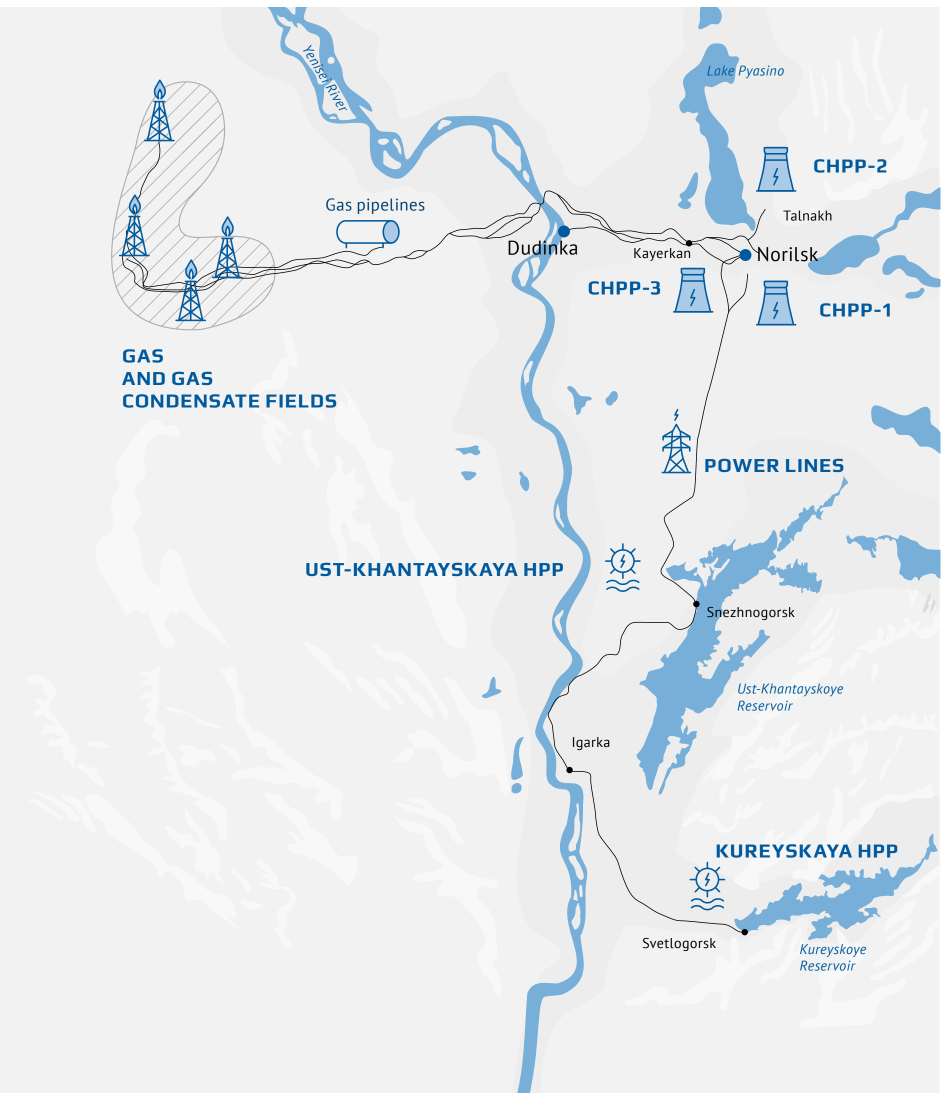
Projected climate factor changes by 2050 (vs 2022)

Climate factor	Norilsk Industrial District	Murmansk Region	Trans-Baikal Territory
Average air temperature	+1.5 °C	+1.1 °C	+1 °C
Thickness of the seasonally thawed soil layer The term "permafrost degradation" is used in the context of the assessment. This factor is particularly relevant for evaluating infrastructure risks outside urban areas	+0.8 m	Irrelevant	Irrelevant
Annual precipitation Mainly due to changes in the trajectory of Atlantic cyclones and increased atmospheric moisture content	+58 mm	+4 mm	+23 mm
Number of days with a high risk of severe thunderstorm per year Due to changes in temperature and humidity	+6 days	+2 days	+5 days



Based on forecasting results, the key climate risk factors for Nornickel facilities are permafrost degradation, an increase in total annual precipitation (including more frequent precipitation anomalies), and a higher likelihood of thunderstorms. Most of the changes are expected to occur after 2040.

To improve threat assessment, it is also necessary to model climate-dependent factors such as river basin water availability, flood synchronisation, ice conditions along the Northern Sea Route, and others. For example, low river water levels – an issue the Company already faced in 2013 – may pose a threat due to the potential:

- shortage of water supply for production and social facilities in Norilsk
- increase in natural gas consumption resulting from the additional load on combined heat and power plants due to low reservoir levels and reduced output at the Ust-Khantayskaya and Kureyskaya hydropower plants.

IFRS S2 13b

Most industrial buildings and structures in the Norilsk Industrial District are built on stable (rock) foundations. However, linear infrastructure – including power lines, gas pipelines, water pipelines, and railway infrastructure – as well as certain fuel storage tanks, which are primarily located outside urban areas, are vulnerable to permafrost degradation.

Expected changes in climate factors by 2050 vs 2022

IFRS S2 25a (v)

To mitigate risks associated with the condition of permafrost soils in the Norilsk Industrial District, the Company conducts ongoing monitoring of the technical condition of its assets through expert assessments, inspections, and monitoring of permafrost and foundation stability.

Factors

Factors	Activities	Monitoring	Repairs	Reconstruction	Construction
Permafrost degradation	Fuel storage tanks	✓	✓	✓	✓
	Power lines	✓	✓		✓
	Gas pipelines	✓	✓		
	Heat and water supply pipelines	✓	✓	✓	✓
	Railway	✓	✓		
Increased frequency of thunderstorms	Equipping power lines with lightning surge protection systems and monitoring the number of lightning strikes on power grid facilities				
Higher annual precipitation	Maintaining and modernising hydraulic structures to ensure technical reliability				
Higher frequency of heavy precipitation	Monitoring the technical condition of facilities and water levels in the Norilskaya River and water reservoirs				

According to the initial assessment, the impact of climate risk factors in the short- and medium-term horizon until 2028 is mitigated as part of operational activities and through initiatives and investment projects aimed at enhancing the reliability of industrial assets and infrastructure.

Transition risks and opportunities

TCFD Ra, IFRS S2 22b

In 2022, to identify and assess relevant transition risks and opportunities, Nornickel – in collaboration with the Institute for Economic Forecasting of the Russian Academy of Sciences – developed three proprietary long-term scenarios for global economic and climate development through 2050. The projected changes in global temperature under these scenarios are consistent with the three IPCC scenarios (SSP1-2.6, SSP2-4.5, and SSP5-8.5), which the Company also uses for its assessment of physical climate risks.

In 2024, the scenarios were updated to reflect actual data for 2022–2023, the upward revision of projected global GHG emissions across all scenarios, and the extension of the projection period to 2060. The mix of vehicle fleets – one of the key areas of application for the Company's metals – has also shifted: sales of battery electric vehicles and hybrid vehicles have increased, while sales of internal combustion engine vehicles and hydrogen fuel cell electric vehicles have declined.

The probability of the Rapid Transition scenario was lowered from 25% to 20%. This revision reflects a rise in global emissions of more than 2% over 2021–2023, which further complicates the already challenging task of global economic decarbonisation. The difficulty stems from: (a) the limited financial capacity of the global economy to absorb the specialised costs involved; and (b) the insufficient level of international collaboration and cooperation, which are critically important to tackling global challenges such as climate change. The probability of the Sustainable Palladium scenario was raised to 75% as it aligns most closely with current trends. The probability of the Global Growth scenario remains at a minimal level of 5%, as the high economic growth rates required for this pathway are currently considered unattainable.

TCFD 5a

Key characteristics of climate scenarios

Scenario	Rapid Transition SSP1-2.6	Sustainable Palladium SSP2-4.5	Global Growth SSP5-8.5
Strategic focus	Low-carbon development paradigm with the global community's efforts focused on the reduction of GHG emissions	Maintaining current socioeconomic trends. Traditional industries remain centre stage along with the green economy	Abandoning efforts to curb climate change with further rapid economic growth fuelled by hydrocarbons
Inflation	High	Moderate	Low
Resource/Energy intensity	Low	Moderate reduction	High
Climate regulation	Strict	Moderate	Insignificant
Carbon price	Strong growth	Moderate growth	At 2021 levels
Temperature change by 2060	+1.9 °C	+2.2 °C	+3 °C
Probability	20%	75%	5%

The underlying assumptions vary between climate scenarios, with these differences directly linked to the Company's product portfolio. The Sustainable Palladium scenario is considered baseline; it provides for traditional industries to remain centre stage along with the growing green economy. For example, internal combustion engine (ICE) vehicles will retain a large market share, contributing to robust demand for palladium in the long run. The other two scenarios are used to stress-test the Company's financial performance.

Nornickel has identified potential transition risks and opportunities based on global economic and climate change scenarios, analysis of proposed carbon regulation initiatives, market trends, and stakeholder expectations.

Identified transition risks and opportunities

TCFD 5a, IFRS S2 10a, IFRS S2 10b

Regulatory risks

- Compliance with carbon regulations in the Company's export markets
- Compliance with national carbon regulations

Regulation-related opportunities

- Use of ESG financing tools
- Sale of carbon credits generated by climate projects

Technology risks

- Failure to achieve decarbonisation targets due to lack of access to advanced foreign low-carbon technologies

Market risks

- Restrained demand for primary platinum group metals due to declining sales of internal combustion engine vehicles
- Restrained demand for primary nickel due to the development and mass production of new nickel-free batteries
- Restrained demand for primary metals due to increased recycling

Market opportunities

- Higher demand for primary nickel and copper, driven by transport electrification, the expanding hybrid vehicle market, and the growth of renewables
- Growing demand for primary platinum group metals due to the use of platinum and palladium in the hydrogen economy and of palladium in vehicle hybridisation

Reputational risks

- Increased protest activity by non-profit organisations and local communities, including indigenous peoples of the North

To mitigate risks arising from the need to comply with carbon regulations, the Company regularly monitors legislation both in Russia and in its export markets.

The introduction of the CBAM[1] in the European Union does not pose any risk to the Company in the short term, as non-ferrous and platinum group metals are not currently covered by the cross-border carbon tariff. The Company continues to monitor developments in carbon regulation and to forecast the potential associated costs going forward.

In the long term, Nornickel relies on its competitive advantage – one of the lowest product carbon footprints in the industry.

The Company is also exploring opportunities for trading carbon credits that may be generated through the implementation of climate projects.

Sustainability assessment of Nornickel's product portfolio

TCFD 5b, TCFD 5c, IFRS S2 13a, IFRS S2 13b, IFRS S2 22a

One of the key drivers of Nornickel's long-term strategy is the growing demand for the Company's metals to support the development of a low-carbon economy. By supplying green metals to the market, the Company is already actively contributing to the global transition to cleaner modes of transport and renewable energy.

Key climate change factors affecting demand for the Company's products

Factors	Ni	Pd/Pt	Cu
Growth of battery electric vehicle (BEV) market share	↑	↓	↑
Expansion of the hybrid vehicle market	↑	↑	↑
Growth of the fuel cell market and the hydrogen economy	→	↑	→
Increased power generation from renewables / low-carbon fuels	↑	↑	↑
Expansion of energy-storage and charging infrastructure to support growth in EVs	↑	→	↑
Net effect	↑	→	↑

IFRS S2 25b

To assess market-related transition risks and opportunities, Nornickel modelled changes in demand for key metals under its three proprietary global economy and climate change scenarios.

Based on the updated 2024 scenarios, the Company revised its metal consumption forecasts.

[1] Carbon Border Adjustment Mechanism.