Higher, faster, stronger

Nickel for the aviation industry

Ni

Nickel is a key material in the production of aircraft engines and components such as turbines and blades.

Nickel's benefits:
- High temperature resistance
- Strength and corrosion resistance
- Low density
- Good thermal conductivity
- Resistance to high mechanical loads

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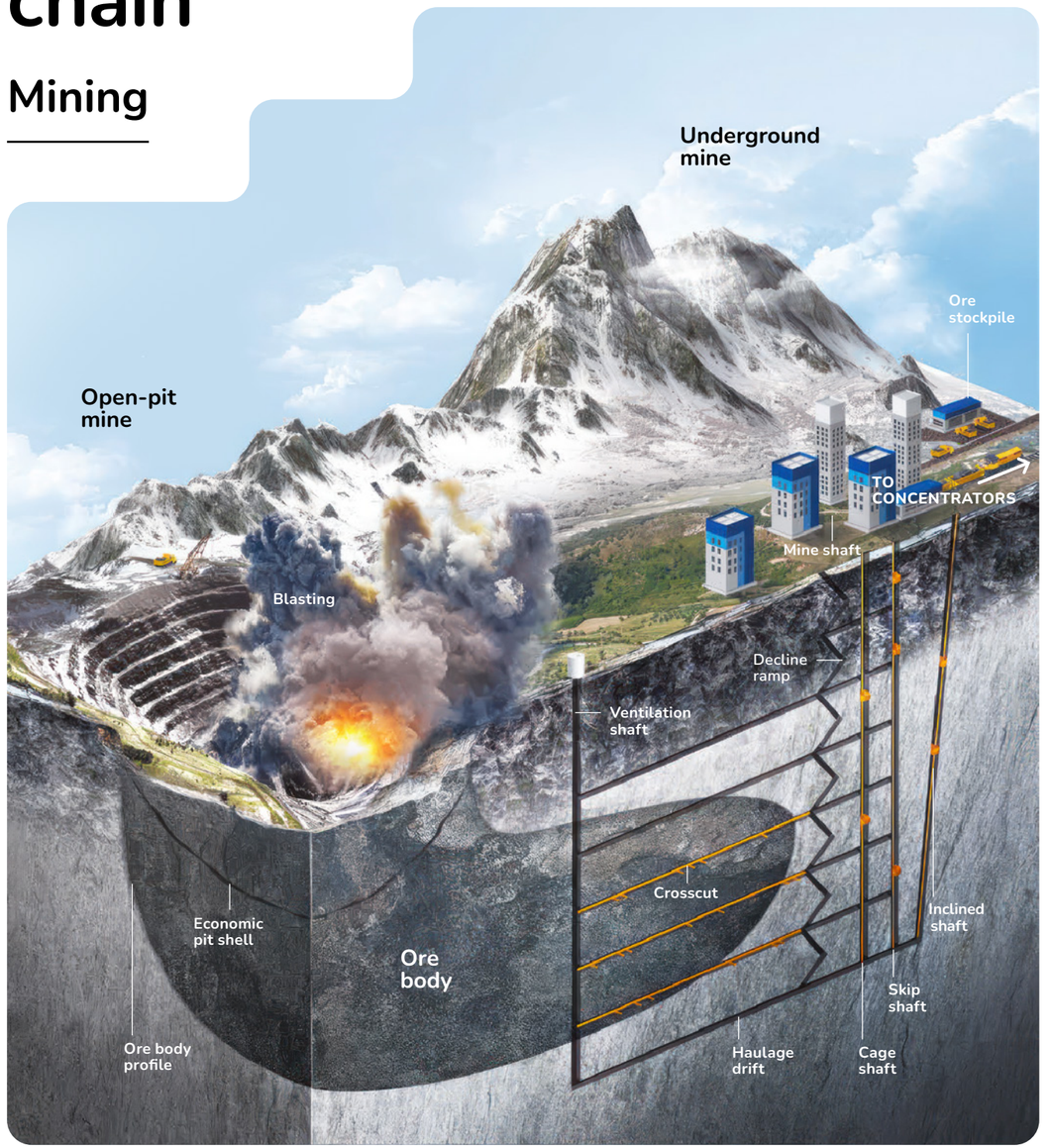
Production chain

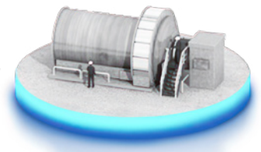
Mining



Concentration

Crushing

Pieces of ore are crushed and ground in crushers



Milling

Crushed ore is ground in mills with water

Pulp (finely ground ore mixed with water)

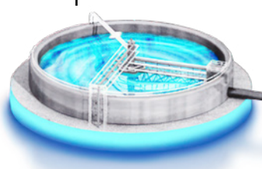
Flotation

Mineral separation by selective attachment of mineral particles to air bubbles. Hydrophobic mineral particles rise with air bubbles, while hydrophilic one remain in the slurry

Tailings transported via a slurry pipeline

Tailings storage facility

Concentrate



Thickening

Partial dewatering of concentrate to achieve a moisture content of 40%–50%

Concentrate

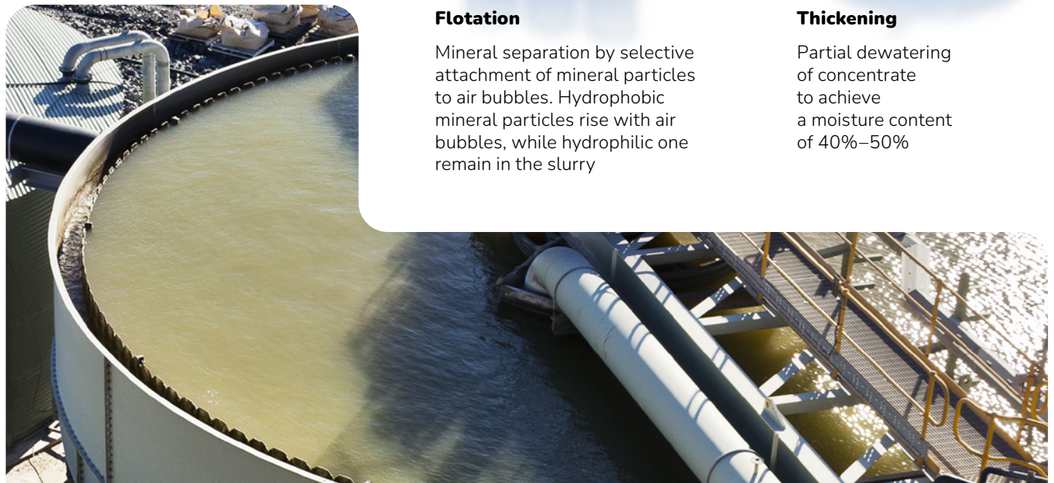
Filtering and drying

Reduction of concentrate moisture content to 7%–15%, then further to 2%

Smelting

Concentrates (nickel sulphide, iron ore, copper)

Finished products for sale



Smelting

Ni Stages of the nickel production chain

Flash smelting furnace (Norilsk site)

Smelting of raw materials to a molten state through internal oxidation processes, separating gangue and iron into slag and producing matte

Matte

Converter

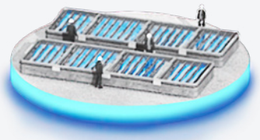
Oxidation and removal of iron and other undesirable impurities into slag

Copper-nickel matte

Roasting and EAF smelting (Kola site)

Redox roasting and EAF smelting

Nickel anodes



Nickel tankhouse (Kola site)

Leach-electrowin process

Nickel tube furnace powder

Nickel cathodes

Semi-products, sludges with high precious metal content

Metallurgical shop (Norilsk site)

Processing of sludges and semi-products with high precious metal content

Selenium

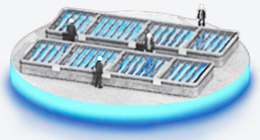
Precious metal concentrates

Refineries

Toll processing by third-party refineries

Precious metals

Finished products for sale



Chemical and metallurgical shop (Kola site)

Electrowinning process

Cobalt cake

Cobalt section (Kola site)

Electrowinning process

Cobalt concentrate, cobalt cathodes

Matte

Converter slag

Dry nickel concentrate

Concentration

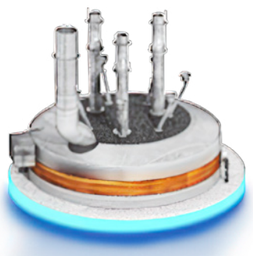
Slag

Granulated waste slag

Nickel pellets

Process gas

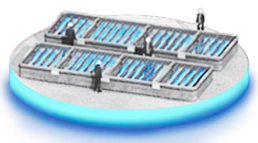
Production of sulphuric acid for sale



Slag-cleaning furnace

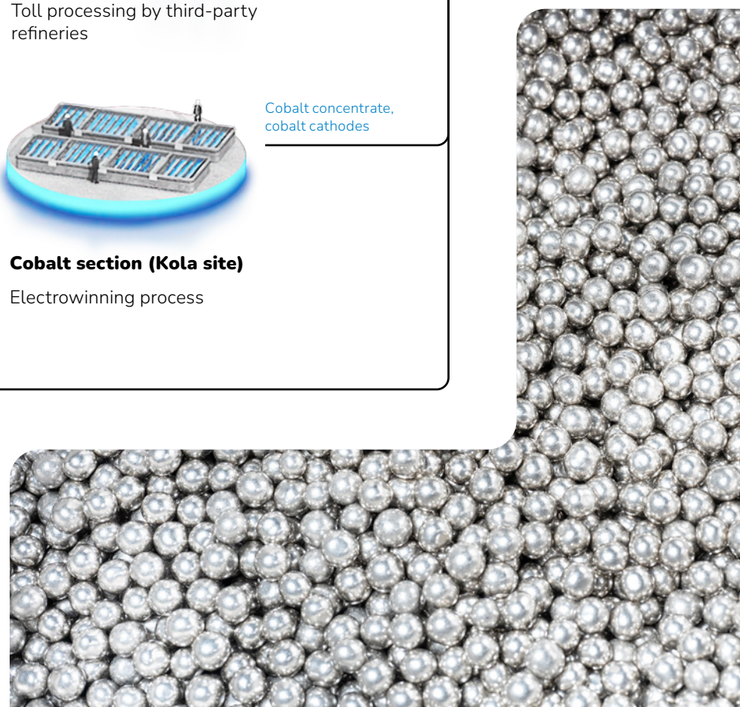
Enhanced recovery of metals from slag

Backfilling of mine workings

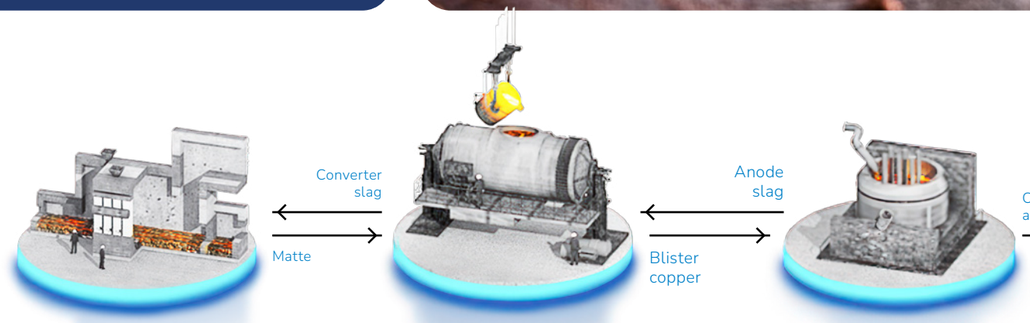


Carbonyl nickel section (Kola site)

Carbonyl nickel, powders, salts, and solutions



Cu Stages of the copper production chain



Vanyukov furnace

Smelting of raw materials to a molten state through internal oxidation processes, separating gangue and iron into slag and producing matte

Converter

Oxidation and removal of iron and other undesirable impurities into slag

Anode furnace

Removal of impurities into slag

Metallurgical shop (Norilsk site)

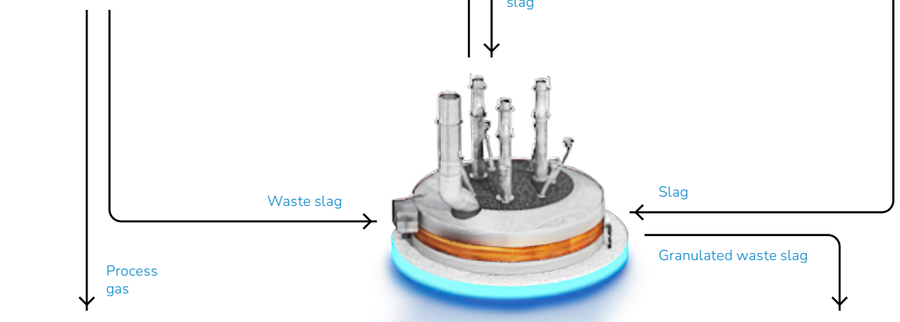
Processing of sludges and semi-products with high precious metal content

Refineries

Toll processing by third-party refineries

Electrolysis

Dissolution in electrolyte and deposition of pure metal on cathodes. Precious metal impurities insoluble in the electrolyte fall to the bottom of the electrowinning cell in the form of sludge



Production of commercial sulphur and sulphuric acid for operational needs

Slag-cleaning furnace (Norilsk site)

Enhanced recovery of metals from slag

Backfilling of mine workings

Mineral resource base

The Group's mineral resources and ore reserves as at 1 January 2025

POLAR DIVISION[1] (copper-nickel sulphide ores)	Ore (mln t)	Metal grade Ni (%)	Cu (%)	Pd (g/t)	Pt (g/t)	Au (g/t)	6 PGM (g/t)	Contained metal Ni (kt)	Cu (kt)	Pd (koz)	Pt (koz)	Au (koz)	6 PGM (koz)
Total proven and probable reserves	1,373	0.69	1.18	3.03	0.82	0.17	4.00	9,460	16,216	133,721	36,272	7,311	176,391
Total measured and indicated resources[2]	1,995	0.73	1.17	3.00	0.83	0.17	3.98	14,552	23,289	192,604	53,282	10,837	255,292
Total inferred resources	837	0.67	1.17	3.00	0.80	0.18	3.97	5,590	9,793	80,632	21,579	4,808	106,925
Taimyr Peninsula													
Proven and probable reserves	1,206	0.70	1.31	3.45	0.93	0.19	4.54	8,477	15,754	133,564	36,165	7,263	176,115
Measured and indicated resources	1,573	0.75	1.39	3.80	1.05	0.21	5.03	11,756	21,913	191,969	52,875	10,565	254,179
Inferred resources	782	0.66	1.23	3.20	0.86	0.19	4.24	5,181	9,595	80,531	21,513	4,760	106,742
Kola Peninsula, disseminated ore[3]													
Proven and probable reserves	167	0.59	0.28	0.03	0.02	0.01	0.05	983	462	157	107	49	276
Measured and indicated resources	422	0.66	0.33	0.05	0.03	0.02	0.08	2,796	1,376	636	407	272	1,114
Inferred resources	55	0.75	0.36	0.06	0.04	0.03	0.10	408	198	102	66	48	182

TRANS-BAIKAL DIVISION[4] (gold-iron-copper ores)	Ore (mln t)	Metal grade Cu (%)	Au (g/t)	Ag (g/t)	Fe (%)	Contained metal Cu (kt)	Au (koz)	Ag (koz)	Fe (kt)
Proven and probable reserves	272	0.52	0.65	2.73	18.7	1,429	5,728	23,937	50,914
Measured and indicated resources	292	0.59	0.66	3.16	22	1,732	6,213	29,658	64,294
Inferred resources	43	0.61	0.4	3.41	4.15	258	544	4,671	1,768

[1] According to the JORC Code. In 2021, SRK Consulting (Russia) completed an estimate of mineral resources and ore reserves using its proprietary methodology.
[2] Proven and probable ore reserves are included in measured and indicated resources.
[3] Mineral resources and ore reserves at the deposits developed by the Kola site were estimated based on an updated methodology using resource modelling.
[4] In 2021, CSA Global completed an estimate of the Trans-Baikal Division's mineral resources in line with the JORC Code based on an updated resource model, which reflects both the complexity and diversity of the deposit's ore types.

Existing deposits

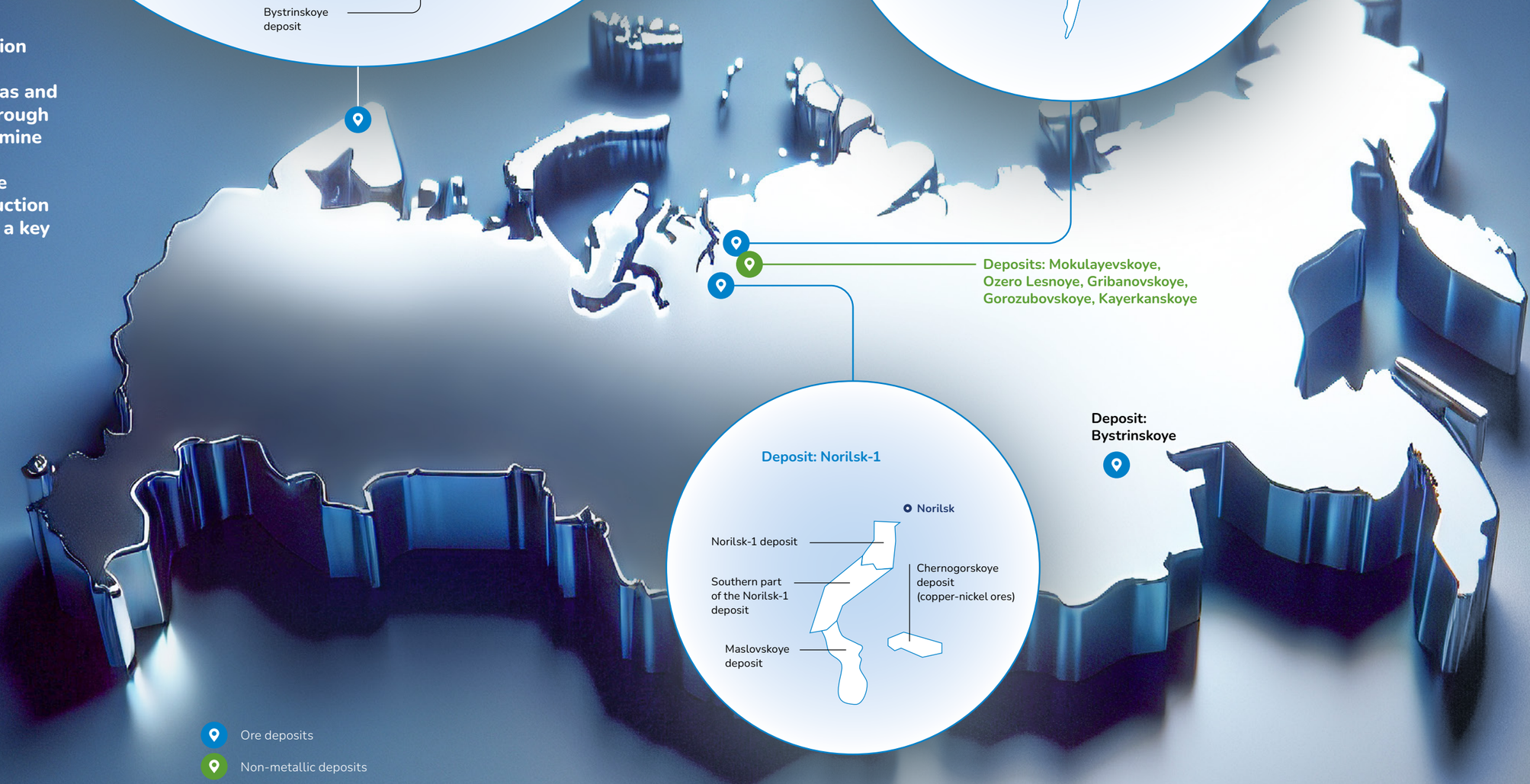
The Company conducts exploration in three regions of Russia – on the Taimyr and Kola Peninsulas and in the Trans-Baikal Territory. Through exploration at new and existing mine sites, Nornickel drives increases in its high-grade and cuprous ore reserves to support future production from existing sites, viewing it as a key driver of its long-term growth.

Given the current production rate, the available resources of copper-nickel sulphide ores will last for

>70 YEARS,

and those of gold-iron-copper ores – for

>20 YEARS



Existing ore deposits

Deposits: Talnakhskoye and Oktyabrskoye

Minerals:
copper-nickel sulphide ores.

Location: Krasnoyarsk Territory, Norilsk. Geologically, they form part of the Talnakh Ore Cluster and are being developed by the Norilsk site of the Polar Division.

The Company has been developing the Talnakhskoye and Oktyabrskoye deposits since the early 1960s, when multiple deposits of high-grade, cuprous, and disseminated ores were discovered within the area. Nornickel is still well supplied with non-ferrous and noble metals from the uniquely rich and vast resource base of the Talnakh Ore Cluster deposits.

Reserves and resources of the Talnakh Ore Cluster deposits

Proven and probable reserves

	Total, mln t of ore			
8,169	15,387	5	2024	**1,069**
8,197	15,361	5	2023	**1,066**
7,572	14,240	5	2022	**915**

Measured and indicated resources

	Total, mln t of ore			
11,382	21,466	7	2024	**1,440**
11,431	21,391	7	2023	**1,429**
11,312	21,144	7	2022	**1,378**

Inferred resources

	Total, mln t of ore			
5,152	9,558	3	2024	**771**
5,138	9,697	3	2023	**741**
4,939	9,269	3	2022	**725**

● Nickel, kt ● 6 PMG, kt
● Copper, kt

Deposit: Norilsk-1

Minerals:
copper-nickel sulphide ores.

Location: Krasnoyarsk Territory, Norilsk. Geologically, it forms part of the Norilsk Ore Cluster and is being developed by the Norilsk site of the Polar Division.

The Company has been developing Norilsk-1 since the 1930s, currently mining disseminated ores from the deposit's northern portion. In 2020, the deposit's resource estimate was updated against new permanent exploratory conditions for open-pit and underground mining.

Reserves and resources of the Norilsk-1 deposit

Proven and probable reserves

	Total, mln t of ore			
308	367	1	2024	**137**
314	379	1	2023	**137**
337	412	1	2022	**144**

Measured and indicated resources

	Total, mln t of ore			
374	446	1	2024	**133**
392	474	1	2023	**140**
419	512	1	2022	**143**

Inferred resources

	Total, mln t of ore			
29	38	0.1	2024	**11**
22	30	0.1	2023	**9**
36	47	0.1	2022	**12**

● Nickel, kt ● 6 PMG, kt
● Copper, kt

Deposits: Zhdanovskoye, Zapolyarnoye, Bystrinskoye, Tundrovoye, Sputnik, Verkhneye

Minerals:
copper-nickel sulphide ores.

Location: Murmansk Region, Pechengsky District.

The deposits are located within a 25 km strip between Nikel and Zapolyarny and are grouped into two ore clusters: the Western cluster (the Kotselvaara-Kammikivi and Semiletka deposits, whose reserves were classified as off-balance following a state expert review and excluded from the 2024 estimate) and the Eastern cluster (comprising the Zhdanovskoye, Zapolyarnoye, Bystrinskoye, Tundrovoye, Sputnik, and Verkhneye deposits). The deposits in the Western and Eastern clusters have been developed since the 1930s and 1960s, respectively. The deposits are developed by the Kola site of the Polar Division.

Reserves and resources of the Kola site

Proven and probable reserves

	Total, mln t of ore
983 462 0.01	2024 **167**
407 206 0.003	2023 **64**
437 219 0.003	2022 **69**

Measured and indicated resources

	Total, mln t of ore
2,796 1,376 0.03	2024 **422**
2,068 1,010 0.03	2023 **300**
2,102 1,025 0.03	2022 **305**

Inferred resources

	Total, mln t of ore
408 198 0.01	2024 **55**
873 430 0.01	2023 **138**
880 433 0.01	2022 **139**

- Nickel, kt
- Copper, kt
- 6 PMG, kt

Deposit: Bystrinskoye

Minerals:
gold-iron-copper ores.

Location: Trans-Baikal Territory, Gazimuro-Zavodsky Municipal District.

The Bystrinskoye deposit has been developed by the Trans-Baikal Division since 2017. Mining operations are carried out at two open pits: Verkhne-Ildikansky and Bystrinsky-2, with two more — Medny Chainik and Yuzhno-Rodstvenny — scheduled to come online in 2030.

Reserves and resources of the Bystrinskoye deposit

Proven and probable reserves

	Total, mln t of ore
50,914 1,429 • 1 • 0.2	2024 **272**
52,874 1,505 • 1 • 0.2	2023 **283**
40,059 1,680 • 1 • 0.2	2022 **274**

Measured and indicated resources

	Total, mln t of ore
64,294 1,732 • 1 • 0.2	2024 **292**
65,268 1,801 • 1 • 0.2	2023 **303**
45,258 1, 808 • 1 • 0.2	2022 **261**

Inferred resources

	Total, mln t of ore
1,768 258 • 0.1 • 0.02	2024 **43**
1,891 262 • 0.1 • 0.02	2023 **44**
5,346 237 • 0.1 • 0.03	2022 **59**

- Iron, kt
- Copper, kt
- Silver, kt
- Gold, kt

Existing non-metallic deposits

Deposit: Mokulayevskoye

Minerals:
limestone.

Location: Krasnoyarsk Territory, Taimyrsky Dolgano-Nenetsky Municipal District.

In 2018, following the discovery of the Mokulayevskoye limestone deposit located 10 km north-west of the production sites of the Oktyabrsky and Taimyrsky Mines, an exploration and mining licence was obtained for its development. In 2018, the State Commission for Mineral Reserves of the Russian Ministry of Natural Resources reviewed the feasibility study of permanent exploratory conditions and the reserve statement for the deposit. The deposit's limestone reserves — amounting to approximately 136 mln t — were entered into the State Register of Mineral Reserves for potential use in cement and lime production as well as for sulphuric acid neutralisation. The deposit can be developed through open-pit mining.

In 2022, an exploration campaign was conducted to look into dolomite overburden within the Mokulayevskoye limestone deposit, and since 2023 the Company has been mining limestone at the site.

Deposit: Ozero Lesnoye

Minerals:
magmatic rock (basalts).

Location:
Krasnoyarsk Territory, Norilsk.

Located 22 km to the north of Norilsk, the deposit consists of two adjacent licence areas (No. 1 and No. 2) which share a common boundary. The deposit is developed within licence area No. 1. In 2017, Nornickel obtained a survey, exploration, and mining licence for the magmatic basalt reserves at licence area No. 2.

In 2022, Nornickel updated its reserve estimate for the deposit's two licence areas to 189.2 Mcm. In 2023, a technical project was prepared for the further development of the deposit, enabling mining the two licence areas as one open-pit mine to ensure continuous production, and mining operations commenced at the deposit.

Deposit: Gribanovskoye

Minerals:
sand.

Location: Krasnoyarsk Territory, Taimyrsky Dolgano-Nenetsky Municipal District.

In 2020, Nornickel obtained an exploration and mining licence upon the discovery of the Gribanovskoye deposit, located on the Yenisei River, 22.5 km south of Dudinka. In 2020, the exploration phase was completed and pilot production was launched at the deposit. A state expert review of the feasibility study of permanent conditions and the reserve statement was conducted in 2021, and sand production was launched in 2022.

Deposit: Gorozubovskoye

Minerals:
anhydrite.

Location:
Krasnoyarsk Territory, Norilsk.

In 2020, following further examination of the deposit's flanks carried out as part of follow-up exploration of the Gorozubovskoye anhydrite deposit, the reserves were converted from C2 to C1. A certificate issued by the State Commission for Mineral Reserves confirmed the parameters of the updated conditions and the anhydrite reserves. The deposit is currently under development.

Deposit: Kayerkanskoye

Minerals: quartzose sandstone, coal, tuffaceous argillite.

Location:
Krasnoyarsk Territory, Norilsk.

Since 1967, the Kayerkanskoye deposit has been supplying the needs of the Company's Norilsk site in materials used to produce fluxes for concentration and metallurgical processes at the metallurgical plants, as well as to manufacture building materials. The deposit is currently under development.

Growth projects

Deposit: Maslovskoye

Minerals:
copper-nickel sulphide ores.

Location:
Krasnoyarsk Territory, Norilsk. Geologically, the deposit is part of the Norilsk Ore Cluster.

The Company obtained a licence to explore and mine the Maslovskoye deposit upon its discovery in 2015.

A feasibility study of permanent exploratory conditions and a reserve statement for the Maslovskoye deposit were approved by the State Commission for Mineral Reserves, and its copper-nickel ore reserves were included into the State Register of Mineral Reserves. B + C1 + C2 ore reserves: 206.8 mln t.

Deposit: Kolmozerskoye

Minerals:
beryllium, niobium, lithium, lithium ore, tantalum.

Location:
Murmansk Region, Lovozersky District.

In 2023, an exploration and mining licence (under a 50%/50% JV arrangement) was obtained for the Kolmozerskoye deposit, located within an area of federal significance. The balance (economic) reserves of the deposit were confirmed through exploration in 1960 at 75 mln t of ore and 844.2 kt of lithium oxide. In 2024, follow-up exploration fieldwork was completed at the deposit to verify the quality and quantity of the minerals present. The development of a feasibility study of conditions and the approval of reserves by the State Commission for Mineral Reserves are scheduled for 2025.

Deposit: Bugdainskoye

Minerals:
beryllium, niobium, lithium, lithium ore, tantalum.

Location: Trans-Baikal Territory, Alexandrovo-Zavodsky Municipal District.

The deposit's mineral reserves, comprising 813 mln t of B + C1 + C2 ore reserves, including 600 kt of molybdenum, were included into the State Register of Mineral Reserves in 2007.

Deposit: Bystrinsko-Shirinskoye

Minerals:
gold ore.

Location: Trans-Baikal Territory, Gazimuro-Zavodsky Municipal District.

In 2024, a geological exploration project was developed to study the flanks and deep horizons of the deposit, which are characterised by a highly complex ore body structure. Geological exploration is scheduled for 2025, with a feasibility study and a reserve statement to be prepared based on its results.

Deposit: Western flank of the Oktyabrskoye deposit

Minerals:
copper-nickel sulphide ores.

Location: Krasnoyarsk Territory, Norilsk. Geologically, the deposit is part of the Talnakh Ore Cluster.

Licensed for prospecting in 2017, the area shares a boundary with the earlier licensed mining area at the Oktyabrskoye deposit. In 2022 and 2023, appraisal activities were carried out at the Zapadny section, where prospecting had earlier confirmed the presence of copper-nickel ores. In 2024, a final report with reserve estimates was prepared and successfully passed the state expert review at the State Commission for Mineral Reserves. Following expert evaluations, reserve approvals anticipated in the second quarter of 2025 are as follows: rich ores — 225 kt, cuprous ores — 2,287 kt, and disseminated ores — 667 kt.

Promising areas and prospects

Area: Yuzhno-Norilskaya

Minerals:
copper-nickel sulphide ores.

Location: Krasnoyarsk Territory, Taimyrsky Dolgano-Nenetsky Municipal District.

In 2019, the Company obtained prospecting licences for the Morongovsky and Yuzhno-Yergalakhsky copper-nickel sulphide ore prospects within the Yuzhno-Norilskaya area. In 2021 and 2022, prospecting of the areas was conducted, including prospecting drilling. An estimate of inferred copper-nickel sulphide ore resources was completed. The resources total 46 mln t, are located on the flanks, and have potential for extension beyond the boundaries of both prospects. In 2023, a subsoil use licence was obtained for the adjacent Mezhdurechensky licence area.
In 2024, a geological exploration project was developed. Exploration work is scheduled to commence in 2025.

Area: Mikchangdinskaya

Minerals:
copper-nickel sulphide ores.

Location: Krasnoyarsk Territory, Taimyrsky Dolgano-Nenetsky Municipal District.

In 2019 and 2020, the Company obtained exploration licences for the Neralakhsky, Yuzhno-Neralakhsky, Snezhny, Yuzhno-Ikensky, and Medvezhy prospects within the Mikchangdinskaya area. Prospecting drilling was carried out in 2021–2023. In 2024, an assessment was conducted to evaluate the viability of mining the identified disseminated copper-nickel mineralisation, which demonstrated negative economic viability.
A prospecting programme for the properties has been completed.

Area: Arylakhskaya

Minerals:
copper-nickel sulphide ores.

Location: Krasnoyarsk Territory, Taimyrsky Dolgano-Nenetsky Municipal District.

In 2020, the Company obtained prospecting licences for the Yttakhsky, Samoyedsky, and Mastakh-Salinsky prospects within the Arylakhskaya area. In 2021 and 2022, prospecting drilling was conducted at the prospects identified by geophysical and geochemical prospecting across areal zones. In 2024, an assessment was conducted to evaluate the viability of mining the identified disseminated copper-nickel mineralisation, which demonstrated negative economic viability.
A prospecting programme for the properties has been completed.

Area: Alenuyskaya

Minerals:
gold-copper porphyry ores.

Location: Trans-Baikal Territory, Alexandrovo-Zavodsky District.

In 2020, the Company obtained prospecting licences for the Severo-Alenuysky and Yuzhno-Alenuysky prospects within the Alenuyskaya area. In 2023, prospecting drilling was conducted at the Tsentralno-Alenuysky area. In 2024, an assessment was conducted to evaluate the viability of mining the identified gold-copper porphyry mineralisation, which demonstrated negative economic viability.
A prospecting programme for the properties has been completed.

Area: Mostovskaya

Minerals: gold-silver ores, copper ore, molybdenum ore.

Location: Trans-Baikal Territory, Mogochinsky District.

In 2020, the Company obtained prospecting licences for the Zapadno-Mostovsky and Vostochno-Mostovsky prospects

within the Mostovskaya area. In 2022, prospecting drilling was conducted at prospects identified by geophysical and geochemical prospecting across areal zones. In 2024, an assessment was conducted to evaluate the viability of mining the identified gold and copper mineralisation, which demonstrated negative economic viability. A prospecting programme for the properties has been completed.

Area: Dogyinskaya

Minerals:
gold-copper and gold-silver ores.

Location:
Trans-Baikal Territory, Gazimuro-Zavodsky District.

In 2021, the Company obtained prospecting licences for the Severo-Dogyinsky and Yuzhno-Dogyinsky prospects within the Dogyinskaya area. In 2022 and 2023, prospecting drilling was conducted at prospects identified by geophysical and geochemical prospecting across areal zones. The prospectivity of the area has not been confirmed, and exploration programme has been completed.

Area: Shamyanskaya

Minerals:
gold ore, copper-molybdenum ore.

Location:
Trans-Baikal Territory, Trans-Baikal District.

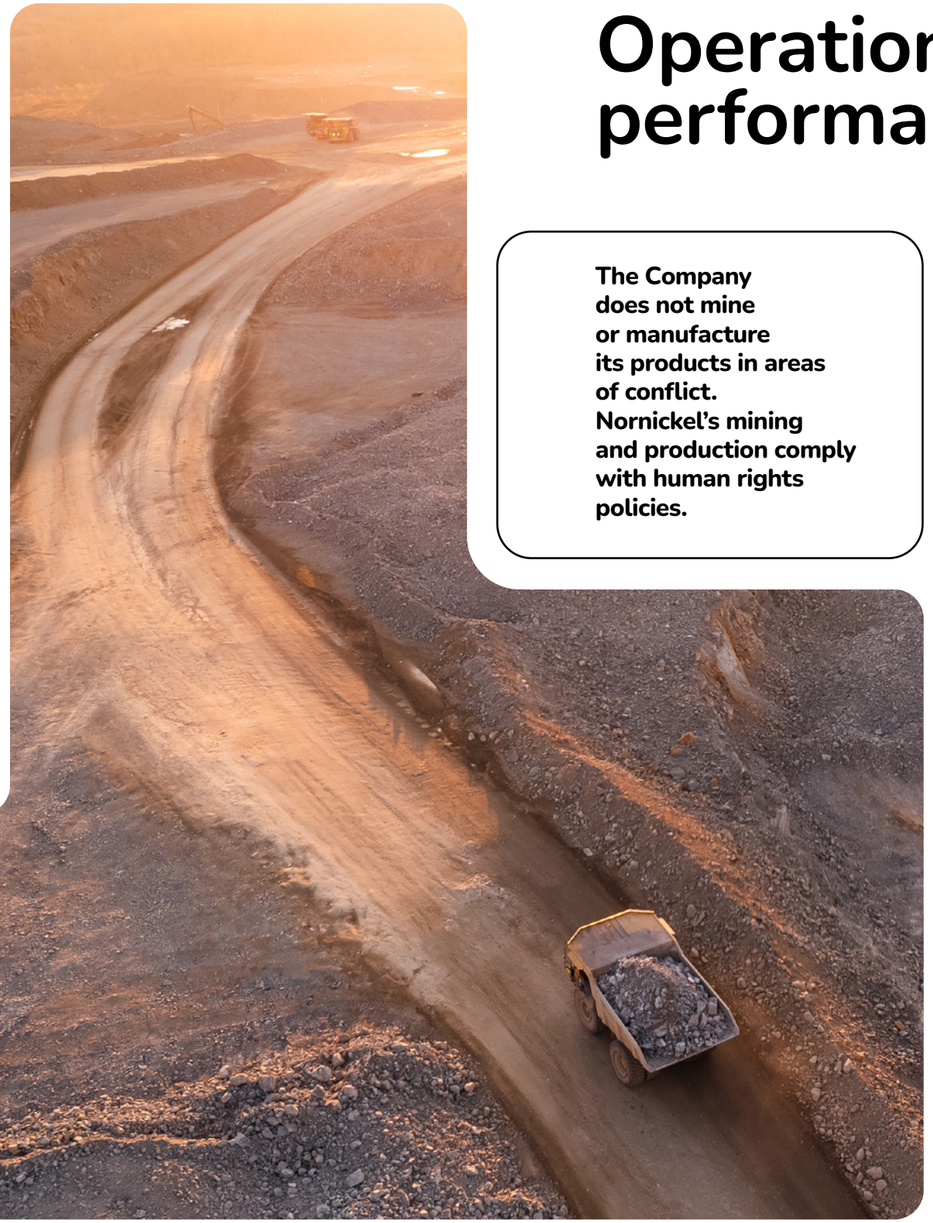
In 2021 and 2022, the Company obtained prospecting licences for the Zapadno-Shamyansky, Tsentralno-Shamyansky, and Vostochno-Shamyansky prospects within the Shamyanskaya area. In 2023, prospecting drilling was conducted at prospects identified by geophysical and geochemical prospecting across areal zones. In 2025, after the ongoing laboratory tests are completed, a report on the area's potential and an opinion on further prospecting will be prepared.

Area: Chuvanskaya

Minerals:
gold ore, silver ore, copper-molybdenum ore.

Location:
Kamchatka Territory, Penzhinsky Municipal District. Chukotka Autonomous Area, Anadyrsky Municipal District.

In 2024, Nornickel obtained a prospecting licence for the Chuvanskaya area site. In 2025, preparation of a geological exploration project is planned, along with the commencement of prospecting activities, including geophysical and geochemical surveys.



Operational performance

The Company does not mine or manufacture its products in areas of conflict. Nornickel's mining and production comply with human rights policies.

One of Nornickel's core business areas is the production of non-ferrous and precious metals. The Group has two production divisions: the Polar Division, which mines copper-nickel sulphide ores at the Norilsk and Kola sites, and the Trans-Baikal Division, which develops gold-iron-copper ores.

The Norilsk site is located on the Taimyr Peninsula in the north of the Krasnoyarsk Territory. This is where the Company's largest deposits are being developed. This production asset operates a full metals production cycle — from ore mining to the shipment of finished products. Given its location in the Arctic Circle, the site is connected to other regions of the country via the Yenisei River, the Northern Sea Route, and by air.

The Kola site is located on the Kola Peninsula in the Murmansk Region where ore is mined and nickel concentrate is produced. The Kola site serves also as the Company's nickel refining hub.

The Foreign site hosts a nickel refinery with a total production capacity of up to 65 ktpa of nickel products. The plant processes the Company's own feedstock as well as nickel-bearing raw materials from third-party suppliers.

The Trans-Baikal Division is located in the Trans-Baikal Territory of Russia, 500 km away from Chita. The mining and processing plant was launched with commercial operation in 2019. The asset includes open-pit mining operations and processing facilities with full infrastructure, including a power line, a 227-km Borzya–Gazimursky Zavod railway line (25% held by Nornickel and 75% by the government), as well as a rotation camp.

Polar Division

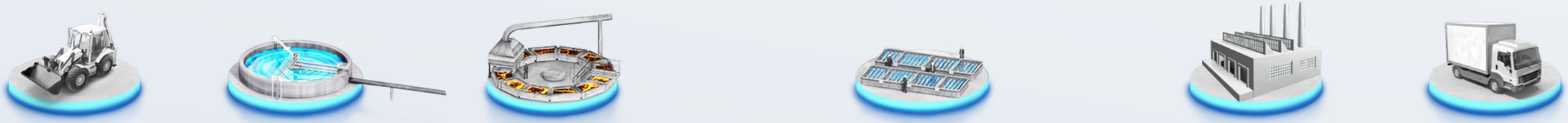
Norilsk site
Taimyr Peninsula, Krasnoyarsk Territory

Kola site
Kola Peninsula, Murmansk Region

Trans-Baikal Division

Trans-Baikal Territory

Production flow



Mining

Existing deposits:

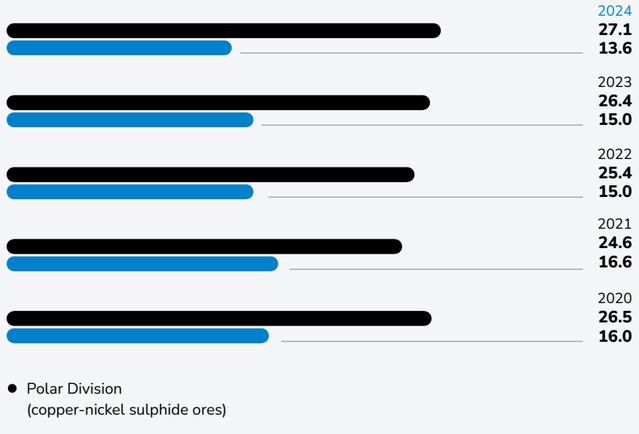
Talnakhskoye, Oktyabrskoye, Norilsk-1, Zhdanovskoye, Zapolyarnoye, Tundrovoye, Bystrinskoye

Mines / open pits:

Taimyrsky, Oktyabrsky, Komsomolsky, Skalisty, Mayak, Zapolyarny, Severny, Verkhne-Ildikansky (open pit), Bystrinsky-2 (open pit)

For more details on ore production, metal content, and metal recovery rates, please see the Data Book section on the Company website.

Group ore output , MLN T



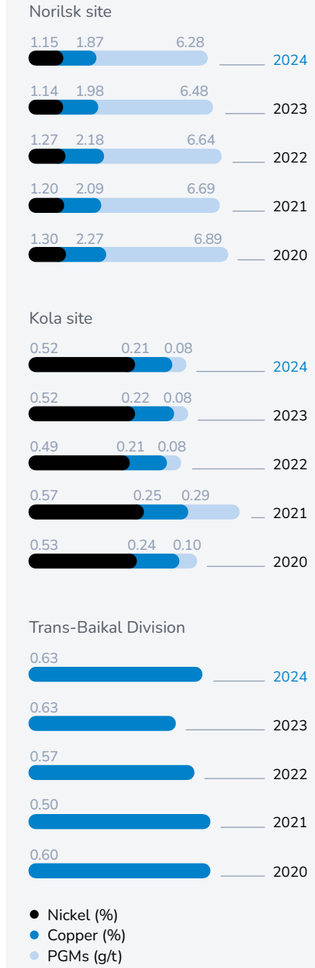
In 2024, the Polar Division mined copper-nickel sulphide ores at six deposits. The ores are classified into three categories.

Metal content by ore category

Ore categories / Metal	Ni (%)	Cu (%)	PGMs (g/t)
Rich ores — high in non-ferrous and precious metals	1.31–2.63	1.57–6.34	4.00–23.74
Cuprous ores — elevated copper content relative to nickel	0.59–0.74	1.21–3.57	5.82–9.85
Disseminated ores — lower overall metal content	0.24–0.56	0.29–1.30	4.31–7.53[1]

[1] Excluding the Kola site, as PGMs are not detected in the disseminated ore mined there based on sampling data.

Average metal content in mined ore



The Norilsk site develops the Talnakhskoye and Oktyabrskoye deposits through underground mining at the Taimyrsky, Oktyabrsky, Komsomolsky, Skalisty, and Mayak Mines. The mines employ slicing and room-and-pillar methods with the cut-and-fill system, with stopes refilled with solidifying backfill mixtures. The Norilsk-1 deposit is developed by the Zapolyarny Mine through open-pit and underground mining. Underground mining is carried out through sublevel caving using front ore passes and diesel-powered self-propelled equipment.

In 2024, total ore production by the Norilsk site was 20.2 mln t, up 1.0 mln t y-o-y (up 5%). High-grade ore output increased by 9% (+0.6 mln t), while production of cuprous ores decreased by 3.3% (–0.2 mln t). Changes in ore production volumes were due to delayed deliveries of mining equipment. Disseminated ore production increased by 7.1% (+0.5 mln t), as planned under the efficiency improvement programme.

In 2024, **the Kola site** mined disseminated ores at the following deposits: Zhdanovskoye, Zapolyarnoye, and Tundrovoye. Kola MMC used various ore mining methods. The Zhdanovskoye and Zapolyarnoye deposits use three mining methods: gravity caving with front ore passes, sublevel caving with room-and-pillar ore removal, and room-and-pillar mining.

In 2024, Kola site produced 7.0 mln t of ore. A decrease in ore production by 3.5% (–0.2 mln t) was due to the suspension of mining operations at the Kotselvaara-Kammikivi and Semiletka deposits after the Kaula-Kotselvaara shaft was put on care and maintenance in 2024.

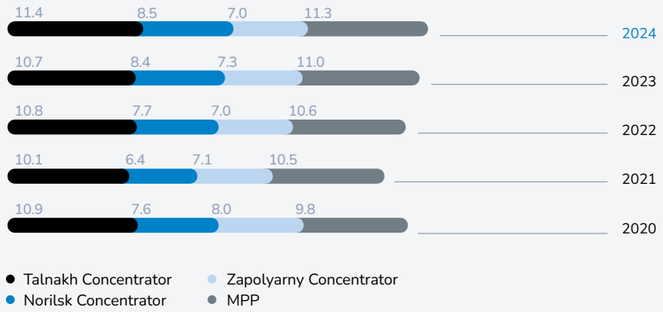
The Trans-Baikal Division mines gold-iron-copper ores of the Bystrinskoye deposit at the Verkhne-Ildikansky and Bystrinsky-2 mines. In 2024, total ore production was 13.6 mln t, down 1.4 mln t (–9%) y-o-y. Lower ore mining volumes were due to the processing of stockpiled primary and mixed ores at the concentrator.

Concentration

Concentrators

- Talnakh Concentrator, Norilsk site
- Norilsk Concentrator, Norilsk site
- Zapolyarny Concentrator, Kola site
- Mining and processing plant (MPP), Trans-Baikal Division

Mining and processing plant (MPP), Trans-Baikal Division



Metals recovery in concentration, %

Operations	2020	2021	2022	2023	2024
Nickel					
Norilsk site	84.8	84.3	85.3	84.7	**83.9**
Kola site	62.9	67.7	67.4	66.5	**67.0**
Copper					
Norilsk site	95.1	95.5	96.3	96.2	**95.8**
Kola site	71.8	76.8	73.7	73.1	**72.9**
Trans-Baikal Division	87.4	86.9	88.1	88.8	**89.3**
PGMs					
Norilsk site	86.4	85.6	85.8	85.3	**85.3**

+ 0.7 mln t

In 2024, Talnakh Concentrator increased its ore processing

TO **11.4** MLN T

+ 0.1 mln t

In 2024, Norilsk Concentrator increased its ore processing

TO **8.5** MLN T

+ 0.3 mln t

In the reporting year, Bystrinsky GOK processed

11.3 MLN T OF ORE

Talnakh Concentrator processes high-grade, cuprous, and disseminated ores from the Oktyabrskoye and Talnakhskoye deposits to produce nickel-pyrrhotite and copper concentrates as well as metal-bearing products. Its key processing stages include crushing, milling, flotation, and thickening. In 2024, Talnakh Concentrator increased its ore processing to 11.4 mln t, up 0.7 mln t y-o-y, as a result of efficiency initiatives.

Norilsk Concentrator processes all disseminated ores from the Norilsk-1 deposit, cuprous and disseminated ores from the Oktyabrskoye and Talnakhskoye deposits, and some metal-bearing products from Talnakh Concentrator to produce nickel and copper concentrates. Its key processing stages include crushing, milling, flotation, gravity concentration, and thickening. In 2024, Norilsk Concentrator increased its ore processing to 8.5 mln t, up 0.1 mln t y-o-y.

The resulting thickened concentrates from Talnakh and Norilsk Concentrators are transported via slurry pipelines to the metallurgical facilities of the Norilsk site for further processing.

Zapolyarny Concentrator processes disseminated ores from Kola MMC deposits. The concentrator produces nickel sulphide concentrate, which is then sold via third parties and shipped to the Norilsk site. In 2024, the concentrator processed 7.0 mln t of ore, down 0.3 mln t y-o-y, due to a decline in open-pit mining of disseminated ore.

Mining and processing plant processes ores from the Bystrinskoye deposit into copper, iron ore, and gold concentrates. Its key processing stages include crushing, milling, flotation, thickening, filtration, and final product packaging. The concentrator has two processing lines. Copper and iron ore concentrates are sold via third parties, while gold concentrates are shipped to the Norilsk site for further processing. In the reporting year, Bystrinsky GOK processed 11.3 mln t of ore, an increase of 0.3 mln t y-o-y, as a result of efficiency initiatives.

Trans-Baikal Division' production volumes

Products	2020	2021	2022	2023	2024
Ore processing (mln t)	9.8	10.47	10.60	11.02	**11.3**
Copper (in copper concentrate, t)	62.7	67.8	67.2	69.0	**70.0**
Copper content in the concentrate (%)	24.7	22.9	23.0	23.0	**22.9**
Iron ore concentrate (kt)	2,047	2,582	2,545	2,892	**2,940**
Iron content in the concentrate (%)	64.2	63.7	64.7	65.1	**64.7**

Smelting

Downstream facilities

- Nadezhda Metallurgical Plant, Norilsk site
- Copper Plant, Norilsk site
- Copper Plant's metallurgical shop, Norilsk site
- Chemical and metallurgical shop, Kola site
- Refining shop, Kola site
- Nickel tankhouse, Kola site
- Refinery, Foreign site

Production chain

Norilsk site

Nadezhda Metallurgical Plant processes nickel concentrates from concentrators, nickel slag from Copper Plant, pressure-oxidised sulphide concentrate[1], secondary materials, and metal-bearing feedstock from the Kola site to produce converter matte, which is then shipped to the Kola site.

Copper Plant processes the entire volume of copper concentrates from Talnakh and Norilsk Concentrators, metal-bearing feed from the Kola site, copper cake from the Foreign site, and gravity concentrate from the Trans-Baikal Division to obtain copper cathodes, elemental sulphur, and sulphuric acid for the Company's operational needs. Copper Plant's metallurgical shop recycles sludge from the copper tankhouses of Copper Plant to produce precious metal concentrates and commercial selenium.

Kola site

The Kola site's refining facilities process converter matte from the Norilsk site[2]. Converter matte is fed into the converter matte separation section, where it undergoes crushing, milling, and flotation to produce copper and nickel concentrates.

A portion of the converter matte, after crushing, is directly shipped to the Foreign site for processing, while the remaining part is milled, subjected to precious metals recovery, and then also sent to the Foreign site.

A hydrometallurgical product of Nadezhda Metallurgical Plant, produced from metal-bearing material supplied by Talnakh Concentrator.

The resulting copper concentrate is sent to Copper Plant. The nickel concentrate stream is divided, with a portion undergoing magnetic separation and precious metals recovery before being sent to the Foreign site for further processing The remaining portion of the nickel concentrate is treated in the roasting and electric furnace sections to produce tube furnace nickel powder, anodes, and granulated nickel alloy. Anodes are processed using conventional electrorefining technology at the chemical and metallurgical shop to produce cathodes. Tube furnace nickel powder is further processed at the nickel tankhouse using a leaching and electrowinning technology to produce cathodes. Granulated nickel alloy is processed at the nickel carbonyl section to produce pellets and powder.

During the production of nickel cathodes at the chemical and metallurgical shop and the nickel tankhouse, semi-products with high precious metals content and primary cobalt cake are also obtained. Semi-products are further processed at the chemical and metallurgical shop to produce precious metal concentrates. Primary cobalt cake is processed at the cobalt section to produce commercial cobalt concentrate and cobalt cathodes.

Foreign site

The refinery uses a sulphuric acid leaching technology that enables high metal recovery rates – over 98%. It processes nickel feedstock supplied by the Kola site (matte and crushed, PGM-depleted converter matte) as well as feedstocks purchased from third parties (nickel salts). Once leached, copper cake is sent to the Norilsk site, while purified nickel solutions are sent for further processing to produce nickel cathodes, nickel briquettes, powder, salts, as well as salts and solutions of cobalt.

Precious metals produced by Nornickel are refined under tolling agreements by third-party companies.

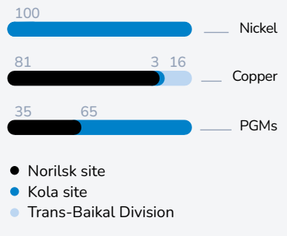
Metals recovery in smelting, %

Operations	2020	2021	2022	2023	2024
Nickel					
Norilsk site[1]	94.1	94.4	95.1	94.9	**95.2**
Kola site[2]	96.3	98.3	98.4	98.5	**98.3**
Foreign site [1]	98.2	98.1	97.8	98.3	**98.6**
Copper					
Norilsk site[1]	94.6	95.1	95.4	95.6	**95.7**
Kola site[2]	95.4	99.5	99.6	99.2	**99.2**
Foreign site [2]	99.8	99.8	99.8	99.8	**99.8**
PGMs					
Norilsk site[1]	96.4	96.5	96.6	96.7	**96.9**
Kola site[2]	92.9	92.9	97.8	98.1	**98.2**
Foreign site [2]	99.9	99.9	99.9	99.9	**99.9**

[1] A hydrometallurgical product of Nadezhda Metallurgical Plant, produced from metal-bearing material supplied by Talnakh Concentrator.
[2] The production and processing of own converter matte have been discontinued following the shutdown of the smelting shop in December 2020.

Products

Share of finished products in 2024, %



The Group's saleable products

Metal	2020	2021	2022	2023	2024
Nickel (kt)	235.7	193.0	219.0	208.6	**205.1**
including from own feed	232.5	189.9	218.7	208.2	**204.9**
Copper (kt)	487.2	406.8	433.0	425.4	**432.5**
Palladium (koz)	2,826	2,616	2,790	2,692	**2,762**
Platinum (koz)	693	641	651	664	**667**

[1] Feedstock to finished products.
[2] In refining, converter matte to finished products.

Distribution

The Company's products comply with national and international quality standards.

Despite geopolitical challenges and related logistical issues, the Company successfully met all its obligations to customers in 2024, having never failed to deliver on its commitments. This solid performance was to a large extent driven by Nornickel's long-standing policy and building direct relationships with market players.

In 2024, the Company's products were supplied to key metal-consuming countries.

Nornickel metals' applications

PGMs

Hydrogen solutions

Platinum, palladium, iridium, and ruthenium are widely used in rapidly developing hydrogen technologies. Platinum group metals are used as catalysts in low-carbon hydrogen production as well as in hydrogen purification, transportation, and use as an energy source in fuel cells.

Automotive industry

Palladium, platinum, and rhodium are used as active materials in automotive exhaust gas catalysts to minimise the vehicles' environmental impact

Chemical and petrochemical industries

Palladium, platinum, and rhodium are used as catalysts in chemical and petrochemical processes, helping industry players achieve high operational efficiency

Jewellery

Palladium and platinum are used to make a wide range of jewellery that stands out not only for its beauty but also for its safety, durability, andhigh value

Electronics

Palladium is used in the production of capacitors, motherboards, and other electronic components, while platinum is primarily used in hard drives, and rhodium in coatings for connectors and contacts

Healthcare

PGMs are extensively used as catalysts in pharmaceutical synthesis. Palladium has also found wide application in dentistry, while platinum is used in medical devices such as pacemakers and as an active ingredient in anti-cancer medicines

Glass fibre and optical glass

In the glass industry, platinum and rhodium are used to manufacture bushings for making glass fibre and optical glass

Nickel

Machine building, chemical and petrochemical industries, construction, and production of household appliances and cutlery.

Nickel is used in stainless steel production. Adding nickel as an alloying element to stabilise the austenitic structure enhances steel's corrosion resistance, high-temperature strength, weldability, ductility, and resistance to aggressive environments

Aerospace industry

Nickel-based heat-resistant alloys offer strong resistance to aggressive environments and are used in the production of aircraft engine components

EV batteries

Nickel is a key element used in the production of precursor cathode active materials for EV batteries. Nickel-intensive NCM and NCA batteries are considered the dominant technologies due to their higher gravimetric and volumetric energy density, which increases driving range. Nickel-based batteries are also more suitable for recycling and reuse than other types of battery systems

Renewable energy

Nickel alloys are used in wind, solar, and geothermal energy generation

Copper

Network infrastructure

Copper is used in power generation, transmission, and distribution as well as in all types of electrical wiring
A strong push for transport electrification and transition to renewable energy will require a significant expansion of distribution networks

Construction and air conditioning and cooling systems

The construction sector uses copper in pipes and tubing, heating and cooling systems, and as a cladding material. Electrical and communication cables are also mostly made of copper

Renewable energy

Copper is widely used in the construction of wind, solar, and other types of renewable power plants

Electronics and home appliances

Copper is used in electronics and home appliances owing to its superior electrical and thermal conductivity

Automotive industry

The automotive industry uses copper in batteries, electric motors, inverters, wiring, and charging infrastructure. Transport electrification is expected to be a key driver of copper demand throughout the current decade

Sales and distribution strategy

As the world's largest producer of several metals, Nornickel views sales and distribution as a key pillar of its business, on par with production. The key objective of sales and distribution is to ensure current and future liquidity across the entire product range.

The Group sells its products globally both through its own sales offices in Europe, China, and Russia and via distributors in other regions.

Nornickel's products are registered on major global commodity exchanges. In particular, the Foreign site passed an audit in 2024 confirming compliance with the LME Responsible Sourcing requirements and maintained its LME brand registration.

Group products by site

Norilsk site:
- Copper cathodes;
- Copper concentrate;
- Commercial sulphur;
- Selenium;
- Precious metals.

Kola site:
- Nickel cathodes and carbonyl;
- Nickel sulphide concentrate;
- Nickel carbonate and sulfate;
- Nickel matte;
- Nickel salts;
- Copper matte;
- Cobalt cathodes, cobalt concentrate;
- Precious metals;
- Sulphuric acid.

Foreign site:
- Nickel salts, briquettes, cathodes, and powders;
- Copper cake;
- Cobalt sulphate, cobalt solutions.

Trans-Baikal Division:
- Iron ore concentrate;
- Copper concentrate.

The Company's market reach enables it to respond promptly to evolving demands in terms of product quality and services as well as to changes in the market environment and other external conditions affecting sales and distribution. Nornickel favours direct sales to industrial customers, while also engaging other professional market participants willing to partner with the Company to promote its products.

Nornickel has traditionally positioned itself as a responsible supplier committed to the sustainable development of end markets for its core products and not seeking to benefit from its market position to the detriment of other participants. Regardless of external conditions, consumers can rely on Nornickel for a stable supply and unrestricted access to consistent-quality products in volumes that meet market demand.

Nickel sales and distribution strategy

The Company's nickel product sales mix matches the global nickel consumption profile, where the key end-use segments include stainless and specialty steel production, alloy manufacturing, and electroplating. The battery sector is also growing in importance.

To capture the expected mid- and long-term growth in nickel demand from the battery sector, Nornickel continues to implement a number of initiatives to enhance and expand its existing product range supporting the battery supply chain. The significant increase in Indonesian nickel supply may become a limiting factor for the implementation of these initiatives. Nevertheless, the competitive advantages of Norilsk Nickel products, such as their low carbon footprint and full compliance with internationally recognised environmental standards, support the Company's continued presence in market segments that traditionally prioritise these qualities, particularly in sustainable electric vehicle production.

The sales and distribution strategy for nickel products is aimed at striking a healthy balance between supplies to stainless steel producers and deliveries to other industries, thereby ensuring the Group's stable sales performance amid shifting consumption trends in end-use markets.

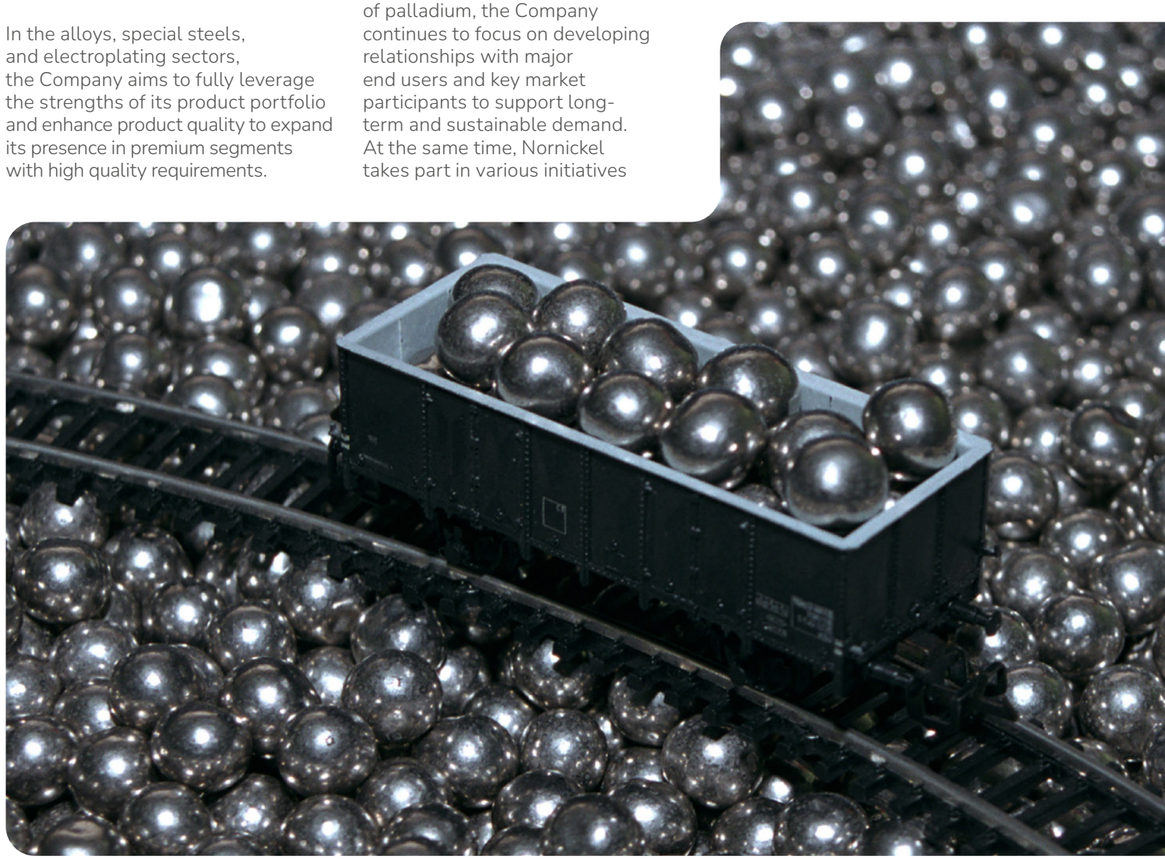
In recent years, the battery sector has been the fastest-growing end-use segment. The Company is strongly focused on building long-term relationships with key market participants and explores various forms of cooperation with consumers in the battery sector. Nornickel also conducts research in battery recycling and works on developing integrated solutions for the future battery supply chain.

In the alloys, special steels, and electroplating sectors, the Company aims to fully leverage the strengths of its product portfolio and enhance product quality to expand its presence in premium segments with high quality requirements.

PGM sales and distribution strategy

The automotive industry, the production of process catalysts, as well as the jewellery and medical products industries, have traditionally remained the key market segments for platinum group metal (PGM) products.

As the world's largest producer of palladium, the Company continues to focus on developing relationships with major end users and key market participants to support long-term and sustainable demand. At the same time, Nornickel takes part in various initiatives aimed at further promoting the use of palladium in various future industrial applications. Among other initiatives, Nornickel is actively developing palladium-based solutions for emerging technologies, including hydrogen energy, advanced chemistry, solar power, and other areas that have the potential to expand the metal's applications going forward.



Product quality

In 2024, Nornickel once again reaffirmed its reputation as a reliable supplier of high-quality products. The Company places top priority on delivering high-quality products and related services to maximise customer satisfaction. The Company's products comply with national and international quality standards. Nornickel's production sites have established procedures during both the manufacturing process and final product release to manage non-conforming products and prevent their delivery to customers. The handling of such products, responses to customer complaints, and corrective actions are carried out in accordance with documented procedures compliant with ISO 9001:2015. With regard to product acceptance by consumers, the Company follows the instruction on the procedure for acceptance of products by quantity and quality, as well as the product supply contract.

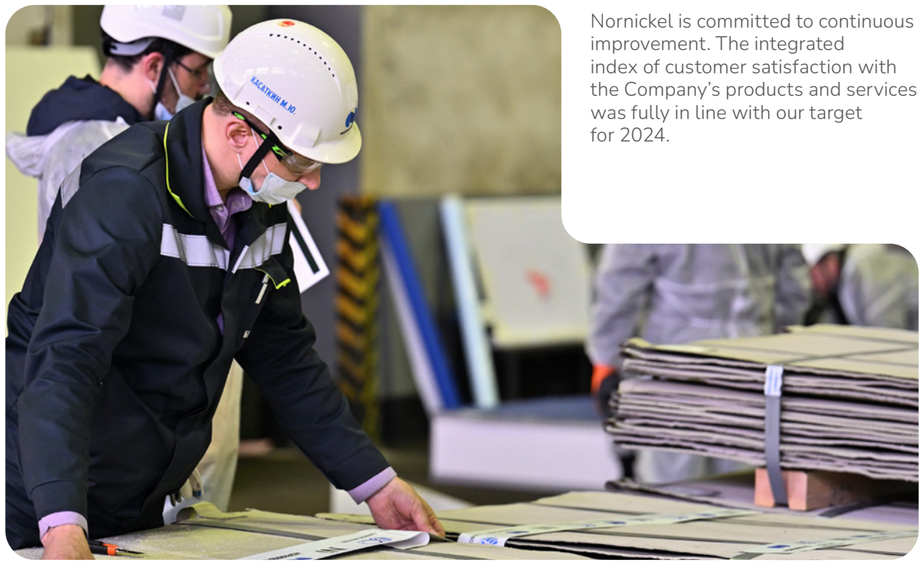
All of the Company's products are certified, with safety certificates issued that set out product-specific requirements for transportation and handling.

The Company successfully maintains certification to international standards such as ISO 9001 (quality management), ISO 45001 (occupational health and safety management), ISO 14001 (environmental management), and ISO/IEC 27001 (information security management).

In line with the principles of transparency and openness in disclosing product quality information to consumers and other stakeholders, up-to-date data on the physical and chemical properties of the Company's products is available in the Products section of the Company's website.

Customer complaints and queries (NUMBER OF CASES)

Indicators	2020	2021	2022	2023	2024
Total customer complaints and queries regarding product quality	22	18	16	27	**30**
Of which were substantiated	7	10	3	13	**6**



Customer satisfaction

Every year, the Company conducts a customer satisfaction survey in line with ISO 9001 to collect feedback from its customers. The feedback received is reviewed and incorporated into initiatives to improve product and service quality.

Nornickel is committed to continuous improvement. The integrated index of customer satisfaction with the Company's products and services was fully in line with our target for 2024.

Customer satisfaction is measured and assessed using a numerical satisfaction score. The evaluation is based on criteria that reflect the quality attributes of the Company's products and services. Each criterion is evaluated using the following scale: 3 points — the customer is fully satisfied; 2 points — the customer is partially satisfied; 1 point — the customer is not satisfied with the quality of the Company's products and services.

During the reporting period, Nornickel retained most of its customer base and established new partnerships in new markets, promptly adding new clients to its portfolio.

Consumer personal data protection

Personal data protection at Nornickel is governed by the Personal Data Processing and Security Methodology and the Personal Data Processing Policy, both developed in line with legal requirements. Documents provided by consumers and containing personal data, among other information, are stored in the information system in compliance with relevant data protection regulations. In 2024, there were no data-related incidents involving consumers' personal data.

Customer satisfaction level (POINTS)

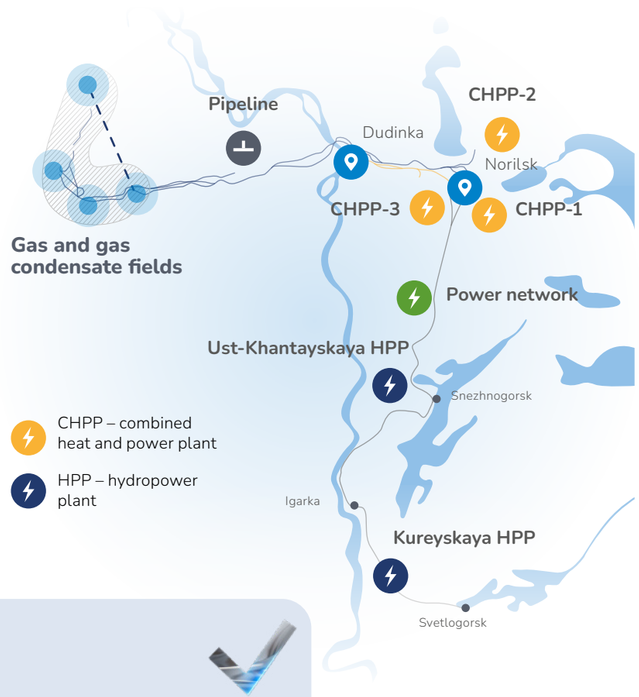
Energy assets

Nornickel operates its own fuel and energy assets, which include four natural gas fields, three combined heat and power (CHP) plants, two hydropower plants, as well as gas pipelines, power lines, and gas-fired boiler houses. The Group's energy assets supply approximately 56% of the Group's total energy needs, with electricity accounting for 50% of that volume.

The Company's fuel and energy assets are managed by the Energy Division and include the following facilities.

A gas and condensate production enterprise operating in the Krasnoyarsk Territory and the Yamal-Nenets Autonomous District. Its core activities include the extraction and processing of natural gas and gas condensate as well as the sale of hydrocarbon feedstocks to consumers.

Energy infrastructure



Natural gas production
2,650 MCM

Gas condensate production
102 KT

Share of renewable electricity across the Group
54.4%

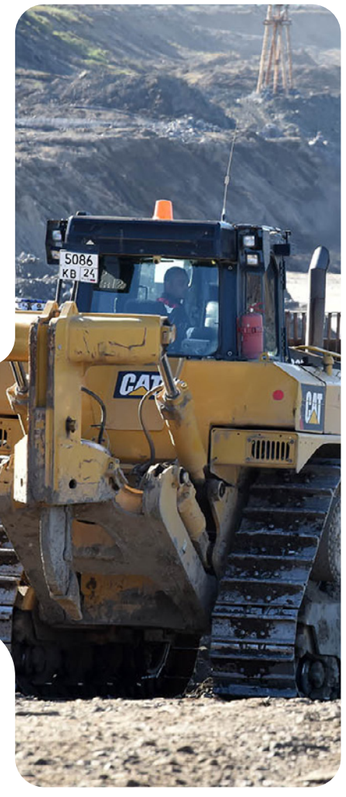
Production volume[1]

Indicators	2020	2021	2022	2023	2024
Natural gas (mcm)	2,728	2,927	2,816	2,720	**2,650**
Gas condensate (kt)	98	102	91	85	**102**

Existing deposits:
- Messoyakhskoye gas field — under development since 1969
- Yuzhno-Soleninskoye gas condensate field — under development since 1972
- Severo-Soleninskoye gas condensate field — under development since 1983
- Pelyatkinskoye gas condensate field — under development since 2003

An enterprise engaged in the transportation of natural gas and gas condensate, delivering feedstocks from the fields to consumers in the Norilsk Industrial District. The district's gas supply system is a regional-level network and is not connected to the Unified Gas Supply System of Russia. Natural gas is transported from the fields via a trunk pipeline to Dudinka and Norilsk.

A fuel company serving as a strategic supplier of light and dark petroleum products to the Far North. The company plays a key commercial and social role in the region, with operations spanning the Norilsk Industrial District, the cities of Krasnoyarsk and Dudinka, the Murmansk Region, and the Trans-Baikal Territory. The fuel company supplies petroleum products to mining, exploration, and transport companies as well as municipal enterprises. Its key consumers are Norilsk Nickel Group enterprises.



Gas reserves
242.7 BCM

Gas condensate reserves
4,424 KT

The string length of gas and condensate pipelines
1,653 KM

[1] Gas condensate production figures include production losses (carryover with separation gas).

A fuel and energy company engaged in the generation and supply of electricity and heat to consumers in the Far North. Electricity and heat generation relies on a mix of renewable energy sources (hydropower) and non-renewable sources (natural gas).

The asset comprises the following facilities:
- three gas-fired thermal power plants with a total installed capacity of 1,154 MW;
- two hydropower plants with a total installed capacity of 1,102 MW;
- nine boiler houses;
- three electric boiler houses;
- six fossil fuel-fired boiler houses.

Company energy system highlights:
- total installed capacity: 2,256 mw
- total chpp heat capacity: 4,129 gcal/h
- total boiler capacity: 511 gcal/h

The Company supplies electricity, heat, and water to residents of Norilsk, Dudinka, Svetlogorsk, and Snezhnogorsk, as well as to Nornickel enterprises, which account for about 73% of the energy produced.

The Company's main source of renewable energy is hydropower, generated at the Ust-Khantayskaya and Kureyskaya HPPs.

The Ust-Khantayskaya HPP is the world's northernmost hydropower plant, with a capacity of 502 MW. It was built on permafrost and is located on the Khantayka River, a right-bank tributary of the Yenisei.

Surface area of the Khantayka Reservoir
2,230 SQ KM

Total volume of the Khantayka reservoir
14.03 CU KM

Active (usable) volume of the Khantayka Reservoir
22.55 CU KM

Surface area of the Kureyka Reservoir
558 SQ KM

Active (usable) volume of the Kureyka Reservoir
7.3 CU KM

Total volume of the Kureyka reservoir
10.0 CU KM

The Kureyskaya HPP is located in the north of the Krasnoyarsk Territory, on the Kureyka River, with an installed capacity of 600 MW.

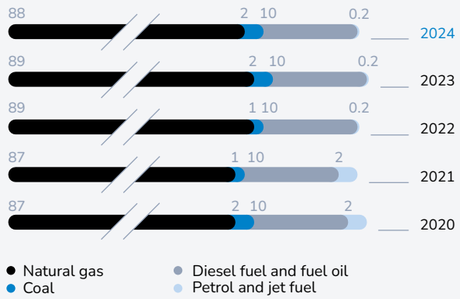
In 2024, the share of renewables in total electricity generation stood at 54% for the Group and 58% for the Norilsk Industrial District. Renewable energy accounted for 12% of the Group's total energy consumption.

Energy sold to external consumers accounts for 31% of Nornickel's total self-generation.

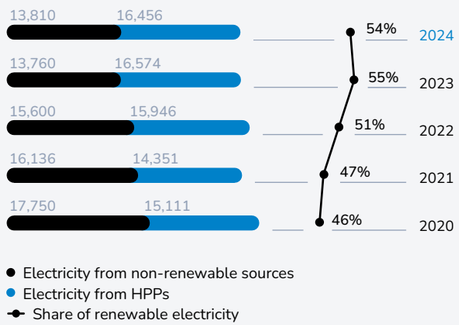
Energy consumption by the Group[1] (TJ)

Indicators	2020	2021	2022	2023	2024
1. Fuel consumption, including:[2]	141,237	151,235	141,909	137,150	**133,746**
• natural gas	122,216	130,867	125,934	121,643	**117,940**
• diesel fuel and fuel oil	13,939	15,097	13,628	13,080	**13,471**
• petrol and jet fuel	2,902	3,715	325	312	**297**
• anthracite coal	2,180	1,557	2,027	1,562	**1,765**
• lignite	0	0	0	552	**273**
2. Electricity and heat from renewable sources (HPPs)	15,310	14,586	16,152	16,800	**16,686**
3. Electricity and heat purchased from third parties	11,200	10,891	11,005	8,701	**8,660**
4. Sales of electricity and heat to third parties	17,254	19,974	18,968	19,216	**18,838**
Total energy consumption (1+2+3–4)	**150,493**	**156,738**	**150,098**	**143,435**	**140,254**
Share of renewable energy consumption	10%	9%	11%	12%	**12%**
Share of renewable electricity consumption	46%	47%	51%	55%	**54%**

Fuel consumption by the Group (%)



Electricity consumption by the Group (TJ)



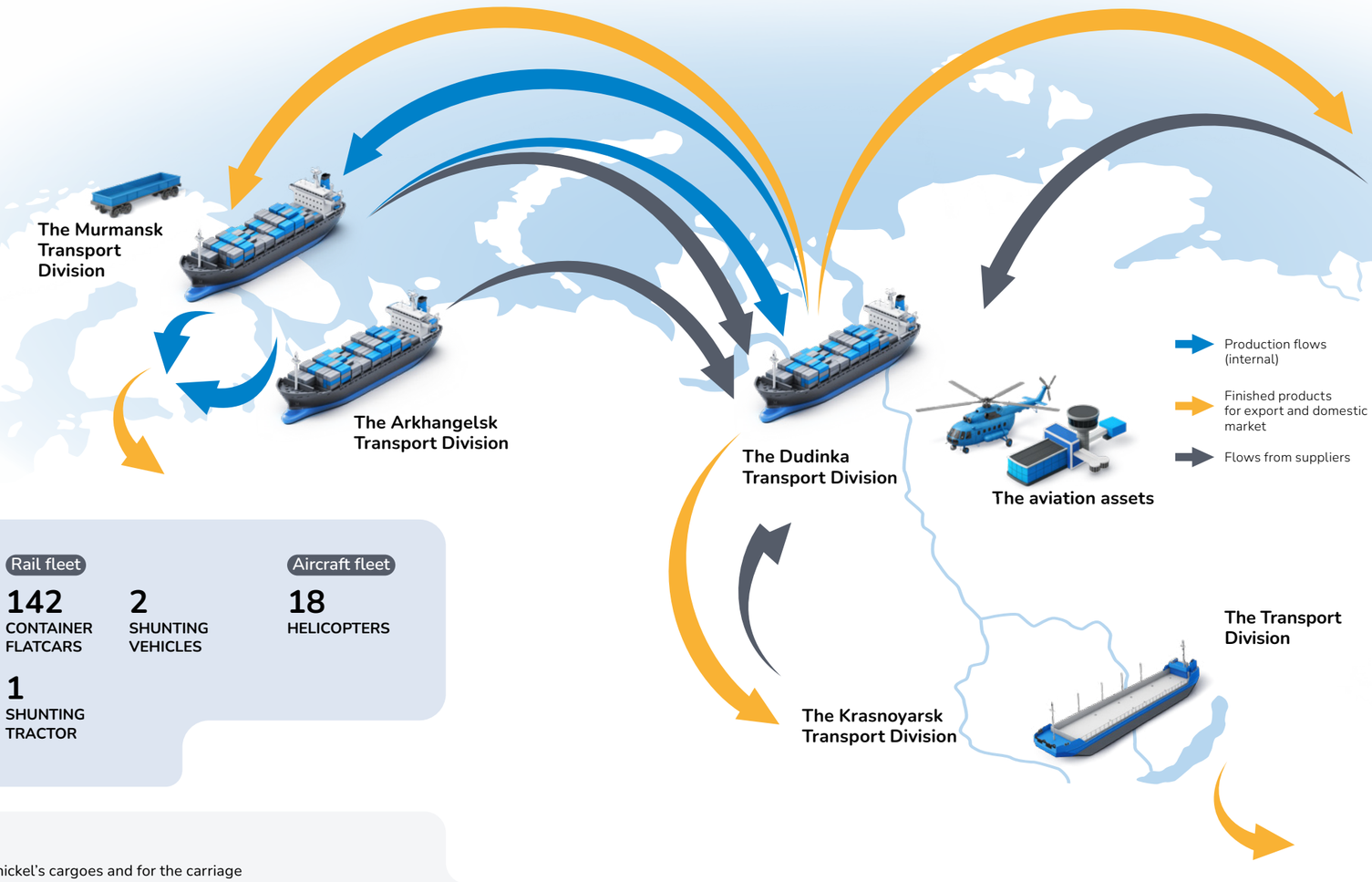
The Company's investment programme includes a number of projects to boost the share of hydropower, capture fuel and energy savings, and improve the reliability of energy and gas supplies.

The Company's key projects to improve equipment reliability and energy efficiency and to boost output include:
- replacement of power unit equipment for units no. 1 and 2 at chpp-2: pre-commissioning activities are underway; three tanks have been put into operation at the plant
- ongoing retrofit of the dams at the kureyskaya hpp
- ongoing replacement of storage tanks and associated infrastructure at tank farms
- completion of drilling of three wells at a well pad within the pelyatkinskoye gas condensate field; tie-in works are in progress
- completion of construction and installation works; pre-commissioning activities including operating mode testing of a booster compressor station at the severo-soleninskoye gas condensate field
- ongoing retrofit of the gas transportation system from the fields to the norilsk industrial district
- commissioning of a gas filling station in the norilsk industrial district

[1] For a detailed breakdown of the Group's energy consumption by enterprise, see Nornickel's Sustainability Report 2024.
[2] Including fuel consumed for energy generation to meet the needs of Norilsk.

Transport and logistics assets

Nornickel owns an advanced transport infrastructure capable of handling most challenging freight logistics tasks and ensuring sustainable operations of Group enterprises. Nornickel's transport and logistics assets cover the full range of key transport and freight-forwarding services.



Asset summary:

Sea fleet

6 VESSELS
heavy ice-class

1 ICEBREAKER
sea-class

River fleet

619 VESSELS
(186 self-propelled and 433 towed vessels), including the active core fleet of 381 vessels

Rail fleet

142 CONTAINER FLATCARS

2 SHUNTING VEHICLES

1 SHUNTING TRACTOR

Aircraft fleet

18 HELICOPTERS

The Krasnoyarsk Transport Division
is responsible for the transportation and forwarding of Nornickel's cargoes and for the carriage of precious metal concentrates.

A standalone asset
coordinates the operations of the Krasnoyarsk and Lesosibirsk ports and Yenisei River Shipping Company, which provide a strictly seasonal service due to the Yenisei River freezing over in winter. When ice flows pass, the ports are used to transship Nornickel's cargoes to Dudinka, including crushed stone, clinker, equipment, materials, and socially significant cargoes (as part of the Northern Deliveries programme).

A standalone asset
carries the bulk of Nornickel's and third-party cargoes shipped on the Yenisei River. It owns over 600 river vessels, including self-propelled and towed ones. The fleet operates in the Yenisei, Angara, Nizhnyaya Tunguska, and Podkamennaya Tunguska Rivers and their largest tributaries.

The river port in Krasnoyarsk
is one of the largest ports in the Yenisei basin. It transships cargoes delivered by road, rail, and water and provides ancillary services. The port has three operating areas — Yenisei, Zlobino, and Peschanka.

The river port in Lesosibirsk
is located 40 km downstream of the point of confluence of the Angara and Yenisei Rivers and downstream of the hard-to-navigate rapids. This secures the delivery o Nornickel's cargoes at times of low water on the Yenisei River and the use of ships loaded to maximum capacity. The port's unique benefits:

- the only dedicated river port on the yenisei river capable of handling explosives with a storage option
- offers year-round service (rail-to-road and road-to-rail cargo transshipment services in between navigation periods)
- a railway to achinsk links lesosibirsk to the trans-siberian railway

The Murmansk Transport Division
is based in the year-round ice-free sea port of Murmansk.

The Arkhangelsk Transport Division
is responsible for smooth year-round transshipment services for Nornickel's cargoes via the Arkhangelsk sea port, which is conveniently linked to other Russian and foreign regions by road, air, and rail.

The Dudinka Transport Division
includes the Dudinka port and a fleet of port service vessels handling cargo transshipment for the production needs and residents of the Taimyr Peninsula.

The aviation asset
supports the corporate and social activities in the local communities of the Taimyr Peninsula.

Norilsk Airport
is the only transport infrastructure facility that provides year-round connections between the Norilsk Industrial District and other Russian regions.

The Transport Division
arranges transportation of the Trans-Baikal Division's products by rail from Gazimursky Zavod to Borzya.

Nornickel has a unique Arctic fleet capable of breaking through Arctic ice up to 1.5 m thick without icebreaker support, which enables the Company to provide year-round dry and liquid cargo shipping services between sea ports.

In 2024, Nornickel also shipped liquid cargoes, including by the Company-owned tanker, Yenisei. The transport services involved export of gas condensate from the Pelyatkinskoye field, delivery of petroleum products to the Norilsk Industrial District, and commercial trips to other destinations.

In addition to sea transportation with its own fleet of Arc7 heavy ice-class vessels, the Company engages a fleet of lower ice-class Arc4/Arc5 vessels to transport additional cargoes for major investment projects in Taimyr. These sea vessels require icebreaker escort in the Yenisei River, the Yenisei Bay, and the Kara Sea between November and May on an ongoing basis, with three icebreakers providing this support.

Nornickel signed a long-term contract with ROSATOM (valid until 2041 and renewable until 2051) to engage a nuclear-powered Project 22220 icebreaker with a shaft power of about 60 MW to make sure the Company's strategic needs for icebreaker support are fully covered.

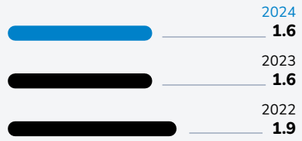
The Dudinka port and the **fleet of port service vessels** are located on the Taimyr Peninsula. The Dudinka port is Taimyr's main cargo gateway with no reasonable alternative. In addition, it is the world's only port that gets flooded every year during the spring thaw. From November to May, the port's water area and the Yenisei River freeze over. At this period, the Dudinka port handles only sea vessels using icebreakers to de-ice the berths and provide support during manoeuvring and mooring operations. In May, during the flooding, the service is suspended. In June, after the ice breakup, water level drop, and restoration of the berths, vessel operations resume at both sea and river berths. The port transships cargoes for businesses and residents of the Taimyr Peninsula. In summer, river vessels deliver equipment and materials (sand, round timber, clinker, process materials, etc.) for production needs from Krasnoyarsk and Lesosibirsk. All year round, except for a short period of ice drifting on the Yenisei River, converter matte and metal products are shipped from Dudinka by sea.

To reduce its environmental footprint, the Company implements programmes aimed at reducing fuel consumption and preventing contamination of the Dudinka and Yenisei Rivers and finances the release of fry.

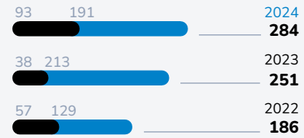
Nornickel's own **terminal** in Murmansk ensures year-round transshipment of the Company's finished metal products for export, acceptance of converter matte from Dudinka and its shipment by rail to the Kola site, and shipment of industrial semi-products to Dudinka as well as of cargoes to meet the needs of the Norilsk region. Along with sea transportation, the Company's Murmansk-based operations include transport and freight-forwarding services, cargo transshipment and storage as well as railway services between Murmansk and Monchegorsk.

Thanks to its own airline and the airport in Norilsk, the Company provides air transportation services to local communities across the Taimyr Peninsula. The air carrier operates a fleet of eighteen Mi-8 helicopters providing air services related to the operations of the Norilsk Nickel Group, emergency medical flights, search and rescue operations, and passenger services.

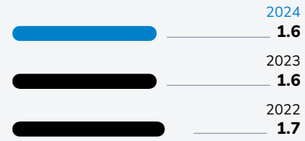
Dry cargo transportation by fleet, (MLN T)[1]



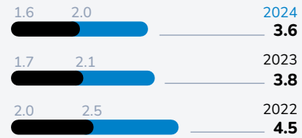
Liquid cargo shipments, (KT)[1]

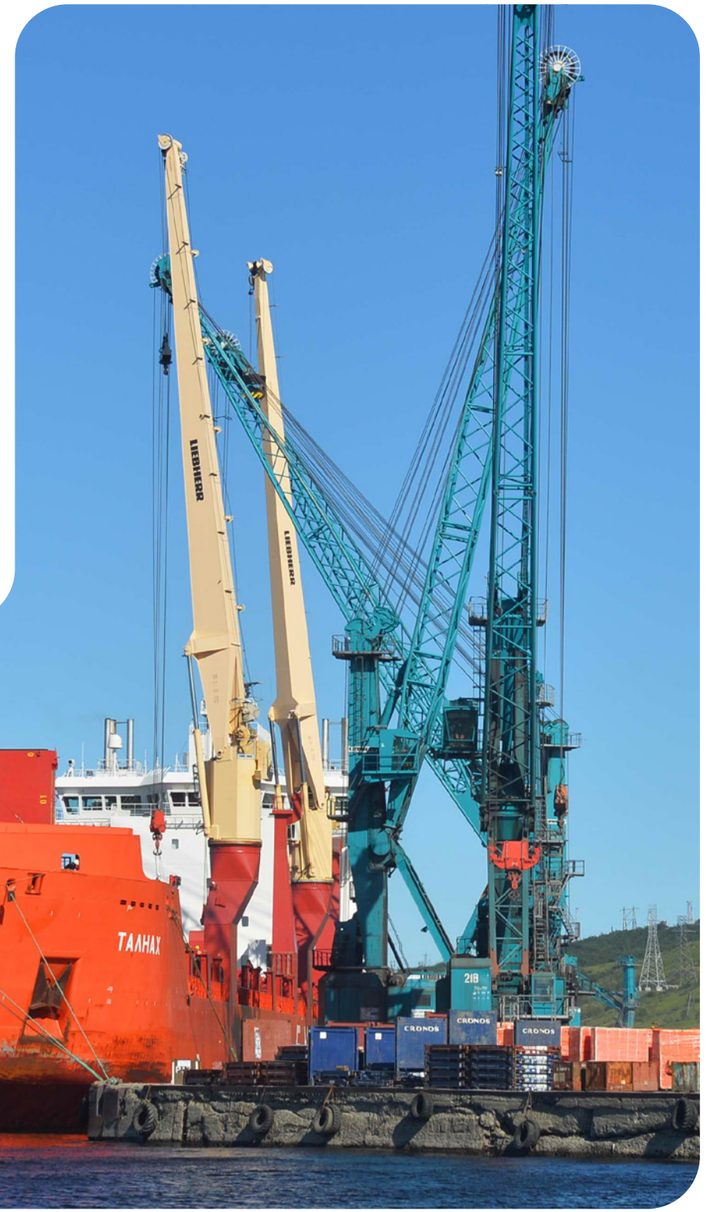


Cargo traffic at the Murmansk terminal, MLN T



Cargo traffic at the Dudinka port, MLN T





[1] Includes a third-party fleet.

Innovation and IT

Contribution to the UN SDGs

Deployment of innovative tools is a critical lever to improve Nornickel's business processes and workplace safety. Nornickel is continuously working to ensure technological sovereignty and developing IT initiatives to support its key business segments.

In 2024, the Company updated its innovation and R&D strategy. Its key strategic priorities include reliability and availability, agility and achieving technological sovereignty.

Strategic goals:
- accelerate decision making
- attract the necessary capabilities
- ensure it landscape stability during transformation

Key focus areas in innovation

- **Digitization of the Manufacturing Chain**
- **Improving Production Technology**
- **High-Tech Products**
- **Ecology and Industrial Safety**

9.9
BILLION RUB.
was allocated for the implementation of projects in IT, innovation, and digitalisation in 2024.

Nornickel relies on innovative technologies, including artificial intelligence (AI) and machine learning (ML), at all stages of its production process — from exploration to smelting — to streamline processes and make its operations safer for people and the environment.

The Company's goal is not only about research, development, and deployment of promising technologies but also about building the Company's own R&D capabilities, shaping internal policies, and fostering a culture of high-tech developments.

The primary contractor for scientific and technical projects for the Company is a dedicated research institute. It is one of Russia's largest research and engineering centres for mining, concentration, metallurgy, and processing of minerals, with a comprehensive portfolio encompassing the development and production of scientific and technical products. In 2024, the institute secured international patent protection for its proprietary roast-leach-electrowin technology in Canada, Finland, Sweden, and Spain.

Ecology and industrial safety

- **Minimising environmental impact** — To mitigate negative impacts of operations on the environment (water, land, and other resources)
- **Reducing emissions SO_2** — To improve air quality in order to protect the environment and public health from the harmful impact of air pollutants
- **Improving industrial safety** — To reduce injuries and fatalities and prevent hazardous situations

Emissions monitoring

In the reporting year, the development of the core platform for the Axioma predictive emission monitoring system (PEMS) base platform was successfully completed. Developed internally by Nornickel, this innovation offers an alternative to complex and costly automated control systems that rely on sensors and gas analysers.

The core purpose of the technology is to use AI to analyse pollutant emissions from operations by creating a digital twin that continuously pulls data on the status of the production process. The Axioma system can predict emissions based on the current operational load. To achieve this, data from weather stations are used. Predictive modelling of plume trajectory and dispersion enables specialists to adjust process parameters and prevent the spread of harmful substances into urban areas. This solution also supports forecasting the volume and composition of emitted substances as well as tracking relevant environmental indicators as levels of equipment utilisation change. The impact of emission reductions on meeting production targets for finished products is also monitored.

In late 2024, the system was successfully tested at Nadezhda Metallurgical Plant. Experts evaluated the consistency of results from mathematical modelling, accredited laboratory sample analyses, and instrumental readings from certified gas analysis equipment. The tests were conducted in accordance with metrological standards, with a representative of the Mendeleev All-Russian Institute for Metrology (VNIIM) in attendance.

Axioma stands out as a strategically important and high-priority project in Nornickel's portfolio. The Axioma system has attracted significant interest from other leading Russian companies after being showcased at numerous exhibitions and forums.

Project awards:
- Diploma from the BRICS Solutions Awards in the Climate and Environmental Technologies category
- Award for the Best Project Implemented in the Russian Arctic Zone at the 5th Reliable Partner — Ecology national competition of the best local environmental protection practices

Rock mineralisation

In the course of mining, rock is extracted from under the ground and sent to concentrators, where grinding takes place and valuable components are separated from gangue. Gangue is a byproduct of the concentration process (tailings). After that, tailings undergo special treatment and are sent to tailing dumps, where they are distributed across their surface. During prolonged exposure to air, minerals contained in tailings react with carbon dioxide to form stable secondary carbonates, which remain in the tailing dumps. Thus, conditions are created for carbon dioxide capture, or natural mineralisation.

The Company enables conditions under which tailings can capture between 4.5 and 17.9 kg of CO_2 per tonne through natural chemical processes, depending on the mineral composition of the gangue. Analysis of natural mineralisation data from the past four years indicates an annual CO_2 removal rate of approximately 350 kt. The Company developed a methodology for estimating and accounting for the CO_2 absorption capacity of tailings. This capacity was independently audited and verified, and is now factored into greenhouse gas emissions and removals calculations.

Video analytics

To maintain a safety culture at its operations, Nornickel actively adopts solutions that use AI-enabled video analytics. The Company operates a proprietary solution to monitor the use of personal protective equipment (PPE) by operational staff. The AI-enabled solution continuously monitors workwear usage on the shop floor, including safety helmets with chin straps buckled up, safety goggles, and other protective equipment. Specialists also train the system to monitor and record the use of a safety harness when working at height. If an employee violates the rules for using personal protective equipment, the system will generate a violation card and send it to the line manager, who will review each case and make a decision. The card is then submitted to a coordinator from the Health and Safety Department for final review.

In 2024, the system's incident detection capabilities were expanded to include additional safety hazards: working at height, entering hazardous areas around active equipment, and the unauthorised transport of people using machinery not intended for that purpose.

Nornickel's engineering team also developed a mobile computer vision system for monitoring compliance with industrial safety regulations and supporting various work processes in areas where fixed surveillance cameras and communications channels are unavailable. Pilot tests are scheduled for 2025.

Personnel positioning system at mines

In 2024, the implementation of a precise personnel positioning system was completed at Norilsk site mines. The project is aimed at enhancing the safety of employees working in the hazardous operational environment of the mine. A collision avoidance system was implemented to alert the operator of potentially hazardous proximity to pedestrians and other vehicles. Subsequent functionality development included the design and implementation of an automatic braking and stopping system for self-propelled vehicles, enabling the vehicle to decelerate or stop autonomously upon detecting a pedestrian in close proximity.

The system enables emergency notification of personnel, helps determine their location, and reduces response time for rescue services during emergencies. The solution includes features such as immobility detection, alerts for hazardous proximity to vehicles, access control for hazardous areas, and other options aimed at improving industrial safety.

Further project development is planned for 2025, including the creation of functionality for managing safe routes for personnel movement and a mobile solution for mining supervisors, designed to improve the speed of production process management without involving the mining dispatcher.

Transport planning and management system

The SPRUT system is being implemented to automate transport management processes. It operates as a single, centralised solution for managing transport operations in industrial settings. The system collects data from onboard equipment and uses this information to optimise traffic flow management. In addition, SPRUT automates transport-related document workflows and serves as a platform for communication between clients, internal contractors, carriers, and supervisory authorities. At the initial stage, the SPRUT system is designed to manage and monitor road transport operations. Further development will extend its capabilities to cover the planning and tracking of rail and water transport. Looking ahead, the solution will support the development of multimodal supply chains.

Benefits of the SPRUT system:

- enhanced driver safety and reduced road accident rates
- lower risk of violations and property damage during transport service delivery
- calculation across various types of driver remuneration based on actual work performed

In 2024, the development of the system's core modules was completed, functional testing was carried out, and compliance with customer requirements was confirmed. The SPRUT system is scheduled for commercial deployment in December 2025.

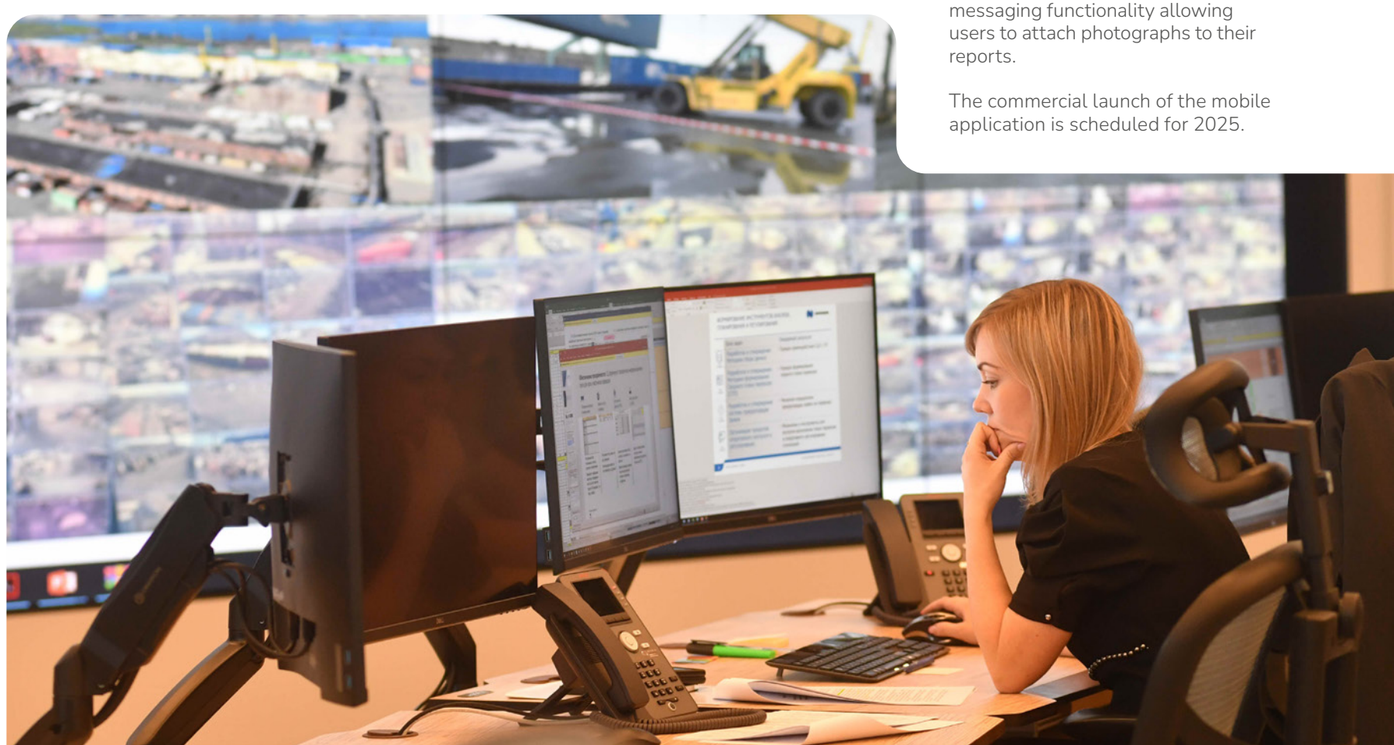
Project awards: the SPRUT system received the 13th ComNews Award for the Best Solution for Transport Service Planning and Transport Management.

NoRiskNN app

The NoRiskNN mobile application was developed to provide an alternative channel for communicating health and safety (H&S) concerns at the Company's operational sites. It enables employees to enter information about identified issues directly into the mobile app, allowing any staff member to report risks or potential incidents. Submitted reports are then escalated to coordinators and responsible personnel for resolution. The application streamlines the risk identification process and reduces response times.

Analysis of feedback received during the pilot deployment of the NoRiskNN application highlighted several key suggestions for system enhancement: the introduction of push notifications, the development of a competitive rating system to incentivise risk identification, and improved messaging functionality allowing users to attach photographs to their reports.

The commercial launch of the mobile application is scheduled for 2025.



Enhancing production technology

Improving equipment productivity

To improve the quality of finished products

Improving product quality

To improve product competitiveness and expand into new market segments

Reducing production losses

To increase metal output, including through the recycling of post-production waste

Geological data analysis

The Company continues a major project to develop and deploy an automated mining and geological data processing and analysis system. The project aims to develop a single digital platform that enables end-to-end automation of key business processes in mining operations, including exploration, drilling, sampling, core management, rock quality control, mine planning, design, and mineral extraction activities, ground support, geological and surveying calculations, and reserve tracking. The MinePRO system by Russian developer OT-OIL was selected for the project and is currently being adapted to meet Nornickel's specifications.

In 2024, functionality was implemented to enable the recording of mine planning and design data and the management of mine surveying calculations.

Plans are in place to introduce functionality for automating the planning and execution of geological exploration activities, geological modelling and calculations, and mineral reserve tracking. MinePRO will secure the quality, availability, and accuracy of production data across all levels of the Company, enabling timely and effective management decision making.

Modelling underground blasting

In 2023, the Company launched a project to model underground drilling, aimed at reducing rock dilution with waste rock and concrete during drilling and cleaning as well as cutting drilling and blasting costs.

Using modern software to model upcoming drilling and blasting operations — while accounting for the patterns and interrelationships of rock mass strength properties — enables highly accurate predictions of blasting outcomes and rock fragmentation quality. Blast simulation using numerical methods enables the effective optimisation of target drilling and blasting patterns. It also allows for the simulation and subsequent refinement of blasting performance under actual mining conditions.

In 2024, the initial software adaptation for the main rock types present at the Komsomolsky Mine was completed. Empirical data from test stopes were collected to support the fine-tuning of simulation coefficients.

The software's simulation coefficients are expected to be finalised by the end of the first quarter 2025. This will be followed by on-site pilot tests at the mine, including simulated cleanup drilling projects and controlled blasting trials, to validate the project's target metrics and support scaling decisions.

Optimising refining processes

In 2024, a project was launched at the refining shop of the Kola site aimed at reducing secondary metal content in concentrates. The project includes automated control of reagent consumption, pulp levels within the flotation sections, and irrigation water supply. As a result, secondary metal content has been reduced by more than 10%.

To date, a flotation control model has been developed, a data-lake–based solution has been deployed and tested, and a server has been installed and configured within the refining shop. Completion of the pilot phase is expected in the first half of 2025, followed by the transition to commercial operation in the latter half of the year.

In 2024, Nornickel implemented a new precious metal recovery process for converter matte at the Kola site's refining shop. The new system minimises precious metal losses, thereby enhancing overall production efficiency.

The process for recovering precious metals from crushed converter matte was integrated into the magnetic separation stage of the converter matte separation section. It facilitates the extraction of precious metals from intermediate products during nickel production.

Precious metal recovery from nickel concentrate had previously taken place at this site. With the introduction of a new flow distribution system, it is now also possible to recover precious metals from crushed converter matte.

The engineering solution behind the system was implemented by leveraging the section's existing capacity. The process is as follows: the converter matte undergoes pre-treatment — milled in one of the workshop's ball mills — and is then fed as a pulp to magnetic separation. At this stage, the material is separated: the magnetic fraction, containing precious metals, is directed to the flotation section, while the non-magnetic fraction, comprising depleted matte, is filtered and packaged into containers for subsequent shipment.

Previously transferred to partners for further processing, the precious metals contained in the converter matte are now retained within the production chain. This enables more effective delivery of the production programme.

Optimising concentration processes

The Company continued its research on ionometric mapping and optimisation of pulp ionic content during the flotation of copper-nickel ores at its concentrators. Research showed that ion-selective electrodes can effectively control the consumption of specific reagents, resulting in improved concentrate quality, increased metal recovery into concentrate, and reduced reagent consumption. The laboratory testing phase was completed in 2024. Pilot tests are scheduled for 2025, after which the project to integrate ion-selective electrodes for monitoring and controlling concentrator processes may move into the implementation phase. The initiative is expected to improve the recovery of nickel, copper, and PGMs.

At Norilsk Concentrator, ongoing research and development is focused on optimizing PGM recovery through gravity separation methods. A process survey at the concentrator resulted in recommendations identifying potential areas for improvement. The second phase of the research will involve comprehensive laboratory testing to validate these recommendations ahead of pilot trials scheduled for 2025.

Increasing copper recovery in the Trans-Baikal Division

Initiated in 2023, the project aims to improve copper recovery while maintaining the quality of copper-gold concentrate.

An optimisation-based control algorithm for flotation was successfully developed at Bystrinsky GOK, covering all stages of the process. Automated control was implemented for air flow, pulp levels in flotation cells, and the dosing of specific reagents. To enhance the quality of input data, a computer vision algorithm was also developed to supply the system with the information required for effective process control.

In 2024, the solution was transitioned to continuous operation.

Throughout 2025, a comprehensive analysis will be carried out to evaluate the algorithm's stability and determine the project's economic potential. Efforts are currently underway to transition the solution to commercial operation.

High-tech products

Palladium Centre

The Centre's portfolio currently comprises over 25 new palladium-based products across three distinct application areas — greentech, high-tech materials, and traditional uses — each at a different stage of development.

In 2024, extensive pilot- and industrial-scale testing was conducted to evaluate new materials for hydrogen energy systems, including catalysts for electrolysers, membranes for ultra-pure hydrogen production, and fuel cell catalysts. The first commercial deliveries of these materials are expected in 2025. In the reporting year, industrial tests were successfully completed, and the first commercial batch of new palladium-based anodes for water disinfection via electrolysis was produced. Furthermore, industrial testing of glass fibre bushings with palladium-based current leads was successfully completed. Product refinement is planned for 2025, with the integration of palladium into the alloy composition.

Also in 2025, the Company intends to complete fundamental research in the area of electric transport, aimed at integrating new palladium catalysts into lithium-sulphur batteries to extend their lifespan and increase power output. Preliminary estimates suggest that replacing lithium-ion batteries with lithium-sulphur batteries incorporating palladium catalysts could multiply the driving range of electric vehicles several times over.

In the long term, the Company aims to bring over 100 new palladium-based materials to market, which, according to internal estimates, could generate at least 40 to 50 tonnes of new palladium demand by 2030.

Battery materials

In September 2024, Nornickel announced the establishment of its Battery Technology Centre in Saint Petersburg. The project is aimed at advancing the Company's technological capabilities in the promising field of nickel-containing cathode active materials — a key component of advanced battery systems.

The new centre will focus on the development and research of battery materials using state-of-the-art process equipment unique in Russia, enabling the full cycle of synthesis and testing under specialised conditions.

In 2024, Nornickel's R&D centre produced the first samples of cathode materials for NCM 811+ chemistry, with further research planned to develop new products.

Metal powders

Powder metallurgy is a cost-effective alternative to traditional machining of metal parts. It enables the production of items with unique properties, significantly improves metal use efficiency, and enhances the competitiveness of the final product.

In 2024, the Company successfully developed and produced several prototypes of metal powders derived from nickel- and cobalt-based heat-resistant alloys. These powders exhibit spherical morphology and possess specific technological properties that make them suitable for a wide range of additive manufacturing technologies, including 3D printing, metal injection moulding, coating deposition, and hot isostatic pressing. This, in turn, enables the production of high-tech components with complex geometries for use in the aerospace, aviation, energy, and medical industries. The powder prototypes developed by Nornickel were tested by several leading Chinese manufacturers of additive manufacturing equipment, receiving positive feedback supported by formal quality certifications.

Enhancing corporate business processes

Data lake ecosystem

One of the core components of the corporate digital landscape is the data lake — a scalable platform for digitising technological and business processes. It is designed to store and analyse data across the entire Group while driving synergies by enriching data in external systems with new information. Integration data flows from Nornickel's core production sites have already been incorporated into the ecosystem.

A proprietary framework has been developed to streamline the integration and processing of equipment sensor data, leveraging advanced open-source solutions. The existing tools support the integration of machine-learning models, generation of analytical reports, creating custom calculations, and running basic quality checks on metrics — without the need to develop additional standalone components.

The data lake solution is built using domestically produced Russian products and open-source systems and consists of four primary components:

- Data Platform — storage and processing of big data;
- Containerised environment — for deploying ML[1] applications and Industrial ML instances;
- ML Platform (ML environment) — a corporate platform for developing and integrating machine learning (ML) models into operational processes;
- ML Clusters — a geographically distributed infrastructure for the deployment of ML solutions at production sites.

The Data Platform and ML Platform were officially launched into commercial operation in 2024. The data lake is now integrated with the main manufacturing execution systems (MES)[2] used at Nornickel's production sites.

The ML clusters at the Kola site and Talnakh Concentrator are scheduled to enter commercial operation in 2025. The ML cluster at the Kola site will operate as a megacluster, enabling the simultaneous deployment of innovative solutions across multiple concentrators. The launch of the ML cluster at Norilsk Concentrator is scheduled for 2026.

These ML clusters are primarily intended to achieve two goals:

- accelerating the deployment of digital production projects by removing the need for iterative design and deployment of integration infrastructure;
- reducing the analytical load on production control and dispatch systems.

Integrated document management

Further development of the Integrated Document Management programme continued in 2024. The initiative is aimed at holistically enhancing the quality, speed, agility, and technological maturity of business process documentation.

As a result of project and operational activities during the year, all Group enterprises completed the transition to legally binding electronic document management (EDM).

The volume of automated routine tasks related to accounts payable processing increased.

Compliance with legal requirements for machine-readable powers of attorney within the EDM system was achieved through the implementation of a solution for issuing and monitoring the status of such documents, thereby ensuring the legal validity of electronic signatures applied to documents.

The scope of electronically processed contractual documentation was expanded, and digital signing of work/service orders was introduced. Since the start of the pilot operation, two Group enterprises have fully transitioned their work/service order processing to an electronic format.

The practices developed through this initiative also enabled the effective use of EDM functionality for tax monitoring and ensured compliance with document submission requirements established by the Federal Tax Service of Russia.

Supernika mobile app

In 2023, Nornickel developed and deployed Supernika, Russia's first corporate super app. The platform integrates a wide range of digital services for both employees and management, including an employee personal account, a messaging tool, and a unified media centre. It provides all employees with 24/7 mobile access to all available corporate resources directly from their mobile phones.

In under a year since production deployment, the Supernika platform was adopted by over 80 thousand users across the Company.

New digital services are now being designed with native integration into Supernika in mind. In 2024, the app was enhanced with a new Personal Protective Equipment (PPE) service, enabling employees to fully manage and access PPE-related information.

HR electronic document management

Preparations are underway for the pilot deployment of Nornickel's HR electronic document management system (HR EDMS). In 2024, all necessary configurations were completed on the domestic Directum RX platform, and preparatory work for launch at the corporate Head Office was finalised. The HR EDMS will minimise the use of paper-based documents, increase the productivity of HR staff supporting personnel processes, enable the transformation and technological unification of business process documentation, and provide the ability to forecast and respond quickly to internal and external changes affecting document flows in HR and social business processes.

Throughout 2024, Nornickel significantly expanded the functionality of its core corporate systems and services for employees and management. These improvements are expected to optimise and substantially enhance the efficiency of internal business processes, including HR administration, the Golden Rules of Safety, training, employee evaluation, and other key tasks.

[2] Machine learning.
[3] Information systems designed to manage production processes at the enterprise level.

Financial performance (MD&A)

FY2024 Highlights

- Consolidated revenue decreased 13% y-o-y amounting to USD 12.5 billion driven by the decline of nickel and PGM prices;
- EBITDA decreased 25% y-o-y to USD 5.2 billion owing to lower revenue and export duties effective for the full year, while EBITDA margin was down 7 p.p. to 41%;
- Cash operating costs decreased 3% y-o-y to USD 5.1 billion mostly driven by the weakening of Russian rouble, decrease in mineral extraction tax owing to lower metal prices and continuing execution of operating efficiency programme that allowed to mitigate growing inflation in Russia and the expenses related to export duties;
- CAPEX decreased 20% y-o-y to USD 2.4 billion driven by lower rouble exchange rate, as well as the execution of investment efficiency programme including optimization of payments to contractors and prioritization of investment projects using risk-based approach;
- The Sulphur Programme at Nadezhda Plant reached its designed capacity with sulfur dioxide emissions being reduced by 390 thousand tonnes y-o-y and the efficiency of cleaning sulfur-containing gases confirmed by the government watchdog Rosprirodnadzor at 99.1%;
- Net working capital decreased 3% y-o-y to USD 3 billion driven mostly by lower work-in-progress metal inventory and materials as well as weaker Russian rouble;
- Free cash flow was down 31% to USD 1.9 billion. Free cash flow adjusted for interest and lease payments amounted to USD 335 mln;
- Net debt increased 6% y-o-y to USD 8.6 billion with net debt/EBITDA ratio as of December 31, 2024 remained at conservative level of 1.7x;
- In March and October, the Company placed two 100-billion roubles corporate bonds, which became a record on the Russian public debt market.

Key corporate highlights (USD MILLION, UNLESS STATED OTHERWISE)

Indicators	2023	2024	Change
Revenue	14,409	**12,535**	–13%
EBITDA[1]	6,884	**5,196**	–25%
EBITDA margin, %	48	**41**	–7 p.p.
Net profit	2,870	**1,815**	–37%
Capital expenditures	3,038	**2,438**	–20%
Net working capital[2]	3,092	**3,007**	–3%
Net debt[2]	8,093	**8,586**	6%
Net debt / 12M EBITDA	1.2x	**1.7x**	0.5x
Dividends paid per share, USD[3]	–	**9.7**	100%
Free cash flow[2]	2,686	**1,858**	–31%
Free cash flow (adjusted)[4]	1,347	**335**	–75%

In 2024, revenue of GMK Group segment decreased 8% to USD 9,653 million primarily owing to decrease in matte sales to Kola Division, lower volumes of PGM sales due to high base effect in 2023 and lower metal prices.

Revenue of South cluster segment decreased 33% to USD 715 million driven by lower volume of semi-products sales to GMK Group as well as lower prices of semi-products realized.

Revenue of Kola division segment decreased 20% to USD 6,684 million primarily owing to lower nickel and palladium prices.

Revenue of GRK Bystrinskoye segment increased 13% to USD 1,511 million driven by higher gold and copper prices.

Revenue of Other non-metallurgical segment decreased 5% and amounted to USD 1,008 million.

In 2024, EBITDA of GMK Group segment remained almost unchanged and amounted to USD 3,594 million. Negative effect of lower revenue in 2024 was offset by partial shift from processing of purchased concentrates of South cluster to own feed and decrease in cash operating costs.

EBITDA of South cluster segment decreased 48% to USD 251 million primarily owing to lower revenue that was partially offset by decrease in cash operating costs.

EBITDA of Kola division segment decreased 61% to USD 882 million primarily owing to lower revenue that was partially offset by decrease in cash operating costs.

EBITDA of GRK Bystrinskoye segment increased 15% to USD 1,108 million primarily due to higher revenue.

EBITDA of Other non-metallurgical segment increased by USD 7 million to the negative USD 18 million.

Negative EBITDA impact unallocated to segments decreased by USD 97 million and amounted to USD 679 million mainly due to decrease in administrative costs driven by the Russian rouble depreciation against US dollar.

Key segmental highlights[5] (USD MILLION, UNLESS STATED OTHERWISE)

Indicators	2023	2024	Change
Revenue	**14,409**	**12,535**	**–13%**
GMK Group	10,488	**9,653**	–8%
South cluster	1,066	**715**	–33%
Kola division	8,396	**6,684**	–20%
GRK Bystrinskoye	1,340	**1,511**	13%
Other non-metallurgical	1,064	**1,008**	–5%
Eliminations	–7,945	**–7,036**	–11%
EBITDA	**6,884**	**5,196**	**–25%**
GMK Group	3,641	**3,594**	–1%
South cluster	484	**251**	–48%
Kola division	2,254	**882**	–61%
GRK Bystrinskoye	963	**1,108**	15%
Other non-metallurgical	–25	**–18**	–28%
Eliminations	343	**58**	–83%
Unallocated	–776	**–679**	–13%
EBITDA margin	**48%**	**41%**	**–7 p.p.**
GMK Group	35%	**37%**	2 **p.p.**
South cluster	45%	**35%**	–10 **p.p.**
Kola division	27%	**13%**	–14 **p.p.**
GRK Bystrinskoye	72%	**73%**	1 **p.p.**
Other non-metallurgical	–2%	**–2%**	0 **p.p.**

[1] A non-IFRS measure, for the calculation see the notes below.
[2] A non-IFRS measure, for the calculation see an analytical review document ("Data book") available in conjunction with Consolidated IFRS Financial Results on the Company's web site.
[3] Paid during the current period before the split of shares.
[4] Commented further in the text.
[5] Segments are defined in the consolidated financial statements.

Metal sales

In 2024, revenue from metal sales was down 14% (or USD 1,854 million) y-o-y to USD 11,848 million driven by:

- lower metal prices (USD 1,585 million) for palladium and nickel, which were partially offset by higher prices for copper and gold;
- decrease of metal sales volume (USD 269 million) primarily due to the high base effect of precious metal stock sales in 2023.

Other sales

In 2024, other sales decreased 3% (or USD 20 million) to USD 687 million primarily due to the Russian rouble depreciation and the decrease in revenue from resale of icebreaking and sea transportation services, which was partially offset by the increase in revenue from oil products and rentals.

Cost of sales

Cost of metal sales

In 2024, the cost of metal sales decreased 2% (or USD 112 million) to USD 6,232 million, driven by the following factors:

- decrease in cash operating costs by 3% (or USD 182 million);
- increase in depreciation and amortization by 2% (or USD 21 million);
- comparative effect related to change in metal inventories y-o-y leading to the cost of metal sales increase by USD 49 million.

Cash operating costs

In 2024, total cash operating costs decreased 3% (or USD 182 million) to USD 5,129 million mainly due to decrease in mineral extraction tax and other levies (USD –125 million), decrease in third party services (USD –88 million), decrease in materials and supplies (USD –67 million), decrease in labour costs (USD 54 million) and in transportation expenses (USD –54 million), that was partly compensated by the introduction of export customs duties from October 1, 2023 (USD +229 million).

Inflationary growth of cash operating costs amounted to +USD 281 million while Russian rouble depreciation against US Dollar amounted to cash operating costs decrease of USD –351 million.

Cost of metal sales (USD MILLION)

Indicators	2023	2024	Change
Labour	1,892	**1,838**	–3%
Materials and supplies	985	**918**	–7%
Third party services	894	**806**	–10%
Mineral extraction tax and other levies	873	**748**	–14%
Export customs duties	121	**350**	3x
Transportation expenses	216	**162**	–25%
Fuel	157	**153**	–3%
Electricity and heat energy	115	**108**	–6%
Purchases of raw materials and semi-products	33	**26**	–21%
Purchases of refined metals for resale	5	**–**	–100%
Other costs	20	**20**	0%
Total cash operating costs	**5,311**	**5,129**	**–3%**
Depreciation and amortisation	939	**960**	2%
Decrease in metal inventories	94	**143**	2x
Total	**6,344**	**6,232**	**–2%**

Labour

In 2024, labour costs decreased 3% (or USD 54 million) to USD 1,838 million amounting to 36% of the Group's total cash operating costs driven by the following factors:

- USD –158 million — Russian rouble depreciation against US Dollar;
- USD +104 million — primarily increase in labour costs due to indexation of salaries and wages.

Materials and supplies

In 2024, expenses for materials and supplies decreased 7% (or USD 67 million) to USD 918 million driven by the following factors:

- USD –76 million — Russian rouble depreciation against US Dollar;
- USD +75 million — inflationary growth of materials and supplies prices;
- USD –66 million — primarily lower repairs volume driven by improvement of efficiency in planning and execution of repairs as well as high base effect in 2023.

Mineral extraction tax and other levies

In 2024, mineral extraction tax and other levies decreased 14% (or USD 125 million) to USD 748 million primarily due to lower metal prices partly offset by higher ore production volumes.

Third-party services

In 2024, cost of third-party services decreased 10% (or USD 88 million) to USD 806 million mainly driven by:

- USD –85 million — primarily due to cost optimization driven by improvement of efficiency in planning and execution of repairs as well as high base effect in 2023;
- USD +50 million — inflationary growth of third-party services prices;
- USD –53 million — Russian rouble depreciation against US Dollar.

Transportation expenses

In 2024, transportation expenses decreased 25% (or USD 54 million) to USD 162 million driven by the following factors:

- USD –17 million — Russian rouble depreciation against US Dollar;
- USD +11 million — inflationary growth of transportation expenses;
- USD –48 million — primarily due to optimization of logistics routes.

Fuel

In 2024, fuel expenses decreased 3% (or USD 4 million) to USD 153 million mainly due to Russian rouble depreciation against US Dollar that was partially offset by inflation of fuel price.

Purchases of raw materials and semi-products

In 2024, purchases of raw materials and semi-products decreased 21% (or USD 7 million) and amounted to USD 26 million.

Depreciation and amortisation

In 2024, depreciation and amortisation expenses increased 2% (or USD 21 million) to USD 960 million mainly due to increase in property, plant and equipment that was partly offset by Russian rouble depreciation against US Dollar.

Electricity and heat energy

In 2024, electricity and heat energy expenses decreased 6% (or USD 7 million) to USD 108 million primarily due to Russian rouble depreciation against US Dollar that was partially offset by inflation.

Other costs

In 2024, other costs remained almost unchanged and amounted to USD 20 million.

Decrease in metal inventories

Comparative effect of change in metal inventory amounted to USD +49 million resulted in a corresponding increase in cost of metal sales.

Cost of other sales

In 2024, cost of other sales decreased by USD 32 million to USD 656 million primarily due to Russian rouble depreciation against the US Dollar and lower revenue from resale of icebreaking and sea transportation services, which was partially offset by the increase in oil products sales and rentals.

Selling and distribution expenses

Selling and distribution expenses (USD MILLION)

Indicators	2023	2024	Change
Export customs duties	43	**176**	4x
Transportation expenses	135	**124**	–8%
Staff costs	28	**26**	–7%
Depreciation and amortisation	23	**23**	0%
Marketing expenses	29	**23**	–21%
Other	38	**36**	–5%
Total	**296**	**408**	**38%**

In 2024, selling and distribution expenses increased 38% (or USD 112 million) to USD 408 million primarily driven by:

- USD +133 million — export customs duties introduced on October 1, 2023;
- USD –14 million — Russian rouble depreciation against US Dollar.

General and administrative expenses

General and administrative expenses (USD MILLION)

Indicators	2023	2024	Change
Staff costs	705	**665**	–6%
Third party services	181	**183**	1%
Depreciation and amortisation	110	**91**	–17%
Property tax and other miscellaneous taxes	75	**77**	3%
Other	22	**30**	36%
Total	**1,093**	**1,046**	**–4%**

In 2024, general and administrative expenses decreased 4% (or USD 47 million) to USD 1,046 million. The main factors of the change were:

- USD –88 million — Russian rouble depreciation against US Dollar;
- USD +20 million — primarily indexation of salaries;
- USD +16 million — increase in third-party services primarily driven by consulting services expenses.

Other operating expenses

Other operating expenses, NET (USD MILLION)

Indicators	2023	2024	Change
Social expenses	205	**126**	–39%
Change in other allowances	47	**74**	57%
Loss on disposal of property, plant and equipment and intangible assets	36	**36**	0%
Change in decommissioning obligations	45	**5**	–89%
Change in environmental provisions	–32	**3**	n.a.
Expenses on industrial incidents response	10	**2**	–80%
Proceeds from insurance claims settlements	–27	**–35**	30%
Other, net	–15	**–33**	2x
Total	**269**	**178**	**–34%**

In 2024, other operating expenses, net decreased by USD 91 million to USD 178 million driven by the following factors:

- USD –79 million — decrease in social expenses;
- USD +35 million — change in environmental provisions related to compensation for environmental damages;
- USD +27 million — change in other allowances;
- USD –40 million — comparative effect of changes in decommissioning obligations.

Finance costs

Finance costs, NET (USD MILLION)

Indicators	2023	2024	Change
Interest expense, net of amounts capitalised	337	**620**	84%
Unwinding of discount on provisions	147	**185**	26%
Interest expense on lease liabilities	35	**52**	49%
Loss/(gain) from currency conversion operations	–5	**45**	n.a.
Fair value (gain)/ loss on the cross-currency interest rate swap contracts	60	**–16**	n.a.
Other, net	–7	**10**	n.a.
Total	**567**	**896**	**58%**

In 2024, finance costs, net increased 58% (or USD 329 million) y-o-y to USD 896 million primarily driven by the following factors:

- USD +283 million — increase in interest expenses related to replacement of foreign currency debt with RUB-denominated debt facilities at high nominal interest rates; nominal interest rates continued to rise in 2024 as a result of the Bank of Russia's measures to raise the key rate;
- USD +50 million — negative revaluation of the results from currency conversion operations due to a change in the structure and increased volatility of the domestic foreign exchange market (a significant widening of bid-ask spreads) following the imposition of sanctions on the Moscow Exchange, as well as changes in the methodology of official exchange rate calculation by the Bank of Russia;
- USD +38 million — increase in unwinding of discount on provisions due to the increase in interest rates and provisions in 2024;
- USD –76 million — revaluation of cross-currency interest rate swaps to fair value mainly driven by comparative changes in the rouble exchange rate: the partial appreciation of the Russian rouble against the US dollar compared to that expected in estimations at the maturity of the swaps in 2024 and the depreciation of the Russian rouble in 2023.

Income tax expense

The breakdown of the income tax expense (USD MILLION)

Indicators	2023	2024	Change
Current income tax expense	966	**340**	–65%
Deferred tax /benefit (–) /expense	–302	**249**	n.a.
Total income tax expense	**664**	**589**	**–11%**

In 2024, income tax expense decreased by USD 75 million driven mostly by lower profit before tax.

The effective income tax rate in 2024 of 24.5% was above the Russian statutory tax rate of 20%, which was primarily driven by the non-deductible provision for impairment of non-financial assets, net.

EBITDA

EBITDA (USD MILLION)

Indicators	2023	2024	Change
Operating profit	5,540	**3,574**	–35%
Depreciation and amortisation	1,165	**1,181**	1%
Impairment of non-financial assets, net	179	**441**	2x
EBITDA	**6,884**	**5,196**	**–25%**
EBITDA margin	**48%**	**41%**	**–7 p.p.**

In 2024, EBITDA decreased 25% (or USD 1,688 million) to USD 5,196 million primarily driven by lower revenue, which was partially offset by the decrease in cash operating costs.

Statement of cash flows

Statement of cash flows (USD MILLION)

Indicators	2023	2024	Change
Cash generated from operations before changes in working capital and income tax	**7,121**	**5,275**	**–26%**
Movements in working capital in the cash flow statement	–229	**–504**	2x
Income tax paid	–1 164	**–338**	–71%
Net cash generated from operating activities	**5,728**	**4,433**	**–23%**
Capital expenditure	–3,038	**–2,438**	–20%
Other investing activities	–4	**–137**	34x
Net cash used in investing activities	**–3,042**	**–2,575**	**–15%**
Free cash flow	**2,686**	**1,858**	**–31%**
Interest paid	–791	**–1,468**	86%
Payments of lease liabilities	–45	**–55**	22%
Dividends paid to non-controlling interests	–503	–	–100%
Free cash flow (adjusted)	**1,347**	**335**	**–75%**
Other financing activities	–1,065	**–519**	–51%
Net cash used in financing activities	**–2,404**	**–2,042**	**–15%**
Effects of foreign exchange differences on balances of cash and cash equivalents	–25	**–133**	5x
Net change in cash and cash equivalents	**257**	**–317**	**n.a.**

In 2024, net cash generated from operating activities decreased 23% to USD 4,433 million. Decrease in EBITDA and increase in working capital in 2024 were partly offset by decrease in income tax payments.

In 2024, net cash used in investing activities decreased 15% to USD 2,575 million primarily driven by decrease in capital expenditures.

In 2024, free cash flow decreased 31% to USD 1,858 million following the decrease in net cash generated from operating activities, which was partly offset by the decrease in cash used in investing activities.

In 2024, free cash flow adjusted for regular financing outflows (interest paid, payments of lease liabilities, dividends paid to non-controlling interests) decreased by USD 1,012 million and amounted to USD 335 million following the decrease in free cash flow and increase in interest paid.

Net working capital changes between the balance sheet and cash flow statement (USD MILLION)

Indicators	2023	2024
Change of the net working capital in the balance sheet	**911**	**85**
Foreign exchange differences	–780	**–299**
Change in income tax payable	208	**–103**
Change of provisions, reserves and long term components of working capital included in cash flow	–412	**–161**
Other changes	–156	**–26**
Change of working capital per cash flow	–229	**–504**

Capital investments breakdown by project (USD MILLION)

Indicators	2023	2024	Change
Polar Division, including:	1,223	**849**	–31%
• Skalisty mine	90	**75**	–17%
• Taymirsky mine	73	**121**	66%
• Komsomolsky mine	41	**16**	–61%
• Oktyabrsky mine	5	**52**	10x
• Talnakh Enrichment Plant	123	**46**	–63%
• Capitalised repairs	93	**62**	–33%
• Purchase of equipment	219	**192**	–12%
• Other Polar Division projects	579	**285**	–51%
Kola MMC	233	**264**	13%
Environmental program (Sulfur Program at the Nadezhda Plant)	454	**343**	–24%
South cluster	248	**185**	–25%
Energy and gas infrastructure modernization	408	**355**	–13%
Bystrinsky project (Chita)	65	**98**	51%
Other production projects	355	**300**	–15%
Other non-production assets	52	**44**	–15%
Total	**3,038**	**2,438**	**–20%**

In 2024, CAPEX decreased 20% (or USD 600 million) to USD 2,438 million driven by the effect of the Russian rouble depreciation against US Dollar, launch of the Sulfur Programme and the execution of investment efficiency programme including optimization of payments to contractors and prioritization of investment projects using risk-based approach.

Debt and liquidity management

As of December 31, 2024, the Company's total debt increased 2% compared to December 31, 2023 and amounted to USD 10,408 million. Share of long-term debt in loan portfolio structure increased significantly.

Debt and liquidity (USD MILLION)

Indicators	As of 31 December 2023	As of 31 December 2024	Change	
			USD million	%
Non-current loans and borrowings	5,377	**7,112**	1.735	32%
Current loans and borrowings	4,335	**2,834**	–1.501	–35%
Lease liabilities	520	**462**	–58	–11%
Total debt	**10,232**	**10,408**	**176**	**2%**
Cash and cash equivalents	2,139	**1,822**	–317	–15%
Net debt	**8,093**	**8,586**	**493**	**6%**
Net debt /12M EBITDA	1.2x	**1.7x**	0.5x	

As of December 31, 2024, the Company's net debt increased by USD 493 million due to the increase in total debt and decrease in cash.

The Company fully meets its financial obligations in line with transactional documentation.

In April 2024, rating agency NCR assigned the credit rating to the Company at the highest investment-grade level of "AAA. ru". In November 2024, national rating agency Expert RA confirmed the Company's credit rating at the highest investment level "ruAAA".