

Investments in environmental objects construction in the Russian Federation

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Abstract. The article is devoted to the characteristics of environmental investments in the Russian Federation, which are divided into two types: the first investments are aimed at the development and implementation of environmentally friendly production technologies; the second investments are directed to the commissioning of environmental protection and nature-cleaning fixed assets. Investments of the second type are considered in more detail. The data of modern statistics show the reduction of organizations with special costs, associated with investments in the construction of environmental facilities. The dynamics of "green" investments, their structure by directions and sources of financing are analyzed. Economic methods to stimulate environmental investments of enterprises and increase, targeted government spending on the environment, are proposed. As a result, we can consider that transition is needed from the residual principle of financing environmental protection to a directed increase in targeted government spending.

1 Introduction

In the 80th of the XX century, theoretical direction of the sustainable development concept was formed. Today, the concept of sustainable development in a broad sense is understood as a process of economic, social and institutional transformations that contributes to meeting people needs, but at the same time, the use of natural resources and impact on the environment should be carried out on a scale that does not harm future generations. Thus, sustainable development includes two components of the process: economic and environmental, which should not be contradictory interconnected and developed in order to meet the needs of people, and this implies not only material consumption, but also the need to preserve natural ecosystems and public health. At the end of the 20th century, another new term appeared: "green economy", which was a model of the economy, within the possibility to create conditions for striving for sustainable development.

Modern foreign scientists are actively exploring the possible impact of the sustainable development concept and the "green" economy on the world one and in general on the well-being of the population. The most famous researchers in this area are B. Agarwal, G. Daily,

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T. Jackson, J. Stiglitz, A. Sen, S. Collan, M. O'Connor, D. Pierce, W. Rees, K. Scott, N. Stern, et al. [1–7].

Currently, the concept of sustainable development has become one of the highest priority, rapidly developing and popular areas of science, which has received support at the state and international levels, the basic ideology of all international global forums.

The greatest contribution to the study of sustainable growth and "green" economy problems was made by such Russian scientists as S. Bobylev, I. Glazyrina, A. Golub, K. Hoffman, V. Gurman, A. Gusev, V. Danilov-Danilyan, I. Krasovskaya, M. Lemeshev, D. Lvov, A. Margolin, P. Oldak, G. Safonov, V. Parfenov, R. Flight, B. Porfiriev, I. Potravny, E. Ryumina, E. Ushakov, N. Fedorenko, T. Khachaturov, E. Schwartz, A. Shevchuk and many others [8–12].

The implementation of state programs of international significance in modern Russia has made a huge contribution to the practical realization of investment projects that meet international environmental requirements according to "green" construction and sustainable planning. These include the Olympics in Sochi in 2014 or the 2018 FIFA World Cup final. Another project of international importance with a declared environmental effect is the requirements implementation of "green" construction on the territory of Skolkovo innovation center [13, 14].

Formation and development of a "green" economy is impossible without "green" investment, the main directions of which are analyzed in the article. At the same time, environmental investments are proposed to be divided into two types: *the first type* is investments aimed at the development and implementation of environmentally friendly production technologies (waste-free, energy-saving) with a minimum potential load on the environment, including investments in the commissioning of renewable energy sources; *the second type* investments is aimed at nature protection and nature cleaning fixed assets putting into operation.

The first area of investment is widely developing in the world economy. By 2030, twofold growth of the share of renewable energy sources (RES) in the global energy balance will increase global GDP by 1.1% (by about \$ 1.3 trillion), welfare can potentially increase by 3.7%, and employment in the renewable energy sector will increase by 6% annually, according to forecasts [15, 16]. Also, investment in this area includes capital costs for the introduction of other (not the creation of renewable energy) newest production technologies, which have a minimum impact on the environment in addition to meeting the goal of increasing production efficiency [17].

The second area of environmental investment is the commissioning of water treatment facilities, filters, gas collection plants, waste incineration and waste processing plants, landfills with no negative impact on the environment.

2 Methodology

The methodological basis of the study was the research works of Russian and foreign scientists on the problems of sustainable development and the "green" economy. In the study course, such general scientific methods were used as a systematic approach as a general methodological principle of research, scientific abstraction, logical analysis, methods of systematization, comparative analysis, and methods of intersectoral analysis were also used.

The statistical base of the study was the data of the Federal State Statistics Service of the Russian Federation. Unfortunately, statistics do not allow analyzing the investment processes of the first direction, since it is difficult to single out the costs of environmental protection in the total amount of production costs for the introduction of more advanced

technologies. Therefore, the “environmental investments” concept is narrowed down to environmental investments of the second direction in the article.

3 Results

Total environmental costs are divided into three categories: 1) recurrent costs; 2) overhaul; 3) investments in fixed assets. Current costs are understood as the costs of maintaining and operating nature conservation and nature conservation facilities. Overhaul involves the cost of repairing fixed assets (fixed assets) for environmental protection. Investment in fixed assets refers to the cost of construction and maintenance, as well as the purchase of new equipment and technologies. The costs of environmental protection by the categories listed above are shown in Table 1.

Table 1. Dynamics of the main types of environmental protection costs in the Russian Federation (in actual prices), RUB. Source: it was compiled according to Rosstat data: <http://www.gks.ru>.

Cost types	2005	2010	2012	2015	2017	2019
Current	142.7	193.5	239.2	290.9	320.9	374.41
Overhaul	15.6	26.1	27.0	22.2	24.6	23.5
Fixed capital investments	58.7	89.1	116.5	151.8	154.0	175.03

There is an increase in all types of costs in the period under review. However, the increase in total expenditures on environmental protection is carried out not due to their real growth, but because of the price factor.

Overhaul costs varied in the range of 22–27 billion rubles during the period 2012–2019. We should note that the real (in comparable prices) investment volume decreased by 3%, despite the growth in investments in nominal terms (almost 3 times in 2005–2019). Environmental investments occupy an insignificant share in their national economic volume, and this share is decreasing (from 1.9% in 2000 to 0.9% in 2019). Sluggish investment processes result in an insufficient volume of basic environmental funds. Their share in the national economic volume is also not significant (does not exceed 1%) and is decreasing (from 1% in 2010 to 0.8% in 2019). The structure of environmental investments by funding sources in 2019 is shown in Table 2

Table 2. Environmental investments in environmental facilities in 2019 by investment sources (in actual prices), RUB mln, %. Source: it was compiled according to Rosstat data: «Environmental treatment in Russia».

	Investments, Total	Including funds			
		Federal budget	Budgets of constituent entities of the Russian Federation and local budgets	own funds enterprises	others sources
RUB mln	175029	8878	8058	155878	2215
%	100	5.1	4.6	89.1	1.2

Attention is drawn to the weak participation in the State environmental investment processes (both Federal and Regional budgets). The share of enterprises is significant, almost 90%. Moreover, an analysis of statistical data shows that recently the share of the state has been decreasing, since budget expenditures are primarily directed to the defense-industrial complex and the social sphere, and to environmental protection, on a leftover principle. By contrast, the share of private investment is growing.

There is a decrease in the number of organizations in Russia with special costs associated with environmental innovations, despite the increase in the share of private

investment, if there were 559 in 2011 and then there were 260 in 2015. In 2017, there was a slight increase in the number of companies, carrying out innovative environmental costs, to 341, but it was observed only at the quantitative level of the companies number, while the total amount of costs in the period under review decreased by 1.8 times: from 22 to 12 billion rubles. The total investment costs per organization decreased 2.33 times: from 84.5 to 36.2 million rubles. The largest decline was observed in the manufacturing sector, which sectors (metallurgy, chemical industry, production of building materials) had a significant impact on the environment. This indicates a reduction in interest in the use of the best, environmentally friendly technologies in their production by private organizations and a decrease in government incentives for environmental costs.

The change in the structure of environmental investments by direction of financing over the past ten years is shown in Table 3.

Table 3. Environmental investments in water treatment facilities, in fixed assets for capturing air pollutants, waste recycling and disposal (in actual prices), million rubles, %. Source: it was compiled according to Rosstat data: « Environmental treatment in Russia».

Investment direction	2010		2019	
	million rubles	%	million rubles	%
Protection of water resources	46025	51.7	71805	41.1
Atmospheric air protection	26127	29.3	70250	40.1
Recycling and disposal of waste	6276	7.0	13731	7.8
Others	10666	12.0	19243	11.0
TOTAL	89094	100	175029	100

As it can be seen from the table, very insignificant volumes of capital investments were directed to waste disposal, although the problems of waste processing and accumulation today are the most urgent among Russian environmental problems.

Here are the examples of large investment projects for the construction and reconstruction of environmental treating facilities, the information about which was found through Internet monitoring of information resources.

New sewage treatment facilities were put into operation, designed to receive 2.5 thousand cubic meters per a day; the volume of investments amounted to over 510 million rubles in the Yamalo-Nenets Autonomous District (Novy Urengoy) in 2020. [18]. In the Tyumen region, the process of treatment facilities modernization in the amount of 22.1 billion rubles will be completed by 2031. [19]. The construction of new treatment facilities with a capacity of more than 2.6 million cubic meters of open pit waters per year began, hydrotechnical solutions of the project provided for multi-stage wastewater treatment in 2020, in the Kemerovo region, at the Taldinsky coal mine (one of the most promising and dynamically developing) [20]. New municipal wastewater treatment plants will be built at a cost of 3.8 billion rubles in the Tomsk region, in the city of Seversk, by 2024. Seversk is the only city in Russia with a population of over 100 thousand inhabitants that does not have a sewage treatment plant [21]. In the Amur Region (Svobodny), construction of sewage treatment facilities with a capacity of 10 thousand m³ / day has been underway since 2020; the volume of investments is 1.8 billion rubles. [22]. Construction of an additional complex of treatment facilities began, which will purify 400 thousand cubic meters of wastewater per day by 2025, investments will exceed 10 billion rubles in the city of Khabarovsk on the national project "Ecology" in 2013 [23]. In the Kamchatka Territory (Vilyuchinsk), more than 1.6 billion rubles is aimed at the construction of a pipeline at the sewage treatment plant, which has been implemented since 2019 as part of the State Program of the Kamchatka Territory. [24]. In the Sakhalin region (Yuzhno-Sakhalinsk), the reconstruction of the TFC-7 treatment facilities is underway, which are unique and have no

analogues in Russia, they will provide complete mechanical and biological wastewater treatment, investments will exceed 3 billion rubles. [25]

4 Discussion

It is noteworthy that the main part of environmental investment projects, implemented and planned in Russia, is the reconstruction and modernization of outdated water treatment systems, which timely reimbursement of fixed assets is not carried out within the timeframes set by the operational standards and their state is currently critical. As for new technological projects, the constructions of new refinery and waste incineration plants, industrial parks, installation of more efficient and powerful air-cleaning filters, monitoring stations for environmental pollution, projects for the production of renewable energy - their number are very small.

Today, the anthropogenic impact on the quality of water and atmospheric resources in Russia is assessed as negative, but stable, without obvious tendencies towards deterioration. In the Russian Federation, for 2015–2019 periods, annual emissions volume of pollutants into the atmosphere decreased by 27.5%: from 31.3 to 22.7 million tons; the volume of polluting wastewater discharge decreased by 12.1%: from 42.9 to 37.7 billion cubic meters. The huge area of forests still determines the role of Russia as the “ecological lungs” of the planet. Today Russia is the world leader in terms of cumulative reductions in greenhouse gas emissions. Low level of land development ensures a low degree of land degradation.

However, a critical situation has developed in the field of waste management: the annual generation of production and consumption waste is inevitably growing. There is an annual increase in the volume of accumulated waste, despite the growth in the volumes of their utilization and neutralization (from 2,685 million tons in 2015 to 3,882 million tons in 2019).

Thus, the environmental conditions in the country are far from favorable. The main factors of environmental degradation in Russia are currently the following: a high degree of fixed assets depreciation, a low degree of resource efficiency, a low technological level of the economy, insufficient development of the ecological market, and the absence of a stimulating environmental policy. According to expert estimates, annual losses of Russia's GDP, caused by environmental degradation and the associated deterioration in the quality of economic factors, amount to 4–6%, and taking into account damage to human health, they can reach 10–15% of GDP [26].

The above-mentioned environmental problems require immediate solutions, which require an increase in the volume of "green" investment. But, unfortunately, Russia is far from a leading position in the world in the field of innovative technologies, as well as in their application in environmental protection. Further ignoring the trends of the innovative economy is fraught with capital outflow from Russia, restricting the country's access to global sources of green financing, a subsequent decrease in the attractiveness of Russian companies and the loss of the country's competitiveness in the world market, as a consequence.

Our country needs to reduce the technological gap with developed countries to fulfill the obligations, adopted by the world community, including Russia, to achieve the UN sustainable development goals (including those that solve environmental problems). According to experts, today the main goal is the development of information and communication technologies (ICT) and the best available technologies (BAT). There are already examples of “green” BAT use in the Russian economy, mainly in the fuel and energy complex: sensor control technology in geological exploration, increasing the oil recovery factor, integrated use of coal, processing industrial waste [12].

But the given examples are not enough, a complete innovative modernization of mineral and raw materials and fuel and energy complexes, as well as the processing industries of their products, as key activities in the socio-economic development and ensuring the national security of the country, which account for a large share of pollution, is required. If the previous model of extensive resource-intensive development is preserved, the Russian economy may become lagging behind with a steady decline in GDP at the turn of the 2040th [27].

5 Conclusion

The analysis results of the current situation in the field of environmental investment indicate the need to intensify investment environmental protection processes. In order to do this, it is necessary to improve economic methods to stimulate environmental investments, for example: to increase the rates of payments for negative impact on the environment and to accumulate collected payments in order to implement environmental costs; use accelerated depreciation of fixed assets; to issue preferential loans under the state guarantee for environmental purposes; apply tax credits for environmental investment or completely exempt enterprises from paying income tax, which is used to finance environmental costs [28]. A transition is needed from the residual principle of financing environmental protection to a directed increase in targeted government spending. Significant improvement in the environmental situation in the country is possible, but this requires serious joint work of the state, business and population, given the growth of environmental investment.

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