The system of specially protected natural territories as an element of the spatial development of the country

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Abstract. The goal of the implemented environmental policy in the Russian Federation at the present stage of society development is to improve the quality of the natural environment and environmental conditions of human life, to form a balanced environmentally oriented model of economic development. A number of strategic documents adopted in the last decade in the country declare the need to create a system of specially protected natural territories that would ensure the preservation of natural ecosystems. The practice of functioning of specially protected natural territories in the constituent entities of the Russian Federation shows that they make a significant contribution to the socio-economic development of the regions. At the same time, it should be taken into account that when organizing them, the ecological component, which focuses on the conservation of biological diversity, on the optimization of anthropogenic activities that exclude degradation changes in ecosystems, prevails over economic feasibility. The above-mentioned aspects determine the need for a scientifically based determination of the optimal ratio at different territorial levels of natural and anthropogenically transformed ecosystems, ensuring sustainable development under conditions of increasing economic activity and global climate change. Results: the formation of new, increasing the area and reorganization of existing specially protected natural territories of federal, regional and local significance should not be considered as an activity that hinders the socio-economic development of the region. The long-term practice of the formation and functioning of specially protected natural territories of different categories and territorial levels indicates that they are not only a source of a number of economic, environmental and social benefits, but also an essential element in the system of land use that ensures sustainable development.

1. Introduction
The current stage of development of society, characterized by the presence of global environmental problems, declares the priority of the environmental component in all spheres of life as a necessary condition for sustainable development, and on the one hand it determines the choice of methods for solving problems, and on the other - it is the result of decisions made in various spheres of life.

The strategic goal of the state policy in the environmental sphere is to solve socio-economic tasks that ensure environmentally oriented economic growth, preserve a favorable environment, biological diversity and natural resources to meet the needs of present and future generations, realize the right of every person to a favorable environment, strengthen the rule of law in the field of environmental protection and ensure environmental safety [1–3].

In accordance with the land legislation, the regulation of relations on the use and protection of land is carried out on the basis of ideas about it as a natural object protected as an essential part of nature, a natural resource used as a means of production in agriculture and forestry and the basis for economic
activity on the territory of the Russian Federation, and at the same time as immovable property, an object of ownership and other rights to land, as well as the priority of protecting human life and health, the priority of preserving the lands of specially protected territories.

The share of the area occupied by specially protected natural territories of federal, regional and local significance in the total area of the territory of the Russian Federation is one of the main indicators for evaluating the state of environmental safety.

2. Materials and methods
The development of a system of sustainable management of specially protected natural territories based on digital technologies, taking into account the economic feasibility of land use strategies, requires the development of special methodological tools for high-precision spatial analysis, which will form the basis for making decisions on the directions of organizing rational land use that are adequate to the qualitative and quantitative characteristics of protected territories.

The availability of up-to-date information, which is necessary and sufficient for a differentiated impact on land plots, contributes to the establishment of an optimal organization of a specially protected natural territory, each of the sites of which is able to perform a maximum of complementary and a minimum of mutually exclusive functions.

The theoretical and methodological basis of the research is based on the fundamental developments of domestic and foreign scientists in the field of economics, land management, cadastre, environmental protection, organization (reorganization) and functioning of the network of specially protected natural territories.

The information base of the study was made up of statistical and analytical materials of federal and regional executive authorities of the Russian Federation, methods and recommendations of scientific organizations in the field of land management, cadastre and environmental protection, containing systematized data on the actual state of the Russian natural environment, including information on the state of individual components of the natural environment, ecosystems, specially protected natural territories of various categories and territorial levels.

3. Results
The Russian Federation, being the largest state in the world, includes more than 1/5 of the land area with undisturbed ecosystems, forming the world's largest zone of stabilization of the global environment, and it is a unique ecological resource for the recovery of the Earth's biosphere.

The goal of spatial development of the Russian Federation is to ensure a sustainable and balanced spatial development of the Russian Federation, aimed at reducing interregional differences in the level and quality of life of people, accelerating economic growth and technological development, as well as ensuring the national security of the country. One of the main directions of spatial development is to ensure the improvement of the state of the environment, the preservation and recovery of the biological diversity of the Russian Federation, cultural landscapes and the reduction of the negative consequences of climate change, including through the formation of new specially protected natural territories of different status in order to form and develop a system of ecologically interconnected natural territories, in which each new element complements the existing ones. Increasing the scientific level and quality of the developed activities determines the relevance of the use of methods of economic-statistical and economic-mathematical modeling, which allow us to determine the quantitative value of the dependence of the results of land use on various factors, to justify the optimal area of environmental land use and the mode of land use as part of the functional and protected zones of specially protected natural territories.

Opportunities for the development of the system of specially protected natural territories are determined by a combination of various factors of a natural and socio-economic nature.

In the context outlined above, it is obvious that there is a need for scientific justification of the ratio of natural and anthropogenic systems in the region, which ensures the preservation of biological and
landscape diversity, the optimal quality of the environment necessary for human life, and the sustainable development of society.

One of the principles of the land legislation of the Russian Federation is the priority of protecting human life and health, according to which, when carrying out activities for the use and protection of land, such decisions should be made and such activities should be carried out that would ensure the preservation of human life or prevent a negative (harmful) impact on human health, even if this would require large costs. That is, the priority of environmental requirements over the economic feasibility of land use is decisive when making decisions regarding the implementation of one or another project.

The main tasks of the state policy on land fund management are:
- creation of conditions for the organization of rational and efficient use of land plots, including consideration of public and industry needs, requirements for sustainable development of territories, as well as compliance with guarantees of the rights of participants in land relations;
- ensuring the protection of nature and the environment, including the protection of land and the preservation of cultural heritage;
- preservation and improvement of the quality of the land;
- preservation of the status of specially protected natural territories as specially protected lands as part of the land fund;
- providing conditions for improving the efficiency of civil turnover of land plots, including those aimed at protecting the rights to immovable property, as well as for reducing administrative barriers and ensuring the taxation of real estate [6, 7].

In the field of management of activities for the conservation of biodiversity, and such forms as specially protected natural territories, in recent decades, economic mechanisms have become very important, which is a general global trend that is also relevant for the Russian Federation. The transition from a centrally planned to a market-oriented economy has led to a sharp reduction in funding for environmental protection activities in general and specially protected natural territories in particular. But the practice of the formation and functioning of specially protected natural territories in the constituent entities of the Russian Federation shows that they are a source of a number of economic, environmental and social benefits: the creation of new jobs, sources of additional income for the local population, the receipt of funds to budgets of all levels, the maintenance of populations of commercial species of animal in adjacent territories, the control of recreational activities, the minimization of the number of natural and anthropogenic emergencies and damage from them, the creation of conditions for attracting foreign tourists and investments.

In view of the above, it should be noted that protected territories provide not only direct benefits, but also indirect ones, which are not always taken into account in fact. The result is a significant underestimation of the role of the presence of individual specially protected natural territories and their systems in the socio-economic development of the regions. This is often due to the lack of methods and practices for the economic evaluation of resources and services of specially protected natural territories. A correct and complete evaluation of the economic potential of specially protected natural territories will contribute to their inclusion in the plans of socio-economic development of the regions.

4. Discussion
According to the current legislation and established traditions, the state registration of land in the Russian Federation is carried out according to the categories of land that are allocated for their purpose and have a certain legal regime. One of the 7 categories is the land of specially protected territories and objects, the analysis of changes in the area of which indicates a steady trend of its increase and at the moment the area of land in this category is 49.6 million hectares (Fig. 1).
Analytical review of the share of land in this category relative to the constituent entities of the Russian Federation showed significant differences.

Strategic documents and target programs adopted and implemented in the Russian Federation in the field of environmental protection and environmental safety declare an increase in the share of land in this category, respectively, the question arises about the size of this share in the regions.

The draft Strategy for the development of the system of specially protected natural territories for the period up to 2030 provides for the formation of an effectively managed, representative system of ecologically related specially protected natural territories that ensures the preservation of typical and unique ecosystems and landscapes, objects of the animal and plant world, including rare and endangered, listed in the Red Book of the Russian Federation and the Red Books of the constituent entities of the Russian Federation, natural and cultural heritage, the area of which occupies at least 17% of the land territory of Russia and at least 10% of the sea area (the area of territorial waters and the exclusive economic zone of the Russian Federation), in the interests of sustainable socio-economic development of the country, ensuring environmental safety, preserving a favorable environment, and meeting the needs of present and future generations.

The analysis of the organization and functioning of specially protected natural territories in the constituent entities of the Russian Federation objectively shows that it is wrong to oppose them to other land uses, they must be considered as an obligatory element in the structure of land use in the region. The main losses of land resources are caused not by the expansion of the network of specially protected natural territories, but by the irrational use of the former. The area of disturbed land that has lost its economic value or has a negative impact on the environment is more than 1 million hectares. Land desertification is more or less observed in 27 constituent entities of the Russian Federation on an area of more than 100 million hectares.

In the world practice, there are large differences in the estimates of the global costs of land degradation. Globally, the annual costs of land degradation are estimated at between $18 billion and $20 trillion. According to the Land Degradation Economics Initiative (ELD), the loss of ecosystem services due to land degradation costs between $6.3 trillion and $10.6 trillion annually, accounting for 10-17% of global GDP [8]. In turn, land degradation due to human activities negatively affects the well-being of about 3.2 billion people.

If current trends of ecosystem degradation and climate change continue, crop yields are expected to decline by 10% worldwide, and by up to 50% in selected regions by 2050.

To estimate the environmental organization of the territory of the region and optimize the ratio of natural and anthropogenically transformed ecosystems, it is advisable to use the following environmental indicators that integrate their qualitative and quantitative characteristics: the coefficient
of ecological stability of the territory; the index of ecological diversity of the territory; the coefficient of anthropogenic load; the forest cover of the territory and other indicators that characterize the ecological diversity and stability of the territory (the length of migration corridors, the area protected by forest belts, the area of micro-reserves, ecological niches).

The total area of natural biogeocenoses, tracts, nature protection zones and specially protected territories is the ecological fund of the territory, respectively, the larger its area, the higher the natural protection of the territory and, accordingly, the stability of the landscape. At the same time, the level of natural protection also depends on the ratio of land with different degrees of anthropogenic load. Lands characterized by a high degree of anthropogenic load have low natural protection. The ratio of the area of land that makes up the ecological fund of the territory to the total area of the territory used is the coefficient of natural protection of the territory. A coefficient of less than 0.5 indicates a critical level of protection of the territory.

Another indicator that is advisable to use to estimate the impact of the composition of land on the ecological stability of the territory, the sustainability of which decreases with increasing agricultural development of land, plowing and intensive use of land, carrying out land reclamation and cultural works, development of the territory is the coefficient of environmental stability of the territory.

At the same time, if the coefficient of environmental stability is less than 0.33, then the territory is environmentally unstable; if it changes from 0.34 to 0.50, then it is considered unstable; if it is in the range from 0.51 to 0.66, then it passes into the gradation of average stability; if it exceeds 0.67, then the territory is environmentally stable.

The results of the calculations of the above-mentioned indicators should be used as a basis for determining the degree of balance of the land structure of the region and determining the directions for its improvement in terms of preserving biological and landscape diversity, minimizing ecosystem degradation.

5. Conclusion

A number of targeted programs and documents on environmental protection and sustainable development adopted at the international and regional levels demonstrate the declaration by the world community of equal attention to the economic, social and environmental components of development and the recognition of the impossibility of the development of human society with the degradation of the natural environment. At the same time, the creation and development of a system of specially protected natural territories is considered as an integral part of the country's environmental system and a guarantor of ensuring sustainable development of both individual regions and the state as a whole.

In the context of determining the optimal land area of specially protected territories and objects in the structure of the land fund of the hierarchical system, a municipality - a constituent entity of the Russian Federation – Russian Federation it is advisable to calculate the coefficient of ecological stability of the territory, or the coefficient of natural protection of the territory and, based on the result obtained, make a scientifically justified decision on changing the structure of the land fund and the ratio of natural and anthropogenic ecosystems in the region, which acts as a guarantor of the optimal quality of the environment necessary for human life. The main mechanism for ensuring such a balance, ensuring the organization of rational use of land and its protection, is land management. Thus, the creation of new, increasing the area and reorganization of existing specially protected natural territories is wrong to consider as an activity that hinders the socio-economic development of the region. The target indicators of progress in this direction should be the reduction of regional differences in the network of specially protected natural territories, the increase in the bio-productivity of natural systems to safe levels, and the recovery of species diversity.

The data accumulated by science and practice show that the environmentally justified exclusion (full or partial) from the economic use of part of the land resources leads to an increase in the productivity of the remaining land in the economic turnover in the amount significantly exceeding the shortage of products in the areas excluded from the turnover. That is why the development of the system of specially protected natural territories and the increase of their share in the land fund of the
country should be considered as one of the most important directions for the intensification of the use of land resources in the long term.

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