# BUSINESS OVERVIEW

In 2021, the Company significantly increased capital investments in modernisation and upgrade of equipment and other fixed assets, including energy infrastructure with a focus on industrial safety and energy efficiency:

- Capital investment rose **57%** to USD 2.8 billion

- Investment in the Sulphur Project exceeded **USD 500 million**

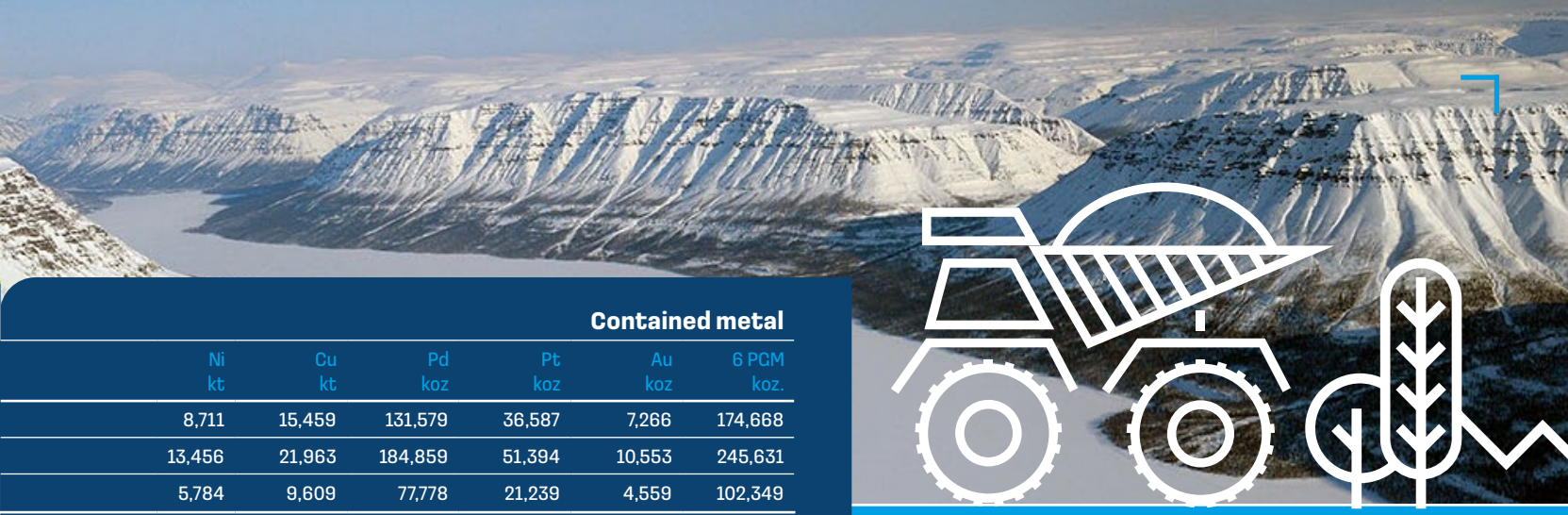
Amid the global economic recovery after the 2020's recession, the global demand for metals was increasing in 2021, which had a positive impact on Nornickel's operational and financial performance.

By the end of 2021, the Company had almost fully restored suspended operations at its mines and the concentrator, meeting production guidance for nickel and copper and exceeding guidance for platinum group metals.

# MINERAL RESOURCE BASE

| Mineral resources and ore reserves<br>norilsk and kola divisions as of 01.01.2022[1] | Ore<br>mln t | Metal grade | | | | | |
|---|---|---|---|---|---|---|---|
| | | Ni<br>% | Cu<br>% | Pd<br>g/t | Pt<br>g/t | Au<br>g/t | 6PGM<br>g/t |
| Total proven and probable reserves | 1,293 | 0.67 | 1.20 | 3.16 | 0.88 | 0.17 | 4.20 |
| Total proven and probable reserves | 1,824 | 0.74 | 1.20 | 3.15 | 0.88 | 0.18 | 4.19 |
| Total inferred resources | 995 | 0.58 | 0.97 | 2.43 | 0.66 | 0.14 | 3.20 |
| **NORILSK DIVISION** | | | | | | | |
| Proven and probable reserves | 1,219 | 0.68 | 1.25 | 3.36 | 0.93 | 0.18 | 4.45 |
| Proven reserves | | | | | | | |
| Talnakh ore field, including | 656 | 0.63 | 1.24 | 3.10 | 0.83 | 0.18 | 4.06 |
| rich | 55 | 2.68 | 2.97 | 5.59 | 1.16 | 0.15 | 7.31 |
| cuprous | 62 | 0.75 | 2.57 | 6.51 | 1.71 | 0.40 | 8.33 |
| disseminated | 539 | 0.41 | 0.91 | 2.45 | 0.69 | 0.16 | 3.24 |
| Norilsk-1 deposit (disseminated ore) | 39 | 0.25 | 0.34 | 3.21 | 1.23 | 0.13 | 4.71 |
| Probable reserves | | | | | | | |
| Talnakh ore field, including | 419 | 0.90 | 1.59 | 3.96 | 1.05 | 0.21 | 5.20 |
| rich | 76 | 2.75 | 3.73 | 7.38 | 1.68 | 0.32 | 9.55 |
| cuprous | 51 | 0.70 | 2.59 | 5.93 | 1.55 | 0.39 | 7.57 |
| disseminated | 291 | 0.45 | 0.86 | 2.72 | 0.79 | 0.16 | 3.64 |
| Norilsk-1 deposit (disseminated ore) | 104 | 0.22 | 0.26 | 2.61 | 1.01 | 0.11 | 3.85 |
| Measured and indicated resources | 1,514 | 0.75 | 1.38 | 3.79 | 1.05 | 0.21 | 5.03 |
| Talnakh ore field, including | 1,368 | 0.80 | 1.49 | 3.83 | 1.02 | 0.22 | 5.03 |
| rich | 119 | 3.43 | 4.33 | 8.62 | 1.81 | 0.31 | 11.14 |
| cuprous | 113 | 0.90 | 3.08 | 7.64 | 2.02 | 0.48 | 9.80 |
| disseminated | 1,136 | 0.51 | 1.04 | 2.95 | 0.84 | 0.19 | 3.92 |
| Norilsk-1 deposit (disseminated ore) | 147 | 0.28 | 0.34 | 3.38 | 1.30 | 0.14 | 4.97 |
| Inferred resources | 854 | 0.57 | 1.07 | 2.83 | 0.77 | 0.16 | 3.72 |
| Talnakh ore field | 842 | 0.58 | 1.08 | 2.82 | 0.76 | 0.16 | 3.69 |
| rich | 47 | 3.17 | 5.06 | 9.69 | 2.03 | 0.49 | 12.26 |
| cuprous | 68 | 0.67 | 2.11 | 5.45 | 1.45 | 0.35 | 7.05 |
| disseminated | 727 | 0.40 | 0.73 | 2.12 | 0.61 | 0.13 | 2.83 |
| Norilsk-1 deposit (disseminated ore) | 12 | 0.25 | 0.32 | 3.55 | 1.40 | 0,133 | 5.29 |
| **KOLA DIVISION (DISSEMINATED ORE)** | | | | | | | |
| Proven and probable reserves | 74 | 0.62 | 0.31 | 0.03 | 0.02 | 0.01 | 0.05 |
| Proven ore reserves | 37 | 0.58 | 0.25 | 0.03 | 0.02 | 0.01 | 0.05 |
| Probable reserves | 37 | 0.67 | 0.37 | 0.03 | 0.02 | 0.01 | 0.05 |
| Measured and indicated resources | 310 | 0.69 | 0.34 | 0.05 | 0.03 | 0.02 | 0.08 |
| Inferred resources | 141 | 0.63 | 0.31 | 0.04 | 0.03 | 0.01 | 0.07 |

1 Data regarding the mineral resources and ore reserves of the deposits of the Taimyr and Kola peninsulas were classified according to the Australasian Code for Reporting of Mineral Resources and Ore Reserves (JORC code), created by the Australasian Institute of Mining and Metallurgy, the Australian Institute of Geoscientists, and the Minerals Council of Australia, subject to the terminology recommended by the Russian Code for Public Reporting of Exploration Results, Mineral Resources, Mineral Reserves (NAEN Code). Proven and probable ore reserves are included in mineral resources. In 2021, SRK Consulting (Russia) completed an estimate of mineral resources and ore reserves using its own methodology.



| Contained metal | | | | | |
|---|---|---|---|---|---|
| Ni kt | Cu kt | Pd koz | Pt koz | Au koz | 6 PGM koz. |
| 8,711 | 15,459 | 131,579 | 36,587 | 7,266 | 174,668 |
| 13,456 | 21,963 | 184,859 | 51,394 | 10,553 | 245,631 |
| 5,784 | 9,609 | 77,778 | 21,239 | 4,559 | 102,349 |
| | | | | | |
| 8,247 | 15,229 | 131,511 | 36,542 | 7,245 | 174,554 |
| | | | | | |
| 4,143 | 8,146 | 65,333 | 17,471 | 3,816 | 85,633 |
| 1,477 | 1,638 | 9,905 | 2,058 | 262 | 12,969 |
| 464 | 1,584 | 12,894 | 3,383 | 793 | 16,494 |
| 2,202 | 4,924 | 42,534 | 12,031 | 2,760 | 56,171 |
| 99 | 134 | 4,072 | 1,559 | 169 | 5,974 |
| | | | | | |
| 3,775 | 6,677 | 53,356 | 14,119 | 2,895 | 70,035 |
| 2,101 | 2,852 | 18,113 | 4,126 | 784 | 23,447 |
| 359 | 1,333 | 9,800 | 2,569 | 649 | 12,513 |
| 1,315 | 2,492 | 25,442 | 7,424 | 1,461 | 34,075 |
| 229 | 271 | 8,750 | 3,394 | 366 | 12,912 |
| 11,323 | 20,923 | 184,388 | 51,093 | 10,381 | 244,801 |
| 10,914 | 20,419 | 168,462 | 44,948 | 9,717 | 221,349 |
| 4,073 | 5,136 | 32,893 | 6,919 | 1,171 | 42,502 |
| 1,017 | 3,489 | 27,804 | 7,353 | 1,750 | 35,677 |
| 5,825 | 11,793 | 107,765 | 30,676 | 6,796 | 143,170 |
| 409 | 504 | 15,926 | 6,145 | 664 | 23,453 |
| 4,897 | 9,172 | 77,603 | 21,123 | 4,502 | 102,043 |
| 4,868 | 9,134 | 76,231 | 20,581 | 4,451 | 100,002 |
| 1,489 | 2,377 | 14,627 | 3,064 | 740 | 18,508 |
| 457 | 1,442 | 11,951 | 3,181 | 761 | 15,462 |
| 2,922 | 5,315 | 49,653 | 14,337 | 2,950 | 66,032 |
| 30 | 38 | 1,371 | 542 | 51 | 2,041 |
| | | | | | |
| 464 | 230 | 68 | 45 | 21 | 114 |
| 217 | 94 | 34 | 25 | 10 | 60 |
| 247 | 136 | 34 | 20 | 11 | 54 |
| 2,133 | 1,040 | 471 | 301 | 172 | 830 |
| 887 | 437 | 175 | 116 | 57 | 306 |

**NORNICKEL BOASTS A UNIQUE MINERAL RESOURCE BASE OF TIER 1 ASSETS IN RUSSIA, ON THE TAIMYR AND KOLA PENINSULAS AND IN THE ZABAYKALSKY REGION. NORNICKEL'S CONTINUED FOCUS ON REPLACING AND EXPANDING ITS RESOURCE BASE IS ESSENTIAL TO ITS LONG-TERM DEVELOPMENT.**

**>75 years**

**of resources at the current production rate**

| Mineral resources and ore reserves zabaykalsky division as of 01.01.2022[1] | | Ore mln t | Contained metal | | | |
|---|---|---|---|---|---|---|
| | | | Cu mln t | Au mln oz | Ag mln oz | Fe mln t |
| TOTAL | Proven and probable reserves | 281 | 2 | 6 | 28 | 42 |
| | Measured and indicated resources | 274 | 2 | 6 | 32 | 49 |
| | Inferred resources | 61 | 0.2 | 1 | 5 | 8 |

In 2021, the Company updated the mineral resource estimate using 3D modelling data, which resulted in an increase of total reserves and resources by 225 mln t.

An updated resource model was also used to estimate the mineral resources of the Bystrinskoye deposit in line with the JORC Code.

**Dynamics of reserves and mineral resources**

| Item[2] | 2019 | 2020 | 2021 |
|---|---|---|---|
| PROVEN AND PROBABLE RESERVES | | | |
| Ore, mln t | 757 | 743 | 1,293 |
| Nickel, mln t | 6.7 | 6.5 | 8.7 |
| Copper, mln t | 11.9 | 11.6 | 15.5 |
| PGMs, Moz | 120 | 118 | 175 |
| MEASURED AND INDICATED RESOURCES | | | |
| Ore, mln t | 2,193 | 2,019 | 1,824 |
| Nickel, mln t | 15.2 | 13.8 | 13.5 |
| Copper, mln t | 23.2 | 23.0 | 22.0 |
| PGMs, Moz | 260 | 258 | 246 |
| INFERRED RESOURCES | | | |
| Ore, mln t | 933 | 575 | 995 |
| Nickel, mln t | 7.4 | 4.5 | 5.8 |
| Copper, mln t | 8.0 | 7.9 | 9.6 |
| PGMs, Moz | 78 | 77 | 102 |
| TOTAL | | | |
| Ore, mln t | 3,126 | 2,594 | 2,819 |
| Nickel, mln t | 22.6 | 18.3 | 19.2 |
| Copper, mln t | 31.2 | 30.9 | 31.6 |
| PGMs, Moz | 338 | 335 | 348 |

**PROVEN AND PROBABLE RESERVES AT GRK BYSTRINSKOYE'S DEPOSIT AT YEAR-END 2021 WERE 281 MLN T, AVERAGE METAL CONTENT: CU – 0.6%, FE IN MAGNETITE CONCENTRATE – 14.9%, AND AU – 0.63 G/T.**

# Existing deposits

Nornickel is well-positioned to maintain a high level of economic ore reserves given the significant mineral resources within its existing deposits. The depleted proven and probable reserves at the existing mines are replaced through the development of measured, indicated and inferred resources. The Company plans to ramp up its production by tapping into new rich ore deposits and gradually developing disseminated and cuprous ore horizons.

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 Data on mineral resources and ore reserves are based on the JORC Code, excluding GRK Bystrinkoye's deposits. The 2019 data include the Honeymoon Well project.

# NORILSK DIVISION

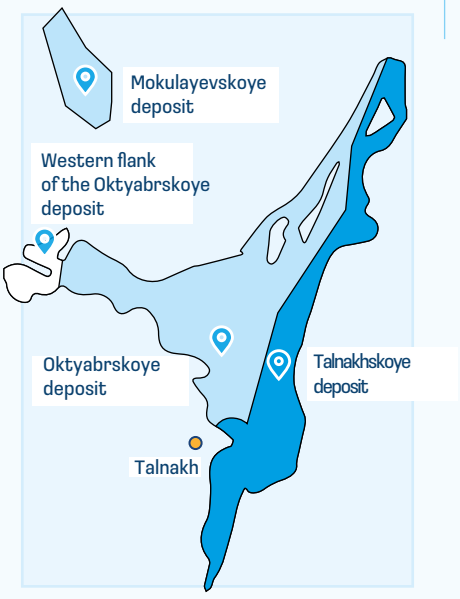
## Talnakh Ore Cluster

The Talnakh Ore Cluster is located in the Norilsk Industrial District in the north of the Krasnoyarsk Region, on the right bank of the Norilskaya River. Geologically, the Talnakh Ore Cluster is located on the north-western margin of the Siberian Craton and includes the world's largest Oktyabrskoye and Talnakhskoye copper-nickel deposits. In the early 1960s, 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 developed through mining operations of its Norilsk Division. In 2021, SRK Consulting (Russia) developed a methodology for estimating mineral resources and ore reserves and re-estimated the mineral resource base of the Talnakh Ore Cluster using 3D modelling data. With models updated as of 1 January 2022, the mineral resources of all ore types were adjusted to add 232 mln t to the previous estimate, including 11 mln t in rich ores, 38 mln t in cuprous ores and 183 mln t in disseminated ores. Proven and probable reserves increased by 452 mln t due to new mining project launches and the development of design documents.

**Reserves and resources**

| Item | 2019 | 2020 | 2021 |
|---|---|---|---|
| PROVEN AND PROBABLE RESERVES | | | |
| Ore, mln t | 631 | 623 | 1,108 |
| Nickel, mln t | 6.0 | 5.9 | 8.0 |
| Copper, mln t | 11.4 | 11.2 | 15.0 |
| PGMs, Moz | 112 | 110 | 158 |
| MEASURED AND INDICATED RESOURCES | | | |
| Ore, mln t | 1,554 | 1,546 | 1,368 |
| Nickel, mln t | 11.3 | 11.2 | 10.9 |
| Copper, mln t | 21.6 | 21.4 | 20.4 |
| PGMs, Moz | 234 | 232 | 221 |
| INFERRED RESOURCES | | | |
| Ore, mln t | 437 | 433 | 842 |
| Nickel, mln t | 3.7 | 3.6 | 4.9 |
| Copper, mln t | 7.6 | 7.5 | 9.1 |
| PGMs, Moz | 78 | 76 | 100 |
| TOTAL | | | |
| Ore, mln t | 1,991 | 1,979 | 2,210 |
| Nickel, mln t | 15.0 | 14.8 | 15.8 |
| Copper, mln t | 29.2 | 28.9 | 29.5 |
| PGMs, Moz | 312 | 308 | 321 |

**PROVEN AND PROBABLE RESERVES INCREASED BY 452 MLN T DUE TO NEW MINING PROJECT LAUNCHES AND THE DEVELOPMENT OF DESIGN DOCUMENTS.**



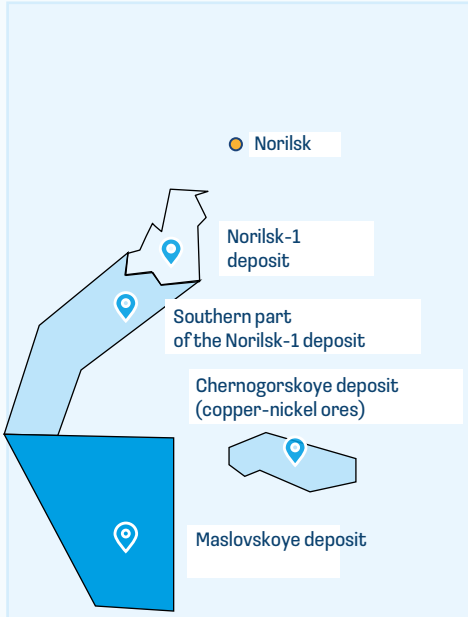

## Norilsk Ore Cluster

The Norilsk ore cluster is also located in the Norilsk Industrial District. Brownfields within the NID include the northern part of the Norilsk-1 deposit producing disseminated copper and nickel sulphide ores since the 1930s. In 2020, the resource estimate for deposit was updated against new permanent exploratory standards for open-pit and underground mining. A feasibility study of permanent exploratory standards and a reserve statement for the Norilsk-1 deposit (northern part) were approved by the State Commission for Mineral Reserves of the Russian Ministry of Natural Resources and included into the State Register of Mineral Reserves. In 2021, SRK Consulting completed an estimate of mineral resources and ore reserves. The estimate of the deposit's ore reserves was based on the feasibility study, which drove an increase in proven and probable reserves.

Design documentation providing for the development of the deposit's remaining reserves took into account the additional resource potential not covered by earlier project solutions, enabling us to add 104 mln t of disseminated ore to Nornickel's proven and probable reserves.

To raise additional external investments in brownfield expansion in the northern part of the Norilsk-1 deposit, Nornickel has launched the South Cluster project, which is currently ongoing.

A licence to develop the Norilsk-1 deposit, as well as some of the Polar Division assets, were transferred to Medvezhy Ruchey, a wholly owned subsidiary established specifically to implement the expansion project. Medvezhy Ruchey includes Norilsk Concentrator, an open-pit and an underground mine at Zapolyarny Mine, and tailing dumps No. 1 and Lebyazhye.




**Reserves and resources**

| Item | 2019 | 2020 | 2021 |
|---|---|---|---|
| PROVEN AND PROBABLE RESERVES | | | |
| Ore, mln t | 42 | 40 | 144 |
| Nickel, mln t | 0.1 | 0.1 | 0.3 |
| Copper, mln t | 0.2 | 0.2 | 0.4 |
| PGMs, Moz | 8 | 8 | 19 |
| MEASURED AND INDICATED RESOURCES | | | |
| Ore, mln t | 145 | 157 | 147 |
| Nickel, mln t | 0.4 | 0.4 | 0.4 |
| Copper, mln t | 0.6 | 0.6 | 0.5 |
| PGMs, Moz | 25 | 26 | 23 |
| INFERRED RESOURCES | | | |
| Ore, mln t | 1 | - | 12 |
| Nickel, mln t | 0,003 | - | 0.03 |
| Copper, mln t | 0,003 | - | 0.04 |
| PGMs, Moz | 0.3 | - | 2 |
| TOTAL | | | |
| Ore, mln t | 146 | 157 | 159 |
| Nickel, mln t | 0.4 | 0.4 | 0.4 |
| Copper, mln t | 0.6 | 0.6 | 0.5 |
| PGMs, Moz | 25 | 26 | 25 |

**PROVEN AND PROBABLE RESERVES OF OF DISSEMINATED ORE INCREASED BY 104 MLN T DUE TO REVALUATION.**

## KOLA DIVISION

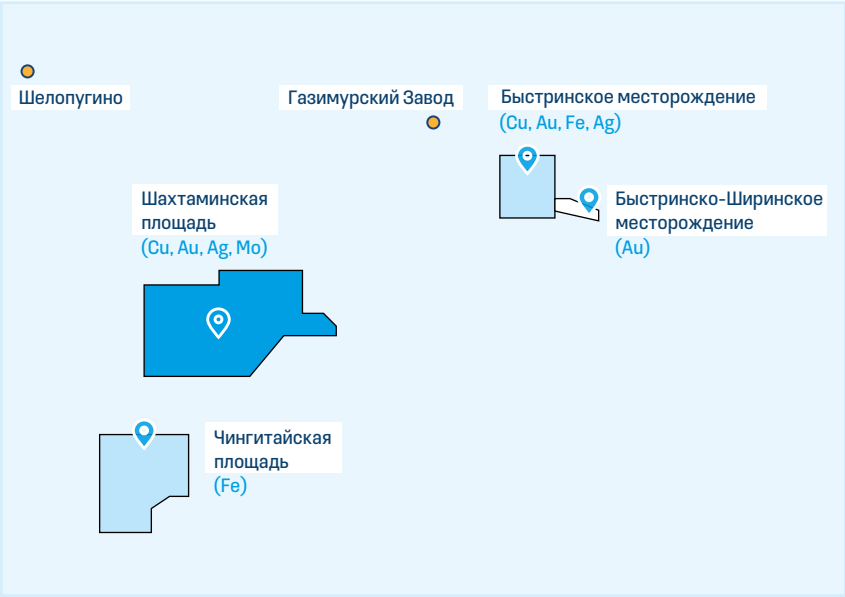
The Kola Division develops deposits located within a 25 km stretch between Nikel and Zapolyarny in the west of the Murmansk Region and grouped into two ore clusters: Western (Kotselvaara and Semiletka deposits) and Eastern (Zhdanovskoye, Zapolyarnoye, Bystrinskoye, Tundrovoye, Sputnik, and Verkhneye deposits). The deposits in the Western and Eastern clusters have been developed since the 1930s and 1960s, respectively.


**Reserves and resources**

| Item | 2019 | 2020 | 2021 |
|---|---|---|---|
| PROVEN AND PROBABLE RESERVES | | | |
| Ore, mln t | 85 | 80 | 74 |
| Nickel, mln t | 0.5 | 0.5 | 0.5 |
| Copper, mln t | 0.3 | 0.2 | 0.2 |
| PGMs, Moz | 0.1 | 0.1 | 0.1 |
| MEASURED AND INDICATED RESOURCES | | | |
| Ore, mln t | 321 | 316 | 310 |
| Nickel, mln t | 2.2 | 2.2 | 2.1 |
| Copper, mln t | 1.1 | 1.1 | 1.0 |
| PGMs, Moz | 0.8 | 0.8 | 0.8 |
| INFERRED RESOURCES | | | |
| Ore, mln t | 144 | 142 | 141 |
| Nickel, mln t | 0.9 | 0.9 | 0.9 |
| Copper, mln t | 0.4 | 0.4 | 0.4 |
| PGMs, Moz | 0.3 | 0.3 | 0.3 |
| TOTAL | | | |
| Ore, mln t | 465 | 458 | 451 |
| Nickel, mln t | 3.1 | 3.1 | 3.0 |
| Copper, mln t | 1.5 | 1.5 | 1.4 |
| PGMs, Moz | 1.1 | 1.1 | 1.1 |

## TRANS-BAIKAL DIVISION

The Trans-Baikal Division develops the Bystrinskoye deposit located 16 km east of Gazlmursky Zavod in the Zabaykalsky Region. Nornickel owns 50.01% of GRK Bystrinskoye which develops gold-iron-copper ores. 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. In 2021, Nornickel obtained an exploration licence to prospect for, and appraise, flanks of the Bystrinskoye deposit.




**Reserves and resources**

| Item | Ore | Copper | Gold | Silver | Iron |
|---|---|---|---|---|---|
| Proven and probable reserves | 281.3 mln t | 1.7 mln t | 176 t (5.6 Moz) | 870 t (28 Moz) | 42.0 mln t |
| Measured and indicated resources | 273.5 mln t | 1.9 mln t | 182 t (6.4 Moz) | 990 t (32 Moz) | 48.5 mln t |
| Inferred resources | 60.7 mln t | 243 kt | 30 t (1 Moz) | 163 t (5.2 Moz) | 8 mln t |

# Growth projects

## MASLOVSKOYE DEPOSIT

The Maslovskoye deposit is located in the Norilsk Industrial District, 12 km south of Norilsk. Geologically, the deposit is part of the Norilsk Ore Cluster. The Company received the licence to explore and mine the Maslovskoye deposit's platinum-copper-nickel sulphide ores upon its discovery in 2015.

### Reserves

A feasibility study of permanent exploratory standards and a reserve statement for the Maslovskoye deposit were approved by the State Commission for Mineral Reserves of the Russian Ministry of Natural Resources and included into the State Register of Mineral Reserves.

**B + C1 + C2 mineral reserves**

| Item | Reserves | Metal grade |
|---|---|---|
| Total ore | 206.8 mln t | – |
| Palladium | 33,087 koz | 5.0 g/t |
| Platinum | 13,040 koz | 2.0 g/t |
| Nickel | 711 kt | 0.3% |
| Copper | 1,098 kt | 0.5% |
| Cobalt | 26 kt | 0.01% |
| Gold | 1,268 koz | 0.2 g/t |

## BUGDAINSKOYE DEPOSIT

The Bugdainskoye molybdenum deposit lies in the Alexandrovo-Zavodsky District of the Zabaykalsky Region, 30 km north-west of Alexandrovsky Zavod. Its 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**

| Item | Reserves |
|---|---|
| Ore | 813 mln t |
| Molybdenum | 600 kt |
| Gold | 360 koz |
| Silver | 6,221 koz |
| Lead | 41 kt |

## BYSTRINSKO-SHIRINSKOYE DEPOSIT

The Bystrinsko-Shirinskoye gold ore deposit is located 24 km south-east of Gazimursky Zavod in the Zabaykalsky Region. The licence area shares a boundary with the Bystrinskoye deposit. In 2021, the Company developed the necessary document package to enhance the exploration project design. In 2022, Nornickel will submit a final reserve statement for the site to the government authorities responsible for managing subsoil assets.

## DEPOSITS
## TALNAKH ORE CLUSTER

To unlock the full potential of its deposits supporting existing operations and determine the best configuration for new operations, Nornickel explores the Talnakh Ore Cluster deposits, ensuring increases in high-grade and cuprous ore reserves.

### Eastern flank of the Oktyabrskoye deposit

Surface exploration was conducted in 2020–2021. The project uncovered new high-grade ore zones as well as further defined the boundaries and delivered a detailed geology of the high-grading ore reserves within the Severnaya 3 and Severnaya 4 deposits. The state expert review found the reserve statement compliant with applicable regulations, with the rich ore reserves of these deposits included into the State Register of Mineral Reserves.

### Western flank of the Oktyabrskoye deposit

In 2017, Nornickel obtained an exploration licence to prospect for, and appraise, mineral deposits within the western flank of the Oktyabrskoye deposit. The exploration licence area shares a boundary with the already licensed mining area at the Oktyabrskoye copper-nickel ore deposit. In 2021, prospecting for the project was completed. Preliminary estimates of the Zapadny section suggest potential reserve growth of 500 kt in high-grade copper and nickel ores, 2,140 kt in cuprous ores, and 546 kt in disseminated ores. Appraisal phase exploration activities will continue in 2022, to be followed by a state expert review and approval of the reserves by the State Commission for Mineral Reserves.

## DEPOSITS
## NON-METALLIC MINERAL

### Mokulayevskoye deposit

The Mokulayevskoye limestone deposit lies 10 km north-west of the production sites of the Oktyabrsky and Taimyrsky Mines. The mining licence for this limestone deposit was obtained upon its discovery in 2017. In 2018, the State Commission for Mineral Reserves of the Russian Ministry of Natural Resources reviewed the feasibility study of permanent exploratory standards and the reserve statement for the deposit, and included its 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.

Building stone (dolomite) reserves at 1.2 million m3 were confirmed by an exploration programme conducted in 2021. The measured reserves will be used to construct in-pit roads to enable the deposit's further development.

### Ozero Lesnoye deposit

The deposit is developed within licence area No. 1 of the Ozero Lesnoye deposit located 22 km north of Norilsk. In 2017, Nornickel obtained a survey, exploration and mining licence for the magmatic basalt reserves of the Ozero Lesnoye deposit (licence area No. 2), which is adjacent to licence area No. 1.

Following a review of the 2019 feasibility study of permanent exploratory standards and the reserve statement, the deposit's basalt reserves were included into the State Register of Mineral Reserves for potential use as inert reinforcement for backfill concrete in underground mines. The C1 + C2 balance reserves of basalt are 187,911 thousand m3.

In 2022, Nornickel is planning to update its reserve estimate for the deposit's two licence areas and start working on a single detailed geological study to ensure the continuous production of magmatic basalts from the Ozero Lesnoye deposit.

### Cribanovskoye deposit

In 2020, Nornickel obtained an exploration and mining licence upon the discovery of the Cribanovskoye deposit, located on the Yenisey 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.

### Corozubovskoye deposit

In 2020, following further examination of the deposit's flanks carried out as part of follow-up exploration of the Corozubovskoye 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.

# PROMISING AREAS

## Yuzhno-Norilskaya area

The Morongovsky and Yuzhno-Yergalakhsky copper-nickel sulphide ore prospects lie within the Yuzhno-Norilskaya area, located 30 km south of Norilsk. In 2019, Nornickel obtained exploration licences to prospect for, and appraise, deposits within the area. In 2021, prospecting drilling was conducted across prospects. A report on the area's potential is to be prepared in 2022 upon the completion of chemical and analytical studies and laboratory tests.

## Mikchangdinskaya area

The Neralakhsky, Yuzhno-Neralakhsky, Snezhny, Yuzhno-Ikensky and Medvezhy copper-nickel sulphide ore prospects lie within the Mikchangdinskaya area, located 70 km north-east of Norilsk. Between December 2019 and April 2020, Nornickel obtained exploration licences to prospect for, and appraise, deposits within the area. In 2021, prospecting drilling was conducted at prospects identified by geophysical and geochemical prospecting across areal zones, which confirmed that the area has a potential for containing copper-nickel sulphide ores. Prospecting drilling is planned to continue in 2022.

## Arylakhskaya area

The Yttakhsky, Samoyedsky and Mastakh-Salinsky copper-nickel sulphide ore prospects lie within the Arylakhskaya area, located 160 km north-east of Norilsk. In May 2020, Nornickel obtained exploration licences to prospect for, and appraise, deposits within the area. In 2021, prospecting drilling was started at prospects identified by geophysical and geochemical prospecting across areal zones. Prospecting drilling is planned to continue in 2022.

## Alenuyskaya area

The Severo-Alenuysky and Yuzhno-Alenuysky gold-copper porphyry and epithermal gold-quartz mineralisation prospects lie within the Alenuyskaya area, located in the Alexandrovo-Zavodsky Municipal District of the Zabaykalsky Region. In February and March 2020, Nornickel obtained exploration licences to prospect for, and appraise, deposits within the area. In 2020–2021, the Company conducted geophysical and geochemical prospecting across areal zones and identified drilling targets to confirm the geology.

## Mostovskaya area

The Zapadno-Mostovsky and Vostochno-Mostovsky gold-copper porphyry and epithermal gold-quartz mineralisation prospects lie within the Mostovskaya area, located in the Mogochinsky District of the Zabaykalsky Region. In May 2020, Nornickel obtained exploration licences to prospect for, and appraise, deposits within the area. In 2020–2021, the Company conducted geophysical and geochemical prospecting across areal zones and identified drilling targets to confirm the geology.

## Dogyinskaya area

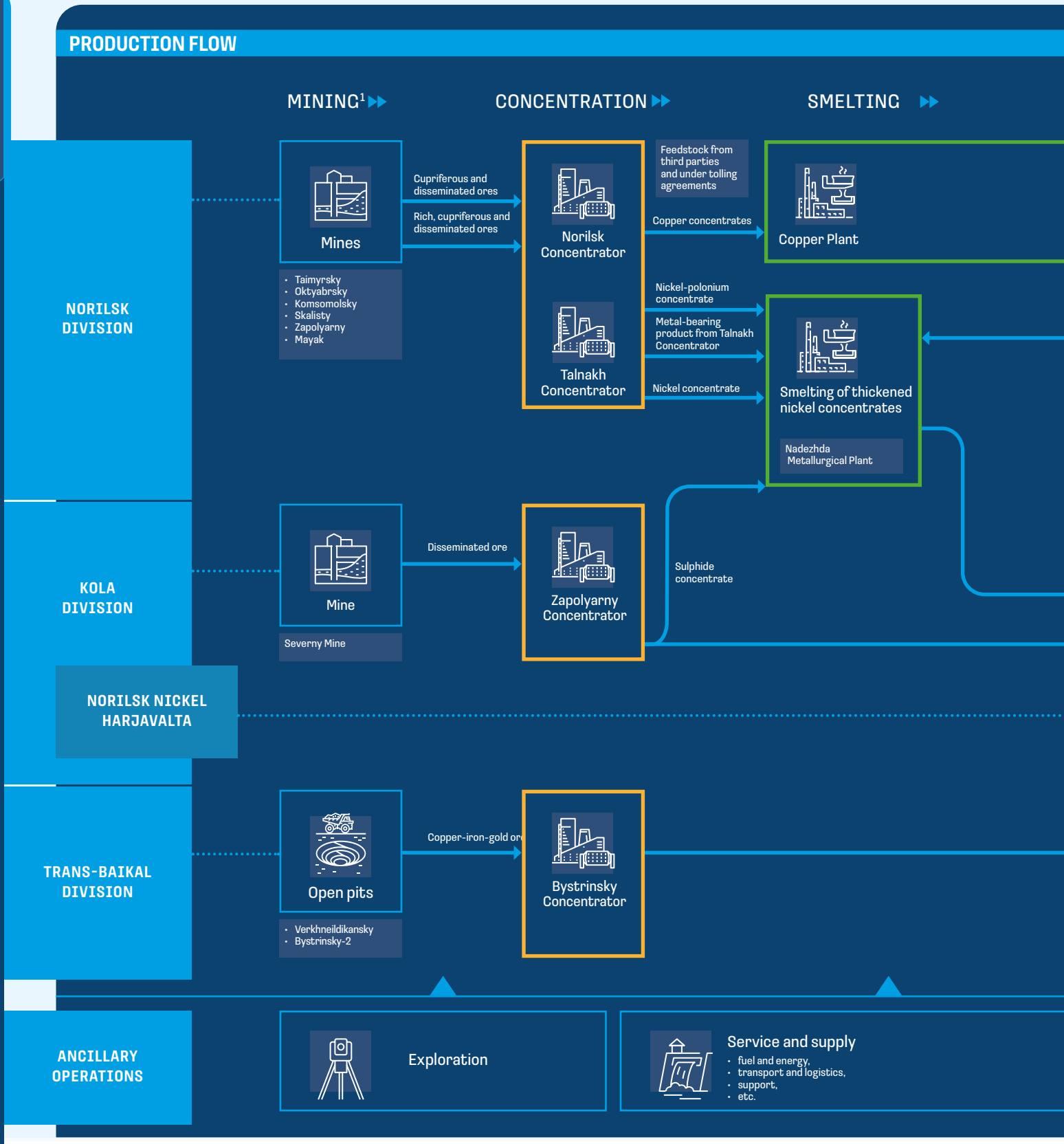
The Severo-Dogyinsky and Yuzhno-Dogyinsky gold-copper porphyry and epithermal gold-quartz mineralisation prospects lie within the Dogyinskaya area, located in the Gazimuro-Zavodsky District of the Zabaykalsky Region. In March and April 2021, Nornickel obtained exploration licences to prospect for, and appraise, deposits within the area. In 2021, the Company conducted geophysical and geochemical prospecting across areal zones, to be continued in 2022 to further identify drilling targets to confirm the geology.

## Shamyanskaya area

Zapadno-Shamyansky, Tsentralno-Shamyansky and Vostochno-Shamyansky prospecting areas of gold-copper porphyry mineralisation prospects lie within the Shamyanskaya area in the Zabaykalsky District of the Zabaykalsky Region. In September 2021, Nornickel obtained an exploration licence to prospect for, and appraise, deposits at the Zapadno-Shamyansky prospect. Subsoil licenses for the Tsentralno-Shamyansky and Vostochno-Shamyansky prospects are expected to be obtained in 2022.

# OPERATIONAL PERFORMANCE

## PRODUCTION FLOW




1 sulphide copper-nickel and copper-iron-gold ores

REFINING ▸▸ PGM REFINING ▸▸ SALES ▸▸

Copper Plant's metallurgical shop

Precious metal concentrate

Krasnoyarsk Precious Metals Refinery, Urals' Innovative Technologies, Prioksky Plant of Non-Ferrous Metals

Own sales network

Copper sludge

Precious metal concentrate

Metal-bearing reverts from the metallurgical shop

Metallurgical

closed in March 2021

and chemical and metallurgical shops

Chlorine leaching residuals, nickel sludge

Copper matte

Nickel tankhouse

Refining shop

Converter matte

Sulphide concentrate

**Saleable metals and products**

- Nickel
- Palladium
- Copper
- Platinum
- Cobalt
- Rhodium
- Iridium
- Ruthenium
- Silver
- Gold
- Selenium
- Tellurium
- Sulphur
- Sodium sulphate
- Sodium chloride

Third-party feedstock

Nickel refinery in Finland

Copper cake under tolling agreements to the Norilsk Division

**Products**

- Iron ore, copper and (gold) gravity concentrates

R&D

**Production of saleable metals**

## Norilsk Nickel Group's saleable metals production [1]

| Asset | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 |
|---|---|---|---|---|---|---|---|---|---|---|
| Total nickel, t | 300,340 | 285,292 | 274,248 | 266,406 | 235,749 | 217,112 | 218,770 | 228,687 | 235,709 | 193,006 |
| from the Company's own Russian feed | 223,153 | 219,273 | 223,224 | 220,675 | 196,809 | 210,131 | 216,856 | 225,204 | 232,532 | 189,945 |
| from third-party feed | 77,187 | 66,019 | 51,024 | 45,731 | 38,940 | 6,981 | 1,914 | 3,482 | 3,177 | 3,061 |
| Total copper, t | 363,764 | 371,063 | 368,008 | 369,426 | 360,217 | 401,081 | 473,654 | 499,119 | 487,186 | 406,841 |
| from the Company's own Russian feed | 344,226 | 345,737 | 345,897 | 352,766 | 344,482 | 397,774 | 473,515 | 498,838 | 486,816 | 406,815 |
| from third-party feed | 19,538 | 25,326 | 22,111 | 16,660 | 15,735 | 3,307 | 139 | 281 | 370 | 26 |
| Total palladium, koz | 2,732 | 2,662 | 2,752 | 2,689 | 2,618 | 2,780 | 2,729 | 2,922 | 2,826 | 2,616 |
| from the Company's own Russian feed | 2,624 | 2,529 | 2,582 | 2,575 | 2,526 | 2,728 | 2,729 | 2,919 | 2,820 | 2,616 |
| from third-party feed | 108 | 133 | 170 | 114 | 92 | 52 | 0 | 3 | 6 | 0 |
| Total platinum, koz | 683 | 650 | 662 | 656 | 644 | 670 | 653 | 702 | 695 | 641 |
| from the Company's own Russian feed | 658 | 604 | 595 | 610 | 610 | 650 | 653 | 700 | 693 | 641 |
| from third-party feed | 25 | 46 | 67 | 46 | 34 | 20 | 0 | 2 | 2 | 0 |
| **NORILSK DIVISION AND KOLA MMC** | | | | | | | | | | |
| Nickel, t | 233,632 | 231,798 | 228,438 | 222,016 | 182,095 | 157,396 | 158,005 | 166,265 | 172,357 | 145,817 |
| Norilsk Division (from Company feed) | 124,000 | 122,700 | 122,390 | 96,916 | 50,860 | 0 | 0 | 0 | 0 | 0 |
| Kola MMC | 109,632 | 109,098 | 106,048 | 125,100 | 131,235 | 157,396 | 158,005 | 166,265 | 172,357 | 145,817 |
| from the Company's own Russian feed | 99,153 | 96,573 | 100,834 | 123,335 | 126,937 | 155,110 | 157,519 | 166,265 | 172,357 | 145,817 |
| Copper, t | 352,466 | 359,102 | 354,943 | 355,707 | 350,619 | 387,640 | 436,201 | 442,682 | 422,031 | 337,120 |
| Norilsk Division (from Company feed) | 295,610 | 296,760 | 297,552 | 292,632 | 280,347 | 306,859 | 353,131 | 355,706 | 351,413 | 315,511 |
| Kola MMC | 56,856 | 62,342 | 57,391 | 63,075 | 70,272 | 80,781 | 83,070 | 86,976 | 70,618 | 21,609 |
| from the Company's own Russian feed | 48,616 | 48,977 | 48,345 | 60,134 | 63,542 | 78,587 | 82,987 | 86,976 | 70,618 | 21,609 |
| Palladium, koz | 2,628 | 2,580 | 2,660 | 2,606 | 2,554 | 2,738 | 2,671 | 2,868 | 2,809 | 2,587 |
| Norilsk Division (from Company feed) | 1,989 | 2,006 | 2,065 | 1,935 | 1,703 | 956 | 987 | 1,042 | 1,180 | 1,058 |
| Kola MMC | 639 | 574 | 595 | 671 | 851 | 1,782 | 1,684 | 1,826 | 1,630 | 1,529 |
| from the Company's own Russian feed | 635 | 523 | 517 | 640 | 815 | 1,737 | 1,684 | 1,826 | 1,630 | 1,529 |
| Platinum, koz | 660 | 627 | 627 | 622 | 622 | 660 | 642 | 690 | 691 | 634 |
| Norilsk Division (from Company feed) | 529 | 504 | 500 | 488 | 449 | 259 | 260 | 251 | 302 | 271 |

1 Total amounts may vary from the sum of numbers due to arithmetical rounding. The total operating results of Nkomati are not included in the total performance of the Group.

| Asset | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 |
|---|---|---|---|---|---|---|---|---|---|---|
| Kola MMC | 131 | 123 | 127 | 134 | 173 | 401 | 381 | 439 | 390 | 363 |
| from the Company's own Russian feed | 129 | 100 | 95 | 122 | 159 | 385 | 381 | 439 | 390 | 363 |
| **NORILSK NICKEL HARJAVALTA (FINLAND)** | | | | | | | | | | |
| Nickel, t | 45,518 | 44,252 | 42,603 | 43,479 | 53,654 | 59,716 | 60,765 | 62,422 | 63,352 | 47,189 |
| from the Company's own Russian feed | 0 | 0 | 0 | 424 | 19,012 | 55,021 | 59,337 | 58,939 | 60,175 | 44,128 |
| Copper, t | 1,006 | 6,549 | 10,629 | 13,048 | 9,598 | 13,441 | 18,036 | 12,948 | 2,491 | 1,923 |
| from the Company's own Russian feed | 0 | 0 | 0 | 0 | 593 | 12,328 | 17,980 | 12,667 | 2,121 | 1,897 |
| Palladium, koz | 21 | 39 | 74 | 78 | 64 | 42 | 58 | 54 | 17 | 30 |
| from the Company's own Russian feed | 0 | 0 | 0 | 0 | 8 | 35 | 58 | 51 | 11 | 29 |
| Platinum, koz | 9 | 16 | 31 | 33 | 22 | 10 | 11 | 12 | 4 | 7 |
| from the Company's own Russian feed | 0 | 0 | 0 | 0 | 2 | 6 | 11 | 9 | 2 | 7 |
| **TRANS-BAIKAL DIVISION[2]** | | | | | | | | | | |
| Copper (in concentrate), t | — | — | — | — | — | — | 19,417 | 43,489 | 62,664 | 67,798 |
| Gold (in concentrate), koz | — | — | — | — | — | — | 89 | 177 | 241 | 258 |
| Iron ore concentrate, kt | — | — | — | — | — | — | 346 | 1,311 | 2,046 | 2,582 |
| **NORILSK NICKEL NKOMATI (SOUTH AFRICA)[3]** | | | | | | | | | | |
| Nickel, t | 9,624 | 11,920 | 11,359 | 11,350 | 8,486 | 8,006 | 6,597 | 6,485 | 5,839 | 795 |
| Copper, t | 4,594 | 5,034 | 4,938 | 5,301 | 4,007 | 4,504 | 3,055 | 3,419 | 2,877 | 465 |
| Palladium, koz | 32 | 46 | 48 | 53 | 40 | 46 | 33 | 33 | 30 | 5 |
| Platinum, koz | 12 | 20 | 19 | 20 | 15 | 20 | 13 | 14 | 13 | 2 |
| **NORILSK NICKEL TATI (BOTSWANA)[4]** | | | | | | | | | | |
| Nickel, t | 12,215 | 6,416 | 3,207 | 911 | — | — | — | — | — | — |
| Copper, t | 10,292 | 5,412 | 2,436 | 671 | —— | — | — | — | — | — |
| Palladium, koz | 83 | 43 | 18 | 5 | — | — | — | — | — | — |
| Platinum, koz | 14 | 7 | 4 | 1 | — | — | — | — | — | — |
| **LAKE JOHNSTON (AUSTRALIA)** | | | | | | | | | | |
| Nickel, t | 8,975 | 2,826 | — | — | — | — | — | — | — | — |

1 The Group owns 50.01% in Bystrinsky GOK. The operating results show metals contained in concentrate for sale assuming a 100% ownership by the Group while total operating results include Bystrinsky GOK's full performance. Bystrinsky GOK was commissioned in 2019.

2 The Company owns 50% in Nkomati. The operating results show metals contained in concentrate for sale assuming a 50% ownership and are not consolidated in the Group's total operating results. In 2019, the Group and African Rainbow Minerals, its partner in the project, decided to close the project, which was eventually put on care and maintenance in Q2 2021 due to termination of operations.

3 The sale of the asset was closed on 2 April 2015.

**Group ore output** (mln t)

| Asset | 2019 | 2020 | 2021 |
|---|---|---|---|
| **Assets in Russia (copper-nickel sulphide ores)** | **26.3** | **26.5** | **24.62** |
| Norilsk Division | 18.4 | 18.8 | 17.5 |
| Kola Division | 7.9 | 7.7 | 7.2 |
| **Assets in Russia (gold-iron-copper ores)** | **10.5** | **16.0** | **16.6** |
| Trans-Baikal Division | 10.5 | 16.0 | 16.6 |

**Average metal content in mined ore**

| Asset | 2019 | 2020 | 2021 |
|---|---|---|---|
| NICKEL (%) | | | |
| Norilsk Division | 1.32 | 1.30 | 1.20 |
| Kola Division | 0.55 | 0.53 | 0.57 |
| COPPER (%) | | | |
| Norilsk Division | 2.24 | 2.27 | 2.09 |
| Kola Division | 0.24 | 0.24 | 0.25 |
| Trans-Baikal Division | 0.60 | 0.60 | 0.50 |
| PGMS (g/t)[1] | | | |
| Norilsk Division | 6.89 | 6.89 | 6.69 |
| Kola Division | 0.10 | 0.10 | 0.29 |

**Metals recovery in concentration** (%)

| Asset | 2019 | 2020 | 2021 |
|---|---|---|---|
| NICKEL | | | |
| Norilsk Division | 83.1 | 84.8 | 84.3 |
| Kola Division (Kola MMC) | 67.9 | 62.9 | 67.7 |
| COPPER | | | |
| Norilsk Division | 95.2 | 95.1 | 95.5 |
| Kola Division (Kola MMC) | 73.2 | 71.8 | 76.8 |
| Trans-Baikal Division | 87.7 | 87.4 | 86.9 |
| PGMS | | | |
| Norilsk Division | 85.2 | 86.4 | 85.6 |

1 The PGMs include palladium, platinum, rhodium, ruthenium, and iridium.
2 Metals recovery into bulk concentrate.

**Metals recovery in smelting** (%)

| Asset | 2019 | 2020 | 2021 |
|---|---|---|---|
| **NICKEL** | | | |
| Norilsk Division[1] | 94.6 | 94.1 | 94.4 |
| Kola Division (Kola MMC)[2] | 97.0 | 96.3 | 98.3 |
| Kola Division (NN Harjavalta)[2] | 97.9 | 98.2 | 98.1 |
| **COPPER** | | | |
| Norilsk Division[1] | 94.1 | 94.6 | 95.1 |
| Kola Division (Kola MMC)[2] | 96.5 | 95.4 | 99.5 |
| Kola Division (NN Harjavalta)[2] | 99.8 | 99.8 | 99.8 |
| **PGMS** | | | |
| Norilsk Division[1] | 95.8 | 96.4 | 96.5 |
| Kola Division (Kola MMC)[2] | 91.6 | 92.9 | 92.9 |
| Kola Division (NN Harjavalta)[2] | 99.8 | 99.9 | 99.9 |

**Seleable metals production**

| Product | 2019 | 2020 | 2021 |
|---|---|---|---|
| **GROUP TOTAL** | | | |
| Nickel, kt | 228.7 | 235.7 | 193.0 |
| from own feed | 225.2 | 232.5 | 189.9 |
| Copper, kt | 499.1 | 487.2 | 406.8 |
| from own feed | 498.8 | 486.8 | 406.8 |
| Palladium, koz | 2,922 | 2,826 | 2,616 |
| from own feed | 2,919 | 2,820 | 2,616 |
| Platinum, koz | 702 | 695 | 641 |
| from own feed | 700 | 693 | 641 |
| **ASSETS IN RUSSIA** | | | |
| Nickel, kt | 166.3 | 172.4 | 145.8 |
| Copper, kt | 486.2 | 484.7 | 404.9 |
| Palladium, koz | 2,868 | 2,809 | 2,587 |
| Platinum, koz | 690 | 691 | 634 |
| **NORILSK NICKEL HARJAVALTA** (Finland) | | | |
| Nickel, kt | 62.4 | 63.4 | 47.2 |
| Copper, kt | 12.9 | 2.5 | 1.9 |
| Palladium, koz | 54 | 17 | 30 |
| Platinum, koz | 12 | 4 | 7 |

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

# Norilsk Division

The Norilsk Division is the Group's flagship asset boasting a full metals production cycle from ore mining to the shipment of finished products to customers. The Norilsk Division includes the Company's two major production assets – the Polar Division and Medvezhy Ruchey (100% stake), as well as a number of transport and support assets. The Norilsk Division's assets are located on the Russian Taimyr Peninsula – in the Norilsk Industrial District in the north of the Krasnoyarsk Region in the Arctic Circle, and linked to other regions by the Yenisei River, the Northern Sea Route, and by air.

The Norilsk Division operates the largest deposits in the Company's portfolio: Talnakhskoye and Oktyabrskoye, as well as the Norilsk-1 deposit, with a combined annual output of over 17 mln t of copper-nickel sulphide ore.

In 2021, the Norilsk Division accounted for 78% of copper and 41% of PGMs in the Group's total finished products.

## MINING PRODUCTION

The Norilsk Division mines 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 Polar Division of 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. Stopes are refilled with backfill mixtures, with their composition adjusted in each case depending on technological requirements for mine backfill durability.

The Norilsk-1 deposit is developed by the Zapolyarny Mine (Medvezhy Ruchey – South Cluster project), through open-pit and underground mining. Underground mining is carried out through sublevel (level) caving using front ore passes and self-propelled vehicles.In 2021, total ore production by the Norilsk Division was 17.5 mln t, down 1.4 mln t y-o-y (–7%). High-grade and disseminated ore production decreased by 19% and 3%, respectively, while production of cuprous ores increased by 1%. The year-on-year decrease in production was caused by the temporary suspension of operations at the Oktyabrsky and Taimyrsky Mines due to flooding by groundwater. Both mines have currently resumed their operations in full.

**Ore output** (mln t)

| Deposit/mine, ore type | 2019 | 2020 | 2021 |
|---|---|---|---|
| Total ore | 18.42 | 18.82 | 17.46 |
| high-grade | 7.35 | 7.48 | 6.07 |
| cuprous | 5.75 | 5.49 | 5.55 |
| disseminated | 5.32 | 5.85 | 5.84 |
| Oktyabrskoye deposit | 9.45 | 9.58 | 7.39 |
| Oktyabrsky Mine (underground) | 5.37 | 5.34 | 4.79 |
| high-grade | 0.88 | 0.80 | 0.58 |
| cuprous | 3.38 | 3.41 | 3.41 |
| disseminated | 1.11 | 1.13 | 0.80 |
| Taimyrsky Mine (underground) | 4.08 | 4.24 | 2.60 |
| high-grade | 4.08 | 4.24 | 2.60 |
| Talnakhskoye and Oktyabrskoye deposits | 7.34 | 7.55 | 7.98 |
| Komsomolsky Mine (underground) | 4.00 | 4.25 | 4.26 |
| high-grade | 0.10 | 0.14 | 0.35 |
| cuprous | 2.28 | 1.81 | 1.85 |
| disseminated | 1.62 | 2.30 | 2.06 |
| Skalisty Mine (underground) | 2.34 | 2.54 | 2.79 |
| high-grade | 2.25 | 2.27 | 2.50 |
| cuprous | 0.09 | 0.27 | 0.29 |
| Mayak Mine (underground) | 1.00 | 0.76 | 0.93 |
| high-grade | 0.04 | 0.03 | 0.04 |
| disseminated | 0.97 | 0.73 | 0.89 |
| Norilsk-1 deposit | 1.63 | 1.69 | 2.09 |
| Zapolyarny Mine (open-pit/underground) | | | |
| disseminated | | | |

### SINCE 2020, THE COMPANY HAS BEEN IMPLEMENTING THE TECHNOLOGY BREAKTHROUGH 2.0

Project portfolio aimed at shifting to safe, green and efficient digital operation driven by innovation, big data analytics and unmanned mining technology. Nornickel was the first Russian company to put unmanned autonomous haul trucks into commercial operation at the Skalisty Mine in 2021.


## CONCENTRATORS

### Talnakh Concentrator

Processes high-grade, cuprous and disseminated ores from the Oktyabrskoye and Talnakhskoye deposits to produce nickel-pyrrhotite and copper concentrates, and metal-bearing products. The key processing stages include crushing, milling, flotation, and thickening.

### Norilsk Concentrator

Processes all disseminated ores from the Norilsk-1 deposit, cuprous and disseminated ores from the Oktyabrskoye and Talnakhskoye deposits, and low-grade ores from Copper Plant to produce nickel and copper concentrates.
The key processing stages include crushing, milling, flotation, gravity concentration, and thickening.

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. In 2021, the Company's concentration facilities processed a total of 16.5 mln t across all types of ore feedstocks.

In 2021, Talnakh Concentrator decreased its ore processing by 7% to 10.1 mln t due to a temporary decline in production caused by the flooding of the Taimyrsky and Oktyabrsky Mines. Recovery of nickel from ore into bulk flotation concentrate, including the output of metal-bearing pyrrhotite product, remained almost flat year-on-year at 87.4% (down 0.5%).

In 2021, the Norilsk Concentrator reduced its ore processing to 6.4 mln t, down 1.2 mln t y-o-y, as a result of a temporary suspension of processing operations due to an accident. Recovery of nickel from ore into bulk concentrate was 70.0%, down 0.6% y-o-y, due to the concentrator temporarily shifting to processing (crushing) ores from the Talnakhskoye deposit during and after the accident response.

**TALNAKH CONCENTRATOR HAS SUCCESSFULLY TESTED THE DIGITAL TWIN OF A FLOTATION OPERATOR**

automating
**80%**
of processes

Its automation algorithms generate recommendations for the ore flotation process in real time to increase metal recovery into concentrate. The project also uses machine vision to monitor ore sizes on several conveyors before it is fed into a semi-autogenous grinding mill, which is essential for optimal grinding control.

**Ore processing and nickel recovery**

| HItem | 2019 | 2020 | 2021 |
|---|---|---|---|
| Ore processing, mln t | | | |
| Talnakh Concentrator | 10.7 | 10.9 | 10.1 |
| Norilsk Concentrator | 7.5 | 7.6 | 6.4 |
| Nickel recovery, % | | | |
| Talnakh Concentrator | 85.9 | 87.9 | 87.4 |
| Norilsk Concentrator | 71.3 | 70.6 | 70.0 |

In 2021, total ore production by the Norilsk Division was
**17.46 mln t.**

In 2021, the Norilsk Division accounted
**for 78% of copper**
in the Group's total finished products.


## SMELTING

### Production chain

The produced concentrates, including steam cured sulphide concentrate, secondary materials, and metal-bearing feed from Kola MMC, are fed into flash smelting furnaces at Nadezhda Metallurgical Plant. Steam cured sulphide concentrate is leached at the hydrometallurgical shop of Nadezhda Metallurgical Plant from products with low metal content, such as Talnakh Concentrator's metal-bearing products, products from Nadezhda Metallurgical Plant's tailings facility, and concentrates from tailings ponds. 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 and also a copper cake with 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 and Kola MMC to produce precious metal concentrates, commercial selenium, and tellurium.

The precious metals produced by the Norilsk Division are refined at Krastsvetmet and Urals' Innovative Technologies under tolling agreements.

The decrease in copper and PGM output in 2021 was caused by the temporary suspension of operations at Norilsk Concentrator due to an accident, and at two mines due to flooding.

### DOWNSTREAM FACILITIES

Nadezhda Metallurgical Plant

Copper Plant

Copper Plant's metallurgical shop

**Production volumes**

| Products | 2019 | 2020 | 2021 |
|---|---|---|---|
| Copper, t | 355,706 | 351,413 | 315,511 |
| Palladium, koz | 1,042 | 1,180 | 1,058 |
| Platinum, koz | 251 | 302 | 271 |

### Products

- Copper cathodes
- Nickel converter matte sent for processing to Kola MMC
- Precious metal concentrates
- Commercial sulphur, selenium
- Tellurium ingots

# Kola Division

The Kola Division includes Kola MMC, Nornickel's wholly owned subsidiary. The Kola Division is another key production asset of the Company in Russia, which is located on the Kola Peninsula in the Murmansk Region.

In 2021, Kola MMC accounted for 76%, 5% and 58% of the Group's total nickel, copper, and PGM finished products, respectively.

## MINING PRODUCTION

Kola MMC mines disseminated copper-nickel sulphide 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 2021, Kola MMC produced 7.2 mln t of ore (down 6% y-o-y). The decrease in ore production was due to the fact that the concentrator stopped processing off-balance (sub-economic) ores from the open-pit section to enhance the technical and economic performance in producing sulphide concentrate.

**Ore output** (mln t)

| Deposit/mine | 2019 | 2020 | 2021 |
|---|---|---|---|
| Total ore | 7.91 | 7.65 | 7.16 |
| Zhdanovskoye deposit: | 7.25 | 7.08 | 6.55 |
| • Severny Mine (underground section) | 6.49 | 6.43 | 6.48 |
| • Severny Mine (open-pit section) | 0.77 | 0.65 | 0.07 |
| Zapolyarnoye deposit: | 0.06 | 0.05 | 0.03 |
| • Severny section (underground) | 0.06 | 0.05 | 0.03 |
| Kotselvaara and Semiletka deposits: | 0.60 | 0.52 | 0.58 |
| • Kaula-Kotselvaara mine (underground) | 0.60 | 0.52 | 0.58 |

## CONCENTRATION

The concentrator produces nickel sulphide concentrate, which is then sold via third parties or partially shipped to the Norilsk Division for further processing. In 2021, the concentrator processed 7.1 mln t of ore.

**Ore processing,** (mln t)

| Item | 2019 | 2020 | 2021 |
|---|---|---|---|
| Ore processing, mln t | 7.60 | 7.96 | 7.11 |

**THE CONCENTRATION PLANT SUCCESSFULLY TESTED EXPRESS METHODS TO ASSESS ORE DRESSABILITY BY MEASURING THE ORE'S MAGNETIC PROPERTIES WITH A FERROMETER AND DETERMINING DISSEMINATION, WHICH GOING FORWARD WILL BOOST THE RECOVERY RATES FOR NON-FERROUS METALS.**

## SMELTING

In 2021, Kola MMC used only Nornickel's own Russian feedstock in metals production. The decrease in saleable nickel and PGM production was primarily caused by lower supplies of raw materials from the Norilsk Division due to the temporary suspension of operations at the Oktyabrsky and Taimyrsky Mines, and at Norilsk Concentrator. The decrease in saleable copper output was due to the closure of the copper shop in March 2021.

The precious metals produced by the Kola Division are refined at Krastsvetmet and Prioksky Plant of Non-Ferrous Metals under tolling agreements.

**Production volumes**

| Products | 2019 | 2020 | 2021 |
|---|---|---|---|
| Nickel, t | 166,265 | 172,357 | 145,817 |
| from own Russian feed | 166,265 | 172,357 | 145,817 |
| Copper, t | 86,976 | 70,618 | 21,609 |
| from own Russian feed | 86,976 | 70,618 | 21,609 |
| Palladium, koz | 1,826 | 1,630 | 1,529 |
| from own Russian feed | 1,826 | 1,630 | 1,529 |
| Platinum, koz | 439 | 390 | 363 |
| from own Russian feed | 439 | 390 | 363 |

### Products:

- Nickel cathodes
- Nickel carbonyl
- Copper cathodes
- Copper concentrate
- Sulphide concentrate from the concentrator
- Electrolytic cobalt
- Cobalt concentrate
- Precious metal concentrates
- Sulphuric acid
- Crushed matte and converter matte for Haijavalta

**NORNICKEL SUCCESSFULLY TESTED THE CHEMICAL AND METALLURGICAL SHOP EQUIPMENT TO PERFORM EXPRESS ANALYSIS OF REUSED WATER FOR RHODIUM CONTENT. THE COMPANY ALSO DEPLOYED ULTRA M PRO BY DISTRAN, A DEVICE TO DETECT GAS LEAKS, WHICH REDUCES MECHANICAL ENERGY LOSSES IN PROCESS PIPELINES AND UTILITIES.**

# Norilsk Nickel Harjavalta (Finland)

Norilsk Nickel Haijavalta located in Haijavalta, Finland, is Nornickel's wholly owned subsidiary, acquired by the Group in 2007. The Haijavalta is apart of the Kola Duvision and processes Nornickel's Russian feedstock and nickel-bearing raw materials sourced from third-party suppliers.

Founded in 1959, it is Finland's only nickel refinery and one of the largest nickel producers in Europe. Harjavalta's capacity is 66 ktpa of nickel products.

The facility uses sulphuric acid leaching with metal recovery rates above 98%, which is a best practice in the global mining and metals industry.

In 2021, Norilsk Nickel Haijavalta accounted for 24%, 1% and 1% of the Group's total nickel, copper and PGM finished products, respectively.

## SMELTING

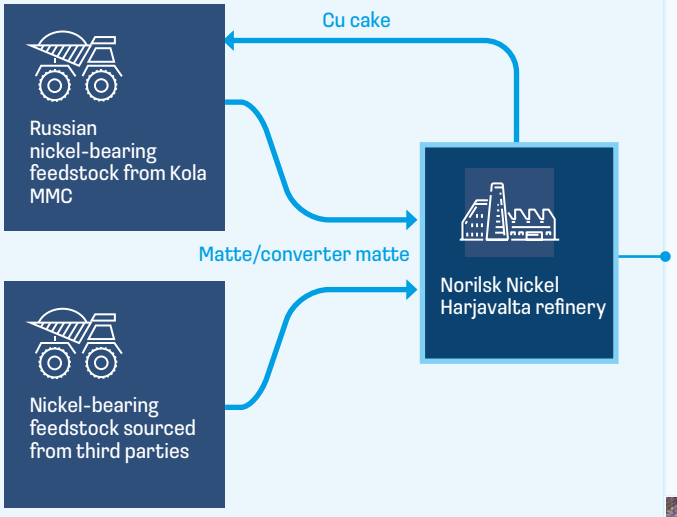
During 2021, Norilsk Nickel Harjavalta mainly processed nickel feed from Kola MMC's refining operations. Third-party feedstocksand nickel salts from other suppliers, were supplied regularly in small amounts throughout 2021. Metal recovery remained high.

In 2021, Norilsk Nickel Harjavalta reduced its nickel production by 26% due to lower supplies of nickel concentrate from Kola MMC. The production of copper in copper cake totalled 1.9 kt, down 23% y-o-y, while the output of saleable palladium and platinum in copper cake increased by 43% y-o-y. The increase was due to increased supplies of crushed converter matte to match operational needs.

**Production volumes**

| Products | 2019 | 2020 | 2021 |
|---|---|---|---|
| Nickel, t | 62,422 | 63,352 | 47,189 |
| from the Company's own Russian feed | 58,939 | 60,175 | 44,128 |
| Copper (in copper cake), t | 12,948 | 2,491 | 1,923 |
| from the Company's own Russian feed | 12,667 | 2,121 | 1,897 |
| Palladium (in copper cake), koz | 54 | 17 | 30 |
| from the Company's own Russian feed | 51 | 11 | 29 |
| Platinum (in copper cake), koz | 12 | 4 | 7 |
| from the Company's own Russian feed | 9 | 2 | 7 |

**Facility's process chart**




**Products:**

- Ni:
  - cathodes
  - briquettes
  - salts
  - powders
  - solutions
- Co
  - sulphate
  - solutions
- Cu
  - PGM-bearing copper cake

# Trans-Baikal Division

The Trans-Baikal Division includes Bystrinsky GOK, the construction of which was started by Nornickel in 2013 (put into commercial operation in 2019). In 2021, Bystrinsky GOK reached its design capacity. In 2021, the Trans-Baikal Division produced 17% of the Group's total copper output.

**17%**

In 2021, the Trans-Baikal Division produced 17% of the Group's total copper output

## MINING PRODUCTION

Bystrinsky GOK mines gold-iron-copper ores of the Bystrinskoye deposit.

**Ore output** (mln t)

| Mining asset | 2019 | 2020 | 2021 |
|---|---|---|---|
| Total ore | 10.49 | 16.04 | 16.55 |
| Bystrinskoye deposit: | 10.49 | 16.04 | 16.55 |
| Verkhne-Ildikansky open-pit mine | 8.60 | 11.57 | 13.34 |
| Bystrinsky-2 open-pit mine | 1.89 | 4.47 | 3.21 |

## CONCENTRATION

The facility 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. In 2021, it processed 10.47 mln t of ore (2019: 9.76 mln t). The increase was due to scheduled ramp-up to design capacity.

Copper and iron ore concentrates are sold via third parties, while gold concentrates are further processed at the Norilsk Division.

**Products:**

- Copper concentrate
- Gold concentrate
- Iron ore concentrate

**Production volumes**

| Products | 2019 | 2020 | 2021 |
|---|---|---|---|
| Ore processing, mln t | 7.50 | 9.76 | 10.47 |
| Copper (in copper concentrate), t | 43,489 | 62,663 | 67,798 |
| copper content in the concentrate, % | 25.50 | 24.65 | 22.87 |
| Gold (in copper and gold concentrates), koz | 177 | 241 | 258 |
| gold content in the concentrate, g/t | 4,034 | 3,050 | 2,627 |
| Iron ore concentrate, kt | 1,311 | 2,047 | 2,582 |
| iron content in the concentrate, % | 64.60 | 64.22 | 63.72 |


**A PROJECT TO OPTIMISE FLOTATION PROCESSES USING THE DIGITAL TWIN OF A FLOTATION OPERATOR (TALNAKH CONCENTRATOR) WAS PILOTED AT BYSTRINSKY GOK.**

The pilot was rated as successful, and in 2022 we plan to conduct repeat testing of the system using video analytics of the foam layer in flotation cells and measuring metrics such as froth floatation speed, bubble size and foam color in real time.

# SALES AND SUPPLY CHAIN

## Products

**One of the Company's main objectives is to make sure its product range matches the global demand mix for metals now and in the future, which is essential to generating demand for its products.**

### NICKEL

The main market segment for Nornickel's nickel products remains stainless steel, plating and alloying.

However, in order to prepare the mid-term growth of nickel demand in batteries, Nornickel continues implementing a number of initiatives to enhance and expand its existing product range to support the battery supply chain.

Norilsk Nickel Harjavalta's nickel and cobalt sulphates are considered the industry benchmark and are widely used in battery manufacturing. Norilsk Nickel Harjavalta is uniquely flexible when it comes to making various types of products so it can factor in consumer preferences in developing its product portfolio.

Although the Company already has a wide portfolio of battery materials, it continues to actively engage the battery sector as it expands its product range to match the new requirements for type and quality emerging in the market. The Company developed specialised products for the battery sector based on nickel sulphate solution and plans to further boost the output of nickel products to meet the needs of the emerging ecosystem of battery materials.

Furthermore, the Company has recognized early on that the existing nickel sources will not be able to meet the rising demand of nickel in batteries. Therefore through joint development with an industrial partner, Nornickel designed a competitive process that provides a solution for customers to dissolve nickel and cobalt cathodes thereby ensuring the availability of nickel feedstock for electric vehicles for future projects.

### PRECIOUS METALS

The main market segment for its PGM products is and remains the automotive segment and the production of catalysts.

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

One of them was The Palladium Challenge - an initiative launched in 2021 and intended to inspire individuals, businesses and academic institutions to invent and design a sustainable use-case that increases the demand for palladium. Furthermore, we have been actively engaging with Russian and international scientific institutions which with our support carry out research to allocate new palladium applications.

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 the liquefied organic hydrogen carriers (LOHC). In the longer run, palladium may find new applications in electrolysers 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, electric 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.

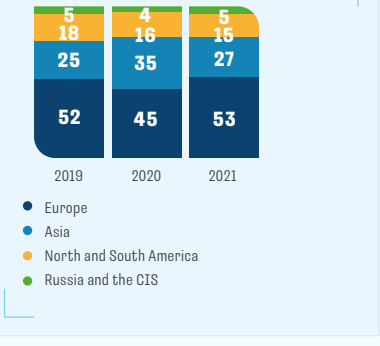
Nornickel together with its partners is working on accelerated adoption of hydrogen technologies and other applications mentioned above to bring closer a cleaner and more sustainable future and ensure the effective energy transition essential to achieve net-zero goals as it was set by the Paris agreement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

### OTHER METALS

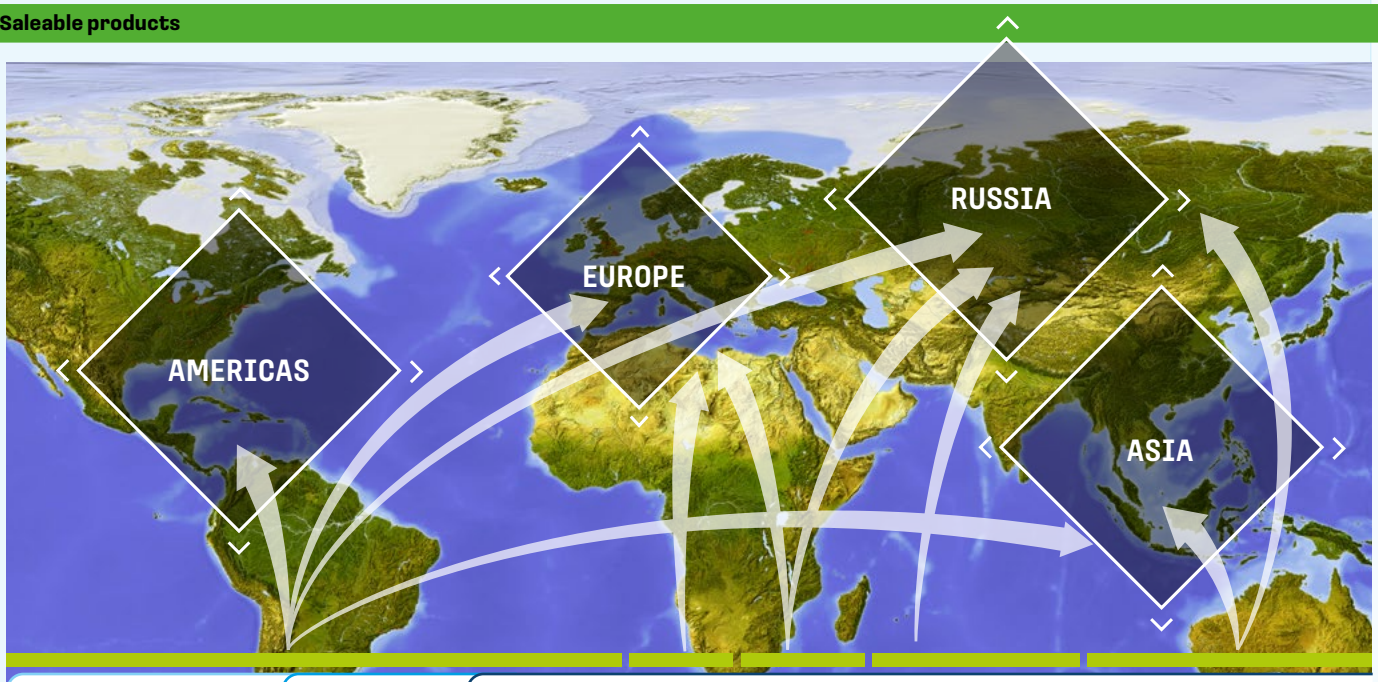
Nornickel engages in steady continuous improvement of its quality for its other commodity metals in dialogue with its main industrial customers.

The Company supplies its products to 37 countries around the world, with Europe as the major consumer.

**Sales by region** (%)



**Saleable products**




| Type of metals | Saleable products | Sales markets | | | | | | |
|---|---|---|---|---|---|---|---|---|
| • Copper cathodes<br>• Intermediate copper products<br>• Nickel cathodes<br>• Nickel carbonyl powder<br>• Nickel shot<br>• Intermediate nickel products<br>• Nickel briquettes<br>• Nickel sulphate crystals<br>• Nickel sulphate solution<br>• Nickel hydroxycarbonate | • Platinum<br>• Palladium<br>• Rhodium<br>• Iridium<br>• Ruthenium<br>• Cold<br>• Cold gravity concentrate<br>• Silver | • Cobalt cathodes<br>• Cobalt sulphate<br>• Cobalt concentrate | Tellurium ingots | Commercial selenium powder | Commercial sulphur | Sodium sulphate | Sulphuric acid | Iron ore concentrate |

# Sales strategy

Sales, along with production, have traditionally been a key focus area of Nornickel's business.

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

Electric vehicles and batteries are a priority segment in the nickel consumption structure, 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 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.

As the world's largest producer of palladium, the Company follows its strategy of entering into direct long-term contracts with end consumers to sutain strong demand.

# Product sales

In 2021, Nornickel once again confirmed its long-standing 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 analysed and used to design initiatives to improve product and service quality. The Company is committed to continuous improvement. The integrated index of customer satisfaction with the Company's products and services fully met its target for 2021.

Despite production disruptions in 2021 caused by unforeseen events at the Norilsk Division and notwithstanding the continued logistical issues due to the COVID-19 pandemic, the Company successfully fulfilled all of its obligations to customers without defaulting on any of them. Annual sales for some metals exceeded production volumes due to sales from inventories, which to some extent offset the decrease in planned production.

Demand, as an external driver for product sales, showed mixed trends during 2021. In 2021, the global automotive industry (the main consumer of platinum group metals) fell short of its production targets amid supply disruptions in the market for chips and other components, which, in turn, led to a lower demand for PGMs. Nevertheless, thanks to Nornickel's strategy to develop its own distribution system based on long-term direct relationships with major consumers including automotive companies and PGM processors, the Company delivered on its targets for palladium supply to the industrial consumption sector and ensured the overall efficiency of its product sales.

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

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

# Supply chain

Supply chain management at Nornickel ensures the Group's continuous operation and reliable supplies to customers. Nornickel seeks to work with partners who are committed to occupational safety and environmental protection. The Company also expects its suppliers to follow international best practices and standards in sustainable development and sustainable use of natural and mineral resources, with operations certified through industry initiatives.

Nornickel employs a proprietary multi-tier system to evaluate its suppliers. The criteria for selection, evaluation and re-evaluation of external suppliers have been determined in line with the requirements of ISO 9001:2015 Quality management systems. Nornickel is particularly focused on building relationships with suppliers whose equipment is unique and critical for the stable operation of the Company's production facilities.

Nornickel gives preference to local suppliers to provide social support to its operating regions. Along with saving jobs, this policy supports unique enterprises whose continuous operation is essential to both the well-being of their employees and the social fabric of local communities.

## ESG-DRIVEN SUPPLIER SELECTION

Nornickel seeks to create a common information space and set of values with its suppliers. Consideration of ESG factors in supplier selection, combined with the use of advanced equipment and materials, regular pilot tests and operational improvements enable lean resource management and reduce environmental footprint, directly improving the environmental performance of Nornickel's operations.

In 2021, the Company approved its Responsible Sourcing Policy (the "Policy") covering all of the Company's activities related to supplier selection in the supply chain of raw materials, goods, works, and services. The purpose of the Policy is to define the Company's approach to responsible sourcing and declare standards and principles to be followed by the Company and its suppliers.

Together with the Policy, the Company approved the Supplier Code of Conduct (the "Code"), which introduced procedures for responsible selection of suppliers in accordance with ESG requirements in all of Nornickel's supply chains.

Also in the reporting period, the Company began developing a due diligence management system (DDMS) for its supply chains focused on identifying potential risks affecting the sustainability of business processes in supply chains as well as minimising the following risks:

- Violation of human rights and freedoms
- Support for non-state armed groups
- Illegal control of mines and raw material transportation
- Corruption and bribery
- Misinformation across the supply chain from ore mining to product delivery to consumers

The Policy and the Code are the key tools of the DDMS. A number of new DDMS tools are planned to be developed and deployed in 2022. The OECD Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas and a five-step model for risk-based due diligence on supply chains provide a methodological framework for developing the DDMS.

The DDMS ensures compliance with the following requirements and guidelines:

- London Metal Exchange responsible sourcing policy
- Standards and principles of leading sustainable development initiatives in the industry: ICMM, IRMA, RMI, and JDDS
- Requirements of the Company's clients

As part of the DDMS implementation, the Company held training events for its employees and began assigning roles and developing a roadmap for the Code implementation.

As part of the DDMS implementation, the Company held training events for its employees and began assigning roles and developing a roadmap for the Code implementation.

TfS, RSBN and RMI audits as well as a number of customer-requested audits were conducted in 2021. Audits of the production sites of Nornickel's divisions and PGM product processors included evaluation of all ESG aspects: environmental, social and corporate governance. The auditors also made recommendations on engaging contractors on compliance with the Company's policies.

For example, the TfS audit verified that the employees of Nornickel and contractors outside the Group were not paid below the living wage. The verification identified violations on the part of some contractors, followed by improvement notices to the non-compliant contractors.

In 2021, the Company delivered a series of trainings for its internal suppliers on sustainability standards for responsible supply chains (OECD, JDDS). A total of 80 employees of the Company have been trained.

The DDMS will enable the identification of all supply chain participants which, provided they comply with the Policy and the Code, will improve decision making and strengthen the Company's position on the global market.

The Company's model master agreement with contractors now includes a separate clause on ESG compliance with the following provisions:

- Zero tolerance for discrimination and retaliation
- Requirements for working conditions and remuneration and prevention of child and forced labour
- Environmental protection requirements
- Anti-corruption
- Compliance with the UN Global Compact

Given the risk of potential negative environmental impact of cargo in transit, the master agreement sets explicit requirements for cargo packaging. Goods to be shipped must meet the cargo standards and requirements of GOST 26653-2015 Preparation of general cargoes for transportation and GOST 15846-2002 Production for transportation to the areas of the Far North and similar regions. Packaging, labelling, transportation and storage. Mandatory requirements are established for the transport containers and product packaging that should ensure cargo integrity during multiple transshipments and transportation to the Far North.

Environmental impact is assessed throughout the life cycle of procured products: production, transport, storage, use, and disposal. Nornickel requires its contractors to have a functioning environmental management system in place and to ensure that all services and products delivered by them comply with local environmental laws.

## PROCUREMENT

The main objective of procurement at Nornickel is to facilitate the timely and full satisfaction of its needs in required products supplied to the specified quality and reliability standards at acceptable price, as well as maximising the value for money spent on such products.

Nornickel's procurement process is certified to international standards ISO 9001 and ISO 14001. Uniform procedures apply to both centralised procurement for Nornickel and to independent procurement by the Head Office units, the Company's branches and the Group enterprises. Depending on the budgeted cost, procurement can follow a tendering, simple or simplified procedure. Procurement procedures may involve collective procurement bodies at various levels, such as the tender committee, tender commissions of the Head Office, procurement and tender commissions of branches and Group companies.

Nornickel has in place category procurement policies outlining unified binding principles and approaches to procurement of specific categories to mitigate operational and financial risks, cut costs, reduce working capital requirements, and add reliability and cadence to the supply flow. A total of 45 category procurement policies were in place at Nornickel at the end of 2021, including four new policies approved in 2021. In 2021, about 58% of inventories were purchased for Nornickel's core operations under the category procurement policies.

**TFS, RSBN AND RMI AUDITS AS WELL AS A NUMBER OF CUSTOMER-REQUESTED AUDITS WERE CONDUCTED IN 2021.**

# ENERGY ASSETS

**The Company boasts its own energy resource base comprised of four hydrocarbon fields.**

Nornickel's key production facilities are located in the Arctic Circle, operating in sub-zero temperatures for about eight months of the year. It is therefore critical for the Group to supply energy not only to its production enterprises but also to infrastructure facilities and communities in its regions of operation.

**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: 253.2 bcm
- Gas condensate reserves: 4,697 kt

**Norilsktransgaz** transports natural gas and gas condensate from fields to consumers. The length of its gas and condensate pipelines totals 1,639 km. The pipelines were commissioned from 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 European consumers. The company's operations span vast areas of Russia, including the Norilsk Industrial District, the cities of Krasnoyarsk and Dudinka, and the Murmansk and Chita

**2,927 Mcm**
natural gas production[1]

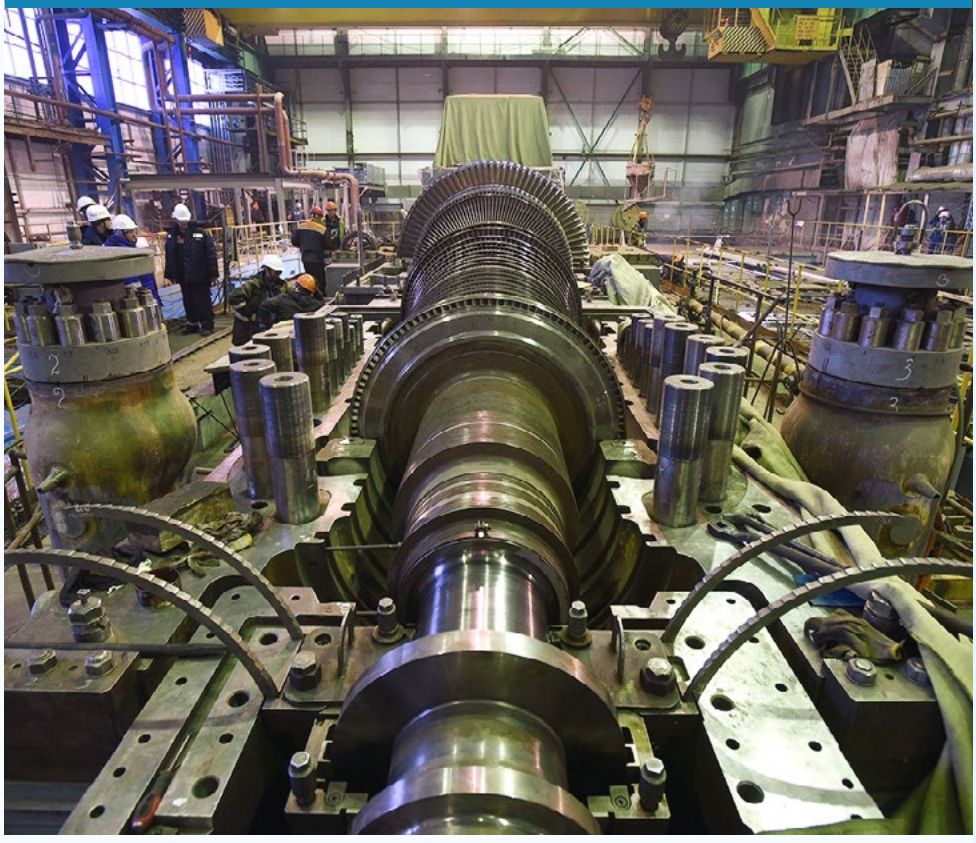
**102 kt**
gas condensate production

**47%**
electricity generated from renewable sources in Group

**Production volume[1]**

| Product | 2019 | 2020 | 2021 |
|---|---|---|---|
| Natural gas (Mcm) | 2,804 | 2,728 | 2,927 |
| Gas condensate (kt) | 92 | 98 | 102 |

**IN 2021, GROUP'S MAIN FUEL AND ENERGY ASSETS IN THE NORILSK INDUSTRIAL DISTRICT WERE SPUN OFF AS THE ENERGY DIVISION AS PART OF THE GROUP'S MANAGEMENT SYSTEM OPTIMISATION EFFORT.**



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

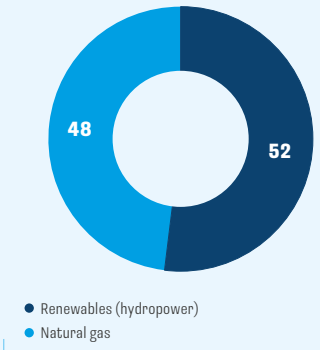
Regions. Taimyr Fuel Company supplies petroleum products to mining, exploration, and transport companies and municipal enterprises. Its key consumers are the Norilsk Nickel Group enterprises.

About 85 kt of AI-92 and AI-95 petrol, diesel and jet fuel as well as almost 2 kt of various oils were delivered to the port of Dudinka between June and October 2021.

This year, regular deliveries of petroleum products to Taimyr will continue during the winter season as well, for the first time ever. Taimyr Fuel Company transitioned to year-round delivery last year, as Nornickel launched a comprehensive programme to upgrade its tank farm facilities.

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

**NTEC's power generation mix in the Norilsk Industrial District in 2021**
(%)



Ust-Khantayskaya and Kureyskaya HPPs are Nornickel's two renewable electricity generation facilities. In 2021, the share of renewables in total electricity generation stood at 47% for the Group and 52% for the Norilsk Industrial District.

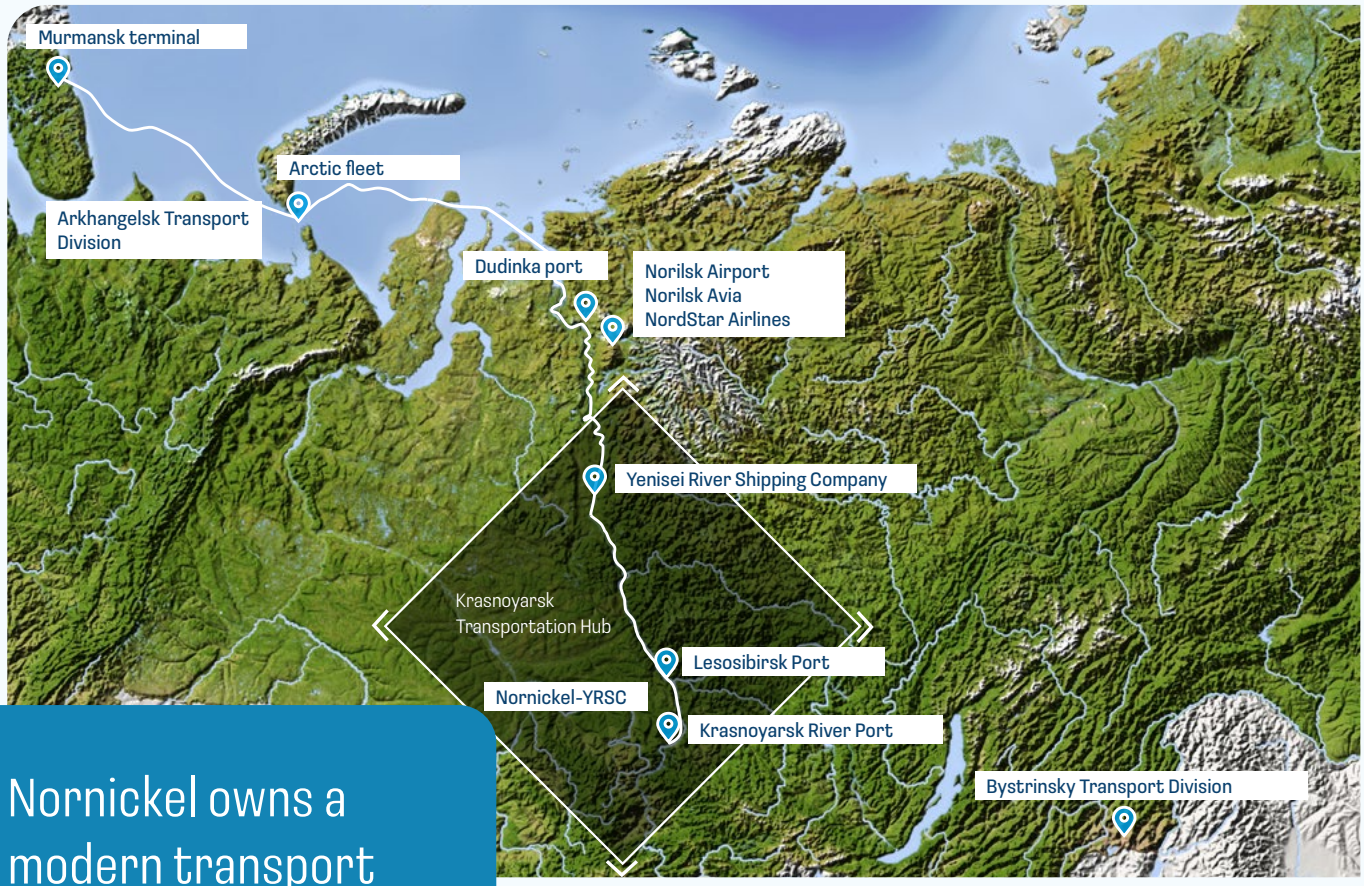
Nornickel's investment programme includes a number of large-scale priority projects to boost the share of renewables such as hydropower, capture fuel and energy savings, and improve the reliability of energy and gas supplies.

## THE COMPANY'S KEY PROJECTS TO IMPROVE EQUIPMENT RELIABILITY AND ENERGY EFFICIENCY AND TO BOOST OUTPUT INCLUDE:

- replacement of seven hydropower units at the Ust-Khantayskaya HPP (the last hydroelectric unit was replaced in 2021, the project is completed)
- replacement of generating units at CHPP-2 and CHPP-3 in Norilsk
- 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 electric power networks
- upgrade of heat and water pipelines
- construction of a new water withdrawal facilities on the Norilskaya River
- upgrade of the Norilsk heat and water lines
- construction of stormwater and industrial wastewater treatment facilities
- upgrade of trunk and distribution gas pipeline systems;
- upgrade and development of utility infrastructure in Tukhard
- construction of five new gas wells at the Pelyatkinskoye gas condensate field
- comprehensive upgrade of the Norilsk, Dudinka, and Kayerkan tank farms.


НОРИЛЬСКИЙ НИКЕЛЬ
МУРМАНСК
IMO 9330836

# TRANSPORT ASSETS




Nornickel owns a modern transport infrastructure capable of handling most challenging freight logistics tasks and ensuring continuity and sustainability of operations of Group enterprises.

Nornickel's transport and logistics assets cover the full range of transport and freight forwarding services.

**Asset summary:**

- Arc7 Arctic fleet (five dry cargo vessels and one tanker), two port icebreakers (Dudinka and Avraami Zavenyagin)
- 627 vessels of the river fleet (198 self-propelled and 429 towed vessels), including the active core fleet of 425 vessels (129 self-propelled and 296 towed vessels)
- rail car and locomotive fleet – 118 container flatcars, two shunting vehicle, one shunting tractor, and one 2M62 diesel locomotive
- aircraft fleet – 20 Mi-8 helicopters, 10 planes, and Norilsk Airport, ensuring smooth air connectivity for the Norilsk Industrial District

# Sea freight shipping services

Nornickel has a unique Arctic fleet comprising five dry cargo vessels and one Yenisei heavy ice-class tanker (Arc7 as per the classification of the Russian Maritime Register of Shipping). The vessels are capable of breaking through Arctic ice up to 1.5 m thick without icebreaker support.

Nornickel's dry cargo fleet provides year-round freight shipping services between Dudinka, Murmansk, Arkhangelsk, Rotterdam, and Hamburg sea ports while also serving other destinations. In 2021, 70 voyages were made from Dudinka (2020: 66), including two direct voyages to European ports (2020: 9).

In 2021, the Company also shipped liquid cargo, including by its own tanker Yenisei, including export supplies of gas condensate from the Pelyatkinskoye field to European ports, oil product deliveries to the Norilsk Industrial District, and commercial voyages to other destinations.

**The Polar Transport Division and Dudinka port** are the key industrial facilities of the city port of Dudinka, accessible by both sea and river vessels.

Located in the Far North, the Dudinka port 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, the 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 Dudinka port transships cargoes destined for the Taimyr Peninsula, including goods for local residents (except for perishables and mail). In summer, river vessels deliver equipment and materials (sand, round timber, clinker, etc.) for process needs from Krasnoyarsk and Lesosibirsk. Sulphur shipments are directed both via the Yenisei River and via sea routes. Converter matte and metal products are shipped by sea from Dudinka throughout the year.

The Polar Transport Division operates its own fleet of port service vessels which includes a river-class icebreaker, towboats, motorboats, a bunker barge, and a floating crane. To reduce its environmental footprint, the division runs programmes to cut fuel consumption and prevent pollution of the Dudinka and Yenisei Rivers, while also investing in bioresource management (e.g., releasing fry).

The year-round ice-free sea port of Murmansk is home to Nornickel's **Murmansk Transport Division.**

The Murmansk Transport Division's key functions:

- Shipment of Nornickel's finished metal products to European ports
- Receipt of converter matte from Dudinka and its shipment by rail to Kola MMC
- Shipment of empty containers, equipment and materials to Dudinka

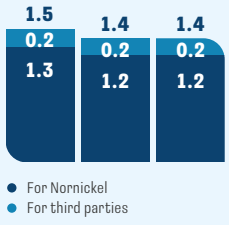
In addition to sea transportation, the Murmansk Transport Division is focused on freight forwarding, transshipment and storage of cargoes, and rail transportation between Murmansk and Monchegorsk.

The division's shipping department complies with international maritime conventions by ensuring environmentally friendly and safe sea transportation, with the vessels undergoing regular scheduled repairs and safety inspections. In addition, in 2019, the Murmansk Transport Division's Information Security Management System was certified to ISO/IEC 27001:2013.

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

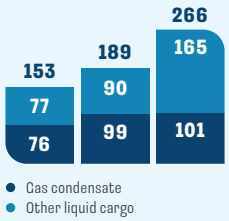
**The Krasnoyarsk Transport Division** is based in Krasnoyarsk. The division is responsible for transportation and forwarding of Nornickel's cargoes and for carriage of precious metal concentrates.

**Dry cargo transportation by Nornickel's fleet[1]** (mln t)




1 Except metal products

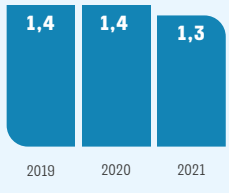
**Liquid cargo shipments[2]** (kt)



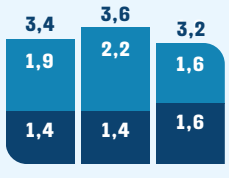

2 Oil products were transported by sea

THE VESSELS ARE CAPABLE OF BREAKING THROUGH ARCTIC ICE UP TO 1.5 M THICK WITHOUT ICEBREAKER SUPPORT.

**Cargo traffic at the Murmansk terminal** (mln t)




**Cargo traffic at the Dudinka port** (mln t)



In 2019, **Nornickel-YRSC** was established to coordinate operations of the Krasnoyarsk port and Yenisei River Shipping Company, which operate a strictly seasonal service due to the Yenisei River getting frozen in winter. When ice flows pass, the Group uses the ports to transship Nornickel's cargoes to Dudinka, including crushed stone, clinker, materials, equipment, and socially significant cargoes (as part of the Northern Deliveries programme).

**Yenisei River Shipping Company** carries the bulk of the Group's and third-party cargoes shipped on the Yenisei River. The company owns over 600 river vessels, including self-propelled and towed ones. The fleet operates in the Yenisei, Angara, Nizhnyaya Tunguska and Podkamennaya Tunguska Rivers, and their largest tributaries.

**Krasnoyarsk River Port** is one of the largest ports in the Yenisei basin. The port transships cargoes delivered by road, rail and water, provides storage services, and transports cargoes using private railway lines. The port has three operating areas – Yenisei, Zlobino and Peschanka.

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

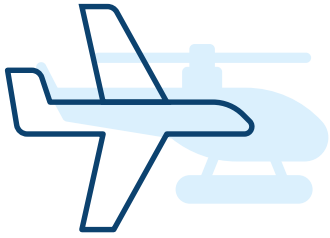
- The only dedicated port on the Yenisei River capable of handling explosives with a storage option
- Offers year-round service (rail-to-road and road-to-rail cargo transshipment services in between navigation periods)
- Has access to the federal Baikal Highway (M53) via the Krasnoyarsk–Yeniseisk Highway
- A railway to Achinsk links Lesosibirsk to the Trans-Siberian Railway

**The Bystrinsky Transport Division** was established in 2017 to support shipments of finished products from Bystrinsky GOK and handle its inventories. The Bystrinsky Transport Division provides maintenance services for the 227-km Naryn (Borzya)–Gazimursky Zavod private railway line built through a public-private partnership.

The Company's transport and logistics subsidiaries and units are fully environmentally permitted and compliant with applicable environmental regulations, namely:

- Air pollutant emissions from mobile sources do not exceed the maximum allowable levels
- Marine fuels are purchased from suppliers that have all required documents confirming fuel quality. The quality of fuel is verified by an independent laboratory
- Onboard wastewater treatment plants are subject to annual certification to prevent pollution and contamination of water bodies and marine environment
- Oily water is transferred to specialist contractors at sea ports

# Aviation assets



**Norilsk Avia** serves the transport needs of local communities in the Norilsk and Taimyrsky Dolgano-Nenetsky Districts of the Krasnoyarsk Region. The air carrier has its own fleet of 20 helicopters and provides air services related to the operations of the Norilsk Nickel Group, emergency medical flights, search and rescue operations, and local passenger traffic.

**NordStar Airlines** is an aviation project that has been steadily growing since its establishment in 2008. At the beginning of 2021, the airline's fleet consisted of ten Boeing 737 and five ATR 42-500 aircraft. With the five ATR 42-500 aircraft retired between May and July 2021, the airline's fleet was comprised of ten aircraft at the end of 2021. NordStar Airlines is a major air carrier in the Siberian Federal District and the anchor airline of Norilsk Airport. The air carrier's annual passenger traffic is in excess of one million people. The airline's current route network covers over 30 cities in Russia and the CIS.

**Norilsk Airport** is located 36 km away from Norilsk. It plays an essential role in ensuring the region's transport accessibility as it connects the north of the Krasnoyarsk Region with other parts of Russia. In 2020, the Company finished renovating the airfield complex and airport infrastructure through a public-private partnership. The renovated Norilsk Airport now meets all current regulatory requirements, offering higher quality and safety standards and ensuring reliable and consistent passenger and freight transport services.

# FINANCIAL PERFORMANCE (MD&A)

## FY2021 HIGHLIGHTS

- Consolidated revenue increased 15% y-o-y to USD 17.9 billion owing to higher metal prices and sale of palladium from the inventories accumulated in 2020, which have positively offset production losses caused by industrial incidents in 1H21;
- Oktyabrsky mine returned to its full production capacity in the middle of May, while the Taimyrsky mine and Norilsk concentrator – in December 2021;
- EBITDA increased 37% y-o-y to USD 10.5 billion due to higher revenue, of which Bystrinsky GOK (Chita project) contributed USD1.1 billion, EBITDA margin amounted to 59%;
- Social expenses doubled to just over USD 1 billion mostly as result of provisions related to the agreements on social and economic development of the city of Norilsk and the Krasnoyarsk region;
- CAPEX increased 57% y-o-y to a record USD 2.8 billion driven by growth of investments into key strategic projects, including over USD 500 mln in Sulfur Programme 2.0, which was in active construction phase, and 3- and 4-fold, respectively, increase in investments in South Cluster and Talnakh Concentrator Phase-3 expansion. Expenditures on capitalised repairs, improvement of industrial safety and modernization of core assets were up more than 40% exceeding USD 800 mln;
- Net working capital was up y-o-y to USD 1.3 billion driven mostly by increase in metal inventories on the back higher MET and changes in income tax payables;
- Free cash flow decreased 34% y-o-y to USD 4.4 billion driven by the reimbursement of the environmental damages in the amount of USD 2 billion and increased capital expenditures;
- Net debt was almost flat y-o-y at USD 4.9 billion with net debt/EBITDA ratio of 0.5x as of December 31, 2021. Interest expenses decreased 38% due to efficient management of debt portfolio resulting in a record low average annual interest rate of 2.8%;
- In October 2021, the Company successfully placed a 5-year USD 500 mln Eurobond with a coupon rate of 2.80% marking the lowest ever spread to the benchmark in the history of Nornickel's public offerings;
- On December 27, 2021, EGM approved the interim dividend for the 9 months of 2021 in the amount of RUB 1,523.17 per ordinary share (approximately 20.81 at the RUB/USD exchange rate set by the Russian Central Bank as of the EGM date) for the total amount of RUB 232.84 bn (approximately USD 3.05 bn)

**Key corporate highlights** USD million (unless stated otherwise)

| Index | 2021 | 2020 | Change |
|---|---|---|---|
| Revenue | 17,852 | 15,545 | 15% |
| EBITDA[1] | 10,512 | 7,651 | 37% |
| EBITDA margin | 59% | 49% | 10 п. п. |
| Net profit | 6,974 | 3,634 | 92% |
| Capital expenditures | 2,764 | 1,760 | 57% |
| Free cash flow[2] | 4,404 | 6,640 | –34% |
| Normalized net working capital[2,3] | 1,269 | 712 | 78% |
| Net debt[2] | 4,914 | 4,705 | 4% |
| Net debt, normalized for the purpose of dividend calculation[4] | 4,902 | 3,469 | 41% |
| Net debt/12M EBITDA | 0.5x | 0.6x | –0.1x |
| Net debt/12M EBITDA for dividends calculation | 0.5x | 0.5x | –0.0x |
| Dividends paid per share (USD)[5] | 13.9 | 26.3 | –47% |

**Key segmental highlights** [6] USD million (unless stated otherwise)

| Index | 2021 | 2020 | Change |
|---|---|---|---|
| **Revenue** | **17,852** | **15,545** | **15%** |
| GMK Group | 11,836 | 12,700 | –7% |
| South cluster | 767 | 694 | 11% |
| KGMK Group | 9,893 | 8,926 | 11% |
| NN Harjavalta | 1,493 | 1,308 | 14% |
| GRK Bystrinskoye | 1,346 | 1,004 | 34% |
| Other mining | 28 | 137 | –80% |
| Other non-metallurgical | 1,533 | 1,387 | 11% |
| Eliminations | –9,044 | –10,611 | –15% |
| **EBITDA** | **10,512** | **7,651** | **37%** |
| GMK Group | 5,456 | 6,171 | –12% |
| South cluster | 397 | 407 | –2% |
| KGMK Group | 3,758 | 1,757 | 2x |
| NN Harjavalta | 59 | 70 | –16% |
| GRK Bystrinskoye | 1,076 | 717 | 50% |
| Other mining | –16 | –14 | 14% |
| Other non-metallurgical | 11 | 31 | –65 |
| Eliminations | 716 | –556 | н.п. |
| Unallocated | –945 | –932 | 1% |
| **EBITDA margin** | **59%** | **49%** | **10 p.p.** |
| GMK Group | 46% | 49% | (3 p.p.) |
| South cluster | 52% | 59% | (7 p.p.) |
| KGMK Group | 38% | 20% | 18 p.p. |
| NN Harjavalta | 4% | 5% | (1 p.p.) |
| GRK Bystrinskoye | 80% | 71% | 9 p.p. |
| Other mining | –57% | –10% | (47 p.p.) |
| Other non-metallurgical | 1% | 2% | (1 p.p.) |

1 A non-IFRS measure, for the calculation see the notes below.
2 A non-IFRS measure, for the calculation see an analytical review document («Data book») available in conjunction with Consolidated IFRS Financial Results on the Company's web site.
3 Paid during the current period
4 Normalized on interim dividends (at the rate of the Board of Directors meeting date) and bank deposits with maturity of more than 90 days
5 Normalized on receivables from the registrar on transfer of dividends to shareholders
6 Segments are defined in the consolidated financial statements

In August 2020, in order to improve management efficiency it was decided to establish Norilsk, Kola and Trans-Baikal divisions. Norilsk division includes GMK Group, South Cluster and a number of companies from "Other non-metallurgical segment". Kola division includes KGMK Group and NN Harjavalta, as well as a number of companies from "Other non-metallurgical segment". Trans-Baikal division includes the GRK Bystrinskoye segment, as well as a number of companies from "Other mining" and "Other non-metallurgical" segments.

In 2021, revenue of GMK Group segment decreased 7% to USD 11,836 million primarily due to the decrease of revenue from selling matte to Kola MMC as well as lower copper sales volumes due to the temporary suspension of Oktyabrsky and Taimyrsky mines and Norilsk Concentrator, that was partly offset positively by higher realized metal prices.

Revenue of South cluster segment increased 11% to USD 767 million primarily driven by higher realized prices of semi-products delivered to GMK Group that was partly negatively offset by lower sales volumes due to the temporary suspension of Oktyabrsky and Taimyrsky mines and Norilsk Concentrator.

Revenue of KGMK Group segment increased 11% to USD 9,893 million primarily owing to higher realized metal prices, that was partly negatively offset by lower sales volumes due to the temporary suspension of Oktyabrsky and Taimyrsky mines and Norilsk Concentrator.

Revenue of NN Harjavalta increased 14% to USD 1,493 million driven by higher realized metal prices, that was partly offset negatively by lower sales volumes due to the temporary suspension of Oktyabrsky and Taimyrsky mines and Norilsk Concentrator.

Revenue of GRK Bystrinskoye segment increased 34% to USD 1,346 million primarily driven by higher copper and iron prices.

Revenue of Other mining segment decreased 80% to USD 28 million owing to lower sales volumes of semi-products following the termination of Nkomati's operations in 1H2021.

Revenue of Other non-metallurgical segment increased 11% to USD 1,533 million primarily due to increase in revenue from other sales, that was partly offset negatively by lower sales volumes of semi-products following the termination of Nkomati's operations in 1H2021.

In 2021, EBITDA of GMK Group segment decreased 12% to USD 5,456 million primarily owing to lower revenue, as well as higher social expenses and higher cash operating costs due to higher mineral extraction tax and temporarily re-introduced export duties, which were partly positively offset by the lower expenses on environmental provisions.

EBITDA of South cluster segment decreased 2% to USD 397 million due to the increase in mineral extraction tax in 2021, which was partly positively offset by higher revenue.

EBITDA of KGMK Group segment increased 2 times to USD 3,758 million primarily owing to higher revenue and higher margin on matte processing, following the revision of a purchase price formula, that was partly negatively offset by temporary re-introduced export duties.

EBITDA of NN Harjavalta decreased 16% to USD 59 million owing to lower sales volumes due to the temporary suspension of Oktyabrsky and Taimyrsky mines and Norilsk Concentrator.

EBITDA of GRK Bystrinskoye segment increased 50% to USD 1,076 million primarily due to higher revenue.

EBITDA of Other mining segment decreased by USD 2 million to a negative USD 16 million.

EBITDA of Other non-metallurgical segment decreased by USD 20 million and amounted to USD 11 million.

EBITDA of Unallocated segment decreased by USD 13 million and amounted to a negative USD 945 million.

**Sales volume and revenue**

| Index | 2021 | 2020 | Change |
|---|---|---|---|
| **Metal sales** | | | |
| **Group** | | | |
| Nickel, thousand tons[1] | 200 | 221 | –10% |
| from own Russian feed | 174 | 198 | –12% |
| from 3d parties feed | 3 | 3 | 0% |
| in semi-products[2] | 23 | 20 | 15% |
| Copper, thousand tons[1] | 383 | 500 | –23% |
| from own Russian feed | 308 | 427 | –28% |
| in semi-products[2] | 75 | 73 | 3% |
| Palladium, koz[1] | 2,687 | 2,634 | 2% |
| from own Russian feed | 2,656 | 2,604 | 2% |
| in semi-products[2] | 31 | 30 | 3% |
| Platinum, koz[1] | 628 | 689 | –9% |
| from own Russian feed | 621 | 684 | –9% |
| in semi-products[2] | 7 | 5 | 40% |

1 All information is reported on the 100% basis, excluding sales of refined metals purchased from third parties and semi-products purchased from Nkomati.
2 Metal volumes represent metals contained in semi-products.

| Index | 2021 | 2020 | Change |
|---|---|---|---|
| Rhodium, koz[1] | 53 | 58 | –9% |
| from own Russian feed | 51 | 56 | –9% |
| in semi-products[2] | 2 | 2 | 0% |
| Cobalt, thousand tons[1] | 5 | 6 | –17% |
| from own Russian feed | 4 | 5 | –20% |
| in semi-products[2] | 1 | 1 | 0% |
| Gold, koz[1] | 370 | 386 | –4% |
| from own Russian feed | 191 | 192 | –1% |
| in semi-products[2] | 179 | 194 | –8% |
| **Average realized prices of refined metals produced by the Group** | | | |
| **Metal** | | | |
| Nickel (USD per tonne) | 18,528 | 13,916 | 33% |
| Copper (USD per tonne) | 9,322 | 6,221 | 50% |
| Palladium (USD per oz) | 2,388 | 2,176 | 10% |
| Platinum (USD per oz) | 1,088 | 882 | 23% |
| Rhodium (USD per oz) | 19,946 | 12,056 | 65% |
| Cobalt (USD per tonne) | 39,857 | 30,745 | 30% |
| Gold (USD per oz) | 1,804 | 1,764 | 2% |
| **Revenue, USD million[3]** | | | |
| Nickel | 3,627 | 3,144 | 15% |
| including semi-products | 345 | 342 | 1% |
| Copper | 3,789 | 3,078 | 23 |
| including semi-products | 607 | 424 | 43% |
| Palladium | 6,665 | 6,365 | 5 |
| including semi-products | 69 | 147 | –53% |
| Platinum | 685 | 622 | 10% |
| including semi-products | 10 | 19 | –47% |
| Rhodium | 1,056 | 682 | 55 |
| including semi-products | 28 | 6 | 5x |
| Gold | 654 | 676 | –3% |
| including semi-products | 309 | 336 | –8% |
| Other metals | 627 | 410 | 53% |
| including semi-products | 391 | 224 | 75% |
| **Revenue from metal sales** | **17,103** | **14,977** | **14%** |
| Revenue from other sales | 749 | 568 | 32% |
| Total revenue | 17,852 | 15,545 | 15% |

3 Includes metals and semi-products purchased from third parties and Nkomati.

# Revenue

## NICKEL

Nickel sales accounted for 21% of the Group's total metal revenue in 2021.

In 2021, nickel revenue increased 15% (or +USD 483 million) to USD 3,627 million. The increase was primarily driven by higher realized nickel price (+USD 958 million), which was partially offset negatively by lower sales volume (-USD 478 million).

The average realized price of refined nickel increased 33% from USD 13,916 per tonne in 2020 to USD 18,528 per tonne in 2021.

Sales volume of refined nickel produced from the Company's own Russian feed, decreased 12% (or -24 thousand tonnes) to 174 thousand tonnes owing the temporary suspension of Oktyabrsky and Taimyrsky mines and Norilsk Concentrator.

Sales volume of refined nickel produced from third-party feed remained unchanged at 3 thousand tonnes.

In 2021, sales of nickel in semi-products increased 1% to USD 345 million primarily due to an increase in the sales volume of semi-products following the shut down of a smelter at Kola MMC, which was almost fully negatively offset by lower sales volume of semi-products produced by Nkomati.

In 2021, revenue from the resale of nickel purchased from third parties amounted to USD 3 million.

## COPPER

In 2021, copper sales accounted for 22% of the Group's total metal sales, increasing 1 p.p y-o-y. Copper revenue increased 23% (or +USD 711 million) to USD 3,789 million. The increase was primarily driven by higher realized copper price (+USD 1,528 million), which was partly offset negatively by lower sales volume (-USD 1,122 million).

The average realized price of refined copper increased 50% from USD 6,221 per tonne in 2020 to USD 9,322 per tonne in 2021.

Physical volume of refined copper sales from the Company's own Russian feed decreased 28% (or -119 thousand tonnes) to 308 thousand tonnes primarily driven by the temporary suspension of operations at Oktyabrsky and Taimyrsky mines and Norilsk Concentrator.

Revenue from copper in semi-products in 2021 increased 43% to USD 607 million driven by higher copper price.

In 2021, revenue from the resale of copper purchased from third parties amounted to USD 305 million.

## PALLADIUM

In 2021, palladium accounted for 39% of the Group's total metal revenue, down by 3 p.p. y-o-y. Palladium revenue increased 5% (or +USD 300 million) to USD 6,665 million due to higher realized price (+USD 544 million) and increase in sales volume (+USD 56 million).

The average realized price of refined palladium increased 10% from USD 2,176 per troy ounce in 2020 to USD 2,388 per troy ounce in 2021.

Physical volume of refined palladium sales from the Company's own Russian feed increased 2% (or +52 thousand troy ounces) to 2,656 thousand troy ounces in 2021. The increase in sales volume was driven by the sale of metal from the stock accumulated in 2020, that more than offset by the negative impact from the temporary suspension of Oktyabrsky and Taimyrsky mines and Norilsk Concentrator.

Revenue of palladium in semi-products decreased 53% to USD 69 million in 2021 primarily due to lower sales volume of semi-products produced by Nkomati.

In 2021, revenue from the resale of palladium purchased from third parties amounted to USD 253 million (vs USD 553 million in 2020).

## PLATINUM

In 2021, platinum sales increased 10% (or +USD 63 million) to USD 685 million. Platinum remained unchanged at 4% of the Group's total metal revenue. The increase in realized platinum price (+USD 141 million) was partly negatively offset by the decline in sales volume (-USD 78 million).

Physical volume of refined platinum sales from the Company's own Russian feed decreased 9% (or -63 thousand troy ounces) to 621 thousand troy ounces in 2021 due to the negative impact from the temporary suspension of Oktyabrsky and Taimyrsky mines and Norilsk Concentrator.

Revenue of platinum in semi-products in 2021 decreased 47% to USD 10 million primarily due to lower sales volume of semi-products produced by Nkomati.

## RHODIUM

In 2021, revenue from rhodium increased 55% (or +USD 374 million) due to the higher realized price.

Revenue from the resale of rhodium purchased from third parties amounted to USD 14 million in 2021.

## GOLD

In 2021, revenue from gold declined 3% (or -USD 22 million) primarily due to lower realized volume of semi-products produced by Bystrinsky project.

## OTHER METALS

In 2021, revenue from other metals increased 53% (or +USD 217 million) to USD 627 million primarily driven by higher revenue from iron ore concentrate on the back of higher realized price.

# Other Sales

In 2021, other sales increased 32% (or +USD 181 million) to USD 749 million primarily due to an increase of air transportation services following the lift of travel restrictions related to the COVID-19 pandemic and higher oil products sales.

In 2021, other sales increase **32%**

# Cost of Sales

## COST OF METAL SALES

In 2021, the cost of metal sales increased 12% (or +USD 557 million) to USD 5,057 million, driven by the following factors:

- Increase in cash operating costs by 25% (or +USD 988 million);
- Comparative effect of change in metal inventories y-o-y leading to the cost of metal sales reduction by USD 429 million.

## CASH OPERATING COSTS

In 2021, total cash operating costs increased 25% (or +USD 988 million) to USD 4,874 million mainly due to the introduction of temporary Nickel and Copper export custom duties in 2H2021 (+USD 442 million) and increase in mineral extraction tax and other levies in real terms (+USD 379 million).

Inflationary growth of cash operating costs (+USD 159 million) was partly positively offset by Russian rouble depreciation against USD (-USD 40 million).

**Cost of metal sales** (USD million)

| Index | 2021 | 2020 | Change |
|---|---|---|---|
| Labour | 1,406 | 1,307 | 8% |
| Materials and supplies | 715 | 731 | –2% |
| Mineral extraction tax and other levies | 627 | 248 | 3x |
| Purchases of refined metals for resale | 581 | 482 | 21% |
| Export custom duties | 442 | – | 100% |
| Third party services | 410 | 276 | 49% |
| Transportation expenses | 130 | 90 | 44% |
| Fuel | 122 | 109 | 12% |
| Electricity and heat energy | 118 | 151 | –22% |
| Purchases of raw materials and semi-products | 95 | 298 | –68% |
| Sundry costs | 228 | 194 | 18% |
| **Total cash operating costs** | **4,874** | **3,886** | **25%** |
| Depreciation and amortisation | 843 | 845 | 0% |
| Increase in metal inventories | –660 | –231 | 3x |
| Total | 5,057 | 4,500 | 12% |

## Labour

In 2021, labour costs increased 8% (or USD +99 million) to USD 1,406 million amounting to 29% of the Group's total cash operating costs driven by the following factors:

- **-USD 28 million** – positive effect of the Russian rouble depreciation against US dollar;
- **+USD 77 million** - indexation of salaries and wages in line with the terms of collective bargaining agreement;
- **+USD 37 million** – increase in headcount in Norilsk industrial region.

## Materials and supplies

In 2021, expenses for materials and supplies decreased 2% (or USD 16 million) to USD 715 million driven by the following factors:

- **USD 2 million** - positive effect of the Russian rouble depreciation against US dollar;
- **-USD 32 million** – lower consumption of materials due to termination of Nkomati's operations;
- **+USD 18 million** – inflation of materials and supplies prices.

## Mineral extraction tax and other levies

In 2021, mineral extraction tax and other levies increased 3 times (or USD 379 million) to USD 627 million driven by the following factors:

- **-USD 4 million** - positive effect of the Russian rouble depreciation against US dollar;
- **+USD 383 million** – primarily due to the increase of mineral extraction tax in 2021.

## Purchases of refined metals for resale

In 2021, purchases of refined metals for resale increased 21% (or USD 99 million) to USD 581 million owing to the purchases of copper in order to cover production losses caused by the temporary suspension of two mines and the Norilsk Concentrator, which was partly offset negatively by lower purchases of palladium.

## Export custom duties

In 2021, export custom duties amounted to USD 442 million due to introduction of temporary Nickel and Copper export custom duties by the Government of the Russian Federation, which were effective from August until December 2021.

## Third-party services

In 2021, cost of third-party services increased 49% (or USD 134 million) to USD 410 million mainly driven by:

- **+USD 121 million** – increase in repairs and mining-related services;
- **+USD 13 million** – price inflation of third-party services.

## Transportation expenses

In 2021, transportation expenses increased 44% (or USD 40 million) to USD 130 million driven by the following factors:

- **–USD 1 million** - positive effect of the Russian rouble depreciation against US dollar;
- **+USD 7 million** – price inflation of expenses;
- **+USD 34 million** – primarily increase in transportation expenses in Norilsk industrial region related to higher volumes of services purchased as part of the program targeting improvement of industrial safety of production facilities.

## Fuel

In 2021, fuel expenses increased 12% (or USD 13 million) to USD 122 million driven by the following factors:

- **–USD 2 million** - positive effect of the Russian rouble depreciation against US dollar;
- **-USD 12 million** – due to the shutdown of smelting and metallurgical workshops at Kola MMC;
- **+USD 33 million** – price inflation of fuel.

## Electricity and heat energy

In 2021, electricity and heat energy expenses decreased 22% (or USD 33 million) to USD 118 million driven by the following:

- **-USD 1 million** - positive effect of the Russian rouble depreciation against US dollar;
- **-USD 35 million** - cost decrease primarily related to the shutdown of smelting and metallurgical workshops at Kola MMC and termination of Nkomati's operations.
- **+USD 3 million** – price inflation of fuel.

## Purchases of raw materials and semi-products

In 2021, purchases of raw materials and semi-products decreased 68% (or USD 203 million) to USD 95 million due to cessation of third-party copper concentrate consumption and termination of Nkomati's operations.

## Sundry costs

In 2021, sundry costs increased 18% (or +USD 34 million) to USD 228 million mostly due to increase in clean-up expenses in Norilsk industrial region and also due to price inflation and growth of security and industrial safety expenses.

## Depreciation and amortisation

In 2021, depreciation and amortisation expenses were unchanged compared to 2020 and amounted to USD 843 million.

## Increase in metal inventories

Comparative effect of change in metal inventory amounted to -USD 429 million resulting in a respective decrease of cost of metal sales primarily due to increase in the cost of work in progress and finished goods following the changes in legislation in 2021 (increase in MET and introduction of temporary export custom duties).

# Cost of other sales

In 2021, cost of other sales increased by USD 189 million to USD 753 million primarily due to increase of air transportation services following the lift of restrictions related to the COVID-19 pandemic and higher oil products sales.

**USD 189 million**
cost of other sales increased

# Selling and distribution expenses

**Selling and distribution expenses** (USD million)

| Index | 2021 | 2020 | Change (%) |
|---|---|---|---|
| Transportation expenses | 81 | 72 | 13% |
| Marketing expenses | 48 | 44 | 9% |
| Staff costs | 19 | 19 | 0% |
| Other | 36 | 32 | 13% |
| Total | 184 | 167 | 10% |

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)

| Index | 2021 | 2020 | Change |
|---|---|---|---|
| Staff costs | 577 | 529 | 9% |
| Third party services | 191 | 142 | 35% |
| Depreciation and amortisation | 83 | 67 | 24% |
| Taxes other than mineral extraction tax and income tax | 76 | 69 | 10% |
| Transportation expenses | 18 | 18 | 0% |
| Other | 44 | 44 | 0% |
| Total | 989 | 869 | 14% |

In 2021, general and administrative expenses increased 14% (or USD 120 million) to USD 989 million. Positive effect of the Russian rouble depreciation amounted to -USD 16 million. Changes of the general and administrative expenses in real terms were primarily driven by the following factors:

- **+USD 58 million** – increase in staff costs, including salaries indexation and one-off payments related to management bonuses.
- **+USD 52 million** – increase of third-party services primarily related to the IT security and consulting services related to the ESG strategy implementation.

Staff costs increased **by 9%** including due to wage indexation

Third party services cost increased **by 35%** due to IT security and ESG strategy implementation

# Other operating expenses

**Other operating expenses, NET** (USD million)

| Index | 2021 | 2020 | Change (%) |
|---|---|---|---|
| Social expenses | 1,031 | 500 | 2x |
| Environmental provisions | 176 | 2,242 | –92% |
| Expenses on industrial incidents response | 69 | – | 100% |
| Change in other provisions | –3 | 24 | n.a |
| Change in provision on production facilities shut down | –3 | –10 | –70% |
| Other, net | 15 | –19 | n.a |
| Total | 1,285 | 2,737 | –53% |

In 2021, other operating expenses, net decreased by USD 1,452 million to USD 1,285 million driven by the following factors:

- **-USD 2,066 million** – primarily due to the high base effect of 2020, when environmental provision related to the liquidation of diesel fuel leak at the industrial site of the Heat and Power Plant № 3 of Norilsk and compensation for environmental damages was recognised;
- **+USD 531 million** – increase in social expenses provisions related to agreements on socio-economic development of Norilsk and Krasnoyarsk region;
- **+USD 69 million** - expenses on industrial incidents response in 2021.

# Finance costs

**Finance costs, NET** (USD million)

| Index | 2021 | 2020 | Change (%) |
|---|---|---|---|
| Interest expense, net of amounts capitalised | 225 | 364 | –38% |
| Changes in fair value of other non-current and other current liabilities | 66 | 262 | –75% |
| Unwinding of discount on provisions and payables | 59 | 61 | –3% |
| Interest expense on lease liabilities | 15 | 12 | 25% |
| Fair value (gain)/loss on the cross-currency interest rate swap contracts | –68 | 182 | n.a |
| Other, net | –18 | –2 | 9x |
| Total | 279 | 879 | –68% |

In 2021, finance costs, net declined 68% y-o-y to USD 279 million primarily driven by the following factors:

- **–USD 250 million** – income from a change in the fair value of cross-currency interest rate swaps in 2021, primarily due to the expiration of several instruments with final settlements falling into the period of temporary appreciation of the Russian ruble against the US dollar compared to the exchange rate at the beginning of 2021, compared to the loss from a change in the fair value in 2020.
- **–USD 196 million** –comparative effect of change in the fair value of put option in relation to transactions with the owners of non-controlling interests of Bystrinsky GOK, which expired on 31.12.2021.
- **–USD 139 million** – a 38% decrease in the interest expense, net of amounts capitalized, due to the effective debt portfolio management despite a 6% increase of the gross debt (proactive refinancing of some liabilities on more competitive terms), which, in turn, was achieved due to the following activities:

- full redemption of a USD 1 billion Eurobond bearing a coupon rate of 5.55% per annum in October 2020 and full early repayment of a RUB 60 billion term loan with an interest rate of 8.3% per annum in November 2020;
- full early repayment of RUB 15 billion exchange-traded ruble bonds bearing a coupon rate of 11.6% per annum in February 2021 (on the date of the early redemption at the discretion of the issuer stipulated in the issuance documentation);
- in September 2020 and in October 2021 the Company successfully priced two five-year Eurobond issues in the amount of USD 500 million each with a coupon rate of 2.55% and 2.80%, respectively;
- in 2021, a number of maturing bilateral facilities totaling US$725mm were successfully refinanced at similar or better pricing terms.

# Income tax expense

In 2021, income tax expense increased by USD 1 366 million driven mostly by the increase of profit before tax.

The effective income tax rate in 2021 of 24.9% was above the Russian statutory tax rate of 20%, which was primarily driven by the income tax provision related to the compensation of environmental damages as well as recognition of non-deductible social expenses.

**The breakdown of the income tax expense** (USD million)

| Index | 2021 | 2020 | Change |
|---|---|---|---|
| Current income tax expense | 1,695 | 1,685 | 1% |
| Deferred tax expense/(benefit) | 616 | –740 | n.a. |
| Total income tax expense | 2,311 | 945 | 2x |

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

| Index | 2021 | 2020 | Change (%) |
|---|---|---|---|
| Russian Federation | 1,668 | 1,648 | 1% |
| Finland | 5 | 11 | –55% |
| Rest of the world | 22 | 26 | –15% |
| Total | 1,695 | 1,685 | 1% |

# EBITDA

**EBITDA** (USD million)

| Index | 2021 | 2020 | Change (%) |
|---|---|---|---|
| **Operating profit** | 9,536 | 6,400 | 49% |
| Depreciation and amortisation | 928 | 943 | –2% |
| Impairment of non-financial assets, net | 48 | 308 | –84% |
| **EBITDA** | **10,512** | **7,651** | **37%** |
| **EBITDA margin** | **59%** | **49%** | **10 п. п.** |

In 2021, EBITDA increased 37% (or +USD 2,861 million) to a USD 10,512 million primarily due to higher revenue.

# Statement of cash flows

**Statement of cash flows** (USD million)

| Index | 2021 | 2020 | Change |
|---|---|---|---|
| **Cash generated from operations before changes in working capital and income tax** | **11,479** | **10,254** | **12%** |
| Movements in working capital | –2,226 | –662 | 3x |
| Income tax paid | –2,211 | –1,304 | 70% |
| **Net cash generated from operating activities** | **7,042** | **8,288** | **–15%** |
| Capital expenditure | –2,764 | –1,760 | 57% |
| Other investing activities | 126 | 112 | 13% |
| **Net cash used in investing activities** | **–2,638** | **–1,648** | **60%** |
| **Free cash flow** | **4,404** | **6,640** | **–34%** |
| Interest paid | –315 | –510 | –38% |
| Other financing activities | –3,732 | –3,822 | –2% |
| **Net cash used in financing activities** | **–4,047** | **–4,332** | **–7%** |
| Effects of foreign exchange differences on balances of cash and cash equivalents | –1 | 99 | n.a. |
| **Net increase in cash and cash equivalents** | **356** | **2,407** | **–85%** |

In 2021, free cash flow decreased 34% to USD 4.4 billion following the decrease of cash generated from operating activities and increase in cash used in investing activities.

In 2021, net cash generated from operating activities decreased 15% to USD 7.0 billion. Settlement of environmental obligations and increase in income tax payments were partly positively offset by higher metal revenue.

In 2021, net cash used in investing activities increased 60% to USD 2.6 billion primarily driven by a 57% capital expenditures increase to USD 2.8 billion.

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

| Index | 2021 | 2020 |
|---|---|---|
| **Change of the net working capital in the balance sheet** | **–557** | **273** |
| Foreign exchange differences | 15 | –290 |
| Change in income tax payable | 524 | –359 |
| Change of long term components of working capital included in CFS | –56 | –95 |
| Provisions | –2,145 | –186 |
| Other changes | –7 | –5 |
| **Change of working capital per cash flow** | **–2,226** | **–662** |

**Capital investments breakdown by project** (USD million)

| Index | 2021 | 2020 | Change (%) |
|---|---|---|---|
| Polar Division, including: | 843 | 665 | 27% |
| Skalisty mine | 95 | 109 | –13% |
| Taymirsky mine | 38 | 97 | –61% |
| Komsomolsky mine | 32 | 51 | –37% |
| Oktyabrsky mine | 10 | 16 | –38% |
| Talnakh Concentrator | 167 | 38 | 4x |
| Other Polar Division project | 501 | 354 | 42% |
| Kola MMC | 205 | 155 | 32% |
| Sulfur project | 526 | 154 | 3x |
| South cluster | 304 | 114 | 3x |
| Energy and gas infrastructure modernization | 316 | 219 | 44% |
| Chita (Bystrinsky) project | 62 | 98 | –37% |
| Other production projects | 490 | 344 | 42% |
| Other non-production assets | 18 | 11 | 64% |
| Total | 2,764 | 1,760 | 57% |

In 2021, CAPEX increased 57% (or USD 1,004 million) to a record USD 2,764 million driven by growth of investments in key strategic projects. Sulfur Programme that entered its active phase recorded over USD 500 million of CAPEX, while investments in South Cluster and Talnakh Concentrator expansion increased 3- and 4-fold, respectively. Expenditures on capital repairs, improvement of industrial safety and modernization of core assets were up more than 40% exceeding USD 800 million.

# Debt and liquidity management

**Debt and liquidity** (USD million)

| Index | As of 31 December 2021 | As of 31 December 2020 | Change | |
|---|---|---|---|---|
| | | | USD million | % |
| Non-current loans and borrowings | 8,616 | 9,622 | –1,006 | –10% |
| Current loans and borrowings | 1,610 | 12 | 1,598 | 100% |
| Lease liabilities | 235 | 262 | –27 | –10% |
| **Total debt** | **10,461** | **9,896** | **565** | **6%** |
| Cash and cash equivalents | 5,547 | 5,191 | 356 | 7% |
| **Net debt** | **4,914** | **4,705** | **209** | **4%** |
| Net debt /12M EBITDA | 0.5x | 0.6x | –0.1x | |

As of December 31, 2021, the Company's total debt increased 6% compared to December 31, 2020 and amounted to USD 10,461 million. The increase was primary driven by the new US$500mm five-year Eurobond successfully priced in October 2021 with the purpose to increase the available liquidity cushion for the scheduled 2022 debt repayments. Current loans and borrowings as of December 31, 2021 increased by USD 1,598 million as compared to December 31, 2020, primarily due to the two Eurobonds totaling USD 1,500 million maturing in April and October 2022 becoming a short-term liability as of December 31, 2021. Current loans and borrowings are fully covered by the balance sheet liquidity and available limits under committed credit lines.

The Company's Net debt as of December 31, 2021 increased 4% compared to December 31, 2020 due to the increase in total debt.

Despite the Net debt increase, Net debt / 12M EBITDA as at the end of 2021 decreased by 0.1x compared to December 31, 2020 and amounted to 0.5x.

As of December 31, 2021, the Company was assigned investment grade credit ratings from all three international rating agencies Fitch, Moody's and S&P Global, and Russian rating agency "Expert RA".