



BUSINESS OVERVIEW



In 2022, the Russian economy in general and Nornickel in particular faced intense pressure, which had a material impact on the Company's business, challenging us to promptly adapt our operations, procurement, sales, and financial activities to the new normal.

Despite all these headwinds, Nornickel fully met its production targets for the year and ramped up its output of all metals.





MINERAL RESOURCE BASE

UPSTREAM PROJECTS



Existing ore deposits



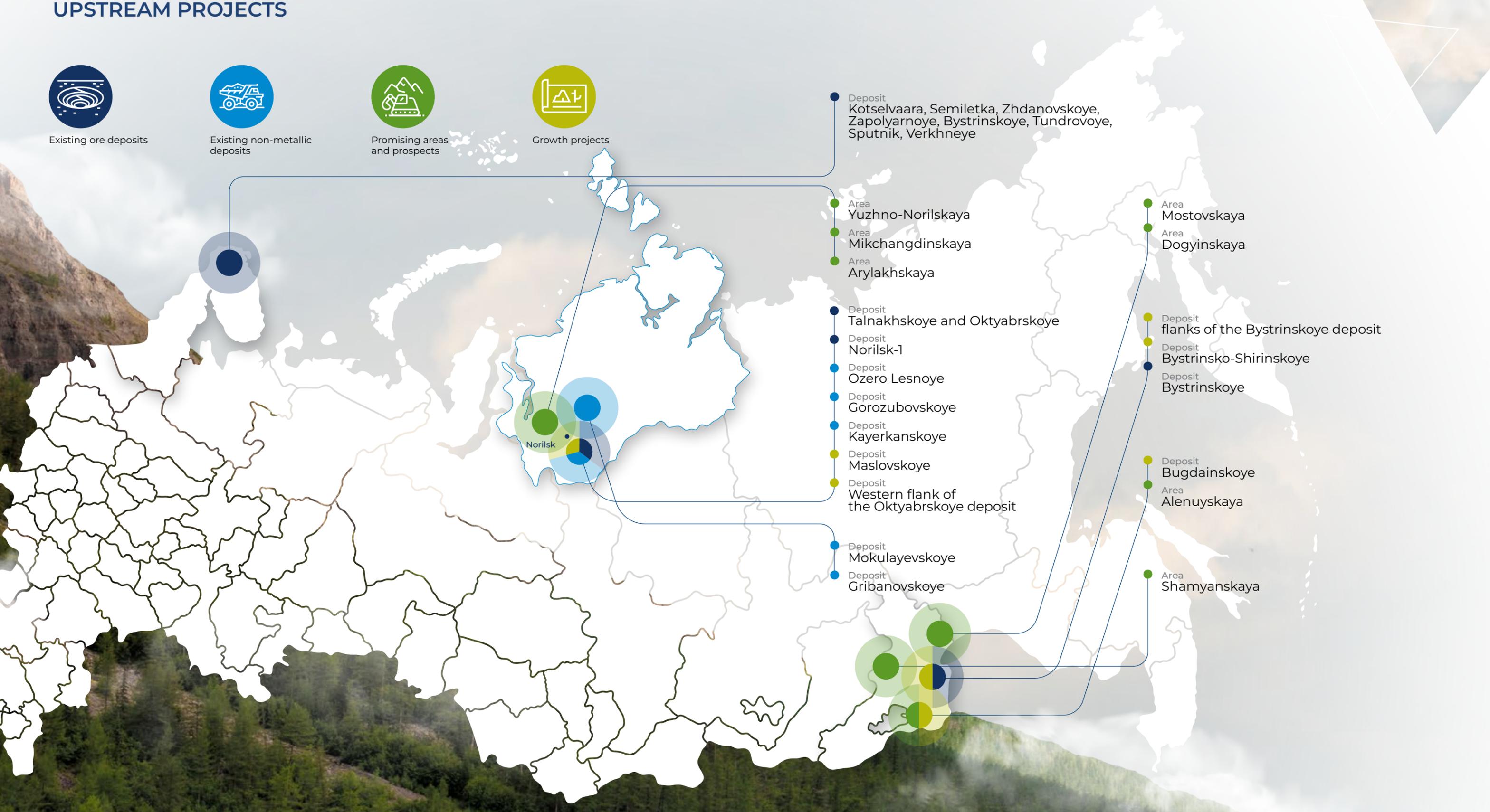
Existing non-metallic deposits



Promising areas and prospects



Growth projects



Deposit
Kotselvaara, Semiletka, Zhdanovskoye,
Zapolyarnoye, Bystrinskoye, Tundrovoye,
Sputnik, Verkhneye

Area
Yuzhno-Norilskaya
Area
Mikchangdinskaya
Area
Arylakhskaya

Deposit
Talnakhskoye and Oktyabrskoye
Deposit
Norilsk-1
Deposit
Ozero Lesnoye
Deposit
Gorozubovskoye
Deposit
Kayerkanskye
Deposit
Maslovskoye
Deposit
Western flank of
the Oktyabrskoye deposit

Deposit
Mokulayevskoye
Deposit
Gribanovskoye

Area
Mostovskaya
Area
Dogyinskaya

Deposit
flanks of the Bystrinskoye deposit
Deposit
Bystrinsko-Shirinskoye
Deposit
Bystrinskoye

Deposit
Bugdainskoye
Area
Alenuyskaya

Area
Shamyanskaya

Norilsk



THE GROUP'S MINERAL RESOURCES AND ORE RESERVES AS AT 1 JANUARY 2023

Norilsk ¹ and Kola divisions	Ore mln t	Metal grade				Contained metal							
		Ni %	Cu %	Pd g/t	Pt g/t	Au g/t	6 PGM ⁴ g/t	Ni kt	Cu kt	Pd koz	Pt koz	Au koz	6 PGM ⁴ koz
Total proven and probable reserves	1,127	0.74	1.32	3.44	0.95	0.19	4.55	8,347	14,870	124,593	34,259	6,752	164,823
Total measured and indicated resources²	1,826	0.76	1.24	3.26	0.91	0.19	4.33	13,834	22,681	191,391	53,505	10,927	254,156
Total inferred resources	876	0.67	1.11	2.77	0.74	0.16	3.62	5,854	9,749	77,976	20,819	4,528	101,958
Norilsk division³													
Proven and probable reserves	1,058	0.75	1.38	3.66	1.01	0.20	4.84	7,909	14,651	124,529	34,217	6,732	164,716
Proven reserves	658	0.73	1.38	3.57	0.98	0.20	4.70	4,789	9,058	75,543	20,645	4,182	99,520
Talnakh ore field, including	617	0.76	1.44	3.59	0.96	0.20	4.70	4,684	8,918	71,358	19,028	4,009	93,366
· rich	77	2.76	3.15	6.06	1.27	0.17	7.87	2,126	2,427	15,037	3,144	411	19,523
· cuprous	76	0.74	2.51	6.15	1.59	0.38	7.84	559	1,906	15,019	3,879	934	19,137
· disseminated	464	0.43	0.99	2.77	0.80	0.18	3.66	1,999	4,585	41,302	12,004	2,665	54,707
Norilsk-1 deposit (disseminated ore)	41	0.26	0.35	3.21	1.24	0.13	4.71	105	140	4,186	1,618	173	6,154
Measured and indicated resources	400	0.78	1.40	3.81	1.06	0.20	5.07	3,120	5,593	48,986	13,572	2,550	65,196
Talnakh ore field, including	297	0.97	1.79	4.22	1.07	0.23	5.49	2,888	5,322	40,381	10,238	2,197	52,523
· rich	62	2.78	3.96	7.64	1.56	0.33	9.75	1,713	2,442	15,144	3,099	647	19,312
· cuprous	57	0.60	2.24	5.11	1.35	0.33	6.54	345	1,282	9,406	2,484	599	12,026
· disseminated	179	0.46	0.89	2.76	0.81	0.17	3.69	830	1,598	15,831	4,655	951	21,185
Norilsk-1 deposit (disseminated ore)	103	0.23	0.26	2.61	1.01	0.11	3.84	232	271	8,605	3,333	353	12,673
Inferred resources	1,521	0.77	1.42	3.90	1.09	0.22	5.18	11,732	21,656	190,919	53,203	210,755	253,324
Talnakh ore field	1,378	0.82	1.53	3.95	1.06	0.23	5.19	11,312	21,144	175,016	47,057	10,099	229,919
· rich	124	3.46	4.39	8.68	1.83	0.33	11.21	4,300	5,451	34,682	7,332	1,303	44,787
· cuprous	131	0.86	2.91	7.31	1.94	0.44	9.37	1,128	3,807	30,690	8,159	1,865	39,374
· disseminated	1,123	0.52	1.06	3.04	0.87	0.19	4.04	5,884	11,886	109,644	31,566	6,931	145,758
Norilsk-1 deposit (disseminated ore)	143	0.29	0.36	3.46	1.34	0.14	5.09	419	512	15,902	6,146	657	23,405
Inferred resources	737	0.68	1.26	3.28	0.87	0.19	4.29	4,975	9,316	77,810	20,710	4,473	101,669
Talnakh ore field	725	0.68	1.28	3.27	0.86	0.19	4.27	4,939	9,269	76,295	20,116	4,415	99,429
· rich	44	3.31	5.43	10.35	2.15	0.47	13.02	1,452	2,383	14,602	3,032	669	18,372
· cuprous	55	0.60	2.04	5.22	1.39	0.33	6.73	328	1,115	9,161	2,429	576	11,803
· disseminated	626	0.50	0.92	2.61	0.73	0.16	3.44	3,159	5,771	52,532	14,654	3,170	69,254
Norilsk-1 deposit	12	0.30	0.39	3.94	1.54	0.150	5.82	36	47	1,515	594	58	2,240
Kola division (disseminated ore)													
Proven and probable reserves	69	0.63	0.32	0.03	0.02	0.01	0.05	437	219	64	42	20	107
Proven ore reserves	35	0.59	0.25	0.03	0.02	0.01	0.05	203	87	32	23	10	56
Probable reserves	35	0.67	0.38	0.03	0.02	0.01	0.05	234	132	32	19	10	51
Measured and indicated resources	305	0.69	0.34	0.05	0.03	0.02	0.08	2,102	1,025	472	302	172	832
Inferred resources	139	0.63	0.31	0.04	0.02	0.01	0.06	880	433	166	109	55	290

¹ In 2021, SRK Consulting (Russia) completed an estimate of mineral resources and ore reserves using its own methodology.

² Proven and probable ore reserves are included in measured and indicated resources.

³ The decline in ore reserves and inferred resources across the Norilsk Industrial District's deposits was mainly driven by shifting economic parameters and changes in MET assessments, with some disseminated ores at the Taimyr ore cluster becoming less economically viable to mine beyond 2035.

⁴ The six platinum group metals (PGMs) are platinum, palladium, rhodium, ruthenium, osmium, and iridium.



Zabaykalsky division¹

	Ore mln t	Metal grade				Contained metal			
		Cu %	Au g/t	Ag g/t	Fe %	Cu kt	Au koz.	Ag koz	Fe kt
Total proven and probable reserves²	274	0.61	0.59	2.95	14.62	1,680	5,180	26,027	40,059
Total measured and indicated resources	261	0.69	0.63	3.55	17.34	1,808	5,274	29,809	45,258
Total inferred resources	59	0.4	0.47	2.06	9.08	237	881	3,895	5,346

The Company conducts exploration in three regions of Russia – on the Taimyr and Kola Peninsulas and in the Zabaykalsky Territory. Through exploration at new and existing mine sites, Nornickel ensures 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.



Over 75 years
of resources at the current production rate

EXISTING ORE DEPOSITS

DEPOSITS: TALNAKHSKOYE AND OKTYABRSKOYE

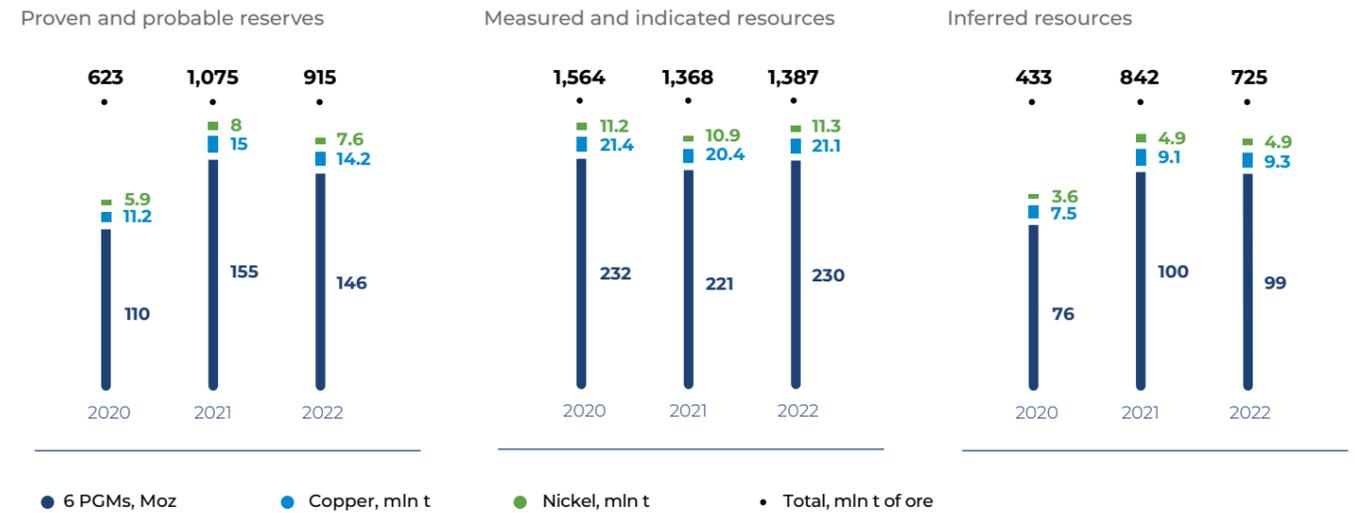


Minerals: copper-nickel sulphide ores.

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

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 base and noble metals from the uniquely rich and vast resource base of the Talnakh Ore Cluster deposits.

Reserves and resources of the Talnakhskoye and Oktyabrskoye deposits



DEPOSIT: NORILSK-1

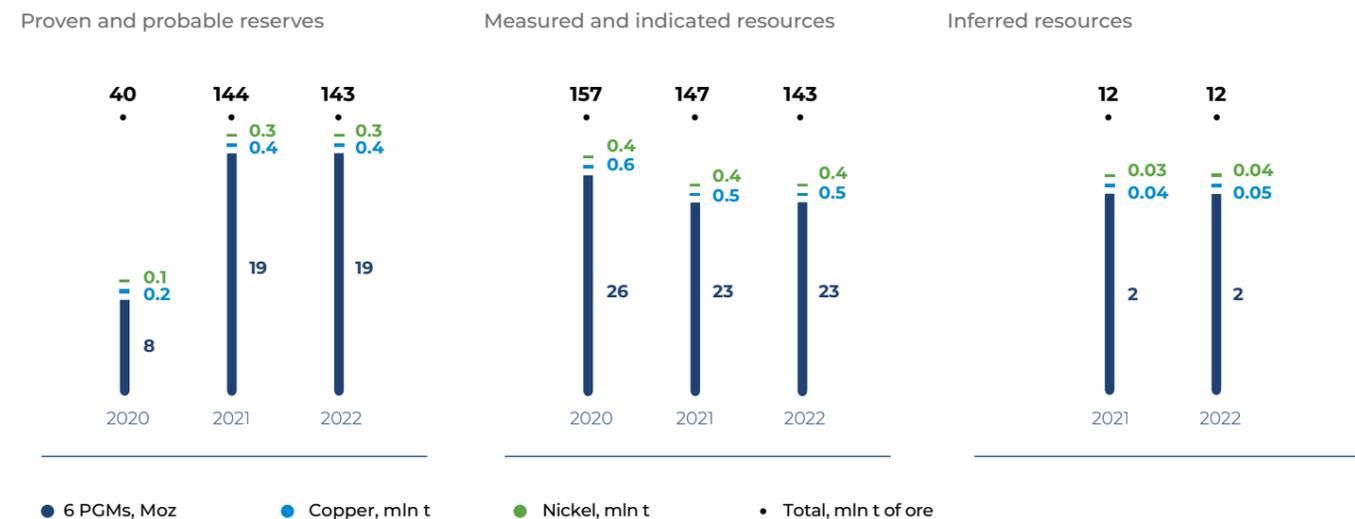


Minerals: copper-nickel sulphide ores.

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

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

Reserves and resources of the Norilsk-1 deposit



¹ In 2021, CSA Global completed an estimate of mineral resources of the Bystrinskoye deposit in line with the JORC Code based on an updated resource model, which reflects both complexity and diversity of the deposit's ore types.

² Proven and probable ore reserves are included in mineral resources. The reserves include 13.0 mln t of mined and concentrated ore stockpiles from earlier production.



DEPOSITS: KOTSELVAARA, SEMILETKA, ZHDANOVSKOYE, ZAPOLYARNOYE, BYSTRINSKOYE, TUNDROVOYE, SPUTNIK, AND VERKHNEYE

Minerals: copper-nickel sulphide ores.

Location: Murmansk Region, Pechengsky District.

The deposits are located within a 25 km stretch between Nickel and Zapolyarny and grouped into two ore clusters: Western (Kotselvaara and Semiletka deposits) and Eastern (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.

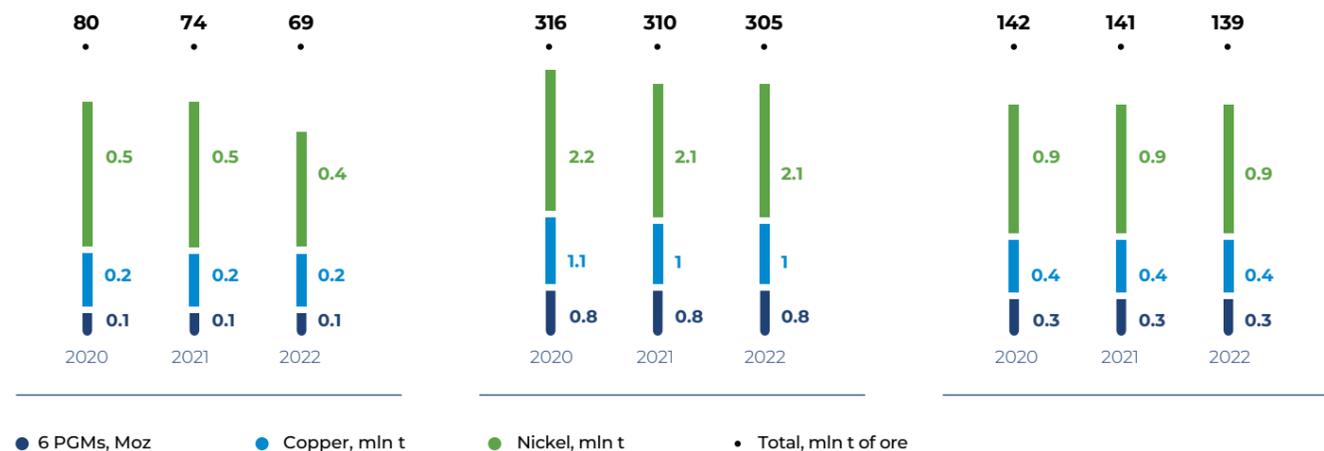


Reserves and resources of the Kola Division

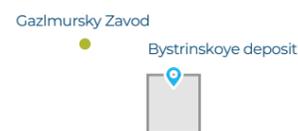
Proven and probable reserves

Measured and indicated resources

Inferred resources



DEPOSIT: BYSTRINSKOYE



Minerals: gold-iron-copper ores.

Location: Zabaykalsky Territory, Gazimuro-Zavodsky Municipal District.

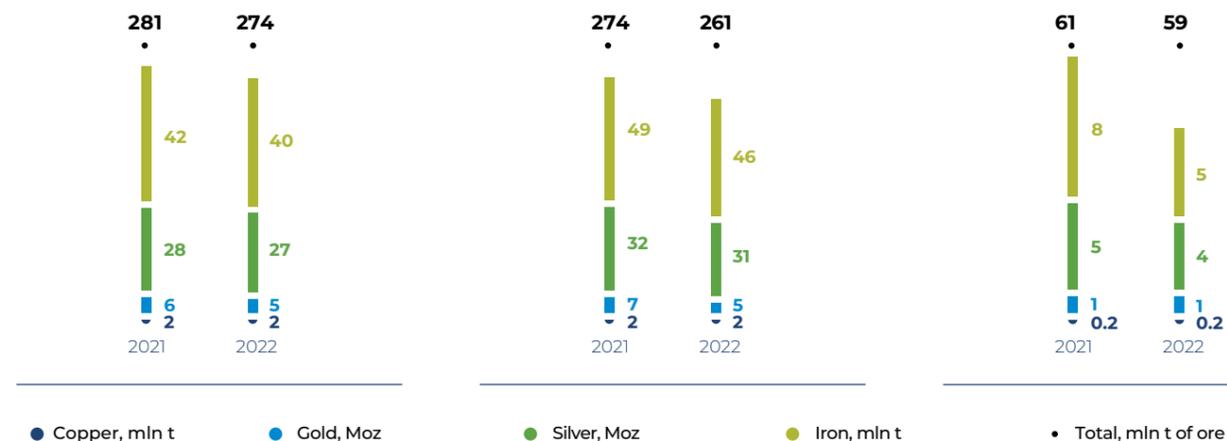
Developed since 2017, the Bystrinskoye deposit currently comprises two open-pit mines, Verkhne-Ildikansky and Bystrinsky-2, with two more – Medny Chainik and Yuzhno-Rodstvenny – scheduled to come online in 2030.

Reserves and resources of the Bystrinskoye deposit¹

Proven and probable reserves

Measured and indicated resources

Inferred resources



¹ 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 NON-METALLIC DEPOSITS

Deposit: MOKULAYEVSKOYE

Minerals: limestone.

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

The deposit lies 10 km north-west of the production sites of the Oktyabrsky and Taimyrsky Mines. The exploration and mining licence for this limestone deposit was obtained upon its discovery in 2017. In 2018, the State Commission for Mineral Reserves reviewed the feasibility study of permanent exploratory standards and the reserve statement for the deposit. It included the deposit's limestone reserves into the State Register of Mineral Reserves for potential use in cement and lime production and in sulphuric acid neutralisation. The deposit can be developed through open-pit mining.

Its B + C₁ + C₂ balance reserves of limestone are 135,661 kt.

In 2022, an exploration campaign was completed to look into dolomite overburden within the Mokulayevskoye limestone deposit. In 2021 was confirmed 1.2 Mcm of reserves at the Verkhne-Mokulayevskoye dolomite deposit, which will be used to construct roads for a project to develop the limestone deposit.



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 and developed a case for the best option to further develop the deposit, enabling mining the two licence areas as one open-pit mine to ensure continuous production.

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. Exploration phase activities were completed, and a pilot operation was started at the deposit in 2020. A state expert review of the feasibility study of permanent conditions and the reserve statement was conducted in 2021. 87,798 kt of sand reserves used for operational needs were confirmed as C₁ + C₂ reserves. 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 reclassified from C₂ to C₁. As a result, the deposit's reserves were recalculated. A certificate issued by the State Commission for Mineral Reserves confirmed the parameters of updated standards; anhydrite reserves were confirmed as follows: C₁ balance reserves at 81,830 kt, C₂ balance reserves at 12,484 kt and A + B + C₁ + C₂ off-balance reserves at 1,640 kt. In 2022, a detailed geological study of the deposit was continued.

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 Polar Division plants in materials used to produce fluxes for concentration and metallurgical processes at the metallurgical plants, as well as to manufacture building materials.

In 2022, exploration within the Kayerkanskoye multi-mineral deposit confirmed C₁ overburden (basalt) reserves at 7.87 Mcm.

GROWTH PROJECTS

Deposit: BYSTRINSKO-SHIRINSKOYE

Minerals: gold ore.

Location: Zabaykalsky Territory, Gazimuro-Zavodsky Municipal District.

In 2022, a feasibility study of permanent exploratory standards and the reserve statement were completed for the deposit, with the results submitted in December 2022 for a state expert review.

Deposit: BUGDAINSKOYE

Minerals: molybdenum and associated elements.

Location: Zabaykalsky Territory, Alexandrovo-Zavodsky Municipal District.

The deposit's mineral reserves were included into the State Register of Mineral Reserves in 2007. In 2014, Nornickel halted the development of the Bugdainskoye deposit for three years amid a low-price environment across the global molybdenum market and in 2017 extended the suspension of operations for another five years, until 31 December 2022.

B + C₁ + C₂ mineral reserves

	Reserves
Total ore	813 mln t
Mo	600 kt
Au	360 koz
Ag	6,221 koz
Pb	41 kt

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, appraisal was started at the Zapadny section, where prospecting had earlier confirmed the presence of copper-nickel ores, suggesting potential for reserve additions of 500 kt in high-grade ores, 2,140 kt in cuprous ores and 546 kt in disseminated ores. Plans for 2023 include securing a state expert review and a reserve statement approval.

Deposit: FLANKS OF THE BYSTRINSKOYE DEPOSIT

Minerals: lode gold, iron ore, copper ore.

Location: Zabaykalsky Territory, Gazimuro-Zavodsky Municipal District.

Licensed for prospecting in 2021, the area shares a boundary with the earlier licensed exploration and mining area at the Bystrinskoye deposit. In 2022, to grow the gold-iron-copper ore and gold ore reserves in its the mineral resource base, the Company launched exploration phase activities and conducted surface geophysical and geochemical prospecting over the area. Further plans include drilling the identified targets, followed by a resource estimate against provisional exploratory standards. According to a preliminary estimate, the deposit

flanks have a potential for reserve additions of 368 kt in copper and 32 tonnes in gold.

Deposit: MASLOVSKOYE

Minerals: copper-nickel sulphide ores.

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

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

A feasibility study of permanent exploratory standards 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 mineral reserves

	Reserves	Metal grade
Total ore	206.8 mln t	
Pd	33,087 koz	5.0 g/t
Pt	13,040 koz	2.0 g/t
Au	1,268 koz	0.2 g/t
Ni	711 kt	0.3%
Cu	1,098 kt	0.5%
Co	26 kt	0.01%



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 exploration licences for the Morongovsky and Yuzhno-Yergalakhsy copper-nickel sulphide ore prospects within the Yuzhno-Norilskaya area. In 2021–2022, prospecting of the areas was completed, including prospecting drilling.

A preliminary estimate of the resource potential is currently being prepared. After laboratory tests are completed in 2023, a report on the area's potential and an opinion on further prospecting will be prepared.

Area: MIKCHANGDINSKAYA

Minerals: copper-nickel sulphide ores.

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

In 2019–2020, the Company obtained exploration licences for the Neralakhsy, Yuzhno-Neralakhsy, Snezhny, Yuzhno-Ikensky, and Medvezhy prospects within the Mikchangdinskaya area. Prospecting drilling conducted in 2021 confirmed that the area has a potential for containing copper-nickel sulphide ores. In 2022, the Company decided to continue prospecting drilling, to be completed in 2023–2024.

Area: ARYLAKHSKAYA

Minerals: copper-nickel sulphide ores.

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

In 2020, the Company obtained exploration licences for the Yttakhsky, Samoyedsky and Mastakh-Salinsky prospects within the Arylakhskaya area. In 2021–2022, prospecting drilling was completed at prospects identified by geophysical and geochemical prospecting across areal zones. In 2023, after the ongoing laboratory tests are completed, a report on the area's potential and an opinion on further prospecting will be prepared.

Area: ALENUYSKAYA

Minerals: gold-copper porphyry ores.

Location: Zabaykalsky Territory, Alexandrovo-Zavodsky District.

In 2020, the Company obtained exploration licences for the Severo-Alenuysky and Yuzhno-Alenuysky prospects within the Alenuyskaya area. In 2022, prospecting drilling was completed at prospects identified by geophysical and geochemical prospecting across areal zones, confirming signs of copper porphyry mineralisation that extends beyond the licence area. The Company applied for a subsoil licence for the adjacent Tsentralno-Alenuyskaya area, with plans to continue prospecting in 2023.

Area: MOSTOVSKAYA

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

Location: Zabaykalsky Territory, Mogochinsky District.

In 2020, the Company obtained exploration licences for the Zapadno-Mostovsky and Vostochno-Mostovsky prospects within the Mostovskaya

area. In 2022, prospecting drilling was completed at prospects identified by geophysical and geochemical prospecting across areal zones. In 2023, after the ongoing laboratory tests are completed, a report on the area's potential and an opinion on further prospecting will be prepared.

Area: DOGYINSKAYA

Minerals: gold-copper and gold-silver ores.

Location: Zabaykalsky Territory, Gazimuro-Zavodsky District.

In 2021, the Company obtained exploration licences for the Severo-Dogyinsky and Yuzhno-Dogyinsky prospects within the Dogyinskaya area. In 2022, the Company conducted geophysical and geochemical prospecting across areal zones and identified drilling targets to confirm the geology. Started in 2022, the drilling campaign will continue in 2023. A report on the area's potential will be prepared based on drill results from the drilling campaign.

Area: SHAMYANSKAYA

Minerals: gold ore, copper-molybdenum ore.

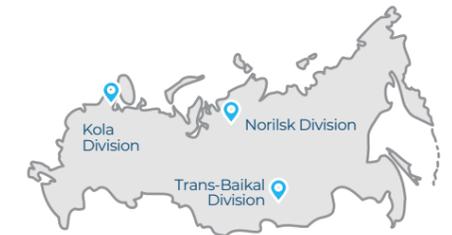
Location: Zabaykalsky Territory, Zabaykalsky District.

In 2021 and 2022, the Company obtained exploration licences for the Zapadno-Shamyansky, Tsentralno-Shamyansky and Vostochno-Shamyansky prospects within the Shamyanskaya area. In 2022, the Company conducted geophysical and geochemical prospecting across areal zones and identified drilling targets to confirm the geology in 2023.

OPERATIONAL PERFORMANCE

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

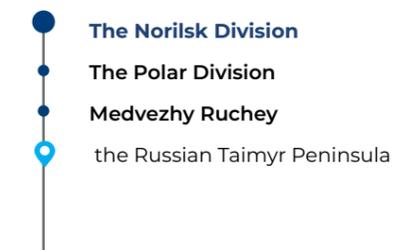
The Company owns three production assets: the Norilsk and Kola Divisions mining copper-nickel sulphide ores and the Trans-Baikal Division producing gold-iron-copper ores.



The Norilsk Division is the Group's flagship asset includes the Company's two major production assets – the Polar Division and Medvezhy Ruchey (100% stake), as well as a number of support assets. The Norilsk Division's assets are located on the Russian Taimyr Peninsula – in the Norilsk Industrial District (northern part of the Krasnoyarsk Region, within the Arctic Circle) – and linked to other Russian regions by the Yenisei River, the Northern Sea Route and by air.

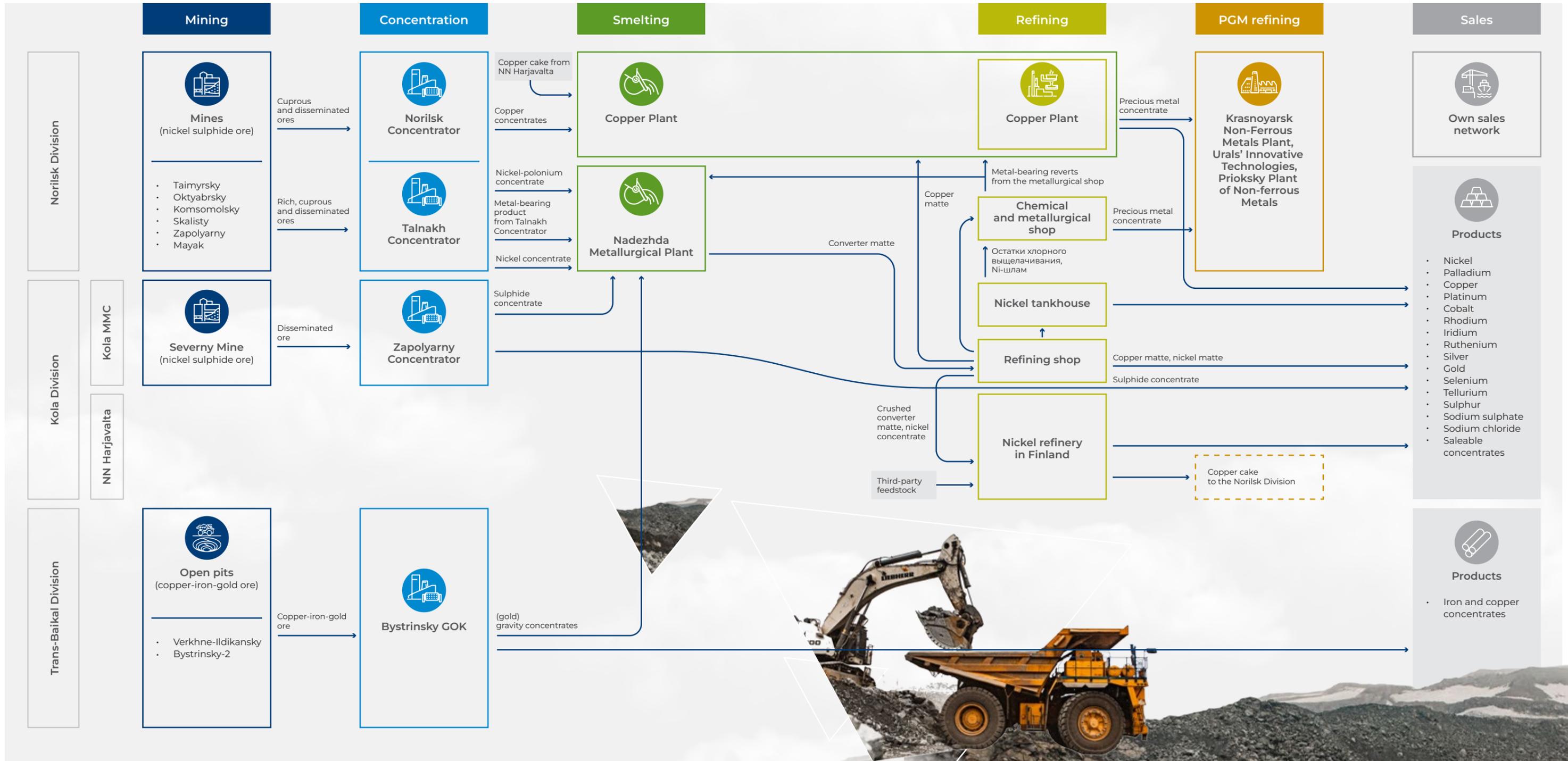
Located on the Kola Peninsula in the Murmansk Region, **the Kola Division** includes two Nornickel's wholly owned subsidiaries: Kola MMC, a production company; and Norilsk Nickel Harjavalta. Norilsk Nickel Harjavalta is located in Harjavalta, Finland. Founded in 1959, Harjavalta is now the only nickel refinery in Finland and one of the largest in Europe with a total throughput capacity of 65 ktpa of nickel products.

The Trans-Baikal Division is located in the Zabaykalsky Territory of Russia, 350 km away from Chita. The Division includes Bystrinsky GOK (via 50.01% held in GRK Bystrinskoye), the construction of which was started by Nornickel in 2013 (put into commercial operation in 2019). This asset includes open-pit ore mining operations and a mining and processing plant with full infrastructure, including a power line, a 227 km Borzha–Gazimursky Zavod railway line (25% held by Nornickel and 75% by the government), as well as a rotation camp.





PRODUCTION FLOW





MINING

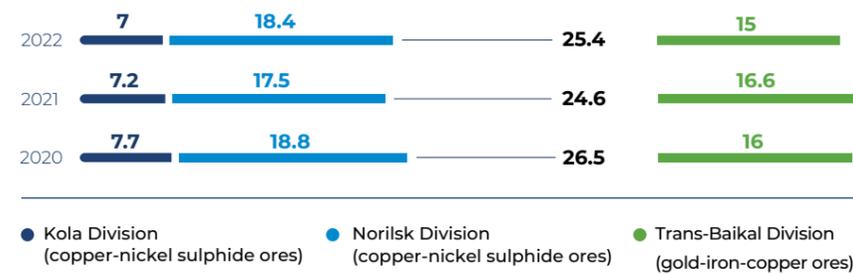
The Norilsk and Kola Divisions mine copper-nickel sulphide ores of three grades: high-grade ores with a higher content of base and precious metals; cuprous ores with a higher copper content as compared to nickel; and disseminated ores with a lower content of all metals. The Trans-Baikal Division mines gold-iron-copper ores of the Bystrinskoye deposit.

The Norilsk Division develops the Talnakhskoye and Oktyabrskoye deposits through underground mining at the Taimyrsky, Oktyabrsky, Komsomolsky, Skalisty, and Mayak Mines. The mines deploy slicing and room-and-pillar methods with the cut-and-fill system, with stopes refilled with backfill mixtures.

The Norilsk-1 deposit is developed by the Zapolyarny Mine of the Norilsk Division through open-pit and underground mining. Underground mining is carried out through sublevel caving using front ore passes and self-propelled vehicles.

In 2022, total ore production by the Norilsk Division was 18.4 mln t, up 1.0 mln t y-o-y (+6%). High-grade ore production increased by 22% (+1.3 mln t), while production of cuprous ores decreased by 4% (-0.2 mln t). Changes in ore production were planned in the mining option for 2022. Disseminated ore production decreased by 1.8% (-0.1 mln t). The year-on-year decrease in the production of disseminated ores was due to the repair of the backfilling facility at the Mayak Mine and the rescheduling of ore mining at the Zapolyarny Mine (with mining operations suspended) to process higher-grade feedstock from the Talnakhskoye and Oktyabrskoye deposits.

Group ore output (mln t)



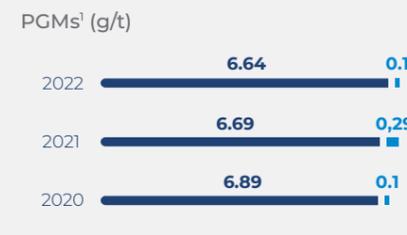
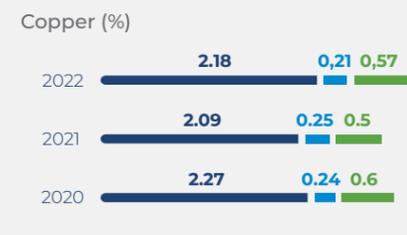
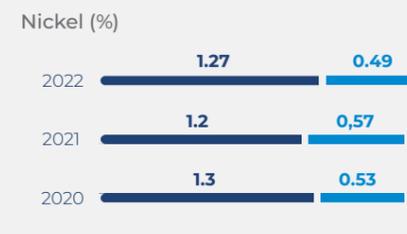
The Kola Division mines disseminated ores at four deposits: Zhdanovskoye, Zapolyarnoye, Kotselvaara, and Semiletka. Kola MMC uses various ore mining methods. The Zhdanovskoye and Zapolyarnoye deposits use three mining methods: gravity caving with front ore passes, sublevel caving with room-and-pillar ore removal and room-and-pillar mining. The Kotselvaara and Semiletka deposits primarily use stoping from sublevel drifts and sublevel caving. Room-and-pillar short-hole and long-hole stoping is also used on a limited scale.

In 2022, Kola MMC produced 7.0 mln t of ore (down 2% y-o-y). The decline in ore production was caused by the decrease in the regulatory requirements for reserves prepared for development and ready for extraction at the Severny Mine (shortage of self-propelled-diesel machinery, lack of spare parts and termination of aftersale support for mining equipment in Russia by Western companies due to sanctions).

The Trans-Baikal Division mines gold-iron-copper ores of the Bystrinskoye deposit through open-pit mining at the Verkhne-Ildikansky and Bystrinsky-2 mines.

In 2022, total ore production by the Trans-Baikal Division was 15.0 mln t, down 1.6 mln t y-o-y. The decline in ore production was scheduled in the mining option for 2022.

Average metal content in mined ore



● Norilsk Division
● Kola Division
● Trans-Baikal Division

¹ The PGMs include palladium, platinum, rhodium, ruthenium, and iridium.

CONCENTRATION

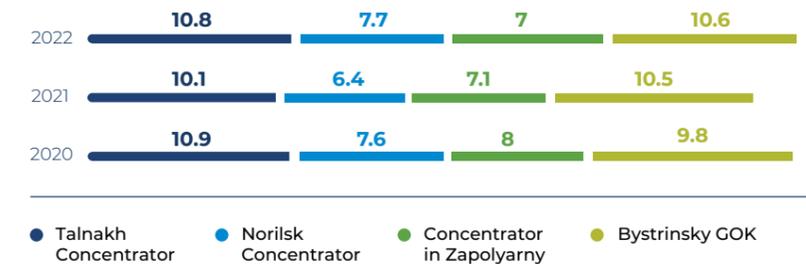
CONCENTRATORS

- Talnakh Concentrator, Norilsk Industrial District
- Norilsk Concentrator, Norilsk Industrial District
- Concentrator, Zapolyarny
- Bystrinsky GOK, Zabaykalsky Territory

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 2022, Talnakh Concentrator increased its ore processing by 7% to 10.8 mln t.

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 2022, Norilsk Concentrator increased its ore processing to 7.7 mln t, up 1.3 mln t year-on-year. The resulting thickened concentrates from Talnakh Concentrator and Norilsk Concentrator are transported via slurry pipelines to the metals operations of the Norilsk Division for further processing.

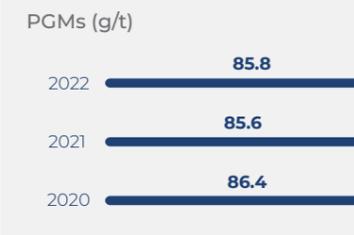
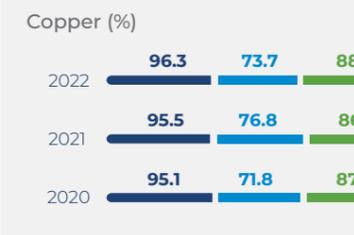
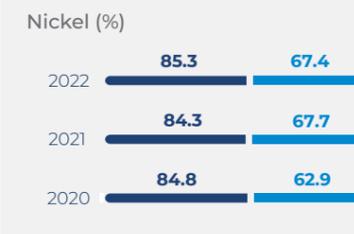
Concentrators' throughput (mln t)



Concentrator in Zapolyarny processes disseminated ores from Kola MMC deposits. The concentrator produces nickel sulphide concentrate, which is then sold via third parties or partially shipped to the Norilsk Division for further processing. In 2022, the concentrator processed 7.0 mln t of ore, down 0.1 mln t year-on-year due to a decrease in ore production.

Bystrinsky GOK processes ores of the Bystrinskoye deposit into copper, iron ore and gold concentrates. Its key processing stages include crushing, milling, flotation, thickening, filtration, and end product packaging. The concentrator has two processing lines. Copper and iron ore concentrates are sold via third parties, while gold concentrates are further processed at the Norilsk Division. In 2022, Bystrinsky GOK processed 10.6 mln t of ore, up 0.13 mln t year-on-year. Metallurgy and refining.

Metals recovery in concentration across the Group



● Norilsk Division¹
● Kola Division
● Trans-Baikal Division

¹ Metals recovery into bulk concentrate.



SMELTING AND REFINING

DOWNSTREAM FACILITIES

- Nadezhda Metallurgical Plant, Norilsk Industrial District
- Copper Plant, Norilsk Industrial District
- Metallurgical shop of Copper Plant, Norilsk Industrial District
- Chemical and metallurgical shop, Monchegorsk
- Refining shop, Monchegorsk
- Nickel tankhouse, Monchegorsk
- Nickel refinery, Harjavalta

PRODUCTION CHAIN

Norilsk Division

The produced nickel concentrates, including steam-cured sulphide concentrate¹, secondary materials and metal-bearing feed from Kola MMC, are fed into flash smelting furnaces at Nadezhda Metallurgical Plant. The matte produced in flash smelting furnaces is then converted into high-grade converter matte.

Copper Plant processes all of the copper concentrate from the Company's concentrators, metal-bearing products from Kola MMC and copper cake from Norilsk Nickel Harjavalta to obtain copper cathodes, elemental sulphur and sulphuric acid for the operational needs of the Norilsk Division. Copper Plant's metallurgical shop recycles sludge from the copper tankhouses of Copper Plant to produce precious metal concentrates, commercial selenium and tellurium.

Kola Division (Kola MMC)

Kola MMC's refining facilities in Monchegorsk refine converter matte from the Norilsk Division². Converter matte is crushed, milled and separated into copper and nickel concentrates by flotation, while

part of the converter matte after crushing is immediately sent for processing to Norilsk Nickel Harjavalta. The resulting copper concentrate is sent to the Norilsk Division's Copper Plant. The nickel concentrate flow is then separated, with some of it after magnetic separation and recovery of precious metals sent to Norilsk Nickel Harjavalta for further processing. The remaining nickel concentrate is processed at the roasting and electric furnace sections to produce tube furnace nickel powder, anodes and granulated nickel alloy. Anodes are processed using the conventional electrorefining technology at Tankhouse 1 to produce cathodes. Tube furnace nickel powder is processed at Tankhouse 2 using a new technology involving leaching plus electrowinning to produce cathodes. The granulated nickel alloy is processed at the nickel carbonyl section to produce pellets and powder.

The production of nickel cathodes at Tankhouse 1 and Tankhouse 2 results in semi-finished products with a high content of precious metals. These semi-products are processed at the chemical and metallurgical shop to produce precious metal concentrates. The production of nickel cathodes at Tankhouse 1 and Tankhouse 2 also generates primary cobalt cake, which is used by the cobalt section to produce saleable cobalt concentrate and cobalt cathodes.

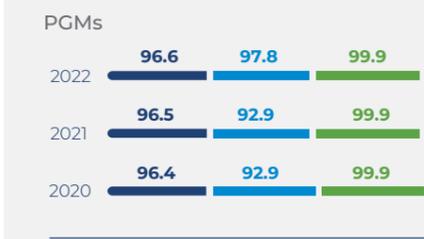
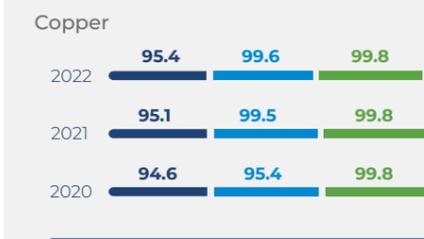
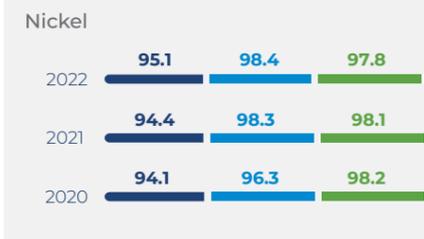
Norilsk Nickel Harjavalta

Norilsk Nickel Harjavalta uses sulphuric acid leaching with high metal recovery rates – above 98%. The refinery processes nickel feedstock (matte and crushed converter matte) supplied by Kola MMC and small amounts of feedstocks purchased from third parties (nickel salts). Once leached, copper cake is sent to the Norilsk Division or sold to third parties, 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 at Krastsvetmet, Urals' Innovative Technologies and Prioksky Plant of Non-ferrous Metals.

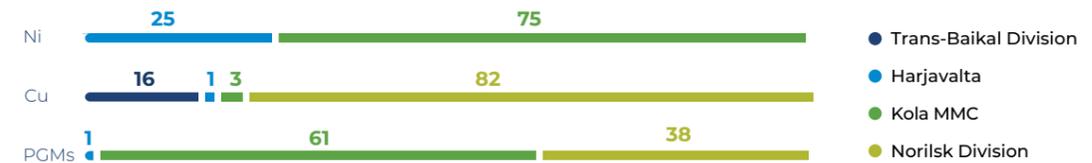
Metals recovery in smelting (%)



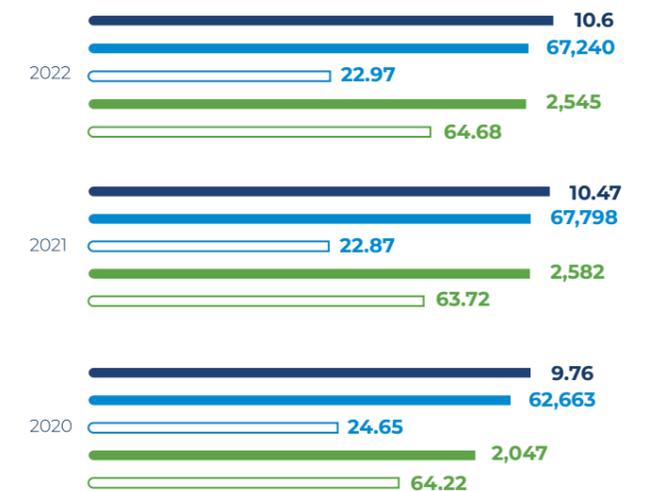
- Norilsk Division³
- Kola Division (Kola MMC)⁴
- Kola Division (NN Harjavalta)⁴

PRODUCTS

Finished products manufactured in 2022 (percentage of the Group's total output, %)



Production volumes by Bystrinsky GOK



- Ore processing (mIn t)
- Nickel (kt)
- Copper (kt)
- Palladium (koz)
- Platinum (koz)
- Copper content in the concentrate (%)
- Iron content in the concentrate (%)

Finished product output by the Group



- Nickel (kt)
- Copper (kt)
- Palladium (koz)
- Platinum (koz)
- from own feed
- from own feed
- from own feed
- from own feed

The Group's saleable products

Norilsk Division:

- Copper cathodes
- Commercial sulphur
- Selenium
- Tellurium ingots
- Precious metals

Kola Division:

- Nickel cathodes and carbonyl
- Nickel sulphide concentrate
- Nickel matte
- Copper matte
- Cobalt cathodes, cobalt concentrate
- Precious metals
- Sulphuric acid

Harjavalta:

- Nickel salts, briquettes, cathodes, powders, and solutions
- Copper cake
- Cobalt sulphate, cobalt solutions

Trans-Baikal Division:

- Iron ore concentrate
- Copper concentrate

¹ Hydrometallurgical product.

² The production and processing of own converter matte has been discontinued following the shutdown of the smelting shop in December 2020.

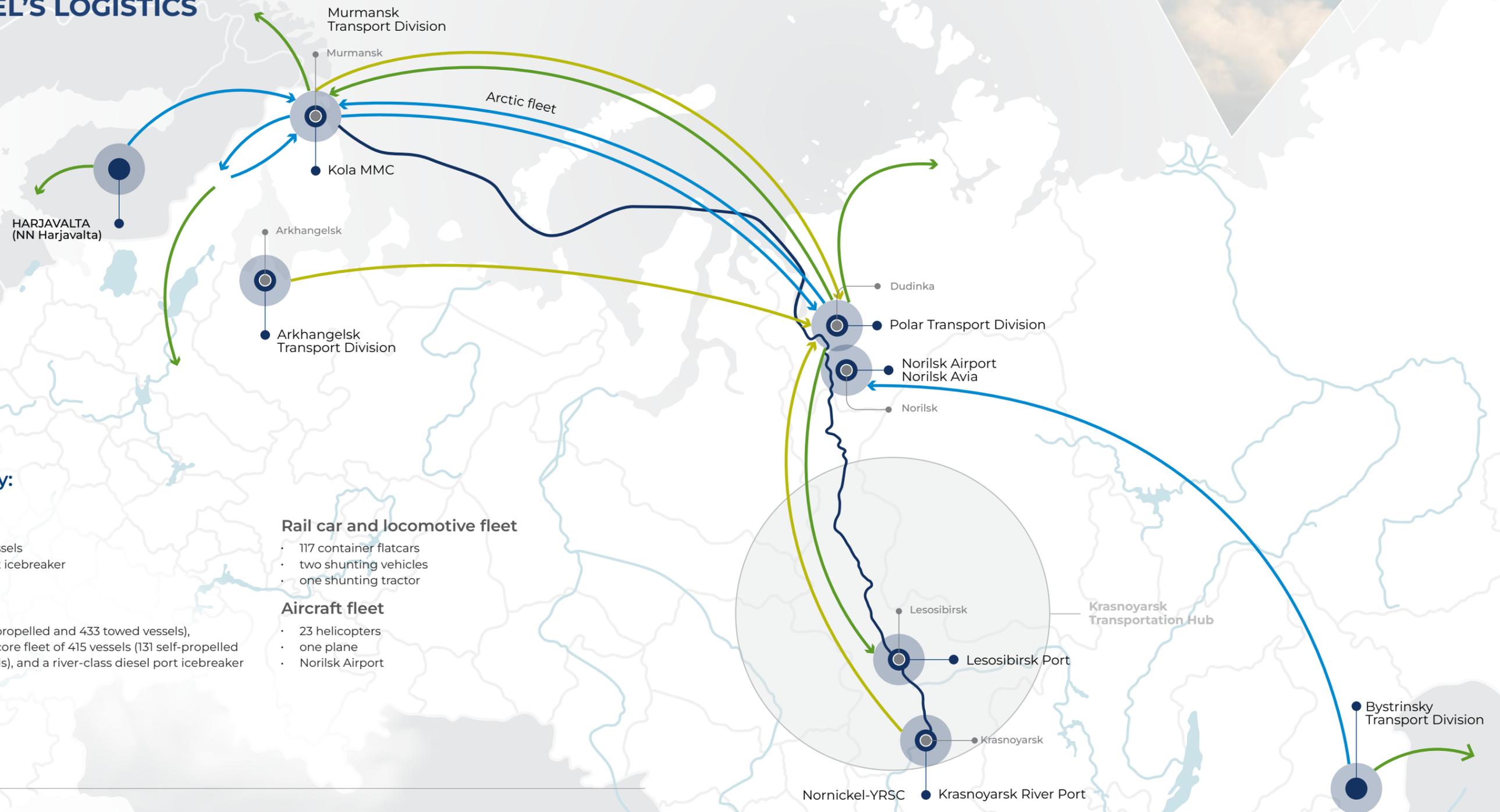
³ Feedstock to finished products.

⁴ In refining, converter matte to finished products.



LOGISTICS OPERATIONS AND PRODUCT SALES

NORNICKEL'S LOGISTICS MAP



Asset summary:

Sea fleet

- six heavy ice-class vessels
- a sea-class diesel port icebreaker

River fleet

- 633 vessels (200 self-propelled and 433 towed vessels), including the active core fleet of 415 vessels (131 self-propelled and 284 towed vessels), and a river-class diesel port icebreaker

Rail car and locomotive fleet

- 117 container flatcars
- two shunting vehicles
- one shunting tractor

Aircraft fleet

- 23 helicopters
- one plane
- Norilsk Airport



TRANSPORT AND LOGISTICS ASSETS

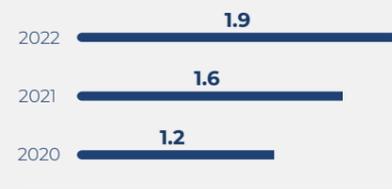
Nornickel has a unique Arctic fleet capable of breaking through Arctic ice up to 1.5 m thick without icebreaker support, which enables the Company to provide year-round dry and liquid cargo shipping services between Dudinka, Murmansk and Arkhangelsk sea ports while also serving other destinations.

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 cargo 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, with three icebreakers providing this support. Arc7 ice class vessels require just one icebreaker to make and maintain ice channels in the Yenisei River and the Yenisei Bay on a regular basis to ensure commercial speed of piloting.

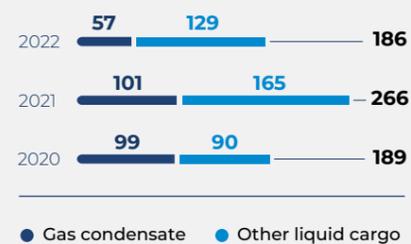
In 2022, Nornickel signed a long-term contract with ROSATOM (valid until 2041 and renewable until 2051) to engage a nuclear-powered Project 22,220 icebreaker with a shaft power of about 60 MW to make sure the Company's strategic needs for icebreaker support are fully covered. After these two icebreakers are retired upon reaching the end of their service life (in 2027 and 2029), the Project 22220 vessel chartered by Nornickel will ensure stable icebreaker support for the Company's vessels and cargo transportation services.

The Company owns Dudinka port on the Taimyr Peninsula, which is Taimyr's main cargo gateway with no

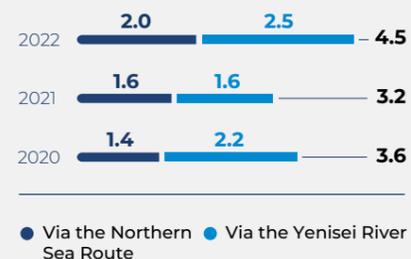
Dry cargo transportation by fleet (mln t)¹



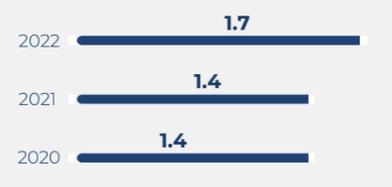
Liquid cargo shipments (kt)¹



Cargo traffic at Dudinka port (mln t)



Cargo traffic at the Murmansk terminal (mln t)



reasonable alternative. In addition, Dudinka is the world's only port that gets flooded every year during the spring thaw. From November to May, its water area and the Yenisei River freeze over. At this period, Dudinka port handles only sea vessels using icebreakers to de-ice the berths and provide support during manoeuvring and mooring operations. In May and June, during the flooding, the service is suspended to be resumed for sea and river vessels when ice flows pass and the water level goes down.

The port transships cargoes for the Norilsk Division and for residents of the Taimyr Peninsula. In summer, river vessels deliver equipment and materials (sand, round timber, clinker, process materials, etc.) for process needs from Krasnoyarsk and Lesosibirsk. Sulphur is shipped from Dudinka partly by river and partly by sea. Converter matte and metal products are shipped by sea from Dudinka throughout the year.

To support major investment projects, the port's cargo traffic is projected to increase up to 1.5 times compared to the current average of 3.5 million tonnes, which will require expanding the port facilities. In 2022, we increased the volumes of cargo handled by the port by up to 30% versus the average rate, having invested more than RUB 6 billion over the past four years in upgrading and expanding the port facilities.

Nornickel's own **terminal in Murmansk** ensures year-round transshipment of the Company's finished metal products (primarily those produced by the Norilsk Division) for export, acceptance of converter matte from Dudinka and its shipment by rail to the Kola Division, shipment of semi-products to Dudinka for further processing at the Norilsk Division facilities as well as of procured equipment, materials and cargoes to meet the needs of the Norilsk Region.

The Company also own aviation assets, including Norilsk Avia and Norilsk Airport, offering air transportation services to local communities across the Taimyr Peninsula. The air carrier has its own fleet of 23 helicopters and one plane and provides air services related to the operations of the Norilsk Nickel Group, emergency medical flights, search and rescue operations, and local passenger services.

PRODUCT SALES

Nornickel's products are listed on the London Metal Exchange and the Shanghai Futures Exchange

In 2022, the Company supplied its products to 34 countries around the world, with Europe remaining the major consumer. The Company operates its own global network of representative and sales offices in Russia, China, USA and Switzerland, prioritising direct sales to consumers.

SALES STRATEGY

Sales, along with production, have traditionally been a key focus area of Nornickel's business. One of the Company's key sales objectives is to promote and ensure a favourable environment for sustainable demand for its products now and in the future.

The Company's nickel product sales mix matches the global nickel consumption mix, with stainless steel, plating and alloying as its main segments. At the same time, the battery sector is increasingly gaining importance.

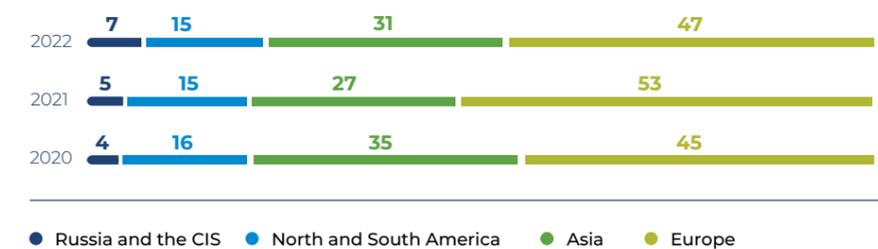
To capture the expected mid- and long-term growth in nickel demand from the battery sector, Nornickel continues implementing a number of initiatives to enhance and expand its existing product range supporting the battery supply chain to secure nickel for its future investments.

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

In March 2022, as part of its response to the current situation, Nornickel sold 100% of NordStar Airlines shares to the airline's managers to focus on its

core business, the production and sale of non-ferrous and precious metals. That said, NordStar Airlines remains the main air carrier based in Norilsk Airport, providing uninterrupted air services between Norilsk and major Russian cities.

Sales by region (%)



Hundreds of companies (more than 95% of them – industrial consumers) purchase Nornickel's nickel products.

When it comes to **nickel products, the sales strategy** focuses on achieving a healthy balance between supplies to stainless steel producers and shipments to other industries to secure a stable position in the market.

Electric vehicles and batteries are a priority segment in the nickel consumption mix, as its growth rates suggest that in the long term, it can become the key source of demand for high-grade nickel. Given the Company's wide range of low-carbon nickel products, high reliability of supply, own global sales platform, and long-term experience of partnering with automakers and chemical companies, Nornickel sees its role as a key element in the development of the electric vehicle market

and related value chains. The Company is strongly focused on building long-term relationships with key market participants and considers various forms of cooperation with the battery sector players. 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 seeks to maximise the use of its product portfolio advantages and improve product quality to boost its share in high-quality, premium segments.

The automotive industry and the production of other process catalysts, as well as the jewellery and medical products industries remain the key market segments for **PGM products**.

¹ Includes a third-party fleet.



At the same time, Nornickel engages in various initiatives to further promote the use of palladium in future industrial applications.

Nornickel's PGM products are purchased by dozens of companies, 80% of them being industrial consumers.

As the world's largest producer of palladium, the Company continues to follow its strategy of entering into direct contracts with end consumers in the **PGM market** to sustain strong demand. Speaking about the future PGM uses, we should name several of those related to the hydrogen economy. Palladium can find important application in hydrogen storage. Moreover, palladium may be a good component in the systems of hydrogen transportation based on liquefied organic hydrogen carriers (LOHC). In the longer run, palladium may find new applications in electrolyzers and fuel cells.

Moreover, palladium may play an important role in hydrogen safety. Among other promising areas where

palladium can find its future use, we can name water treatment systems, electronic sensors (including those for autonomous vehicles), palladium coatings and alloys in aerospace and electronic applications, energy density enhancing dopings for Li-ion batteries as well as biofuel catalysis, carbon dioxide capturing devices, cancer drugs and pharmaceutical catalysts, and others.

Nornickel together with its partners is working on accelerated adoption of hydrogen technologies and other applications mentioned above to bring closer a cleaner and more sustainable future and ensure the effective energy transition essential to achieve net-zero goals set by the Paris agreement on climate change.

PRODUCT SALES

In 2022, Nornickel once again confirmed its reputation as a reliable supplier of high-quality products. Every year, the Company conducts customer satisfaction analysis in line with ISO 9001

to get feedback from its customers. Customer feedback 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 2022.

Despite the geopolitical challenges and related logistical issues, the Company successfully met all its obligations to customers in 2022, having never failed to deliver on its commitments. In 2022, we developed and set up backup routes to ensure uninterrupted product supplies to consumers.

Nornickel has successfully retained all of its major customers in 2022, none of whom defaulted on contractual obligations, enabling the Company to meet its sales targets. This solid performance was to a large extent driven by the Company's longstanding policy of independent positioning in the market and building direct relationships with consumers.

ENERGY ASSETS

Natural gas production

2,816 Mcm

Gas condensate production

91 kt

Share of renewables across the Group

51%

Nornickel operates its own energy assets, which are managed by the Energy Division and comprise four natural gas fields, three combined heat and power (CHP) plants, two hydropower plants (Ust-Khantayskaya HPP and Kureyskaya HPP), as well as gas pipelines and power lines. Electricity is generated from renewable (hydropower) and non-renewable (natural gas) sources.

Norilskgazprom produces gas and gas condensate from the Pelyatkinskoye, Yuzhno-Soleninskoye and Severo-Soleninskoye gas condensate fields, as well as the Messoyakhskoye gas field.

Start of production

1969

Gas reserves

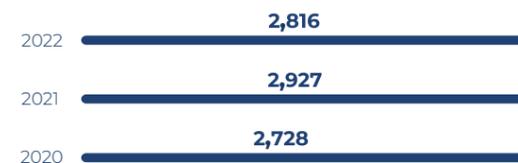
250.4 bcm

Gas condensate reserves

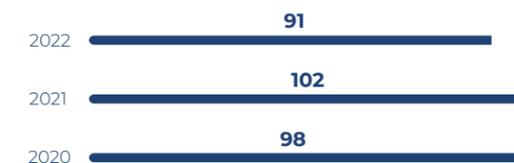
4,606 kt

Production volume¹

Natural gas (Mcm³)



Gas condensate (kt)



Norilsktransgaz transports natural gas and gas condensate from fields to consumers. The string length of its gas and condensate pipelines totals 1,639 km. The pipelines were commissioned in 1969.

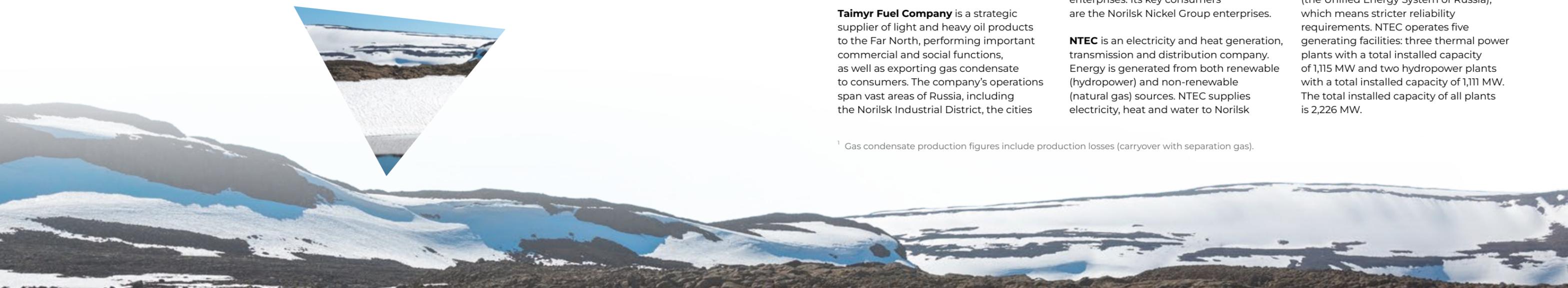
Taimyr Fuel Company is a strategic supplier of light and heavy oil products to the Far North, performing important commercial and social functions, as well as exporting gas condensate to consumers. The company's operations span vast areas of Russia, including the Norilsk Industrial District, the cities

of Krasnoyarsk and Dudinka, Murmansk Region, and Zabaykalsky Territory. Taimyr Fuel Company supplies petroleum products to mining, exploration and transport companies and municipal enterprises. Its key consumers are the Norilsk Nickel Group enterprises.

NTEC is an electricity and heat generation, transmission and distribution company. Energy is generated from both renewable (hydropower) and non-renewable (natural gas) sources. NTEC supplies electricity, heat and water to Norilsk

households, as well as to all industrial and commercial consumers in the Norilsk Industrial District. The local electricity grid is operationally and geographically isolated from the national grid (the Unified Energy System of Russia), which means stricter reliability requirements. NTEC operates five generating facilities: three thermal power plants with a total installed capacity of 1,115 MW and two hydropower plants with a total installed capacity of 1,111 MW. The total installed capacity of all plants is 2,226 MW.

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





Power generation mix in the Norilsk Industrial District in 2022 (%)



- Renewables (hydropower)
- Natural gas

Ust-Khantayskaya and Kureyskaya HPPs are NTEC's two renewable electricity generation facilities. In 2022, the share of renewables in total electricity generation stood at 51% for the Group and 56% for the Norilsk Industrial District.

The Kola and Trans-Baikal Divisions purchase electricity on the wholesale electricity and capacity market (WECM). Harjavalta sources electricity from the Finnish electricity market.

The Company's investment programme includes a number of projects to boost the share of renewables such as 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:

<ul style="list-style-type: none"> construction of a new water intake on the Norilskaya River construction of stormwater and industrial wastewater treatment facilities construction of five new gas wells at the Pelyatkinskoye gas condensate field 	<ul style="list-style-type: none"> upgrade of emergency diesel fuel tanks at Norilsk CHPP-1, CHPP-2, CHPP-3, Dudinka boiler house, Ust-Khantayskaya HPP, and Kureyskaya HPP upgrade of the Norilsk utility tunnels upgrade and development of utility infrastructure in Tukhard comprehensive upgrade of the Norilsk, Dudinka and Kayerkan tank farms 	<ul style="list-style-type: none"> upgrade of electric power networks upgrade of heat and water pipelines upgrade of trunk and distribution gas pipeline systems replacement of generating units at CHPP-2 and CHPP-3 in Norilsk
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INNOVATION AND DIGITAL TECHNOLOGY

CONTRIBUTION TO THE UN SDGs



Nornickel extensively relies on innovative solutions such as artificial intelligence and machine learning at all stages of its production process, from exploration to smelting, while fostering an overall culture of innovative transformation and digital literacy among its employees. The use of technology streamlines operating processes while also making production safer both for employees and the environment.

However, technological innovation at Nornickel is not only about research, development and rollout of promising technologies and solutions but also about building the Company's proprietary R&D

platform and research centres, shaping internal policies and fostering a culture of high-tech developments.

Nornickel is also progressing initiatives to manufacture production-critical components for its core operations as part of embedding computer modelling and 3D printing into its processes. For this purpose, the Company has set up a platform featuring available scanning, design, modelling, and prototyping technologies which already enable Nornickel to efficiently jump-start component manufacturing. The Company has used 3D printing to reproduce the full cycle of manufacturing pilot components. These solutions enable the Company to significantly expand its capacity to manufacture in-house more items required by its enterprises.

Nornickel's uniform approach to managing its intellectual property greatly contributes to driving its innovative growth and building a competitive portfolio of R&D assets.

The Company's coordination centre responsible for managing its intellectual property registers exclusive patent rights and copyrights both in Russia and abroad.

As at 1 January 2023, the Company owned the intellectual property rights in the following items registered in Russia:

- 18 inventions
- Four utility models
- Four software applications
- 18 trademarks

Moreover, the invention patent for the method for continuously converting nickel-containing copper sulphide materials, which underlay the continuous conversion project at Copper Plant, has been registered in the USA, Kazakhstan, China, Canada, Finland, Sweden, and Chile.

TECHNOLOGY BREAKTHROUGH 2.0

Since 2015, Nornickel has been running its Technology Breakthrough programme, focused on building an automated operational control system and improving labour productivity and safety, including by integrating advanced information support and automation tools into its production processes.

In 2019, all previous results from the Technology Breakthrough programme were analysed to transform it into the Technology Breakthrough 2.0 project portfolio, with its initiatives more focused on ensuring operational continuity, securing technological independence and achieving operational safety and environmental goals.

By December 2022, **9 IT projects** had been successfully delivered as part of the Technology Breakthrough 2.0 project portfolio.



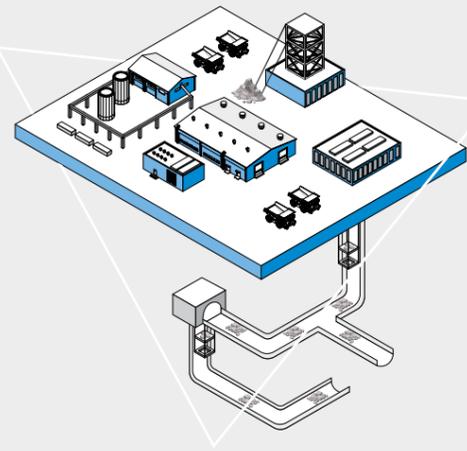
AUTOMATION OF THE GLUBOKAYA MINE (SKALISTY MINE)

Human presence in the mine needs to be minimised given its challenging mining conditions (mining depth over 2 km, temperature of +46 °C, high pressure).

Offsetting the projected decline in the automation level, which was maintained **at 50%** instead of a drop from 80% to 20% expected by now.

Confirmed **automation of five core processes:**

- Crushing
- Skip hoisting
- Rock conveyor delivery
- Drainage
- Ventilation



Backfilling can be automated **by 70%:** this requires manual installation of backfill bulkheads and adjustments to shutoff gates and switches at branched workings.

Five areas do not currently lend themselves to autonomous or remote control and require human presence:

- Drilling and blasting
- Supporting
- Rock haul by self-propelled diesel equipment
- Rock pressure control
- Mine surveying

Further development of a domestic geological and mining information system is ongoing. Once adopted by the Company, the product has proved highly effective, enabling Nornickel to update its mineral resource base and streamline its mining plans.

Further improvements are continuously made to simulation modelling, dispatch and mining management systems, with an emphasis on verifying and tracking production targets, boosting the equipment utilisation rate, and so on.

The Company has made further progress on its ambitious project to minimise human presence in deep mines. Currently, Nornickel is exploring the concept of autonomous and automated mining processes at the Glubokaya mine (part of the Skalisty Mine) leveraging forward-looking technical solutions that can minimise human presence in underground workings.

During 2022, the Company improved the quality of its finished products by:

- changing the topology of the circuit for zinc recovery from leaching solutions

- changing the topology of cobalt and lead recovery circuits
- adopting abrasive material with a reduced content of impurities
- improving the performance of the extraction cascade within the zinc recovery process (from 43 m³/h to 53–55 m³/h)
- improving raffinate precipitation after zinc recovery
- improving the performance of the circuit for raffinate neutralisation after zinc recovery.

These improvements have reduced the content of copper, iron and lead impurities in Nornickel's nickel cathodes by 9% year-on-year for copper, 12% year-on-year for iron and by over 30% year-on-year for lead.

INDUSTRIAL SAFETY TECHNOLOGY

VIDEO ANALYTICS

To improve safety culture at its operations, Nornickel is actively adopting solutions that use AI-enabled video analytics.

The Company's proprietary solution to monitor the use of personal protective equipment by operational staff was further improved in 2022. New safety incident detection models were, detecting open fire, etc.). The solution was integrated with personnel tracking and face recognition modules to monitor compliance with safety rules.

In particular, the Company is planning to leverage video analytics to detect four out of the six safety violations with the highest risk of injury listed in Nornickel's golden rules:

- Working at height without a safety harness
- Moving loads with people under a suspended load or dangerously close to the load
- Employees staying near unfenced rotating (moving) machinery or equipment components
- Transferring people in vehicles not designed for these purposes

In 2022, the Norilsk Division launched pilot tests of a video analytics system at its industrial facilities. As part of this project, server infrastructure was deployed and mock violations of industrial safety rules were staged for a quality test of machine learning algorithms.

Plans for 2023 include looking into the potential use of computer vision at construction sites to monitor compliance with industrial safety rules by contractors. Nornickel also plans to continue pilot testing and implementation of other solutions based on video analytics (assessment of discharge turbidity, identification of cathode grades on the cutting line, monitoring for oversized ore pieces, etc.) at the production facilities of the Norilsk Division, following which the accuracy of the algorithms and their impacts will be assessed.

In 2022, Nornickel teamed up with the Federal Environmental, Industrial and Nuclear Supervision Service of Russia (Rostekhnadzor) to set up an experiment to deploy a remote industrial safety compliance monitoring system. The system was piloted at Kola MMC and provided continuous

risk-based supervision, monitored compliance with the requirements for operating conditions and the actual status of industrial safety at hazardous production facilities, analysed the current situation at hazardous production facilities predicted potential adverse events, and transmitted information to automated information system of Rostekhnadzor.

EMERGENCY MONITORING

The Company has stood up an information and diagnostic system in its Norilsk Division to detect and prevent negative trends and emergencies. A large-scale building and structure monitoring system has been created to consolidate data on the condition of soil, bearing elements of buildings, satellite monitoring data, and data from predictive models. The resulting insights inform the Company's proactive initiatives to prevent climate change impact. In 2022, the project won gold at the ComNews Awards and silver at the MineDigital competition held as part of the 18th MINEX Russia Mining & Exploration Forum.



GREEN TECHNOLOGY AND ESG

ENVIRONMENTAL MONITORING

Environmental monitoring of water bodies is part of StikhiyaEco, the corporate environmental protection and monitoring system.

Tools for environmental monitoring of water bodies enable online tracking of changes in metrics over time to prepare mitigation measures



Environmental monitoring

- Monitor the environment by aspect: air, climate, water, soils, tailings and waste, biodiversity, emergency preparedness

Related projects:

- Project to install an automated control system covering emission sources at Nadezhda Metallurgical Plant
- Digital Plant (Nadezhda Metallurgical Plant): digital mock up. Environmental monitoring. Prototype
- Development of a predictive emission monitoring system (PEMS)
- Implementation of an environmental tracking system (ETS)
- Smart City: piloting an air quality monitoring system in Norilsk
- Air quality monitoring in Monchegorsk, Nikel and Zapolyarny



Data visualisation panels (dashboards)

- Operational data by aspect: air, climate, water, soils, tailings and waste, biodiversity, incidents
- Environmental performance by aspect



Data records

- Registers and records of facilities with negative environmental impacts
- Registers and archives of permits and licences
- Registers of waste storage facilities
- Data sheets of metering and other equipment



Environmental planning and management

- Predict above limit levels of environmental impacts
- Submit data to supervisory bodies



Report generation

- Operational and statistical reports on environmental performance
- Paid use of natural resources (calculate environmental fees, environmental tax, water use fees)



Tracking environmental indicators

- Sulphur emissions
- Carbon footprint
- Oil spills
- Remediation of legacy pollution
- Clean-ups and other activities



The Company is implementing automation projects in ecology / environmental protection.

For example, an environmental water drone has been successfully piloted to speed up the tracking of performance against targets over time.

Tools for environmental monitoring of water bodies enable online tracking of changes in metrics over time to prepare mitigation measures

Environmental monitoring of water bodies is part of StikhiyaEco, the corporate environmental protection and monitoring system.

Another tech-enabled initiative within our ESG agenda was the development of a prototype of an environmental monitoring system at Nadezhda Metallurgical Plant based on a digital twin. The pilot will be the first step towards creating an integrated information and analytics platform relying on a uniform methodology for calculating environmental (air, water and soil) impacts. The system will be capable of interpreting and verifying the data obtained, generating forecasts and reports as well as performing mathematical and simulation modelling of environmental processes.

An automated pollutant emissions monitoring system has been piloted at Copper Plant. The pilot solution will allow Nornickel to evaluate the potential

Completed activities

- Tested an environmental water drone
- Analysed the correctness of collected data
- Exploring potential data transmission to a digital plant to build a prototype



for using Russian equipment, taking into account the Company's process and production profiles.

In 2023, Nornickel will also start developing a mathematical model of industrial emissions, with the relevant software suite expected to become an alternative to expensive and complicated instrumentation to monitor emissions. The development of this information system has been supported by an industrial competence centre. Going forward, this product is also planned to be offered to third-party industrial enterprises. As part of the engagement with industrial competence centres, amendments are also being made to the existing regulatory framework.



MINE WATER TREATMENT

A pilot test project was launched in 2022 to treat mine waters at the Komsomolsky Mine. The pilot also included parallel operation of several mine water treatment plants using reverse osmosis and electro dialysis to bring water quality to the standards required by Russian laws. Conducting tests in this format helps us understand which technology performs better given the biochemical profile of mine waters at the Komsomolsky Mine.

A pilot test plan has been approved, with the pilot slated for completion in 2023. The pilot's results will inform the preparations for the Komsomolsky Mine development project and help make the optimal decision when selecting the best mine water treatment technology.

HIGH-TECH MATERIALS

Metals produced by Nornickel are currently central to high-tech manufacturing. In 2022, the Company

produced its first physical samples of innovative high-tech materials (powders, alloys, catalysts) which can potentially boost its product margins several times over. New palladium-containing catalytic products (hydrogen separation and purification membranes) offers the potential to expand palladium sales and build value chains from palladium production to vehicle fuel batteries. Pilot tests are ongoing as part of an experimental battery unit.

The Kola Division continues exploring technical and design solutions for the manufacturing of new types of saleable products: premium quality nickel cathodes for electroplating and superalloys, as well as rondelles.

MODIFIED SULPHUR

The Company has tested an innovative technology for producing modified sulphur, which could become a promising feedstock for the construction industry. Work is underway to produce pilot samples of asphalt featuring modified sulphur instead of BND 100/130 grade bitumen. Asphalt pilot samples

have been produced to confirm that the asphalt concrete mixtures meet the requirements for operation in the Far North, with the production of a pilot batch of sulphur-extended asphalt and sulphur concrete being set up at the asphalt concrete plant in Norilsk. The project's potential throughput capacity is 30 ktpa of sulphur. Up to 20 ktpa of modified sulphur are planned to be additionally used in the production of reinforced concrete products to beautify the city.

GANGUE MINERALISATION

The Company is exploring the ability of waste from concentration of polymetallic ores to absorb CO₂ from the atmosphere. Gangue mineralisation is a natural process, but no prior research has been conducted into using gangue from ore concentration to reduce carbon footprint. Solutions involving artificial waste mineralisation are being developed in parallel. Accelerated mineralisation is being tested as part of the pilot project. The new technology may also find application at Nornickel's assets.

TECH-ENABLED CONSTRUCTION

CONSTRUCTION MANAGEMENT PLATFORM

Nornickel is testing a platform that provides a common data environment based on a Building Information Model (BIM) to connect all construction process stakeholders and drive end-to-end digitalisation of capital construction projects throughout their life cycles. The platform ensures comprehensive

monitoring of construction project timelines and budgets. Competitive pilot tests were conducted in 2022 on capital construction projects of various types (social infrastructure and residential facilities) at all stages of their life cycles. The Company tested the functionalities of products offered by different vendors. In 2023, the Company is planning to digitise construction monitoring and test additional features of vendor products via pilot projects.

The platform's value proposition

1 Process acceleration through:

- end-to-end digitisation of the construction process
- access for all stakeholders to a single source of truth for data

2 Addressing potential errors by preventing conflicts and using BIM models

3 Timely identification of variances in the construction process through specialist services embedded into the process

LASER SCANNING BASED ANALYTICS

The tool increases the speed and accuracy of detecting deviations in construction and installation.

STEP 1. The customer collects data using LIDAR and transmits the information to the vendor's cloud-based platform.

STEP 2. Information is processed and compared by machine vision and AI-based tools against the BIM project parameters and work schedule.

STEP 3. An analytical report is prepared regarding the quality (compliance with geometric parameters) and work progress.

The solution helps improve work quality and accelerate timelines while tracking and visualising construction progress as well as improving communication between project stakeholders.

In 2022, the first pilot phase was completed under a project to construct a church complex of the Russian Orthodox Church

in Norilsk, with the pilot construction of a residential building launched as part of the Norilsk renovation programme. In 2023, Nornickel is planning to roll out the technology in residential construction as well as at the Company's industrial facilities to confirm its economic and non-financial impacts across different types of projects and different construction stages.

UAV-ENABLED MONITORING

UAV-enabled analytics is used to build a regularly updated 3D model of the construction project, enabling better monitoring of progress on groundworks and improving communication between project stakeholders.

In 2022, a pilot was launched to validate the value proposition of the software for UAV data analysis conducted as part of groundworks for the surface backfilling preparation complex at the Mayak Mine.





TECHNOLOGY IN OPERATIONS

CONCENTRATION OPTIMISATION

A pre-feasibility study was conducted, and the potential technical impact was calculated in 2022 for the introduction of an intelligent automated process control system for disseminated ore flotation to improve operational performance of Norilsk Concentrator. In 2023, the Company is planning to create a prototype of this assistant system, first in an automated version and then in an automatic version, with the system to be eventually rolled out if the study results are validated.

A prototype assistant using statistical data was developed in 2022 for the copper flotation circuit of Norilsk Concentrator. The system currently runs in an automated mode across normal operating modes of the production process. The assistant's algorithms for emergency operation are also being described and prepared for testing for the subsequent automatic operation and rollout of the system. In parallel with the prototyping of these assistants on the copper and disseminated ore circuits, Norilsk Concentrator, in particular its flotation line, is being retrofitted with sensors and process data collection equipment to boost the assistants' performance and step up the overall performance and process effectiveness.

Industrial tests of a pilot pneumatic flotation cell were also carried out at Norilsk Concentrator. Data were obtained to support the case for retrofitting of scavenging facilities at Norilsk Concentrator using impellerless pneumatic flotation cells.

Among other things, Nornickel is planning to draft an operating procedure in 2023 for the processing of disseminated and cuprous ores at Norilsk Concentrator's

upgrade project (NOF-2) based on a relevant ore dressability study. The resulting operating procedure will be used to design NOF-2.

Since 2019, a number of projects have been ongoing across Talnakh Concentrator's value chain to digitise production processes for increased productivity and improved recovery of precious metals. These projects include process cruise control systems for process engineers as well as machine vision sensors used across the process stages. A digital granulometer has already come online, and a nickel flotation optimisation system and a low-nickel pyrrhotite flotation optimisation system were successfully piloted. Going forward, Nornickel plans to scale up these optimisation systems to the entire flotation capacity and test the flotation froth control systems in real time.

CONVERTING OPTIMISATION

A converting monitoring system is planned to be developed in order to boost the recovery of non-ferrous metals from converter matte. The experiment will involve determining the correlation between iron content of converter matte and the colour of the converter's off-gas flame using optical analysis tools. This will help increase the average iron content in converter matte and boost the recovery of non-ferrous metals such as nickel, cobalt and copper leveraging iron's shielding properties during matte converting. The system will operate remotely in real time. Material balance calculations carried out by GiproNornickel Institute corroborate the potential impact from its adoption. Initially, the system will learn how to determine iron content by analysing the off-gas

flame spectrum. When the target state is reached, the system will be able to prompt the operator about the optimal time to complete the converting based on the composition of off-gases as determined by an analysis of their flame spectrum.

In 1H 2023, Nornickel is planning to create a prototype for one converter of Nadezhda Metallurgical Plant. If proven effective, the solution will be rolled out to the plant's other converters, and its use in the converter operations of Copper Plant will also be considered.

HYDROCYCLONE CONTROL OPTIMISATION

The development of an assistant system to optimise hydrocyclone control at the Trans-Baikal Division's concentrator was launched in 2022. Hydrocyclone control is essentially about stabilising a set pressure by controlling the pump operation rate, about keeping density within a set range by controlling the water flow rate in the sump subject to relevant restrictions, and about adjusting the feed density by opening/closing cyclones when the sump level limits are reached. Optimising hydrocyclone operating modes will stabilise the proportion of the material meeting target parameters and, consequently, boost copper recovery into copper concentrate.

The Company has developed a pump hydrocyclone control concept, evaluated the potential impact from the solution's implementation using historical data and drafted a prototyping plan. By mid-2023, Nornickel is planning to test the model, make preliminary impact estimates and prototype the solution in real-life industrial settings.

MILLING OPTIMISATION

In 2021, a diagnostic was run on Bystrinsky GOK, resulting in a decision to apply optimisation algorithms to boost the milling circuit's performance. The key hypothesis behind the project was that a digital assistant would boost the autogenous mill's throughput. As part of Step 1, Company specialists analysed historical data and developed a control algorithm for the autogenous mill to confirm this hypothesis. Once the hypothesis was verified using the site's historical data, it was decided to prototype with real data. The test results have confirmed the key hypothesis, with the solution boosting the mill's throughput. Preparations are underway for a review by the investment committee, which will decide on whether to allocate funds for the project. The Company's objective for 1H 2023 is to start moving the solution to the commercial launch stage.

In order to improve the semi-autogenous mill's throughput, an AI-based assistant was developed, adjusted and tested at Talnakh Concentrator in 2022. The tests have confirmed that the system is applicable and delivers a performance impact. Plans for 2023 include testing a feeder control system for the semi-autogenous mill in automatic mode and moving the finished assistant prototype to fully automatic operation. The mill is also expected to be retrofitted with sound sensors to ensure more accurate modelling and build the mill's DEM model. These improvements will enable more data feeds from in-mill processes while unlocking control of the milling process and extending the mill liner lifetime.

MONITORING TAILINGS STORAGE FACILITIES AND FLUE-GAS STACKS

Starting from 2022, Talnakh Concentrator and Nadezhda Metallurgical Plant have been testing a platform to analyse UAV data. As part of this initiative, pilots were conducted to monitor the operation of Talnakh Concentrator's tailings storage facility and flue-gas stacks of Nadezhda Metallurgical Plant.

The tests at the tailings storage facility included:

- monitoring changes in the condition of dams and hydraulic structures over time
- visualising the liquid tailings inflow distribution
- estimating the area covered by solid tailings.

The tests at flue-gas stacks included:

- detecting cracks in the protective layer of concrete
- evaluating the condition of service platforms, ladders, stack tips, and signal lights
- evaluating the condition of stack's metal structures and portals.

The tests have confirmed the product's functionality and provided preliminary estimates of its economic and non-financial impacts. Going forward, the Company is planning to launch a second testing phase to confirm the product's value proposition in harsher winter conditions. Moreover, the second phase will involve testing the technology on new types of the Company's assets (power lines and pipelines) and completing the calculations of economic and non-financial impacts from the technology rollout across all facilities.

LOWERING MAGNESIUM CONTENT IN CONCENTRATE

The initiative to lower magnesium content in concentrate run at the Kola Division is important to the Company since higher magnesium content translates to a potentially lower price of finished products. The project bets on automated on-stream analysis of gangue sample mineral composition to improve separation of magnesium-bearing minerals from ore and enable predictive adjustments to the concentration process. A comprehensive characterisation of minerals and their phases in all ores mined by the Kola Division was conducted in 2022 using advanced 3D microscopy and digital core analysis methods. Recommendations were drafted for a range of laboratory studies to streamline existing concentration processes, planned to be completed in 1H 2023. The laboratory studies will support subsequent pilot tests to trial the highest-potential solution for improving the sulphide concentrate production process.

PRODUCING HIGH-GRADE NICKEL CATHODES

An initiative was launched to produce higher grade nickel cathodes by reducing the impact of zinc-emitting sources. The initiative will identify key zinc emission sources and provide recommendations on reducing and stabilising their impact on the quality of nickel cathodes.

¹ Discrete element method.



LIDAR SCANNER

The Company has adopted mobile LIDAR scanners to survey mining operations across all of its mines.

LIDAR scanning is the most effective method of sourcing digital models for underground workings and the ground surface. It performs high-precision surveys of mine workings in motion in minutes, with 3D visualisation taking place in real time. An accurate

high-res digital model of the scanned location is obtained through instant processing of laser beam reflections. A scanning range of up to 200 m can be achieved underground, at a rate of 300 thousand measurements per second.

LIDAR scanning systems allow Nornickel to conduct more than 1.5 thousand surveys per year, covering over 40 km of mine workings. Most importantly, these scanners ensure more accurate geometric

measurement of underground workings, including stopes. This level of accuracy helps mine managers to make faster and better decisions on how to proceed with their mining operations.

A rate

of **300** thousand measurements per second

A scanning range of up to

to **200** m

RESEARCH AND DEVELOPMENT

R&D is a major driver behind the implementation of the Company's strategic priorities. The Company's key strategic priorities include driving fundamental improvements in environmental protection, developing

and implementing projects to upgrade existing and construct new production facilities so as to increase output and supply of key metals to the global market as well as maintaining the Company's financial stability as its

major investment projects are brought online. Gipronickel Institute, which is part of the Group, is Nornickel's core R&D platform. It is one of Russia's largest research and design centres for mining, concentration and metallurgy.

DIGITAL PROJECTS

Technological advancements are the most essential tool used to improve Nornickel's business processes and workplace safety. Despite the geopolitical risks and external challenges of 2022, the Company continued its digital projects while taking steps to maintain business continuity.

The strategy previously adopted by Nornickel and its proactive management decisions helped the Company achieve strong IT stability amid unprecedented uncertainty and external pressure.

RUB **12.3** billion

was allocated to digital, innovative and IT projects in 2022, including initiatives to gain technological independence.

TECHNOLOGICAL INDEPENDENCE

Gaining technological independence has become a new priority focus area in the Company's IT strategy. Nornickel's information systems have been isolated in advance, with additional equipment and spare parts purchased. An evaluation of the Company's IT landscape for technological independence has demonstrated that 18% of its systems (barring the process control system, PCS) use imported software, while one third of these systems require additional measures, including renewal. The remaining systems can be operated without running any material risks for several years. The Company has

developed criteria for ranking IT projects by impact of relevant restrictions. Key considerations include availability of Russian alternatives, in-house development capabilities, available purchased licenses, availability of updates, and technical support.

In 2022, the Company put a huge effort into securing technological independence in industrial automation. Imported process control systems make up 92% at the Company while 21% requires renewal in the nearest future. To reduce exposure to imported equipment, the Company has run a detailed analysis of alternative Russian-made equipment items and data collection and operational control systems, approving four primary Russian manufacturers of controllers

and preparing scheduled PCS upgrade programmes for each of its divisions. A targeted programme has been developed and put in place to train Nornickel specialists in the new equipment. Dedicated testing laboratories and an expert centre are being set up to test solutions.

ICC Metallurgy will develop proprietary alternatives for critical mining tools, including a geological and mining information system, a mining planning system and an underground dispatch system ICC Ecology will create a digital twin to simulate industrial emissions leveraging PCS data.

Pursuing projects announced by Nornickel is a task of industry-wide significance that requires appropriate corporate procedures and implementation approaches; therefore, a separate legal entity, Norsoft, was established to ensure product development. The establishment of a dedicated legal entity focused on ICC projects was prompted by the need to apply a flexible product-based approach, streamline efforts to develop industry-specific solutions, ensure transparent management of project implementation and financing, register and exercise intellectual property rights, and conduct follow-up monitoring. Major companies in the Russian mining, metallurgical and chemical industries have shown interest in the products under development.

In 2022, Nornickel launched a new strategy to promote the uniformity of measurements, which includes an initiative aimed at import substitution and stronger technological independence. When searching for Russian alternatives, we selected over 360 manufacturers across 119 principal groups

In 2022, Nornickel's in-house experts trained

>**12** thousand employees

Were involved in digital literacy initiatives

~**20** thousand employees

of measurement instruments. Their production capacities and the quality of their products meet the Company's requirements. In particular, an alternative Russian-made nuclear density gauge, PR-1K, produced by ROSATOM was selected and tested in a real-life operational environment at the Medvezhy Ruchey site. The successful testing prompted the decision to run in-depth durability tests to build experience and test operational performance.

In addition, a Russian-made automated system for streamlining the work of metrological services (NERPA software) was piloted in 2022 with a view to building a single information environment to combine measurement standards, measurement instruments, testing equipment, and reference standards.

In order to improve digital literacy among employees who operate existing software and to reduce the risks associated with the adoption of new information systems and tools, the Company has successfully launched an educational ecosystem to meet current needs and promptly deliver training. In 2022, Nornickel's in-house experts trained over 12 thousand employees in various software applications while almost 20 thousand employees were involved in digital literacy initiatives.

DIGITAL FINANCIAL ASSETS

In 2022, Nornickel placed a pilot issue of digital financial assets (DFAs) on Atomyze, an open asset and process digitisation platform. The DFAs issued by the Company were dubbed New Money Market (NMM) and are set to become a promising financial product in short-term trade finance and highly liquid and reliable investments. These assets serve as Nornickel's unconditional financial obligation to repay the funds to the investor (DFA holder) in such amount and on such date as determined by the offering documents. The NMM digital financial assets combine the advantages of traditional paper-based financial products such as factoring instruments and short-term bonds. As such, the DFAs represent Nornickel's

pure credit risk and rank among the best debt assets in Russia in terms of quality and reliability.

With this pilot project, Nornickel seeks to test the platform functionality and operating specifics when issuing and transacting in DFAs. If successful, the pilot project opens up broad prospects for scaling up the circulation of NMM DFAs and expanding the range of digital financial assets through new platform solutions and products for other needs of issuers and investors.

IT INFRASTRUCTURE CONTINUITY

In 2022, Nornickel teamed up with Russian infrastructure solutions market participants to carry out an ambitious testing programme for import-independent IT equipment for compliance with existing corporate standards and information security requirements as well as for compatibility with the current IT landscape.

Nornickel has launched a large-scale initiative to pilot and phase in a multifunctional Linux-based infrastructure solution into its corporate environment. The transition to Linux infrastructure will imply a particular emphasis on corporate business processes and users.

A programme to build backup computing capacity in key corporate data centres has been completed. This move will reduce the potential negative impact on the continuity of IT services caused by the shortages of equipment and components following the withdrawal of foreign manufacturers from the Russian market.

The Company continues to implement data centre development projects. The construction of a new data centre in Moscow in cooperation with IXcellerate was completed in 2022, and functional systems to support IT equipment were put into operation. Land plots for the construction of new data centres in Monchegorsk and Norilsk have been found and selected.



The Company has launched a new wave of the programme to upgrade service facilities that are critical for its production systems. Based on lessons learned, the relevant corporate standard has been updated with requirements for the creation and operation of the relevant class of physical infrastructure.

THE DATA LAKE PLATFORM

Technology-wise, mining production of base metals is one of the most challenging industries. The journey from ore mining to selling the finished product involves collecting terabytes of data that must be processed to boost plant productivity and make work more comfortable. To collect and process big data across production sites and embed best practices, the Company has put in place a project to create a Data Lake digital platform. The Data Lake is essentially a technologically advanced platform that leverages big data, artificial intelligence and machine learning to address business tasks.

In 2022, infrastructures to launch several business initiatives leveraging artificial intelligence and machine learning (including a containerisation platform) were developed based on the Data Lake. For example, a prototype was launched for a prediction algorithm to control the dissolution and filtration processes in the nickel tankhouse at Kola MMC (on one of the four dissolution units). The system is comprised of machine-learning models that receive input data using several dozens of data tags in near real time and display resulting insights on dashboards across dedicated screens in the control room. The prototype's early results were evaluated in the first quarter of 2023. Going forward, we plan to roll out a series of solutions leveraging machine learning to the other three dissolution units.

At the same time, as part of the programme to gain technological independence, we initiated migration of the data platform from foreign to Russian-made software. To date, three of the four project phases have been completed. We expect that new Russian-made software will be used to support the platform development strategy, in particular, to design the Data Lake's geo-distributed infrastructure.

In addition, a dedicated platform is being set up to develop solutions leveraging machine learning. The platform helps address tasks such as data discovery, model development and launch of applications leveraging machine learning and runs on a high-performance cluster.

DEVELOPING COMMUNICATIONS NETWORKS

The Company continues its programme to develop service data networks. In 2022, the construction of a high-performance service network at the production sites of the Polar Division was completed; similar projects were initiated at Kola MMC and NTEC. To implement unmanned mine and remote equipment control technologies, communications networks must meet tough bandwidth and data speed requirements. With this in mind, the Company partnered with a number of Russian manufacturers of telecommunications equipment to initiate in 2022 the development of a switch with enhanced performance to be subsequently used in mines. By mid-2023, we expect to complete testing of selected developments. Delivering both enhanced performance and stronger security is a challenging task for developer teams; once implemented, this solution will not only cover the existing needs but also accommodate future growth in data traffic from production automation.

HIGH-SPEED INTERNET IN THE NORILSK INDUSTRIAL DISTRICT

Given that mobile and fixed-line connectivity remains a key prerequisite for high quality of life in the modern world while driving the growth of digital services, Nornickel launched the construction of a 956-km Novy Urengoy–Norilsk fibre-optic line back in 2017.

The project seeks to cover the Company's production-driven demand for high-speed connectivity and improve the quality of life in the Norilsk Industrial District by offering broadband internet access, enhancing the quality of services, including public ones, and expanding the range of communications services.

High-speed data services are available in the Norilsk Industrial District as well as in communities along the fibre-optic line route since 2017. An in-house maintenance service has been set up to service the communications line, comprising a call centre, a single network management centre and highly skilled field teams experienced in working in a similar environment and set up with specialist equipment and a fleet of custom-built all-terrain vehicles.

For more reliable operation, the capacity of the existing backup communications line across the Yenisei River was expanded from 1 to 40 Gbps and stabilised. The new line will both expand the total radio bandwidth and reduce the impact of weather conditions on data speed.

Work is ongoing on backing up the existing communications line between Novy Urengoy and Norilsk. The project is carried out by an approximately 200-strong construction and installation team set up specifically for this purpose, with a dedicated fleet of construction equipment. These efforts, including

measures to enhance the line's reliability, have ensured an SLA¹ of at least 97%, with emergency recovery within 72 hours.

To improve connectivity given the growing demand for data services from the Norilsk Industrial District's residents, the Company has expanded the backhaul network's bandwidth from 40 to 200 Gbps, enabling an increase of up to 85 Gbps for data traffic passing through client communications channels, while the Company's own traffic requires less than 1% of this capacity.

CITY ONLINE

City Online is a project aimed to improve the quality of life of people living in small and medium-sized towns in the Far North and the Far East by providing infrastructure and digital services in various areas of life and making habitual services more accessible in remote areas.

In line with advanced trends, the City Online business model offers integrated solutions and promotes digital social services combined into ecosystems/platforms.

Its key solution comprises an integration platform and a range of integrated B2C, B2B and B2G services selected from existing market products based on a needs analysis of cities. The platform is an entry-level product and a key element in the Company's positioning in the Smart City market.

The platform is available both [online](#) and as a mobile app in five cities: Norilsk, Dudinka, Monchegorsk, Murmansk, and Krasnoyarsk. The number of registered users exceeds 180 thousand, with almost 1.5 million unique visitors. The mobile app has been installed about 55 thousand times. The platform enjoys positive user feedback as shown by surveys and regular Net Promoter Score assessments.

The web and mobile versions of the platform currently offer 28 and 16 services, respectively. The most popular

services are GO.Media, Playbill, Broadcasts (available only in the web version), Map, and Transport.

Services that support seamless interaction of municipal employees with each other and with local residents within a shared information space will be further enhanced. More effective city management decisions will be enabled by leveraging real data, including through infrastructure products represented by hardware and software solutions for the automation of municipal infrastructure.

Examples of infrastructure services implemented as part of City Online include an air quality monitoring programme and a predictive environmental assessment model covering Norilsk, Monchegorsk, Nikel, and Zapolyarny and seeking to improve the urban environment and the quality of life as well as a mobile-based school education system introduced in the Murmansk Region in 2022, offering improved and socially inclusive education and minimising the impact of weather-related school cancellations.

ENHANCING CORPORATE BUSINESS PROCESSES

Key focus areas of Nornickel's digitalisation efforts include the continued automation and development of core processes within the corporate ERP² template.

Currently, all key financially significant Group enterprises are already included into the unified business template and relevant automation systems such as the supplier relationship management (SRM) system and warehouse logistics management system, with the groundwork laid to further

increase the maturity of related business processes and improve their operational efficiency.

The corporate template covers over 50% of the Company's core business processes, with the centralised platform encompassing 37 enterprises engaged in different areas (core and auxiliary operations, sales, supply and logistics, construction, energy, services, and project management). The system supports business functions and interaction for more than 15 thousand users while ensuring integration with 40 related automation systems that make part of the corporate architecture.

To ensure independence from imported ERP solutions, the Company works on migrating to a composite ERP architecture.

Warehouse operations are improved via projects that automate warehouse logistics management. As part of these efforts, Nornickel has launched a specialist system at the warehouses of Kola MMC and the Polar Division, which can be rolled out to other corporate assets, while its functionality related to cargo management at ports and logistics within divisions can also be expanded.

Novy Urengoy–Norilsk fibre-optic line

956 km

For data traffic passing through client communications channels

85 Gbps

¹ Service Level Agreement.

² Enterprise Resource Planning. It is a business process management software solution that is used to integrate and manage finance, supply chains, operations, trading, reporting, production, and human resources.

FINANCIAL PERFORMANCE (MD&A)

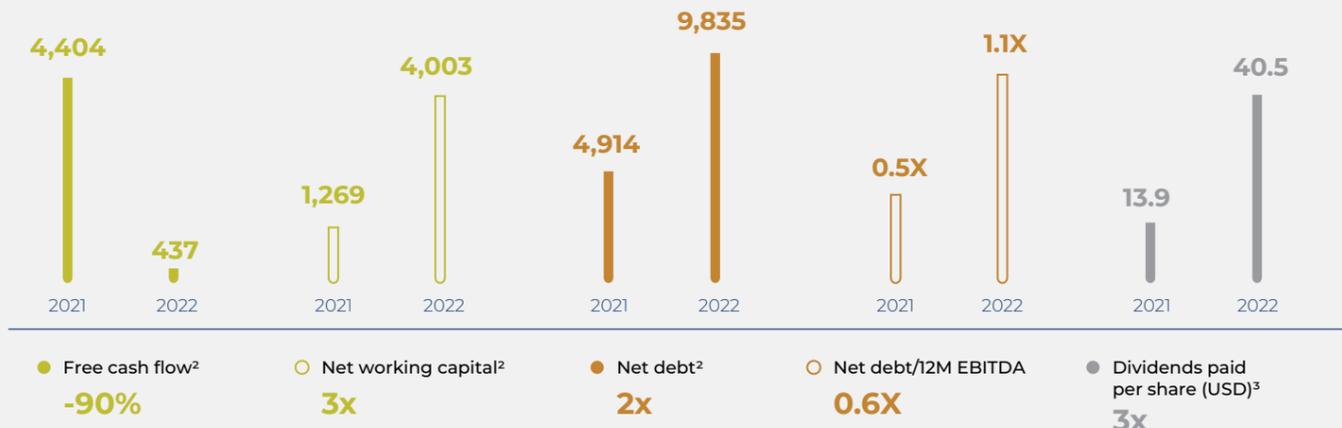
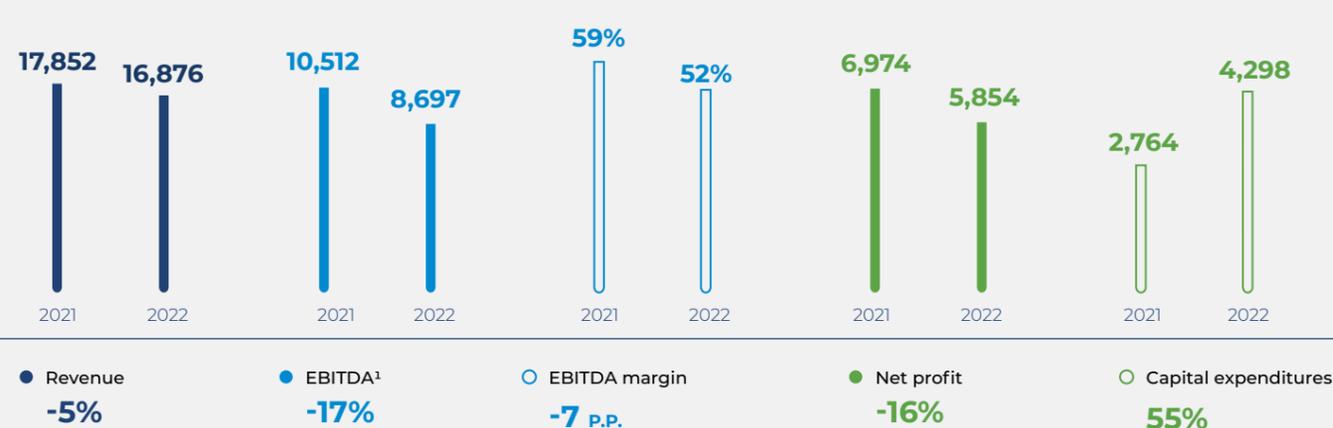
FY2022 HIGHLIGHTS

- Consolidated revenue decreased 5% y-o-y amounting to USD 16.9 billion. Higher nickel and cobalt prices and recovery of production volumes following the liquidation of damages caused by incidents at Oktyabrsky and Taimyrsky mines and Norilsk concentrator were negatively offset by lower copper and PGM prices as well as decline in metal sales volume driven by logistics disruptions and reorientation of sales to new markets that requires additional time;
- EBITDA decreased 17% y-o-y to USD 8.7 billion owing to lower revenue, higher operating cash costs driven mainly by increase in labour expenses and repairs. EBITDA margin amounted to 52%;
- Net income was down 16% y-o-y to USD 5.9 billion mostly driven by lower EBITDA;
- CAPEX increased 55% y-o-y to a record USD 4.3 billion driven by growth of investments into flagship environmental, mining and metallurgical projects as well as capital repairs aimed at improvement of industrial safety and mitigation of physical risks of production assets;
- Net working capital amounted to USD 4 billion driven mostly by increase in metal inventories as well as amortization of advance payments from customers and termination of factoring services;
- Free cash flow decreased from USD 4.4 billion to USD 0.4 billion driven mostly by lower EBITDA, increase of net working capital and higher CAPEX;
- Net debt doubled y-o-y to USD 9.8 billion following the decrease of free cash flow and payment of dividends. Net debt/ EBITDA ratio as of December 31, 2022 was at 1.1x. The Company continues to duly service all its debt liabilities;
- In September 2022, the Company received the consent of holders of 5 issues of eurobonds for the total amount of USD 3.75 billion to amend transaction documents in order to split payments to Russian and foreign investors, simplify cancellation of notes and appoint new Trustee. This was the largest deal of that kind in Russia both in terms of total amount and number of issues;
- In October and December 2022, Nornickel placed 9.75% RUB 25 billion exchange-traded bonds on the Moscow Exchange and two issues of CNY bonds in the total amount of CNY 9 billion, respectively;
- Economic restrictions imposed on Russia by a group of countries pose risks for operating, commercial and investment activities of the Company. To mitigate these risks Nornickel is developing relationship with alternative clients and suppliers, setting up new logistic routes and exploring new capital markets.

Key Segmental Highlights¹ (USD million)

Indicators	2022	2021	Change
Revenue	16,876	17,852	-5%
GMK Group	12,242	11,836	3%
South cluster	972	767	27%
KGMK Group	10,451	9,893	6%
NN Harjavalta	2,363	1,493	58%
GRK Bystrinskoye	1,325	1,346	-2%
Other mining	1	28	-96%
Other non-metallurgical	1,558	1,533	2%
Eliminations	-12,036	-9,044	33%
EBITDA	8,697	10,512	-17%
GMK Group	4,316	5,456	-21%
South cluster	450	397	13%
KGMK Group	3,915	3,758	4%
NN Harjavalta	157	59	3x
GRK Bystrinskoye	934	1,076	-13%
Other mining	-11	-16	-31%
Other non-metallurgical	9	11	-18%
Eliminations	-9	716	n.a.
Unallocated	-1,064	-945	13%
EBITDA margin	52%	59%	-7 p.p.
GMK Group	35%	46%	-11 p.p.
South cluster	46%	52%	-6 p.p.
KGMK Group	37%	38%	-1 p.p.
NN Harjavalta	7%	4%	3 p.p.
GRK Bystrinskoye	70%	80%	-10 p.p.
Other mining	n.p.	-57%	n.a.
Other non-metallurgical	1%	1%	0 p.p.

Key Corporate Highlights (USD million, unless stated otherwise)



¹ A non-IFRS measure, for the calculation see the notes below.

¹ Segments are defined in the consolidated financial statements.

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.



In 2022, revenue of GMK Group segment increased 3% to USD 12,242 million primarily due to the increase of sales following the recovery of operations at Oktyabrsky and Taimyrsky mines and Norilsk Concentrator after incidents in 2021, which was partly negatively offset by lower metal prices.

Revenue of South cluster segment increased 27% to USD 972 million primarily driven by higher volume of tolling services realized to GMK group due to the recovery of operations at Oktyabrsky and Taimyrsky mines and Norilsk Concentrator after incidents in 2021, and higher realized prices of semi-products.

Revenue of KGMK Group segment increased 6% to USD 10,451 million primarily owing to higher sales of semi-products delivered to GMK group and NN Harjavalta.

Revenue of NN Harjavalta increased 58% to USD 2,363 million driven by higher realized nickel prices and higher semi-products revenue.

METAL SALES

In 2022, revenue from metal sales was down 6% (or -USD 1,030 million) y-o-y to USD 16,073 million primarily driven by lower sales volume (-USD 704 million) as well as lower realized metal prices (-USD 153 million) as well as the decrease of revenue from the resale of metals purchased from third

OTHER SALES

In 2022, other sales increased 7% (or +USD 54 million) to USD 803 million primarily due to an increase in oil product sales, resale of icebreaking and sea transportation services, increase

Revenue of GRK Bystrinskoye decreased 2% and amounted to USD 1,325 million.

Revenue of Other mining segment decreased 96% owing to the termination of Nkomati's operations in 1H2021.

Revenue of Other non-metallurgical segment increased 2% to USD 1,558 million primarily due to higher revenue from other sales that was partly negatively offset by lower revenue from metal resale.

In 2022, EBITDA of GMK Group segment decreased 21% to USD 4,316 million owing to higher cash operating costs primarily driven by increased mineral extraction tax, higher labour, repair and maintenance costs, which were partly positively offset by higher revenue, decrease in social expenses, as well as cancellation of Nickel and Copper export custom duties in 2022.

EBITDA of South cluster segment increased 13% to USD 450 million primarily owing to higher revenue that was partly negatively offset by increase in cash operating costs due to higher labour, repair and maintenance costs.

parties (-USD 173 million). Lower metal sales volumes driven by the extension of logistics and reorientation of sales to new markets (-USD 2,040 million) were partly compensated by the production recovery (+USD 1,336 million) following the temporary suspension of Oktyabrsky and Taimyrsky mines and Norilsk Concentrator

of waste-product prices and Russian rouble appreciation, which was partially negatively offset by the sale of "NordStar" airline.

EBITDA of KGMK Group segment increased 4% to USD 3,915 million primarily owing to higher revenue.

EBITDA of NN Harjavalta increased 3-fold to USD 157 million owing to higher revenue, which was partly offset by increase in cash operating costs mainly due to higher reagents and energy costs.

EBITDA of GRK Bystrinskoye segment decreased 13% to USD 934 million primarily due to increase in cash operating costs driven by higher labour, repair and maintenance costs.

EBITDA of Other mining segment remained almost unchanged at negative USD 11 million.

EBITDA of Other non-metallurgical segment remained almost unchanged y-o-y and amounted to USD 9 million.

EBITDA of Unallocated segment decreased by USD 119 million and amounted to a negative USD 1,064 million mainly due to higher administrative expenses.

in 2021. Lower palladium, copper, rhodium and iron prices were partly compensated by higher nickel and cobalt realized prices.

COST OF SALES

COST OF METAL SALES

In 2022, the cost of metal sales increased 21% (or +USD 1,051 million) to USD 6,108 million, driven by the following factors:

- increase in cash operating costs by 34% (or +USD 1,667 million);
- increase in depreciation and amortization by 20% (or +USD 172 million);
- comparative effect of change in metal inventories y-o-y leading to the cost of metal sales reduction of USD 788 million.

Cost of metal sales (USD million)

Indicators	2022	2021	Change
Labour	2,123	1,406	51%
Mineral extraction tax and other levies	1,192	627	90%
Materials and supplies	1,069	715	50%
Third party services	784	410	91%
Purchases of refined metals for resale	437	581	-25%
Transportation expenses	275	130	2x
Fuel	166	122	36%
Electricity and heat energy	136	118	15%
Purchases of raw materials and semi-products	33	95	-65%
Export custom duties	-	442	-100%
Other costs	326	228	43%
Total cash operating costs	6,541	4,874	34%
Depreciation and amortisation	1,015	843	20%
Increase in metal inventories	-1,448	-660	2x
Total	6,108	5,057	21%

CASH OPERATING COSTS

In 2022, total cash operating costs increased 34% (or +USD 1,667 million) to USD 6,541 million mainly due to increase in labour costs (+ USD 717 million), increase in mineral extraction tax and other levies (+USD 565 million), increase in third party services (+ USD 374 million), and increase in materials and supplies (+ USD 354 million), partly offset by the cancellation of nickel and copper export custom duties in 2022 (- USD 442 million).

Inflationary growth of cash operating costs amounted to +USD 352 million while Russian rouble appreciation against USD amounted to cash operating costs increase of +USD 273 million.



Labour

In 2022, labour costs increased 51% (or +USD 717 million) to USD 2,123 million amounting to 32% of the Group's total cash operating costs driven by the following factors:

- +USD 232 million – indexation of salaries and wages above the CPI in line with the terms of collective bargaining agreement;
- +USD 127 million – increase in headcount in Norilsk industrial region;
- +USD 77 million – one-off incentive bonus to personnel;
- +USD 177 million – other increase in labour costs mainly due to increase in provisions, primarily unused vacation provision, driven by the increase in labour costs;
- +USD 104 million – effect of the Russian rouble appreciation against US dollar.

Mineral extraction tax and other levies

In 2022, mineral extraction tax and other levies increased 90% (or +USD 565 million) to USD 1,192 million, which was partly offset by the cancellation of nickel and copper export custom duties in 2022 (-USD 442 million). The main factors of the change were:

- +USD 527 million – increase of costs primarily due to the change in mineral extraction tax legislation in 2022;
- +USD 38 million – effect of the Russian rouble appreciation against US dollar.

Materials and supplies

In 2022, expenses for materials and supplies increased 50% (or +USD 354 million) to USD 1,069 million driven by the following factors:

- +USD 223 million – higher consumption of materials primarily due to increased repairs as part of the programme for improvement of fixed assets;

- +USD 78 million – inflationary growth of materials and supplies;
- +USD 53 million – effect of the Russian rouble appreciation against US dollar.

Third-party services

In 2022, cost of third-party services increased 91% (or +USD 374 million) to USD 784 million mainly driven by:

- +USD 306 million – primarily due to increase in repairs as part of the programme for improvement of fixed assets;
- +USD 38 million – inflationary growth of third-party services;
- +USD 30 million – effect of the Russian rouble appreciation against US dollar.

Purchases of refined metals for resale

In 2022, purchases of refined metals for resale decreased 25% (or -USD 144 million) to USD 437 million owing to lower purchases of palladium.

Transportation expenses

In 2022, transportation expenses increased 2 times (or +USD 145 million) to USD 275 million driven by the following factors:

- +USD 129 million – primarily due to transportation expenses growth in Norilsk industrial region driven by increase in sea transportation volume and icebreaking services;
- +USD 8 million – inflationary growth of expenses;
- +USD 8 million – effect of the Russian rouble appreciation against US dollar.

Fuel

In 2022, fuel expenses increased 36% (or +USD 44 million) to USD 166 million driven by the following factors:

- +USD 23 million – increase of fuel expenses due to growth of production volume after recovery of operations at Oktyabrskiy and Taymirskiy mines;
- +USD 12 million – inflationary growth of fuel price;
- +USD 9 million - effect of the Russian rouble appreciation against US dollar.

Electricity and heat energy

In 2022, electricity and heat energy expenses increased 15% (or +USD 18 million) to USD 136 million driven by the following factors:

- +USD 10 million – inflationary growth of expenses;
- +USD 9 million – effect of the Russian rouble appreciation against US dollar.

Purchases of raw materials and semi-products

In 2022, purchases of raw materials and semi-products decreased 65% (or -USD 62 million) to USD 33 million due to decrease of raw materials consumption at NN Harjavalta and termination of Nkomati's operations.

Other costs

In 2022, other costs increased 43% (or +USD 98 million) to USD 326 million primarily due to price inflation, effect of

the Russian rouble appreciation against US dollar and growth of industrial security and health and safety expenses.

Depreciation and amortisation

In 2022, depreciation and amortisation expenses increased 20% (or +USD 172 million) and amounted to USD 1,015 million mainly due to transfers from construction in progress as well as effect of the Russian rouble appreciation against US dollar.

Increase in metal inventories

Comparative effect of change in metal inventory amounted to -USD 788 million resulting in a respective decrease of cost of metal sales mainly due to increase in metal inventories in 2022 driven by the extension of logistics chains and reorientation of sales on new markets.





COST OF OTHER SALES

In 2022, cost of other sales increased by USD 70 million to USD 816 million due to higher oil products sales, resale of icebreaking and sea transportation

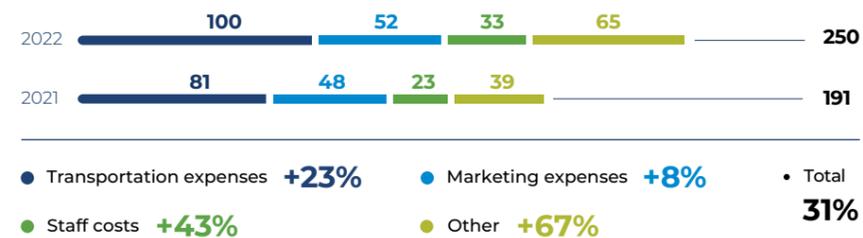
services, Russian rouble appreciation, as well as higher labour and repairs costs, which was partially compensated by the sale of NordStar airline.

Other sales increased

USD **816** million

SELLING AND DISTRIBUTION EXPENSES

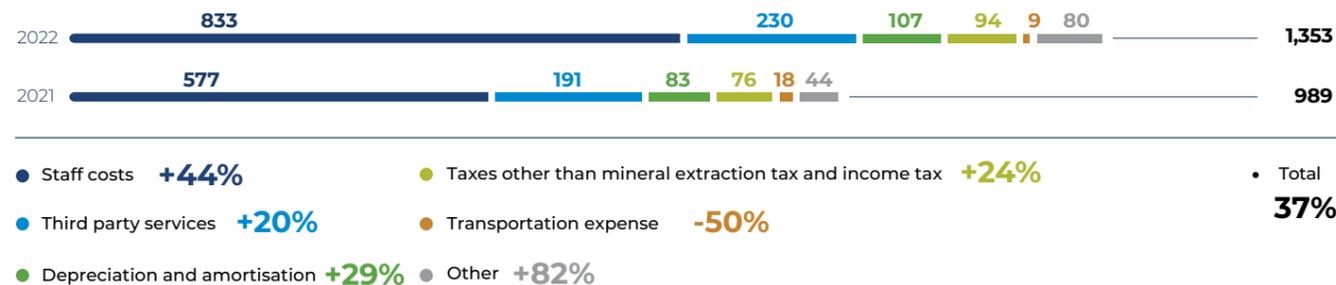
Selling and distribution expenses (USD million)



In 2021, selling and distribution expenses increased 10% (or +USD 17 million) to USD 184 million primarily due to increase in transportation expenses (+USD 9 million).

GENERAL AND ADMINISTRATIVE EXPENSES

General and administrative expenses (USD million)



In 2021, selling and distribution expenses increased 10% (or +USD 17 million) to USD 184 million primarily due to increase in transportation expenses (+USD 9 million).

In 2022, general and administrative expenses increased 37% (or +USD 364 million) to USD 1,353 million. Negative effect of the Russian rouble appreciation amounted to +USD 70 million. Changes of

the general and administrative expenses in real terms were primarily driven by the following factors:

- +USD 209 million – increase in staff costs, including salary indexation and one-off payments to personnel;
- +USD 26 million – increase of third-party services primarily driven by repair and maintenance, security, fire safety and consulting services;

- +USD 59 million – increase of other administrative expenses primarily driven by property tax, depreciation and business travel expenses.

Administrative expenses

USD **1,353** million

OTHER OPERATING EXPENSES

Other operating expenses, NET (USD million)

Indicators	2022	2021	Change
Social expenses	407	1,048	-61%
Environmental provisions	93	176	-47%
Loss on disposal of property, plant and equipment	70	35	2x
Change in other provisions and liabilities	43	-3	n.a.
Expenses on industrial incidents response	35	69	-49%
Change in provision on production facilities shut down	14	-3	n.a.
Change in decommissioning obligations	12	-5	n.a.
Other, net	4	-32	n.a.
Total	678	1,285	-47%

In 2022, other operating expenses, net decreased by USD 607 million to USD 678 million driven by the following factors:

- -USD 641 million – decrease in social expenses liabilities;

- -USD 83 million – primarily due to lower environmental provision related to compensation for environmental damages;
- +USD 46 million – change in other provisions and liabilities primarily due to increased allowance for expected credit losses;

- +USD 35 million – increase in loss on disposal of property, plant and equipment following the liquidation of damages caused by incidents at Oktyabrsky and Taimyrsky mines.



FINANCE COSTS

Finance costs, NET (USD million)

Indicators	2022	2021	Change (%)
Interest expense, net of amounts capitalised	330	225	47%
Unwinding of discount on provisions and payables	185	59	3x
Loss/(gain) from currency conversion operations	111	-24	n.a.
Fair value loss/(gain) on the cross-currency interest rate swap contracts	18	-68	n.a.
Interest expense on lease liabilities	16	15	7%
Changes in fair value of other non-current and other current liabilities	-	66	-100%
Income received as a result of early debt repayment	-172	-	-100%
Other, net	5	6	-17%
Total	493	279	77%

In 2022, finance costs, net increased by 77% to USD 493 million primarily driven by the following factors:

- +USD 105 million – an increase in interest expenses as the Company drew on RUB-denominated revolving loan facilities with high nominal interest rates in order to refinance Company's debt amidst deteriorating external environment and also as a result of significant increase in LIBOR and Term SOFR rates during the course of 2022;

- USD 66 million – the Company ceased revaluating the put option related to transactions with owners of non-controlling interest in Bystrinsky GOK following its expiration on 31.12.2021;
- +USD 135 million – to a larger extent, the accounting effect related to the results of foreign currency conversion transactions that were exercised during the periods of extreme intraday volatility when the Company had to comply with the regime of the mandatory sale of foreign currency revenues;

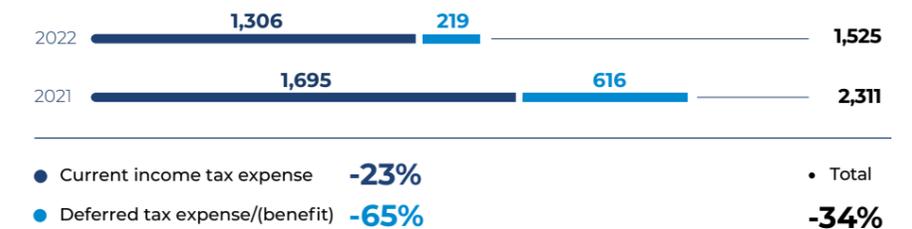
- +USD 126 million – an increase in unwinding of discount on provisions and payables primarily due to accrual of social provisions at the end of 2021 as well as significant volatility of discount rates during 2022;
- USD 172 million – one-off income derived from an early repayment of the loan at a discount.

INCOME TAX EXPENSE

In 2022, income tax expense decreased by USD 786 million driven mostly by lower profit before tax as well as the provision for income tax related to the compensation of damages to water resources and soil in 2021.

In 2022, the effective income tax rate of 20.7% was above the Russian statutory tax rate of 20%.

The breakdown of the income tax expense (USD million)



The breakdown of the current income tax expense by tax jurisdictions (USD million)

Indicators	2022	2021	Change (%)
Russian Federation	1,288	1,668	-23%
Finland	20	5	4x
Rest of the world	-2	22	n.a.
Total	1,306	1,695	-23%

EBITDA

EBITDA (USD million)

Indicators	2022	2021	Change
Operating profit	7,581	9,536	-21%
Depreciation and amortisation	1,026	928	11%
Loss on disposal of property, plant and equipment	90	48	88%
EBITDA	8,697	10,512	-17%
EBITDA margin	52%	59%	-7 p.p.

In 2022, EBITDA decreased 17% (or -USD 1,815 million) to a USD 8,697 million driven by lower revenue and higher cash operating costs.



STATEMENT OF CASH FLOWS

Statement of cash flows (USD million)

Indicators	2022	2021	Change
Cash generated from operations before changes in working capital and income tax	8,897	11,479	-22%
Movements in working capital	-3,184	-2,226	43%
Income tax paid	-1,127	-2,211	-49%
Net cash generated from operating activities	4,586	7,042	-35%
Capital expenditure	-4,298	-2,764	55%
Other investing activities	149	126	18%
Net cash used in investing activities	-4,149	-2,638	57%
Free cash flow	437	4,404	-90%
Interest paid	-599	-315	90%
Other financing activities	-4,465	-3,732	20%
Net cash used in financing activities	-5,064	-4,047	25%
Effects of foreign exchange differences on balances of cash and cash equivalents	962	-1	n.a.
Net change in cash and cash equivalents	-3,665	356	n.a.

In 2022, free cash flow decreased 90% to USD 0.4 billion following the decrease in cash generated from operating activities and increase of cash used in investing activities.

In 2022, net cash generated from operating activities decreased 35% to USD 4.6 billion. Increase in cash operating costs and more explicit working capital increase in 2022 were partly compensated by decrease in income tax payments and comparative effect of repayment of environmental damages in 2021.

In 2022, net cash used in investing activities increased 57% to USD 4.1 billion primarily driven by the increase in capital expenditures.

Reconciliation of the net working capital changes between the balance sheet and cash flow statement is presented (USD million)

Indicators	2022	2021
Change of the net working capital in the balance sheet	-2,734	-557
Foreign exchange differences	-218	15
Change in income tax payable	-165	524
Change of long term components of working capital included in CFS	-51	-56
Provisions	-160	-2,145
Other changes	144	-7
Change of working capital per cash flow	-3,184	-2,226

Capital investments breakdown by project is presented (USD million)

Indicators	2022	2021	Change (%)
Polar Division, including:	1,543	843	83%
• Skalisty mine	90	95	-5%
• Taymirsky mine	83	38	2x
• Komsomolsky mine	40	32	25%
• Oktyabrsky mine	14	10	40%
• Talnakh Concentrator	356	167	2x
• Capitalised repairs	222	139	60%
• Purchase of equipment	322	272	18%
• Other Polar Division projects	416	90	5x
Kola MMC	350	205	71%
Sulfur project	893	526	70%
South cluster	298	304	-2%
Energy and gas infrastructure modernization	465	316	47%
Chita (Bystrinsky) project	72	62	16%
Other production projects	607	490	24%
Other non-production assets	70	18	4x
Total	4,298	2,764	55%

In 2022, CAPEX increased 55% (or +USD 1,534 million) to USD 4,298 million driven by investments in key projects. Sulfur Programme investments increased by

70% to USD 893 million, while investments in Kola GMK and Talnakh Concentrator expansion increased by 71% and

2-fold respectively. Another significant CAPEX growth factor was an increase in capital repairs, improvement of industrial safety and modernization of core assets.





DEBT AND LIQUIDITY MANAGEMENT

Debt and liquidity (USD million)

Indicators	As of 31 December 2022	As of 31 December 2021	USD million	Change %
Non-current loans and borrowings	7,189	8,616	-1,427	-17%
Current loans and borrowings	4,295	1,610	2,685	3x
Lease liabilities	233	235	-2	-1%
Total debt	11,717	10,461	1,256	12%
Cash and cash equivalents	1,882	5,547	-3,665	-66%
Net debt	9,835	4,914	4,921	2x
Net debt /12M EBITDA	1.1x	0.5x	0.6x	

As of December 31, 2022, the Company's total debt increased by 12% compared to December 31, 2021 and amounted to USD 11,717 million. The increase in total debt was primarily driven by utilization of RUB-denominated revolving loan facilities in order to refinance Company's debt amidst deteriorating external environment.

As of December 31, 2022, the Company's net debt increased by USD 4,921 million due to a decrease in cash as a result of increased capital expenditures and dividend payments during 2022.

The Company fully honors its financial obligations in line with transactional documentation and in full compliance with existing regulations.

In November 2022, Russian rating agency "Expert RA" confirmed the Company's credit rating at the highest investment level "ruAAA". International rating agencies withdrew and currently do not publish Russian companies' credit ratings due to sanctions imposed on Russia.

REPORT ON PAYMENTS

Nornickel publishes a report on payments in the countries where it operates.

The report confirms the Company's compliance with the highest standards of corporate governance and business transparency.

Income tax payments are recorded in accordance with the taxpayer's belonging to a particular reporting segment. The amounts of income tax payments for a consolidated taxpayers group are therefore reflected in the GMK Group

reporting segment since the designated member of the consolidated taxpayers group belongs to this segment.

Tax and other payments in 2022 by asset (USD million)

Asset	Income tax	MET	Licences and similar payments	Total payments
GMK Group	1,035	969	0	2,004
South Cluster	64	87	0	151
KGMK Group	0	33	0	33
NN Harjavalta	2	0	0	2
GRK Bystrinskoye	1	6	0	7
Other mining	8	0	0	8
Other non-metallurgical	17	0	0	17
Total	1,127	1,095	0	2,222

Tax and other payments in 2022 by country (USD million)

Asset	Income tax	MET	Licences and similar payments	Total payments
Russia	1,108	1,095	0	2,203
Finland	2	0	0	2
Switzerland	15	0	0	15
Other	2	0	0	2
Total	1,127	1,095	0	2,222

