# Problems of Biodiversity Conservation in Specially Protected and Protected Areas in the Regions

*Yusup* Dzhabrailov[*,1], and *Uma* Mamaeva[2]

[1]Kadyrov Chechen State University, Sheripova Street, 32, 364024, Grozny, Russia
[2]Dagestan State University, st. Mohammed Hajiyeva, 43-a, 367000, Makhachkala, Russia

**Abstract**. Global climate change has an impact on the human potential, economy and ecosystems of all countries of the world, including Russia. A significant contribution to climate change is made by the burning of fossil energy resources, which leads to an increase in the concentration of greenhouse gases in the atmosphere and causes the greenhouse effect. The main consequences are an increase in the average annual temperature and the melting of glaciers, which leads to a rise in the level of the world ocean, as well as severe droughts and fires, floods and tsunamis, and a decrease in biodiversity. These changes have a negative impact on the quality of life of people, including the availability of food, health, the suitability of territories for housing and economic activity, and much more1. The global challenges facing the world community as a result of climate change are shaping a comprehensive agenda for international cooperation over the next few decades. The relevance of this agenda will constantly increase, regardless of the various factors of international tension.

## 1 Introduction

A variety of natural objects and ecosystems, including wide steppes and vast deserts, high mountains, meadows, forests and a huge variety of landscapes, the preservation of the natural habitat of flora and fauna intact, all this allows us to speak about the uniqueness of the ecological systems and biological diversity of Russia and regions [1]. Modern trends in the conservation of biodiversity are formulated in the relevant Conventions, including the Convention on the Conservation of Biodiversity, CITES, Bonn, Ramsar, Bern, and the Convention on the Protection of the World Cultural and Natural Heritage. The development of the ideas embodied in these fundamental documents concerning important aspects of biodiversity conservation is also reflected in the UN Sustainable Development Goals (SDGs), in the European Union Biodiversity Strategy until 2030 and the draft European Law on Nature Restoration [2]. The countries of Russia recognize the high importance of biodiversity and ecosystems for socio-economic development and maintaining stability in the region. They endorsed the Sustainable Development Goals (SDGs), including SDG15 on the need to protect and restore ecosystems, promote their sustainable use, and halt and reverse degradation and loss of biodiversity. Countries are party to most relevant

* Corresponding author: yusupu@mail.ru

international agreements and are taking advantage of the opportunities provided by the international community regarding biodiversity conservation, including addressing the root causes of biodiversity loss, reducing pressures and promoting the sustainable use of biodiversity, protecting ecosystems, species and genetic diversity, and improving planning and improving execution plans.

## 2 Research Methodology

In the course of this work, comparative geographical, statistical and analytical research methods were used. The material for the research was the data of state statistics [8], data from the state report "On the state and protection of the environment of the Russian Federation in 2018" [9], regional reports on the state and protection of the environment [3].

In the course of the work, a comparison was made of the share of the area of protected areas from the area of the territory with the volume of costs for the conservation of biodiversity and the protection of natural areas [10]. These indicators are characterized by diversity; in order to achieve comparability of the indicators presented by different units of measurement, a normalization procedure was applied in the range from 0 to 1, where 1 corresponds to the maximum value of the corresponding indicator among the considered regions-subjects.

The analysis also revealed significant discrepancies in the classification of different ecosystems in Russia, in the terminology of biodiversity, in the terminology of sustainable or climate resilient development, and in data on various ecosystems [4]. This situation requires rethinking, further analysis and unification of concepts, methods and tools for quantitative and qualitative assessment of ecosystems, as well as adequate nationalization of the SDGs on biodiversity [11-12]. "Numerous institutional factors contribute to the inefficient management of natural resources throughout the region:"

• Ecosystems need to be classified not only on the basis of their ecological-biological characteristics, but also as an object of management.

• The countries of Russia have insufficient institutional capacity for proper biodiversity management, and relevant priorities have not yet been properly integrated into economic development planning or private sector activities.

• There are structural mismatches, if not competing priorities, between central and local authorities. Agencies responsible for agriculture, oil and gas, minerals and water sometimes compete with each other and have more power than environmental agencies.

• Lack of planning targets and timelines in policy documents makes it impossible to track progress towards both biodiversity and development goals.

## 3 Results and Discussions

Manifestations of climate change have a serious negative impact on the human capital and economic development of Russia [13-14]. Among the most significant climate risks in the north of the country, the problem of thawing permafrost is the most acute, which carries the risk of destruction of the infrastructure located on it. In the south, the population faces water stress: the lack of fresh water has a negative impact on agriculture, which is important for the economy of the regions, and also exacerbates the problem of the population's access to clean drinking water [5]. The European part of the country is at risk of more heatwaves, which increase mortality rates during hot seasons, especially among the elderly, people with chronic diseases, young children and socially isolated people. In Siberia, the problem of forest fires is aggravating, which not only causes a reduction in forest cover and destruction of infrastructure, but also poses a threat to human life. Reducing greenhouse gas emissions will mitigate some of these negative effects. On December 25, 2019, the Government of the Russian Federation approved the National

Action Plan for the first stage of adaptation to climate change for the period up to 2022 [15]. And on October 29, 2021, the Government of Russia approved the Strategy for the Socio-Economic Development of Russia with Low Greenhouse Gas Emissions until 2050, which provides for a large-scale reduction in carbon dioxide emissions and the achievement of carbon neutrality no later than 2060. Study of climate change and opportunities for adaptation and reduction of anthropogenic impact on the climate system requires interdisciplinary approaches and solutions [6]. Therefore, the report presents the results of research by several research teams using various methods of socio-economic and natural sciences [16]. The first section presents the long-term trajectories of development of various sectors of the Russian economy until 2050. The estimates obtained show that the main potential for reducing anthropogenic greenhouse gas emissions can be achieved through large-scale transformations in the energy production and consumption sectors as the main sources of emissions. Accordingly, the second section analyzes the prospects for the use of new energy technologies in Russia to reduce the anthropogenic impact on the climate [17]. It is important to emphasize that when developing climate scenarios and energy development strategies, natural (non-anthropogenic) sources of carbon dioxide and methane often remain unaccounted for. The third section identifies and assesses the risks of large-scale natural methane emissions in the Russian Arctic [7]. To reduce climate risks, it is necessary to mobilize all available opportunities, therefore, in the fourth section, the prospects of Russian regions and municipalities in adapting to the inevitable consequences of climate change are analyzed.

Given the prospective development of the mining industry (Ak-Sugsky, Kyzyl-Tashtygsky and Kara-Beldirsky GOKs), it is advisable to develop a regional inter-sectoral state program “Green Mining Complex” with an emphasis on [8]: 1) preventing excessive losses of coal during its extraction and processing, development of coal processing and enrichment technologies in order to obtain high-quality fuels with improved environmental characteristics; 2) reclamation of lands disturbed by mining operations, using advanced technologies for storing overburden and enclosing rocks in dumps suitable for biological reclamation and methods for restoring the fertility of disturbed lands. It is necessary to stimulate the development of regional bioeconomy based on the transformation of the existing agro-industrial complex of the region in the context of large-scale agro-climatic changes [18]. The main directions include the use of biodiversity resources, the development of health tourism and medicine, obtaining substances and extracts from grain and animal products (veterinary, microbiological preparations, waste decomposition catalysts). It is necessary to grow and encourage an environmentally responsible small innovative business using the methods of sanitary cleaning, land reclamation, soil protection, progressive digital agricultural technologies. A step in this direction was the development in 2021 of the first zonal farming system since 1982, which includes sections on agroecology, tillage systems, plant protection and fertilizers, etc [20]. Its implementation will contribute to the introduction of new agricultural technologies, increasing productivity, adapting agriculture to climate change, and the competitiveness of agriculture [19].

## 4 Conclusions

The multifactor nature of climate change and the variety of their consequences for the environment, sectors of the economy and the quality of life of the population determine the need to develop and implement systemic and coordinated adaptation measures, taking into account regional and sectoral specifics36. The climate and carbon agenda in the next few years should be integrated into the development strategies of the largest Russian companies in all sectors of the economy. It is necessary to qualitatively expand and adjust the set of measures for adaptation to climate change in the forestry (including reforestation practices) and agricultural sectors. It is necessary to develop national standards for the implementation

of natural and climate projects, harmonized with existing and future international standards used in the global carbon markets. It is necessary to supplement the range of PKPs implemented in Russia (including within the framework of the taxonomy of green projects) with projects on voluntary forest conservation, watering wetlands, and make the list of project types open in the National Register of Climate Projects being developed. It is necessary to remove regulatory and legal restrictions on the implementation of various types of natural and climatic projects (introduce leasing for the implementation of forest and climate projects as a new type of forest management, ensure the investor's ownership of the resulting emission reduction units, remove legal barriers to the implementation of LCP on unused agricultural land, etc. .d.). A coherent policy is needed to support various low-carbon agriculture practices (organic, adaptive, agro-ecological, etc.). It is necessary to integrate territorially differentiated assessments of vulnerability to climate change, as well as various types of natural and climatic solutions, into federal, regional and city strategic planning systems.

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