological systems correspond to regions of varying degrees, for example, regions of various sizes, ranging from economic regions to administrative regions. Systems boundaries tend to depend on the questions posed during the study.

In our opinion, one of the most difficult theoretical issues is the definition of the relationship between the boundaries of natural territorial and economic systems. Probably, there is no simultaneous coincidence of boundaries. Therefore, the boundaries of natural systems tend to the old suitable positional relationships. The main difficulties in establishing the boundaries of economic and ecological systems, the nature of the spread of economic and ecological processes, are associated with taking into account the general advantages of regionalization of natural systems and complexes. The most important interrelationships of systems include “production activities”, “cause-and-effect relationships”, “changes in natural objects - the results of feedbacks.” In this area, the research carried out by the Institute of Geography of ANAS in connection with the protection and improvement of the environment stands out for a more efficient use of natural resources (Budagov, Mammadov & Alizade, 2008).

Also, the structures of the regional economic and ecological cycle determine the links reflecting the corresponding processes, economic and ecological links created as a result of the impact of social production conditions on the natural environment. The study substantiated the classification of the stability of the structures of the regional economic and ecological cycle. It reflects that economic-ecological and socio-ecological ties are direct, that is, they reflect the direct impact on the natural environment. And ecological-economic and ecological-social are feedbacks. This characterizes the impact of social production and the population on the change in indicators of the state of the environment (Mammadov, 2013).

If we consider regional economic and ecological cycles, we will see that, given the advantages of economic and ecological processes of one type or another, it becomes necessary to distinguish systems of various functional types. As an example, you can show the extraction of mineral raw materials, recreational activities and cycles with marine resources. At the same time, there are peculiar functions of individual territories, which cannot be compared with the functions of all regional systems. For

example, recreational areas, agriculture, mountain tourist areas, etc.

Then the most important function of the regional economic and ecological system is the efficient use of natural resources and the restoration of natural conditions for the life of the population, based on local characteristics. In this regard, at the junction of the three subsystems, it has been identified the need paradigm shift for a more efficient use of natural resources and protection of the natural environment. Regional economic and ecological systems are internally divided into local complexes (simple and complex), ecological production complexes, which constitute the primary core of elementary systems. That's why structural analysis of regional economic and ecological systems is the definition of a quantitative expression of the relationships between its constituent elements, the basis necessary for predicting its future development.

CONCLUSIONS

In the methodology for optimizing a sustainable economic and environmental functional structure, an integrated approach is of great importance. The principles of complexity seem to form the basis of territorial organization and planning of a sustainable economic and environmental functional structure. This is not a buzzword at all: - an integrated economic and environmental approach, on the one hand, points to the peculiarities of the natural environment as a set of interrelated elements, and on the other hand, to the complex nature of the impact of economic sectors on the environment. Therefore, the socio-economic development of regions should be carried out and evaluated in close connection with the study of optimization of a sustainable economic and ecological functional structure. In this sense it is important to highlight the next points:

- The solution of economic and environmental problems provides for a more detailed reflection of the issues of environmental protection and effective use of natural resources in the regions in the modern era.
- New directions in the development of the socio-economic development of the regions - environmental planning has been formed, but its territorial directions have not yet been sufficiently studied.
- The basic principles of economic and environmental planning, the definition of interrelated optimal options for natural components consists of an integrated approach to the organization of the environment.
- Features of the cycle of economic and environmental planning are associated with the originality of the processes occurring in the environment. An important condition for organizing its optimality is an accurate account of the

natural and economic-geographical features of the territory, an assessment of its natural potential.

- The implementation of an integrated approach to solving economic and environmental problems requires the use of the method of analysis of dialectical unity. One of the most important elements of the study is the preparation of interrelated models of natural subsystems of the region with other subsystems. It also requires an ecological dialectical approach to model the structures of territorial-production complexes.

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