

# The Low Carbon Trend from a Sustainability Perspective: Limiting Greenhouse Gas Emissions

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**Abstract.** Climate change is the main global risk in the next 10 years, and international organizations, businesses and governments are paying more and more attention to decarbonization strategies and energy transition. In line with the general trend, the popularity of the climate agenda in Russia has grown rapidly in recent years. Until recently, many Russian companies calculated their carbon footprint, planned the development and implementation of climate strategies, and the state was actively developing the regulatory infrastructure for low-carbon development. Banking organizations have also announced climate goals and implemented decarbonization activities. However, a sharp change in the geopolitical and economic situation calls into question the future of the national climate agenda. At first glance, it may seem that the importance of low-carbon development principles has decreased, and banks, which have just begun their journey within the framework of the sustainable development agenda, have lost momentum. Increasingly, there are opinions that the main driver for the development of climate strategies, the request of international investors, has lost its relevance.

## 1 Introduction

The current goals and commitments of countries, primarily the largest emitters of greenhouse gases (GHGs), characterize the insufficient “ambitiousness” of climate policy in the world. According to preliminary WMO data, 2020 will be one of the three warmest years on record, and according to the Climate Action Tracker, the efforts announced by the countries of the world as of November 2020 will not allow achieving climate goals, and global warming by the end of XXI century can reach about 3 °C. Russia is one of the world’s largest GHG emitters (about 5% of total GHG emissions), which leads to increased attention in the international arena to its climate goals and policies [1]. According to the national cadastre<sup>3</sup>, Russia has significantly reduced GHG emissions in the long term: in 2018, GHG emissions in Russia amounted to 2.2 billion tons of CO<sub>2</sub>-eq. (excluding land use, land use change and forestry (LULUCF)), which is 30.3% less than their value in 1990 (3.2 billion tons of CO<sub>2</sub>-eq). If LULUCF is taken into account, the decline will be even more pronounced - by 47.6% in 2018 compared to 1990. However, in recent years, the

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country's GHG emissions have been rising, and Russia's target, for example, in the Climate Action Tracker, is described as "critically insufficient" - corresponding to a warming of more than 4 ° C (assuming that all countries would make similar efforts) [2]. This creates a challenge for Russia's image as a climate-responsible country. The current accounting of GHG emissions and removals in the world does not fully reflect the objective picture, which is especially typical for developing countries and for individual GHGs, which creates a challenge for the need to improve the quality of data for international comparisons - in the context of the formation of climate positions as a factor in the competitiveness of producers from different countries. There is a growing number of countries, regions and companies around the world supporting climate change away from fossil fuels. There is a refusal of coal generation in the electric power industry as the most carbon-intensive direction of electricity production. [3] There are initiatives to move away from the use of internal combustion engines in transport and from the exploration and production of hydrocarbons. Such initiatives pose the challenge of reducing demand for traditional energy resources already in the medium term relative to previous expectations. Plans to abandon the consumption of fossil fuels in different countries of the world for Russia, as for the largest exporter of traditional energy resources, lead to a narrowing of their sales markets. The effect of plans to phase out fossil fuel production is less obvious, and such plans are more of a symbolic nature. According to the International Energy Agency, the projected volumes of world oil consumption in 2040 in a hypothetical scenario of sustainable development, which assumes the achievement of climate goals, are 32% lower than in the business-as-usual scenario, gas - 36% lower and coal - 61% lower. The International Civil Aviation Organization and the International Maritime Organization are making efforts to minimize the adverse impacts of international transport on the climate. For aviation, the introduction of a charge from 2027 for exceeding CO<sub>2</sub> emissions from the baseline (2019) is already planned, and when discussing maritime transport, proposals arise, for example, to improve the operational energy efficiency of existing ships and to reduce emissions of methane and volatile organic compounds [4]. This means the challenge of strengthening the requirements for Russian carriers in international markets.

The introduction of mandatory carbon pricing systems is one of the most fundamental measures in terms of achieving GHG emission reduction goals. Such a decision is made within the framework of a particular jurisdiction, and until recently it did not affect the terms of international trade, but the EU initiative to introduce cross-border carbon regulation (TCR) may change the situation - there is a challenge of the emergence of climate restrictions in international trade and discrimination of Russian products. Specific details of the European mechanism have not yet been presented, but this does not eliminate the need to assess the risks of individual scenarios in advance [5]. If the most negative scenario for Russia is implemented, the loss of Russian exporters to the EU until 2030 only for oil, oil products, gas and LNG, as well as polyolefins, can amount, according to the authors of the report, from 1.4 to 2.4 billion euros per year, depending from the scenario and for fertilizers from 0.2 to 0.5 billion euros per year [6]. The strengthening of the climate agenda in the world leads to an increase in the demand for disclosure of carbon reporting by businesses and limited opportunities to raise funds for carbon-intensive projects. According to the authors of the report, in a scenario in which Russian oil and gas companies are deprived of the opportunity to attract foreign credits and loans, the cost of borrowed capital for them increases by 1.21 percentage points. and the weighted average cost of capital (WACC) - by 0.29 percentage points, while the return on assets (ROA) is reduced by 0.04 percentage points. Thus, the impact of foreign loans in the Russian oil and gas industry is not critical, but if we take into account the potential refusal of foreign investors from Eurobonds and shares of Russian companies, the consequences will be more significant. The challenge for Russia is the exclusion or limitation of support for low-carbon energy sources such as nuclear and large hydropower within the framework of certain green financing mechanisms in the world, for example, in some systems of green (low-carbon)

certificates. The issue of accounting for such projects requires discussion at the international level, since they are of great importance for the Russian energy balance.

## 2 Research Methodology

Russia takes part in the formation of international climate policy, being a party to the UN Framework Convention on Climate Change, its Kyoto Protocol, the Paris Agreement and international treaties for the protection of the ozone layer. At the national level, strategic documents in the field of combating and adapting to climate change have been adopted and are being developed, measures are being taken to reduce GHG emissions, and a goal has been set to reduce them by 2030 [7]. Russian climate policy focuses on measures to adapt to climate change, unleashing the potential for energy efficiency (a draft of a new comprehensive plan for improving energy efficiency has been prepared), protecting and restoring forests, and implementing environmental and environmental initiatives. Separately, to stimulate alternative renewable energy sources in the electric power industry, the regulatory framework for their support in the wholesale and retail markets, in isolated energy regions, and for microgeneration has been formed and is being specified. With regard to carbon regulation in Russia, the Concept for the Formation of a System for Monitoring, Reporting and Verification of GHG Emissions in the Russian Federation (2015) was adopted [8]. As of January 2021, consideration of the rules for the implementation of mandatory carbon reporting (draft of the Federal Law “On Limiting GHG Emissions”), as well as the creation of conditions for the implementation of voluntary initiatives to reduce emissions and increase GHG absorption (draft Concept of the accounting system, registration, release into circulation, transfer and offset of the results of climate projects implemented on the territory of the Russian Federation). In January 2021, a roadmap was approved for the implementation of an experiment in the Sakhalin Oblast to establish special regulation of GHG emissions. In addition, the introduction of public non-financial reporting is being considered (draft Federal Law “On Public Non-Financial Reporting”). Interest in green finance is growing in Russia: the development of a national taxonomy of sustainable finance and the launch of a system of low-carbon certificates are being considered.

## 3 Results and Discussions

Nevertheless, Russia’s efforts in the field of climate policy so far receive “very low” ratings in international ratings (for example, according to the “Climate Action Effectiveness Index”) [9]. Although these ratings are informal, they are in high demand and there are no ratings representing the perspective of Russia or developing countries. Experts are positive about Russia’s accession to the Paris Agreement and initiatives in energy efficiency, GHG reduction and land use, but point to strong opposition to the country’s increased climate ambitions from carbon-intensive industries.

The introduction of mandatory carbon pricing systems is one of the most fundamental measures in terms of achieving GHG emission reduction targets. At the level of the Paris Agreement, the introduction of carbon pricing systems is not mandatory [10]. Countries or associations independently make such a decision to achieve their climate goals. Nevertheless, in 2020, the EU has plans to introduce cross-border carbon regulation, which brings the issue of carbon pricing to the international level and creates risks for Russian exporters supplying products to the EU. In world practice, there are three main carbon pricing schemes: carbon tax, GHG emissions trading system and mixed schemes. GHG emission trading systems can be either mandatory or voluntary. According to the World Bank, as of November 2020, there were 64 carbon pricing initiatives in the world, of which 33 can be attributed to carbon taxes and 31 to TPCs. Such initiatives cover 46 countries

(including EU countries) and 35 subnational jurisdictions (individual US states, provinces in Canada, regions in China, etc.). The current or planned to be introduced carbon pricing initiatives in the world cover about 12 billion tons of CO<sub>2</sub>-eq. (about 22% of global GHG emissions).

Climate change is one of the key global challenges. There is a conventional position, fixed at the UN level, that this problem is of an anthropogenic nature. The increase in the concentration of greenhouse gases in the atmosphere, caused by human activities, puts the dynamics and accounting of GHG emissions at the center of attention of international climate policy. The international climate policy framework is shaped by the UN and has a truly global scope [16]. The common basis for interaction and coordination was laid by the UNFCCC, and issues related to GHG emissions from international aviation and maritime transport are dealt with by such UN specialized agencies as the International Civil Aviation Organization (ICAO) and the International Maritime Organization (IMO). The Intergovernmental Panel on Climate Change (IPCC) was established in 1988 by the United Nations Environment Program (UNEP) and the World Meteorological Organization (WMO) to prepare independent, science-based climate change assessments [8]. The IPCC and former US Vice President Al Gore were awarded the 2007 Nobel Peace Prize “for their efforts to build and disseminate broader knowledge of anthropogenic climate change and lay the foundations for the actions needed to counter such change.”

To assess the possible consequences of a significant increase in climate policy in the world and the widespread adoption of plans to phase out fossil fuels for potential exporters of traditional energy resources, one can use, for example, the long-term forecasts of the IEA in 2020: the Stated Policies Scenario and the Sustainable Development scenario. Scenario) [9]. The declared policy scenario takes into account the measures and targets approved and announced by countries as of the second half of 2020 and assumes that the spread of coronavirus can be brought under control during 2021 [15]. The sustainable development scenario is based on the economic assumptions of the stated policy scenario, but aims to achieve climate (Paris Agreement), clean air and increased access to energy goals. The reduction in world hydrocarbon consumption in physical terms in a hypothetical sustainable development scenario relative to the declared policy scenario by 2040 can be estimated at 32% for gas, 36% for oil and 61% for coal [10]. At the same time, the carbon intensity of Russian fuels will be one of the main factors determining the future dynamics of domestic exports, including relative to benchmarks in the form of declining global demand, in the face of tougher cross-country and inter-fuel competition.

One way to achieve these goals is through a market-based mechanism, the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA), approved by ICAO in 2016 [14]. The system provides for a baseline monitoring phase in 2019-2020, a voluntary pilot (experimental) phase in 2021-2023 and a first voluntary phase in 2024-2026, from 2027 CORSIA will be mandatory for most countries (except for the least developed countries, small island developing countries and inland developing countries). This mechanism provides for additional costs (emission charges) for airlines when carbon emissions exceed the 2019 baseline [11]. However, as an alternative to a fee, aircraft operators can use low-carbon aviation fuel or green fuel that meets the CORSIA sustainability criteria. As of November 30, 2020, 88 countries (accounting for 77% of international air travel) have joined the CORSIA pilot phase. Russia does not participate in this stage and, together with a number of other countries (China, India), criticizes it. According to the Russian side, the system provides for the acquisition of emission units by airlines on open carbon markets outside the international civil aviation sector, which in fact is a mechanism for returning investments in projects in other industrial sectors and does not contribute to the development of technologies in the aviation industry [13]. At the same time, regardless of participation in the pilot phase, all ICAO member states, starting from 2019, should put in place a system for monitoring, informing ICAO and auditing information on carbon dioxide emissions of air transport operators registered in these states

in relation to international flights [12]. It should be emphasized once again that within CORSIA, you need to pay for carbon dioxide emissions only if they exceed the base year, which restrains the increase in the volume of this type of international transportation, but is not a direct factor in their rise in price.

## 4 Conclusions

The most mature and developed is the European JTC system, which was introduced in 2005 and has already gone through three phases of its development and is preparing for the fourth (2021-2030). As the phases progressed, the number of participants expanded, which must buy GHG emission allowances on a mandatory basis and without concessions. At the moment, there are certain indulgences - a system of free distribution of quotas. It operates on the basis of a specified list of goods mainly from the manufacturing industry and does not apply to generating companies, which are required to buy quotas in full<sup>35</sup>. The exemptions apply to those enterprises that are not yet technologically ready to significantly reduce their level of GHG emissions. The approach is based on maintaining the competitiveness of EU producers in order to avoid the so-called “carbon leakage”, when EU production is transferred to the territory of countries where there is no such strict climate policy. At the same time, concessions are tied to a system of benchmarks, which are calculated based on the level of the best available technologies in the EU. In the fourth phase, the free distribution system will be extended by 10 years for goods, focusing on sectors most at risk of shifting production outside the EU (they will receive 100% of the allocation of quotas free of charge). For less vulnerable sectors, free distribution will be gradually reduced from a maximum of 30% after 2026 to 0% at the end of the fourth phase (2030). As part of the Green Deal presented in 2019, the EU is considering the introduction of cross-border carbon regulation on imports. The development of the TWP in the EU refers to the Paris Agreement, but, according to experts, it does not comply with certain WTO principles and the provisions of the UNFCCC, and does not take into account the socio-economic conditions of the EU partner countries. At the same time, the discussion of the legality of the introduced measures at the WTO level can last for years, as a result, the likelihood of the introduction and operation of the TTUR is quite high. The European Commission has developed a plan for financial assistance to bring the EU economy out of the crisis caused by the COVID-19 pandemic, and the introduction of TOUR is one of the expected income items (5-14 billion euros per year in 2021-2027). Moreover, it is possible to introduce measures symmetrical to the EU TOUR by the US and Asia-Pacific countries (in particular, China). The form of entry, the method of collection and the methodology for calculating such a “fee” are still unknown. As of January 2021, formal public consultations with all stakeholders are still underway, so there is no official information regarding all important parameters of the mechanism. TUR is expected to be introduced by the end of 2022<sup>38</sup> (most likely with a phased expansion to different product groups until the end of the 2020s), and the details of the mechanism will be known by the summer of 2021. In particular, questions are raised by: the form and size of the rate of such a “fee” (tax/duty or obligation to buy quotas for GHG emissions); the possibility of offsetting the “fee” in the carbon pricing systems of other countries (EU trading partners); the size and method of accounting for the “carbon footprint” of imported goods (direct GHG emissions only during the production of goods; accounting for the “carbon footprint” along the entire production chain; the possibility of accounting for GHG emissions only in excess of the benchmarks established in the EU and the possibility of obtaining free quotas along with EU producers for comparable groups of goods, the possibility of taking into account voluntary projects to reduce GHG emissions implemented in the territory of EU trading partners).

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