

Macroregional sustainable development on the basis of public-private partnership mechanisms

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Abstract. The subject of the research is issues related to environmental problems in the forest complex of the Yenisei Siberia macroregion. The study examines the experience of implementation of the national project "Ecology" in the Russian Federation. In this national project, the results of the implementation of the federal project "Introduction of the best available technologies" were studied and conclusions were drawn regarding the early closure of this federal project by the Russian state. In particular, it was concluded that blind copying of the European Union legislation applied in the Russian forestry sector could not lead to the successful implementation of the federal project "Introduction of the best available technologies". This is due to the fact that a number of promising technologies, which allow to effectively solve environmental problems in the national forest industry, were outside the scope of this federal project. It was proposed to use a number of its mechanisms within the framework of public-private partnership to solve environmental problems of the forest industry of the Russian Federation.

1 Introduction

Currently, the number of problems associated with the instability and volatility of the global economy is increasing in the world. Significant changes not for the better are taking place in the international financial and commodity markets, which affects the development of entire sectors of economy in various regions of our planet.

These processes are further superimposed by the growth of environmental and demographic problems, as well as the results of scientific and technological progress, which changes the existing structure of production and consumption. All this makes it necessary to adjust both the global development system as a whole and its specific regions.

In this regard, in September 2015 the United Nations Assembly adopted a resolution "Transforming our world: Agenda for Sustainable Development till 2030", which identified 17 goals for sustainable development of the world and 169 related targets. At the same time, a significant part of these goals and objectives were devoted to solving environmental problems facing humanity, including the fight against climate change and its consequences,

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the protection and restoration of land ecosystems, the conservation and rational use of water resources, etc. [1].

In accordance with this UN resolution, in 2017 the Russian Federation adopted the “Strategy for Environmental Safety of the Russian Federation for the period until 2025”, and in 2018 it adopted the national project “Ecology” (NP “Ecology”), consisting of 11 federal projects (FP). In addition, the Russian state adopted a number of program normative documents that directly or indirectly set tasks for solving national environmental problems.

Within the framework of the NP “Ecology”, the Russian Federation is implementing large environmental projects that are in many ways similar in their goals and objectives to those projects that are being implemented in the European Union (“The European Green Deal”), which received the common name “decarbonization of the European economy”. They are also aimed at developing a resource-efficient low-carbon economy, which involves reducing emissions of carbon and other greenhouse gases, as well as solving specific environmental problems, including the elimination of environmentally hazardous facilities in the country and preventing the emergence of new ones, etc. [2].

But at the same time, Russian projects have their peculiarities, which include mechanisms used to solve existing environmental problems. Their list in the Russian Federation in relation to foreign practices is quite short. This is mainly due to the fact that environmental problems in the RF began to be addressed systematically relatively recently. Therefore, the Russian environmental legal framework has not been fully developed.

The mechanisms based on public-private partnership (PPP) are poorly represented in it. At the same time, foreign practice shows that it is PPP that more effectively solves both state and public problems, including those in the environmental sphere. Of course, there are certain disadvantages associated with the fact that the state excessively transfers its functions in the environmental sphere to private business. Under Russian conditions, this is not quite acceptable. Statistics show that private business sometimes shies away from fulfilling the functions stated in PPPs that do not bring direct income. And ecology is precisely one of such functions.

2 Purpose of research

The purpose of the research is to develop an effective system for environmental problems solution in the macroregion on the basis of public-private partnership.

3 Material and methods of research

It should be noted that environmental problems in the Russian Federation sometimes have an industrial focus, that is, they are caused by the activities of enterprises in a certain industry. In many ways, this also applies to such an important for the country economic sector as the forestry complex. Environmental problems arose there quite a long time ago, back in the Soviet period. They constantly accumulated not only in the last decades of the post-Soviet period, but also much earlier. Here the forest complex of the Krasnoyarsk Territory can be considered as a typical example that allows us to characterize the general state of affairs in the forestry sector of the country and the Yenisei Siberia macroregion, since environmental problems in the region are typical for all forest subjects of the Russian Federation.

In the forest complex of the region, a number of sometimes interrelated problems can be identified, the main of which is, firstly, the increase in the weakening and death of forests, which are actually the “lungs of the planet” and affect the weather and climatic conditions as well as the animal world not only in Russia, but in other countries. According to statistical data in the Krasnoyarsk Territory during 2009-2017, the area of damaged forest stands

increased more than 2 times and amounted to 738,601.1 hectares, and the area of dead forest plantations reached 291,662.8 hectares, which is comparable to the area of a small European country [3].

Weakening and death of forests is associated with a number of factors. One of them is forest fires, which in the period under review led to the fact that the total area of forest weakening and death was 309,426.5 hectares and 201,262.3 hectares, respectively. Another factor is the mass reproduction of the Siberian silkworm, the Ussuri polygraph and a number of other pests, which led to the weakening and death of forests on areas of 316,378.2 hectares and 85,527.2 hectares, respectively. Conventionally, the third factor includes forest diseases, as well as weather and soil-climatic conditions, which led to the weakening and death of forests, respectively, on areas of 90,297.6 hectares and 3,138.9 hectares. As a result, this leads to additional carbon emissions instead of reducing them [3].

Secondly, due to the weakening and further drying out of the forest, there is an accumulation of fire-hazardous materials, which lead to uncontrolled and prolonged fires in the region. They significantly change the species composition of forests, which reduces its productivity. Smoke from forest fires in the Krasnoyarsk Territory and other Siberian regions reaches not only the large cities of Siberia (Krasnoyarsk, Irkutsk, etc.), but also spreads to the European part of the country, Kazakhstan, Alaska, Canada and a number of other regions.

All this leads to an increase in carbon-containing gases in the atmosphere, which affects not only the quality of life of the population, but also mainly disrupts the heat exchange system of the atmosphere. As a result of such smoke, the melting of ice in the Arctic and permafrost on the mainland accelerates. All this leads to the destruction of buildings and structures erected on permafrost, which in its turn causes man-made accidents and disasters on a federal and global scale, such as the depressurization of a diesel fuel tank at CHPP-3 in the vicinity of Norilsk. As it is known, about 20 thousand tons of diesel fuel leaked out of the tank, which created a serious threat to the entire ecosystem of the Arctic Ocean.

Thirdly, waste associated with the activities of the forestry complex has been accumulating in the region for decades. Statistics show that annually there is an increase in the volume of accumulation of such waste in the region by at least 2-3 million tons. They accumulate, as a rule, in populated areas where primary wood processing is carried out.

There, due to non-compliance with safety measures for the warehousing and storage of these wastes, they ignite, which in turn causes a sharp deterioration in the environmental situation (the “black sky” effect) in a number of settlements (Kansk, Krasnoyarsk, Minusinsk, etc.). This leads to material damage among legal entities and individuals and, in general, to a decrease in the quality of life of the population. Moreover, these wastes are valuable raw materials for the wood chemical industry, the production of biofuels, animal feed, etc. [3].

4 Research results

It should be said that the state is trying to solve existing problems. A legal framework has been created for this purpose. A number of federal projects has been included in the NP “Ecology”, namely, the FP “Forest conservation”, the FP “Implementation of the best available technologies” (was completed ahead of schedule in 2020) and a number of other projects. In addition, there is a state program of the Russian Federation “Development of forestry”, a number of decrees of the Government of the Russian Federation related to forestry and others.

The peculiarity of these regulations is that they propose to solve environmental industrial problems through the use of extra-budgetary sources, actually, through the use of public-private partnership mechanisms.

In particular, in the NP “Ecology” as a whole the share of extra-budgetary sources is about 80%. The largest share of these sources was contained in the federal project “Implementation of the best available technologies.” It was up to 88%.

Great hopes for the use of extra-budgetary sources in the NP “Ecology” and especially in the FP “Implementation of the best available technologies” were not destined to come true. In particular, the most extra-budgetary project of the FP “Implementation of the best available technologies” was closed ahead of schedule by the Government of the Russian Federation as it was found ineffective.

However, it should be said that this decision was timely and objective. This is due to the fact that it was proposed to use only one mechanism to stimulate extra-budgetary financing, namely, only subsidizing the interest rate on issued bonds.

At the same time, this subsidy itself had certain limitations. It was due to the fact that subsidies were made only if the loan funds attracted by the issuer were used to solve environmental problems using new, “cleaner” technologies for the manufacturing of products or the provision of services, which were called “best available technologies” (BAT).

It should be noted that the concept of BAT was introduced into circulation by the Federal Law “On Environmental Protection” in 2002. Subsequently, it was expanded by the Decree of the Government of the Russian Federation of December 23, 2014 N 1458, which described the procedure for the best available technologies application in practice.

All this gave rise to the formation of a general list of BATs. They were defined in the “Information and technical directories of the best available technologies” (ITD BAT), approved by the Federal Agency for Technical Regulation and Metrology.

It is these technologies described in these reference books that fell under the FP “Implementation of the best available technologies.” At the same time, the size of the bond subsidy within the framework of this federal project could not exceed a certain amount. It was determined based on 70% of the basic indicator determined by Decree of the Government of the Russian Federation of July 20, 2016 No. 702, or 90% in accordance with the Decree of the Government of the Russian Federation of July 17, 2015 No. 719 [2].

In general, it should be noted that the very concept of BAT was first introduced into circulation by the Council Directive of the European Union 96/61/EU of September 24, 1996 “On integrated pollution prevention and control.” There, the most hazardous industries from an environmental point of view were identified, including: energy industries; metal production and processing; processing of mineral raw materials; chemical industry; etc. This list of production activities actually became the basis of Russian BAT [4].

This blind copying of the EU BAT list did not lead to a good result in the Russian forestry industry. In general, their use has been limited. These technologies, in accordance with ITD BAT, applied only to the production of cellulose, wood pulp, paper, and cardboard. A number of promising technologies that make it possible to more effectively solve environmental problems in the forestry industry turned out to be excluded. This applies to the production of liquid and solid biofuels, feed yeast, self-degradable packaging materials, etc.

All this led to the fact that the effectiveness of the FP “Implementation of the best available technologies”, and indeed the NP “Ecology” in general, decreased. In the first year of operation of the NP “Ecology”, about 66% of the planned annual budget was spent. In 2020, this trend continued. But in subsequent years the situation in NP “Ecology” was corrected. And by the end of 2022, 99.7% of all allocated funds were spent.

But in the FP “Implementation of the best available technologies” the negative trends were never overcome. In difficult economic conditions, the Russian state began to reconsider the expenditure of public funds. The Russian government began to sequester costs in areas that were not effective from the state’s point of view, which led to the early closure of the FP “Implementation of the best available technologies”.

5 Discussion

In general, the situation in the environmental sphere of the national forestry sector continues to be difficult. In order to change the situation for the better, a certain set of measures should be taken within the competences of both the state and the federal subjects. In their development and further implementation, various mechanisms of public-private partnership, which have already proved their effectiveness in practice, should be more widely used.

When selecting them, it is necessary to carefully consider the practice of application of these partnerships in other countries. The available foreign practice shows that different countries have their own peculiarities in their application. At the same time, despite their national peculiarities, the applied public-private partnerships have certain common features, which allow to single them out into typical groups.

The first group includes partnerships in which various kinds of tax mechanisms are used. Their range varies from tax sanctions to granting various kinds of tax incentives. For example, the European interstate association (European Union) applies the practice of cancellation of value added tax when purchasing autonomous generators using renewable energy sources (RES). In addition, companies that use these generators have the opportunity to accelerate their depreciation (up to 50% of their cost can be written off within the first year).

In European countries and in countries on other continents, people are granted a number of tax exemptions when they participate in various environmental projects. This applies primarily to income tax, property tax and a number of other taxes.

In addition to incentives, a number of countries apply tax sanctions. In particular, in the UK, additional taxes were introduced to incentivise economic entities to participate in environmental activities. A new tax was introduced there when enterprises use energy resources that emit carbon dioxide. At the same time, enterprises using RES were generally exempted from paying this tax [5, 6].

The next group of partnerships is based on the use of additional state aid in case of their environmental orientation. A fairly wide range of additional state aid is used here. These include the provision of various types of subsidies, including reimbursement of costs of interest rates on loans, etc. Subsidies can also be obtained for reimbursement of costs, including pre-investment costs for environmental projects, as well as for the use of the best available technologies, etc. [5].

Another group of partnerships uses differentiated preferential tariffs as additional assistance from the state. Such incentives are widely used in the European Union, especially in the transport sector. Their essence lies in the fact that by reducing tariffs for the carriage of goods the redistribution of freight flows between certain types of transport means is carried out. In particular, favourable tariffs are available for electric railway and water transport. As a result, part of the cargo is transferred from road and air transport to railway and river transport, which reduces carbon dioxide emissions into the atmosphere of the planet [5-7].

The fourth group of partnerships uses market-based quota mechanisms in their activities. The essence of these mechanisms is that the state provides power generating enterprises with certain quotas for the production of electricity from RES. This practice is widespread in the European Union. There, in particular, by 2025 it is assumed that more than twelve per cent of electricity should be produced on the basis of RES. In case of violation of this indicator, the guilty party will be obliged to purchase a so-called environmental document - a "green certificate". This will cover the detected violation. As a result of their purchase, enterprises bear additional costs, which in turn stimulates wider use of renewable energy sources.

It should be noted that the issuers of the certificates are state authorities that act as regulators of the electricity generation and redistribution market in their own countries. They issue these certificates to enterprises producing electric energy on the basis of RES [6-8].

In addition to the mechanism of issuing carbon dioxide emission quotas, the carbon dioxide emission quotas are actually traded on the stock exchange. It is based on the fact that some energy enterprises have their surplus, and others have their deficit, i.e. there is a certain supply and demand for them. This, in turn, leads to the formation of a certain segment of the market and the relevant infrastructure ensuring transactions with these certificates. In the European Union, the European Emissions Trading System has been acting as a trading platform since 2005 [6, 8].

There is a group of partnerships where there is actually direct financing by the state of environmental projects implemented by entrepreneurs. The state, through its own development institutions, provides loans either at a minimum interest rate or without interest at all. One of the conditions for receiving these loans is that they are used for the intended purpose, e.g. for the purchase of renewable energy generating equipment.

The state also applies guarantees for loans to private business in commercial banks, if they are aimed at financing projects in the environmental sphere, etc. Grant mechanism for environmental projects is also used, which also stimulates project activities in the environmental sphere [5-7].

There is also a group of partnerships where green bonds are used. Their peculiarity is that they are issued to finance projects in an ecological environment. They are issued on the basis of certain principles, standards, etc., with the participation of specialised organisations. The financial resources raised through their issue are channelled into environmental projects. Their issuers can be the state, municipalities, corporations and international financial institutions. Together they have issued such securities for the amount of up to 300 billion euros [6].

Of course, in Russian practice, not all of the above-mentioned mechanisms of public-private partnership are applicable in the environmental sphere, including in the forestry sector of the country. But still, some of them, taking into account certain modifications, can be applied in the national forestry sector.

For more effective use of public-private partnership mechanisms in solving environmental problems in the forestry sector, both in the country and in Yenisei Siberia, they should be applied on the basis of such an institution as an industrial cluster. The main focus of this industrial cluster should be the recycling of forest industry waste allowing to produce such popular products as artificial yarns and fabrics based on them, biofuel, fodder yeast, etc.

For the successful development of such an industrial cluster, additional measures of state support should be applied using the above-mentioned foreign experience (tax, tariff and others). Their use will allow to stimulate economic activity of the enterprises included in the industrial cluster for forest waste processing, which will allow not only to solve sectoral environmental problems, but also in general will increase the activity in the forest complex of Yenisei Siberia.

6 Conclusion

It should be said that in the formation of an industrial cluster for processing of forestry waste on the basis of PPP a special place should be given to the state. The state is obliged to create the most favourable conditions not only for the formation of such a specialised industrial cluster, but also for its subsequent development.

All this in general will allow not only to effectively solve environmental problems in the territory of the Yenisei Siberia macro-region, but also in general the problems of entrepreneurship development in the forest complex. Therefore, the proposed approaches may be of interest to all interested parties, both public and private.

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