STRATEGY

of socio-economic development of the Russian Federation with low greenhouse gas emissions until 2050

I. Analysis of the international context

1. Climate agenda

According to the Intergovernmental Panel on Climate Change, since the 1970s, the world has been experiencing a global change in climate conditions, which manifests itself in an increase in temperature and is associated with an increase in the concentration of greenhouse gases in the atmosphere. As of 2020, the global mean surface air temperature is 1.1 degrees Celsius above the pre-industrial levels of 1850-1900.

Climate change currently observed and expected in the future is associated with widespread and irreversible consequences for anthropogenic and natural systems, and also carries security and sustainable development risks. To minimize these risks, it is necessary to adapt the spheres of public administration, economic sectors and regional infrastructure to changing climatic conditions.

The international community recognizes that Earth's climate change and its adverse effects are a matter of common concern to mankind. As a result of anthropogenic activity, there was a significant increase in the concentration of greenhouse gases in the atmosphere, which increased the natural greenhouse effect, which led to additional warming of the Earth's surface and atmosphere and an adverse impact on ecosystems and humanity.

To stabilize the concentration of greenhouse gases in the atmosphere at a level that would prevent dangerous anthropogenic impact on the climate system, the United Nations Framework Convention on Climate Change was adopted (concluded in New York on May 9, 1992) (hereinafter referred to as the Framework convention), which is currently the legal basis for international cooperation on climate change issues.

In development of the Framework Convention, on December 11, 1997, the Kyoto Protocol to the Framework Convention was adopted in Kyoto, obliging the parties to the Kyoto Protocol, which are included in Annex B to this Protocol, to limit or reduce

greenhouse gas emissions in the first commitment period from 2008 to 2012 , and for the parties to the Doha Amendment to the Kyoto Protocol - in the second period, from 2013 to 2020. Quantitative obligations of the participating states to limit or reduce greenhouse gas emissions were determined, as a rule, relative to the base year 1990.

In order to intensify international efforts to achieve the ultimate goal of the Framework Convention after 2020, the Conference of the Parties to the Framework Convention on December 12, 2015 adopted the Paris Climate Agreement (hereinafter referred to as the Paris Agreement). The Paris Agreement sets a long-term temperature target to keep global average temperature increases well below 2 degrees Celsius above pre-industrial levels and to make efforts to limit temperature increases to 1.5 degrees Celsius, recognizing that this will significantly reduce the risks and impacts of climate change.

The Russian Federation is a party to the Framework Convention (Federal Law "On the Ratification of the UN Framework Convention on Climate Change"), the Kyoto Protocol (Federal Law "On the Ratification of the Kyoto Protocol to the United Nations Framework Convention on Climate Change") and the Paris Agreement (Decree of the Government of the Russian Federation dated September 21, 2019 No. 1228 "On the adoption of the Paris Agreement").

In accordance with Annex I to the Framework Convention, the Russian Federation is included among the countries in which the process of transition to a market economy is taking place. For such countries, the provision of financial and other assistance to developing countries is voluntary. The Russian Federation participated in the implementation of the first period of the Kyoto Protocol, within which it exceeded its obligations to limit anthropogenic emissions of greenhouse gases.

The Paris Agreement does not contain quantitative targets to reduce or limit greenhouse gas emissions. At the same time, countries participating in the Paris Agreement report on their nationally determined contribution to the implementation of the Paris Agreement, which may contain such goals. To achieve the goals of the Paris Agreement, the Russian Federation announced in 2020 its first nationally determined contribution to the implementation of the Paris Agreement and published the first message on adaptation to climate change (posted on the official website of the Framework Convention).

The rate of climate warming on the territory of the Russian Federation is higher than the world average, which is due to the peculiarities of the geographical location and

climate. Average annual temperatures are rising in all physical and geographical regions and federal districts. The highest rate of increase in the average annual temperature is observed on the coast of the Arctic Ocean.

The impact of climate change is complex and creates significant risks, primarily for the population, national infrastructure and climate-dependent sectors of the economy. The most significant include risks of extreme weather events (for example, large-scale floods or droughts), risks of combined adverse impacts (for example, high temperature and high levels of air pollution), and risks of degradation of various ecosystems as a result of changes in thermal and humidity regimes (for example, degradation of permafrost and mountain glaciation, accelerated aging of buildings).

Due to the large territory and the diversity of natural and climatic conditions, climate change also creates new opportunities for the Russian Federation, including such as an increase in the navigation period in the water area of the Northern Sea Route, a reduction in the duration of the heating period, an increase in crop productivity and the absorptive capacity of managed ecosystems.

To implement international climate agreements at the supranational, national and subnational levels, various policy measures are used that stimulate, among other things, the technological transition of the world energy sector from generation based on hydrocarbon raw materials and other types of fuel to carbon-free energy resources and energy resources with low greenhouse gas emissions (hereinafter referred to as global energy transition). The global energy transition forms new trends for the sustainable development of the world energy and economy and defines new challenges for countries exporting hydrocarbon raw materials associated with a decrease in demand for this raw material. At the same time, the activation of the climate agenda creates prerequisites for the emergence of new markets in the global economy.

2. Trends in climate regulation

The emergence in a number of jurisdictions of carbon regulation systems is a significant factor in determining competitiveness in the markets for carbon-intensive products. The potential extension of this regulation to international trade could violate the law of the World Trade Organization and the Framework Convention.

According to the United Nations Environment Programme, from 2008 to 2018, the mass of anthropogenic greenhouse gas emissions in the world increased by 1.5 percent annually and in 2018 reached 55 billion tons of carbon dioxide equivalent. At the same time, about 80 percent of emissions are accounted for by the G20 countries. Compared with 1990, the mass of global greenhouse gas emissions has increased by 40-50 percent. The main contribution to the increase in greenhouse gas emissions is made by developing countries, whose emissions compared to 1990 have increased by 2-4 times.

The most significant contributors to global anthropogenic greenhouse gas emissions are the People's Republic of China, the United States of America, the European Union, India, the Russian Federation, Japan, Brazil and Indonesia. The contribution of each of the other issuers does not exceed 2 percent of global emissions, but in total they account for 43 percent of global emissions. In terms of cumulative growth in annual greenhouse gas emissions relative to 1990 levels, the People's Republic of China, India, the United States of America and Canada are leading, in terms of reduction - the Russian Federation, the European Union and the United Kingdom. The cumulative reduction in annual greenhouse gas emissions by individual states and supranational associations on a planetary scale largely offset the growth in greenhouse gas emissions in developing countries and a number of developed countries, which made it possible to slow down the pace of global warming. As a national contribution to the global response to the threat of climate change, countries declare targets for limiting greenhouse gas emissions. At the same time, more than 60 countries have declared the goal of achieving a balance between anthropogenic emissions of greenhouse gases and their absorption (hereinafter referred to as "carbon neutrality") by 2050 - 2060 and earlier (Great Britain, member states of the European Union, United States of America, People's Republic of China, Japan, etc.).

An increasing number of multinational corporations are participating in various initiatives aimed at reducing greenhouse gas emissions, increasing renewable energy consumption, improving energy efficiency and promoting sustainable development. A number of large corporations have adopted their own low greenhouse gas development strategies that set out ambitious plans to achieve carbon neutrality by 2050 and earlier.

The United Nations Human Settlements Program (UN Habitat) estimates that up to 70 percent of global anthropogenic greenhouse gas emissions come from cities. In this regard, a number of cities are implementing their own climate strategies and plans, including, among other things, the desire to achieve "carbon neutrality". More than 100

cities have announced their intention to achieve "carbon neutrality" by 2050, some cities plan to achieve "carbon neutrality" by 2025-2040 (Stockholm, Helsinki, Copenhagen and others). There are also climate initiatives in which Russian cities participate (for example, the cities of Moscow and Rostov-on-Don participate in the Global Covenant of Mayors on Climate and Energy).

The World Bank estimates that as of April 1, 2021, about 21 percent of global greenhouse gas emissions are covered by special regulations. The main forms of regulation are greenhouse gas emission quotas and systems of carbon taxes and fees, in some countries there are also mixed forms of regulation at the national and regional levels.

Various bans on the sale (use) of carbon-intensive products are planned to protect national markets. Thus, some countries have announced plans to introduce technical standards that limit the level of greenhouse gas emissions for cars, which may lead to a reduction in the use of internal combustion engines (Norway, Denmark, Great Britain, Spain, France, China, Germany). One form of national regulation is also the labeling of products in accordance with national criteria for environmental and energy efficiency (including carbon footprint labeling). Product labeling can help promote products with a low carbon footprint, as well as systematize information about the carbon footprint of products in the national market.

Supranational measures to regulate or curb the growth of greenhouse gas emissions are also taken under the mandate of international organizations and supranational associations. Thus, air transportation has been included in the European Emissions Trading System since 2012. The International Civil Aviation Organization has adopted and is implementing a carbon offset and reduction system for international aviation. Within the framework of the International Maritime Organization, greenhouse gas emission standards have been established for ships and a database is being developed on greenhouse gas emissions from international maritime transport.

Within the framework of the Organization for Economic Cooperation and Development (hereinafter referred to as the OECD) and other international platforms, various initiatives are being considered to create multilateral mechanisms for climate regulation. Since 2021 the Russian Federation has been participating in the OECD International Climate Action Programme.

The European Union's Green Deal envisages the emergence of a frontier carbon correction mechanism for imports of carbon-intensive products, which would impose an additional levy on goods depending on the amount of specific greenhouse gas emissions during their production. It is planned to expand the European Emissions Trading System to new sectors, as well as to phase out free greenhouse gas emissions permits for aviation.

Aligning financial flows with a trajectory towards low-emission, climate-resilient development is one of the 3 global goals of the Paris Agreement. In this regard, sustainable financing mechanisms, including "green" financing, which are oriented towards the principles of environmental, social and managerial responsibility, are becoming more widespread.

Over the past 8 years, the total assets of investors in the world, taking into account the principles of environmental, social and managerial responsibility, has increased 3 times and reached 40 trillion US dollars. The growth rate of green bond funds over the past 3 years has averaged 50 percent per year. By the end of 2020, the total global market for these bonds alone reached 1 trillion US dollars.

Considering the international significance of the climate agenda, the need to ensure energy transition, reduce greenhouse gas emissions, as well as the wide coverage of global climate policy, which creates additional risks for the Russian economy, it is of paramount importance to create incentives and conditions for reorienting capital flows to finance sustainable environmental and social and economic development of the country, as well as the adaptation of financial market participants to new types of risks in the transition to an economy of sustainable development, including an economy with low greenhouse gas emissions.

It is necessary to ensure compliance with international standards of Russian approaches to the identification and verification of sustainable, including "green" projects. An important role in carbon-intensive production sectors is given to the taxonomy of transition projects, which is focused on projects with a high environmental impact. Having our own system of criteria and verification of sustainable and transitional "green" projects will significantly expand the circle of potential investors of such projects and provide access to cheaper financing, as well as avoid the risks of misclassifying products as "green" and make the market for new financial instruments as transparent as possible.

Within the framework of sustainable development, an important direction is to take into account environmental, social and management factors in business strategies and risk management of financial organizations. The implementation of a soft policy to stimulate the financial sector to the size of the minimum share of "green" financial instruments in investment portfolios will allow building a high-quality risk management system at all levels of the economy and ensure the stability of the financial system, taking into account climate risks.

3. Technological development

The sustainable development of world energy is considered on the international agenda in the context of the transition to technologies that use the energy of the sun, wind, water energy (including wastewater energy), biomass, biogas, geothermal energy (hereinafter referred to as renewable energy sources), as well as the development of nuclear and hydrogen energy technologies.

Currently, the global demand for hydrogen is estimated at 116 million tons per year (pure hydrogen accounts for 74 million tons per year, 42 million tons of hydrogen is used in a mixture with other gases as a raw material or fuel in the production of heat and electricity) . Taking into account the need for hydrogen in the implementation of national programs for the development of hydrogen energy in Europe, the Asia-Pacific region and the United States of America, additional global demand for hydrogen may reach 40 - 170 million tons per year by 2050, depending on the pace of global decarbonization and state support mechanisms.

The energy sector is also developing cleaner technologies based on natural gas, using hydrogen and a methane-hydrogen mixture, which will significantly improve the energy efficiency of fuel and reduce greenhouse gas emissions. The development of energy production technologies based on the steam-gas cycle and thermonuclear fusion continues.

In connection with the development of the latest industrial technologies and as the parameters of their energy efficiency approach the thermodynamic maximum, increasing the efficiency of the use of materials and increasing the share of their reuse are becoming increasingly important.

Technologies for the disposal of production and consumption waste are also being developed. Thus, technologies are currently being developed that help reduce the use

of hydrocarbon raw materials in the production cycle and the overall reduction in waste generation, as well as the involvement of biodegradable materials in the production.

Another way to enter the path of development with a low level of greenhouse gas emissions is the development of technologies for capturing, processing, using and (or) storing carbon dioxide, emissions of which are formed in the processes of industrial and energy production. At the same time, the development of these technologies requires additional incentive measures on the part of states and development institutions.

A significant contribution to the reduction of direct greenhouse gas emissions from fuel combustion is being made by the observed and increasingly scalable electrification of transport. In 2019 2.3 million electric vehicles were sold worldwide (more than 65 percent of sales are in the People's Republic of China and the European Union market). It is estimated that by 2030 the share of electric vehicles in the European market will be 57 percent of vehicle sales, and by 2050 more than 95 percent.

4. Prerequisites for development and the subject of the Strategy

The Strategy for the Socio-Economic Development of the Russian Federation with Low Greenhouse Gas Emissions until 2050 (hereinafter referred to as the Strategy) was prepared in pursuance of Decree of the President of the Russian Federation of November 4, 2020 No. 666 "On the reduction of greenhouse gas emissions" and in order to implement Article 4 of the Paris agreement dated December 12, 2015, signed on behalf of the Russian Federation in New York on April 22, 2016 and adopted by Decree of the Government of the Russian Federation dated September 21, 2019 No. 1228 "On the adoption of the Paris Agreement".

The legal basis of the Strategy is the Constitution of the Russian Federation, federal constitutional laws, federal laws, as well as legal acts of the President of the Russian Federation and the Government of the Russian Federation. The strategy was developed in accordance with Article 19 of the Federal Law "On Strategic Planning in the Russian Federation" and takes into account the provisions of strategic planning documents developed at the federal level.

The Strategy defines measures to ensure by 2030 the reduction of greenhouse gas emissions to 70 percent compared to the level of 1990, taking into account the

maximum possible absorption capacity of forests and other ecosystems and subject to sustainable and balanced socio-economic development of the Russian Federation, and also determines the directions and measures for development with low greenhouse gas emissions by 2050.

The priority of the Strategy is to fulfill the task set in the Message of the President of the Russian Federation to the Federal Assembly of the Russian Federation dated April 21, 2021 to reduce the accumulated volume of net greenhouse gas emissions in the Russian Federation to lower levels compared to the European Union indicators in the period from 2021 to 2050 , which will help keep global average temperature increases well below 2 degrees Celsius above pre-industrial levels and make efforts to limit temperature rise to 1.5 degrees Celsius.

The strategy refers to the strategic planning documents of the Russian Federation, is intersectoral and serves as the basis for the inclusion of state policy measures in the field of limiting greenhouse gas emissions in other strategic planning documents of the Russian Federation, strategies for the socio-economic development of the constituent entities of the Russian Federation, state programs of the Russian Federation, state programs of the constituent entities Russian Federation, planning and program-target documents of state corporations, state companies and public companies with state participation. The provisions of the Strategy determine the content of the adaptation of the Russian economy to the global energy transition and the goal-setting of the relevant sectoral and regional adaptation plans.

The strategy covers sectors of the economy and areas of public administration that are sources of anthropogenic greenhouse gas emissions and their sinks, and provides for two scenarios for the socio-economic development of the Russian Federation - inertial and target (intensive), which differ in the level of technological development, structural changes (shifts) in the economy, absorbing capacity of natural absorbers and accumulators of greenhouse gases and other effects.

In the future, until 2030, a slowdown in global economic growth is expected. It will be driven by trends that have emerged in recent years, including an increase in the debt burden in developed and developing countries, a slowdown in the growth of world trade and the growth of global protectionism. In the long term, until 2050, global economic growth is projected to further slow down to 2-2.5 percent as the potential for

catch-up development of the largest emerging markets is exhausted, while their share in the global economy grows.

The target for the Russian economy until 2030, as a result of the implementation of structural measures of state policy aimed at achieving national development goals, is to achieve sustainable growth above the world average (i.e. at least 3 percent) while maintaining macroeconomic stability. The differences in development scenarios lie in different approaches to adapting the Russian economy to the global energy transition.

The inertial scenario provides for the implementation of decisions already made to achieve national goals and objectives of sectoral strategic planning documents. Additional measures, the direct or indirect result of which is the reduction of greenhouse gas emissions, are not considered in this scenario.

In turn, the target (intensive) scenario provides for additional measures to decarbonize sectors of the economy and increase the absorbing capacity of managed ecosystems. This scenario considers the global energy transition as one of the factors ensuring the competitiveness of the Russian economy on a global scale.

II. Inertial scenario

1. General description of the scenario

The inertial scenario assumes the preservation of the current economic model, including the preservation of the balance structure for energy generation and consumption.

In the inertial scenario, net greenhouse gas emissions from the current level of 1584 million tons of carbon dioxide equivalent increase by 8 percent by 2030 (to 1718 million tons of carbon dioxide equivalent) and by 25 percent by 2050 (to 1986 million tons of carbon dioxide equivalent). Such dynamics of net emissions will be possible provided that the current level of absorption capacity (not less than 535 million tons of carbon dioxide equivalent) is maintained.

The level of net greenhouse gas emissions in the inertial scenario by 2050 is higher than similar indicators in the European Union, thus not meeting the task set in the address of the President of the Russian Federation to the Federal Assembly of the Russian Federation dated April 21, 2021.

The carbon intensity of the gross domestic product on the horizon of the Strategy is reduced by 1.5 times and by 2050 will be higher than the world average.

The inertial scenario does not allow achieving "carbon neutrality" on the planning horizon.

2. Technological development

The technological development of the inertial scenario is based on the organic re-equipment of fixed assets - the planned replacement and modernization of obsolete equipment, the gradual decommissioning and replacement of worn out non-energy efficient housing stock.

The Russian Federation has experience with most of the existing low greenhouse gas emission technologies. Thus, the Russian Federation is among the leaders in the development of nuclear energy, the scale of the use of district heating, the role of rail transport in the structure of cargo transportation.

The scenario provides for the use of technologies with low greenhouse gas emissions, characterized by maximum economic efficiency and export potential: renewable and hydrogen energy, waste paper and construction waste, fuel efficiency of cars, intelligent resource consumption metering and "smart energy consumption" in housing and communal services.

As one of the mechanisms of technological development in the inertial scenario, the transition to the best available technologies is considered. At the same time, information and technical reference books on the best available technologies are updated at least once every 10 years in accordance with the legislation of the Russian Federation.

In 2020-2024 it is planned to establish indicators of resource and energy efficiency in the updated information and technical reference books on the best available technologies. The establishment of indicators for greenhouse gas emissions and their further enforcement is not provided for by regulatory legal acts of the Russian Federation.

The transition to the best available technologies in the fuel and energy complex will stimulate the replacement of obsolete coal-fired thermal power plants with more efficient power units using natural gas and renewable energy, as well as

reducing fuel leakage during its extraction, use and transportation. It is also expected to apply technologies that reduce greenhouse gas emissions in the field of coal generation.

At the facilities of the chemical industry and metallurgy, technological development will be determined by the introduction of energy and resource-saving technologies, the systematic modernization of outdated equipment.

3. Structural shifts

The inertial development of the economy in the absence of incentives to move to a growth path with low greenhouse gas emissions is accompanied by a slowdown in economic growth.

In the inertial scenario, the share of traditional sectors of the economy (mining, agriculture, low- and medium-tech industry in the structure of gross domestic product) will decrease by 4.9 percentage points by 2050 compared to 2020, mainly due to a decrease in mining.

At the same time, sectors of the post-industrial economy (high-tech industry, information technology and communications, research and development, etc.), which are characterized by less resource and energy intensity, are growing at a rate that outpaces the growth of gross domestic product as a whole, as a result, their share in the structure of gross domestic product will increase by 6.8 percentage points in 2050 compared to 2020. The share of other sectors of the economy (electricity and water supply, construction and transport, public administration, etc.) remains fairly stable over the forecast horizon in the inertial scenario.

Thus, in the inertial scenario, the scale of structural changes in the economy does not create tangible additional effects in the form of a reduction in the growth rate of emissions by 2050. Emission growth potential in the emerging structure will be up to 862 million tons of carbon dioxide equivalent.

4. Absorption capacity

In the inertial scenario, the current dynamics of greenhouse gas absorption by managed ecosystems is preserved. To maintain the current level of uptake in managed ecosystems, the following measures will need to be scaled up:

preservation of existing trends in the development of the forest complex and existing forest management practices through the predominant development of naturally formed forests with incomplete use of resources;

increasing the effectiveness of fire safety measures in forests and extinguishing fires, preventing the occurrence and spread of forest fires;

reforestation and afforestation, improvement of sanitary safety measures in forests and elimination of pest outbreaks;

watering previously drained swamps, ensuring their fire safety, managing the water balance of swamps;

anti-erosion and field protection measures, the use of conservation plowing technologies, ensuring the fire safety of agricultural landscapes, rational use of water resources.

5. Reducing the energy intensity of the Russian economy

As part of the inertial scenario for the implementation of the Strategy, a slow decrease in the energy intensity of the Russian economy will be observed due to measures of state regulation of the policy in the field of energy conservation and energy efficiency. The ongoing projects and activities to save energy and improve energy efficiency in the Russian Federation will contribute to reducing greenhouse gas emissions at the 2019 level.

At the same time, the ongoing state regulation of energy conservation and energy efficiency improvement leaves a number of unsolved problems. More than half of apartment buildings in the Russian Federation are energy inefficient and use twice as much energy as their modern counterparts. High energy efficiency classes (A, B and C) have no more than 30 percent of annually commissioned apartment buildings. A similar state is typical for public and administrative buildings.

The inertial scenario does not provide for incentive measures to reduce the energy intensity and carbon intensity of the economy of the Russian Federation.

6. Effects from the implementation of the inertial scenario

Under the conditions of the energy transition in the inertial scenario, a drop in energy exports is expected starting from 2030 (on average for 2031-2050 - 2.8

percent in real terms), which is not offset by the expansion of non-energy exports. Taking into account the growth of imports, the dynamics of net exports will have the main restraining effect on the gross domestic product: the average annual growth rate in 2031-2050 will be 1.5 percent, and by the end of the forecast horizon it will drop to a level of about 1 percent.

Under these conditions, the growth rate of domestic demand is also at a low level: real disposable money income of the population is growing at an average rate of 1.2 percent per year, investment in fixed assets - at a rate of 1.9 percent per year.

Measures to limit greenhouse gas emissions contained in the inertial scenario do not fully create incentives for companies to switch to low-carbon technologies: there are no mechanisms to stimulate such activities on the part of the state and institutional investors, including mechanisms to bring financial flows in line with the trajectory towards development, characterized by low emissions and resilience to climate change.

The inertial scenario does not respond to the challenges of declining global demand for hydrocarbons and carbon-intensive goods.

Thus, the trajectory of economic development under the inertial scenario is associated with the following significant risks:

a decrease in budget revenues as a result of a reduction in energy exports;

loss of share in world gross domestic product, lagging behind in technological development;

exhaustion of the possibilities of the export-raw material development model;

backlog in the development and implementation of promising technologies (including the development of "green" technologies) in the field of energy saving and reducing material consumption;

deterioration in the conditions for attracting debt financing, a decrease in the volume of investments, an outflow of capital;

potential risks of outflow of human capital;

deterioration in employment rates;

slow growth in disposable income.

In view of the above, the inertial scenario is not considered as the main one. In order to fulfill the task set in the address of the President of the Russian Federation to the Federal Assembly of the Russian Federation dated April 21, 2021, and to minimize these risks, it is proposed to consider the target (intensive) scenario as the main one.

III. Target (intensive) scenario

1. General description of the scenario

The key task of the target (intensive) scenario is to ensure the global competitiveness and sustainable economic growth of the Russian Federation in the context of the global energy transition.

The target (intensive) scenario ensures mutual alignment of the goals of the international climate agenda to reduce greenhouse gas emissions, the country's economic opportunities to switch to technologies with low greenhouse gas emissions and ensuring national interests of socio-economic development. The main parameters of infrastructure renewal until 2024-2026 laid down in the Strategy have already been determined and included in state programs and national projects. The additional emission reduction measures envisaged by the target (intensive) scenario were selected based on the principle of return on investment in them.

The target (intensive) scenario considers policy measures in the field of technical regulation, financial and tax policies aimed at reducing anthropogenic greenhouse gas emissions as an additional driver of technological renewal of the economy. When choosing these measures (for example, carbon pricing, a quota system for greenhouse gas emissions, the introduction of regulatory requirements for the mandatory use and promotion of technologies with low greenhouse gas emissions and high energy and resource efficiency, adjustments to the mineral extraction tax and other taxes, and fees, etc.) in relation to the most inefficient carbon-intensive sectors of the economy, an assessment of the socio-economic consequences of their implementation, as well as the results of experiments to limit greenhouse gas emissions in individual regions of the Russian Federation, will be taken into account.

The implementation of regional experiments to establish carbon regulation will make it possible to determine the effectiveness of greenhouse gas emission quota mechanisms.

Additional opportunities are associated with the implementation of "green" projects. If such projects meet the criteria set at the national level for their implementation, it will be possible to attract financing through special bonds and loans. The introduction of standards for the system of validation and verification of climate projects and verification of carbon reporting is also provided for by the target (intensive) scenario.

Another tool for regulating greenhouse gas emissions, the introduction of which is significant for the implementation of the target (intensive) scenario, are energy origin certificates based on the fact of electricity production at carbon-free generating facilities and generating facilities with low greenhouse gas emissions, which certify rights based on positive environmental and social effects created during generation: reduction of emissions and reduction of waste, reduction of harm to the environment and human health.

The development of a public non-financial reporting system is an effective mechanism for ensuring the information transparency of a company, which increases its credibility and attracts large investors, and also serves as a condition for listing on stock exchanges around the world. Public non-financial reporting is developed taking into account the key characteristics of assessing the sustainability of companies' activities in the context of climate, social and management risks. A fair assessment of risks, as well as disclosure of the material component of the risk and the consequences that have occurred, are essential to ensure integrated sustainability.

The target (intensive) scenario has been developed based on the assumption that the following agreements will be reached between the member countries of the Paris Agreement:

the ability of each country to independently determine the trajectory of reductions and the national contribution to the collective goal;

technological neutrality of measures (non-discrimination of the results of reductions and takeovers, including from projects in the nuclear and hydropower industries);

mutual recognition of the need to improve assessments of the absorptive capacity of managed ecosystems;

ensuring compliance with international standards of Russian climate regulation, including taxonomy, certificates of origin of electric energy and a system for verifying the results of "green" projects;

the basis for increasing the ambitions of nationally determined contributions to the implementation of the Paris Agreement is the development of a global green finance system that promotes the implementation of green projects and investments in low greenhouse gas emission development and climate change adaptation (this direction should be removed from sanctions);

the mechanisms of Article 6 of the Paris Agreement provide universal rules for the issuance and compliance with international standards of carbon credits from voluntary climate projects and other greenhouse gas emission reduction units. The emergence of such non-discriminatory conditions will allow the implementation of the most effective climate projects, as well as provide support for sustainable demand for carbon credits.

2. Technological development

The target (intensive) scenario takes into account the risks and opportunities posed by the global energy transition and focuses on taking into account technological trends with low greenhouse gas emissions to decarbonize the economy and ensure economic growth.

To stimulate technological development, a regulatory legal framework is being developed to achieve target indicators of greenhouse gas emissions in various sectors of the economy, taking into account the harmonization of these indicators with international counterparts.

Technologies are being applied that reduce the carbon footprint of existing coal-fired generation. There is an active digitalization and electrification of economic sectors. Hydrogen technologies are being introduced in metallurgy and the

chemical industry. Combined cycle generation, nuclear power plants, hydroelectric power plants and renewable energy sources are being developed, the potential for reducing greenhouse gas emissions in coal-fired energy is being used to the maximum, including through a full transition to the best available technologies, support for innovative and climate-efficient coal combustion technologies, and widespread replacement of low-efficiency boiler facilities cogeneration, wide stimulation of development and application of technologies for capture, use and disposal of greenhouse gases. The growing demand for electricity is provided by low greenhouse gas emission steam generation, as well as generation from nuclear power plants, hydroelectric power plants and renewable energy sources.

The following main tools are used to reduce greenhouse gas emissions:

in the electric power industry, modern technologies are being introduced, the development of combined cycle generation, nuclear power plants, hydroelectric power plants and renewable energy sources, the maximum use of the potential for reducing greenhouse gas emissions in coal-fired power engineering, including through a full transition to the best available technologies, support for innovative and climate-efficient combustion technologies coal, the widespread replacement of low-efficiency boiler houses with cogeneration facilities, and the broad promotion of the development and application of technologies for capturing, using and storing greenhouse gases.

Key changes in the structure of electricity generation occur in 2031 - 2050;

reduction of fugitive emissions associated with greenhouse gas leaks that occur during technological processes and the transportation of fossil fuels. The introduction of technologies for the capture, disposal and further use of greenhouse gas emissions has also been laid down;

in the transport sector, a transition to electric turbines is being carried out, a comprehensive electrification of transport is being carried out, and a charging infrastructure is being developed;

in carbon-intensive industries, technologies with low greenhouse gas emissions and high energy efficiency are being introduced. Implementation mechanism - development of a legislative framework to stimulate the use of technologies with low greenhouse gas emissions and high resource and energy efficiency (at the same

time, indicative indicators of greenhouse gas emissions and indicators of resource and energy efficiency can be established in information and technical reference books on the best available technologies), revision of current reference books on best available techniques. Resource and energy-efficient technologies are being introduced in the metallurgical and chemical industries, production technologies with low greenhouse gas emissions are being disseminated, including technologies for sequestering greenhouse gases and using hydrogen;

in housing and communal services and housing construction, it is planned to increase the efficiency of heat supply, heat and cold supply systems and introduce high energy efficiency standards for new buildings (classes A, A+). One of the tools for implementing the measure is the assignment of energy efficiency classes at the construction stage, including taking into account the use of energy-efficient glazing. Decommissioning and replacement of worn-out non-energy efficient housing stock are being carried out;

in agriculture, approaches to soil fertilization are being optimized (including the use of fertilizers with a slow release of nitrogen), "precision" farming is being developed. It is supposed, among other things, to use the best available technologies in agriculture;

in terms of production and consumption waste management, resource-saving and low-waste technologies are being introduced to reduce greenhouse gas emissions, a transition is being made to the best available technologies, a circular economy is being formed, the waste management system is being improved, and a transition is being made to separate waste collection.

3. Structural shifts

The measures envisaged by the target (intensive) scenario contribute to the acceleration of positive structural shifts by 2050, which contribute to an increase in the share of "post-industrial" sectors in the structure of the economy by 11.8 percentage points compared to 2020 (+4.9 percentage points compared to inertial scenario).

At the same time, the share of "traditional" industries is declining more pronouncedly - by 9.4 percentage points in 2050 compared to 2020 (almost twice as much as in the business-as-usual scenario).

Thus, an economic structure is being formed with a high share of output in industries with lower resource intensity and higher energy efficiency indicators: in high-tech industries, in financial and insurance activities, in real estate transactions and in the provision of other services, which is accompanied by a decrease in the carbon intensity of the economy. The redistribution of resources in favor of knowledge-intensive industries and the electric power industry, which is necessary to realize the parameters of the scenario, has the additional effect of reducing carbon intensity.

The increase in greenhouse gas emissions due to economic growth at a rate above the world average in the target (intensive) scenario is offset by the effect of a structural shift.

4. Absorbency

Under the target (intensive) scenario, the absorptive capacity of managed ecosystems is expected to increase from the current 535 million tons of carbon dioxide equivalent to 1,200 million tons of carbon dioxide equivalent in forestry.

Forestry improves management practices and conducts research to gain new scientific knowledge about forests. It is planned to increase the area of managed forests, and measures are also envisaged to assess and study the potential for increasing the absorption of greenhouse gases by forests in the Russian Federation. It is planned to create new technologies aimed at reducing emissions and increasing absorption of greenhouse gases in forests and other ecosystems.

Specific economic activities will be carried out taking into account the implementation of additional measures for reforestation and afforestation, protection of forests from fires, protection of forests from harmful organisms. Comprehensive projects are being implemented to care for the forest, reduce carbon losses from timber harvesting and change forest management practices, reproduction, conservation and protection of forests. In reforestation technologies, monocultures are gradually being replaced by mixed forests with higher absorption characteristics.

In this regard, the costs of forest protection are increasing in order to increase the efficiency of fighting forest fires. The potential of aviation forces to combat forest fires and other natural disasters is being increased.

In agriculture, the loss of soil carbon on arable land is reduced, carbon is accumulated in the soils of meadows, pastures and fallow lands, and disturbed lands are being reclaimed.

Studies are being carried out on the ability to absorb and accumulate greenhouse gases by water bodies, technologies are being developed, and additional measures are being taken to increase the absorption of greenhouse gases by water bodies.

Within the framework of the target (intensive) scenario, the realization of the potential for increasing the absorption capacity in the amount of up to 665 million tons of carbon dioxide equivalent is assumed as the most probable value to ensure compliance with international standards of measures taken in the Russian Federation to protect and improve the quality of sinks and storages of greenhouse gases.

Cumulative investments in the implementation of additional measures to protect and improve the quality of managed ecosystems until 2050 can average at least 0.1 percent of gross domestic product annually.

5. Reducing the energy intensity of the Russian economy

As part of the target (intensive) scenario for the implementation of the Strategy, a significant reduction in the energy intensity and carbon intensity of the economy of the Russian Federation is expected. Energy saving and energy efficiency improvement not only brings a direct economic effect and reduces the anthropogenic impact on the environment, but is also the main driver for reducing greenhouse gas emissions in various sectors of the economy.

The implementation of measures to improve energy efficiency will contribute to the reduction of greenhouse gas emissions at a faster pace than the inertial scenario, and thus will be one of the priority mechanisms for the transition to low-carbon development.

In order to improve the indicators of reducing the energy intensity and carbon intensity of the economy of the Russian Federation, it is necessary to strengthen the measures of influence of the state policy in the field of energy saving and increase energy efficiency in the sectors of the economy with the largest volume of energy consumption.

The largest volume of consumption of fuel and energy resources falls on the production and distribution of electrical and thermal energy, industry and housing and communal services.

In industry, an important direction in improving energy efficiency is to stimulate the development and implementation of technologies that use secondary energy resources or secondary resources in the production cycle instead of traditional (primary) raw materials.

In order to increase the efficiency of the use of energy resources in the operation of buildings and structures, it is necessary to create a mechanism for monitoring compliance with the energy efficiency requirements provided for in the project documentation of capital construction facilities, as well as the development of criteria that determine the need to equip buildings with individual heating points and automated heating control units.

As an intersectoral measure of energy saving and energy efficiency improvement, which significantly contributes to the reduction of energy consumption and greenhouse gas emissions, is the smart "digital" management of energy consumption in the sectors of the economy.

6. Effects from the implementation of the target (intensive) scenario

The implementation of the target (intensive) scenario ensures high indicators of the socio-economic development of the Russian Federation: the growth of gross domestic product at a level above the world average, maintaining a balance between reducing emissions and maintaining macroeconomic stability, expressed in high values of exports, employment, and household incomes.

In the target (intensive) scenario, a more moderate drop in energy exports from 2030 (-2.1 percent in real terms annually, from 2031 to 2050) is expected to be more moderate than in the inertial scenario, including implementation of measures to improve the competitiveness of Russian energy exports in foreign markets. The growth rate of non-energy exports will be 4.4 percent annually. The contribution to sustainable economic growth will be made by both outstripping growth rates of investment in fixed assets (3.7 percent annually) and stable growth in real disposable income (2.5 percent annually). As a result, the annual growth rate of the economy in this option in the period from 2031 to 2050 will be 3 percent. In the

long term, economic growth rates are declining slightly (to a level of about 2.8 percent by 2050), including under the influence of a slowdown in global growth, but remain above the global average.

At the same time, the intensification of investments in the decarbonization of the energy sector may lead to an increase in the cost of electricity in the domestic market.

Under the target (intensive) scenario until 2030, there is a gradual introduction of technologies to reduce emissions and improve energy efficiency, which, in the context of sustainable economic growth, is accompanied by a slight increase in emissions. From 2031, technology scaling will allow to overcome the trend and move into the phase of reducing emissions. The measures envisaged by the target (intensive) scenario provide a reduction in gross emissions by 910 million tons of carbon dioxide equivalent by 2050 compared to the volume of emissions in the absence of such measures. The increase in absorption by 2050 provides an additional effect of up to 665 million tons of carbon dioxide equivalent.

Thus, the implementation of the target (intensive) scenario will lead to a reduction in net greenhouse gas emissions in 2050 by 60 percent compared to the level of 2019 and by 80 percent compared to the level of 1990. This will make it possible to consistently increase the ambition of the nationally determined contributions of the Russian Federation to the implementation of the Paris Agreement (in case of ensuring compliance with international standards of the Russian carbon regulation system, criteria for sustainable projects and the level of absorptive capacity of managed ecosystems).

Cumulative investments in reducing net emissions average 1 percent of gross domestic product in 2022-2030 and 1.5-2 percent in 2031-2050. Multiplier effects from investments will lead to additional positive effects on economic growth. Additional growth in gross domestic product until 2050 in response to investment will exceed investment by 25 percent.

The target (intensive) scenario allows achieving the following positive effects:

sustainable economic growth with rates above the world average;

high level of technological development and competitiveness of the Russian economy;

the emergence and development of new industries (including hydrogen energy and electric transport), the formation of new high-performance jobs;

increasing the investment attractiveness of Russian enterprises and the economy, a high level of investment growth;

growth in the volume of Russian exports and an increase in the share in the world gross domestic product;

ensuring access to global markets for sustainable financing;

maintaining a high level of employment of the population;

growth of disposable incomes of the population;

improving the quality of the environment and ecological well-being of the population;

introduction of the principles of the circular economy;

more than halving the carbon intensity of the economy, reaching the level of leading countries;

stimulating the development of foreign trade relations due to the participation of the Russian Federation in the international climate agenda;

significant contribution to global efforts to mitigate climate change;

implementation of the undertaken obligations of the Russian Federation within the framework of the Paris Agreement and the Framework Convention;

implementation of the target (intensive) scenario will allow the Russian Federation to achieve a balance between anthropogenic emissions of greenhouse gases and their absorption no later than 2060.

IV. Measures to implement the Strategy

To implement the target (intensive) scenario of the Strategy, it is necessary to implement the following measures:

industry-wide:

introduction of financial and tax policy measures to stimulate the reduction of anthropogenic greenhouse gas emissions in the most inefficient carbon-intensive sectors of the economy. The parameters of such measures are determined taking into account the results of the establishment of special legal regimes in individual subjects of the Russian Federation;

creation of a national system to promote the reduction of greenhouse gas emissions and support sustainable development within the framework of the mechanisms provided for in Article 6 of the Paris Agreement;

development of a system of public non-financial reporting of companies;

improving energy and environmental efficiency in the sectors of the economy;

finalization of information and technical guides on the best available technologies, taking into account indicators of energy efficiency and resource efficiency; transfer of technological processes to the best available technologies with low greenhouse gas emissions and zero environmental impact technologies;

providing state support measures for the introduction, replication and scaling of carbon-free technologies and technologies with low greenhouse gas emissions;

increasing the share of the use of secondary energy resources, the involvement of waste in production cycles and in the production of goods, including as secondary raw materials or for the production of fuel;

setting sectoral targets for the transition to low greenhouse gas emission development and ensuring their implementation;

stimulation of the use of secondary energy resources in the production of goods;

changing tax, customs and budgetary policies to meet the challenges of low greenhouse gas emission development;

taking into account the consequences for changes in the balance of greenhouse gases in the implementation of budgetary expenditures and investments;

development of sustainable, including "green" financing;

adoption of sectoral and regional plans for adaptation to climate change and energy transition;

support and dissemination of technologies for the capture, disposal and further use of greenhouse gases;

in energy:

replacement of a part of coal-fired generation with carbon-free and low-carbon generation, growth in electricity generation, which meets the needs of the economy, due to carbon-free generation, as well as a reduction in emissions from existing coal-fired generation through the introduction of modern technologies;

increase in the volume of utilization of associated petroleum gas;

creation of an export sector for the production of hydrogen based on hydrocarbon raw materials and through the production of low-carbon hydrogen to enter the international hydrogen trade market and develop the hydrogen technology industry through measures to launch commercial hydrogen enterprises, create hydrogen production complexes, organize hydrogen supply chains for external and domestic markets and increasing the share of hydrogen in exported products;

reduction of energy and material costs, the use of energy-efficient technologies (combined-cycle plants, combined generation of electricity and heat), timely decommissioning or modernization of morally and physically worn-out low-performance equipment, improvement of thermal insulation;

reduction of losses in electrical and thermal networks to ensure the efficiency of electrical and thermal networks by reducing losses in the transmission and distribution of energy;

development of distributed generation (including in isolated power systems), taking into account the need to maintain the stability of the unified power system;

creation of additional sources of power generation, due to which losses during the transportation of electricity will be reduced;

a significant increase in generation based on renewable energy sources while ensuring the necessary level of localization of equipment production in the Russian Federation in compliance with the principles of environmental responsibility, including in the extraction of rare earth metals;

disclosure to consumers of information about the origin of electricity and its "carbon footprint";

the use of certain types of waste (including those not subject to material utilization) as energy resources;

introduction of innovative resource and energy-efficient technologies for the extraction, enrichment, processing and transport of solid fossil fuels;

in construction and housing and communal services:

setting stringent requirements for the energy efficiency of new residential, public and industrial buildings (classes A, A +) to reduce the amount of energy resources used in the operation of the building and increase the beneficial effect from the use of such resources;

decommissioning of worn-out non-energy efficient assets;

energy efficient retrofitting of existing centrally and individually heated buildings, hot water and heating systems, replacement of household electrical appliances and lighting systems with energy efficient ones, as well as the introduction of smart energy management tools in commercial projects;

involvement in the economic circulation of waste from the combustion of solid fuels generated at energy facilities (ash and slag mixtures, fly ash, slag), including their use in the construction of buildings and roads, land reclamation and restoration of disturbed areas (liquidation of mine workings, coal mines and quarries);

stimulating the equipping of buildings with installations that use and produce renewable energy (solar collectors for hot water supply, photovoltaic panels for generating electricity, heat pumps, apartment and communal wastewater heat recovery units, food waste grinders for processing them into biogas at treatment facilities, etc.);

improving the efficiency of heat supply and heat and cold supply systems, including through the use of reducing heat losses and using low-grade ground heat;

in transport:

a large-scale change in the structure of freight and passenger traffic in favor of less carbon-intensive modes of transport;

the use of new energy-efficient vehicles, large-scale electrification and gasification of public transport, the transition of road transport to hybrid power plants, the promotion of the transition to the use of models with zero emissions of greenhouse gases and pollutants, the promotion of the use of public transport;

construction of a gas engine and electric charging infrastructure for various categories of transport, providing simplified access for vehicles to fuel with a lower carbon footprint;

reducing the volume of natural gas consumed in power generation, increasing energy efficiency in technological operations, reducing losses;

introduction of new transport and information technologies for control and positioning, development and implementation of intelligent information systems for monitoring and control in transport;

development of transport infrastructure and logistics, allowing to optimize the management of traffic flows, increase the capacity of the transport infrastructure, the average speed of movement;

in industry:

improving the quality of iron ore materials, the physical and technical characteristics of coke, the use of metallized raw materials and hot reducing gases;

increasing the energy and resource efficiency of the metallurgical industry, increasing the share of electric steel production, the share of direct reduced iron production, replacing natural gas with hydrogen (requires research and the creation of the necessary infrastructure); increasing the share of primary aluminum production using electrolyzers with pre-baked anodes of the second generation (capacity of 300 kA and above); transition to electrolysis technology with an inert anode (requires research and development); maximizing the use of recycled water;

increasing the efficiency of the use of raw materials; increasing the energy efficiency of production, including energy resources and heat, the use of secondary resources in production within the framework of the circular economy; stimulation

of technical progress in terms of increasing the service life of devices and products in order to reduce the need for material and energy resources for the production of new products, reduce the volume of manufacturing defects;

development and implementation of technologies for the capture, disposal and further use of carbon dioxide and methane, as well as the creation of appropriate infrastructure, engineering and production of the necessary equipment, which ensures the reduction of greenhouse gas emissions into the atmosphere in the amount of captured and used carbon dioxide and methane, including burned;

development of production of new types of energy carriers, including hydrogen, "green" ammonia, biodiesel from wood raw materials for use in diesel engines and biomethane for use in gas transport infrastructure; the use of new energy carriers, including hydrogen and biodiesel;

development of a full-scale industry for the production of components for automobile electric charging stations and gas filling compressor stations;

improving the energy and resource efficiency of chemical production, introducing new processes and catalysts that reduce, among other things, the intensity of emissions in chemical processes and increase selectivity, as well as allowing processes to be carried out at lower temperatures and pressures, which reduces energy consumption; restructuring of the fuel balance, providing for the transition to fuel that emits less greenhouse gas when burned; reduction of nitrous oxide emissions from nitric acid production;

reduction in the production of cement by the "wet" method; replacing fossil fuels with alternative fuels that emit less greenhouse gases when burned compared to conventional fuels; the use of secondary resources as raw materials (the use of industrial waste (ash from thermal power plants, metallurgical slag) leads to a decrease in specific heat consumption for clinker burning, and also reduces technological emissions of greenhouse gases from the decomposition of limestone);

creation of a system for the disposal of used power equipment; the return of non-ferrous and ferrous metals to the economic cycle is ensured, which reduces the need for primary metals and, accordingly, reduces the negative impact on the environment by reducing the volume of mining, reducing associated energy costs;

in the field of production and consumption waste management:

transition to a circular economy that minimizes waste generation, encourages the use of secondary resources, as well as waste and (or) their components as raw materials for the production of products in various sectors of the economy, the introduction of the institution of "extended" responsibility of producers and importers of goods and packaging;

formation of a system for the separate collection and accumulation of waste, including the accumulation of organic waste;

distribution of landfill gas collection technologies and its use as fuel, the maximum direction of organic waste to production facilities, including commercial compost, biogas or feed and feed additives for animals and aquaculture;

in agriculture and forestry:

spreading the use of slow-acting mineral fertilizers and fertilizers with inhibitors of nitrification processes, which dissolve and release nitrogen more slowly than traditional nitrogen fertilizers, compliance with the norms and terms of applying fertilizers to the soil, changing the methods of applying fertilizers;

differential application of agrochemicals to cultivated lands, development of "precision" farming (using the best available technologies in agriculture), the use of remote sensing of the Earth from space to monitor the state of soils and monitor crops);

the use of progressive agronomic methods (regenerative technologies) that increase yields and promote more intensive absorption of residual carbon;

anti-erosion and field protection measures;

increasing the productivity of farm animals; the development of directional breeding, with the help of which it is possible to breed livestock with a lower level of methane emissions generated as a result of life activity;

production of biofuels in livestock and crop production, the introduction of biogas complexes for the disposal of organic waste;

ensuring the accumulation of carbon in the soils of agricultural lands;

watering previously drained swamps, including to prevent peat fires, ensuring fire safety, managing the water balance of swamps;

increasing the efficiency of forest management, strengthening the protection and protection of forests;

improvement of sanitary safety measures in forests and elimination of pest outbreaks;

implementation of climate projects that ensure the development of forest infrastructure and the implementation of measures to care for forest plantations to increase the absorption capacity of forests;

increasing the effectiveness of fire safety measures in forests to prevent the occurrence and spread of forest fires; creation of regional centers for the aviation protection of forests from fires, an increase in the number of aircraft for detecting and monitoring forest fires, an increase in the number of employees of the parachute fire service;

increase in the area of reforestation;

creation of a network of forest selection and seed-growing centers for growing planting material in the constituent entities of the Russian Federation, stimulating activities for the formation of economically valuable plantations.

V. Mechanisms for monitoring the implementation of the Strategy

To control the implementation of the Strategy, the Government of the Russian Federation approves a plan ("road map") for the implementation of the Strategy, which includes general economic, sectoral and other measures necessary to achieve the established indicators of the Strategy. The implementation plan of the Strategy includes priority measures for the implementation of the Strategy in the context of industry-wide activities, as well as activities in the energy sector, construction, housing and communal services, transport, industry, production and consumption waste management, agriculture and forestry.

The implementation plan of the Strategy includes measures, the implementation of which will have the highest socio-economic effect and lead to a significant reduction in emissions (increased absorption) of greenhouse gases throughout the

Russian Federation. The measures taken can contribute to the elimination of existing administrative barriers, the creation of new legal frameworks that stimulate investment in development priority activities with low greenhouse gas emissions, and minimize risks to energy, food, economic and overall national security.

The implementation of the Strategy at the regional level is carried out, among other things, through the conclusion of agreements between the Ministry of Economic Development of the Russian Federation and the highest executive bodies of state power of the constituent entities of the Russian Federation, which provide for regional plans for the implementation of the Strategy.

Control over the implementation of the Strategy is carried out by determining the current values of indicators of the Strategy and monitoring the implementation of measures provided for by the implementation plan of the Strategy.

The results of monitoring the implementation of the Strategy, including information on the actual and predicted values of indicators of the Strategy, are submitted by the Ministry of Economic Development of the Russian Federation to the Government of the Russian Federation in the form of a state report and posted on the official website of the Ministry in the information and telecommunications network "Internet".

The results of monitoring the implementation of the Strategy are also reflected in the international reporting of the Russian Federation, the preparation of which is provided for by the Framework Convention and the Paris Agreement.

The provisions of the Strategy are updated as necessary, including when updating the Nationally Determined Contribution. The results of the global stocktake carried out in accordance with Article 14 of the Paris Agreement inform the updating of the Strategy and the Nationally Determined Contribution.

VI. Strategy implementation indicators

The evaluation of the implementation of the Strategy is carried out using the following indicators:

volumes of total and sectoral greenhouse gas emissions;

volume and efficiency of energy production;

indicators of energy efficiency in sectors of the economy;

indicators characterizing carbon intensity economy;

indicators of the involvement of industries and government structures in the implementation of the Strategy;

volume and specific efficiency of investments in emission reduction of greenhouse gases and increased absorption capacity.

The set and values of indicators of the implementation of the Strategy can be specified based on the results of monitoring the implementation of the Strategy, the adoption of new and adjustment of existing sectoral strategic planning documents and indicators that determine the contribution of the Russian Federation to the implementation at the national level of the Paris Agreement.

Mass indicators of emissions and removals of greenhouse gases in scenarios Strategies are given in the appendix.

As a basis for the implementation of the Strategy, it is proposed to use the target (intensive) scenario.

ANNEX

to the Strategy of Social and Economic Development of the Russian Federation with low greenhouse gas emissions by 2050

INDICATORS

greenhouse gas emissions and absorptions

(million tons of carbon dioxide equivalent)

Name of indicator	Fact - 2019	Plan - 2030	Plan - 2050
Inertial scenario			
Greenhouse gas emissions	2119	2253	2521
Absorption	-535	-535	-535
Net emissions	1584	1718	1986
Target (intensive) scenario			
Greenhouse gas emissions	2119	2212	1830
Absorption	-535	-539	-1200
Net emissions	1584	1673	630