

REICE  
Revista Electrónica de Investigación en Ciencias Económicas  
Abriendo Camino al Conocimiento  
Facultad de Ciencias Económicas, UNAN-Managua

Vol. 10, No. 19, Enero - Junio 2022 REICE ISSN: 2308-782X  
<http://revistacienciaseconomicas.unan.edu.ni/index.php/REICE>  
[revistacienciaseconomicas@gmail.com](mailto:revistacienciaseconomicas@gmail.com)

Conditions And Problems of Innovation Economy Formation and Innovative  
Development Management of Russia's Socio-Economic System at The Present Stage

Condiciones y problemas de la formación de la economía de innovación y la gestión del  
desarrollo innovador del sistema socioeconómico de Rusia en la etapa actual

Fecha recepción: enero 01 del 2022  
Fecha aceptación: enero 19 del 2022

**Natalia A. Solopova**

Moscow State University of Civil Engineering (National Research University), Moscow, Russia.

Email: [ushanovan@mail.ru](mailto:ushanovan@mail.ru)

ORCID: <https://orcid.org/0000-0003-2034-4321>

**Irina N. Kovalyova**

Russian International Academy of Tourism (RIAT), Moscow region, Russia; Bauman Moscow  
State Technical University, Moscow, Russia.

Email: [kovaleva.irina69@gmail.com](mailto:kovaleva.irina69@gmail.com)

ORCID: <https://orcid.org/0000-0001-6317-2502>

**Denis S. Gorin**

MIREA - Russian Technological University, Moscow, Russia.

Email: [gorin@mirea.ru](mailto:gorin@mirea.ru)

ORCID: <https://orcid.org/0000-0002-6286-6091>

**Anastasia N. MYLNIKOVA**

MIREA - Russian Technological University, Moscow, Russia.

Email: [anastasiamn@mail.ru](mailto:anastasiamn@mail.ru)

ORCID: <https://orcid.org/0000-0001-9831-4013>

**Svetlana A. Avtonomova**

Plekhanov Russian University of Economics, Moscow, Russia.

Email: [avtonomova1@yandex.ru](mailto:avtonomova1@yandex.ru)

ORCID: <https://orcid.org/0000-0002-2468-5871>



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## Resumen

El artículo identifica la importancia del desarrollo innovador de los sistemas socioeconómicos de Rusia y la influencia de varios factores externos e internos en el nivel de la economía nacional. El propósito del estudio es definir el concepto moderno de economía de la innovación, sus componentes fundamentales y principales características que permitan llevar a cabo de manera efectiva procesos de innovación en el sistema socioeconómico del país para lograr un crecimiento sostenible de la economía. El estudio explora la estructura moderna de un sistema socioeconómico teniendo en cuenta el enfoque institucional. Esta estructura apoya la idea de que uno de los objetivos fundamentales del desarrollo e implementación de innovaciones, incluidas las direcciones de la innovación asociadas con la formación de un entorno de mercado competitivo y efectivo, es la capacidad de utilizar todo el complejo de instrumentos estatales y de mercado de incidir en los procesos económicos para abandonar la globalización y volver a la defensa de los intereses nacionales. Se identifican brevemente las acciones de las autoridades estatales para el desarrollo innovador de la economía rusa. Las características, formas y mecanismos de gestión de la innovación descritos en el artículo, así como las desventajas identificadas y fundamentadas, permiten realizar ajustes a las medidas en curso para el desarrollo de los procesos de innovación en los sistemas socioeconómicos.

**Palabras clave:** Sistema Socioeconómico, Economía Innovadora, Gestión del Estado y del Mercado y Regulación de los Procesos de Innovación, Desarrollo de la Innovación.

## Abstract

The article identifies the significance of the innovative development of Russia's socio-economic systems and the influence of several external and internal factors on the level of the national economy. The purpose of the study is to define the modern concept of the innovation economy, its fundamental components, and main characteristics allowing to effectively carry out innovation processes in the country's socio-economic system to achieve sustainable growth of the economy. The study explores the modern structure of

a socio-economic system with consideration of the institutional approach. This structure supports the idea that one of the fundamental goals of the development and implementation of innovations, including the directions of innovation associated with the formation of a competitive and effective market environment, is the ability to use the entire complex of state and market instruments of influencing economic processes in abandoning globalization and returning to the defense of national interests. The actions of state authorities for the innovative development of the Russian economy are briefly identified. The characteristics, ways, and mechanisms of innovation management described in the article, as well as the identified and substantiated disadvantages, allow making adjustments to the ongoing measures for the development of innovation processes in socio-economic systems.

**Keywords:** Socio-Economic System, Innovative Economy, State and Market Management And Regulation Of Innovation Processes, Innovation Development.

## **Introduction**

The global political changes that occur in the international space amid the continuing financial and economic crisis, in which various instruments of pressure, including sanctions and restrictions, are actively used against the countries that defend their interests, force the governments of many states to seek new opportunities, ways, and mechanisms for the development of their national socio-economic systems. Among such states subjected to sanctions from Western countries is Russia. The chosen path of modernization of the national economy at the present stage poses several objectives for the socio-economic development of Russia, the most prominent of which are ensuring stable economic growth and the effective regulation and rational use of resources, which determines the priorities and directions of modernization of the country's socio-economic system (SES). In resolving these problems, a crucial role is played by the formation and development of an innovation economy as a factor in increasing the competitiveness of the SES. Innovative activity in implementing systemic changes is able and has to provide technical and technological re-equipment of the Russian industry. In doing so, it will create

the basis for the production of competitive products on both the domestic and foreign markets, which, in turn, will create the conditions for sustainable growth of the national economy as a whole (Ivanova, et al., 2010).

Indeed, in the last years of the 20th century, the world entered a new stage of its development — the stage tied to the construction of postindustrial society coming as a result of the ongoing social and economic revolution. This trend actively continues in the 21st century and, at the present moment, is being joined by Russia. At the basis of postindustrial society lie the chemical-biological and physical-technical principles that form specific production-technological systems and technologies, as well as completely new production relations. The primary instruments of such systems of postindustrial society are information and computer technologies, which shape new social and production processes. In turn, these principles serve as a basis for SES, as well as the innovative organization of the spheres of life of a modern person (Leontev, 2010). The result of these transformations has to be the creation of a progressive form of the organization and management of the economy — an innovation economy as a special type of socio-economic relations based on the dominance of information products and technologies. The results of research and the assessment of scientific works of Russian and foreign scholars on the examined problem make it apparent that the formation and development of the innovation economy is a strategic direction in improving the competitiveness of Russia in the 21st century.

## Materials and Methods

Research problem: The very concept of innovation economy does not have a clearly formulated and scientifically recognized definition as of now. Every researcher defines this concept based on their understanding of the processes addressed in the study. Nevertheless, all definitions have some similar features, which can be identified as an effective economy; an economy based on applied and scientific knowledge; an economy that is capable of and ready to not only generate scientific ideas but reproduce them in practice. The development of innovative directions in production based on scientific and practical knowledge creates the opportunity to modernize the production processes, which entails major changes in the technical and technological base allowing to considerably improve industrial efficiency. At the same time, industrial enterprises that do not use such innovative approaches will not be viable in the innovation economy (Grekova, et al., 2010). Given the rapid development of information and computer technologies around the world, they have become a fundamental element in improving the efficiency of innovation in the industrial sphere through the introduction of computerized systems and information technology in production processes. Through automation of the processes of design, engineering, and technological preparation of industrial production, the implementation of automated control throughout production, and the automation of financial and accounting records, as well as the organizational activities of the subjects of the innovation economy, the entire chain of innovation development in the industry is radically transformed (Alekseeva, 2011).

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The features that can be attributed to the main characteristics of the innovation economy are listed in Table 1.

**(Table 1):** Characteristics of an innovation economy

characteristic	essence
Free access to information	Assumes the possibility of obtaining information at any point by all participants in the innovation process through telecommunications and automated access to sources.
The presence of infrastructure	Allows ensuring the rational use of information and other resources necessary to achieve the progressive development of innovation processes and scientific and technological progress.
The presence of conditions for the formation of opportunities for society to produce the necessary and multifaceted information	Provides the necessary pace of development of the socio-economic system in an innovation economy.
The presence of conditions for the development of computer technologies	Allows increasing the automation of areas of industrial production and the efficiency of socio-economic systems management.
The presence of considerable changes in the functioning of public and social structures	Allows improving the development of innovative activities that directly affect human activities in all spheres of life (Kokurin, et al., 2011).
The presence of positive perception of innovation processes on the part of society and individuals	Allows to create and implement new ideas and technologies into practical activities based on scientific knowledge.
The presence of a competitive innovation environment	Allows for the development and implementation of innovative technologies in various areas of industrial production.
The presence of science and education systems	Allows for the timely training and retraining of personnel capable of effectively implementing complex projects related to the restoration and development of territories and industries (Lazareva, et al., 2008).

Thus, the basic concepts that characterize the innovation economy are innovative activities, innovations, and innovation infrastructure.

**Methods:** The analysis conducted by both foreign and Russian scientists suggests that the term of SES as an element of the national economy in the context of innovation development mainly concerns a set of institutions associated with specialized scientific

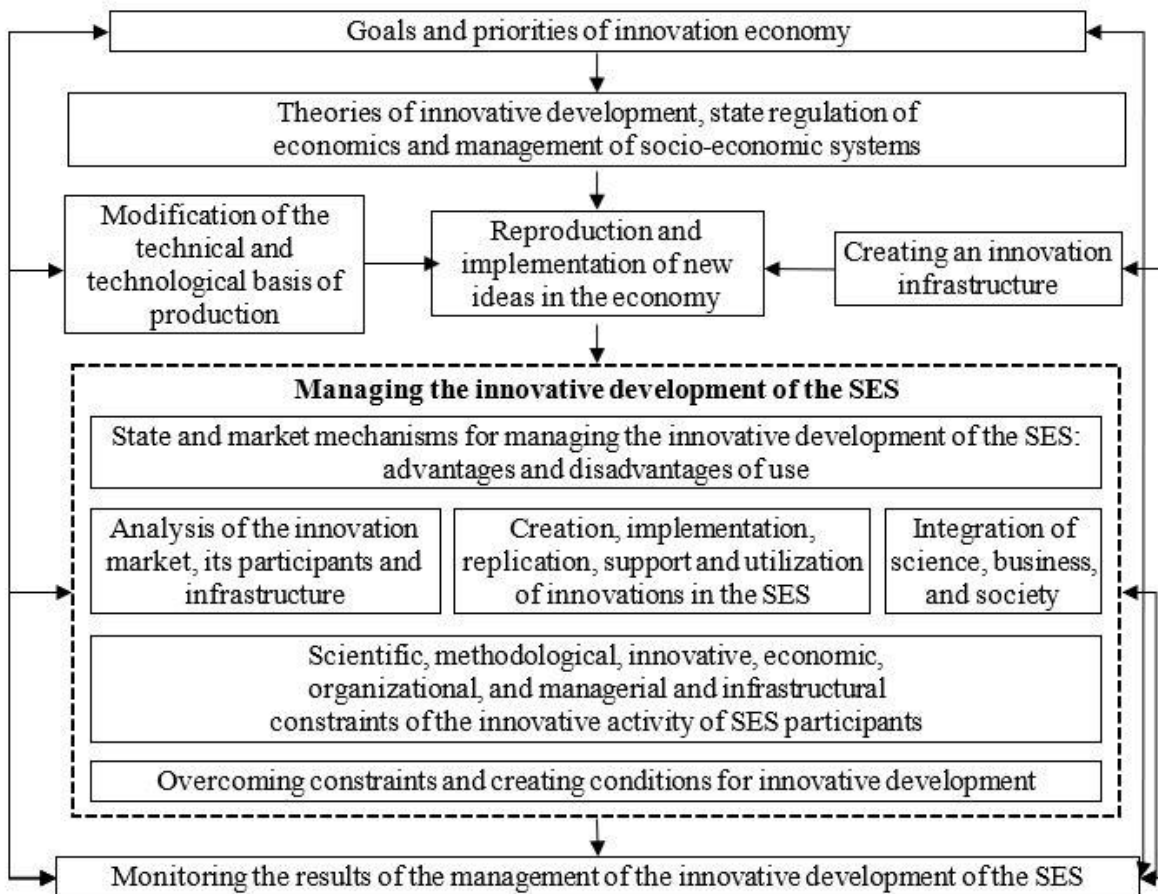
areas examining economic and innovation processes at various levels (national, regional) of SES. Thus, based on scientific knowledge as the fundamental resource, as well as the studied approaches, conditions, and opportunities, SES allow for the development and implementation of new methodological approaches. The main purpose and goal in this are not only the economic development of the SES but the creation of conditions for improving people's standard of living (Ministry of Economic Development of Russia, 2010). Nevertheless, we would like to emphasize that completing the established tasks requires the formation of a unified holistic system including all elements of the infrastructure of the country's SES.

Examining the conceptual apparatus of SES, we can note that it is founded on the ideas of J. Schumpeter on the one hand and the fundamental provisions of the institutionalist theory on the other. Thus, in analyzing the terminology, we can conclude that a common position is not yet developed in full, many details are still under discussion. However, the overall development of SES and its innovative direction, in particular, have to primarily focus on the formation of a positive scientific and technological environment, which will allow to carry out the innovative processes and improve the effectiveness of the economy. Based on this thesis, it can be argued that an SES has to act as an ecosystem, i.e., a system that includes a set of different objects, the functional duties of which can be defined by several specific tasks and targets. Thus, to create a positive social and market environment, which would provide for the functioning of multi-sectoral and scientific elements of the system allowing to form an effective and rational system of connections, it is necessary to activate the production of innovative products and services, as well as promote the commercialization of modern technologies and the development of scientific knowledge and institutions.

Accepting the thesis that an SES is an ecosystem, it is necessary to confirm that it, as a complex system, is characterized by certain qualities, such as self-development, self-regulation, self-organization, etc. (Bertalanffy, 1969). In this way, it is possible to correct the very concept of the SES, which, as we believe, can be formulated in the summarized form as follows: A socio-economic system is a complex system of the ecological type that

presents a single institutional model due to the inclusion of heterogeneous but interrelated elements, which allow for the formation, use, and practically implement the entire available scientific, technical, technological, and creative potential to create and develop modern innovative technologies, products, and services that are most demanded in the life of individuals, society, and the state.

Analyzing the system for managing the innovative development of SES depicted in Figure 1, we can propose considering it as a set of regulatory influences to create an institutional environment that allows for the formation and development of effective innovation processes in the production, commercialization, and transfer of innovations, technology, and scientific knowledge at all stages of the reproduction cycle. This contributes to the formation of elements of the innovation economy and the growth of the added value of the SES participants due to the introduction of innovations.





**(Figure 1):** Managing the innovative development of the SES

Since regulatory influences unite the state and market management mechanisms, there is a need to determine the parameters of their joint use, taking into account the current conditions of socio-economic development and the rational balancing of socio-economic interests of individuals, society, and the state (Figure 1). SES integrates the scientific structures and the enterprises of the real economy (Walter, 2005). Speaking of the realities, in this case, the SES, relying on the implemented strategy of the country's national economy, forms an adaptive environment that reflects the corresponding level of development of economic processes in the country, which, in turn, demonstrates the place of innovations and their role in improving the competitiveness of the industry and services. The key tools for managing the innovative development of the SES are state and market mechanisms of regulation.

The advantages of the state mechanisms of regulation include the opportunity for new large-scale projects and sustainable development programs and accelerated technology transfer through the use of standard models of regulation and organization of business processes in various sectors and regions of the economy. What can be indicated as the disadvantages are:

- low sensitivity to changes in market conditions due to the centralization of management decision-making processes, which slows down the scientific and technological progress;
- a fairly high level of bureaucracy and corruption of the state regulation and control bodies due to the multi-level management system and low involvement of public institutions in public decision-making processes, which inhibits the intensity of innovation among individuals and legal entities.

The advantages of the market regulation mechanisms are the presence of flexible and adaptive systems of interaction with the end consumers, which allow promptly accounting for changes in consumer preferences and developing new regulation methods, mechanisms, and technologies; high variability of the instruments of socio-economic

development, which, given high motivational potential, provides comprehensive coverage of innovative initiatives in various industries and regions of the country.

Among the shortcomings of the market regulation mechanisms are:

- the prevalence of economic business interests of development over the social ones, which stimulates innovative activity mainly in the projects and programs that have maximum economic effect;

- the monopolization of resources, tangible and intangible assets, contributing to the blockage of innovative strategies for the development of various innovations in favor of profits on the existing products.

From the point of the economic development of SES, consideration of the aforementioned advantages and inhibition of the effect of the drawbacks allows taking a different look at the problem of choosing the priority directions of innovative development of the studied system, in which the main point of reference becomes the maximum achievable dissemination of scientific results and their implementation into the production process by means of obtaining new technologies, products, and services, which need to be in demand in most spheres of life of individuals, society, and the state. In this, one of the conditions for the effective development of the SES is the coordination of interests of all its participants.

## Result and discussion

The transition of the Russian economy to the innovative path of development is associated with several limitations. This emphasizes the need for balanced use of state and market mechanisms in managing the innovative development of the SES and creating an innovation economy through identifying and eliminating the scientific and methodical, innovative, economic, organizational and managerial, and infrastructural limitations of innovative activity.

### *Scientific and methodical limitations:*

- the difficulty of ensuring the unity of interaction of participants in innovation activities in the face of changes in the markets for innovative products;
- the lack of focus of the innovation generation processes on the transformation of technical systems and technologies;
- the difficulty of ensuring the stability of participants in innovative activity given the changes in requirements for the organization of industrial production;
- the decrease in demand for innovative products due to a reduction in the effectiveness of interaction between participants in innovative activity.

### *Innovative limitations:*

- the lack of a market approach to the development and introduction of innovations;
- the inability of business structures to commercialize scientific results;
- poor transparency and low legal legitimacy of innovative activities;
- low level of quality management of innovative products.

### *Economic limitations:*

- the raw material model of the economy limits the innovative development of other industries;
- difficulties in the formation of promising “technology corridors” due to the excessive involvement of Russian scientists in international projects and programs;
- the insignificant share of exports of Russian high-tech and science-intensive products and services compared to the world’s leading countries;
- poor planning and allocation of resources in accordance with the economic priorities of innovative development;

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- the lack of coordination of the results of innovative business processes between their participants; insufficient quality of competitive analysis of the market of innovative developments, the choice and production of innovation with the highest level of profitability.

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### *Organizational and managerial limitations:*

- increase in the share of state financing of innovations due to the fact that Russian investors prefer to participate in foreign innovation projects;

- low level of protection of intellectual property and results of innovation activities;

- significant time costs for the development, testing, and certification of innovations;

- low efficiency of scenario modeling of innovation processes based on monitoring and control of results;

- insufficient consideration of state and public interests in organizing innovative activities and planning their results;

- the inconsistency of goals and priorities of various state regulatory and controlling bodies in the allocation of resources and the use of innovation policy tools in the country.

### *Infrastructural limitations:*

- aging of personnel engaged in science, as well as in the development and implementation of innovations;

- the problem of the mass outflow of highly qualified specialists and scientists abroad;

- insufficient level of training of a wide range of specialists in universities, which does not meet the requirements of the innovation economy;

- imperfect legal and regulatory framework for the formation and development of the innovation infrastructure;

- incomparability of innovative changes in the main and auxiliary production;

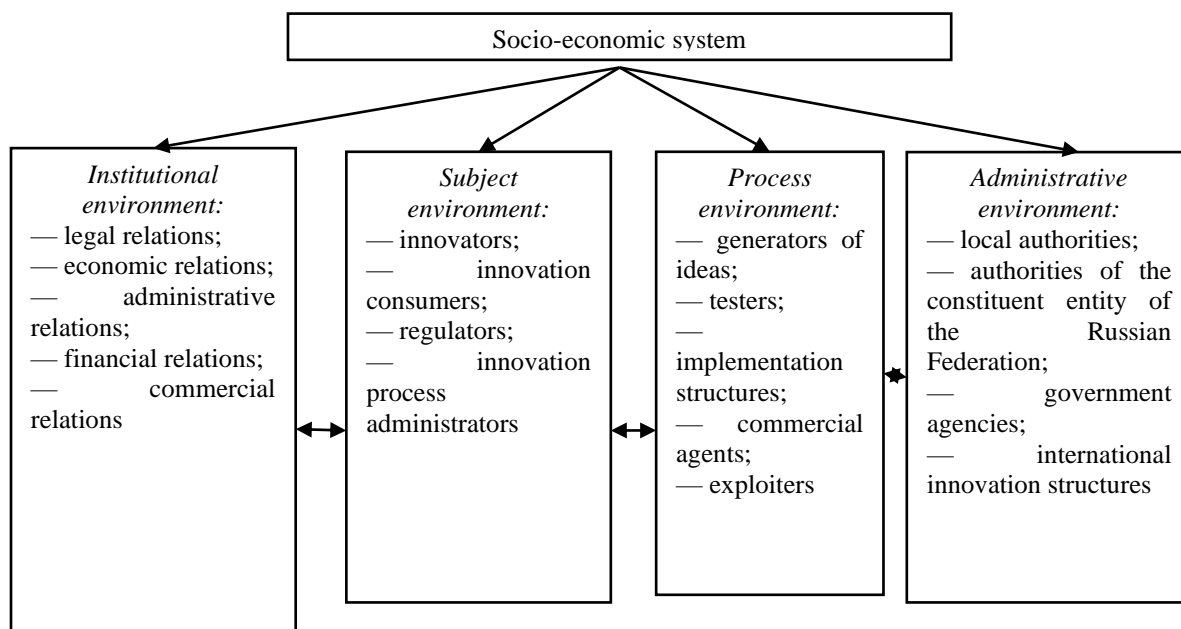
- decrease in the innovation activity of infrastructure facilities;

- the imbalance of innovative business processes and their low adaptability to environmental influences (Simkina, et al., 2010).

Based on the data provided, we can confidently argue that in the current economic conditions, it is important to ensure the elimination of the identified limitations of innovation activity through a balanced application of both market and state mechanisms and

instruments, which will allow forming an effective system of management of innovative development of the SES of Russia.

**Discussion.** Let us now present data on the existing structure, state, trends, and problems of managing the development of the SES in Russia. In doing so, it is important to note that the problems in managing the development of Russia's SES are quite similar to the problems characteristic of the transition period the Russian economy finds itself in in the conditions of the formation and realization of innovative directions. At the moment, we believe, the institutional approach to studying SES needs to consider the structure of the SES as the primary, central, hub scheme demonstrated in Figure 2. Such a scheme allows for a more detailed examination and study of the intra-environmental links between the elements of the SES and the rationality of the methods of interaction. This, in turn, allows revealing certain patterns and problems, addressing which can significantly improve the effectiveness of the existing regulation mechanisms at all levels (Tatarkina, 2010). As indicated by research, the development of the SES in developed countries of the Western world is based on major support for the strategically important industries and services through concentration of the entire available resource potential that allows developing the national economic system.



**(Figure 2):** The structure of the SES

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Resource support for innovation activities and projects concerning this sphere is carried out through the development of mechanisms for making decisions that meet the requirements and needs of markets and includes the ways and instruments of supporting entrepreneurial structures. A complex approach combining both the ways and instruments of public administration and market mechanisms allows achieving the main goal of developing innovation including social and organizational innovations and the improvement and development of the country's SES. In other words, foreign countries employ a variety of instruments and methods involving both certain spontaneity (in the context of the rapidly changing environment) and consistency of development (following the adopted strategies), which, in combination, cover a large scope of both social and economic activities of enterprises, allowing for productive and effective changes in the structure of consumption and production and thereby ensuring the necessary stability and growth of the national SES.

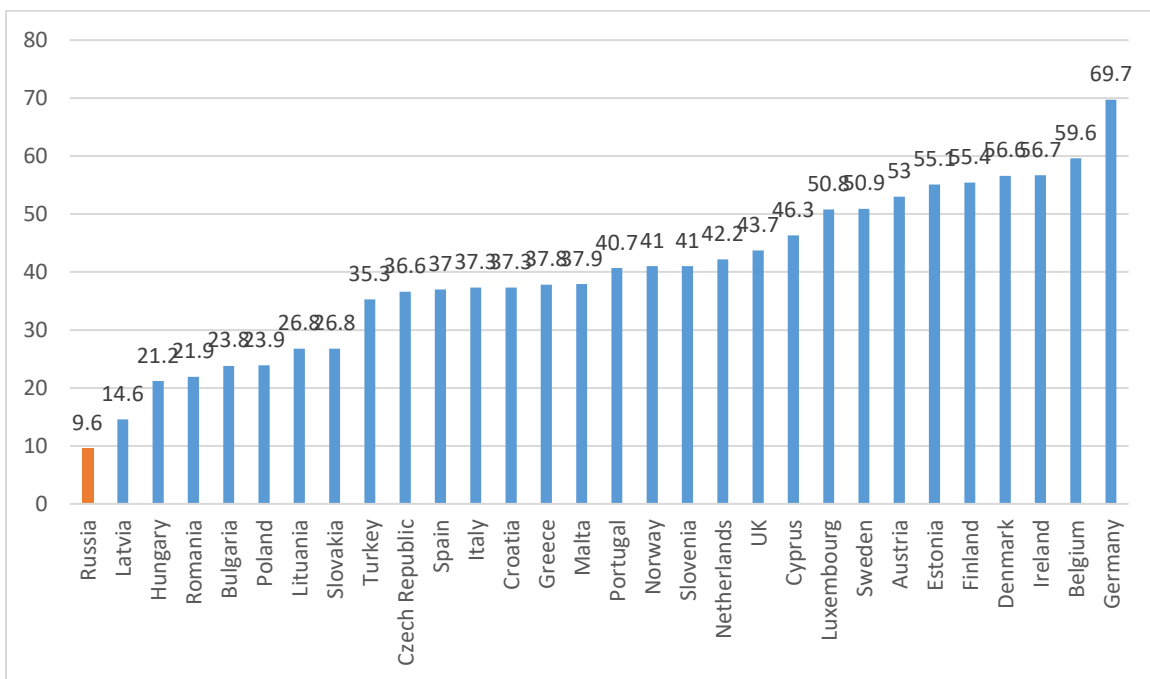
**(Table 2):** The main methods of support for innovative development in developed countries  
(Kuzmin, 2017)

Measures	Countries
Direct financing of innovative enterprises (grants, loans on favorable terms, other financing programs)	UK, Germany, Norway, Denmark, India, China, USA, France, Sweden
Financial support for venture enterprises in innovative areas	Germany, Greece, Norway, Sweden
Tax incentives for innovative enterprises	UK, USA, Germany, Greece, India, Ireland, Spain, China, France, Norway, Poland, Australia
Information and methodological support for participants in innovation activities	UK, USA, Germany, China, Sweden
Support for technoparks and technology incubators	Germany, Denmark, India, China, Sweden
Stimulation of patenting	Germany, USA, France, Sweden
Promotion of the creation of joint ventures by scientific institutions and business structures	UK, Denmark, France, Germany, Ireland, China, Sweden, USA
Stimulation of the application of innovative technologies at the level of small and medium-sized enterprises	UK, China, USA, France
Support of authors-developers through additional payments to employees when their inventions are used commercially	Greece, Denmark, China, Norway, France

Yet the most important aspect is that this affects, first and foremost, the people's standard of living and its quality. Thus, it can be noted that foreign experience in the development of SES concerning the support of entrepreneurship can and needs to be used and deployed in Russia, as it will allow increasing the competitiveness of the national economy.

In recent years, Russia has seen fundamental changes in the quality and quantity of support for innovative development. In particular, the "Strategy for the Development of the Russian Federation until 2020" approved by the Russian Government on December 8, 2011, №2227-p, adopts the key state programs, among which is the program block "Innovative development and modernization of the economy," which includes 18 programs for the development of the national innovation system in various areas and industries (Ministry of Economic Development, 2021). The financial resources planned to be allocated for the implementation of these programs reach 1,745.5 billion rubles and already at the first stage, from 2010 to 2012, the financing of fundamental science increased significantly (1.8 times). In the institutional sphere, there continues the formation of the system of institutions with the primary objective of the development of innovative directions in industry, as well as the creation of venture capital funds with the active participation of the state, such as the "Russian Venture Company" JSC, VEB.RF (Vnesheconombank), and the "Rosnanotech" State Corporation. Special attention is paid to the development and stimulation of scientific research. In particular, to strengthen the position of the Russian Academy of Sciences, major involvement of higher education institutions in the creation and promotion of innovations is proposed. The program of financial stimulation and support of innovative projects is already implemented in more than sixty higher education institutions of the country, which have already received support for about 50 billion rubles at the first stage, and based on the results of a tender, thirty higher education institutions were assigned the status of national research universities with support in the form of financial resources for about 10 billion rubles. In addition, the Russian Government and the Ministry of Higher Education and Science propose and are already implementing projects for the development of innovation infrastructure with the participation of leading Russian and foreign scientists and in close

cooperation with various enterprises involved in this area (only for the period between 2013 and 2015, about 100 billion rubles were allocated for these purposes). In individual universities, business incubators aimed at generating innovative ideas are being actively created and developed. Various forms of innovation associations, such as technology parks, science centers, business parks, introduction economic zones, innovation clusters, etc., have received several advantages and tax benefits. In addition, the Russian “innovation territory” “Skolkovo” Innovation Center was formed based on an unprecedented regulatory and economic regime.



**(Figure 3):** Share of enterprises engaged in technological innovation (in % of the total number of industrial enterprises) (SU HSE, & Rosnano, 2010)

Nevertheless, the instability of the contemporary world economy considerably complicates Russia’s realization of measures for the SES development management and the country’s quickest achievement of the trajectory of innovative economic development (Figure 3).

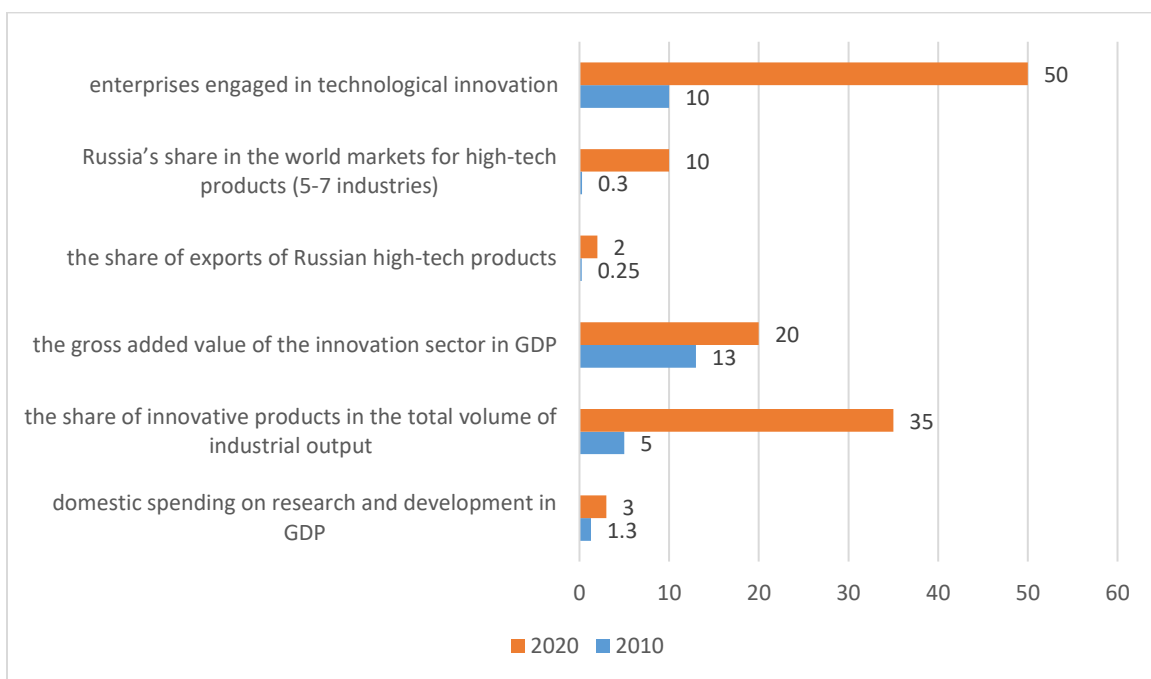
The imposed sanctions and restrictions and sharp fluctuations in national currencies and the cost of resources have had a negative impact on businesses, which, in turn, hinders the ability to increase the share of sources of non-state financing for innovation. As a



consequence, these factors have a considerable influence on the formation of the revenue part of the budget, forcing the government to tighten fiscal policy measures, which ultimately limits the ability of public authorities to apply the system of financial incentives that ensure the increase in innovation activity in the economy.

### **Conclusion**

As of now, Russia has not yet achieved significant changes in the current trends, which can improve the effectiveness of management of both government and business structures through increased innovation activity and the formation of a competitive environment in this sphere promoting the active development of innovation processes. Despite this fact, the correctness of the chosen direction is beyond doubt (Figure 4).



**(Figure 4):** Indicators of innovative development of the Russian Federation in 2010-2020 (in %) (Future Access, 2021)

There is a lot to be done to establish cooperation between business and science and increase the level of commercialization of innovative developments in Russia compared to the level of the developed countries. The state resources allocated for testing and construction and scientific research work are still spent by the receivers (enterprises and

organizations of various forms of ownership) with poor efficiency. Several key issues deserve special attention. The first issue is that despite all efforts on the part of the state, scientific personnel is aging and the training of the young specialists who are encouraged to work in these spheres is unsatisfactory.

The second key problem is that the demand for innovations is either low or nonexistent, leading to significant imbalances in the structure, which is currently inefficient and irrational. Several decisions to purchase foreign equipment as a quick short-term solution to the present problems have a serious impact on the implementation of Russian developments in the long run and, as a result, inhibit the economic development of the country and its national security in the future.

Based on the analysis of indicators characterizing the innovative activity of enterprises, it can be stated that at the present stage, Russia is significantly inferior to the leading countries. Specifically, Research and Development expenses in Russia are at the level of 1.1% of the GPD. Meanwhile, in China, this indicator reaches 1.4%, in the USA – 2.5%, in Japan – 3.2%, and in the UN countries – 2.1%. Such investments in innovative development by Western countries have allowed increasing the surplus of their technological balances by several times: by 1.6 times in the USA, by 2.0 times in the UK, and by 2.7 times in Japan (Federal State Statistics Service, 2021).

Thus, we can conclude that the chosen direction of the development of innovations in Russia is correct, but requires certain adjustments. In particular, it is necessary to shift the emphasis from the importance of ensuring the volume of resource support for most components of the SES to achieving significant and qualitative growth in the efficiency of the SES objects by focusing all the efforts of public authorities on improving the existing and developing new methods and mechanisms for the design and transformation of innovative processes in enterprises.

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