

Methodology of sustainable development and effectiveness of regional economic systems

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Abstract. The urgency of the problem under study is determined by the issues of the effectiveness of the functioning of regional economic systems at all levels of the economic hierarchy, since the methodological level of its development does not meet the requirements of a systematic reflection of objective processes and does not fully reveal their essence. An analysis of conceptual views on this issue indicates a variety of arguments, which indicates a divergence of theoretical positions. Exactly on the basis of the effectiveness of the functioning of regional economic systems, the directions for the formation and development of an economic entity are determined. Despite this, the problem of the effectiveness of the functioning of regional economic systems has not been sufficiently studied. This is confirmed by the presence of a significant divergence of opinions both on the essence of economic efficiency and on the formation of its criteria and indicators. In recent years, this process has noticeably intensified, which is associated with the growing importance of regional economic systems in the new economic conditions. The main results of the article will contribute to the formation of tools for testing the most progressive innovations aimed at the functioning of regional economic systems. The main components of scientific novelty are areas that have received further development and contain elements of a real increase in scientific knowledge, their market positions in the domestic and international markets. The materials of the article can be used to improve public policy in the field of functioning of regional economic systems, as well as in teaching courses in economic theory, management theory and regional development.

1 Introduction

The most important condition for ensuring the sustainable development of the national economy is increasing the stability and efficiency of the functioning of regional economic systems, which determine the directions and level of development of the country's economic potential.

The new methodology for the paradigm of spatial development of regions at the present stage is formed by two trends - modern technological transformations and innovative processes in the economy. These transformations of spatial development of regions expand opportunities and increase the sustainability of the functioning of regional economic systems.

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Taking into account modern realities determined by economic sanctions against Russia, the withdrawal of unfriendly partners from the country's domestic market, the total rejection of state products in the foreign markets of Western European countries, and their reorientation to new markets, the Russian Federation is building an active policy to develop and encourage innovations.

Russia has achieved stabilization and growth of the main macroeconomic indicators characterizing the stability of the regional economic system. At the same time, the dynamics of the most important indicators of sustainable development (such as the share of regional enterprises of the industrial complex carrying out basic innovations; the share of exports of Russian high-tech goods in the total global volume; research and development costs; the share of the state and business participation in financing of Research and Technological Development) indicates that the principles of sustainable development are not sufficiently taken into account in the processes of implementing innovation policy, namely: a breakthrough to the scientific and technological development of the Russian Federation using the innovative development of the country's regions, which will allow Russia to become "one of the leaders of the world economy."

The reasons for the low performance of sustainable development of the regional economy are unbalanced economic development; the activity of innovation activity and the effectiveness of innovation processes, which necessitates a thorough study of the problems of managing the sustainable development of economic systems based on neo-industrialization.

The current pace of development of the world economy places new demands on the methodology for the development of regional economic systems and necessitates a holistic theoretical and methodological justification for ensuring sustainability at the national and regional levels, and research into ways of sustainable regional development in the context of innovative transformations.

The relevance of the study is related to the identification of the principles and prerequisites for improving the methodology for the development of regional economic systems, the development of the concept of spatial development as a new paradigm for innovative economic growth, the development of practical recommendations for choosing key priorities, improving institutions and mechanisms, using innovative approaches.

In the context of modern challenges, the country faces the most important task of strengthening not only the economic stability of the regions from the position of national security of the state, but also increasing innovative activity in the economic sphere. The above indicates the need to transform innovation into a decisive factor in increasing the sustainability of regional economic systems, which requires both theoretical and methodological studies and practical solutions based on them. [1-16]

2 Review of literature

The fundamental provisions in the study of this research topic are the works of J. Schumpeter, S. Freeman, P. Drucker, R. Solow, R. Robinson, M. Porter, Y. Miakawa, K.-H. Openlander, B. Twiss, F. Jansen, S. Edquist, D. Wiggins, D. Gibson, A. Goto, H. Odagiri, E. Lundwall, F. Malherbe, D. North, R. Nelson, N. Rosenberg, J. Tinbergen, K. and other scientists.

The methodological apparatus focused on maintaining the balance and sustainability of regional economic systems was carried out by: Becker, J. Buchanan, J. K. Galbraith, J. Keynes, N. Kaldor, J. Robinson, V. Nordhau, P. Samuelson, R. Solow, J. Stigler, L. Erhard.

Problems associated with the spatial localization of economic activity are reflected in the works of A. Anderson, J. Bell, F. Braudel, D. Delamade, H. Piremma, D. Pchelintsev, R.

Hicks. The dependence of the efficiency of the regional economy on clusters and agglomerations was studied in the works of J. Arabia, T. Vander Klundert, P. Davelaar, M. Porter, S. Smulder, M. Feldman and others.

However, it should be noted that existing studies most often assess trends, describe the relationship between strategy and structural changes, and propose various regional development programs. Meanwhile, the methodological research tools are insufficiently presented, the economic mechanism for the optimal functioning of territorial entities, and the model of regional development on an innovative basis are practically not covered.

Thus, the importance of transforming the productive forces of the region and production relations in the regional economy is reaching a fundamentally new qualitative, stabilizing stage of its development. These questions determine the choice of topic, purpose and objectives of the study, as well as its theoretical and practical significance.

3 Methods

One of the strategic directions of the innovative economy is breakthrough technologies, digital transformation and platform solutions, as a result of which innovative progress in the economy itself is accelerated.

In our opinion, strategy is the result of a systematic analysis of the business environment, forecasts of future conditions for the development of a system of structured actions aimed at achieving the target goal.

The principle of competitive advantage was first formulated by M. Porter for the conditions for creating innovation.

The problem of forming a strategy for the development of society is relevant at all times.

In our opinion, a development strategy can be determined by both a concept and a program of actions that serve as the connecting link of the system.

The methodology for strategic management of production and economic activities was formed in the second half of the 20th century.

The strategic approach includes the implementation of strategic goals.

The development of long-term plans for economic development is an integral part of the strategic approach.

I. Ansoff considers strategic planning as the implementation of the most important decisions on the implementation of operational and tactical plans.

The conceptual scheme of strategic management of sustainable regional development reflects the decomposition of targets for sustainable regional development by areas and levels of the national economy.

In accordance with the innovation-breakthrough scenario, the main role is given to intensifying the creation of fundamentally new technologies that provide a radical increase in the final effectiveness of production and economic activity.

Studies of the modern period reflect the multidimensional nature of the activities of regional economic systems (RES), the trend of which is development along certain vectors under conditions of balance. Balanced sustainable development of RES based on innovation activities presupposes the construction of new approaches to the regional economic management system, which is determined by the methodology of balanced sustainable development of the innovative potential of regional economic zones.

The methodology for sustainable development and efficient functioning of regional economic systems is considered in the following sequence:

- logic of the process of managing economic systems;
- forms of organization of strategic management;
- factor-targeted implementation mechanisms, including methods of coordination and regulation;

- general and specific management principles,
- a system of criteria and indicators that evaluates the effectiveness of functioning.

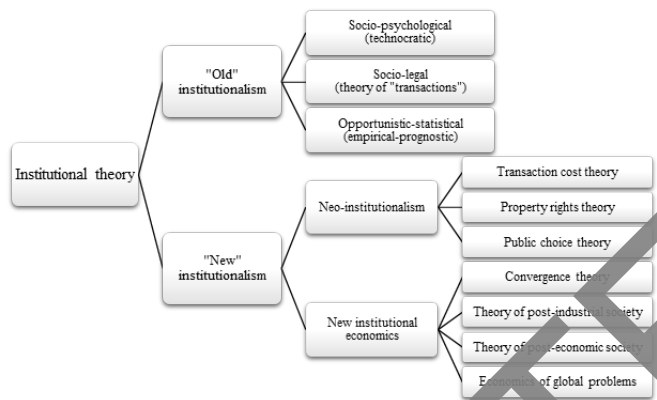


Fig. 1. Classification of institutional concepts

The peculiarity of the proposed approach lies in the implementation of temporality within the framework of the factor-target transformation of the regional innovative potential of RES. Temporality characterizes and defines time, which is associated not only with the transformation and achievement of planned goals for the long term, but also with the use of mechanisms for the implementation of intermediate and final results.

A methodological feature of the theoretical foundations for the formation of an innovation potential management system is:

- comparative approach to studying the formation and development of innovative potential;
- holistic approach to research.

Currently, the most relevant and in-demand approaches are: systemic, holistic, expantegration and program-targeted.

The systematic approach represents a methodology for studying an object (problem, process), identifying and systematizing:

- elements, external and internal relationships between them that affect the results of its activities;
- determining the purpose of these elements, based on the general purpose of the object.

In other words, the systems approach represents a direction in the methodology of scientific knowledge and practice, based on which any object is studied as an integral socio-economic system.

The logic of the research fits into the sequence (Fig. 2).

In management theory, the systems approach represents:

- focusing on the integrity of the organizational structure;
- interconnectedness of individual elements of the organization that have a common goal;
- focus of management activities on final results in a changing external environment.

In recent decades, interest in institutional theory in general, and in particular in neo-institutional theory, has been growing in Russia.

The algorithm for implementing the iterative steps of the factor-target approach used is presented in Figure 3.

A new socio-technological paradigm can provide a technological breakthrough based on the use of effective mechanisms.

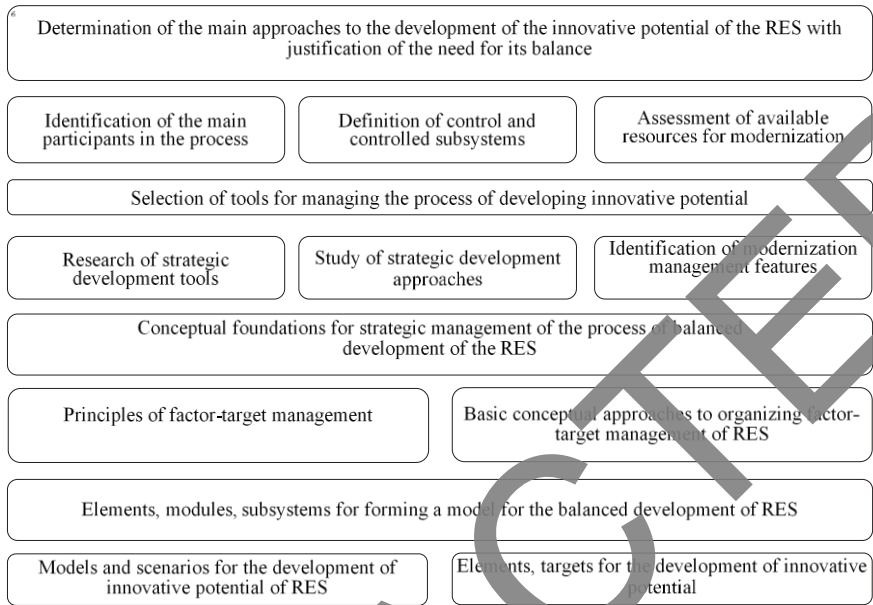


Fig. 2. Scheme for managing the balanced development of the innovative potential of RES using factor-target methodology.

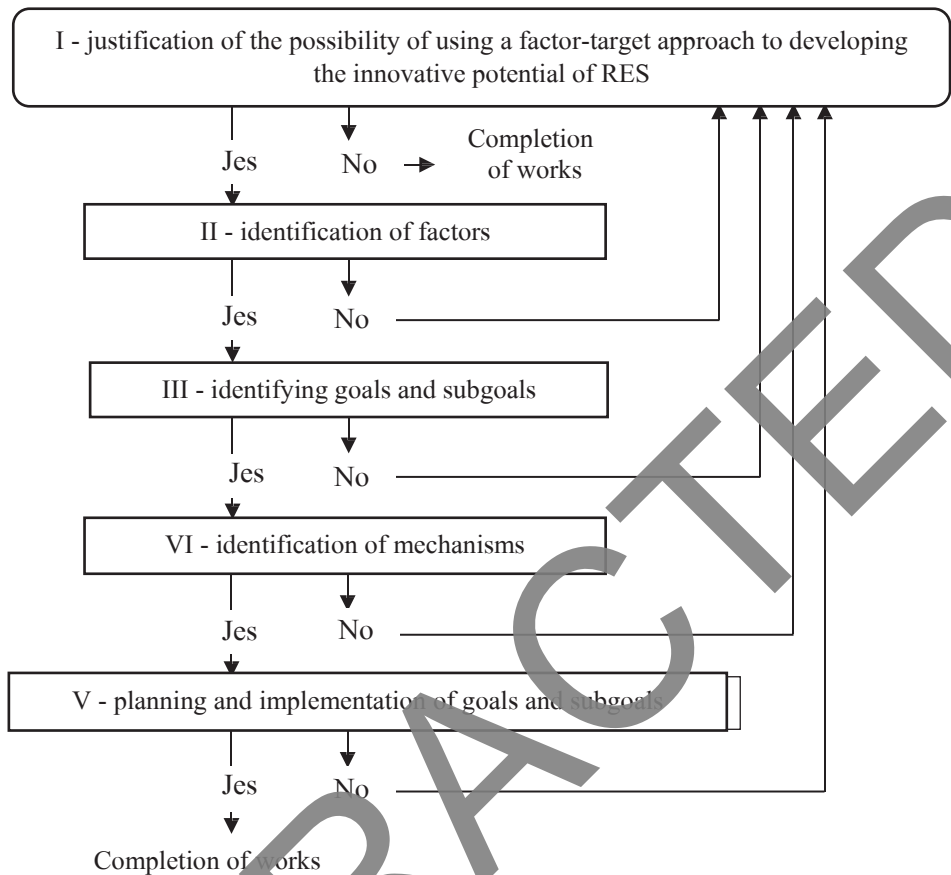
Directions in neo-institutional theory are presented in the field of industrial organization: the theory of firm organization and the theory of state regulation of the concentration and use of resources.

According to the theory of institutional development, structural changes are carried out gradually. The emergence of certain institutions is accompanied by certain transformations.

Currently, the development of the innovative potential of RES is proposed through the use of a factor-target methodology approach.

Increasing the efficiency of the innovative potential of RES is based on the method of system decomposition with the identification of factors corresponding to different levels of the hierarchy (macro-, meso-, sectoral and micro levels).

At the first stage, an analysis of the economic situation of the innovative potential of RES is carried out. At the second stage, factors influencing the functioning of the regional economy are identified. At the third stage, the goals and subgoals of the process development and the necessary conditions for achieving the goals are identified. At the fourth stage, the mechanisms that ensure movement towards a given state are determined. The fifth stage includes the planning process and implementation of goals.



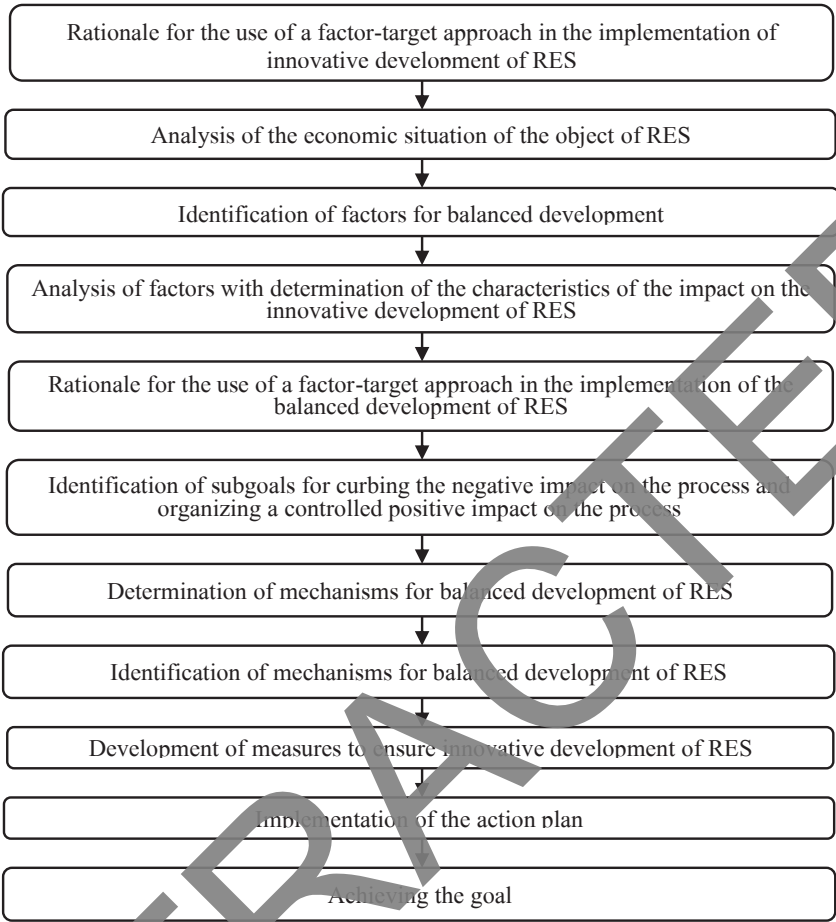
Note – Developed by the author.

Fig. 3. Algorithm for iterations of the factor-target approach to developing the innovative potential of RES.

The development of the innovative potential of RES implies increased attention to the problems of transforming the production and technological base in all spheres and sectors of the country's economy. Currently, the basis for the formation and implementation of an innovation breakthrough strategy is the innovative and technological re-equipment of economic sectors.

The main conditions for systematizing factor-target approaches to the development of the innovative potential of regional economic systems are:

- targeted start in the regulation and management of RES;
- the nature of the functioning of socio-economic and production systems and processes of RES;
- legitimacy of considering the RES and its links as programs of a holistic and dynamic nature;
- variety of factors influencing the functioning of RES.



Note – Developed by the author.

Fig. 4. Organizational structure of factor-target management of the processes of balanced development of RES.

The initial point when developing a factor-target model of regulation is a conceptual idea that reflects the qualitative and quantitative characteristics of specific areas of development.

In turn, innovative factors represent the basis for innovative development, which creates conditions for their effective use.

Advantages based on basic factors (“first nature”) are quickly lost. Thus, the benefits of location can be offset by the development of transport infrastructure, modern means of transmission and communications.

In the modern world, factors of “second nature” (human capital and institutions), which are not given once and for all, are becoming more promising.

The need for a balanced development of RES is the basis for developing principles for its formation and determining influencing factors.

In modern conditions, it is necessary to pay attention to new factors influencing the development of the innovative potential of RES: infrastructural, foreign economic, agglomeration, innovation-technological, institutional.

Thus, the methodology for organizing and forecasting the sustainable development of the innovative potential of RES is based on a system of general and specific management

principles, forms of organization and mechanisms for their implementation in specific conditions.

In addition to the basic provisions for the formation of a methodology for the development of the innovative potential of RES, the author proposes a methodological approach to the analysis of the innovative potential of sustainable self-development of RES, based on assessing the completeness of the implementation of the functionality of innovation activities and innovative projects of the region using the methodological developments of E.D. Ignatieva.

Innovative potential is being developed to a greater extent on the basis of targeted programs of government financing of innovative projects in the industrial sector.

The innovative potential of self-development is a characteristic of the sustainability and balance of RES.

In this case, the innovative potential of RES represents the opportunity, readiness and ability of the regional innovation system (NIS) and the innovative structures of industrial enterprises to carry out innovative activities most fully, to increase innovative activity and productivity based on the reasonable use of the resource base and other sources of development.

Composition of innovative potential based on functional features (Fig. 5).

The development of these elements characterizes the organizational structure of the innovative potential of self-development of RES.

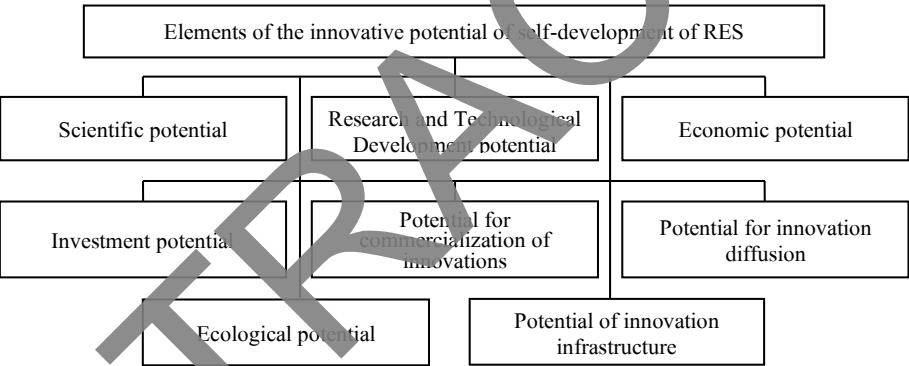


Fig. 5. Elements of the innovative potential of self-development of RES.

The methodology for analyzing the performance of functions and assessing the innovative potential of self-development of RES is based on the basic provisions of the analysis of territorial systems.

- systematic identification and presentation of innovative objects of RES, based on their classification;
- analysis of innovative objects of RES based on the functions they perform;
- cause-and-effect analysis of factors influencing innovative objects of RES;
- system analysis of innovative objects of RES, providing a holistic picture of the sustainable development of the regional economic system.

The methodology for developing territorial development programs includes three stages.

These methodological conditions formed the basis of the proposed methodology for analyzing the innovative potential of self-development of RES, containing the following stages:

1st Stage. Selection and justification of indicators for analyzing the elements of the innovative potential of self-development of RES.

2nd Stage. Determination of partial and complex indicators for assessing the elements of the innovative potential of self-development of RES using expert assessment methods to determine weight indicators. As private indicators for assessing the innovative potential of self-development, indicators of the functioning and development of RES are used, such as: the level of costs for technological innovation per capita; level of innovative activity of enterprises and organizations; the number of organizations that carried out technological innovations, etc., located in the database of the Federal State Statistics Service.

3rd Stage: identification of sources of self-development and key directions of balanced development of RES.

To analyze the innovative potential of self-development of RES, all private indicators are integrated into separate blocks, based on the implemented functions of RES according to the elements of innovative potential:

- scientific,
- Research and Technological Development,
- commercialization,
- diffusion of innovations,
- innovative infrastructure with the inclusion of a resource component, including labor resources.

The calculation of private indicators for assessing the innovative potential of self-development of RES is carried out by standardization, which is carried out by identifying in each group the private indicators of the maximum indicator and then, all private indicators in dynamics are divided by this maximum indicator.

Next, for each block of normalized partial indicators, a complex indicator is calculated in dynamics, taking into account weighting coefficients.

The calculation of the summary complex indicator is determined by the formula of the geometric mean of the complex indicators.

$$KII_j = X1j + X2j + X3j + \dots + Xni_j \quad (1)$$

where: Xni_j – complex indicators for a group of private indicators.

Summary comprehensive indicators can be used to determine the degree of implementation of the completeness of the implemented functions of RES, as well as as a comparative characteristic of the innovative self-development potential of various RES. To assess the completeness of the implementation of the RES functions, each indicator is compared with the maximum (equal to 1, that is, the RES implements its functions 100%).

The completion of the assessment methodology is the identification of potential sources of self-development on the basis of which the directions of management influences on the development of RES are formed by identifying options for improving poorly developed comprehensive indicators.

4 Conclusion

As a result of the study, the following conclusions were drawn.

The strategy for managing innovation processes has a significant impact on the sustainable growth of the state's economy, which made it possible to identify and systematize the features of innovation processes as a tool for implementing approaches to the creation and development of effective business in industries. A comparative analysis of the theoretical views of representatives of traditional economic schools showed that throughout the 20th century, significantly different models for organizing the development of regional economic systems were put forward. However, with all the diversity of theoretical approaches, there is a general tendency to simplify complex reproductive processes. In most generally accepted

models of organizing economic activity, abstraction is made from the actually existing wide variety of production and economic relationships within the framework of a single reproduction process.

At the turn of the 20th and 21st centuries, the formation of regional economic systems of a higher type began, associated with the development of globalization; a distinctive feature of this period is new information and communication technologies that destroy spatial barriers to solve socio-economic problems. Such socio-economic systems are being formed as new organizational forms of strategic management, providing additional competitive advantages and allowing the socio-economic potential to be revealed to a greater extent. Based on the conceptual approaches developed in the economic literature, the content of the methodology for strategic management of a regional economic system is revealed in the following logical sequence: – general and specific principles of management – forms of organizing strategic management – factor-target implementation mechanisms, including methods of coordination and regulation – a system of criteria and indicators, assessing the effectiveness of functioning.

From a methodological point of view, the degree and nature of the influence of the components of the organizational and economic mechanism on the formation of market structures, which lead to increased competitive advantages and help strengthen the positions of economic entities in the market, have been identified.

The presented methodology for factor-target regulation of the activities of regional systems is based on a systemic and program-target approach. Management is built on the basis of strategic programs and a concept that contains fundamental decisions regarding their essential characteristics. The proposed factor-target mechanisms ensure the creation of a new architecture of economic and financial markets that meet the requirements of globalization. The main methodological approaches proposed in the work take into account the impact of the external environment in areas of a global nature.

References

1. Baranova, N.M., L.I. Gerasimova. The place of the high-tech sector of the Russian economy in international integration under sanctions Text: direct // Strategic planning and development of enterprises – 2019. – pp. 360–362.
2. T.I. Bezdenezhnykh, M.M. Makenov. Economics and management. **4**, 11–21. (2019)
3. I.A. Berakina, E.A. Shumova. Regional economics. **2**, 50–53 (2020)
4. V.S. Bozhko. Economics of the region. **15(3)**, 644–658 (2019)
5. Vinslav, Yu.B. Russian Economic Journal **2**, 3–31 (2019)
6. S.V. Galachyeva, L.S. Akhmatova. Paradigm for managing sustainable development of a macroregion. Russian entrepreneurship. – 2018. – P. 33.
7. Gamidullaeva, L.A. Theoretical and applied economics **3**, 22–35 (2018)
8. 8S.Yu. Glazyev. Innovations **2(256)**, 11–23 (2020)
9. L.V. Glezman, S.N. Butorin. Issues of innovative economics. **3** (2020)
10. Dombrovskaya, I.A. International Journal of Applied and Fundamental Research. **11(2)**, 233 (2017)
11. S.P. Zemtov, V.A. Barinova. Economic Issues. **10**, 65–81 (2016)
12. M.A. Kuvshinov. Young scientist. **1(7)**, 86–91 (2016)
13. Petrov, A.S. Management of socio-economic development / K.V. Pavlov // Strategic imperatives in the context of globalization. (Minsk, Publishing house. BSU, 2019)

14. Smorodinskaya, N.V. Innovations. **7(189)**, 27 (2014)
15. I.V. Soboleva. Economic Issues. **9**, 51–70 (2019)
16. Ursul, A.D. Bulletin of the Russian Academy of Sciences. Use and protection of natural resources in Russia. **1**, 30–38 (2015)

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