GHG emissions

GRI 305-1, 305-2, 305-4

Despite growth in transportation, Russian Railways reduced its total GHG emissions in 2023 to 36.9 mt of CO_2.

Indirect energy-related emissions make up more than half of the aggregate emissions in terms of mass. In 2023, their share reached 71.5%.

GHG emissions, both direct and indirect, are consolidated at the operational level. The boundaries are set based on financial and operational control, taking into account the territorial principle.

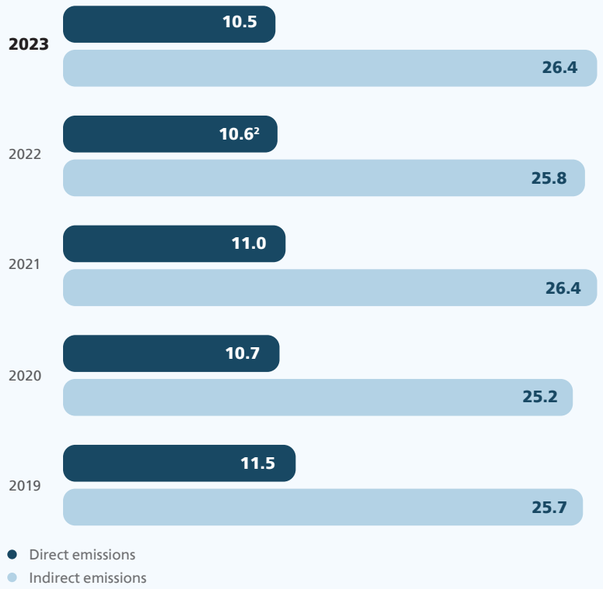
GRI 305-5

In 2023, the reduction in GHG emissions from the implementation of the Company's Environmental Strategy and Energy Strategy amounted to 485,085 t of CO_2, comprising:

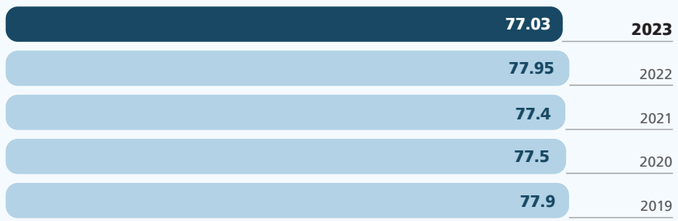
- direct emissions of 237,053 t;
- indirect emissions of 248,032 t.

The parameter of Russian Railways' carbon intensity is a specific indicator of total direct and indirect energy emissions of greenhouse gases per unit of work performed (gross tkm). This indicator most accurately reflects the Company's efforts related to low-carbon development, as it does not depend on the volume of services provided.

Direct and indirect energy-related emissions in 2019–2023, mt of CO_2[1]



GHG emissions per transportation volumes in 2019–2023, kg of CO_2 equivalent / 10 thousand gross tkm



[1] In accordance with Order No. 371 of the Russian Ministry of Natural Resources and Environment dated 27 May 2022, and Decree No. 707 of the Russian Government dated 20 April 2022, GHG emissions are calculated only for CO_2.

[2] The 2022 Russian Railways Sustainable Development Report presented the emissions figure as 11.5 mt of CO_2. However, due to the requirement to prepare statutory reporting, in 2023 this indicator was recalculated in line with the national methodology (as per Order No. 371 of the Russian Ministry of Natural Resources and Environment dated 27 May 2022).

In 2023, Russian Railways' carbon intensity reached 77.03 kg of CO_2 equivalent / 10 thousand gross tkm. This was mostly driven by a high degree of electrification of Russian Railways' infrastructure, with more than 51% of the total operating length of railways electrified.

The Company is implementing an Energy Savings and Energy Efficiency Programme. The following two areas made the most significant contribution:

- improving the energy efficiency of transportation operations;
- enhancing the efficiency of resource utilisation in stationary power generation.

These focus areas encompass approximately 130 initiatives aimed at improving traffic management, the condition of track infrastructure, increasing energy efficiency of heat generation, and more.

Other important contributors were efforts to improve energy efficiency and the performance of locomotives, processes and infrastructure facilities; and higher level of energy recovery on electric traction. Electrification of railway infrastructure reduced the volume of diesel-powered operations on a number of railways.

By 2030, Russian Railways plans to electrify the Rtishchevo 1 – Kochetovka 1 section of the South-Eastern Railway with an operational length of 262 km, and Volochaevka 2 – Komsomolsk-Sortirovochny – Vanino of the Far Eastern Railway with an operational length of 820 km.

Shifting to new types of rolling stock is essential for reducing GHG emissions. To this end, Russian Railways purchases modern Russian-made rolling stock with improved environmental performance.

Alongside enhancing its traction fleet with new locomotive models, the Company is also pursuing projects to develop and introduce eco-friendly traction rolling stock. These include initiatives to bring into service gas- and hydrogen-powered rolling stock between 2027 and 2028.

The Company is actively preparing the groundwork for its forthcoming climate projects. As part of these efforts, in 2023 it continued cooperation with Bauman Moscow State Technical University as part of the agreement to set up the Bauman GoGreen Consortium.

Energy efficiency

Russian Railways maintains leadership in energy efficiency and environmental friendliness among freight and passenger railway companies.

GRI 3-3, 302-3

To achieve our strategic targets in reducing carbon intensity, we take steps outlined in the Energy Strategy through 2030 with an outlook through 2035, annual Energy Savings and Energy Efficiency Programme, industry investment programmes of our branches, and programme of organisational and technical initiatives for 2020–2025[1].

Key areas in energy saving and efficiency:

- improving the energy efficiency of transportation operations;
- developing the power grid to reduce energy losses and make it more energy efficient;
- using stationary and non-traction energy more efficiently.

Russian Railways is advancing its energy-saving initiatives through investment programmes to upgrade fixed assets and the investment project to introduce resource saving technologies in railway transport.

In 2023, the Company went through with all of its essential energy saving activities covering both train traction and stationary units, which made it possible to achieve the targets for energy savings and energy efficiency improvement under the corporate Long-Term Development Programme[2]. In 2023, the energy efficiency of Russian Railways' operations improved by 0.6% year-on-year.

[1] Approved by Russian Railways' Order No. 2651/r dated 27 November 2019.

[2] Order No. 466-r of the Russian Government dated 19 March 2019.