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ЭКОЛОГИЧЕСКИЕ ИННОВАЦИИ В РОССИЙСКОЙ ФЕДЕРАЦИИ: ПРОБЛЕМЫ И ПЕРСПЕКТИВЫ

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ECOLOGICAL INNOVATIONS IN THE RUSSIAN FEDERATION: PROBLEMS AND PROSPECTS

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АННОТАЦИЯ

Целью данной работы является выявление возможных способов решения сложившихся проблем в области экологических инноваций в Российской Федерации. В качестве инструментов и методов исследования использовались анализ существующих подходов к сущности экологических инноваций, а также выявление и анализ современной ситуации с экологическими инновациями в России. В результате исследования были выявлены наиболее важные проблемы в области экологических инноваций в России, а также разработаны возможные пути решения сложившихся проблем, о чем были сделаны соответствующие выводы.

ABSTRACT

The aim of this work is to identify possible solutions to existing problems in the field of ecological innovation in the Russian Federation. As tools and research methods, an analysis of existing approaches to the essence of environmental innovations was used, as well as the identification and analysis of the current situation with ecological innovations in Russia. As a result of the study, the most important problems in the field of ecological innovations in Russia were identified, as well as possible solutions to existing problems were developed, about which the corresponding conclusions were made.

Ключевые слова: экология, инновации, экологические инновации, окружающая среда, переработка отходов, рациональное природопользование, инновационная экономика.

Key words: ecology, innovations, ecological innovations, environment, waste processing, rational nature management, innovative economy.

In the modern world economy there is a universal transition to a new system of economy. According to scientists, at this moment the main pattern of social development is the renewal of the world economy, the transition from industrial to post-industrial type of society, as well as the new sixth technological mode. Under such conditions, a fundamentally new type of economy appears – the innovative economy.

It should be noted that at the same time with the development of the innovative economy, in the current conditions of irrational use of natural resources, lack of energy-saving technologies and deterioration of the ecological climate, the need to find innovative ways of solving the existing environmental problems is recognized all over the world. One of the ways to ensure further effective functioning of national innovative systems by scientists is the development of ecological innovations [1].

Speaking about innovative environmental approaches in the economy, it is worth mentioning the concept of «circular economy». This term refers to an economy that is based on the reuse of resources and waste recycling. There are two key elements that make up the essence of the circular economy: prevention of inefficient use of goods (including through joint consumption) and processing of the maximum possible amount of waste for reuse [2]. According to another approach to determining the essence of a closed-loop economy, it is based on the concept of "three Rs" - Reduce, Reuse, Recycle. The fundamental elements are the change in production and consumer processes in order to reduce harmful waste (informed consumption), the sharing or reuse of products, and the processing of waste [1]. Thus, we can conclude that the circular economy is a balanced version of mutually beneficial interaction between the economy and the environment, and its key element is ecological innovation.

There are several approaches to the definition of «ecological innovation». According to one of the approaches to ecological innovation, they are considered as «new products and technologies that protect the environment». [2]. According to another point of view, ecological innovation is understood as «changes being introduced to the way of protecting the environment that reduce the harmful effects on the environment» [3]. Ecological innovations are also considered as a way of introducing improved production and technological processes for the purpose of general greening [4]. Thus, despite the many existing approaches to determining the essence of ecological innovations, it can be concluded that ecological innovations are always aimed at preventing and reducing the negative impact on the environment, and the economy and ecology must function in concert. Given this, it is necessary to take into account the environmental, economic and social aspects of the final result of ecological-innovative activity [5].

Speaking about the situation with ecological innovations in Russia, it should be noted that the economy of our country has a strong resource dependence, so the problem of environmental management is one of the most pressing, as well as the use of ecological innovations to solve it.

Innovation activity in the Russian Federation has increased significantly in recent years, but, compared to many developed countries, its overall level is still quite low. According to the statistical compilation «Innovation activity indicators», compiled under the guidance of the Ministry of Economic Development of the Russian Federation, the aggregate level of innovation activity of organizations in Russia at the end of 2017 is only 8.5% [6], when the majority of developed and many developing countries have a much higher level of innovation activity. Comparative analysis of the values of this indicator is presented in Table 1.

Table 1

Cumulative level of innovation activity of organizations, 2017*

Country	Indicator, %
Switzerland	75,3
Brazil	72,6
Germany	67,0
Australia	66,3
Luxembourg	65,1
Belgium	64,2
India	63,7
Ireland	61,0
United Kingdom	60,2
…	…
Russian Federation	8,5

* compiled by the author by [6].

The main emphasis in the innovation activity of the Russian Federation is on innovations in technology and production, as well as in the field of marketing and promotion. Among Russian organizations that use innovations in their production, the share of organizations that implement ecological innovations is quite small. For example, the share of organizations that implement ecological innovations varies between 3.6% and 13.9% (according to various criteria) of the total number of innovative organizations [7]. Thus, we can see that the problem of successful creation and implementation of ecological innovations in the Russian Federation is quite serious. This situation has developed from the following reasons.

Problem analysis.

First, there is a significant lack of investment resources in the area of innovative activity by Russian enterprises. The long payback period and high cost of ecological innovations contribute to the perception of ecological innovations as economically unprofitable technologies that organizations are not willing to implement, preferring to spend limited investment resources on other improvements. The share of investment in environmental protection in Russian

companies in 2005 averaged 1.6% of total investment in fixed assets, and this percentage has been steadily declining over time [8]. The dynamics of changes in this indicator can be seen in Fig. 1.

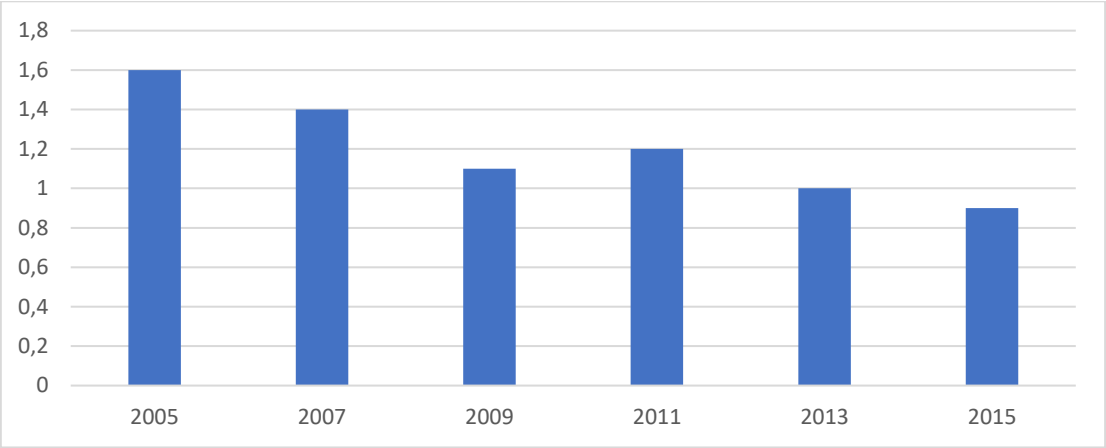

*Fig. 1 – Share of investments in fixed assets in environmental protection in the total volume of investments in fixed assets, %, 2015**
** compiled by the author by [8].*

Due to a significant reduction in government funding, Russia has ceased to produce its own ecological equipment, which also significantly complicates the solution of ecological problems and the introduction of ecological innovations due to the need to import expensive foreign equipment [9].

Secondly, Russian enterprises are not motivated to use ecological innovations, and they do not have up-to-date and systematized information about the ecological situation in the country, which may affect their decision in favor of ecological innovations. Enterprises also demonstrate a certain «careless» approach to ecology, for example, in the area of the wrong opinion that there is no need to treat natural resources with care, because they are limitless [10].

Thirdly, the Russian Federation lacks a single legislation with a clearly defined conceptual definitions and an effective mechanism of state regulation in the area of ecological innovation, and in the area of innovative activities and environmental safety in general. At the moment, at the federal level, there is no single law on innovation, and although some regions (for example, Saratov and Belgorod regions) attempt to create a regulatory framework in the field of innovation, they are still far from perfect [10]. Some legal norms regulating innovative activity at the federal level are presented separately in different regulatory bodies and do not cover the entire scope of innovations in full. A similar situation is observed in the field of legal regulation of ecology and environmental safety. Legal norms that regulate the activities of economic entities of the Russian Federation in the field of ecology are poorly developed and are presented fragmentarily in various documents, an integrated regulatory framework is also missing here [9]. Laws in the field of environmental safety are not interconnected, their norms contradict each other, and they also lack clearly established mechanisms for regulating environmental activities [11]. Ecological innovations, as an object of state legal regulation, practically do not exist, and even those aspects that fall under the action of legal norms in the field of innovation or environmental safety are regulated haphazardly and insufficiently. In addition, there are such shortcomings of state regulation of ecological innovations as, for example, a significant discrepancy between the amount of fines for violation of environmental safety standards and the actual damage to the environment. Fines for negative impact on the environment have not been indexed for decades, the size of fines is so low (especially compared to advanced foreign countries) that they are completely incomparable with the real damage to the environment. For example, poultry farms prefer to dispose of waste by simple removing and leaving it to rot naturally, while paying a small fine rather than spending impressive sums of money on the introduction of ecologically innovative technologies for processing and disposal of biological waste [10]. Consequently, a set of administrative and legislative measures that can regulate the sphere of environmental innovations is not developed in Russia. This can also include the problem of outdated environmental standards, which further complicates the assessment of the need for ecological innovations, their effectiveness and the degree of damage in case of refusal to use them. And this list is complemented by the lack of a comprehensive and unified system of state environmental monitoring that could track and apply measures to eliminate environmental violations [10].

Fourthly, there is a problem of waste processing. Waste recycling and reuse of resources are key elements of a closed-loop economy. This is an effective method both from the point of view of economics (cost reduction by reducing the amount of resources used), and from the point of view of ecology (reduction of landfill volumes of industrial, domestic and biological waste). The waste distribution structure used in some countries of the world is presented in table 2.

Table 2

Waste distribution in the countries of the world, %, 2018*

Country	Landfill	Recycling	Disposal
Sweden	0,8	50,6	48,6
USA	50	30	20
Russia	90	7	3

* compiled by the author by [12].

Sweden can be cited as an example of the most successful country in the field of waste recycling. In the country, waste is practically not sent to landfills, which are considered to be a «relic of the Stone Age», but, on the contrary, are recycled as much as possible or incinerated after careful sorting. Unfortunately, in Russia the situation is exactly the opposite – almost the entire amount of waste is sent to landfills, many of which are unauthorized, and only a small part goes to recycling and disposal. However, it is worth noting that recently in our country, intensive work is being carried out to solve the problem of waste accumulation. According to the national project «Ecology», by 2024 it is planned to eliminate 191 unauthorized landfills within the boundaries of cities, increase the share of waste allocated for processing up to 60% and directed for disposal up to 36% [13].

We have highlighted only some of the problems that hinder the successful use of ecological innovation in the Russian Federation. This situation requires more detailed analysis and comprehensive consideration in the future. At the stage of preliminary study, we have formulated the following possible ways to solve the existing problems in the field of ecological innovation.

Suggestions and conclusions.

Firstly, a possible way to improve the situation in the field of creation of ecological innovations may be the state financial support to enterprises, in order to increase their interest in ecological innovation. This is especially important for small companies, as the engine of any innovative activity, based on global experience, is most often small and medium-sized enterprises. These support measures may include tax exemptions, subsidies (especially at the initial stage of purchasing expensive ecological equipment), federal and regional programs for the development of ecological innovations, etc. [10].

Also, state regulation in the field of ecological innovation should extend to the formation of personnel and information infrastructure both in the field of innovation in general and in the field of ecological innovation in particular. Possible tools include stimulating scientific activities in the field of ecological innovation, promoting close cooperation between higher education institutions, research centers and enterprises, for example, through the formation of interdisciplinary research laboratories, centers for the transfer and exchange of technologies and «best practices», and national innovation incubator programs and other platforms for interaction in the field of ecology and innovation.

Secondly, one of the tools for solving these problems is the development of information infrastructure in the field of ecological innovations, including a register of enterprises using ecological innovations, sites for sharing experience and «best practices», stimulating the formation of environmental awareness among the population, etc. This includes, for example, the creation of business incubators, innovation and technology centers, innovation clusters as elements of technological innovation infrastructure in the field of ecology, since in Russia at the moment there is only one cluster that can be attributed to the environmental sphere – the St. Petersburg Cluster of Clean technology for the urban environment [14].

Thirdly, one of the priority ways to solve problems with ecological innovations is to develop a detailed and comprehensive regulatory framework, which includes the definition of the essence of ecological innovations, their classification and detailed mechanisms of state regulation. For example, the first step could be the development of the Federal Law «On Innovation Activities», from which one can proceed to the classification and development of detailed measures for the legal regulation of ecological innovations. It is also necessary to develop a new system of penalties according to the amount of actual damage. Tighter fines and tax sanctions could be a significant way to naturally stimulate the development and implementation of ecological innovations, as has happened in developed European countries such as Sweden, Norway and the United Kingdom [10].

Thus, it can be concluded that the development and implementation of ecological innovations is becoming a key element of economic policy in the world. Limited natural resources and a high degree of pollution and harm to the environment make the problem of environmental care while maintaining economic activity the most urgent one. In this regard, ecological innovation is one of the effective ways to solve this problem.

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