GHG emissions (Scope 3): downstream and upstream

The Company conducts an annual quantification of Scope 3 emissions that arise outside of the Nornickel Group's operations and are beyond its control. These emissions are categorised as upstream and downstream emissions.

Their quantification follows the recommendations of the GHG Protocol and the IPCC Guidelines for National Greenhouse Gas Inventories.

GHG emissions (Scope 3) (mln t of CO_2 equivalent)

Indicators	2022	2023	2024
Upstream, including:	**1.4**	**1.3**	**1.2**
• purchased goods and services	0.9	0.8	**0.7**
• capital goods	0.1	0.1	**0.1**
• energy and fuel	0.3	0.3	**0.3**
• other categories	0.1	0.1	**0.1**
Downstream, including:	**3.9**	**5.1**	**5.5**
• transportation of sold products	0.2	0.2	**0.2**
• processing of sold products	3.7	4.9	**5.3**
Total Scope 3 emissions	5.3	6.4	**6.7**

In 2024, the Company continued to quantify its upstream Scope 3 GHG emissions, covering all emission categories required by the GHG Protocol. The bulk of upstream Scope 3 emissions was attributable to the purchase of goods and equipment from third-party suppliers as well as to energy and fuel consumption (to the extent not included in Scope 1 and 2). In 2024, total upstream Scope 3 emissions amounted to 1.2 mln t of CO_2 equivalent.

Downstream Scope 3 emissions are associated with the transportation of the Company's sold products from production assets to consumers and their subsequent processing into finished products.

In 2024, the Company updated its methodology for quantifying other indirect (downstream Scope 3) GHG emissions, incorporating new guidance documents, such as the Scope 3 Emissions Accounting and Reporting Guidance (2023) by the International Council on Mining and Metals (ICMM), ISO 14083:2023, Global Logistics Emissions Council (GLEC) Framework, Scope 3 GHG Emissions in the Nickel Value Chains. A Guide to Determine Nickel-Specific Scope 3 GHG Emissions by the Nickel Institute, and industry best practices.

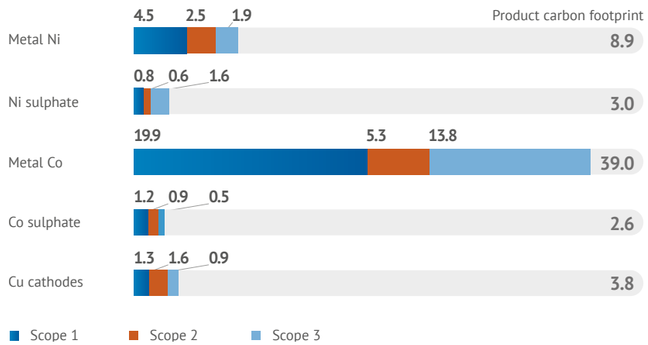
The downstream Scope 3 emissions assessment for 2024 covered nickel, copper, palladium, platinum, copper and nickel intermediates, and iron ore concentrate sold outside the Nornickel Group[1]. The bulk of these emissions comes from intermediates sold outside the Group. Emission volumes are influenced by changes in sales volumes, the Group's product portfolio, and the geographic mix of product sales.

[1] Including foreign operations.

Product carbon footprint

Product carbon footprint assessments for 2024[1]

Product carbon footprint of non-ferrous metals (kg of CO_2 equivalent per kg of product)

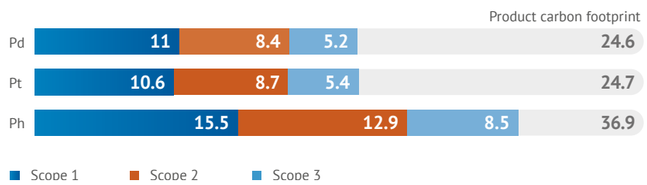


The carbon footprints of Nornickel's products are calculated based on:

- ISO 14067:2018, ISO 14040:2006, ISO 14044:2006
- GHG Protocol Product Life Cycle Accounting and Reporting Standard methodology
- LME passport guidance – Nickel Institute guidance for nickel producers to calculate their GHG emissions
- the IPA's guidance: The Carbon Footprint of Platinum Group Metals: A Best Practice Guidance for the Calculation of Greenhouse Gas of Primary Produced PGMs.

The scope of the carbon footprint calculation for MMC Norilsk Nickel's products in 2024 included direct greenhouse gas absorption by tailings. For more details on this project, please see the Decarbonisation Projects sub-section.

Product carbon footprint of PGMs
(kg of CO_2 equivalent per g of metal)

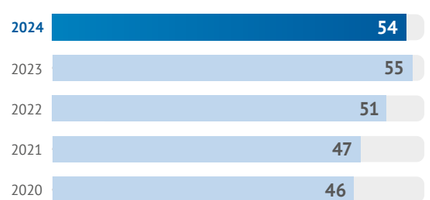


Use of renewable energy sources

In 2024, the share of electricity generated from renewable sources reached 54.4% for the Group. This is slightly lower than in the previous year but exceeds the target of 46% set by the Environmental and Climate Change Strategy.

Given the extreme climatic conditions at some of the Group's production sites, the potential for solar, geothermal, and wind energy remains limited. At the same time, the Company is exploring opportunities to develop additional renewable generation capacity. For more details, please see the Decarbonisation Projects sub-section.

Share of renewables in total electricity consumption by the Nornickel Group (%)



In the longer term, Nornickel aims to achieve an energy mix that combines nuclear, thermal, and hydro generation.

[1] Including the Sulphur Project's provision.