

Carbon Landfill as a Low-Carbon Resource Management Tool

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Abstract. It was extremely difficult for the deported peoples to adapt to new natural conditions, and to a new ethnic environment, and to a new humiliating situation. K.D. Ushinsky wrote that the influence of natural conditions on people is so powerful that the destruction of these conditions (and in this case separation) torments a person with painful homesickness. A number of government regulations established a cruel special regime. Settlers scattered in small groups from Kyrgyzstan to Kazakhstan did not have the opportunity to keep in touch with each other. In order to survive physically and morally, the settlers had to prove their innocence every minute of their existence. Adaptation in new geographic and climatic conditions, different from historical ones, had a dominating and depressing effect on the moral and psychological state of people.

1 Introduction

In recent years, the problem of global warming has become more and more obvious, and the issue of emissions of large amounts of greenhouse gases into the atmosphere has become more and more urgent. The topic of mitigating the consequences of climate change has been actively developed since the Kyoto Protocol, which was adopted in 1997, being an additional document to the UN Framework Convention on Climate Change. The UN Framework Convention, in turn, was adopted in 1992. The Kyoto Protocol included the following provisions, which countries that ratified the agreement were obliged to comply with: Each Party shall implement and / or further develop, in accordance with its national circumstances, an energy policy and measures to develop and improve the efficiency of energy use. Some of the provisions directly related to energy policy [1]: 1. Increasing the efficiency of energy use in the relevant sectors of the national economy; 2. Protecting and improving the quality of sinks and reservoirs of greenhouse gases, promoting sustainable forest management practices, afforestation and reforestation in a sustainable manner; 3. Promoting sustainable forms of agriculture in the light of climate change considerations; 4. Conducting research, promoting the introduction, development and wider use of new and renewable types of energy, carbon dioxide absorption technologies and innovative environmentally friendly technologies; 5. Measures to limit and/or reduce emissions of

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greenhouse gases not controlled by the Montreal Protocol in transport; Three main mechanisms have become instruments for achieving the goals of the Kyoto Protocol: Joint Implementation (JI), the Clean Development Mechanism (CDM) and International Emissions Trading (ITT). JI and CDM aim to develop projects to reduce greenhouse gas emissions in other countries, as well as the implementation of these projects, which allows the creation of carbon credits for sale in the carbon market.

Carbon polygons (from the English carbon - carbon) are land plots where they will develop and test technologies for controlling the production and absorption of greenhouse gases, as well as study the rate of photosynthesis of different plants [2–3]. Carbon farms are plantations, plots of land where these greenhouse gas absorption technologies are put into practice. The creation of carbon landfills and carbon farms affects the economy of the country, as well as its social sphere. This paper will show the socio-economic impact of the development of carbon landfills and carbon farms on the territory of the regions, the positive and negative aspects of this process, and also consider the socio-economic effect expected by various stakeholders from the development of carbon farms [5, 6]. At present, a fairly large amount of foreign literature has been created regarding the development of carbon farms and the impact of this phenomenon on the social and economic side of the life of the population, since this process began earlier abroad than in Russia. In recent years, a domestic literature has begun to appear that considers carbon farms and carbon landfills, their development in Russia, and the possible impact on the Russian population and the Russian economy [4].

2 Research Methodology

To study the influence of the development of carbon farms on the territory of the regions, such a method as an informative type of bibliographic analysis was used. This method includes a description of the theoretical context of research, the selection of material and its theoretical analysis. Also, methods of systematization and classification of theoretical data obtained during the bibliographic analysis were used.

3 Results and Discussions

Gradual increases in global average temperatures are leading to unpredictable weather patterns that are jeopardizing food production, causing sea levels to rise, and increasing the risk of natural disasters, all of a global nature and on an unprecedented scale. Due to climate change, more frequent extreme weather events and the expansion of deserts are occurring. In general, in the long term, climate change can lead to unpredictable effects that are unlikely to be positive [7].

However, there is another aspect of the fight against greenhouse gas emissions, which is directly related to the economy. In view of the general fight against global warming, many countries introduce various taxes, duties and fines tied to the volume of greenhouse gases emitted during production. Commitment to the Paris Agreements of the countries that are world economic leaders creates a certain environmental framework for industries around the world, beyond which it is not economically profitable to pass. The European Union is the clearest example of the economic fight against greenhouse gas emissions. In addition, the Parliament of the European Union adopted the Green Deal: a program that aims to massively reduce carbon dioxide emissions and achieve zero net greenhouse gas emissions by 2050 [8]. Duties on products with a higher carbon footprint are part of this program.

The European carbon tax on goods is a big problem for manufacturers from other countries, especially Russian ones. The EU countries account for 42% of Russian exports: it is based on oil, gas and metals (fig. 1)[9].

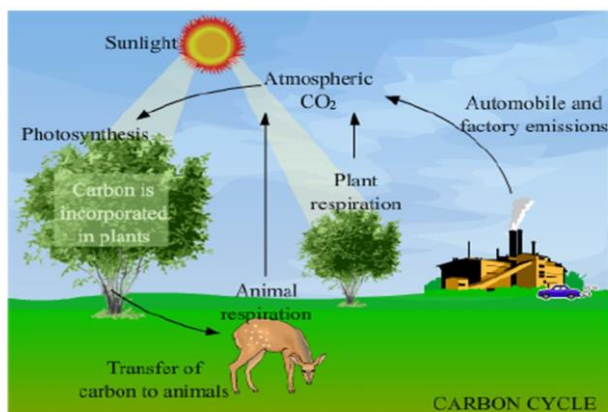


Fig. 1. Carbon cycle

However, Russian industry in almost all areas has a Soviet industrial base, which does not meet modern environmental standards. By the standards of the European Union, Russian production is “dirty”, so it is planned to impose high duties on exports. According to the audit company KPMG, Russia’s trade losses can range from 6.25 billion euros per year [4]. Considering that such losses go through the largest trade channel in Russia, this state of affairs will have an extremely detrimental effect on the Russian economy. In addition, the countries of the European Union are gradually reducing the consumption of oil as a “dirty” source of energy. In addition, in the coming years, the profitability of Russian oil supplies to the EU may decrease by 10–20% [10]. The Green Deal also plans to phase out natural gas as an energy source [6]. This creates even more risks for Russia.

In Russia there was and is a system of environmental control. Enterprises receive an environmental hazard class, environmental passports are developed, and an environmental fee is paid. In the institutions of the Russian Academy of Sciences, studies of CO₂ absorption by fields, forests and swamps have been going on for a long time. There are about two dozen scientific and educational institutions in Russia with world-class research in the field of monitoring CO₂ and other greenhouse gases [11].

Today, in matters of ecology, we have to reckon with the rest of the world. Either you recognize the global agenda, supported by all civilized countries, including under the auspices of the UN, and integrate into it, or you remain on the sidelines, at the level of a “banana republic”. Judging by the latest documents that are published in Russia, there has been a tilt towards the recognition and synchronization of our legislation with the international one in this matter.

At the same time, a dispute is developing in the scientific community about which methods to use to calculate the emission and absorption of greenhouse gases. It is on the carbon ranges that both Russian and Western measurement methods can be worked out. It is important that our results are recognized in the West. And as Nikolai Durmanov says, if today we do not measure ourselves, then tomorrow we will be measured and, most likely, not in our favor [9].

In foreign literature, the issue of social and economic consequences of the creation of carbon landfills and carbon farms is actively discussed. Since in Russia projects for capturing CO₂ began to be developed much later than abroad, at the moment there is more

experience in this area in foreign countries. In foreign publications on the topic of capturing CO₂ from the atmosphere through forest ecosystems, the term “carbon farming” is used, which literally translates as “carbon farming” [10-11]. Carbon farming is a term that refers to a set of agricultural practices aimed at sequestering carbon in ecosystems: in soil, plant roots, leaves and wood. The development of carbon farms is also carbon farming, so this term will be used in the review of foreign literature.

The EU circular economy policy system is based on a plastic strategy, i.e. by 2030 all plastic packaging in the EU market will be completely recycled; a closed circulation system will be created to reduce the cross-border transfer of plastic. spend in vain.

The main goal of the EU Green New Deal is to achieve carbon neutrality in the EU by 2050. The EU classification provides clear definitions of terms.

The German Beverage Bottle Deposit System (98% return rate) and the Extended Producer Responsibility system have clear carbon reduction benefits, but also many challenges and challenges.

Since plastic is a high carbon material, incineration will have direct carbon emissions. It is very necessary to form a closed plastic cycle - multiple cycles, less incineration, no landfill, and to establish a reliable infrastructure for the collection, sorting, and recycling of plastic waste (fig. 2) [12].

Sorting before incineration/landfill can promote recycling, reduce carbon emissions, improve waste handling efficiency, and reduce financial burden.



Fig. 2. Closed plastic cycle

4 Conclusions

Greenhouse gas emissions from the waste sector in Europe are second only to energy, agriculture and industry, ranking fourth, accounting for about 3%. From 1990 to 2019, emissions showed an overall downward trend.

There are over 500 waste incinerators in Europe, and every year waste incinerators emit over 50 million tons of carbon dioxide.

Carbon emissions from waste incineration with energy recovery are attributed to the energy sector.

Greenhouse gas emissions from the waste sector in Germany are on a downward trend, with CO₂ emissions reduced by about 90% in 2030 compared to 1990.

The European Unions have different views on how to reduce emissions, but they are all exploring ways to achieve the goals set in the Paris Agreement.

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