

Regulating ecosystem service ‘Regulation of greenhouse gas flows’: Current status and regulatory Promotion in Russia

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Abstract. Ecosystem services are an integral part of a country's natural capital, and they require economic valuation. However, in Russia, there is no legislative methodological basis for the economic assessment of many ecosystem services in Russia, particularly the regulation of greenhouse gas flows. The Global climate change, the urgent need in transition to a low-carbon economy, the fall in global oil demand and the dissimulation of the alternative energy sources, the need to reduce the carbon footprint emphasize the strong demand for the creation of the system of payment for ecosystem services and considering service "regulation of greenhouse gas flows" as a category of marketable goods. "Low carbon" is a significant competitive advantage in the markets. The article considers the Russian experience of the ecosystem services of terrestrial ecosystems assessment and provides an overview of crucial Russian regulations in the field of regulating greenhouse gas emissions. We established that the rhetoric of the key legislation items in the field of greenhouse gas regulation goes along with the world agenda. The main problem today is the need to launch an economic mechanism for regulating greenhouse gas emissions.

1 Introduction

Global climate change and an increase in average planetary temperature lead to adverse environmental changes. Most experts believe that the leading cause of global climate change is the increase in emissions of anthropogenic greenhouse gases and the positive responses of natural ecosystems [1]. Global climate threats make it necessary to restructure the traditional economy to reduce greenhouse gas emissions, preserve natural ecosystems, and increase society's resilience. Modern social trends have led to the decarbonization of goods and services' production, in other words, to a low-carbon economy. Despite the peak of interest in the term itself occurred in 2008 (data from Google Trends [2]), the low-carbon economy is becoming an essential component of the green world agenda. A low-carbon economy is a way of thinking, behavior, and management in which hydrocarbon emissions increase to minimal level along with the implementation of the principles of sustainable use of resources, economic, and improving the quality of life [3]. Decarbonization is the

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reduction or, ideally, elimination of greenhouse gas emissions to mitigate climate change and minimize the damage they cause. The Kyoto Protocol, which was signed by 159 states in Kyoto (Japan) in December 1997, entered into force on 02/16/2005. This fact became possible after the Kyoto Protocol was ratified by countries whose total greenhouse gas emissions quota exceeded 55 % (as of 1990). The Kyoto Protocol is an additional document to the United Nations Framework Convention on Climate Change, which was adopted on 05/09/1992 and one of the first documents that led to the modern "green" agenda (regulation of greenhouse gas emissions). In recent times, the United Nations Climate Change Conference in Paris has become the most significant event in the field of climate negotiations with the Paris Agreement, adopted on 12/12/2015, as a result. The main features of this agreement are the so-called "bottom-up principle": countries themselves determine targets and do not bear any legal responsibility. Countries declare the Intended nationally determined contributions and must review them every five years. Moreover, this agreement emphasizes the protection of ecosystems that provide the ecosystem service "regulating greenhouse gas flows" (carbon capture and sequestration) in the fight against climate change.

For Russia, the problem of climate change is especially acute due to natural and geographical conditions. The warming rate in Russia is, on average, almost 2.5 times higher than the global warming rate because 67% of its territory is the permafrost zone. Over the past 15 years, the amount of extreme natural phenomena in Russia has tripled. A number of experts attribute this fact to climate change [4]. Heatwaves in 2010 led to 54,000 additional deaths [5] and high economic losses (from 210 to 450 billion rubles) [6]. These facts, together with the awareness that Russia may lag significantly behind global technological trends, Russian goods may cease to be in demand in foreign markets due to non-compliance with environmental standards, which led to the emergence of state and entrepreneurial environmental initiatives.

The Russian Federation should consider the absorption capacity of ecosystems when declaring restrictions on anthropogenic greenhouse gas emissions. For example, Russian forests absorb up to 600 million tons of carbon dioxide per year, which is 1.2% of all anthropogenic emissions [7], and provide the ecosystem service "regulation of greenhouse gas flows" for the whole world. Also, Russian wetlands ecosystems occupy a significant area. The annual accumulation of carbon dioxide only in Western Siberia's marshes is from 5 to 20 million tons [8]. The Russian Federation indicated that the world community should recognize the ecosystem services provided by its ecosystems. Furthermore, Russia realized that ecosystem services needed to be valued and monetized, and Russia's natural capital needed to be considered not only as a source of mineral resources but also as a source of ecosystem services [9].

The purpose of this article: to show the evolution of the modern Russian legislative base in the field of regulating greenhouse gas emissions as a demand factor for the ecosystem service "regulating greenhouse gas flows."

The study hypothesizes that for the regulatory promotion of the service "Regulation of greenhouse gas flows", clearly developed administrative and economic mechanisms for regulating and accounting of greenhouse gas emissions are needed.

2 Experience in assessing ecosystem services of Russian Federation terrestrial ecosystems

Ecosystem services of Russia are crucial for the economy and population of the country [7]. Nevertheless, state policy and the decision-making process consider the importance of Russian ecosystem services only to a small extent - only under the traditional understanding of bioresources and revenues from the recreational and protective functions of forests. For

the first time, the authors of the TEEB-Russia project conducted a national assessment of Russian ecosystem services. This project aimed at developing a methodology for assessing ecosystem services and biodiversity of Russia. Currently, two project phases have been implemented, and a prototype of the national report has been published (in 2 volumes).

The result of the first phase of the project (TEEB-Russia 1, 2013–2015) was an attempt to adapt possible approaches and methods to the non-monetary assessment of terrestrial ecosystem services at the national level. The project solved the following tasks - to classify ecosystem services of terrestrial ecosystems of Russia; identify different approaches to assessing ecosystem services at the federal and regional levels; conduct a preliminary assessment of the most essential ecosystem services of Russia's regions, using natural science indicators or grades; analyze publicly available data and create a list of the additional necessary information to assess ecosystem services at the federal level [10].

The second stage of the project (TEEB-Russia 2, 2018–2019) assessed the importance of biological diversity and natural systems of Russia for maintaining ecosystem services and formulated principles for managing the natural ecosystems of Russia. The project solved the following tasks - to create a methodological basis and a system of indicators of biodiversity and ecosystem services, taking into account international standards and the specifics of Russian conditions; to identify the relationship between biodiversity indicators and ecosystem services in model territories; formulate proposals on the optimal management of biodiversity and ecosystem services at the national level [11].

Besides, the second phase of the project included a preliminary economic assessment of ecosystem services. However, to create a market for ecosystem services, it is necessary to evaluate not only the supply of ecosystem services but also the demand for them. In particular, the first phase of the project provided data on the offer of an ecosystem service, the regulation of greenhouse gas flows (carbon uptake and binding). However, it indicated that the potential demand (greenhouse gas emissions) is currently impossible to calculate. This fact is due to the lack of a system for accounting for greenhouse gas emissions from anthropogenic sources.

3 The state of the Russian system of legal regulation of greenhouse gas emissions

The Russian Federation just began to develop mechanisms for regulating greenhouse gas emissions. The primary task for their implementation is an inventory of emission sources, accounting for greenhouse gas emissions and greenhouse gas removals (including forests, swamps, and agricultural land).

According to the Seventh National Communication of the Russian Federation, in 2015, the total greenhouse gas emissions, excluding land use and forestry changes, amounted to 2651.2 million tons of CO₂-eq. This value is 116.2% of the 2000 emission level or 70.4% of the 1990 emission level. Emissions from the energy sector dominate the total greenhouse gas emissions (82.8% in 2015). Among the greenhouse gas emissions, the leading role belongs to carbon dioxide, generated during the burning of fossil fuels. The assessment of anthropogenic greenhouse gas emissions is generalized, and its clarification is required (it is necessary to improve the system of accounting for sources and mass of greenhouse gas emissions) [12].

The adoption of the Climate Doctrine (approved by Decree of the President of the Russian Federation of 17/12/2009, No. 861-RP) is a kind of reference point for the development of the regulatory framework in the field of regulation of greenhouse gas emissions. This document indicated that the Russian Federation recognizes the anthropogenic factor's ability to have adverse and dangerous effects on the climate system, which leads to significant consequences for the economy, the population, and the environment, and establishes the principles and priorities of climate policy.

The next document ("Comprehensive Plan for the Implementation of the Climate Doctrine for the Period Until 2020" (approved by Decree of the Government of the Russian Federation 25/04/2011, No. 730-r)) provided "the development and implementation of economic instruments to limit greenhouse gas emissions by the industry," and "the implementation of measures to reduce market imbalances, financial and tax policies that stimulate the reduction of anthropogenic emissions of greenhouse gases" (paragraph 18).

Decree of the President of the Russian Federation "On reducing greenhouse gas emissions" 30/09/2013, No. 752 introduced a target value for reducing greenhouse gas emissions - by 2020, it should be no more than 75% of the 1990 level. In 2014, a Government Decree of the Russian Federation dated 04/04/2014, No. 504-r approved an action plan to reduce the carbon intensity of the Russian economy. The plan envisions developing methodologies and guidelines for determining the level of greenhouse gas emissions, introducing appropriate reporting as mandatory for enterprises, and evaluating and predicting the volume of emissions by sector of the economy. The economic mechanism for regulating emissions suggested: to evaluate Russia's effectiveness to limit greenhouse gas emissions and prepare proposals for their adjustment, to develop scenarios of regulatory measures, concepts, and action plans.

Besides, Decree No. 767 of 28/11/2014, of the Ministry of Economic Development of the Russian Federation "On the Approval of Methodological Recommendations for the Development of Indicators for Reducing Greenhouse Gas Emissions by Sector of the Economy" approved the sectors of the economy and categories of direct and indirect greenhouse gas emissions that are subject to accounting. This document defines the economy's sectors based on the Main Classifier of Types of Economic Activities of Russia. So, the oil production code is 06.1 (Crude oil and petroleum (associated) gas production); the oil transportation code is 49.50.1 (Oil and petroleum product transportation via pipelines).

According to the "Concept for the formation of a system for monitoring, reporting and verifying the volume of greenhouse gas emissions in the Russian Federation" dated 22/04/2015, No. 716-r, it is the constituent entities of the Russian Federation and enterprises that should monitor anthropogenic greenhouse gas emissions (with the provision of reporting on volumes and on reducing emissions to authorized state executive bodies).

In 2016, Russia signed the Paris Agreement; several documents have appeared to regulate the issues of accounting and reduce greenhouse gas emissions at the level of constituent entities of the Russian Federation and individual enterprises.

The decree of the Ministry of Natural Resources of Russia dated 16/04/2015, No. 15-r "On approval of methodological recommendations for a voluntary inventory of greenhouse gas emissions in the constituent entities of the Russian Federation" was supposed to ensure a reduction in greenhouse gas emissions by 2020. These guidelines allowed to estimate the total greenhouse gas emissions for the constituent entities of the Russian Federation from the categories of emission sources (activities) that make the immense contribution.

Decree of the Ministry of Natural Resources of Russia 30/06/2015, No. 300 "On approval of guidelines and guidelines for the quantitative determination of greenhouse gas emissions by organizations engaged in economic and other activities in the Russian Federation" approved the rules for collecting and monitoring information, and reporting on greenhouse gas emissions since 28/12/2015. Guidelines recommend that greenhouse gas emissions be accounted for by source category and related business activities or manufacturing processes leading to greenhouse gas emissions into the atmosphere, establish reporting requirements.

The decree of the Ministry of Natural Resources of Russia 29/06/2017, No. 330 "On the approval of guidelines for the quantitative determination of the volume of indirect energy emissions of greenhouse gases" approved the rules for calculating the volumes of indirect

energy emissions of greenhouse gases generated as a result of organizations consuming electric and thermal energy received from external generating objects.

Russia is now at the final stage of preparation of a "Strategy for the long-term development of a country with a low level of greenhouse gas emissions until 2050." (the project appeared in March 2020). According to the developer (Ministry of Economic Development), the Strategy should provide access to the diversification path of the economy, accompanied by a low level of greenhouse gas emissions. To implement the Paris Agreement, the Strategy proposes stricter targets for reducing greenhouse gas emissions.

4 Discussion and conclusions

Thus, by 2020, Russia laid the foundations of an administrative mechanism for regulating greenhouse gas emissions; it created a system for accounting for greenhouse gases. However, the Russian Federation's key documents in the field of climate change contain mainly declarative provisions. Also, the target set in reducing greenhouse gas emissions is not detailed enough, there are no reporting forms and there is an absence of the instructions for enterprises how to submit reports on greenhouse gas emissions and for the authorized federal executive body how to verify these reports.

The economic mechanism for regulating greenhouse gas emissions is in its infancy. There are no specific solutions for the following items: there is no payment tool for greenhouse gas emissions and, accordingly, there is no mechanism to compensate the loss of ecosystem services and regulation of greenhouse gas flows; there are no criteria for the economic effectiveness of measures to reduce greenhouse gas emissions and a system of fines. Consequently, there are no motives for the transition to a low-carbon economy for enterprises. However, big Russian business supports a policy of transition to low-carbon development. At the corporate level in Russia, the climate agenda is especially relevant for public companies attracting foreign investment, credit funds from foreign banks, and having foreign shareholders.

Rule-making in Russia is still ongoing. Adopting the draft law prepared by the Ministry of Economic Development of the Russian Federation (the draft Federal Law On State Regulation of Greenhouse Gas Emissions and Absorption and on Amending Certain Legislative Acts of the Russian Federation, revised on 03/27/2019) may remove many questions. Evaluation of the effect of the implementation of various measures to regulate greenhouse gas emissions and state support for scientific research to determine the level of assimilation capabilities of ecosystems make it possible to take into account the ecosystem service "regulating greenhouse gas flows".

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