

Analysis of the Economic Dynamics of the Implementation of the Green Course in Russia

Ruslan Ilyasov ^a

Chechen State University, Grozny named after A.A. Kadyrova, Grozny, Russian Federation

Keywords: Economy, climate, global nature, green technologies, renewable energy, national conditions, climate change, economic and environmental priorities.

Abstract: Reducing net greenhouse gas emissions to zero even within 30 years by 2050 is a highly ambitious goal, especially for Russia, which has so far not taken active action in the field of combating climate change. This goal must be achieved through a fair, inclusive and gradual economic transformation that takes into account the interests of all and everyone. To avoid giving wrong market signals and creating new imbalances in the economy, the transition to a new development model should eliminate direct public spending to the maximum extent and should focus on stimulating private investment in green sectors of the economy, reallocating subsidies from the fossil fuel and nuclear energy sectors to benefit of renewable energy, as well as improving institutions and regulation.

1 INTRODUCTION


The key goal in the field of clean energy should be to provide at least 20% of electricity generation excluding large hydroelectric power plants and at least 10% in the transport and heating sectors, taking into account the electrification of these sectors through renewable energy and excluding traditional biomass by 2030 and the transition to 100 % RES in the entire energy sector by 2050. Also, for the period up to 2030, it is planned to reduce the energy intensity of Russian GDP by 40% compared to the level of 2007 (fulfillment of the goal that was set for the period up to 2020), for the period up to 2050 - a decrease in the energy intensity of Russian GDP to the world average level. In addition, by 2050 there should be no vehicles with internal combustion engines left in Russia. Each subject of the Russian Federation must develop and fulfill its regional goals for the share of renewable energy and energy efficiency (Babina, 2020).

With the large-scale development of renewable energy and related industries, special attention should be paid to the participation of civil society in this process and the creation of opportunities for the development of small and medium enterprises, local

initiatives and local economies of regions, cities and settlements. Clean energy should not become an oligopoly with a few big players and closed market entry. It also needs to eliminate support for false green technologies such as carbon capture and storage (CCS), large hydropower, and nuclear power, including controlled fusion. The replacement of coal with natural gas in electricity generation should not be seen as an intermediate step in the energy transition and decarbonization of the energy sector. To achieve these goals, the following measures must be taken (Lapaeva, 2019; Gakaev, 2019; Murtazova, 2021):

General measures to support the development of clean energy

- development and implementation of the phase-out of subsidies for fossil fuels and nuclear energy and the reorientation of subsidies to the renewable energy sector, as well as the development of international cooperation in the field of phase-out of subsidies for fossil fuels and nuclear energy;
- development and implementation of a phase-out of cross-subsidizing in the electric power industry;
- development and implementation of plans for the gradual abandonment of (1) the expansion

^a <https://orcid.org/0000-0001-7040-798X>

- of the geography of fossil fuel production (the introduction of a ban on the development of new deposits of coal, oil and gas),
- (2) extraction and (3) combustion of fossil fuels;
- development of strategies for a just energy transition for regions with coal mono-specialization, primarily for the Kemerovo region (Kuzbass), taking into account all economic, environmental and social aspects and the subsequent expansion of this practice to the regions of oil and natural gas production;
- development of a roadmap for the development of bioenergy based on waste from agriculture, forestry and public utilities;
- development of a roadmap for the development of green hydrogen energy and other Power-To-X technologies;
- Strengthening measures to control the use of fuel oil and diesel fuel, especially in the Arctic regions and places of traditional residence of indigenous peoples of the North, Siberia and the Far East.
- Improving Energy Efficiency
- introduction of apartment-by-apartment heat energy metering through the obligatory requirement to install apartment heat meters in all new buildings and their phased introduction in existing buildings, as well as the introduction of payment for consumed heat energy according to apartment heat meters;
- return of the requirement to conduct an energy audit at least once every five years for budgetary institutions and organizations consuming fuel and energy resources worth more than 10 million rubles. per year, as well as for organizations that carry out activities at the expense of budgets of various levels (the requirement of Article 16 of the Federal Law No. 261-FZ of November 23, 2009 "On Energy Saving and Energy Efficiency Improvement and on Amendments to Certain Legislative Acts of the Russian Federation", canceled in 2019);
- reduction of unreasonable consumption of electricity in cities through the restriction of illuminated advertising and the introduction of minimum lighting standards for establishments closed at night;
- development and implementation of a comprehensive program to reduce energy losses in heat and power networks, as well as water supply networks;
- popularization of energy savings among the population and corporations, as well as stimulation of the implementation of energy management standards in organizations, including the international standard ISO 50001. RES in the electricity sector (Gakaev, 2018):
- development of competition in the electricity sector (in particular, creation of opportunities for individuals to choose their electricity supplier);
- waiver of requirements for localization of production of equipment for RES, as well as waiver of introduction of requirements for the export of equipment for RES within the framework of the RES Capacity Supply Agreement (PSA) mechanism;
- transition to competitive selection of projects at the second stage of the implementation of the CSA RES support mechanism in 2025–2035. based on a one-part price that takes into account capital and operating costs, cost of capital and installed capacity utilization factor (ICU), and not only on the basis of capital costs, as is currently the case;
- granting a non-penalty deferment to RES CSA projects due to the COVID-19 factor (for investment projects with a planned start date for power supply in the period up to 12/31/2021, it is necessary to introduce a non-penalty deferral of facility commissioning for a period of up to 9 months, with a shift in the delivery deadline for RES CSA for the duration of the declared delay, but not more than 3 months from the initial end date of power supply under the contract);
- Rejection of the CSA mechanism for RES after 2035 and the rejection of other non-market mechanisms for the development of the electric power industry;
- providing the subjects of the Russian Federation with the opportunity to make independent decisions regarding the development of RES in the retail electricity market, not limited by the maximum volumes of compensation for losses of grid organizations due to electricity from RES at a level of no more than 5%;
- development of a comprehensive plan to equip all landfills with landfill gas collection facilities and ensure its use for energy purposes, as well as reducing the standard installed capacity utilization factor (ICUF) for landfill gas power plants from 65% to 50% (Vladimirov, 2019; Molchanova, 2019);

- development of a support system for local small-scale initiatives in the field of renewable energy (energy cooperatives, microgeneration projects, distributed networks with a high share of renewable energy) in the interests of local communities;
- taking measures to reduce and gradually stop the use of fuel oil and diesel fuel as an energy source in the places of residence of the indigenous peoples of the North, Siberia and the Far East and replace them with renewable energy sources;
- approval of minimum prices for the supply of surplus electricity to the grid in the microgeneration segment at a level not lower than the electricity tariffs for the population.

2 RESULTS AND DISCUSSIONS

The transition to a circular economy is a huge challenge even for many European countries that have been dealing with this problem for several decades (Egorova, 2020). The development of a circular economy requires the introduction of new business models based on less carbon-intensive materials and processes, as well as the transition from a linear consumption economy in favor of a more sustainable model that involves the long-term use of goods, the development of joint consumption (sharing), the elimination of unnecessary and dangerous for the environment of disposable goods and packaging (particularly plastic), waste reduction, waste recycling and the use of recycled materials. By 2050, carbon neutrality must be achieved in the industrial sectors that currently generate the most greenhouse gas emissions from industrial processes, at least in the production of iron and steel, as well as cement. In the world, some of the largest producers of these materials are already taking on such obligations on their own. So, on September 1, 2020, a group of 40 leading cement producers committed to switch to the production of carbon-neutral cement by 2050. The initiative was initiated by the Global Cement and Concrete Association (GCCA). Companies intend to achieve carbon neutrality by reducing (1) direct and (2) indirect emissions associated with the use of energy for cement production, (3) the introduction of carbon capture and storage technologies, (4) reducing the content of cement clinker in cement and cement in concrete, as well as more efficient use of concrete in the construction of buildings and infrastructure, (5) recycling of concrete contained in construction debris and demolition waste, (6) increasing the absorption of

carbon dioxide by concrete as a result of the recarbonization (absorption) process.

The EU is implementing the Green Steel for Europe project, aimed at developing a roadmap for the decarbonization of the European steel industry. Currently, the metallurgical industry lacks uniform standards and a clear definition of green metal. There is also a lack of actions aimed at reducing emissions directly from production processes, and not from energy sources, although several large foreign steel companies are already implementing projects to radically reduce emissions from production processes (for example, by using green hydrogen instead of natural gas to restore ores). In agriculture, the main ways to reduce greenhouse gas emissions can be (1) regenerative or regenerative farming practices, (2) waste reduction, and (3) composting. Regenerative agriculture involves minimizing soil disturbance and increasing soil carbon content (Meckling, 2020).

Examples of regeneration methods include the use of organic fertilizers, crop rotation, reduced tillage, growing more varieties crops to promote agrobiodiversity. Reducing the amount of food waste can be achieved through the development of food sharing and discounts on products with an expiration date. Carbon sequestration through improved agricultural practices has huge potential to reduce greenhouse gas emissions. Indigo Ag estimates that if the organic matter content of all the world's agricultural land is increased from today's 1% to pre-industrial levels of about 3%, 1 trillion tons of carbon would be sequestered, the equivalent of all industrial emissions since the industrial revolution. Soil carbon content can be increased through a variety of so-called carbon farming practices. No other sector of the economy has such a potential to absorb carbon from the atmosphere. Russia's key goals in the area of the circular economy should be: transition to carbon-neutral production of metals and concrete, as well as carbon-neutral agriculture by 2050, reducing greenhouse gas emissions from per capita food consumption to a level consistent with preventing an increase in the global average temperatures by more than 1.5°C by 2050, including a 50% reduction in the production and consumption of animal products by 2050, transition of at least 40% of the population to sustainable diets by 2030 and 75% of the population by 2050, reduction of municipal solid waste generation per inhabitant by 30% by 2030 and by 60% by 2050 compared to 2020, as well as achieving a recycling rate of at least 80% of generated waste by 2050 and taking steps to develop modern, low-waste business models that do not encourage excess

consumption. To achieve these goals, the following actions should be taken (Reynard, 2020).

General Measures for the Development of the Circular Economy in Russia (Egorova, 2020):

- introduction of a carbon price (carbon tax);
- integration of the principles of the circular economy into all key strategic documents of the country, including all strategies, road maps, programs for the development of industries, etc.;
- development and inclusion of clear quantitative requirements for greenhouse gas emissions and compliance with the principles of the circular economy in the requirements for public procurement;
- promoting remote work as the new norm for office workers during and after the end of the COVID-19 pandemic, including the possibility of remote work from other localities;
- development and adoption of a framework document for the implementation of the circular economy on the territory of the Russian Federation according to the principles of "zero waste", with prioritization of the stage of conservation of primary resources and minimization of waste production, including in the field of production and consumption waste management by fractions, electronic, food waste, textiles, as well as hazardous, medical and biological waste;
- introduction of positive economic incentives and regulatory support for the principles of waste prevention, maximum use of raw materials and materials, reuse, maintainability and product life extension, legislative restrictions and negative economic incentives for the circulation of disposable goods;
- development of fiscal measures and measures of positive economic incentives, other measures to prioritize the use of products and materials intended for reuse with the exclusion of the stage of material utilization, as well as products and goods from secondary raw materials;
- development of a public education system, including federal channels and the media, on the principles of "zero waste" and popularization of a green lifestyle among the population;
- assistance in the implementation of initiatives for the reuse of goods and the dissemination of cooperation in this area;
- formulation and implementation of priorities according to the principles of "zero waste" in

the implementation of public procurement and activities;

- implementation of fiscal policy based on the principle "the polluter and the waste producer pays for the amount of waste generated" and the introduction of a "pay what you pollute" scheme, which charges waste producers based on the actual amount of waste generated and provides incentives to reduce the volume of waste, both mixed and segregated at source;
- development of a framework document for the implementation in the territory
- Russian standards for the life of goods and their maintainability in order to prevent the implementation of planned aging at the stage of production of goods and to maximize the life of goods;
- development of measures to improve the resource efficiency of manufactured products, especially in construction, automotive and electronics, which can be used as mandatory product standards;
- introduction of the obligation of manufacturers of goods and equipment to cover 100% of the costs of processing and reusing materials (Reynard, 2020).

3 CONCLUSIONS

Forest loss and climate change are interdependent processes. The restoration and protection of forests and swamps, the development of sustainable forestry and the use of abandoned agricultural land are the most important tasks that Russia needs to solve in the next decade. A key qualitative achievement should be the transition from the development of the remaining wild forests to intensive forestry on previously developed lands and plantation forestry. Up to 300 million m³ of wood per year should be grown on 50 million hectares of agricultural land that has been retired from use in Russia, which will create up to 100,000 jobs. In the world, there is an intensive involvement of land that is being retired from agricultural use, limited or unsuitable for modern agriculture, in forestry (from protective afforestation and classical forestry to plantation forestry) or agroforestry (growing forests on agricultural land with the dual purpose of obtaining forest products and forming more favorable conditions for growing crops). Large pulp and paper enterprises built in the world in the 21st century, as well as most large woodworking enterprises, are oriented towards the

provision of raw materials through forest plantations or through highly developed intensive forestry. Similar changes are needed in Russia. Particular attention should be paid to ensuring the fire safety of forests. It is necessary to reduce the areas of "control zones" of forest fires, where non-extinguishing is allowed, from about half to about a quarter of the area of forest land. To ensure the full protection of forests and effective extinguishing of forest fires, the total amount of funding for the powers transferred to the constituent entities of the Russian Federation in the field of forestry should be tripled, up to 90 billion rubles a year in the prices of early 2020.

There are several principles of the cyclical economy in metallurgy (Egorova, 2020):

- development of a roadmap for the decarbonization of the metallurgical industry;
- development of a system of government grants for research and commercialization of new technologies in the production of metals with low greenhouse gas emissions;
- development of a definition and methodology for assessing carbon-neutral metals;
- provision of tax incentives and preferential loans to producers and consumers of carbon-neutral metals;
- Encouraging the use of arc steel-smelting furnaces using electricity from renewable energy sources and green hydrogen, with a gradual phase out of blast furnaces and converter furnaces, which are mainly fueled by metallurgical coal (Molchanova, 2019).

And also we can distinguish the following principles of the cyclical economy in the production of cement and concrete:

- development of a roadmap for the decarbonization of cement and concrete production;
- development of a system of state grants for scientific research and commercialization of new technologies in the production of low-carbon and carbon-negative concrete;
- development of a definition and methodology for assessing carbon neutral cement and concrete, as well as carbon negative concrete;
- provision of tax incentives and preferential loans to producers and consumers of carbon-neutral cement and concrete;
- encouragement to reduce the content of clinker in cement and cement in concrete;
- promotion of the use of waste from other sectors of the industry in the composition of cement;

- encouragement of long-term operation of buildings, close to the normative service life, to prevent premature demolition of buildings.

Implementation of the principles of the circular economy in agriculture (Reynard, 2020):

- development of a roadmap for the decarbonization of agriculture, including the potential for soil carbon storage and the use of animal waste for energy and fertilizer production;
- development and adoption of a law on carbon agriculture, aimed at stimulating the development of climate-friendly agricultural practices, sequestration and storage of carbon in the soil (reduction of tillage, preservation of crop residues and cover on the soil surface, the use of crop rotation);
- Introducing a ban on keeping animal waste in lagoons, with the ensuing obligation of farms to send animal waste for processing into biofuels and fertilizers;
- creation of a system of concessional lending and tax incentives
- for farms that apply regenerative and organic farming methods;
- implementation of a free training program for farmers in regenerative and organic farming methods;
- Development of a support system for local small-scale initiatives in the field of organic, regenerative and carbon agriculture (farms, cooperatives) for the benefit of local communities and the reorientation of the agricultural industry from the production of food in large quantities to the production of food suitable for the transition to sustainable diets.

REFERENCES

- Babina, S. I., 2020. *Digital and information technologies in enterprise management: reality and a look into the future*. p. 89.
- Lapaeva, M. G., 2019. *Region as a spatial socio-economic system of the state*. p. 138.
- Gakaev, R. A., 2019. *Mountain meadow landscapes of the Chechen Republic and features of their distribution*. pp. 108-121.
- Murtazova, K. M.-S., 2021. *Ecological and economic assessment of sectoral agricultural technologies*. 3(15), pp. 68-71.
- Gakaev, R. A., Bayrakov, I. A., Bagasheva, M. I., 2018. *Ecological foundations of the optimal structure of forest landscapes in the Chechen Republic*. In the

- collection: Environmental problems. Looking into the future.* pp. 50-52.
- Vladimirov, A. M., Imanov, F. A., 2019. *Principles for assessing the ecological flow of rivers.* pp. 225-229.
- Molchanova, Ya. P., 2019. *Hydrochemical indicators of the state of the environment.* p. 192.
- Egorova, N. I., Mityakova, O. I., 2020. *Environmental Innovation and Sustainable Development.* pp. 209-215.
- Meckling, J., Hughes, L., 2020. Protecting Solar: Global Supply Chains and Business Power. *New Political Economy.* pp. 88–104.
- Reynard, E., Panizza, M., 2020. Geomorphosites: definition, assessment, and mapping. *Geomorphol Relief.* pp. 82-105.

