Transport infrastructure in the system of environmental projects for sustainable development of the region

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Abstract. The purpose of the work is to analyze national and federal projects of the Russian Federation in the field of ecology, transport infrastructure, assess the degree of their implementation and identify factors affecting the effectiveness of project activities. The article analyzes the main aspects of project management in the system of transport infrastructure development, control and monitoring of planned activities. This will reveal the degree to which the final goals of the projects have been achieved, taking into account the transport component in the region's system. One of the most pressing topics in the modern world is the environmental problem, which has a serious impact on the economy of the state and the life of society. The negative consequences of economic growth have necessitated the formation of a concept of sustainable development and the development of Sustainable Development Goals within its framework, the achievement of which is carried out through the development and implementation of environmental projects. Using a systematic approach, considering the totality of national, federal and regional environmental projects as a single and integrated system, allowed us to achieve our goal. As a result of the conducted research, projects of the Russian Federation in the field of ecology at the national and federal levels were identified, projects were linked to the Goals of sustainable development, development of transport infrastructure, an analysis of the implementation of project indicators was carried out, the reasons for the deviation of indicators from the set values were identified, the dynamics of environmental ratings of the leading regions over two years was considered. The practical and theoretical significance of the study lies in identifying the factors influencing the success of project activities in the field of ecology, taking into account transport infrastructure and the possibility of predicting the results of project implementation in the future.

1 Introduction

The relevance of sustainable development issues is currently due to the aggravation of environmental problems caused by economic growth based on the unlimited use of natural

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resources. In turn, the solution to environmental problems lies in an integrated approach to the implementation of various environmental protection measures. The developed Sustainable Development Goals (SDGs), which are a plan for achieving a sustainable future and implemented through project management, help to ensure a balance of environmental, social and economic aspects of society's development. Therefore, the main goal of project activities in the field of ecology is the restoration and renewal of existing ones, as well as the formation of new ecosystems that are important for the national economy and useful for the environment.

The purpose of this work is to analyze national and federal projects of the Russian Federation, developed with a focus on achieving sustainable development goals, and to assess the degree of achievement of project indicators. As part of this goal, an analysis of the level of implementation of sustainable development goals in Russia was carried out; compliance with the SDGs and projects implemented in the field of ecology has been established; indicators were analyzed to determine the extent and timing of the implementation of assigned tasks within the framework of federal projects; examples of successful regional projects are given; the reasons for the uneven implementation of federal projects in the field of ecology are highlighted; A comparative analysis of the leading regions in the environmental ranking of the Russian Federation was carried out.

The research materials included publicly available scientific, analytical and journalistic works, statistical data, and documentation of reference and legal systems. In the process of work, quantitative and qualitative methods of theoretical research were used. General scientific methods were analysis, synthesis, generalization and classification. Statistical, graphical, logical methods and comparison were used as special ones. The use of a statistical method made it possible to analyze data sets and find the necessary patterns in them. Using the graphical method and comparison, development trends are clearly presented and a holistic picture of the objects under study is obtained. The logical method is used to reproduce the development of the ecological systems under consideration and existing functional connections. Thus, the materials and research methods used made it possible to achieve the purpose of the study and complete the assigned tasks.

The results of the study can be used for scientific and practical purposes to study project activities in the field of ecology at the level of the state and its subjects, identify patterns affecting project activities, predict the results of the implementation of national and regional projects in the field of ecology.

Environmental issues and the role of design processes in achieving sustainable development goals have recently received wide resonance in Russian and foreign scientific circles. The impact of projects on sustainable development goals is considered in the works of A. Saberi, H. Ahmadi, D.S. Shayegan, A. Amirkardoust [1], N. Schöne and B. Heinz [2], D. Milojkovic [3], N. Bushuyeva and O. Chernysh [4] and others [5-10]. It has been established that sustainable development project management is an effective tool for achieving goals under conditions of risk and uncertainty. The use of a project-based approach, implemented through a wide range of actors in interaction with the government, helps organizations implement sustainable practices, ensure balanced development, avoid negative impacts on the environment, helps reduce annual water shortages, ensures access to energy and other sources, and allows the use of weighted indicators to assess the impact of projects on achieving sustainable development goals. Recently, the term “ecological design” has become popular, considered by the authors in relation to various sectors of the national economy: construction [11-13], education [14-15], light industry [16], culture and art [17-18] and others.

More and more attention is being paid to project activities in the civil sphere. In the work of N. Moczek, S.L. Voigt-Heucke, K.G. Mortega, C.F. Kartas, made using empirical research methods, presents the role of civic projects in achieving sustainable development goals [19].

The goals to which project management has made the greatest contribution are highlighted, and evidence of good capacity to support all goals is provided. The problem of data exchange between projects and authorities, UN databases and other responsible bodies was noted. It was also concluded that it is necessary to strengthen support for civilian projects that have the greatest potential to achieve environmentally significant goals in terms of their adaptation and expanded data collection. N. Vasilenko and A. Rumyantseva also explore ways to achieve the SDGs through project activities in non-civic science [20]. Three areas that contribute to achieving the SDGs have been identified: technological, knowledge-based and participatory. C. Masselot, R. Jeyaram, T. Raphaël and J.L. Fernandez-Marques argue that citizen science can not only provide unique, non-traditional data to track progress towards the SDGs, but also, through a project-based approach, generate innovations that enable such progress . Using monitoring of the dynamics of social interaction, the authors compiled a detailed picture of the processes of team participation, important for project management and the development of project initiatives [21].

Some of the work is devoted to the role of software for managing projects that contribute to achieving sustainable development goals. P. Stanimirović, T. Borozan, M. Radojicic and A. D. Tomic found that the use of software accompanies the implementation of successful projects and is beneficial for achieving design goals in all dimensions, such as time, resources, costs and risks. The positive impact of the use of engineering applications on the degree of satisfaction of stakeholder requirements under certain constraints has also been noted [22]. G. Kalkabaeva, M.A. Assanova and S.B. Glazunova are exploring the use of digital technologies in financing projects aimed at sustainable development. New mechanisms have been identified to increase financial support in the form of digital platforms that will attract private investment in environmental projects [23].

The contribution of space projects to achieving sustainable development goals is considered in the work of A. Baumgart, I. Vlachopoulou, J.R. Vera, S. Pippo [24]. It is indicated that many projects focused on sustainable development, regardless of industry sector, ranging from environmental monitoring to supporting search and rescue operations, use space technology. At the same time, space agencies and other institutions are actively adjusting their projects to ensure they are consistent with the sustainable development goals. The authors made an attempt to map the relationships between the projects being developed and the goals of sustainable development in order to determine the benefits of the technologies used.

E. Bulmer focuses on the role of non-human actors as the main actors in project management, which, due to their “non-humanity”, are not able to express themselves and therefore are rarely included in the analysis of stakeholders and approaches to project management, which prevents a realistic consideration of such actors . The author also notes that many projects in various fields, including environmental protection, depend on natural resources to obtain their products [25].

Thus, the analysis of the works of Russian and foreign authors made it possible to identify the leading role of project activities in the light of achieving sustainable development goals. At the same time, it was revealed that the main interest is in general issues of the impact of projects on achieving the SDGs or individual areas of goal setting, such as water supply, energy supply, etc. Therefore, it is of interest to study projects that closely correlate with a set of sustainable development goals in the field of ecology.

2 Materials and Methods

The Sustainable Development Goals (SDGs) are a set of 17 interrelated indicators and are designed to ensure a balance between the main components of sustainable development - social, economic and environmental. The SDGs were developed in 2015 at a UN summit to

replace the Millennium Development Goals (MDGs), set back in 2000, and agreed upon by the leaders of 193 countries. Since 2016, SDSN (Sustainable Development Solutions Network - a network of organizations for developing solutions to promote sustainable development at the United Nations), together with the Bertelsmann Foundation, annually publishes a ranking of countries on the global SDG index, compiled by both the overall score and the spillover indicator. The overall score reflects states' progress in achieving all seventeen goals, with a score of 100 equaling 100% indicating that all sustainable development goals have been achieved. The spillover score or spillover index reflects the degree of positive or negative impact on the ability of other countries to achieve the sustainable development goal, with a higher score representing more positive spillovers.

The results show that in terms of spillover indicator for the period 2022, the Russian Federation ranks 109th among 166 countries with a score of 87.19 points and is in the third quartile in the Eastern Europe and Central Asia sector (see table 1).

Table 1. Indicators of achievement of Russia's sustainable development goals in the sector of countries of Eastern Europe and Central Asia.

Country	Total score								Overflow indicator	
	2000	2015	2021	2022	2022 to 2000, ±	2022 to 2015, ±	2022 to 2021, ±	Rate	Score	Rate
Croatia	72.60	79.24	81.55	81.50	+8.90	+2.26	-0.05	12	75.82	125
Moldova	68.51	76.07	79.06	78.63	+10.12	+2.56	-0.43	25	92.14	93
Belarus	72.32	76.89	78.41	77.50	+5.18	+0.61	-0.91	34	81.73	117
Romania	67.91	75.03	77.3	77.46	+9.55	+2.43	+0.16	35	81.66	118
Serbia	69.74	73.61	78.36	77.34	+7.60	+3.73	-1.02	36	86.60	110
Ukraine	69.05	72.45	75.74	76.52	+7.47	+4.07	+0.78	38	96.73	63
Malta	68.48	73.97	76.13	75.53	+7.05	+1.56	-0.60	41	61.50	149
Georgia	67.15	72.96	75.05	75.02	+7.87	+2.06	-0.03	42	92.40	89
Bulgaria	68.75	74.37	74.94	74.62	+5.87	+0.25	-0.32	44	88.09	107
Kyrgyzstan	66.77	71.98	74.97	74.41	+7.64	+2.43	-0.56	45	96.47	65
Bosnia and Herzegovina	67.35	70.65	74.13	74.02	+6.67	+3.37	-0.11	47	89.33	102
Russia	**66.70**	**70.99**	**74.05**	**73.79**	**+7.09**	**+2.80**	**-0.26**	**49**	**87.19**	**109**
Azerbaijan	62.34	71.37	74.12	73.53	+11.19	+2.16	-0.59	53	96.40	67
Albania	65.85	70.87	73.67	73.51	+7.66	+2.64	-0.16	54	92.43	88
Armenia	66.88	71.13	73.67	73.26	+6.38	+2.13	-0.41	56	94.36	79
Cyprus	66.18	70.61	72.97	72.49	+6.31	+1.88	-0.48	59	51.06	159
North Macedonia	65.93	70.87	73.15	72.47	+6.54	+1.60	-0.68	60	90.82	99
Kazakhstan	65.22	71.09	71.8	71.65	+6.43	+0.56	-0.15	66	92.10	94
Montenegro	65.33	68.19	71.19	71.40	+6.07	+3.21	+0.21	67	77.15	122
Uzbekistan	60.91	66.31	71.35	71.15	+10.24	+4.84	-0.20	69	97.91	42
Tajikistan	59.98	66.33	69.34	69.19	+9.21	+2.86	-0.15	85	98.28	38
Turkmenistan	65.66	66.82	67.55	68.47	+2.81	+1.65	0.92	91	93.05	84

Afghanistan	36.01	41.61	46.35	49.01	+13.00	+7.40	+2.66	158	98.99	25

Legend: 1st quartile 2nd quartile 3rd quartile 4th quartile

Source: Compiled by the authors based on [26].

This is the lowest score among country sectors (for example, for Eastern Europe and Central Asia the score is 91.1 points), but is nevertheless higher than the score of OECD countries (73.8 points). An environmental factor that had a minor impact on the assessment for the Russia was scarce water consumption, determined by the volume of water abstracted as a percentage of existing local renewable freshwater resources. Afghanistan has the highest score in the ranking, and Cyprus has the lowest.

In the overall ranking, Russia ranks 49th among 193 countries with an index of 73.79 points and is in the second quartile in the segment of countries of Eastern Europe and Central Asia. It is noted that about 40% of the tasks set in Russia have already been completed, 30% are characterized by limited progress; the remaining tasks tend to get worse. Croatia has the highest index, while Afghanistan has the lowest.

Over the period since 2000, the general index of Russia, like other countries, has tended to increase, with the exception of the last year. A decrease in the overall SDG achievement index compared to 2021 is observed for almost all countries in the sector due to changes in the general economic and general political situation. The largest decrease (-1.02 points) is typical for Serbia.

Among the SDGs that determined Russia's place in the overall ranking and that best meet the characteristics of environmental systems, we note the following:

1. SDG 6. "Clean water and sanitation" (as of January 1, 2024, 45% of the targets have been developed). For this indicator, with a moderate improvement in the score, which is not sufficient to achieve the goal, serious problems remain.

2. SDG 7. "Affordable and clean energy" (66% of targets achieved). It is noted that the main problems remain, as a result of which the assessment stagnates or grows by less than 50% of the required indicator value.

3. SDG 11. "Sustainable cities and human settlements" (40% of targets). Problems remain; however, there is a moderate improvement in the score, which is not sufficient to achieve the goal.

4. SDG 12. "Responsible consumption and production" (15% of targets). There are serious problems that come with stagnating valuations.

5. SDG 13. "Combating climate change" (37% of targets). It was noted that other problems remain, which influenced the decrease in the score for this indicator.

6. SDG 14. "Preservation of marine ecosystems" (30% of targets). The presence of main problems with the stagnating assessment is indicated.

7. SDG 15. "Preservation of terrestrial ecosystems" (50% of targets). Similar to the previous one [27], [28].

In a number of regions, local authorities are taking measures to regulate the demographic situation in the country. For example, additional groups in kindergartens are opened, funding of preschool institutions is increasing. Let us consider the information on expenses for the period 2012-2019 in preschool educational institutions of the Sergach municipal district, the Nizhny Novgorod region.

Thus, the state of all SDGs that directly correlate with the state of the environment in Russia requires increased attention with a focus on achieving sustainable development goals. The highest percentage of completed tasks is observed in the indicator SDG 7 "Affordable and clean energy", the lowest – SDG 12 "Responsible consumption and production".

It should be noted that environmental issues in Russia began to come to the fore back in the 90s of the last century. In 1992, an interdepartmental commission was created whose task

was to implement the decisions of the UN Conference on Environmental Protection and Development. In 1996, the "Concept of Russia's transition to sustainable development" was approved. In general, from 2000 to 2022, the volume of investments in fixed capital aimed at environmental protection and rational use of natural resources increased more than 13 times from 22,339 million rubles to 306,887 million rubles - see Figure 1.

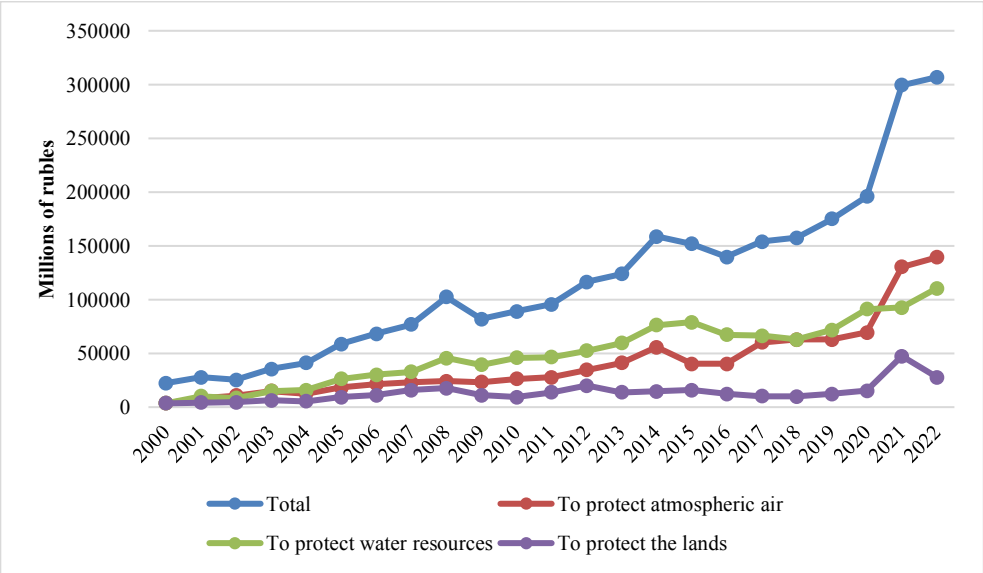

Fig.1. Investments in fixed capital aimed at environmental protection and rational use of natural resources in the Russian Federation**.**

Source: Compiled by the authors based on [29].

At the same time, the greatest growth is observed among investments aimed at protecting atmospheric air - 17.5 times; the growth of investments aimed at the protection of water resources amounted to 13.4 times, and for the protection of land – 7.9 times. If we consider the period of recent years, starting with the implementation of federal projects in the field of ecology in 2018, then there is a change in state policy priorities: investments aimed at land protection showed the greatest growth (+177.7%), followed by atmospheric air protection (+112 .7%) and protection of water resources (+76.2%).

3 Results

Achieving sustainable development goals in the field of ecology is laid down in the national projects of the Russian Federation "Housing and Urban Environment" and "Ecology", which, in turn, include federal projects - see Table 2.

Table 2. Characteristics of federal projects of the Russian Federation in the field of ecology.

#	Federal projects	SDG	Period	Budget, millions of rubles	Connection with government programs of the Russian Federation
1	Clean country	SDG 11 SDG 12	01.10.18– 31.12.24	174306.37	"Environmental protection"
2	Integrated municipal solid waste management system	SDG 11 SDG 12	01.10.18– 31.12.24	306625.22	"Environmental protection"

3	Infrastructure for waste management of I-II hazard classes	SDG 12	01.10.18–31.12.24	65173.58	"Development of the nuclear energy-industrial complex"
4	Fresh air	SDG 13	01.10.18–31.12.25	375695.24	"Scientific and technological development of the Russian Federation" "Environmental protection" "Development of industry and increasing its competitiveness" "Development of the transport system"
5	Pure water	SDG 6	01.10.18–31.12.20	21837.72	"Providing affordable and comfortable housing and utilities to citizens of the Russian Federation"
6	Improvement of the Volga	SDG 12 SDG 14	20.12.18–21.12.25	182572.52	"Reproduction and use of natural resources" "Providing affordable and comfortable housing and utilities to citizens of the Russian Federation" "Environmental protection" "Development of industry and increasing its competitiveness"
7	Preservation of Lake Baikal	SDG 12	01.01.19–31.12.25	46440.59	"Environmental protection"
8	Preservation of unique water bodies	SDG 12 SDG 14	10.01.19–25.12.25	15243.86	"Reproduction and use of natural resources" "Providing affordable and comfortable housing and utilities to citizens of the Russian Federation"
9	Conservation of biological diversity and development of eco-tourism	SDG 15	01.08.18–31.12.24	6222.19	"Environmental protection"
10	Implementation of the best available technologies	SDG 12	01.10.18–31.12.20	2418974.58	"Development of industry and increasing its competitiveness"
11	Forest conservation	SDG 15	01.10.18–31.12.25	156815.38	«Развитие лесного хозяйства»
12	Integrated environmental quality monitoring system	SDG 12	27.12.21–31.12.24	54627.68	"Environmental protection" "Information society"
13	Clean energy (not included in the national project “Ecology”)	SDG 7	01.01.22–31.12.25	18154.00	"Energy Development"

Source: Compiled by the authors based on [30].

The main goals of the projects are a radical improvement in the environmental situation, a positive impact on the health of the residents of the Russian Federation, and a comprehensive solution to the issues of managing natural and economic processes in the country. Achieving the goals of the projects ensures the implementation of government programs, the main purpose of which is to create an environmentally safe environment for current and future generations, as well as the implementation of the constitutional right of Russian citizens to a healthy environment.

The achievement of the set goals was assessed using indicators that make it possible to determine the degree and timing of tasks, obtain real data for making informed decisions, and assess the proximity of projects to completion - see tables 3–15.

Table 3. Fulfillment of the main indicators of the federal project "Clean Country".

Indicator		2018	2019	2020	2021	2022	2023
Number of liquidated most dangerous objects with accumulated environmental damage, items	Plan	31	48	58	66	74	78
	Fact	31	48	58	66	74	80
	±	0	0	0	0	0	+2
Number of people whose quality of life will improve due to the elimination of the most dangerous objects of accumulated environmental damage, thousand people	Plan	2260.6	2929.9	3820.8	4156.0	4555.5	4648.7
	Fact	n/d	n/d	n/d	4156.0	4555.5	n/d
	±	-	-	-	0	0	-
Number of liquidated unauthorized landfills within city boundaries, items	Plan	0	16	28	42	57	111
	Fact	-	16	28	39	58	128
	±	-	0	0	-3	+1	+17
Number of people whose quality of life improves due to the elimination of unauthorized landfills within city boundaries, thousand people	Plan	0	443.4	1059.7	3515.1	5808.3	10595.9
	Fact	n/d	n/d	n/d	3381.0	5880.6	11132.1
	±	-	-	-	-134.1	+72.3	+536.2

Source: Compiled by the authors based on [30-31].

The federal project "Clean Country" is aimed at eliminating unauthorized landfills and hazardous sites with accumulated environmental damage. As part of the project implementation, 27 regional projects were planned in 16 constituent entities of the Russian Federation. At the end of 2023, the number of liquidated unauthorized landfills within city boundaries exceeded the planned values and amounted to 128. The largest number of landfills were removed in the Volga Federal District; The Central Federal District, in particular the Moscow region, the North Caucasus Federal District and others are also noted [32]. The number of liquidated most dangerous objects with accumulated environmental damage was 80, which is an increase of 2. above plan. A positive aspect is the improvement in the quality of life of the population due to the elimination of unauthorized landfills: 5880.6 thousand people. in 2022 and 11132.1 thousand people. in 2023, which is also higher than the amount provided for in the project. Thus, the actual value of the indicators indicates the successful implementation of the "Clean Country" project in the period until 2024.

Table 4. Fulfillment of the main indicators of the federal project "Integrated municipal solid waste management system".

Indicator		2018	2019	2020	2021	2022	2023
Share of municipal solid waste sent for disposal, percentage	Plan	97.0	96.2	96.1	93.8	92.4	90.8
	Fact	n/d	n/d	n/d	73.2	81.7	80.5
	±	-	-	-	-20.6	-10.7	-10.3
	Plan	3.0	3.8	3.9	6.2	7.6	9.2

Share of waste allocated for disposal as a result of separate accumulation and processing (sorting), percentage	Fact	n/d	n/d	n/d	11.6	11.9	12.8
	±	-	-	-	+5.4	+4.3	+3.6
Share of municipal solid waste sent for processing (sorting), percentage	Plan	7.0	15.8	21.4	26.6	32.7	39.7
	Fact	n/d	n/d	n/d	43.3	49.9	52.9
	±	-	-	-	+16.7	+17.2	+13.2

Source: Compiled by the authors based on [30-31].

The problem of municipal solid waste management has recently been one of the most discussed. The federal project "Integrated Municipal Solid Waste Management System" is aimed at creating facilities for processing and recycling waste and reducing their impact on the environment. The main objectives of the project include increasing the volume of municipal solid waste aimed at processing and recycling, as well as reducing the share of imported equipment for processing and disposal of municipal solid waste by 22 percent. The implementation of the project shows positive results in terms of processing (sorting) of municipal solid waste and recycling of waste generated as a result of separate accumulation and processing, as evidenced by the excess of actual indicators over planned ones. Solving the problem of solid waste disposal has turned out to be a more difficult task: over the past three years, the percentage of underachievement of planned indicators ranges from 20.6% in 2021 to 10.3% in 2023. The reasons include the poor development of recycling technologies, as well as the increasing amount of waste every year, which is associated with a decrease in the life cycle of many products and growing consumer demand.

Table 5. Fulfillment of the main indicators of the federal project "Infrastructure for waste management of I-II hazard classes".

Indicator		2018	2019	2020	2021	2022	2023
Share of recycled and neutralized waste in the total volume of waste of hazard classes I and II, percentage	Plan	0	0	0	0	0	0
	Fact	0	0	0	0	0	0
	±	0	0	0	0	0	0
Degree of readiness of production and technical complexes for processing, recycling and neutralization of waste of hazard classes I and II, percentage	Plan	0	0	0	0	34.1	54.6
	Fact	0	0	0	0	35.7	44.8
	±	0	0	0	0	+1.6	-9.8

Source: Compiled by the authors based on [30-31].

The federal project provides for the construction of a modern infrastructure that ensures the safe handling of waste of hazard classes I and II, and the creation of a unified management and control system for the management of waste of this kind. The implementation of the project involves the construction of seven production and technical complexes (PTC) and the processing of 350 thousand tons of waste. Despite the PTC readiness schedule being ahead of schedule in 2022, based on the results of 2023 there is a lag of 9.8% from the planned indicators. The problems are caused by underestimation of the actual volumes of waste generation, outdated processing technologies, the presence of a "gray zone" of accounting and control, and other factors. However, in December 2023, at a meeting of the working

group under the Committee of the Federation Council of the Federal Assembly of the Russian Federation, certain successes were noted in the implementation of project tasks, such as the rapid import substitution of most technologies and equipment, the creation of infrastructures for waste processing located in open storage cards, commissioning of a unified digital platform, etc. [33].

Table 6. Fulfillment of the main indicators of the federal project "Fresh air".

Indicator		2018	2019	2020	2021	2022	2023
The number of complex environmental permits issued to all facilities that have a significant negative impact on the atmospheric air and implement programs to improve environmental efficiency using the best available technologies to reduce emissions in large industrial centers of Russia, items	Plan	0	0	2	2	3	3
	Fact	0	0	n/d	3	3	9
	±	0	0	-	+1	0	+6
Number of facilities that have a negative impact on atmospheric air that have undergone modernization, including using the best available technologies and/or using green financing instruments in large industrial centers of Russia, items	Plan	0	0	0	0	0	5
	Fact	0	0	0	0	0	0
	±	0	0	0	0	0	-5
Reduction in total emissions, percent	Plan	-	-	-	96.0	92.0	91.0
	Fact	-	-	-	n/d	88.9	87.2
	±	-	-	-	-	-3.1	-3.8
Number of cities with high and very high levels of air pollution in the cities participating in the project, items	Plan	8	8	6	5	11	11
	Fact	n/d	n/d	n/d	n/d	11	10
	±	-	-	-	-	0	-1
Reduction in the total volume of emissions of hazardous pollutants in the cities participating in the project, percentage	Plan	100.0	100.0	100.0	96.0	92.0	91.0
	Fact	n/d	n/d	n/d	n/d	88.9	86.7
	±	-	-	-	-	-3.1	-4.3
Number of people whose quality of life will improve due to the reduction of harmful emissions in large industrial centers of the Russian Federation, thousand people	Plan	0	0	0	1945.9	2599.6	2599.6
	Fact	n/d	n/d	n/d	n/d	416.6	2599.6
	±	-	-	-	-	-2183.0	0

Source: Compiled by the authors based on [30-31].

The federal project "Fresh Air" is aimed at reducing emissions of pollutants into the atmospheric air from transport and utility infrastructure facilities and industrial enterprises in 12 large industrial centers of Russia. Each city has an individual comprehensive plan. In 2023, the project was expanded to include 29 more cities, most of which are in the Far East

and Siberia, with smog problems from private sector stove heating. The implementation of the project during the period under study showed both positive and negative results. For 6 units. in 2023, more comprehensive environmental permits were issued to facilities that have a significant negative impact on the atmospheric air and are implementing programs to improve environmental efficiency; throughout the entire duration of the project, a more intensive reduction in the total volume of emissions is observed compared to the planned values; for 1 unit the number of cities with high and very high levels of air pollution will be lower in 2023; The population level has leveled off with an improved quality of life. At the same time, the planned number of facilities that have a negative impact on the atmospheric air that have undergone modernization, including using the best available technologies and/or using green financing instruments, has not been achieved (-5 units in 2023). The uneven implementation of project indicators is due to a decrease in funding due to low cash execution of project costs, difficulties in assessing the degree of air pollution, which is subject to dynamics due to fluctuations in climatic conditions, and poor correspondence of target indicators to the real capabilities of the constituent entities of the Russian Federation.

Table 7. Fulfillment of the main indicators of the federal project "Pure water".

Indicator		2018	2019	2020	2021	2022	2023
Share of the population of the Russian Federation provided with high-quality drinking water from centralized water supply systems, percentage	Plan	85.5	85.5	85.8	86.6	87.6	88.1
	Fact	85.6	85.5	86.5	87.4	87.8	88.6
	±	+0.1	0	+0.7	+0.8	+0.2	+0.5
Share of the urban population of the Russian Federation provided with high-quality drinking water from centralized water supply systems, percentage	Plan	92.7	93.2	93.4	93.7	94.1	94.3
	Fact	93.2	93.2	93.5	94.0	94.3	95.0
	±	+0.5	0	+0.1	+0.3	+0.2	+0.7
Number of constructed and reconstructed (modernized) drinking water supply and water treatment facilities provided for by regional programs, pieces	Plan	-	-	41	124	207	290
	Fact	-	-	n/d	431	794	1183
	±	-	-	-	+307	+587	+893

Source: Compiled by the authors based on [30-31].

The goal of the "Pure Water" project is to provide the population of the Russian Federation with high-quality drinking water from centralized water supply systems. The excess of the actual project indicators over the planned ones indicates the successful implementation of the project. In particular, the share of the population provided with high-quality drinking water reached 88.6% in 2023 (+0.5%), the urban population - 95% (+0.7%). The number of constructed and reconstructed drinking water supply and water treatment facilities in 2023 exceeded the planned value by 4.1 times.

Table 8. Fulfillment of the main indicators of the federal project "Improvement of the Volga".

Indicator		2018	2019	2020	2021	2022	2023
Number of constructed and reconstructed culvert structures to improve water exchange in the lower reaches of the Volga, cumulatively, items	Plan	-	-	-	18	35	53
	Fact	-	10	12	24	48	56
	±	-	-	-	+6	+13	+7

Number of facilities that have a negative impact on the Volga River that have undergone modernization, including using the best available technologies and/or using green tools financing, items	Plan	0	0	0	-	-	-
	Fact	0	0	0	-	-	-
	±	0	0	0	-	-	-
Number of comprehensive environmental permits issued to all facilities, having a significant negative impact on the Volga River and implementing programs to improve environmental efficiency using the best available technologies, items	Plan	0	0	0	-	3	3
	Fact	0	0	0	-	3	12
	±	0	0	0	-	0	+9
Reduction in the volume of polluted wastewater discharged into the Volga River, cumulatively, cubic kilometer	Plan	3.17	3.17	2.98	2.64	2.42	1.86
	Fact	3.17	3.17	2.97	2.48	2.20	1.73
	±	0	0	-0.01	-0.16	-0.22	-0.13
Area of restored water bodies of the Lower Volga, cumulatively, thousands of hectares	Plan	3.9	8.10	12.49	16.55	20.94	24.96
	Fact	3.9	8.15	12.50	16.67	20.96	24.99
	±	0	+0.05	+0.01	+0.12	+0.02	+0.03
Length of restored water bodies of the Lower Volga, cumulative total, kilometer	Plan	91.5	123.1	311.8	583.5	971.0	1167.8
	Fact	91.5	97.2	299.5	779.4	1085.5	1324.1
	±	0	-25.9	-12.3	+195.9	+114.5	+156.3

Source: Compiled by the authors based on [30-31].

The project “Improvement of the Volga” is aimed at ensuring the sustainable functioning of the water management complex of the Lower Volga and improving the environmental condition of the Volga River as a whole. 16 constituent entities of the Russian Federation took part in the implementation of the project in 2023. In general, the project is characterized by positive trends. So, at the end of 2023, by 7 units. more culvert structures were built and reconstructed, by 9 units. More complex environmental permits have been issued, and the water bodies of the Lower Volga are being restored more actively than planned. The challenge remains reducing the volume of contaminated wastewater starting in 2020. The main reason is the lack of treatment facilities capacity, which, in turn, is due to problems with Western supplies of equipment and construction materials due to sanctions.

Table 9. Fulfillment of the main indicators of the federal project “Preservation of Lake Baikal”.

Indicator		2018	2019	2020	2021	2022	2023
Coverage of the area of the Baikal natural territory by state environmental monitoring, percentage	Plan	75.0	78.0	81.0	84.0	87.0	90.0
	Fact	75.0	78.0	81.0	н/д	92.0	100.0
	±	0	0	0	-	+5	+10
Reducing the volume of discharges of contaminated wastewater into water bodies of the Baikal natural territory, thousand cubic meters	Plan	247560	247560	247560	247560	247560	247012
	Fact	n/d	n/d	n/d	247560	247560	167205
	±	-	-	-	0	0	-79807

Source: Compiled by the authors based on [30-31].

The goals of the federal project "Preservation of Lake Baikal" are to clean up contaminated objects and reduce the volume of wastewater into the lake and other reservoirs of the Baikal natural territory. Three subjects of the Russian Federation are involved in the implementation of the project: the Republic of Buryatia, the Trans-Baikal Territory and the Irkutsk Region. Statistics show that, unfortunately, the main environmental problems in the Lake Baikal region have not yet been resolved, as evidenced by the lag in the volume of polluted wastewater discharge - 167.2 billion m^3 instead of 247.0 billion m^3 in 2023. The main reasons were misappropriation of funds caused by adjustments to project documentation, and, as in the previous case, a problem with Western supplies of some equipment due to sanctions. A positive point is 100% coverage of the area of the Baikal natural territory by state environmental monitoring instead of the planned 90%.

Table 10. Fulfillment of the main indicators of the federal project "Preservation of unique water bodies".

Indicator		2018	2019	2020	2021	2022	2023
Number of people involved in cleaning the banks of water bodies, million people	Plan	-	0.8	0.8	0.8	0.8	0.8
	Fact	-	0.9	0.8	1.1	1.3	1.6
	±	-	+0.1	0	+0.3	+0.5	+0.8
Length of cleared sections of river beds, kilometer	Plan	0	20.47	72.32	193.05	344.40	412.88
	Fact	0	22.13	72.62	193.05	352.51	417.01
	±	0	+1.66	+0.3	0	+8.11	+4.13
Area of restored water bodies, cumulative total, thousand hectares	Plan	0	2.7	6.4	10.6	14.4	17.3
	Fact	0	3.4	8.5	12.8	17.2	21.1
	±	0	+0.7	+2.1	+2.2	+2.8	+3.8
Number of people who have improved the environmental conditions of living near water bodies, cumulatively, million people	Plan	0	0.40	4.59	9.59	10.80	13.7
	Fact	0	4.42	8.82	9.98	12.56	16.80
	±	0	+4.02	+4.23	+0.39	+1.76	+3.1

Source: Compiled by the authors based on [30-31].

The goal of the project "Preservation of unique water bodies" is to create comfortable living conditions for the population by improving the condition of aquatic ecosystems. For the period of 2023, 56 constituent entities of the Russian Federation took part in the implementation of the project. During the project implementation period, positive trends in the implementation of indicators have been observed. Thus, the length of cleared sections of river beds and the area of restored water bodies are higher than planned values and, as a consequence, an increase in the number of people who have improved living conditions near water bodies. The number of people involved in the project activities is growing at a faster pace than planned: + 0.8 million people. in 2023.

Table 11. Fulfillment of the main indicators of the federal project "Conservation of biological diversity and development of eco-tourism".

Indicator		2018	2019	2020	2021	2022	2023
Number of visitors to specially protected natural areas (SPNA), million people	Plan	6.0	6.7	4.5	8.0	8.6	11.1
	Fact	6.9	8.0	6.7	10.6	14.0	14.6
	±	+0.9	+1.3	+2.2	+2.6	+5.4	+3.5
Number of federal specially protected natural areas, cumulative total, items	Plan	218	221	225	227	228	231
	Fact	7	5	2	227	228	n/d
	±	-211	-216	-223	0	0	-
The area of specially protected natural areas has been increased, cumulatively, one million hectares	Plan	1.3	1.7	3.5	4.0	4.5	5.0
	Fact	1.3	3.6	4.6	4.6	5.4	5.5
	±	0	+1.9	+1.1	+0.6	+0.9	+0.5

Source: Compiled by the authors based on [30-31].

The project "Conservation of biological diversity and development of eco-tourism" involves creating conditions for the sustainable development of protected areas and tourism, carried out with responsibility to the environment. As part of the project, it is planned to launch programs to restore the population of 13 endangered animals and create 24 protected areas. Exceeding the planned indicators indicates the success of the project. Thus, for the period of 2022, the number of visitors to specially protected natural areas amounted to 14.0 million people. compared to the planned 8.6 million, in 2023 - 14.6 million people. compared to 11.1 million people. The growth of the indicator was largely influenced by the current geopolitical situation, accompanied by Western sanctions. The increase in the total area of protected areas is greater than the planned value, starting in 2019 (from +0.5 million hectares to 1.9 million hectares). The number of protected areas leveled off in 2021 and continues to meet the plan in 2022.

Table 12. Fulfillment of the main indicators of the federal project "Implementation of the best available technologies".

Indicator		2018	2019	2020	2021	2022	2023
Updated information and technical reference books, items	Plan	0	7	14	23	32	41
	Fact	0	6	7	11	14	14
	±	0	-1	-7	-12	-18	-27
Issued integrated environmental permits, items	Plan	0	15	80	150	300	4000
	Fact	0	14	7	43	61	295
	±	0	-1	-73	-107	-239	-3705

Source: Compiled by the authors based on [30-31, 35-36].

The federal project "Implementation of the best available technologies" aims to create conditions for the application of a system for regulating the significant negative impact of facilities on the environment, as well as the modernization and construction of new facilities characterized by high indicators of resource environmental efficiency. For the period 2019-2020, the planned indicators were not achieved. It is assumed that the main reason was the

reluctance of enterprises to implement best available technologies due to the need to incur high costs, lack of awareness and low level of control by government agencies. On December 31, 2020, the project was completed ahead of schedule, and the planned activities were transferred to the federal projects "Fresh Air" and "Improvement of the Volga". In this regard, despite the implementation of certain activities in subsequent years, the planned indicators of the project were not fully achieved.

Table 13. Fulfillment of the main indicators of the federal project "Forest conservation".

Indicator		2018	2019	2020	2021	2022	2023
The number of people involved in conservation, protection and forest reproduction (including extinguishing forest fires, planting forests, clearing forests, protecting forests from crime, participating in school forestry activities), million people	Plan	-	-	0.5	0.5	1.0	1.5
	Fact	-	-	н/д	1.7	1.1	1.6
	±	-	-	-	+1.2	+0.1	+0.1
Forest cover of territories of the Russian Federation, percentage	Plan	-	-	46.4	46.4	46.4	46.2
	Fact	46.4	46.4	46.4	46.4	46.4	46.2
	±	-	-	0	0	0	0
Carbon absorption by forests, million tons	Plan	-	-	600.0	600.0	600.0	610.0
	Fact	-	-	635.4	629.6	622.3	614.4
	±	-	-	+35.4	+29.6	+22.3	+4.4
Damage to forest plantations from forest fires, billion rubles	Plan	32.3	20.5	18.0	17.0	16.0	15.0
	Fact	19.8	13.5	11.5	8.4	7.3	5.8
	±	-12.5	-7.0	-6.5	-8.6	-8.7	-9.2
Ratio of the area of reforestation and afforestation to the area of cut down and dead forest plantations, percentage	Plan	62.3	64.4	72.8	80.4	85.6	92.2
	Fact	73.0	80.7	94.3	110.7	119.2	133.6
	±	+10.7	+16.3	+21.5	+30.3	+33.6	+41.4

Source: Compiled by the authors based on [30-31].

The federal project "Forest Conservation" is aimed at ensuring a balance between the reproduction and disposal of forests and reducing damage from forest fires. 81 constituent entities of the Russian Federation are involved in the implementation of the project. Analysis of the main indicators indicates the successful implementation of the project over the entire period of its implementation. The forest cover of the territory of the Russian Federation corresponds to the planned values; the indicator of carbon absorption by forests exceeds the planned values (+4.4 million tons in 2023). The ratio of the area of reforestation and afforestation to the area of cut down and dead forest plantations at the end of 2023 was 133.6% against the planned value of 92.2%. The damage from forest fires is 9.2 billion rubles less than planned. More and more people are involved in conservation, defense and reproduction activities - 1.6 million people in 2023, with a planned value of 1.5 million people.

Table 14. Fulfillment of the main indicators of the federal project "Integrated environmental quality monitoring system".

Indicator		2018	2019	2020	2021	2022	2023	2024
Number of cities covered by an integrated information system for monitoring the state of the environment, unit	Plan	-	-	-	0	0	0	250
	Fact	-	-	-	0	0	0	-
	±	-	-	-	0	0	0	-

Source: Compiled by the authors based on [30-31].

The project involves the creation of a comprehensive environmental monitoring system on the territory of the Russian Federation, providing timely and comprehensive information to various institutions of the Russian Federation: state authorities, local governments, non-profit organizations, public associations, individual entrepreneurs, and the population. At the same time, it is expected to analyze the existing environmental monitoring system, formulate a regulatory legal framework and ensure the functioning of the created system throughout the Russian Federation. The start of the project is scheduled for 2024. It should be noted that locally, in certain territories of the Russian Federation, a comprehensive environmental monitoring program has been in effect for several years. For example, such a system was launched in Kamchatka and the Rostov region. Another example is comprehensive monitoring studies throughout the Northern Sea Route, carried out at the initiative of the Rosatom State Corporation since July 2021 [37].

Table 15. Fulfillment of the main indicators of the federal project "Clean energy".

Indicator		2018	2019	2020	2021	2022	2023
Installed capacity of generating facilities operating on the basis of the use of renewable energy sources (RES), megawatts	Plan	0	0	0	3545	4495	5220
	Fact	0	0	0	3877	4290	n/d
	±	0	0	0	+332	-205	-
Share of electricity generation from renewable energy sources in the total volume of electricity generation, percent	Plan	0	0	0	17.4	0.8	0.9
	Fact	0	0	0	19.0	17.6	n/d
	±	0	0	0	+1.6	+16.8	-

Source: Compiled by the authors based on [30-31].

The federal project "Clean Energy" is aimed at solving the problem of reducing the carbon footprint, entering the export markets of hydrogen equipment and energy hydrogen, and, in general, sustainable improvement of the environmental friendliness of the energy sector. The project's performance indicators indicate its successful implementation in certain areas. Thus, the share of electricity generation from renewable energy sources at the end of 2021 and 2022 is higher than planned (by 16.8% in 2022). The lower installed capacity of generating facilities operating on the basis of renewable energy sources in 2022 compared to the planned one (-205 MW) is explained by interruptions in the supply of equipment and materials caused by Western European sanctions and the transition to import substitution, which requires some time. The increase in financial burden on energy consumers associated with an increase in the volume of commissioned capacity, insufficient technical potential for the development of renewable energy, and the lack of sustainable demand for "green hydrogen" had some impact.

4 Discussion

Analytical data on the effectiveness of project activities in Russia in the field of ecology allow us to conclude that there is some unevenness in the implementation of projects. The main reasons were the following:

1) insufficient methodological elaboration of the values of individual indicators;
2) poor specificity of individual activities that ensure the implementation of projects;
3) changes in the wording and planned values of project indicators during the implementation of projects;
4) unrealistic deadlines for the implementation of individual activities;
5) changes in the financing of projects and individual events;
6) insufficient degree of participation of public expert organizations in the development of projects and poor discussion of the progress of project implementation with representatives of civil society;
7) the presence of sanctions from unfriendly countries.

The presence of these and other problems in environmentally oriented projects has necessitated their adjustment both in the process of development and implementation. In 2019, the Russian Ministry of Natural Resources made proposals to bring the passport of the national project "Ecology" into line with the key parameters that were previously approved by the Presidential Council for Strategic Development and National Projects. Proposals were also made to redistribute finances between federal projects, adjust statistical tools for monitoring MSW, and change the staffing of federal projects. In 2020, the Public Council under the Russian Ministry of Natural Resources proposed measures to adjust the Clean Air project, including changing the list of cities participating in the project and introducing additional project indicators.

In 2022, based on the results of public expert analysis, it was concluded that the key indicators of federal projects of the national project "Ecology" have been achieved and, due to changes in the geopolitical and geo-economic situation, as well as politics and economics within the country, it is necessary to form a new approach to assessing public satisfaction with the results of the project. It was also proposed to include additional target indicators and transfer funding from regional to federal budgets in the Clean Air project; outline a clear connection between the Forest Conservation project and climate change; increase the number of enterprises registered in the state system of accounting and control over the circulation of waste of hazard classes I and II, etc. In 2023, the Ministry of Natural Resources initiated the expansion of the name and nomenclature of the national project "Ecology". The new name of the future project is "Ecology and Environmental Management" with a validity period until 2030. The project will include three new federal projects: "Circular Economy", "Geology: Revival of a Legend" and "General Cleaning" as a continuation of the "Clean Country" project. The previous federal projects "Improvement of the Volga" and "Preservation of Unique Water Bodies" will be united by the water project "Improvement of Water Bodies". It is planned to allocate 570 billion rubles for the implementation of state programs in the field of natural resources and ecology [38].

In accordance with the targets of national and federal projects, more and more regions of the Russian Federation are implementing their projects in the field of ecology. For the period of 2023, 11 regions are named as using the "green economy" as a tool for achieving sustainable development. An example of an environmentally oriented region is the Sakhalin region, on whose territory an experiment is being conducted to limit greenhouse gas emissions. In the region, by 2030 it is planned to build an Ecopolis - an environmentally friendly city with unmanned vehicles and energy-saving technologies. The Eco.Tseh project is being implemented in the Irkutsk region to create an educational resource center, campus and platform for generating ideas in the field of ecology. In the Chelyabinsk region in 2020,

for the first time, a regional environmental standard was developed and implemented, containing a list of recommendations for enterprises that have a negative impact on the environment. In 2021, regional "green" bonds were issued for the first time in Moscow, where the funds raised are partially used for the purchase of electric buses. Environmental projects in the field of energy saving are being successfully implemented in Chuvashia. Digital projects that received support from the Agency for Strategic Initiatives in 2023 include "Anselm" - a service for assessing the potential for increasing resource and energy efficiency of industrial enterprises, "Smart Waste" - an online service for working with industrial and construction waste, "MeteoTelecom" - a digital platform for managing intensive farming and a number of others. Based on the results of 2023, the 20 best regions in the field of waste management were named, where the first three places in the ranking were taken by Moscow, Moscow, Tula and Nizhny Novgorod regions. Active development of wind energy has been noted in the Kaliningrad region, where several wind farms operate to provide enterprises and the population with clean energy and reduce greenhouse gas emissions. A solar power plant "Sunny City" has been created in the Astrakhan region, which makes it possible to reduce emissions of harmful substances into the atmosphere by reducing the use of traditional types of energy. A large waste processing plant has been built in the Ryazan region, using modern technologies to recycle residues and extract useful secondary resources.

The activity of the constituent entities of the Russian Federation in implementing environmental projects in Russia is reflected in the environmental ranking of regions developed by the Russian rating agency ACRA - see Figure 2.

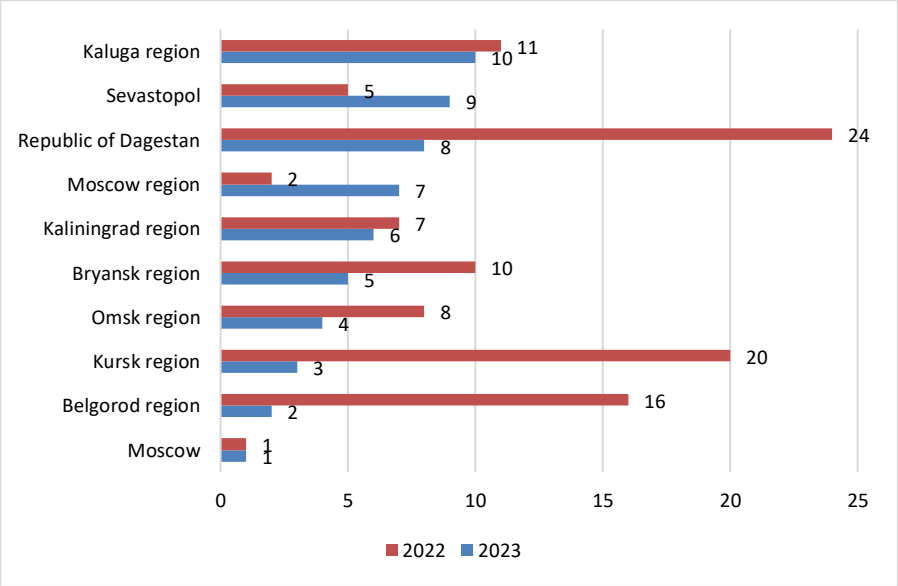

Fig.2. Top 10 regions of the Russian Federation in the environmental ranking of regions – 2023.
Source: Compiled by the authors based on [39-40].

The position of regions in the environmental ranking depends on the value of the comprehensive environmental indicator, calculated on the basis of factors reflecting the state of the environment in the previous year. As the results show, Moscow retained its leadership, with positive dynamics in most indicators. The change in the status of other regions is mainly due to changes in environmental expenditures. Of particular note is the rise in the ranking of the Republic of Dagestan (from 24th to 8th place), Kursk (from 20th to 3rd place) and Belgorod (from 16th to 2nd place) regions. A decrease in position was noted for the Moscow region (from 2nd to 7th place) and the city of Sevastopol (from 5th to 9th place). However, as shown by the values of the complex indicator in the full ranking of the

constituent entities of the Russian Federation, which range between 1.875 and 4.25 points, certain problems persist in all regions of Russia, which indicates the continued relevance of the implementation of environmental projects.

Thus, project activities in the field of ecology are a key component in the development and adoption of decisions aimed at creating a sustainable and environmentally friendly society [41]. The versatility of the category is evident in the fact that such projects are used in various industries and fields of activity - from school education to nuclear energy. Project activities, being one of the main tools for sustainable development, are gradually becoming a separate area based on an understanding of the interaction between man and the environment and making it possible to prevent and solve existing environmental problems and ensure an environmentally safe future.

Issues of design in the field of ecology and the connection of environmental projects developed in the Russian Federation have recently received increasing discussion. Of particular interest is the establishment of the relationship between the sustainable development goals proclaimed at the UN meeting in 2015 and the SDGs, adapted to Russian realities, prospects and guidelines, as well as the compliance of environmental projects with the established goals.

An interesting point is the possibility of achieving the set goals, not only for Russia, but also for all 193 UN member states. The fact is that, both in Russia and at the global level, doubts arise about the reality of the goals set, associated with such important aspects as lack of funding and the inertia of the internal policies of states, where the departments responsible for achieving the goals have no incentive to change their political foundations.

Indicators for assessing project implementation also require more detailed study. It is known, for example, that during the implementation of the national project “Ecology” the list and values of indicators were repeatedly adjusted, which confirms the importance of this issue.

Consideration and discussion of these and other aspects of environmental design will contribute to the improvement of design activities in the field of ecology, will allow the development of projects that not only satisfy the needs of today, but also ensure high quality of the environment in the future.

5 Conclusion

Thus, both positive and negative trends in the development of project management in Russia in the field of ecology have been identified. The existing geo-economic and geopolitical conditions, as well as internal problems of project management of a methodological, financial and planning nature, have determined the degree to which sustainable development goals have been achieved to date.

Along with the analysis of project activities in the Russian Federation, focused on achieving sustainable development goals, and assessment of the results of project implementation, it was revealed that the project activity of the constituent entities of the Russian Federation determines their position in the environmental ranking of regions and, in turn, depends on the redistribution of the federal budget between the constituent entities.

The federal projects “Clean country”, “Preservation of unique water bodies”, “Preservation of biological diversity and development of eco-tourism”, “Forest conservation”, “Clean energy” were recognized as the most successful in terms of the degree of implementation of the main project indicators. For other projects, due to the above-mentioned problems, along with the successes achieved, there is an underachievement of certain indicators. However, the extension of the implementation period for some projects and the positive dynamics of indicators give reason to assume the successful completion of projects in the Russian Federation in the field of ecology.

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