

# The Mechanism of Carbon Regulation of Emissions in Industrial Energy

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**Abstract.** The introduction of cross-border taxes on hydrocarbon-intensive goods in the EU is expected in 2023, and the draft proposals are expected in the second quarter of 2021. The conditions for collecting such a tax from the EU will affect the interests of the EU itself for the next two decades remaining under the Green Deal until zero emissions. Apparently, the mechanism of tax collection will soon become clear, where and for what the collected funds will be directed. The issue of the impact of new taxes on Russian exports shifts the internal debate over the nature of such regulation to several urgent issues. This is the need for a more accurate, reliable and documented accounting of emissions in the country. And this is the choice of the option of adapting the country's tax system to minimize the losses of companies, which began to be actively discussed, since the time factor begins to operate. An important aspect of the problem is the need for the simultaneous and rapid introduction of measures in the field of regulation, taxes, statistics in a complex, depending on the chosen response option. The new measures will not only affect the country's climate programs, taxation and foreign trade, but will also have implications for economic strategy and even regional development.

## 1 Introduction

As part of the Paris Agreement, Europe is making efforts to reduce the content of greenhouse gases in the atmosphere. In December 2019, the European Commission presented a strategy for climate neutrality until 2050: the European Green Deal, a roadmap to ensure the sustainability of the EU economy through the efficient use of resources through the transition to a clean circular economy. The goals of this strategy are to curb climate change, reduce pollution and restore biodiversity. However, increased climate regulation within the EU creates the risk of "carbon leakage" to countries with less stringent carbon regulation. One of the measures to achieve the goal of the "European Green Deal" and prevent "carbon leakage" is the border carbon levy (Carbon Border Adjustment Mechanism, hereinafter referred to as the levy) [1]. The immediate introduction of the border carbon levy is planned for no later than 2023. The border carbon levy mechanism involves charging a fee for the content of each ton of emissions in the composition of imported products. Thus, there will be a differentiation of EU import customs duty rates. The level of the "carbon footprint" in the technological chain of a product depends on the energy base of generation for

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production purposes, which means that the more carbon neutral the resource, the lower the border fee. The introduction of such a mechanism acts as an external incentive for countries whose enterprises have a significant “carbon footprint” in the production of goods and export these goods to the EU market, to bring state regulation measures in line with global low-carbon development trends.

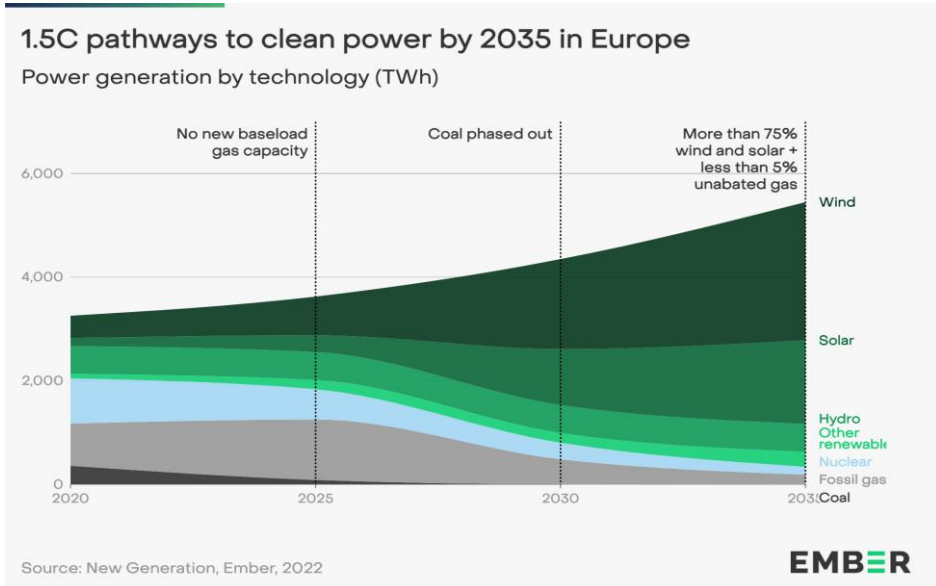
## 2 Research Methodology

The described policy measure is aimed at achieving the EU goals of climate neutrality, it also improves the competitiveness of European manufacturers’ products in the domestic market [2]. It is quite difficult for the products of EU companies to compete on the world stage due to the high costs of strict environmental regulation in the EU (and its absence abroad), expensive labor and high-cost energy generation in the EU. Thus, the introduction of a border carbon levy affects not only sustainable development policy, but also the foreign trade policy of the EU, which is a pretext for exporters to accuse the EU of protectionism and unfair competition. For this reason, the prospect of introducing a border carbon tax raises concerns among Russian companies as well [3]. The situation is aggravated by the continuing uncertainty regarding the form of this fee, as well as the factors taken into account when calculating its value. Thus, it is not clear whether indirect emissions will affect the size of the fee (greenhouse gas emissions are not produced by the exporter, but are associated with its activities) and whether a choice will be made in favor of an emission quota system (at the moment, options are being discussed for imposing a fee on certain or all types of products or extending the Emission Trading Scheme outside the EU). At the same time, the technical issue of accounting for the “carbon footprint” in the value chain of imported goods has not been resolved: verification of the standards for accounting for the “carbon footprint” directly determines the amount of the levied fee [4]. It is possible to reduce the potential value of the collection by including the absorption capacity of forests in the methodology for calculating the absorption capacity. Such an approach would play in favor of Russian manufacturers. However, this argument also needs to be analyzed, since from the point of view of the reliability of forest climate projects (the possibility of fires and deforestation), it does not look strong. The possibility of establishing a fee only for carbon-intensive products imported into the EU (metallurgical, chemical, pulp and paper and cement industries, coke and petroleum products, the extractive sector) is also being discussed. In this configuration, exporters of carbon-intensive products with relatively low energy prices have incentives to introduce energy-saving technologies. Thus, on the territory of trading partners, conditions are created for the production of energy-intensive products with high added value. This form of levy partially offsets the impact of worsening trading conditions on EU trading partners.

## 3 Results and Discussions

The border carbon levy mechanism involves charging a fee for the content of each ton of emissions in the composition of imported products. Thus, there will be a differentiation of EU import customs duty rates [5]. The level of the “carbon footprint” in the technological chain of a product depends on the energy base of generation for production purposes, which means that the more carbon neutral the resource, the lower the border fee. The introduction of such a mechanism acts as an external incentive for countries whose enterprises have a significant “carbon footprint” in the production of goods and export these goods to the EU market, to bring state regulation measures in line with global low-carbon development trends [6]. The described policy measure is aimed at achieving the EU goals of climate neutrality, it also improves the competitiveness of European manufacturers’ products in the domestic market. It is quite difficult for the products of EU companies to compete on the world stage

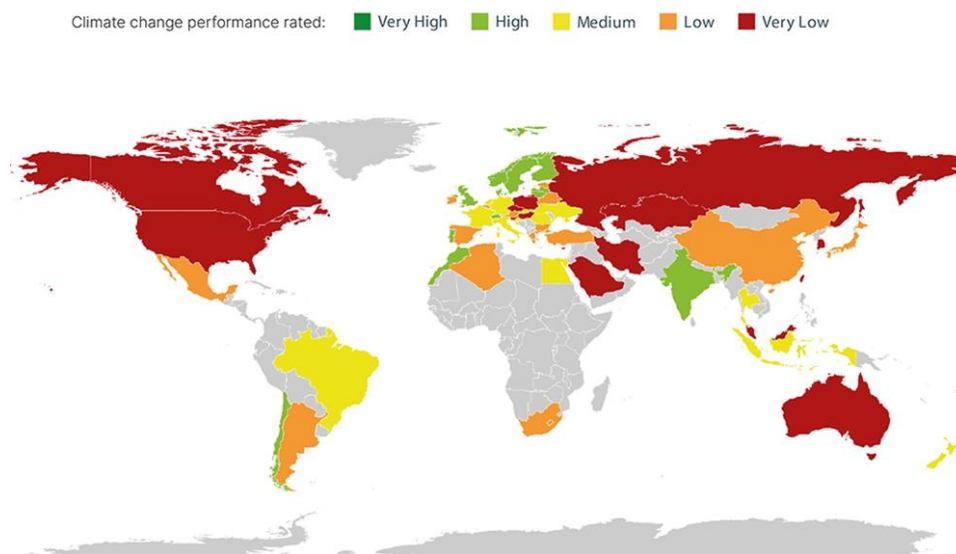
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**Fig. 1.** Technology Power generation

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substantially reduced by 2030, and during 2030-2050 oil will be almost completely removed from the energy mix, while natural gas consumption will account for a tenth of EU energy consumption by 2050 [10]. The issue of EU energy security is heightened by the likely response to the imposition of a border carbon levy by trading partners: a precedent has already been set in the EU Aviation Emissions Directive 2008/101/EC, which provided for cross-border trading of emissions allowances for all aviation flights within the EU borders [11]. In 2012, a joint declaration by ICAO member countries included a list of possible responses in the form of a legislative ban on airlines from participating in the EU emissions trading system; assessing the compliance of the measure with WTO standards; imposition of additional fees on carriers from EU countries and others. Thus, while tightening its trade and climate policy, the EU needs to take into account the positions of the main exporters.



**Fig. 2.** Climat change performance rate (2023)

While the cap-and-trade system is more common globally, its relative effectiveness relative to direct carbon levy is a matter of debate. On the one hand, the quota trading system sets limits on emissions, thereby ensuring the predictability of the emission volume, on the other hand, the price of quotas fluctuates under the influence of demand for them. The low predictability of the costs of paying quotas negatively affects the investment incentives of companies [12]. The opposite situation is typical for setting a carbon levy: companies can solve the problem of optimizing emissions based on a given tax rate. In world practice, hybrid approaches are also discussed both in relation to individual sectors of the economy and in general. Not the last role in making managerial decisions on the introduction of such alternatives is played by the complexity of creating and administering an emissions trading system [13]. The effects of the introduction of the considered instruments for regulating greenhouse emissions are determined by the specifics of the institutional environment, which prevents the identification of the preferred form of the border carbon levy. For this reason, a thorough analysis of the consequences of alternatives for both the EU and its trading partners is necessary, which requires the joint efforts of states when discussing the Directive.

## 4 Conclusions

The Russian authorities are taking into account the global trend of low-carbon development of the economy: the development of the draft Strategy for Low-Carbon Development of

Russia until 2025 is evidence of this. However, now there is a question of prompt adaptation to European innovations, because the economic effect of the introduction of the EU border carbon tax is critical for Russian exporters: a potential border carbon tax could affect 42% of the export flow from Russia to the EU. The main effect of the carbon levy will be on markets that are either highly carbon intensive or highly traded with the EU: oil and gas, metallurgy, coal, nitrogen fertilizer, pulp and paper and glass. According to BCG experts, according to the basic scenario of introducing a tax at the level of \$30 per ton of emissions, the losses will be: \$1.4–2.5 billion per year for the oil and gas sector, \$0.3–0.4 billion per year for exporters of non-ferrous metals, 0.6–0.8 billion dollars per year for the sectors of ferrous metals and coal. The calculation methodology also takes into account the factors of losing part of the oil market in favor of Saudi Arabia in the event of a slow adaptation of Russian producers to the low-carbon vector. KPMG experts estimate losses from the introduction of a carbon tax at 33.3 billion euros for 2025–2030. The Ministry of Economic Development of Russia has prepared a draft federal law “On limiting greenhouse gas emissions”, the Ministry of Energy of Russia has developed a project to introduce a system of “green” or low-carbon certificates that meet international requirements. Moreover, companies and the Moscow City Hall are implementing a project to issue “green” bonds in order to improve the energy efficiency of products. The emissions trading system is also being adapted as part of a pilot project in Sakhalin, where the first transaction using the emissions trading mechanism will take place in mid-2022. An institutional limitation to reduce the negative consequences of the introduction of the border carbon levy is the lack of its own all-Russian system for measuring the level of atmospheric emissions, which allows the EU to assess the “carbon footprint” of products from Russia as much as possible. At the same time, steps are planned to resolve this situation: in 12 cities 2 of Russia, 3 Rules for the creation and operation of a federal state information system for monitoring atmospheric air quality have been approved and an experiment on emission quotas has been envisaged<sup>4</sup>. The potential risks of introducing a border carbon levy encourage action not only at the federal level, but also at the company level. The general trend of the business environment policy is aimed at reducing the “carbon footprint” in products and attracting additional funds to energy-saving and low-carbon technologies. Thus, Russian companies support the state vector in terms of low-carbon policy and invest in “clean” energy. Since 2019, PJSC TATNEFT has been taking active steps to reduce emissions; in February of this year, the company strengthened its positions by joining the international initiative Science Based Targetsinitiative. PJSC TATNEFT plans to achieve carbon neutrality by 2050 with a gradual reduction in emissions: by 10%<sup>5</sup> - by 2025, by 20% - by 2030. PJSC Gazprom is following sustainability trends by pursuing a policy of energy saving and energy efficiency as part of its environmental management system, and PJSC Severstal by setting a target to reduce the carbon intensity of liquid steel by 3% by 2023 compared to 2020. However, private and legislative initiatives in the absence of a clearly specified standard for accounting for greenhouse gas emissions are not a sufficient condition for the full introduction of the considered climate regulation regimes. Thus, the priority direction of Russia’s “green” policy should be considered the standardization of accounting for such emissions both in the framework of internal regulation and in the framework of risk hedging when adopting the EU border carbon levy.

## References

1. R. Gakaev, Carbon sequestration in landscapes of the Chechen Republic, Reliability: Theory & Applications, **17**, **3(66)**, 193-196 (2022).
2. S. S. Galazova, Financing of public-private partnership projects based on “smart technologies”, 1696-1703 (2021).

3. V. G. Konovalova, R. V. Aghgashyan, S. S. Galazova, Perspectives and restraining factors of hr analytics in the conditions of digitization of human resources management, 1015-1024 (2021).
4. G. V. Vorontsova, G. V. Chepurko, R. M. Ligidov, T. A. Nalchadzi, I. M. Podkolzina, Problems and perspectives of development of the world financial system in the conditions of globalization, **57**, 862-870 (2019).
5. Y. E. Klishina, I. I. Glotova, O. N. Uglitskikh, E. P. Tomilina, I. M. Podkolzina, Peculiarities of the financial policy of non-profit organizations in the macroeconomic unstable environment, *Espacios*, **38(34)**, 34 (2017).
6. A. Lawler, End Game for Oil? OPEC Prepares for an Age of Dwindling Demand. Reuters (2021).
7. I. V. Taranova, I. M. Podkolzina, F. M. Uzdenova, O. S. Dubskaya, A. V. Temirkanova, Methodology for assessing bankruptcy risks and financial sustainability management in regional agricultural organizations, **206**, 239-245 (2021).
8. A. S. Salamova, O. Dzhioeva, Green transformation of the global economy in the context of sustainable development, 152-159 (2023).
9. A. S. Salamova, Global networked economy as a factor for sustainable development, 03053 (2020).
10. V. Sebestyén, E. Domokos, J. Abonyi, Focal Points for Sustainable Development Strategies: Text Mining-Based Comparative Analysis of Voluntary National Reviews, *Journal of Environmental Management*, **263** (2020).
11. S. G. Shmatko, L. V. Agarkova, T. G. Gurnovich, I. M. Podkolzina, Problems of increasing the quality of raw material for wine in the stavropol region, **7(2)**, 725-730 (2016).
12. I. M. Podkolzina, A. I. Belousov, F. M. Uzdenova, L. V. Romanko, O. A. Chernikova, Forms of financial fraud and ways to minimize risks, Modern Global Economic System: Evolutional Development vs. Revolutionary Leap, Institute of Scientific Communications Conference, 2197-2205 (2021).
13. I. M. Podkolzina, I. V. Taranova, K. T. Paytaeva, S. V. Revunov, T. F. Abrosimova, Innovative approaches in financial support for regional economic security, 549-558 (2021).