Climate action

The key driver of reducing GHG emissions is the Company's balanced development as regards energy consumption and saving.

Management approach

Russian Railways' Environmental Strategy and Energy Strategy through 2035 outline a set of measures aimed at sustainable low-carbon development and GHG emissions reduction. Through 2035, these will enable the Company to lower the intensity of its direct and indirect GHG emissions per unit of transportation volume. To achieve this, the strategies set a specific target for reducing GHG emissions.

Upgrading the Company's stationary thermal power infrastructure is another key focus of its decarbonisation efforts. This includes efforts in two major areas:

- enhancing energy efficiency of buildings and structures, including that of heat generation facilities, processes, and infrastructure, as well as increasing efficiency of energy resource use in stationary power generation;
- upgrading thermal power facilities by transitioning to low-carbon fuels.

Key ongoing measures implemented by the Company to cut GHG emissions from mobile sources:

- electrifying existing railway lines;
- developing and introducing new rolling stock;
- improving the energy efficiency of transportation operations.

GHG emissions management, monitoring, and reporting

Russian Railways has in place and develops a system of GHG emissions monitoring, reporting and control. Since 2017, Russian Railways has been listed among state-owned companies involved in reducing GHG emissions[1], making annual progress disclosures in its sustainable development reports.

GHG emissions are tracked and measured at the level of Russian Railways' individual structural units, with the collected data further aggregated at higher levels of the Company's corporate structure (branches and the Company overall).

In 2023, Russian Railways submitted its first-ever statutory report on GHG emissions in line with national legislative requirements.

GHG emissions calculation methodology

In 2023, the Company calculated its GHG emissions on the basis of the Comprehensive Methodology for GHG Emissions Volume Measurement at Russian Railways[1] developed in line with the Russian guidelines on the calculation of direct emissions[2] and indirect energy-related emissions[3], as well as methodological guidelines of the Intergovernmental Panel on Climate Change (IPCC). Emissions are calculated in relation to CO_2 based on data on the consumption of energy resources. This approach is permitted by both Russian regulations and methodological guidelines of the IPCC.

The methodology involves the calculation of two GHG emissions categories:

- direct emissions from stationary and transport fuel combustion sources across Russian Railways' operations (Scope 1 under the Greenhouse Gas Protocol[4]);
- indirect energy-related emissions associated with the purchase of electricity and heat by Russian Railways' structural units from third parties (Scope 2 under the Greenhouse Gas Protocol).

Currently, the Company is implementing a system to track indirect GHG emissions associated with the purchase of construction materials, rolling stock and supplies, as well as any other goods (Scope 3 under the Greenhouse Gas Protocol).

Prospects for reducing GHG emissions

National strategic plans view the advance of railway transportation as a prerequisite for the country's social and economic development and a key step towards decarbonisation of Russia's transportation system.

The implementation of the new national project titled "Development of Transport Infrastructure" and the Long-Term Development Programme of Russian Railways until 2035 is expected to lead to a rise in freight turnover to 3.8 tn tkm, which would entail increased fuel and energy consumption, as well as higher GHG emissions. Furthermore, the shift of cargo flows from more carbon-intensive modes of transport to rail may serve as an additional factor driving up GHG emissions.

Alongside the anticipated growth in freight turnover, the Company will seek to increase reliance on low-carbon energy sources and take further steps to improve energy saving and efficiency, ultimately reducing per unit GHG emissions.

1 Approved by Instruction No. AKh-P9-5761 of the Russian Government dated 31 August 2017.

1 Russian Railways' Order No. 726/r dated 24 March 2023.
2 Approved by Order No. 371 of the Russian Ministry of Natural Resources and Environment dated 27 May 2022.
3 Approved by Order No. 330 of the Russian Ministry of Natural Resources and Environment dated 29 June 2017.
4 Greenhouse Gas Protocol. Greenhouse Gas Protocol Corporate Accounting and Reporting Standard.

Russian Railways' Environmental Strategy through 2030 with an outlook through 2035 envisages the following initiatives:

- Traction energy:
  - large-scale electrification of diesel-driven railway sections;
  - transitioning to natural gas for autonomous locomotives;
  - creating experimental passenger trains using hydrogen fuel cells;
- Non-traction energy:
  - shutdown of fuel oil and coal boiler houses and transitioning to greener energy sources;
  - a wider use of renewable energy.

Energy efficiency and saving projects will enable the Company to reduce per unit electricity and diesel consumption in train traction, per unit energy and fuel consumption for heat supply in boiler houses, wear and tear of heating, water supply and disposal infrastructure, and losses in heat networks. An ongoing electrification of key routes in freight and passenger transportation will further increase the share of electricity and low-carbon energy in the Company's energy and fuel mix.

Climate change risks

The Company pays special attention to climate change risks, analysing the climate change impact and taking it into account when planning its activities.

The key potential threat to the Company's business is the growing number of meteorological hazards that jeopardise railway operations, including heavy rains and snowfalls, very low and high temperatures, extreme temperature swings, glaze, rime and greater impact of dangerous hydrological phenomena, such as spring floods and freshets.

The Company assesses climate risks and develops response measures to mitigate them on an ongoing basis. Russian Railways is regularly exposed to the following anthropogenic and natural external risks:

- damage and accidents at sites supporting the Company's operations;
- industrial accidents involving associated transport modes (primarily in sea port water areas and at highways);
- fires and natural disasters in the Company's areas of operation;
- more frequent hydrometeorological hazards (frost, heat, snowfall, heavy rainfall);
- growing incidence of natural phenomena affecting the railway infrastructure (washaway, landslide, washout of slopes, rockfalls, etc.).

To mitigate these risks to infrastructure, the Company implements various reinforcement solutions (anti-washout slab covers, rock dumping, rock anchorage) and structures for the protection of the track bed from natural hazards (such as mudflows, landslides, avalanches and rockfalls).

Russian Railways has in place a Methodology for Evaluating the Influence of External Factors on the Condition and Reliability of Engineering Structures to:

- monitor and forecast the occurrence of dangerous meteorological phenomena in terms of time and place;
- reconcile weather forecasts against critical levels of dangerous weather phenomena, mapping their locations and detailing the underlying reasons;
- evaluate the size of a drainage basin at specific locations;
- identify the probability of dangerous hydrological phenomena, assess associated risks, and evaluate the degree of railway infrastructure inundation.

To enable timely response to emergencies, the Company has developed and implemented the Geoportal service to monitor hydrometeorological and hydrological data across its railway network. Hydrometeorological data is automatically fed into the Geoportal from the server of the Federal Service for Hydrometeorology and Environmental Monitoring (Roshydromet) (daily precipitation, air temperature, wind speed and direction, snow depth, snow water equivalent, snow density, ice phenomena (ice thickness, snow depth on ice)). Hydrological data comes from Roshydromet and Russian Railways water gauging stations.

The service enables the Company to identify smaller man-made structures that are at risk of flooding due to forecast rainfall. The input data powering this functionality includes weather forecasts received from Roshydromet, as well as hydraulic capacity computations and drainage basin parameter analyses (drainage area, main channel slope, forest percentage, wetland extent) performed by bridge inspection teams.

Beyond the 2035 horizon, the focus shifts to reducing absolute GHG emissions, with the ultimate aim of reaching carbon neutrality.