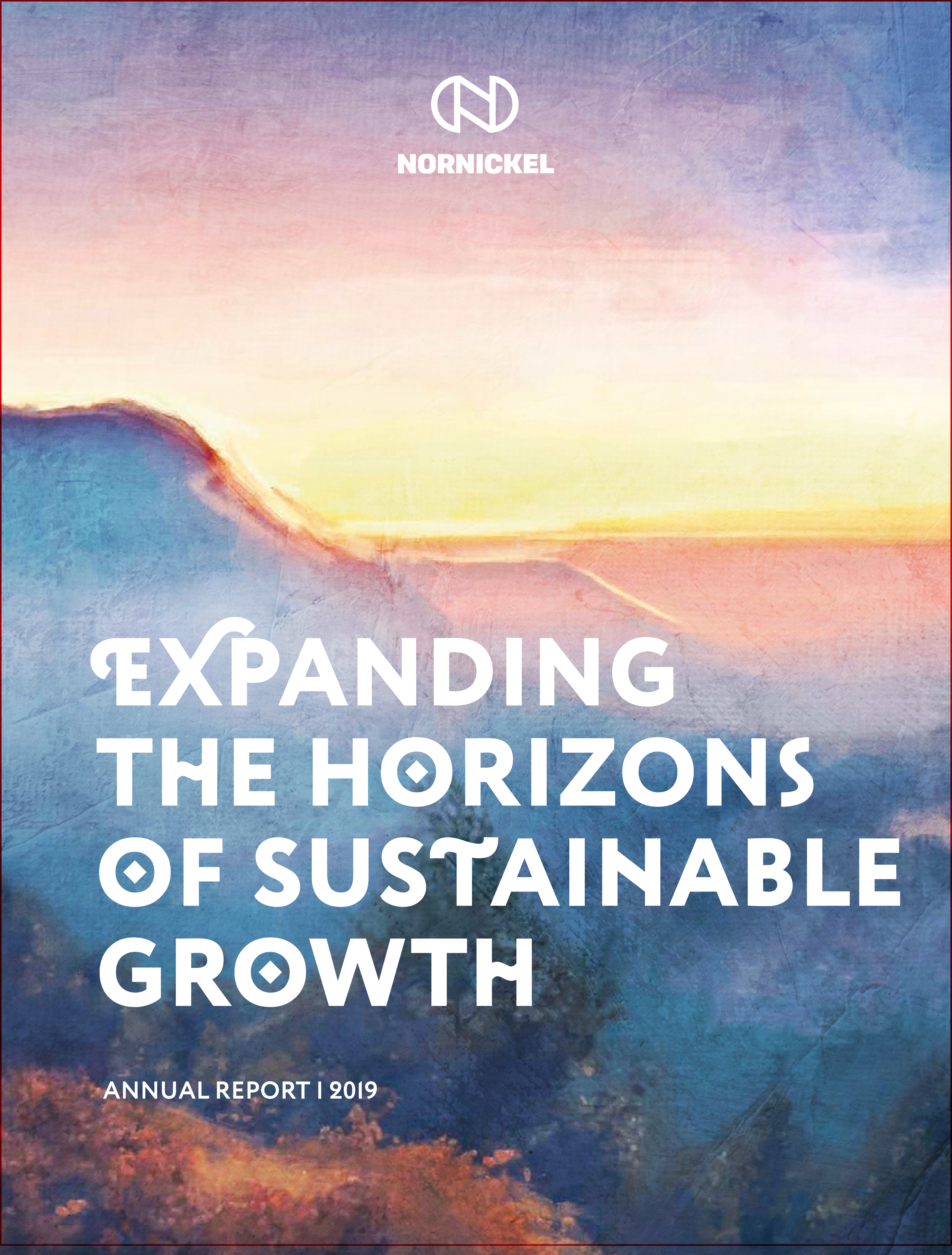


NORNICKEL

EXPANDING THE HORIZONS OF SUSTAINABLE GROWTH

ANNUAL REPORT | 2019

ANNUAL REPORT 2019

MMC NORILSK NICKEL

REPORTING PERIOD
FROM 1 JANUARY 2019 TO 31 DECEMBER 2019

The 2019 annual report of PJSC "MMC "Norilsk Nickel" incorporates the results of MMC Norilsk Nickel and other operations of the Norilsk Nickel Group (MMC Norilsk Nickel, Nornickel, the Company, Group). The Group's interests in the entities are shown as stakes in their authorised capital (direct shareholding), except for GRK Bystrinkoye, for which the Group's effective shareholding is shown.

APPROVED

by the Board of Directors
of MMC Norilsk Nickel
Minutes No. GMK/10-pr-bd of 7 April 2020

ACCURACY OF INFORMATION CONFIRMED

by the Audit Commission
of MMC Norilsk Nickel
Opinion of 7 April 2020

APPROVED

by the Annual General Meeting of Shareholders
of MMC Norilsk Nickel (minutes No. 1 of 13 May 2020)

Vladimir POTANIN
President,
Chairman of the Management Board
MMC NORILSK NICKEL

Sergey MALYSHEV
Senior Vice President –
Chief Financial Officer
MMC NORILSK NICKEL

We are pleased to present to you the 2019 Annual Report of MMC Norilsk Nickel. The key theme of this report is Sustainable Development Strategy. This strategy unveils the management's long-term vision for the development of Nornickel's unique resource base and operational efficiency improvements, both of which will be backed by the rollout of our ambitious comprehensive environmental programme. This "ecological growth" strategy not only lays out long-term ore production and capital investment targets but also sets out concrete action plans aiming at the reduction of the Company's environmental footprint in the regions of its operations. Furthermore, the Company believes firmly that it is well positioned to be the key facilitator in meeting some of the world's major challenges such as transport electrification and reduction of pollution. This Annual Report has been prepared by the Company's Investor Relations Department in line with best practices in information disclosure and in accordance with the requirements of Bank of Russia's Regulation No. 454-P from 30 December 2014.

Vladimir ZHUKOV
Vice President for Investor Relations
MMC NORILSK NICKEL

CONTENT

The interactive version of the 2019 Annual report

Company

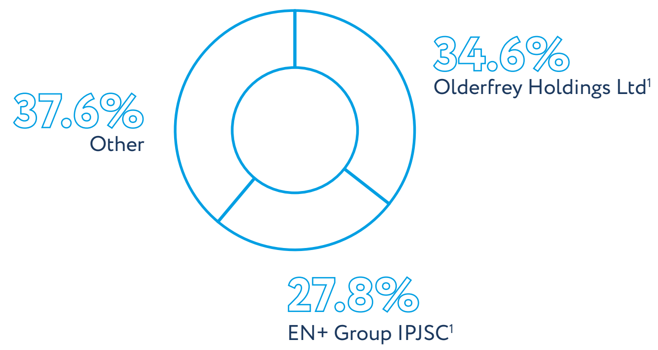
Overview

COMPANY PROFILE

The Norilsk Nickel Group (the Group, Nornickel, or the Company) includes MMC Norilsk Nickel (parent) and its subsidiaries.

Nornickel is Russia's leading metals and mining company, the largest palladium and high-grade nickel producer in the world, and a major producer of platinum and copper. Nornickel also produces cobalt, rhodium, silver, gold, iridium, ruthenium, selenium, tellurium, and sulphur.

Shareholding structure as of 31 December 2019



[1] Indirect ownership via controlled entities.

0.28%
Nornickel share in the index of MSCI Emerging Markets as of the end of 2019

7.2%
Nornickel share in the index of MSCI Russia as of the end of 2019

Nornickel's shares are listed on the Moscow Exchange and are included in its Blue Chip Index.

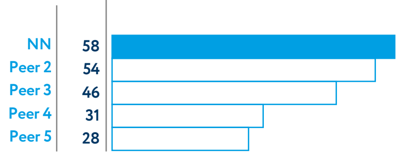
Its American Depositary Receipts (ADRs) are traded on the US OTC market, as well as on the OTC markets of the London, Berlin, and Frankfurt stock exchanges.

INDUSTRY RANKING

Nornickel's share of the global metals market[2]

#1	Pd	Palladium	(41%)
#1	Ni	High-grade nickel	(24%)
#4	Pt	Platinum	(11%)
#4	Rh	Rhodium	(9%)
#8	Co	Cobalt	(3%)
#11	Cu	Copper	(2%)

Global industry leadership by 2019 EBITDA margin[3]
%



[2] Based on refined metal (including tolling) output for palladium, nickel, platinum, and rhodium and based on contained metal production for copper and cobalt.

[3] The peer group includes Anglo American, BHP, Glencore, Rio Tinto, and Vale.

For more details on industry ranking, please see **p. 42**

THE GROUP'S ASSETS

IN RUSSIA

Polar Division

Medvezhy Ruchey
(100% stake)

Kola MMC
(100% stake)

GRK Bystrinskoye
(50.01% stake)

IN FINLAND

A nickel refinery facility Norilsk Nickel Harjavalta
(100% stake)

IN SOUTH AFRICA

The Group owns 50% of Nkomati, which operates a nickel mine of the same name

Nornickel operations focuses on the exploration, mining and processing of minerals, as well as the production and sale of base and precious metals.

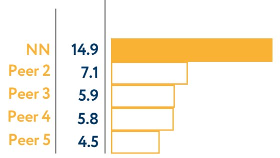
For more details on assets, please see **p. 94-101,** with the structure of core assets available on **p. 320**

COMPETITIVE ADVANTAGES

10
mines

>80
years
of resources at the current production rate

Dividend yield in 2019[4]
%



[4] Recommended dividend to average ADR/share price (Bloomberg) for the reporting year. The peer group includes Anglo American, BHP, Glencore and Rio Tinto

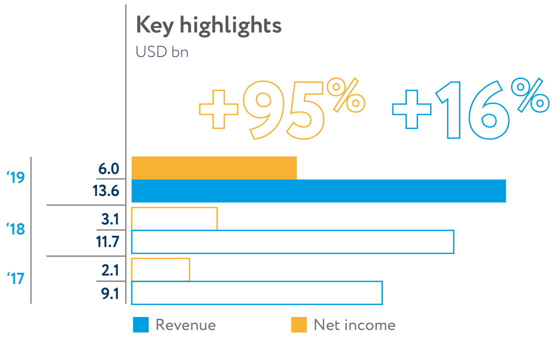
Nornickel boasts a world-class resource base with unrivalled exposure to valuable minerals and extremely rich in core metals such as nickel, copper, and Platinum Group Metals (PGMs).

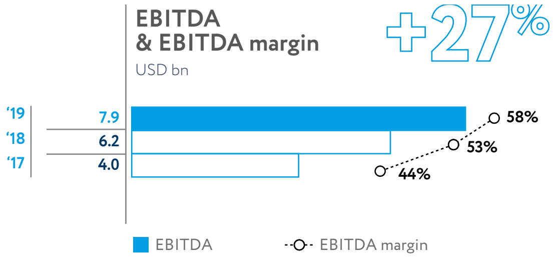
PROVEN AND PROBABLE RESERVES	MEASURED AND INDICATED RESOURCES
757 mln t	2,193 mln t
Ni 6.7 mln t	Ni 15.2 mln t
Cu 11.9 mln t	Cu 23.2 mln t
PGMs 120 moz	PGMs 260 moz

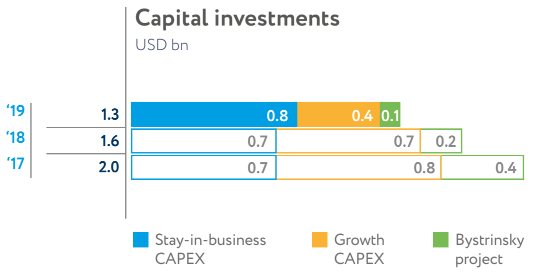
For more details about our mineral resource base, please see **p. 64**

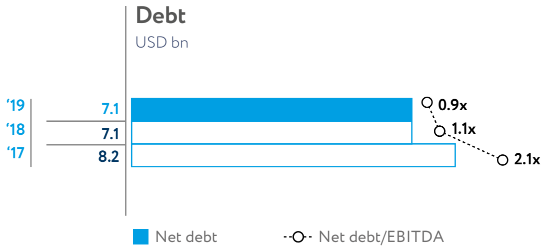
PERFORMANCE HIGHLIGHTS

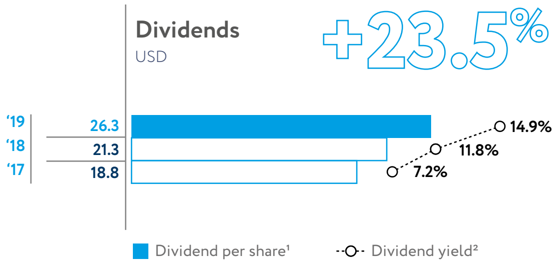
FINANCIAL HIGHLIGHTS


Key highlights
USD bn


EBITDA & EBITDA margin
USD bn


Capital investments
USD bn


Debt
USD bn


Dividends
USD

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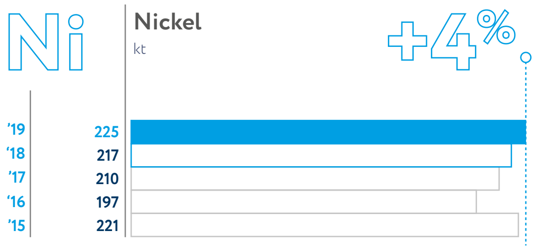
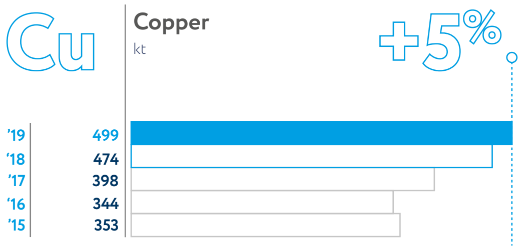
[1] Dividends paid in the calendar year.

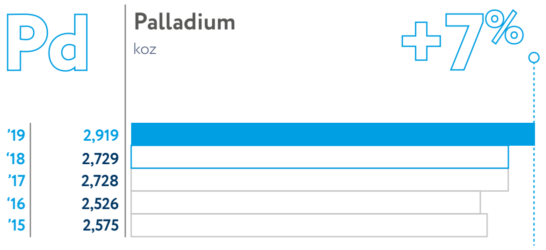
[2] Recommended dividend to average ADR price (Bloomberg) for the calendar year.

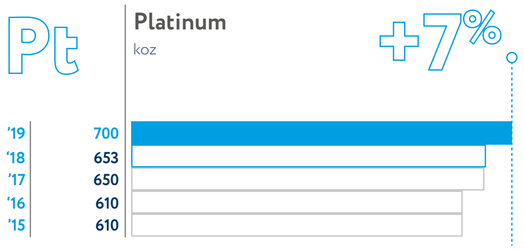
OPERATING HIGHLIGHTS

(from own feedstock)


Nickel
kt


Copper
kt

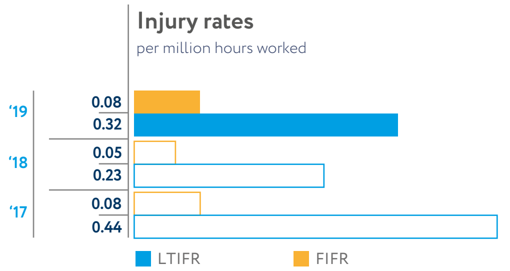

Palladium
koz

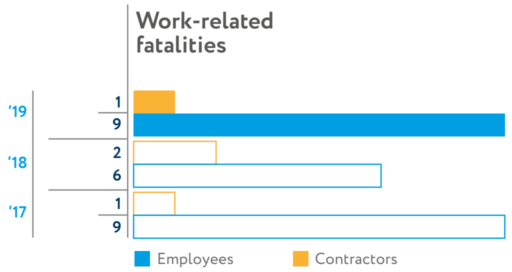

Platinum
koz

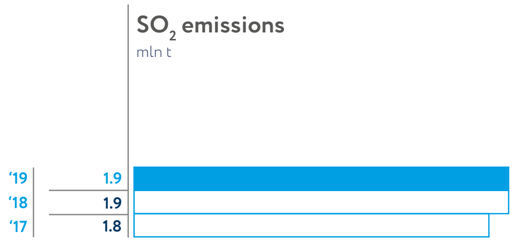
For more details on financial highlights, please see **p. 108**

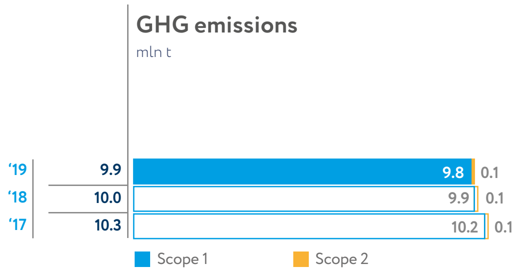

A production outlook is available in the 2019 strategy update presentation (page 27)

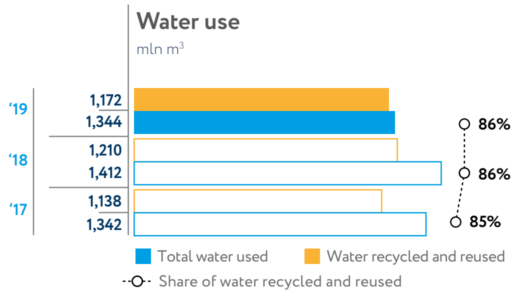
SUSTAINABILITY HIGHLIGHTS

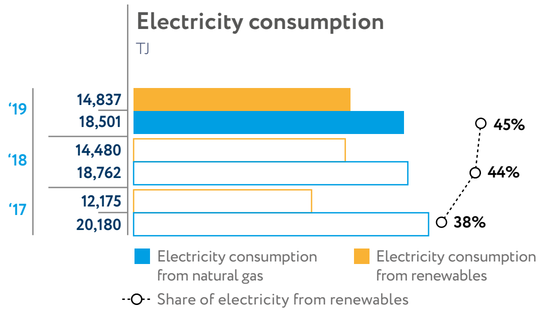

Injury rates
per million hours worked


Work-related fatalities


SO_2 emissions
mln t


GHG emissions
mln t


Water use
mln m^3


Electricity consumption
TJ

ESG PERFORMANCE

Since 2016
SIGNATORY TO THE UN GLOBAL COMPACT SINCE 2016

«B»
MSCI
RATED B, UPDATED IN DECEMBER 2019

3.0/5.0
FTSE4Good
CONSTITUENT OF THE FTSE4GOOD EMERGING INDEX SCORE OF 3.0 OUT OF 5.0 UPDATED IN JUNE 2019

37 ↑27
ROBECOSAM
SCORE OF 37 IN 2019 (UPGRADED FROM 27)

67/100
SUSTAINALYTICS
RATED AVERAGE PERFORMER, SCORE OF 67 OUT OF 100, UPDATED IN 2019

ISS
4 GOVERNANCE SCORE
2 ENVIRONMENTAL SCORE
2 SOCIAL SCORE
UPDATED IN OCTOBER 2019
(1 is low risk, and 10 is high risk)

KEY 2019 EVENTS

FOR THE REPORTING 2019 YEAR

January

Moody's upgraded Nornickel's credit rating to "Baa2", investment grade, and changed the outlook from "Stable" to "Positive". As a result, Nornickel was assigned investment-grade credit ratings by all three major international rating agencies, including S&P Global and Fitch.

Baa2

April

Nornickel won the gold award in the Business Transformation Category at SAP Quality Awards 2019 in the CIS region for its project to roll out SAP ERP across its operations in the Norilsk Industrial District. This is Nornickel's largest business automation project and one of SAP's largest Russian projects in terms of organisational and functional scope.

March

Nornickel took final investment decisions for two attractive growth projects – expansion and retrofit of the 3rd stage of Talnakh Concentrator and the South Cluster development. The two projects' combined CAPEX (for 2019-2022) is estimated at around RUB 90 bn (approximately USD 1.4 bn).

As Krasnoyarsk hosted the 2019 Winter Universiade, Nornickel supported this major international sporting event, acting as its general partner. Nornickel's contribution to the success of the student games was highly praised by international sports federations, participating countries, the local organising committee, and Russia's leadership while also earning the Company a number of prestigious awards.

investment decisions for two attractive growth projects

1.4

USD bn

June

The General Meeting of Shareholders refreshed the Board of Directors, with a majority of the Board comprised of independent directors for the first time in Nornickel's history.

September

Bystrinsky GOK was commissioned. The GRK Bystrinskoye's EBITDA for 1H 2019 was USD 160 mln, for FY 2019 – USD 349 mln.

October

Nornickel successfully completed a USD 750 mln Eurobond issue, maturing in 2024 and achieving the lowest coupon on record for this type of debt at 3.375% p.a.

Eurobond issue

750

USD mln

November

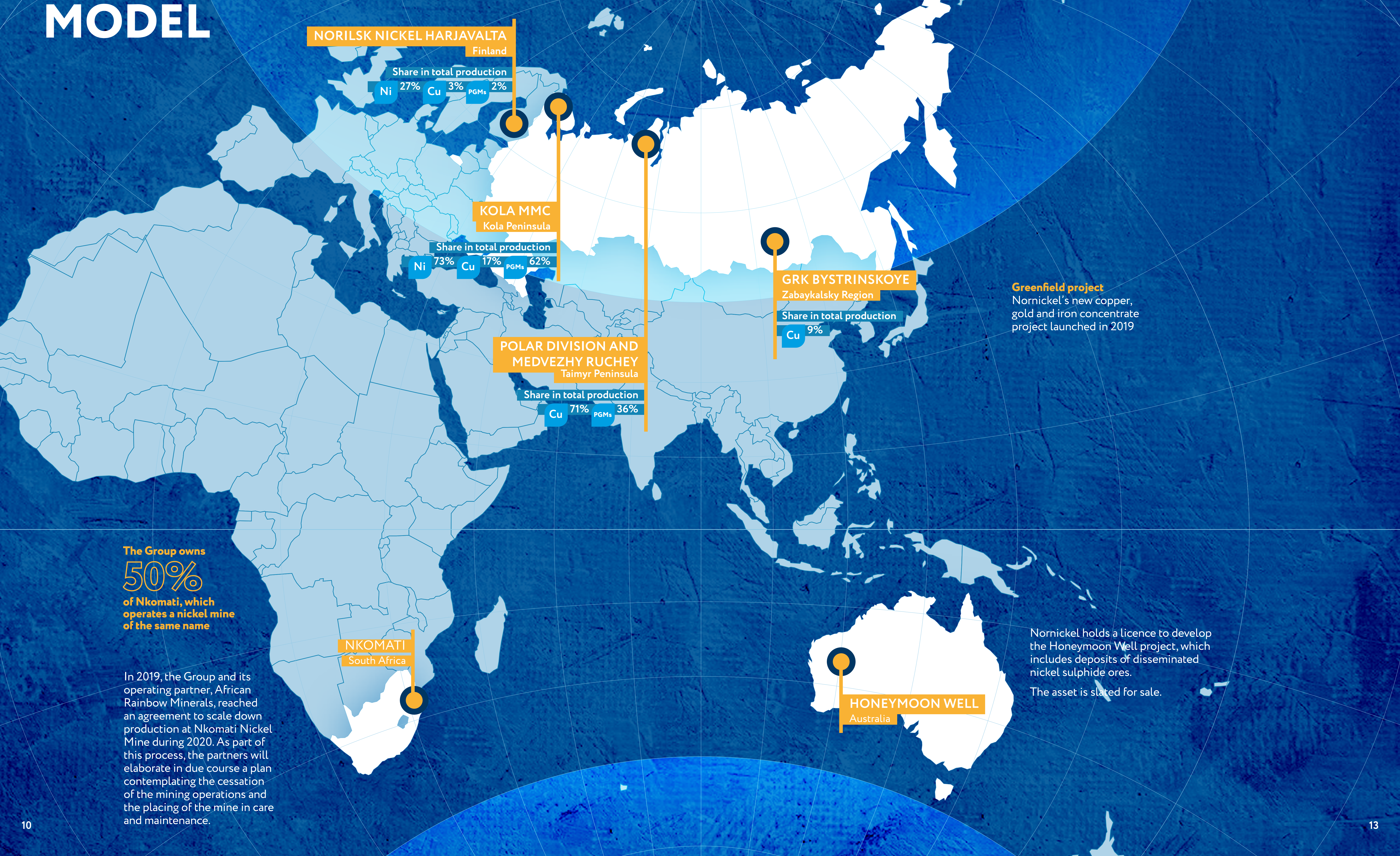
Nornickel was ranked No. 1 in the Top 50 Most Attractive Employers ranking published by Forbes Russia.

Nornickel's Corporate Integrated Quality and Environmental Management System (CIMS) successfully passed its second surveillance audit for compliance with ISO 9001:2015 and ISO 14001:2015.

At Nornickel's annual Capital Markets Day in London, the Group's senior management unveiled Nornickel's 10-year strategic vision and a new comprehensive environmental programme.

BUSINESS MODEL

GLOBAL ASSET MAP



The Group owns

50%

of Nkomati, which operates a nickel mine of the same name

In 2019, the Group and its operating partner, African Rainbow Minerals, reached an agreement to scale down production at Nkomati Nickel Mine during 2020. As part of this process, the partners will elaborate in due course a plan contemplating the cessation of the mining operations and the placing of the mine in care and maintenance.

Greenfield project

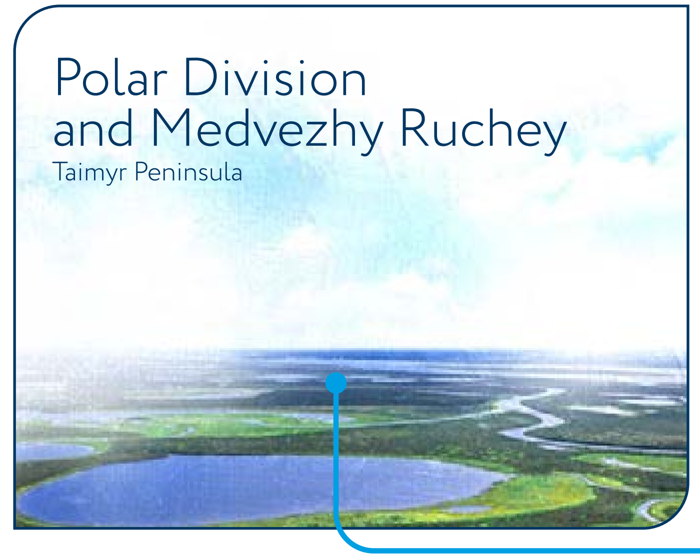
Nornickel's new copper, gold and iron concentrate project launched in 2019

Nornickel holds a licence to develop the Honeymoon Well project, which includes deposits of disseminated nickel sulphide ores.

The asset is slated for sale.

WHERE WE OPERATE

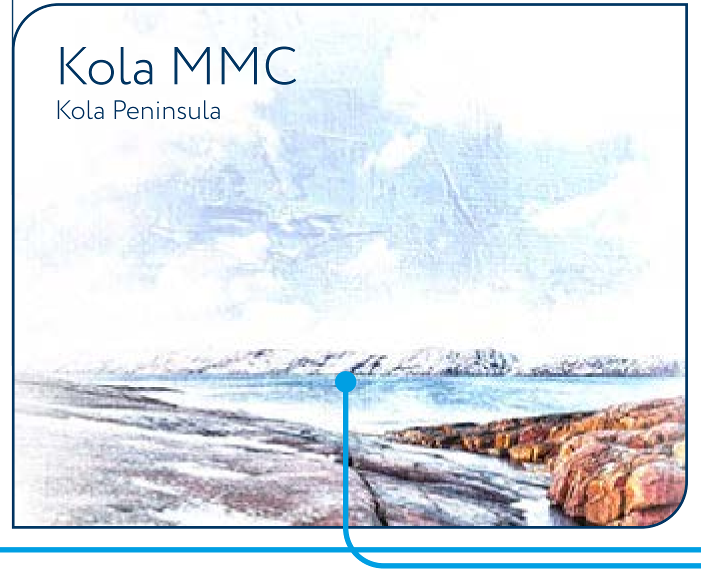
Proven and probable reserves
673
mln t



Polar Division and Medvezhy Ruchey
Taimyr Peninsula

Ore output:
26 Mtpa
Reserve life:
30 years

Proven and probable reserves
85
mln t



Kola MMC
Kola Peninsula

Norilsk Nickel Harjavalta
Finland

Ore output:
10 Mtpa

Proven and probable reserves
316
mln t[1]

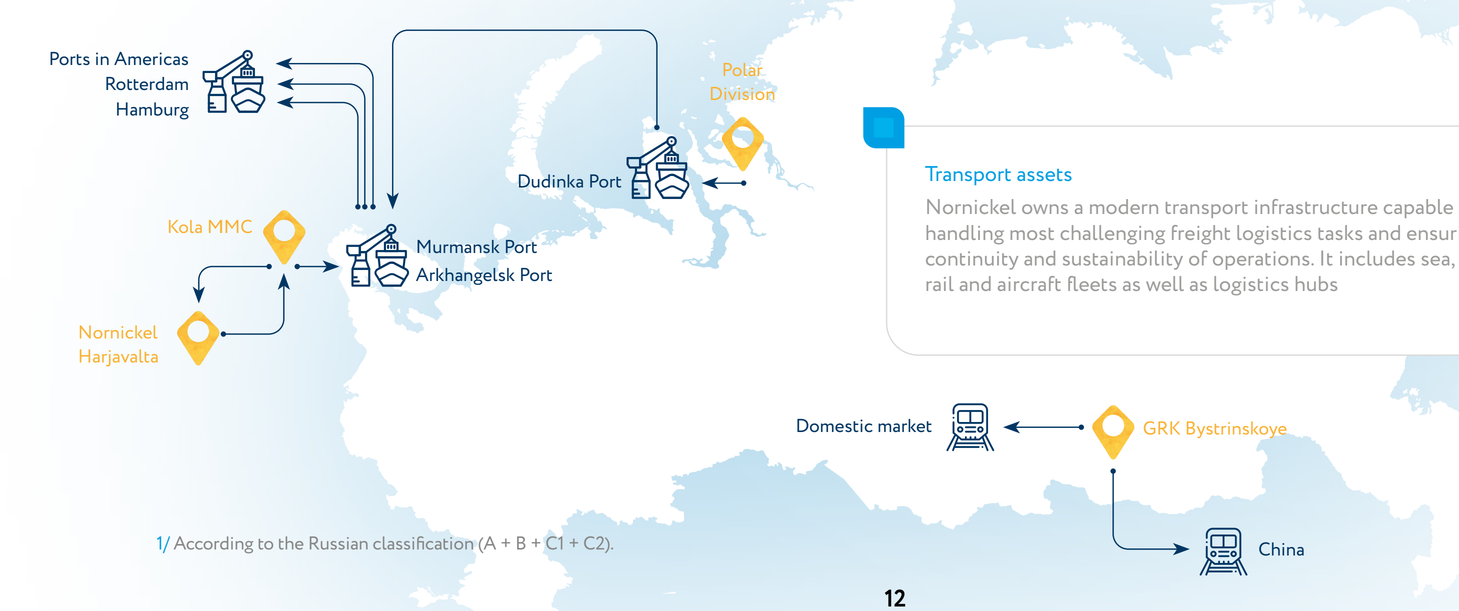
GRK Bystrinskoye
Zabaykalsky Region

Sales

In 2019, Nornickel maintained its long-standing reputation as a reliable supplier of high-quality products, shipping products to 37 countries and products registered for delivery against contracts at the London Metal Exchange and the Shanghai Futures Exchange.

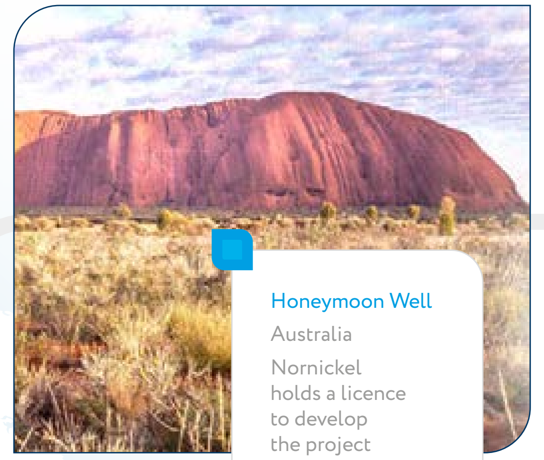
Sales network:

- **Metal Trade Overseas A.G.** Switzerland, Zug
- **Norilsk Nickel Asia Ltd.** China, Hong Kong
- **Norilsk Nickel Metals Trading (Shanghai) Co., Ltd.** China, Shanghai
- **Norilsk Nickel USA** USA, Pittsburgh

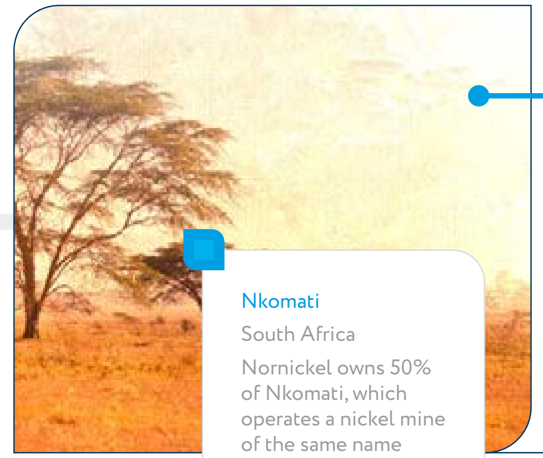


Transport assets

Nornickel owns a modern transport infrastructure capable of handling most challenging freight logistics tasks and ensuring continuity and sustainability of operations. It includes sea, river, rail and aircraft fleets as well as logistics hubs



Honeymoon Well
Australia
Nornickel holds a licence to develop the project



Nkomati
South Africa
Nornickel owns 50% of Nkomati, which operates a nickel mine of the same name

International assets

OTHER MINING ASSETS

OTHER NON-METALLURGICAL ASSETS

Proven and probable reserves
8
mln t

Energy assets

Nornickel owns an integrated network of energy assets, comprising four gas fields, three thermal power plants, and two hydropower plants as well as gas pipelines and power lines, all located within the Norilsk Industrial District

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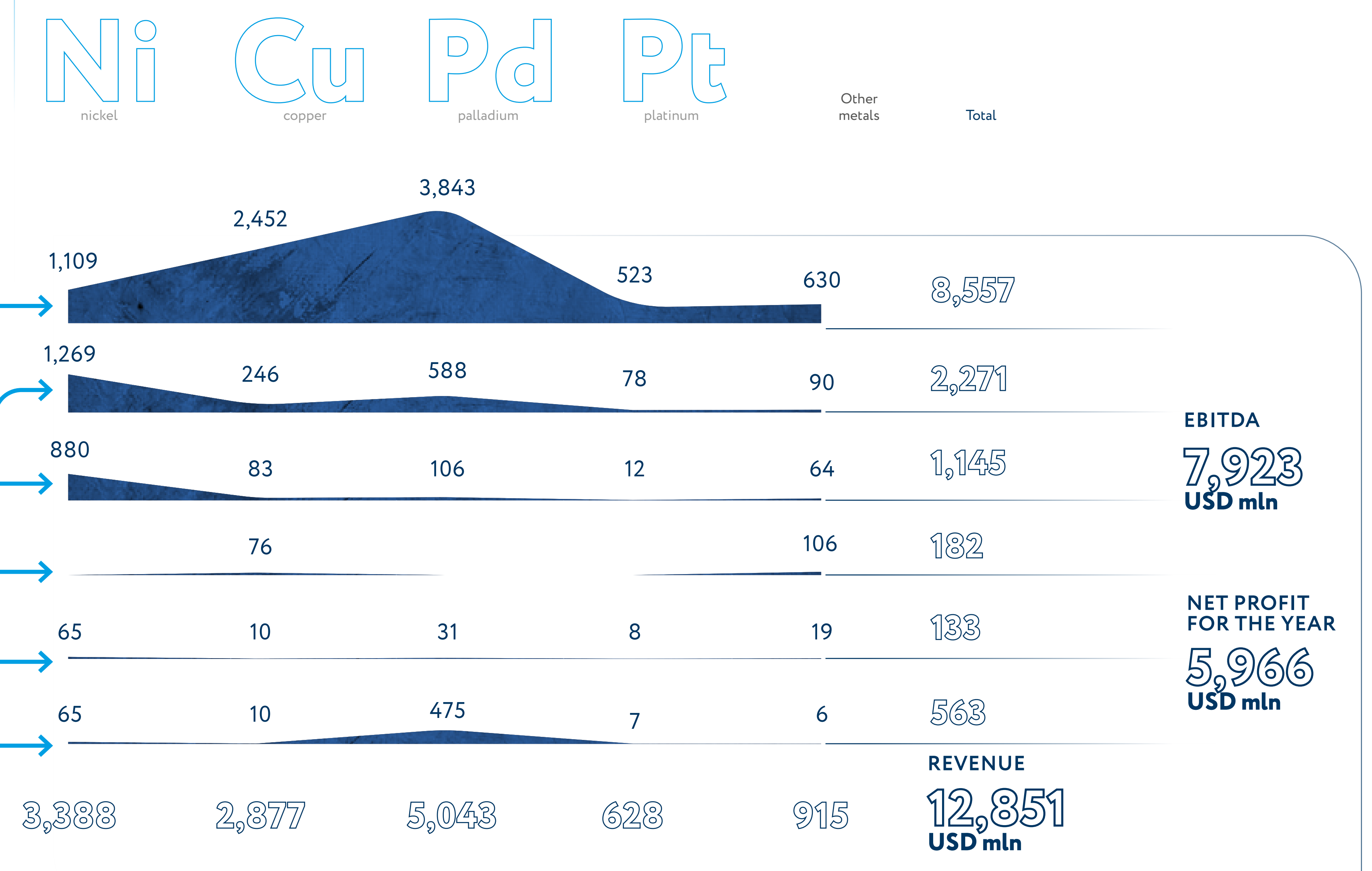
[1] According to the Russian classification (A + B + C1 + C2).

WHAT WE DO

REVENUE FROM METAL SALES, USD MLN

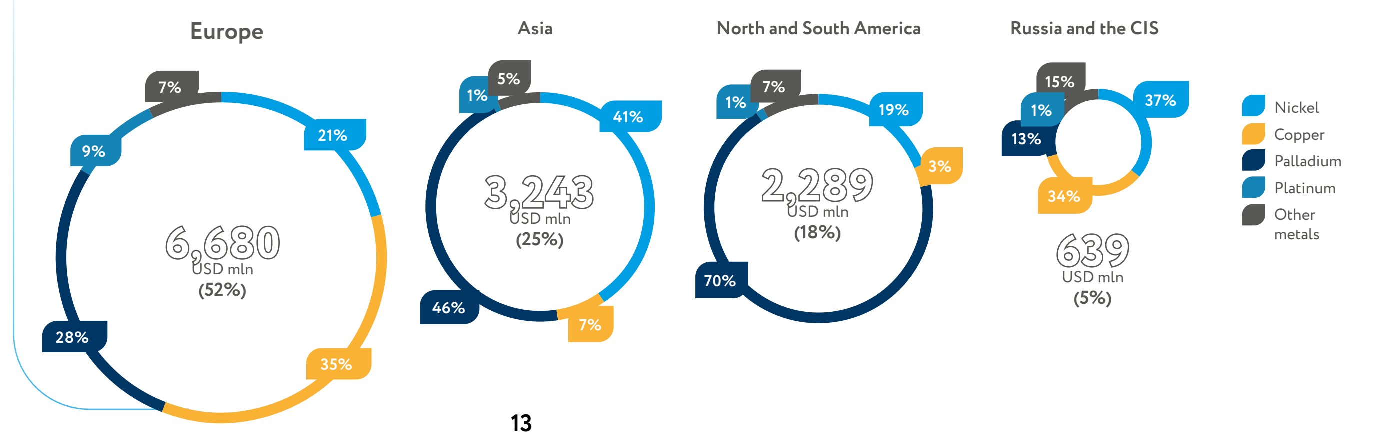


Ni nickel	Cu copper	Pd palladium	Pt platinum	Other metals	Total
1,109	2,452	3,843	523	630	8,557
1,269	246	588	78	90	2,271
880	83	106	12	64	1,145
	76			106	182
65	10	31	8	19	133
65	10	475	7	6	563
3,388	2,877	5,043	628	915	REVENUE 12,851 USD mln

EBITDA
7,923
USD mln

NET PROFIT FOR THE YEAR
5,966
USD mln

GROUP REVENUE FROM METAL SALES TO END USERS



Global Palladium Fund L.P.

Financial platform to engage major holders of existing palladium stockpiles and boost industrial demand for palladium

VALUE CREATION FOR STAKEHOLDERS

SHAREHOLDER RETURNS

Dividends paid in 2019
4.1
USD bn

Dividend yield in 2019
14.9%

SOCIAL PERFORMANCE

LTIFR in 2019
0.32

Average monthly pay
2,000
USD

Tax payments
3
USD thousand

Social investments
278
USD mln

ENVIRONMENTAL PERFORMANCE

GHG emissions (Scope 1 + 2)
9.9
mln t

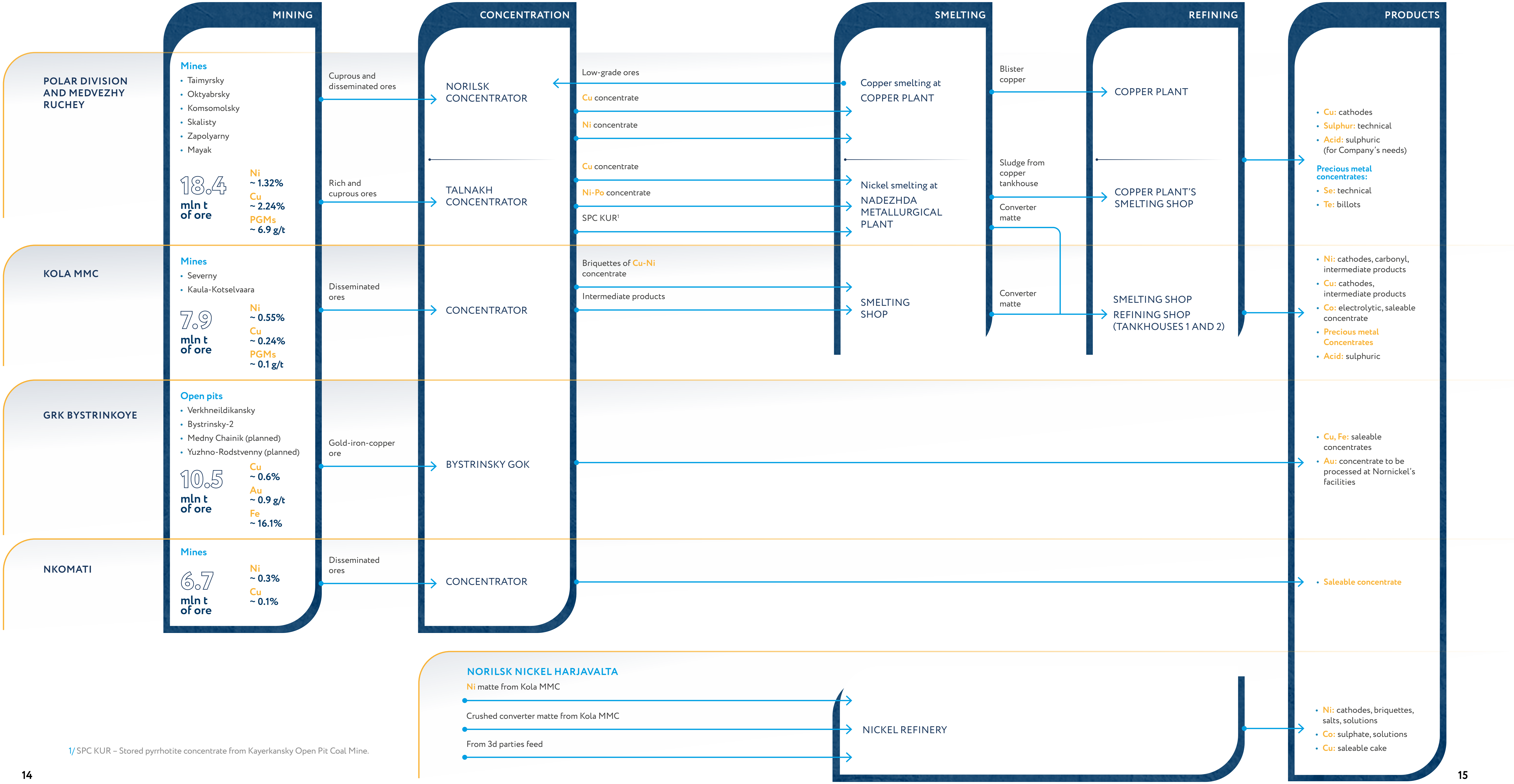
Percentage of reused and recycled water
87%

Share of renewables
45%

Percentage of non-hazardous waste
96%

PRODUCTION FLOW

FOR THE REPORTING 2019 YEAR



MINING

CONCENTRATION

SMELTING

REFINING

PRODUCTS

POLAR DIVISION AND MEDVEZHY RUCHEY

Mines
- Taimyrsky
- Oktyabrsky
- Komsomolsky
- Skalisty
- Zapolyarny
- Mayak

18.4 mln t of ore

Ni ~ 1.32%
Cu ~ 2.24%
PGMs ~ 6.9 g/t

Cuprous and disseminated ores

NORILSK CONCENTRATOR

Rich and cuprous ores

TALNAKH CONCENTRATOR

Low-grade ores

Cu concentrate

Ni concentrate

Cu concentrate

Ni-Po concentrate

SPC KUR[1]

Copper smelting at COPPER PLANT

Nickel smelting at NADEZHDA METALLURGICAL PLANT

Blister copper

Sludge from copper tankhouse

Converter matte

COPPER PLANT

COPPER PLANT'S SMELTING SHOP

- Cu: cathodes
- Sulphur: technical
- Acid: sulphuric (for Company's needs)

Precious metal concentrates:
- Se: technical
- Te: billots

KOLA MMC

Mines
- Severny
- Kaula-Kotselvaara

7.9 mln t of ore

Ni ~ 0.55%
Cu ~ 0.24%
PGMs ~ 0.1 g/t

Disseminated ores

CONCENTRATOR

Briquettes of Cu-Ni concentrate

Intermediate products

SMELTING SHOP

Converter matte

SMELTING SHOP
REFINING SHOP (TANKHOUSES 1 AND 2)

- Ni: cathodes, carbonyl, intermediate products
- Cu: cathodes, intermediate products
- Co: electrolytic, saleable concentrate
- Precious metal Concentrates
- Acid: sulphuric

GRK BYSTRINKOYE

Open pits
- Verkhneildikansky
- Bystrinsky-2
- Medny Chainik (planned)
- Yuzhno-Rodstvenny (planned)

10.5 mln t of ore

Cu ~ 0.6%
Au ~ 0.9 g/t
Fe ~ 16.1%

Gold-iron-copper ore

BYSTRINSKY GOK

- Cu, Fe: saleable concentrates
- Au: concentrate to be processed at Nornickel's facilities

NKOMATI

Mines

6.7 mln t of ore

Ni ~ 0.3%
Cu ~ 0.1%

Disseminated ores

CONCENTRATOR

- Saleable concentrate

NORILSK NICKEL HARJAVALTA

Ni matte from Kola MMC

Crushed converter matte from Kola MMC

From 3d parties feed

NICKEL REFINERY

- Ni: cathodes, briquettes, salts, solutions
- Co: sulphate, solutions
- Cu: saleable cake

1/ SPC KUR – Stored pyrrhotite concentrate from Kayerkansky Open Pit Coal Mine.

Strategic Report

CHAIRMAN'S LETTER

STRATEGY OF SUSTAINABLE DEVELOPMENT

DEAR SHAREHOLDERS,

In 2019, once again, we delivered a strong financial performance that was reflected in the dynamics of our market capitalisation and total shareholder returns.

Higher metal prices combined with relentless work to improve the performance and competitiveness of our businesses, contributed to a sharp increase in EBITDA to almost USD 8 bn, the highest level in the last 12 years. We increased production of our key metals and over delivered on all financial targets set in our most recent efficiency program, with unit cost declining 5% year-on-year. These outstanding results allowed us continue to generate healthy cash flow and pay industry-leading dividends, while maintaining net leverage at a conservative level.

Since 2013 we have been consistent in delivery on our promises to the investment community and in achieving our strategic goals, proving that the Company's outstanding performance is not just a 'flash in a pan', but is driven by a deeply sustainable business model.

The most exciting thing about Nornickel, however, is not the past, but the future. Having one of the best resource bases in the world, it is natural to look for longer term opportunities and to ask what the business is going to look like in 2030. We believe that we can make further advances by unlocking the unique value potential of our Company. We have materially improved our knowledge of the resource base and progressed well with the preparation of key mining projects for their execution. Thus, our long term plans have become more informed, and hence our ambitions more achievable.

We have already embarked on this growth path, having made investment decisions on a further Talnakh concentrator upgrade and the South cluster development. Based on the existing resource base in Taimyr Peninsula, we are able to scale up ore production to 30 mln tonnes by 2030, which will be 75% higher than in 2017.

We have also identified opportunities for optimisation of our downstream assets, which should enable more efficient monetisation of our mineral resources. We have added to our prospective project portfolio, the expansion of Nadezhda smelter, the reconstruction of Norilsk concentrator and the construction of a new copper refining unit at Kola MMC.

Sustainability is a core principle at Nornickel. However, for us, it involves more than just the sustainable use of natural resources; it also comprises the sustainable development of communities and our contribution to a greener economy globally.

Firstly, we are adopting an unprecedented environmental program that covers our key geographies. For Norilsk, we have set new, more aggressive long term targets for sulfur dioxide emissions reduction being nearly 90% versus 75% previously. For Kola operations, our target is seven times emissions reduction within the next two years. Total capital expenditure is budgeted at almost $3.5 billion over the next five years, making it one of the biggest environmental investments in the mining sector globally.

Secondly, Nornickel is perfectly positioned to play a critical role in support of major global megatrends that are already shaping "green mobility", namely: tightening of emission standards for ICE cars and the rapid growth of electric vehicles. Our exposure to nickel, copper, cobalt, palladium and platinum is unique in the mining industry, and we will do our best to provide steady supply of these crucial materials to global markets.

We strongly believe that we are making good progress in shaping Nornickel into an outstanding investment for shareholders, while contributing to the transition to cleaner mobility and a greener economy worldwide.

Gareth Penny

Gareth Peter Penny

Chairman of the Board of Directors,
MMC Norilsk Nickel

PRESIDENT'S LETTER

DEAR SHAREHOLDERS,

2019 was for us a year of phenomenal achievements. Once again, we have shown the investor community the strengths of our business model and our ability to reach ambitious goals. We have been able to significantly increase the value of our business and pay industry-leading shareholder returns through the consistent delivery of our strategy, whose success has been supported by higher metal prices.

Financial highlights

Last year, we ramped up the output of all key metals, breaking a record in the process by producing almost half a million tonnes of copper. Strong operational performance and higher prices for nickel and palladium have contributed to a boost in revenue of 16% to USD 13.6 bn. Furthermore, our successful operational efficiency programme and rigorous cost management have helped us reduce our unit costs by almost 5%. As a result, our EBITDA grew by 27% to USD 7.9 bn while the EBITDA margin reached 58%. We have also seen our net profit increase by almost 2 times to USD 6 bn while free cash flow reached an impressive USD 5 bn for the second year running.

Finally, our leverage remained low, with Net Debt to EBITDA reduced to 0.9. We believe that a conservative approach to debt is central to maintaining our financial stability, which is particularly relevant amidst macroeconomic uncertainty.

Strategic priorities and investments

Last year, Nornickel came to the end of its five-year strategic cycle, which was primarily aimed at reconfiguring and upgrading its downstream facilities, and provided a secure foothold for further business growth. It is now time to take the next move to reach for even more ambitious objectives, and on this note, I would like to discuss in more detail the ten-year strategic programme that we have designed.

We have fundamentally improved our knowledge of our immense resource base to allow for a smooth transition to longer-term planning. In the Taimyr Peninsula, with its ore reserves of more than 2 billion tonnes, we intend to ramp up our production by 75%, or up to 30 Mtpa. In doing so, our output of key metals is expected to rise considerably by 2030: nickel by 15%–25% to 240–260 ktpa, copper by 20%–30% to 480–520 ktpa, and platinum group metals (PGMs) by 30%–45% to 140–150 ktpa.

These strategic plans assume that we will successfully complete the already-sanctioned South Cluster project, brownfield expansion projects at the Talnakh mines, upgrades and debottlenecking of our concentration and metallurgical facilities.

Backed by our unique metal basket and world-leading exposure to mining assets, we are perfectly positioned to support the global transition to green mobility. The rise of hybrid and electric vehicles, and the tightening of regulations on exhaust emissions across the globe are two megatrends that are expected to considerably boost the demand for our products in the coming years.

By 2030, we will be able to supply enough PGMs to the global market to produce 25–40 mln autocatalysts, in turn leading to a 170–270 mln t reduction in air pollutants. In addition, we believe that we will be able to supply enough high-grade nickel to produce 3.5–5.5 mln EV battery packs, which will reduce global GHG emissions by 50–100 mln t. We are confident that Nornickel will play a crucial role in helping the global economy, and above all transport, go green.

For this very reason, we believe that our own assets should also be green. Last year, we adopted the new comprehensive environmental protection programme, conventionally called "Sulphur Programme 2.0". The programme is expected to reduce emissions by 90% by 2025 for the Polar Division, and by 85% as early as 2021 for Kola MMC.

Accordingly, our growth strategy and environmental projects will require significant investment, which can be broken down into three phases. During the first, active construction phase, management expects a gradual increase in investment from USD 2.2–2.5 bn in 2020. During the second phase (from 2022 to 2025), the annual investment is to reach its peak of USD 3.5–4 bn. During the third phase (from 2026 to 2030), our capital expenditures are expected to return to their historical annual average of about USD 2 bn.

Health and safety

Our top priorities are to ensure employee safety and mitigate the risk of work-related injuries. In 2019, we continued our unwavering efforts to enhance occupational health at our facilities. We have maintained our lost time injury frequency rate (LTIFR) at a level significantly below the global industry average. Despite this, it is with deep regret that I must inform you that nine of our colleagues lost their lives at the workplace during the last year. I offer my sincere condolences to their families, and I believe statistics like these are simply unacceptable. We are sparing no effort to achieve our priority goal of zero work-related fatalities at our facilities.

Social responsibility

Sustainability and social responsibility are not just hollow buzzwords for Nornickel: we have been and will continue to be an investor in social infrastructure and human capital.

In 2019, Nornickel and the Russian Government continued their joint implementation of a long-term target programme to relocate people from Norilsk and Dudinka (Krasnoyarsk Region) to other Russian regions with a better climate. Under the programme, 7,586 families moved into new homes on the "mainland" between 2011 and 2019.

We are actively involved in the construction and renovation of social infrastructure across our footprint, with the aim of creating inclusive and people-friendly work and living spaces.

On a final note, I would like to highlight that our 2019 performance has provided ample evidence that we are on the right strategic track. I would like to give my thanks to all those who have contributed to our success, and express my confidence that together we can deliver on all our long-term goals.

Vladimir Potanin

President,
Chairman of the Management Board
MMC Norilsk Nickel

EXPANDING OUR HORIZONS

OUR STRATEGY

The seamless execution of our strategy over the past six years, as well as tailwinds in the commodities markets, have helped us to achieve industry-leading TRS (total returns to shareholders) performance. Now it's time for us to take the next step towards even more ambitious goals, both in terms of business growth and environmental performance.

We are setting new planning horizons, as we see a positive outlook going forward. Firstly, the nickel market, which is a strategic focus for us, is showing a stable global trend in demand from battery and electric vehicle (EV) manufacturers. And while this story has been more about expectations than real action so far, we are keenly aware that the future for the automotive industry lies with green technology, which provides an extra tailwind for us. At the same time, petrol-driven cars are also still being produced, and this sector is our traditional consumer. With environmental standards getting ever tougher, demand for palladium is surging, as this metal is indispensable for making catalytic converters which capture harmful exhaust pollutants. The strong long-term demand for nickel and platinum group metals (PGMs) creates a positive case for our shift from the current, tactical five-year planning horizon to a longer, ten-year strategic planning horizon. This is even more important, as all of the major capital projects we are betting on in the metals and mining industry take on average about 7 to 10 years to deliver. We expect to increase Nornickel's ore production 1.8 times over this time horizon, investing approximately more than RUB 2.0 trillion in our growth projects.

We are confident that Nornickel will play a crucial role in making the global economy, and above all transport, green. To this end, we need to make sure that our own assets in this new, more environmentally conscious world are equally as green.

VLADIMIR POTANIN,
President, MMC Norilsk Nickel

MISSION

Through the efficient use of natural resources and equity, we supply mankind with non-ferrous metals, which make the world a more reliable place to live in, and help people to realise their aspirations for development and technological progress

GLOBAL MEGATRENDS IN THE AUTOMOTIVE INDUSTRY

Electrification + Hybridisation + Stricter exhaust emission regulations = 10 years Steady growth in demand for Ni, Cu, and PGMs

STRATEGY EVOLUTION

STRATEGY UPDATE COVERING KEY AREAS

Ni Cu Pt+Pd

Production growth[1]

- Accelerating output growth
- Expanding the long-term investment programme

Growth in mining production[2]
on the Taimyr Peninsula

+60–75%

Growth in metals output

Ni nickel	+15–25%
Cu copper	+20–30%
Pd+Pt platinum group metals	+30–45%

ECO

Comprehensive environmental programme

- Slashing sulphur-dioxide emissions
- Maintaining leadership in CO_2 reduction

Reduction of SO_2 emissions from operations[2]

by 2025 at the Polar Division **by 90%**

by 2021 at Kola MMC **by 85%**

Nornickel's production cycle ensures one of the lowest levels of GHG emissions among global metals and mining companies

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[1] To the base year (2017).
[2] To the base year (2015).

STRATEGIC ASPIRATION

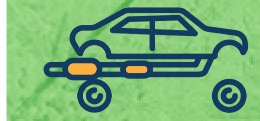
Sustainable growth and maintaining industry-leading shareholder returns

3 GOOD HEALTH AND WELL-BEING | 8 DECENT WORK AND ECONOMIC GROWTH | 9 INDUSTRY, INNOVATION AND INFRASTRUCTURE | 11 SUSTAINABLE CITIES AND COMMUNITIES | 12 RESPONSIBLE CONSUMPTION AND PRODUCTION | 13 CLIMATE ACTION

COMPREHENSIVE ENVIRONMENTAL PROGRAMME

OUR STRATEGY

CONTRIBUTION TO THE GLOBAL SUSTAINABLE DEVELOPMENT AGENDA



By 2030, Nornickel's supplies of PGMs to the global market will support the production of

25–40 mln

autocatalysts annually

Air pollutant emissions will be reduced by

170–270 mln t

Increases in high-grade nickel output will support the production of

3.5–5.5 mln

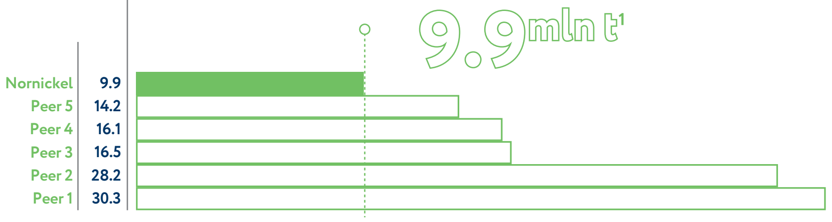
EV battery packs annually

Global CO_2 emissions will be reduced by

50–100 mln t

Nornickel maintains one of the lowest CO_2 footprints among peers (Scope 1&2)

mln t



Nornickel	9.9
Peer 5	14.2
Peer 4	16.1
Peer 3	16.5
Peer 2	28.2
Peer 1	30.3

SHARE OF ELECTRICITY FROM RENEWABLE SOURCES

44.5%
for the Group

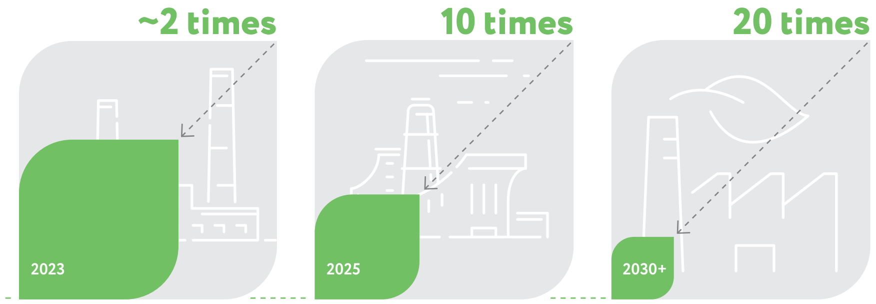
53.5%
for the Norilsk Industrial District

1/ According GHG Standard (Scope 1 & 2) (GHG Corporate Accounting and Reporting Standard)

Sulphur Programme 2.0

Sulphur Programme 2.0, Nornickel's new comprehensive environmental protection programme, aims to achieve world-class performance in sulphur capture, and zero emissions within the cross-border zone affected by Kola MMC (by the end of 2021).

Strategic aspiration



NORILSK INDUSTRIAL DISTRICT

2023: Launch of an anchor project to recover furnace SO_2 at Nadezhda Metallurgical Plant

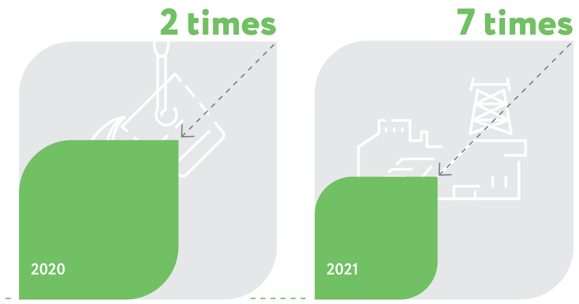
A 45%[2] reduction in SO_2 emissions at the Polar Division

2025: Completion of the Sulphur Project at Copper Plant to recover furnace and converter gases

A 90%[2] reduction in SO_2 emissions at the Polar Division

2030+: Recovery of SO_2 lean gases (including converter gases) at Nadezhda Metallurgical Plant

A 95%[2] reduction in SO_2 emissions at the Polar Division



KOLA MMC

2020: Optimization of smelting operations in Nickel to cut SO_2 emissions in the Russia-Norway border zone

A 50%[2] reduction in SO_2 emissions in the Nickel and Zapolyarny municipalities

2021: Complete shutdown of smelting operations in Nickel town and downstream modernization in Monchegorsk

A 85%[2] reduction in SO_2 emissions at Kola MMC

2/ Against a 2015 baseline.

ACCELERATING PRODUCTION GROWTH

OUR STRATEGY

Our long-term strategy for accelerated production growth is closely aligned with plans to upgrade production facilities and other related infrastructure

ORE PRODUCTION GROWTH

1/ Development of the South Cluster

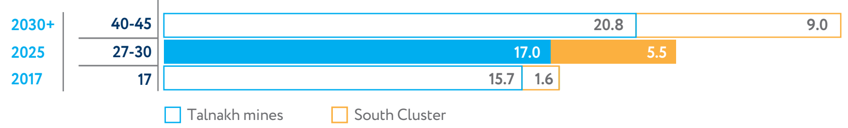
2/ Modernisation of the Skalisty Mine

3/ Brownfield expansion projects at the Talnakh mines (Oktyabrsky, Komsomolsky, Taimyrsky, and Mayak)

Nornickel's resource base expansion programme envisages a production ramp-up by 2030 to

27–30 mln t

Ore production in the Norilsk Industrial District
Mtpa



CONCENTRATION FACILITIES

1/ 3rd Stage of the Talnakh Concentrator Upgrade to boost throughput capacity to 18 Mtpa from 10 Mtpa

2/ Norilsk Concentrator retrofit and expansion

Nornickel's phased long-term investment programme
USD bn
Average for the period

During Phase 1 of the active construction period, CAPEX is expected to steadily grow from USD 2.5–2.8 bn in 2020 to USD 3.0–3.4 bn in 2021, eventually peaking at an annual average of USD 3.5–4 bn between 2022 and 2025. During Phase 3, between 2026 and 2030, CAPEX is expected to revert to its historical annual averages of around USD 2 bn.

SMELTING AND REFINING OPERATIONS

1/ Nickel tankhouse upgrade at KGMK

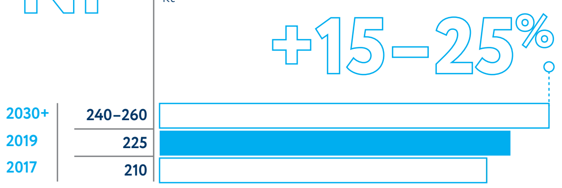
2/ Process chain upgrade at Copper Plant (a Continuous Converting Facility project)

3/ Retrofit of production facilities at Severonickel Plant (KGMK) with the roast-leach-electrowin (RLE) technology rolled out to cover the entire copper output (currently under consideration)

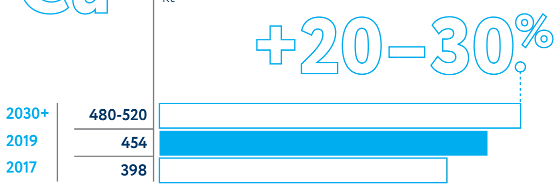
4/ Construction of the 3rd furnace at Nadezhda Metallurgical Plant's smelting shop (currently under consideration)

STRATEGIC AMBITIONS FOR 2030+ METAL PRODUCTION[1]

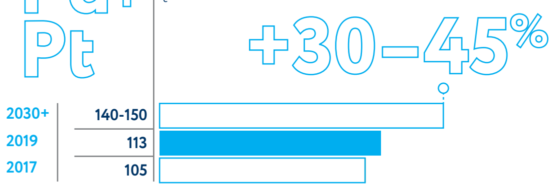
Ni **Nickel**
kt



Cu **Copper**
kt



Pd+Pt **Palladium + platinum**
t



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[1] Metals produced from Russian feedstock (including metals in saleable semi-products) excluding production from Bystrinsky GOK and Nkomati.

KEY INVESTMENT PROJECTS

MINING PROJECTS

SKALISTY MINE

Location

Norilsk Industrial District, Krasnoyarsk Region

Project overview

The Skalisty Mine development project aims to ramp up ore production to 2.5 Mtpa by 2020, and maintain this level until 2025 through mining the rich and cuprous ore reserves of the Talnakhskoye and Oktyabrskoye deposits.
In 2020–2025, the project's CAPEX will total RUB 58.3 bn (USD 0.85 bn).

Ore reserves[1]

53 mln t

Average metal content

NI – 3.2 %
Cu – 3.7 %
PGMs – 10.0 g/t

The Skalisty Mine forms part of Nornickel's Polar Division and produces ore from the Talnakhskoye and Oktyabrskoye deposits. In 2019, the mine extracted 2.3 mln t of rich ore and 88 kt of copper ore.

Project timeline

'19

- CAPEX – RUB 3.7 bn (USD 58 mln)
- Refurbishment of ventilation shaft No. 10 completed, and the main ventilation unit launched
- The sinking of skip-cage shaft No. 1 completed (2.1 km in total)

'20

- Commissioning of ventilation shaft No. 10
- Commissioning 400 ktpa of saleable ore capacity

TAIMYRSKY MINE

Location

Norilsk Industrial District, Krasnoyarsk Region

Project overview

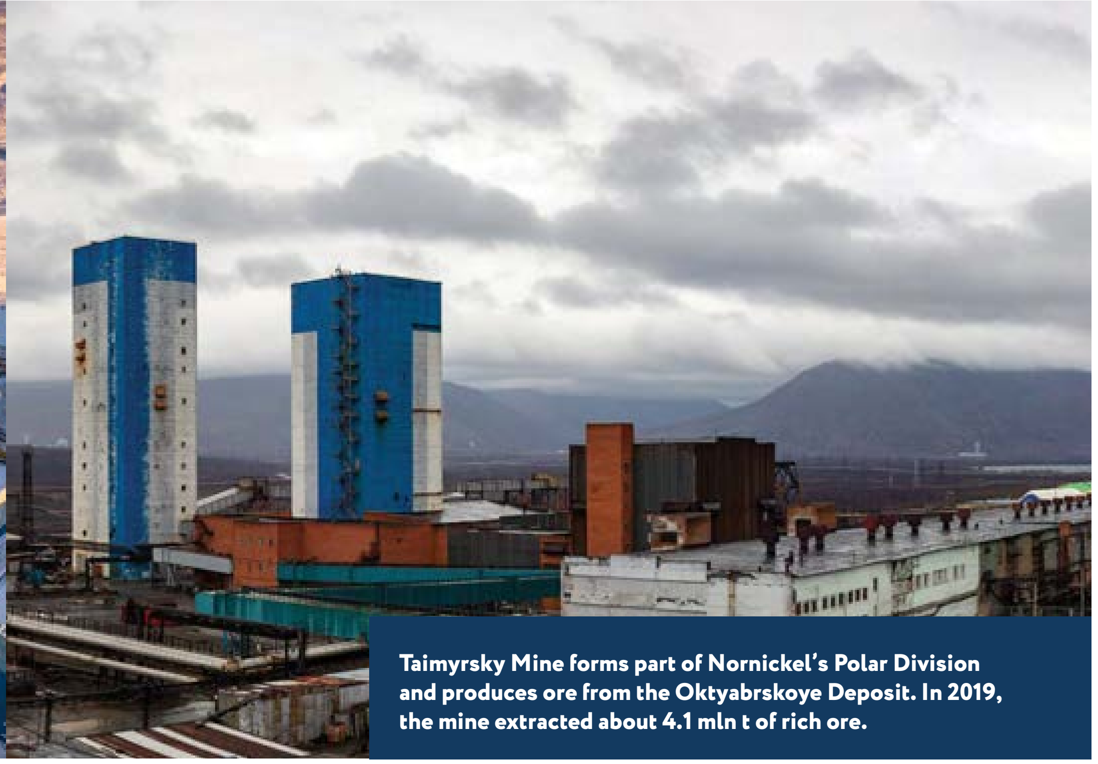
The Taimyrsky Mine development project aims to sustain ore production at 4.3 Mtpa until 2025 by tapping into the rich copper-nickel ore reserves of the Oktyabrskoye deposit.
In 2020–2024, the project's CAPEX will total RUB 32.8 bn (USD 491.6 mln).

Ore reserves[1]

139 mln t

Average metal content

NI – 1.2 %
Cu – 1.9 %
PGMs – 4.5 g/t



Taimyrsky Mine forms part of Nornickel's Polar Division and produces ore from the Oktyabrskoye Deposit. In 2019, the mine extracted about 4.1 mln t of rich ore.

Project timeline

'19

- CAPEX – RUB 4.3 bn (USD 67 mln)
- 5.6 km of underground workings completed

'20–'24

- Commissioning 1.15 Mtpa of capacity to maintain ore production at 4.3 Mtpa

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[1] According to JORC standards.

MINING PROJECTS

OKTYABRSKY MINE

Location

Norilsk Industrial District, Krasnoyarsk Region

Project overview

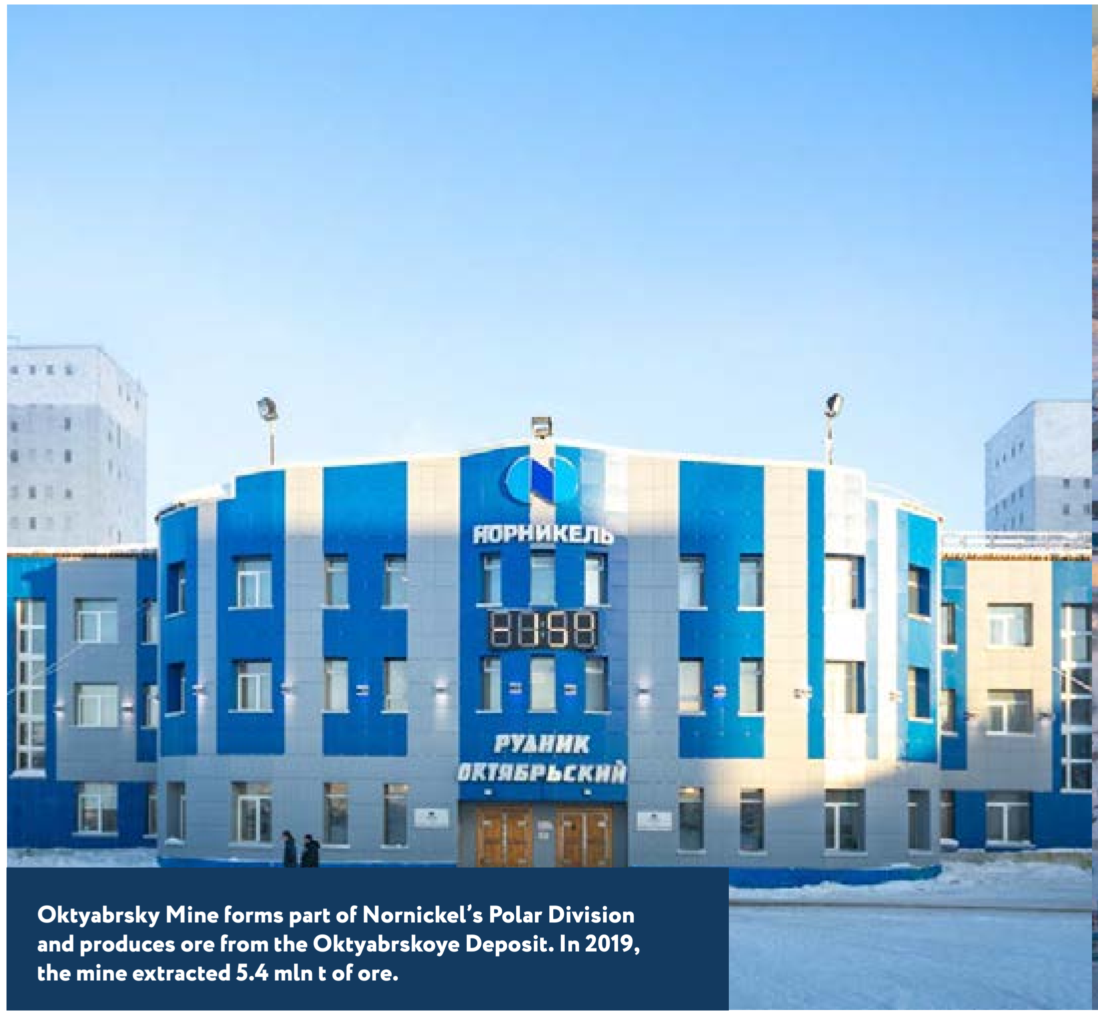
The Oktyabrsky Mine development project aims to maintain production of depleting reserves, and gradually ramp up production to 6.0 Mtpa until 2025, through mining 38.5 mln t of the rich disseminated and cuprous ore reserves of the Oktyabrskoye deposit. In 2020–2025, the project's CAPEX will total RUB 3.8 bn (USD 56.1 mln).

Ore reserves[1]

215 **mln t**

Average metal content

NI – 0.6 %
Cu – 2.1 %
PGMs – 5.8 g/t



Oktyabrsky Mine forms part of Nornickel's Polar Division and produces ore from the Oktyabrskoye Deposit. In 2019, the mine extracted 5.4 mln t of ore.

Project timeline

'19

- CAPEX – **RUB 1.7 bn (USD 27 mln)**
- **2.6 km** of underground workings completed

'20–'25

- Commissioning **300 Ktpa** cuprous ore and **1.15 Mtpa** ore capacity to maintain production reserves

KOMSOMOLSKY MINE

Location

Norilsk Industrial District, Krasnoyarsk Territory (Polar Division)

Project overview

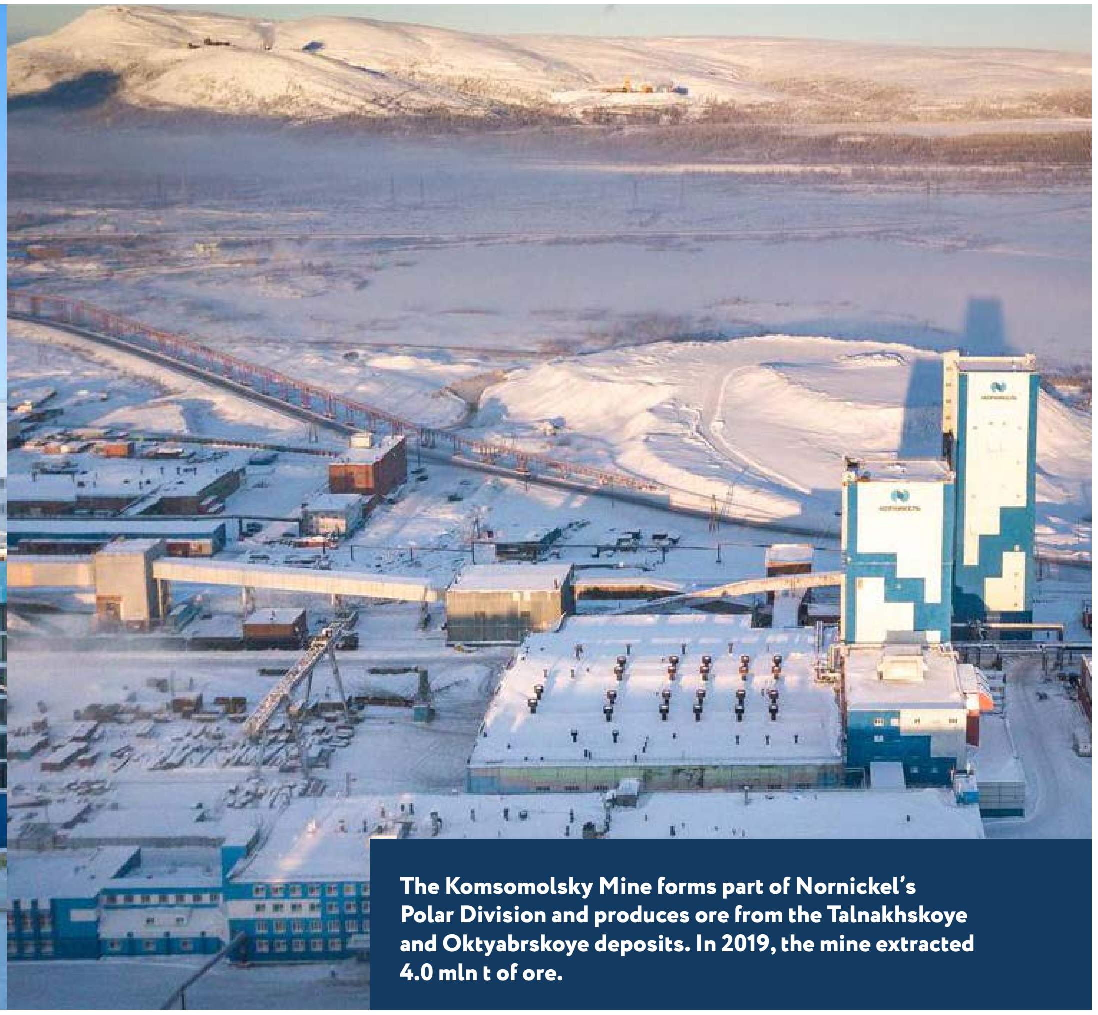
The Komsomolsky Mine development project aims to maintain ore production at 4 Mtpa until 2023, by mining the rich, cuprous, and disseminated ore reserves of the Talnakhskoye and Oktyabrskoye deposits. In 2020–2023, the project's CAPEX will total RUB 13.7 bn (USD 204.5 mln).

Ore reserves[1]

182 **mln t**

Average metal content

NI – 0.6 %
Cu – 1.1 %
PGMs – 4.8 g/t



The Komsomolsky Mine forms part of Nornickel's Polar Division and produces ore from the Talnakhskoye and Oktyabrskoye deposits. In 2019, the mine extracted 4.0 mln t of ore.

Project timeline

'19

- CAPEX – **RUB 3.5 bn (USD 54 mln)**
- **4.5 km** of underground workings completed

'20–'23

- Commissioning **1.5 Mtpa** of saleable ore capacity

1/ According to JORC standards.

MINING PROJECTS

SOUTH CLUSTER

Location

Norilsk Industrial District, Krasnoyarsk Region

Project overview

The project aims to ramp up ore production to 9 Mtpa by 2027, first by expanding the pit (open-pit operations) and then through underground mining. In 2020–2027, the project's CAPEX will total RUB 63.1 bn (USD 0.9 bn).

Ore reserves[1]

42 mln t

Average metal content

Ni – 0.3 %
Cu – 0.4 %
PGMs – 6.0 g/t

In 2017, Nornickel established Medvezhy Ruchey, a wholly-owned subsidiary that operates the assets of the South Cluster. The South Cluster comprises the Norilsk Concentrator (processing capacity of 9.3 Mtpa), the northern part of the Norilsk-1 deposit, developed by the Zapolyarny open-pit mine and the Zapolyarnaya mine, as well as the tailing dump No. 1 and Lebyazhye tailing dump. The Norilsk Concentrator processes all disseminated ores from the Zapolyarny Mine and cuprous and disseminated ores from the Oktyabrskoye and Talnakhskoye deposits. In 2019, the plant processed 7.5 mln t of ore, with nickel recovery in bulk concentrate reaching 71.3%. In 2019, the Zapolyarny Mine produced 1.6 mln t of disseminated ore. In 2019, the South Cluster project's CAPEX was RUB 5.0 bn (USD 76 mln).

Project timeline

'19

- CAPEX – **RUB 1.6 bn (USD 24 mln)**
- Stripping completed
- Exploration conducted
- Design documentation development started

'20

- Feasibility study and detailed engineering conducted
- Completion of design documentation
- Securing of approval from the Main Department of State Expertise
- Launch of construction and installation works

'21-'22

- Construction and installation works, equipment delivery
- Launch of ore production

1/ According to JORC standards.

ARCTIC PALLADIUM

In 2018, Nornickel and Russian Platinum, a Russian private company, signed a memorandum of intent to set up a joint venture (JV) with a view to develop the Norilsk Industrial District's deposits. Contributions to the JV's authorised capital included Nornickel's licence to develop the Maslovskoye deposit and Russian Platinum's licence to develop the southern part of the Norilsk-1 deposit and the Chernogorskoye deposit.

In March 2020, Russian Platinum has notified the Company of its decision to terminate the negotiations regarding Arctic Palladium JV and to proceed with the development of the Chernogorskoye Deposit and the southern part of the Norilsk-1 Deposit on its own. This decision owes to UC RUSAL, one of Nornickel's shareholders, not issuing due corporate approvals to Nornickel to participate in the proposed joint venture.

PROCESSING PROJECTS

BYSTRINSKY GOK (CHITA PROJECT)

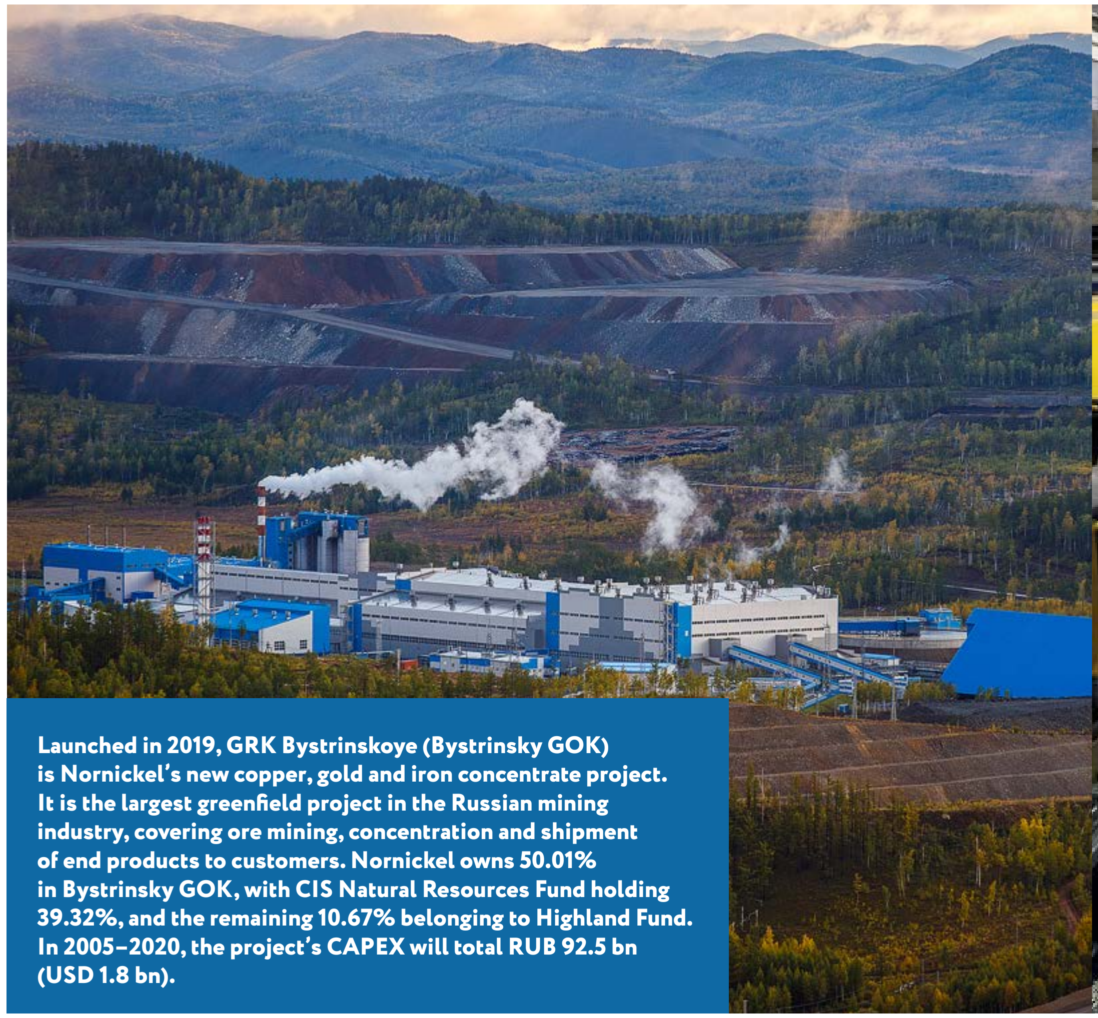
Location

16 km east of Gazimursky Zavod, Gazimuro-Zavodsky District, Zabaykalsky Region

Project overview

The Bystrinsky GOK construction project is made up of an open-pit mine at the Bystrinskoye deposit; a mining and processing plant (MPP) with all associated infrastructure, including a power line and the 227 km Borzya–Gazimursky Zavod railway line; as well as a rotation camp.

Construction of the open-pit mine and the MPP started in 2013. In 2017, a 220 kV power line was commissioned and a camp for 1,047 people was built. Hot commissioning of the MPP started in October 2017. The MPP came online in December 2019. The project is expected to ramp up to design capacity by 2021.



Launched in 2019, GRK Bystrinskoye (Bystrinsky GOK) is Nornickel's new copper, gold and iron concentrate project. It is the largest greenfield project in the Russian mining industry, covering ore mining, concentration and shipment of end products to customers. Nornickel owns 50.01% in Bystrinsky GOK, with CIS Natural Resources Fund holding 39.32%, and the remaining 10.67% belonging to Highland Fund. In 2005–2020, the project's CAPEX will total RUB 92.5 bn (USD 1.8 bn).

Ore reserves[1]

316 mln t

Average metal content

Cu – 0.7 %

Fe_3O_4 – 23 %

Au – 0.9 g/t

In 2020–2022, the project's CAPEX will total

RUB 16.7 bln (USD 252.0 mln).

The project's design capacity

10 Mtpa

New jobs

~2,000 positions

Project timeline

'19

- CAPEX – **RUB 6.7 bn (USD 103 mln)**
- Mining of 7.5 mln t of ore and production of **43.5 kt** of copper concentrate, **177 koz** of gold concentrate, and **1.3 mln t** of iron ore concentrate. EBITDA – **USD 349 mln**

'20

- The MPP is expected to reach design capacity with the following annual concentrate volumes: Cu – **55–65 kt**; Au – **220–240 koz**; Fe_3O_4 (Fe – 66%) – **1.5–1.7 mln t**

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[1] According to the Russian classification (A+B+C1+C2)

TALNAKH CONCENTRATOR

Location

Norilsk Industrial District, Krasnoyarsk Region

Project overview

The Talnakh Concentrator (Polar Division) processes rich, cuprous, and disseminated ores from the Oktyabrskoye and Talnakhskoye deposits to produce nickel-pyrrhotite and copper concentrates. In 2019, the plant processed 10.7 mln t of ore, with nickel recovery in bulk concentrate reaching 85.9% (+2.7% y-o-y).

The upgrade has been rolled out in three stages. Stage 1 was completed in 2015, and included the reconstruction of existing floatation capacity and the replacement of flotation cells that were beyond their useful lives, in order to maintain the concentration capacity at 7.5 Mtpa. Stage 2 involved the expansion of the main building, the reconstruction of the reagent preparation building, and the construction of additional ball mills and vertical mills, as well as the 1st Stage of the tailing dump, all of which helped to boost capacity to 10 Mtpa. This stage was completed in 2018. Plans for the 3rd Stage of the Talnakh Concentrator Upgrade include a capacity ramp-up to 18 Mtpa and construction of the tailing dump's 2nd Stage. The new concentration technology will increase recovery by 4%–7% for all key metals. The project's completion is slated for 2023, reaching design capacity by 2024+. CAPEX for the 3rd Stage of Talnakh Concentrator in 2020–2024 is estimated at RUB 40 bn (about USD 0.6 bn).

The new concentration technology will increase recovery by 4%-7% for all key metals.

3rd Stage project timeline

'19

- CAPEX – **RUB 424 mln** (USD 7 mln)
- Inspection of the construction site and completion of preparatory work
- Development of design documentation completed
- Approval from the Main Department of State Expertise received and construction permit secured
- Completion of preparatory work in the main building of Talnakh Concentrator

'20-'22

- Development of engineering documents
- Construction and installation works
- Equipment delivery
- Pre-commissioning

'23-'24

- Commissioning
- Ramping up to design capacity

PROCESSING PROJECTS

NICKEL TANKHOUSE UPGRADE

Location

Monchegorsk, Murmansk Region

Project overview

The tankhouse 2 upgrade will create a highly effective nickel cathode production unit, harnessing the technology of nickel electrowinning from chlorine dissolved tube furnace nickel powder, which will help increase output of nickel cathodes from 120 ktpa to 145 ktpa. The new technology will help achieve the highest purity of metal and reduce air emissions. In 2020–2021, the project's CAPEX will total RUB 2.9 bn (USD 43.4 mln).

Tankhouse 2 is part of Kola MMC, which produces nickel cathodes using electrowinning technology.

Project timeline

'19

- CAPEX – **RUB 4.8 bn (USD 74.5 mln)**
- Refurbishment of electrowinning cells – the project reaches 98% completion

'20

- Pre-commissioning and ramping up to design capacity

ENERGY PROJECTS

ENERGY INFRASTRUCTURE UPGRADES

Nornickel operates its own energy assets, which comprise four natural gas fields, three thermal power plants (CHPP-1, CHPP-2, and CHPP-3), two hydropower plants (Ust-Khantayskaya HPP and Kureyskaya HPP), gas pipelines, and power lines. Our energy sources include renewables (hydropower) and gaseous hydrocarbons (natural gas).

Location

Norilsk Industrial District, Krasnoyarsk Region

Project overview

Investment in energy infrastructure aims to replace outdated and obsolete HPP turbines and CHPP units, and retrofit key elements of the gas transmission system. These initiatives will markedly extend the service life of our key energy infrastructure facilities, enhance the reliability of our energy and gas supply, increase the amount of renewable energy generated, and enable the creation of an energy saving ecosystem. In 2020–2025, energy infrastructure CAPEX will total RUB 135 bn (USD 2 bn).

Project timeline

'19

- CAPEX – **RUB 15.9 bn (USD 246 mln)**
- Replacement of hydropower units at Ust-Khantayskaya HPP (turbine and electrical shops)
- Replacement of power unit equipment at CHPP-2

'20–'25

- Replacement of two existing power units at CHPP-2 and CHPP-3
- Modernisation of grid facilities and gas transmission equipment upgrades
- Turbine replacement and the introduction of an automated dispatch system at HPPs

ENVIRONMENTAL PROJECTS

SULPHUR PROGRAMME AT KOLA MMC

Location

Nickel settlement, Murmansk Region

Project overview

The project envisages the construction of a 200 kt dry concentrate loading point, the upgrade of the flotation circuit at Zapolyarny Concentrator to allow for production of two types of copper-nickel concentrate, and the complete shutdown of smelting operations in Nickel. The new facility will separate high-grade concentrate and low-grade concentrate, ready to be shipped to third-party consumers. In 2019, the concentrator processed 7.9 mln t of ore.

After all smelting operations are shut down, the employees will be offered jobs at other Nornickel enterprises.

For more details
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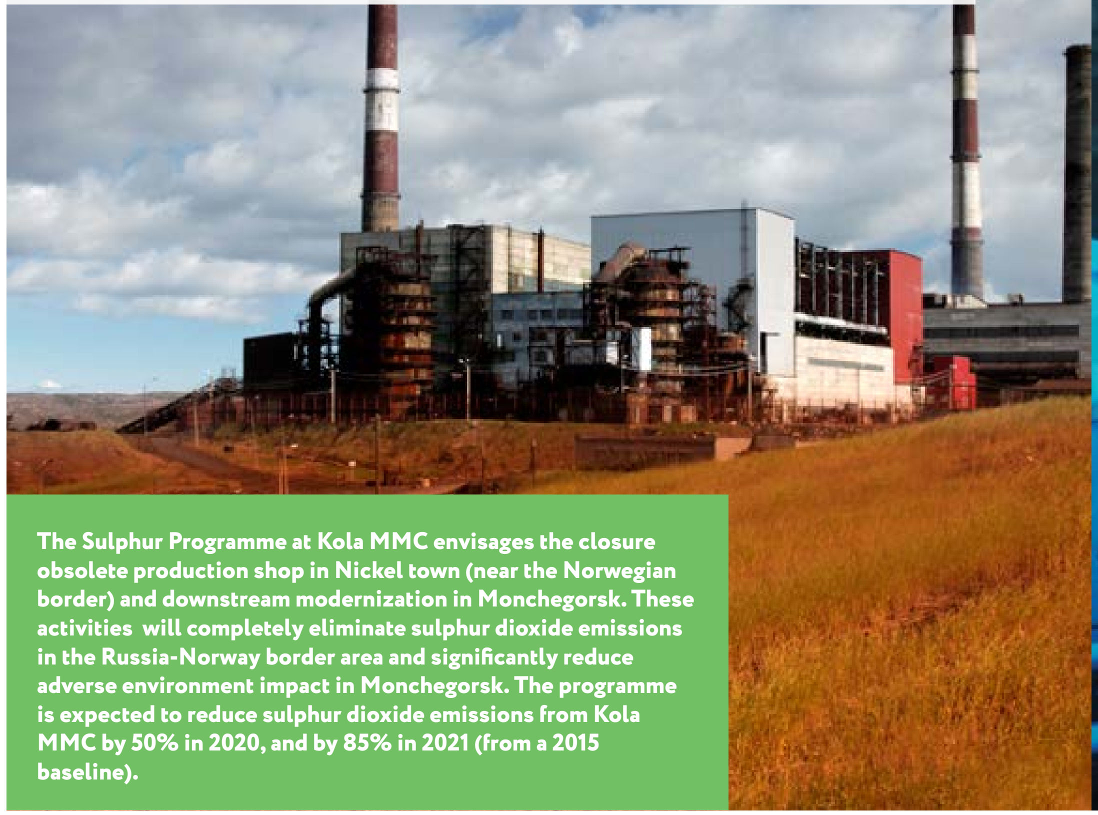
In 2017–2020, the project's CAPEX will total RUB 5.8 bn (USD 90.9 mln).

CLOSURE OF THE SMELTING SHOP IN NICKEL

WILL BE CLOSED

This is a comprehensive environmental project at Kola MMC that will completely eliminate emissions in Nickel, while reducing emissions from Kola MMC by 50% by the end of 2020 (from a 2015 baseline).

Nickel, Zapolyarny, Murmansk Region



The Sulphur Programme at Kola MMC envisages the closure obsolete production shop in Nickel town (near the Norwegian border) and downstream modernization in Monchegorsk. These activities will completely eliminate sulphur dioxide emissions in the Russia-Norway border area and significantly reduce adverse environment impact in Monchegorsk. The programme is expected to reduce sulphur dioxide emissions from Kola MMC by 50% in 2020, and by 85% in 2021 (from a 2015 baseline).

Project timeline

'19

- CAPEX – **RUB 2.3 bn (USD 35.6 mln)**
- Approval from the Main Department of State Expertise secured
- Completion of all construction and installation works
- Launch of finished concentrate production and plant pre-commissioning

'20

- CAPEX – **RUB 1.6 bn (USD 24.9 mln)**
- Partial closure of electric furnaces at the smelting shop in Nickel
- Pre-commissioning at the loading point, and shipping of low-grade concentrate

'21

- Complete shutdown of smelting operations in Nickel
- Launch construction of a loading point for high-grade concentrate

SULPHUR PROGRAMME (POLAR DIVISION)

This is a large-scale environmental project designed to capture sulphur dioxide emissions at Nadezhda Metallurgical Plant and Copper Plant (both part of Nornickel's Polar Division), dramatically reducing emissions.

Nornickel considers its Sulphur Programme at the Polar Division a staged journey, with the following milestones set for sulphur dioxide reduction in the Norilsk Industrial District: 45% by 2023 and 90% by 2025 (from a 2015 baseline). In 2019–2025, the project's CAPEX will total about RUB 3.5 bn.

Location

Norilsk Industrial District, Krasnoyarsk Region (Polar Division)

Project overview

The project will be phased in at Nornickel's two core downstream facilities in the Norilsk Industrial District as follows:

Nadezhda Metallurgical Plant

- **Phase 1:** The recovery of gases at Nadezhda and the establishment of acid neutralisation facilities (including gypsum storage and related infrastructure) – to be completed by 2023
- **Phase 2:** The expansion of neutralisation infrastructure (for sulphuric acid from Cu stream) – to be completed by 2025

Copper Plant

- **Phase 1:** Preparatory work and retrofitting of the gas cleaning unit – to be completed by 2023
- **Phase 2:** Recovery of sulphur dioxide from rich off-gases at sulphuric facilities, reduction of Copper Plant's emissions to the maximum allowable limits, and the discontinuing of converter operations with sulphur-poor gases – to be completed by 2025

Project timeline

'19

- CAPEX – **RUB 1.5 bn (USD 24 mln)**
- Completion of the bulk of on-site preparatory work
- Development of design documentation for **Phase 1** at Nadezhda Metallurgical Plant, and successful state environmental review
- A number of equipment supply contracts signed
- Development of design documentation for **Phase 1** at Copper Plant

'20

- Nadezhda Metallurgical Plant will develop detailed design documentation, secure approval from the Main Department of State Expertise, and commence construction and installation works
- Copper Plant will carry out construction and installation works for **Phase 1** and develop documentation for **Phase 2**

Commodity

Market overview

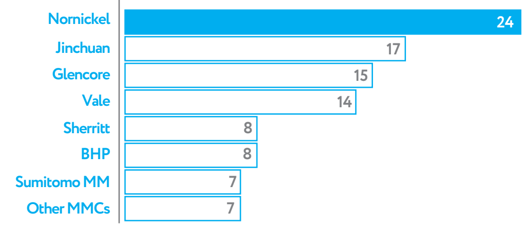
NICKEL (Ni)

KEY TRENDS IN THE NICKEL MARKET

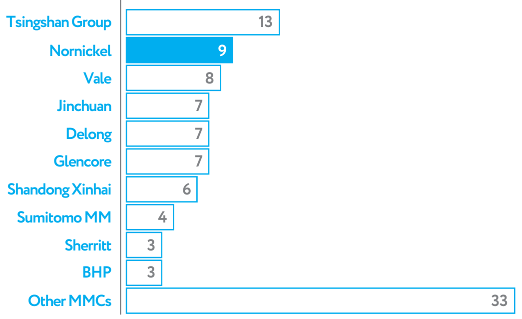
In 2019, nickel deficit in the market narrowed to 42 kt (down from 149 kt in 2018). The commissioning of new facilities in Indonesia and China led to a record increase in nickel pig iron (NPI) production, completely offsetting the nickel consumption growth in stainless steel in China (against weaker consumption outside China) and the higher demand for battery manufacture.

Nickel prices showed mixed trends and high volatility during the first half of 2019. High demand from the stainless steel sector in China and the impact from the Brumadinho dam disaster in Brazil (threatening to reduce nickel output from Vale's assets) were offset by negative macroeconomic effects of the US–China trade war and low global manufacturing PMI.

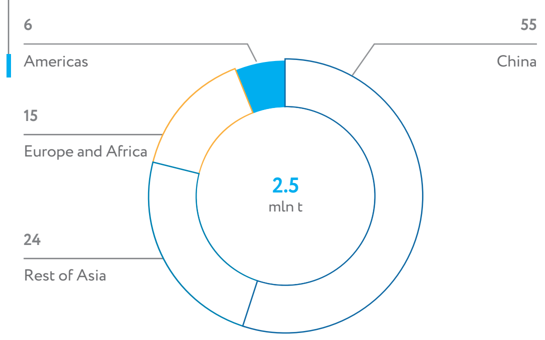
No. 1 in high-grade nickel production (%)



No. 2 in primary nickel production (%)



Primary nickel consumption by region (%)



Source: Company data

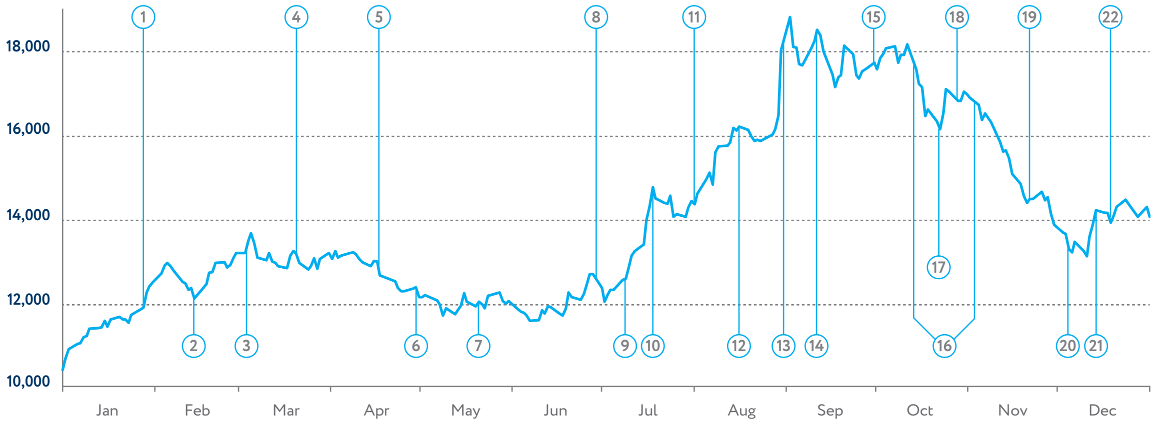
The price went up in the second half of the year after rumours that Indonesia may reintroduce a ban on ore exports, as well as on the news of increased capital intensity of laterite leaching projects. In August, the Indonesian government officially announced a nickel ore export ban effective from 1 January 2020, two years earlier than planned, in an effort to increase domestic processing of mineral resources and capture more value. As a result, the nickel price soared to USD 18,625/t (a five- year high), but this was followed by a period of consolidation. In the fourth quarter, the price dropped on the back of a significant decline in electric vehicle sales in China, caused by reduced government subsidies and stagnation in the stainless steel market, along with falling nickel premiums.

Average annual nickel prices (USD/t)

2014	2015	2016	2017	2018	2019
16,867	11,807	9,609	10,411	13,122	13,936

Source: London Metal Exchange (Cash Settlement)

London Metal Exchange nickel price (USD/t)



Sources: LME, Company data

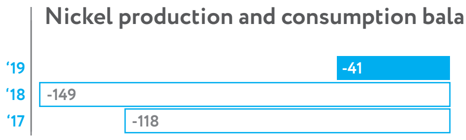
1/ Dam failure at Vale's iron ore mine in Brazil gives rise to concerns over potential decline in nickel production
2/ Considerable growth in Chinese stainless steel production
3/ Positive market expectations regarding China–US negotiations to resolve trade disputes
4/ Optimistic PMIs in China
5/ SLN given green light to export nickel ore from New Caledonia
6/ US government increases tariffs on Chinese goods worth USD 200 bn from 10% to 25%
7/ Strengthening of the US dollar
8/ Ferronickel production halted at Vale's Onca Puma plant
9/ Indonesian President meets with the CEOs of China's Tsingshan, Huayou and Brunp
10/ News of an increase in the capital intensity of potential laterite leaching projects in Indonesia
11/ First reports of a potential ban on nickel ore exports from Indonesia from the beginning of 2020
12/ Ramu mine in Papua New Guinea closed after an industrial waste spill
13/ Indonesian ban on ore exports officially announced for 1 January 2020
14/ Production at Onca Puma resumed
15/ Nickel inventories dwindle at LME-approved warehouses
16/ Electric vehicle sales in China fall considerably
17/ Off-take agreement with SK Innovation for the supply of nickel sulphate from the Sconi project (Australia) terminated
18/ Market players' concerns over the threat of early termination of ore exports from Indonesia
19/ Reports that Vale would write off USD 1.6 bn from the book value of its Goro nickel asset in New Caledonia
20/ Nickel deliveries to LME-approved warehouses commence
21/ European Commission approves a total EUR 3.2 bn in subsidies to boost battery production in Europe
22/ US -China phase 1 trade deal agreed

MARKET BALANCE

In 2019, nickel deficit in the market shrank to 42 kt (from 149 kt in 2018), driven primarily by an increased production of nickel pig iron in Indonesia and China (by 32%, or 228 kt) on the back of cheap supplies of high nickel content laterite ores. There were only marginal increases in the production of refined nickel (1%, or 11 kt) and its chemical compounds (22%, or 21 kt), mostly due to higher nickel sulphate production in China for use in the manufacture of lithium batteries. Conversely, production of other forms of low-grade nickel decreased by 4%, or 17 kt.

Consumption grew by 6%, or 133 kt, mostly due to increased demand for nickel in the Chinese stainless steel segment (by 13%, or 127 kt). Total consumption outside China decreased by 5%, or 32 kt. Nickel consumption for cathode precursors used in the manufacture of lithium batteries grew 26%, or 38 kt, driven by the electrification of transport. Demand from special steels and alloys rose by 2%, while consumption in electroplating decreased by 1%.

The combined nickel inventories of the London Metal Exchange (LME) and Shanghai Stock Exchange (SSE) dropped 16% to 191 kt. The two-year long depletion of inventories accelerated markedly in September–October but ceased in December when 85 kt of nickel was delivered to LME-approved warehouses. The key factors behind the metal inventories winding down (117 kt from January to November 2019) included expectations of higher demand from the battery sector in 2020–2021, the Indonesian nickel ore export ban, and delays to laterite leaching projects in Indonesia. However, when the nickel price dropped in the fourth quarter, market traders' "paper profits" began to ebb, and the cost of holding long physical positions mounted, leading to a backflow of metal into the exchange.



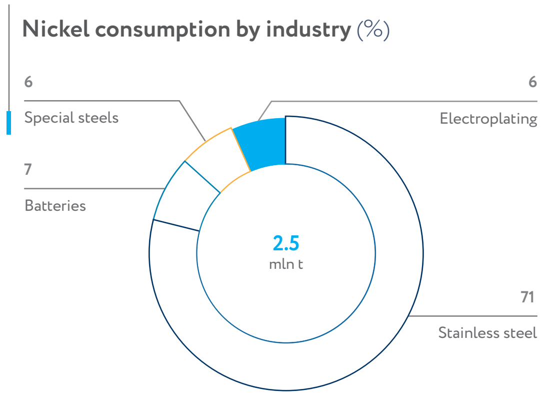
Nickel production and consumption balance (kt)

Source: Company data

CONSUMPTION

MAIN CONSUMING INDUSTRIES

The main area of nickel consumption can be found in the production of stainless steel (over 70% in 2019), which comes in several different grades. Austenitic stainless steel is the most common family of stainless steels (over three quarters of the global production) and includes the 200 series and 300 series.



Nickel consumption by industry (%)

The 300 series steels have an increased nickel content, ranging usually between 8% and 12% but reaching 20% in some grades. Nickel in these concentrations improves resistance to corrosion and strength in a broad range of operating temperatures, ensures good ductility, resistance to aggressive environments, and strips the metal of its magnetic properties. This series is the most versatile and sees a wide range of uses in construction, food, transport, the chemical and energy industries, and other sectors.

In comparison, nickel content in the 200 series is lowered by alloying with manganese, and these steels are not complete substitutes for grades with high nickel content. The 200 series steels are prone to surface (pitting) corrosion, are not heat resistant and are not resistant to aggressive environments. However, due their lower cost, they are widely used in consumer goods such as domestic appliances. China and India alone account for over 90% of the total 200 series steel production.

Although they account for only 1% to 2% of global smelting, austenitic-ferritic (duplex) stainless steels also use nickel and are distinguished from other grades by a higher content of chromium (18% to 25%) and molybdenum (1% to 4%).

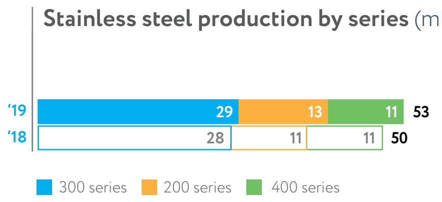
Ferritic and martensitic stainless steels (400 series) typically do not contain nickel, and their properties are similar to those of low-carbon corrosion-resistant steels; however, their mechanical properties are inferior to those of austenitic stainless steels. These steels are mainly used to manufacture automotive exhaust systems, cargo container frames, water heaters, washing machines, cutlery, kitchenware, home decor items, and razor blades.

Stainless steel production uses almost all types of nickel feed (except for some special products, such as nickel powder and compounds). As nickel feed quality has practically no impact on the quality of stainless steel, steel mills predominantly use cheaper feeds. It is for this reason that high-grade nickel has been losing its share of nickel units consumed in stainless steel production in the past few years.

In 2019, total stainless steel output increased by 5% to a record high of 53 mln t. The increase was mostly driven by growing stainless steel production in China, where nickel consumption grew by 13%, or 127 kt, due to higher demand and the restricted stainless exports from Indonesia. Production of nickel-heavy 300 series increased by more than 1.2 mln t, with Tsingshan, the world's largest stainless steel producer, accounting for over 75% of the production growth.

Following a period of strong growth in 2018, Indonesian stainless steel production in 2019 increased by only 50 kt, or 1 kt of nickel. The increase is mostly attributed to growth in 200 series with low nickel content, as 300 series production decreased marginally. This was accompanied by a reshuffle of stainless export flows amid higher trade tariffs on Indonesian products in China and other countries. Exports to China fell by 635 kt, while exports to India, South Korea, Italy, Taiwan and Thailand rose by a total of 650 kt.

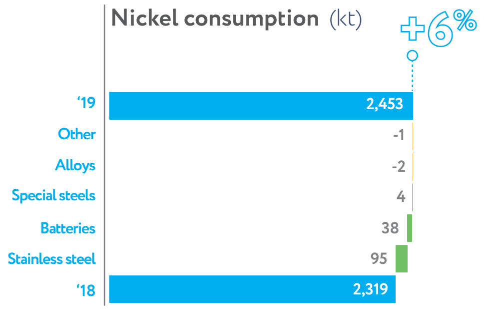
With China increasing its output, a growing availability of low-grade nickel, and cheap Indonesian exports, stainless steel production in other countries and regions fell considerably. The fall was particularly prominent in Europe, South Africa, Japan, and Taiwan. The total level of stainless steel smelting in the USA decreased by 7%, but primary nickel consumption went down by only 2%, or 1 kt, due to the declining production of 400 series, which does not contain nickel.



Stainless steel production by series (mln t)

Source: Company data

Thanks to a 2% rise in global 300 series production, a 17% rise in 200 series production, and a marginal reduction in average scrap metal share, primary nickel consumption in stainless steel production grew by 6% to 1.75 mln t. Nonetheless, the use of high-grade nickel in the stainless steel sector decreased by 131 kt, mostly driven by increased supply of nickel pig iron.



Nickel consumption (kt)

Source: Company data

The battery industry uses nickel as a key element in the production of cathode precursors for battery cells. However, nickel consumption trends vary depending on the type of battery.

Lithium batteries (Li-ion). Li-ion batteries were first commercially launched in 1991 and became widespread due to their ability to retain a high level of energy capacity, even after multiple recharge cycles.

Nickel-metal hydride batteries (Ni-MH). Ni-MH batteries were developed in 1989 as a substitute for Ni-Cd batteries, to avoid using cadmium. Currently, the nickel-metal hydride battery market is growing at a slow pace (with the hybrid vehicle projects of some manufacturers being its only growth driver) and is facing formidable competition from lithium-ion batteries.

Nickel-cadmium batteries (Ni-Cd). The first batteries using nickel were developed back in 1899. These days their use is limited, as the EU prohibited cadmium on grounds of toxicity.

Road transport electrification has been the spark behind the growth in lithium battery production. The 2016–2019 CAGR of electric vehicles (plug-in HEVs and battery electric vehicles) was around 45%. The impetus for transport electrification has come from government incentives, but other key drivers include more stringent environmental regulations, improved battery performance, and lower production costs of battery cells.

In recent years, China has been an important growth centre for EV manufacturing, with plans to increase NEV (electric vehicles and plug-in hybrids) sales to 25% of total vehicle sales by 2025. To this end, China implemented a number of initiatives to stimulate transport electrification, including subsidies for the purchase of electric cars and mandatory requirements for large automakers to produce electric vehicles and plug-in HEVs. However, government subsidies were slashed in the second half of 2019, resulting in the first-ever decline in NEV sales, by 4% y-o-y.

As a result, the centre of battery industry growth is shifting to Europe. In a number of countries, including Belgium, Germany, the UK, and France, buyers receive handsome subsidies and tax incentives for buying EVs; in Norway, where EVs account for 42% of total vehicles sold, buyers are exempted from vehicle registration tax and value added tax (VAT).

Europe's share in global NEV sales grew from 23% in 2018 to 27% in 2019, and is expected to reach 38% by 2025. In March 2019, the European Commission approved new requirements for greenhouse gas emissions from road transport, which call for a more than 2X reduction of CO2 emissions by 2030 from a 2018 baseline. The initiative pressures automakers to expedite electrification under the punishment of fines reaching into the billions. A battery production chain is being developed in anticipation of increased demand in the region. The total announced capacity (CATL, LG Chem, SK Innovation, Samsung, and Northvolt) already exceeds 400 GW·h by 2025, which would be equivalent to 300 kt of nickel.

Battery cell production is one of the final stages of battery manufacturing, preceded by the production of cathode precursors, and when lithium, graphite or silicon are added as the anode, the production of cathode material itself. In 2019, China held its position as the leader in cathode precursor production (61% of global production), while cathode material production was split between China (43%), Japan (30%), and South Korea (26%).

There are several types of lithium batteries available depending on the cathode materials used: LCO (lithium, cobalt oxide), LFP (lithium, iron phosphate), LMO (lithium, manganese oxide), NCM (nickel, cobalt, manganese), NCA (nickel, cobalt, aluminium).

LCO batteries are principally confined to mobile electronics, as high cobalt prices, low power, and chemical instability of the compounds used prevent their application in EVs. However, other types of cathodes are widely employed in the EV sector. The current trend is to replace LFP and LMO with nickel-containing NCM and NCA batteries, owing to the higher energy density and specific energy of the latter, which increases vehicle range.

Growing nickel consumption in Li-Ion batteries is driven not only by an increasing share of battery types containing nickel, but also by a higher average nickel content in the cathode material, which, in turn, is caused by the need to substitute expensive cobalt units. In comparison to 2016, when NCM 1:1:1 (with a nickel mass fraction of 20% of the total cathode mass) accounted for the lion's share of nickel-magnesium compounds in cathode materials, 2019 saw nickel-intensive compounds – NCM 6:2:2 (36%) and NCM 5:3:2 (30%) – take the lead. Going forward, conversion to NCM 8:1:1 (with a nickel content of 48%) is expected, and some producers announced plans to launch commercial production of LNO, a cathode material with nickel content exceeding 50%.

The further development of the automotive industry, with the growing popularity of electric and hybrid cars, along with the evolution of cathode technology towards nickel-intensive types make for a major uptick in growth of primary nickel consumption by the industry in the long run.

Changes in demand in other consuming industries were negligible. Demand for nickel used in special steels with improved structural properties and stability grew by 3%, or 4 kt. Nickel consumption for the production of heat-resistant alloys with a high nickel content, which are key materials for the production of aircraft engines, remained unchanged. Even against the backdrop of the grounding of the Boeing 737 Max, major commercial aircraft manufacturers are building their order books 8 to 10 years ahead, which should prop up nickel demand from the sector. Nickel consumption for standard alloys dropped by 1%, or 2 kt, due to low demand from the oil and gas industry on the back of falling oil prices in 2019.

Nickel is widely used for corrosion protection and as an alternative to chrome plating. Having a strong resistance to corrosion, a high level of hardness and aesthetic properties, nickel can be used to apply decorative and protective electroplating to products. Amid a lower availability of high-grade nickel, which is traditionally used in the premium electroplating segment, nickel consumption for electroplating in 2019 decreased slightly (by 1%, or 2 kt), due to reduced demand in China and other Asian countries.

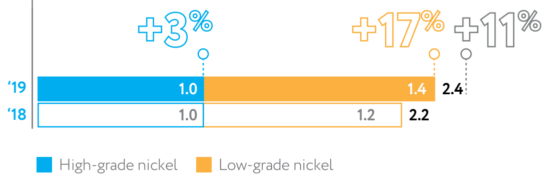
PRODUCTION

Primary nickel can be sorted into two major groups:

- High-grade nickel (cathodes, briquettes, carbonyl nickel and nickel compounds), produced from both sulphide and laterite feed. 2019's main producers of high-grade nickel were Nornickel, Jinchuan, Glencore, Vale, Sherritt, and BHP
- Low-grade nickel (ferronickel, NPI and nickel oxide), produced from laterite feed only. In 2019, the key producers of low-grade nickel included Chinese and Indonesian NPI smelters, as well as ferronickel producers such as Eramet, Posco, South 32, Anglo American, and Pamco

Primary nickel production in 2019 grew by 11%, or 242 kt y-o-y, driven primarily by a surge in low-grade nickel (NPI) output.

Primary nickel production (mln t)



Source: Company data

In 2019, high-grade nickel production increased by 3%, or 32 kt. Despite a marginal decrease in production by Vale and BHP, total smelting of refined metal increased, thanks to higher output by Nornickel and Jinchuan.

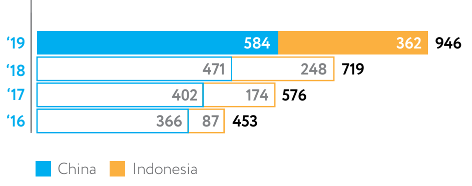
In 2019, high-grade nickel production increased by 3%, or 32 kt. Despite a marginal decrease in production by Vale and BHP, total smelting of refined metal increased, thanks to higher output by Nornickel and Jinchuan.

This was coupled with an increased output of nickel sulphate, which is a key feed for the production of cathode precursors used in Li-Ion batteries. Integrated production of nickel sulphate uses nickel matte, but elsewhere, the main feed for nickel sulphate production is hydrometallurgy semi-products (mixed hydroxide residue and mixed sulphide residue) and crude nickel sulphate, a by-product of copper and PMG production. In 2019, the main feeds for sulphate production were hydrometallurgy semi-products, as well as nickel briquettes and powders, which are melted down during shortages of other feeds.

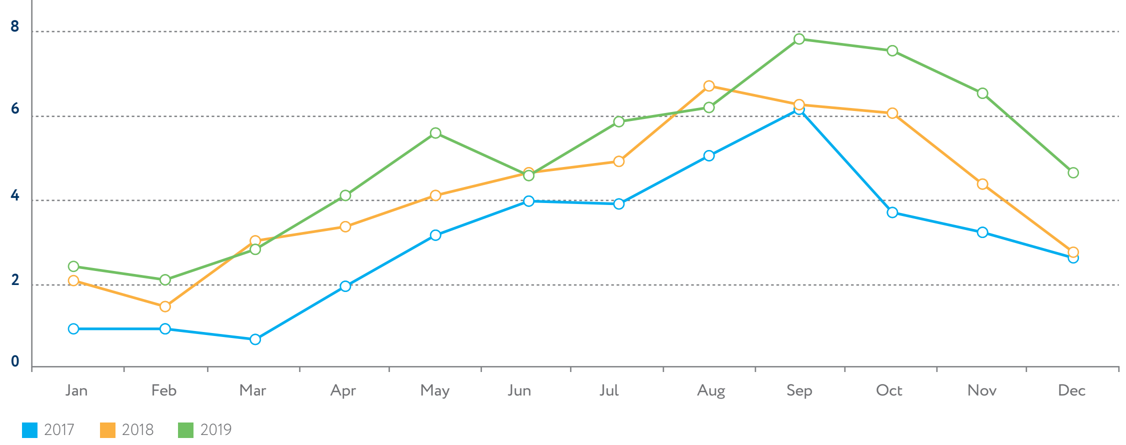
Low-grade nickel production grew by 17%, or 211 kt, boosted by a significant increase in NPI production.

In China, a record level of stainless steel smelting, coupled with a stable growth in ore imports, were the key drivers behind 2019's 24% increase in NPI production to 584 kt. In Indonesia, the startup of new production facilities of Jinchuan, and brownfield expansions at existing smelters using local ores with high nickel content resulted in NPI production growth of 46%, or 114 kt.

NPI production (kt)



Saleable nickel ore imports into China in 2016–2018 (mln t)



COPPER (Cu)

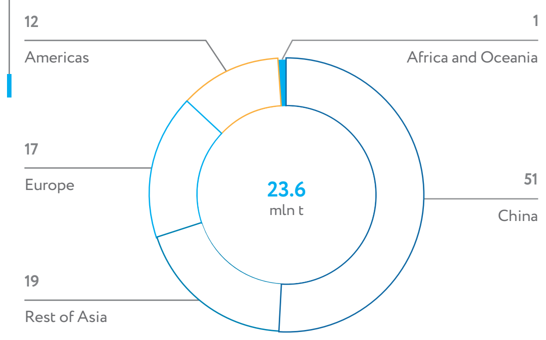
KEY TRENDS IN THE COPPER MARKET

2019: Relatively high prices at the beginning of the year (January–April), supported by reduced extraction from Chilean mines and stable demand for copper from China. Abrupt drop in May–September as escalating trade war between the USA and China gave rise to concerns that demand for metals might fall.

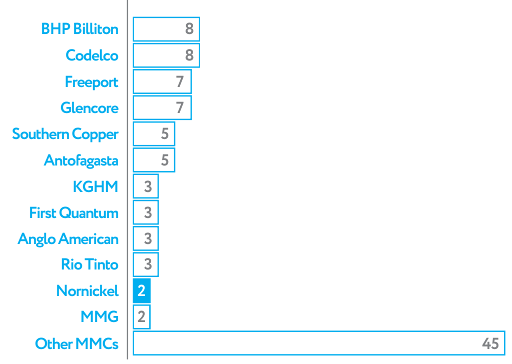
Outlook: Neutral. In the mid-term, the market will remain balanced; a successful outcome of the US–China trade talks and continued global demand may support copper prices in the short term.

Concerns over the possible fallout from the US–China trade war triggered a decline in the price of copper at the end of 2018, which was followed by a period of growth in January and February 2019. The price reached its annual peak of USD 6,572/t in early March. Price growth in 2019 was driven by deficit expectations in the copper market amid production declines in several countries: Chile saw a lower copper content in mined ores, and heavy February rains disrupted production; Indonesia's Grasberg mine (the largest in the country) experienced reduced output as it switched from surface to underground mining; and a number of mines in Africa were closed.

Refined copper consumption by region (%)



No. 11 in the copper mining industry (%)



Early May marked another round of the US–China trade war, when the US government imposed import tariffs on certain Chinese goods, adding to pessimistic sentiment in the market and causing copper prices to plummet to USD 5,750/t in mid-June. However, a strike at the Chuquicamata mine in Chile helped the price to recover to USD 5,970/t by the end of the second quarter. A lack of progress in the trade deal negotiations between the USA and China, along with a new round of tariffs from both sides put pressure on the copper price, plunging it to a two-year low of USD 5,537/t in early September.

In the fourth quarter, the copper price started to recover on the news of strikes and protests at Peruvian and Chilean mines, and amid reports of falling exchange stocks. The growth was further bolstered by a preliminary trade deal between the USA and China, bringing the price up to USD 6,200/t by the end of December.

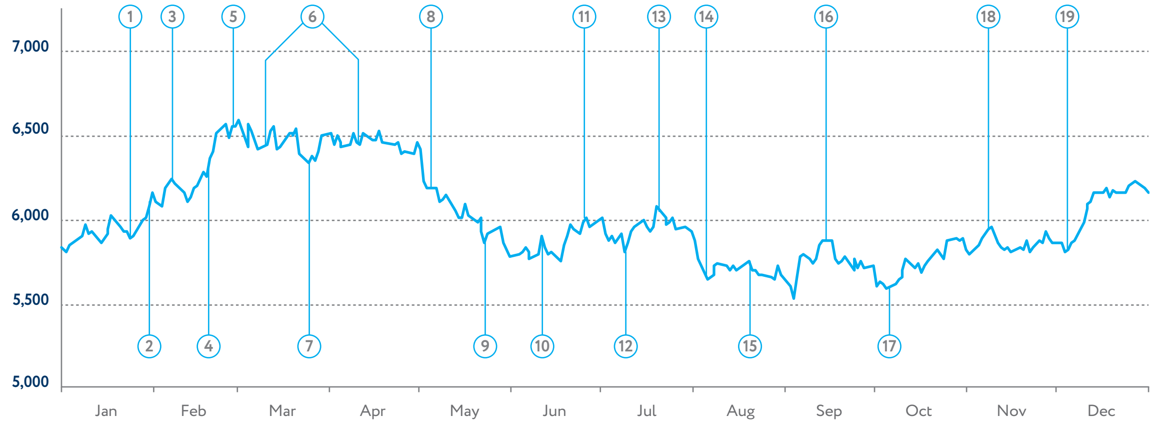
The average copper price on the London Metal Exchange in 2019 was USD 6,000/t, down by 8% from USD 6,523/t in 2018.

Average annual copper prices (USD/t)

2015	2016	2017	2018	2019
5,494	4,863	6,166	6,523	6,000

Source: London Metal Exchange (settlement)

London Metal Exchange copper price in 2019 (USD/t)



Source: LME, Company data

1/ Research groups forecast increasing market deficit
2/ Freeport announces reduced output from its Grasberg mine in Indonesia
3/ Codelco reports a decrease in copper output
4/ Heavy rains halt production at some Chilean mines
5/ Glencore shuts down a number of mines in Africa
6/ Trade talks between the USA and China continue
7/ Falling copper cathode imports to China
8/ The USA imposes import tariffs on Chinese goods worth USD 200 bn
9/ Chinese countersanctions, tariffs on US goods
10/ Reports of declining production in Chile
11/ Strike at Chile's Chuquicamata mine
12/ Chuquicamata strike ends
13/ Increas in copper concentrate imports to China
14/ Extra US tariffs on Chinese imports worth USD 325 bn
15/ Research groups report increasing market deficit
16/ National strike in Peru
17/ News of a reduction in electric grid investment in China
18/ Brief strike at Chile's Escondida mine
19/ The USA and China sign a preliminary trade agreement (phase 1)

MARKET BALANCE

In 2019, the refined copper market remained in balance, as in 2018, with the deficit at just 0.2% of the total market volume, or 50 kt. In 2019, total exchange inventories dropped by 13% to 304 kt (351 kt at end-2018), or at little less than five days of global consumption, with off-exchange inventories going slightly up.

Refined copper market balance (kt)

Source: Company data

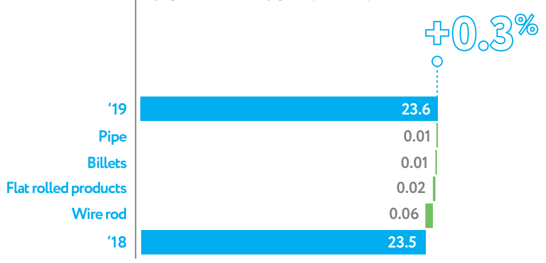
CONSUMPTION

Given its high electrical and thermal conductivity, ductility and corrosion resistance, copper is widely used in various industries. Up to 75% of refined copper produced globally is used for manufacturing electrical conductors, including various types of cable and wire. Key copper-consuming industries include construction, electrical and electronic equipment manufacturing, power industry, transport, engineering, various equipment and consumer goods production.

In 2019, global consumption of refined copper totalled 23.6 mln t (up 0,3%, or 0.1 mln t, y-o-y) due primarily to stronger demand from cable and wire manufacturers. Growth in copper consumption in pipe, flat rolled products and billet production segments was marginal.

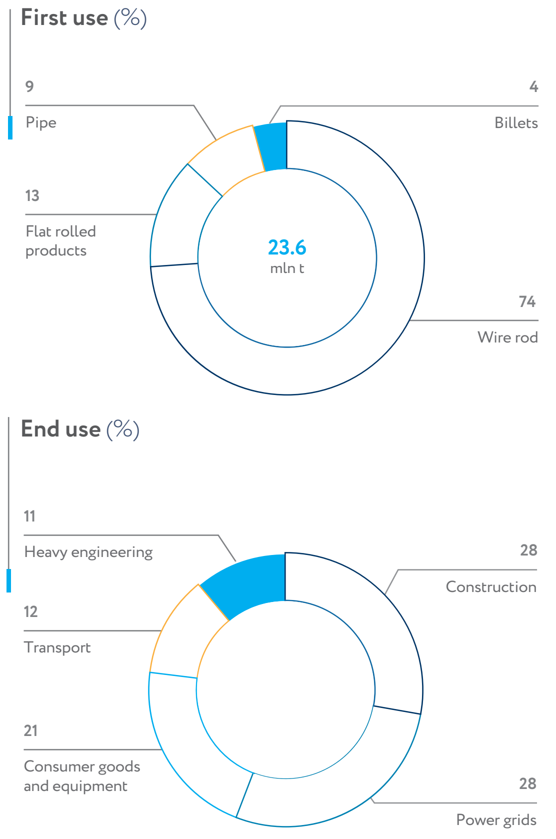
China remains the largest copper consumer globally, with its market share reaching around 51% in 2019 and demand growing by 2%. Experts' concerns over a potential major slowdown of the country's economy (in part due to the trade war with the USA) proved unfounded. Refined copper imports to China decreased in 2019 by 6% to about 5 mln t, while copper scrap imports were down by 2% after imposition of restrictive quotas on imports by the government.

Changes in refined copper consumption by product type (mln t)



Sources: Company data, Wood Mackenzie

Refined copper consumption by industry



Sources: Company data, Wood Mackenzie

Copper concentrate imports rose by 12% to 22 mln t, which helped to meet China's growing consumption needs through the expansion of local production capacity.

Copper demand trends in developed markets were mixed: consumption in Europe (the Group's key market for copper cathodes) shrank by 3.5% in 2019; in North America and Asia (excluding China), consumption rose by 1%. Russia's domestic copper cathode consumption grew by 4% in 2019.

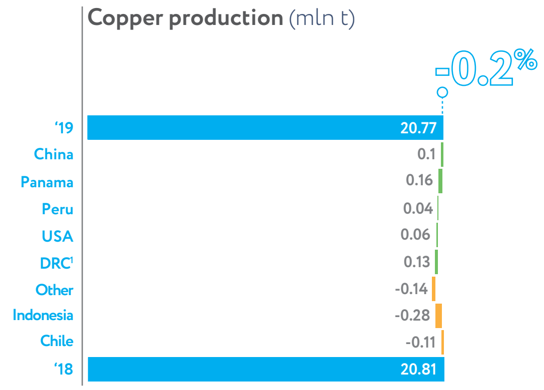
PRODUCTION

In 2019, global refined copper output rose 0.3%, or by 0.1 mln t, y-o-y to 23.55 mln t. The biggest growth came from China, which is firmly on track to deliver smelting and refining capacity expansions. In 2019, refined copper production in China grew by 5% to 9 mln t, while its share in total global output reached 38%. Copper ore mined locally supports just 20% of total Chinese production, with the remaining 80% covered by imported copper concentrates and scrap.

In the rest of Asia (excluding China), refined copper output dropped 3% (with production declines in India and Japan). In North America, it grew by 3.5% (driven by the USA). In South America, it fell by 8% (due to Chile and Peru ramping up concentrate exports to China). In Europe, it slipped by 2%, driven by Germany and Poland. According to preliminary estimates, Russia's refined copper production declined marginally.

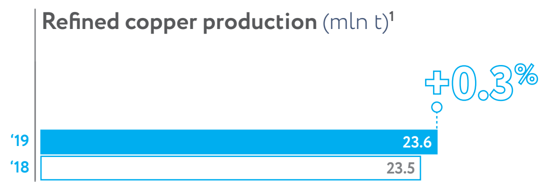
In 2019, global copper production fell 0.2% to 20.7 mln t due primarily to production cutbacks in some Chilean mines and scheduled ramp-down of the Grasberg mine (Indonesia) for technical reasons. The decline was partially offset by the growth of China's domestic mining industry and the commissioning of the new Cobre Panama project in Panama. About 2.8 mln t of refined copper were additionally produced from previously stockpiled scraps and concentrates.

Copper production (mln t)



Sources: Company data, Wood Mackenzie

Refined copper production (mln t)[1]



In 2019, mined production in Chile, the world's leading producer of copper, declined by 2% y-o-y to 5.75 mln t due to poor weather conditions and short-lived strikes. The output of the state-owned Codelco continued to decline (1.7 mln t in 2019, down 5% y-o-y) due to a lack of investment in older deposits with declining average copper ore grades and technical challenges. Production in Peru grew by 1.5% to 2.4 mln t on the back of the Toquepala mine development.

A 4% growth in Africa's mined production to 2.5 mln t was mainly due to higher output from mines at the Democratic Republic of the Congo, while Zambia's mined production slipped marginally.

In 2019, China, which is currently developing a number of smaller mines, ramped up its mined production by 6% to 1.7 mln t. Mined production in Indonesia was almost halved to 0.4 mln t as the Grasberg mine operated by Freeport shifted from open-pit to underground mining.

North America's production grew by 4% to 2.7 mln t thanks to resumed operations at multiple smaller mines in the USA, Mexico, and Canada, after technical problems in the previous year. According to preliminary estimates, Russia's copper production increased by about 2%.

The actual growth in refined copper output in 2019 came short of analysts' forecasts made early in the year due to falling extraction rates. Consumption growth was also below expectations due to the escalation of the US–China trade war. Eventually, the global market remained rather well balanced, with its minor deficit close to initial forecasts.

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[1] DRC — Democratic Republic of the Kongo

PALLADIUM (Pd)

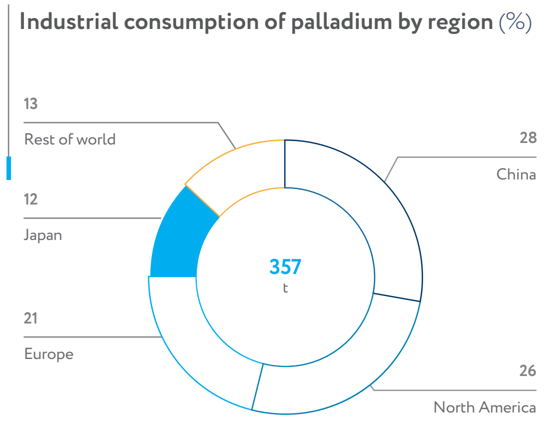
KEY TRENDS IN THE PALLADIUM MARKET

2019 was another year of growing palladium prices due to the steady increases in consumption from the automotive industry amid tougher environmental standards worldwide. Deficit was offset by primary production growth and improved recovery of automotive catalysts as supplies from previously accumulated stocks were much smaller.

The price growth of palladium that began in the second half of 2018 continued into the first quarter of 2019. At the end of March, the price hit an all-time high of USD 1,604/oz. Palladium benefited from a fundamental market deficit and a continued shortage of metal available for spot buying. Price growth was also supported by macroeconomic factors. At its January and March meetings, the US Federal Open Market Committee (FOMC) decided to put interest rate hikes on hold, which had a positive effect on precious metals prices. Moreover, the revived growth of stock market indices increased interest in palladium as a metal widely used in industrial applications.

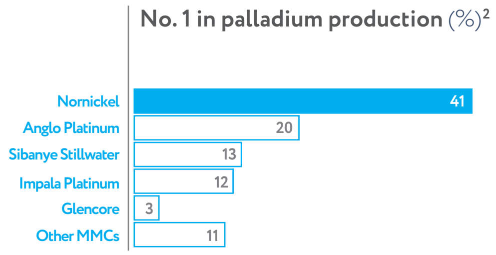
March peaks were followed by price correction early in the second quarter to USD 1,350/oz due to additional supply from South African palladium producers and recyclers which had built up significant work-in-progress inventories by the end of 2018. Besides, consumers sold some of their inventories to reduce hedging costs and improve balance sheet structures. Another significant driver was speculators locking in profits at the close of the first quarter of the financial year, which in some countries ends on 31 March.

Industrial consumption of palladium by region (%)



Source: Company data

No. 1 in palladium production (%)[2]



Statements made by the US FED in early June gave rise to expectations of possible interest rate cuts in 2019. This weakened the dollar and had a positive effect on precious metals prices, resulting in resumed growth in palladium prices, which exceeded USD 1,500/oz by the end of the first half of the year. After a moderate correction seen in late July, palladium prices began growing from August to September and came close to a USD 1,700/oz mark. This was, in part, caused by the increased net long speculative positions in NYMEX; however fundamental factors and news of metal shortages in both warehouses and on the spot market contributed the most to the price increase.

The price rally continued into the fourth quarter, with palladium prices hitting another all-time high of USD 1,990/oz amid stronger backwardation in the forward market, increased demand from automakers, and structural deficit in the market. Lease rate increases were moderate and long speculative positions remained at moderate levels.

Average annual palladium prices (USD/oz.)

2014	2015	2016	2017	2018	2019
803	691	613	869	1,029	1,538

Source: LBMA

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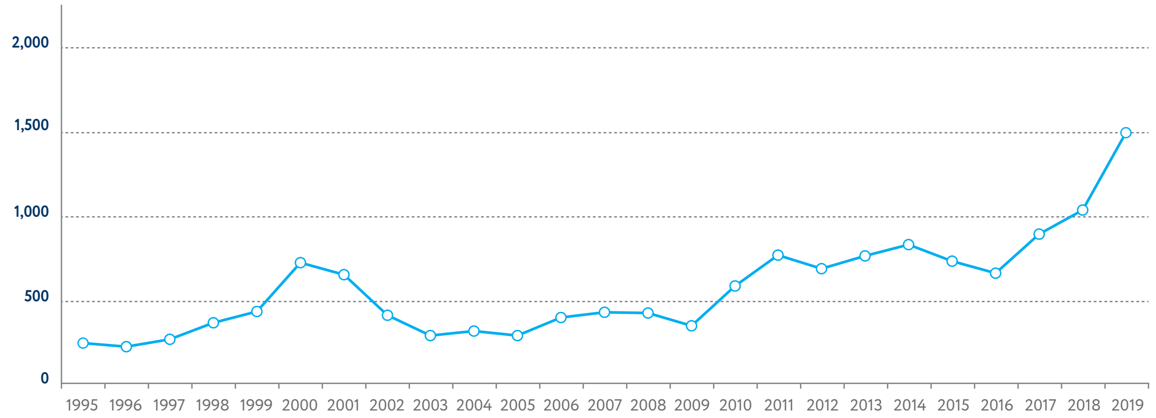
[2] Refined metal including production from own feedstock by third-parties under tolling agreements.

Average annual palladium prices (USD /oz)



Thus, it can be argued that prices were supported by long-term fundamental factors such as a multi-year, persistent market deficit with palladium production lagging behind consumption; an increasing share of petrol cars; a growing production of vehicles with hybrid propulsion systems; and expectations of a surge in palladium use in the catalysts of automobile exhaust treatment systems – a trend initiated by tougher environmental standards in key markets.

However, the negative effect from car production decrease in absolute terms, especially in China, was fully offset by the increased per unit use of palladium in exhaust treatment systems, which was facilitated by new vehicle emissions testing standards (WLTP and RDE tests) and environmental regulations (China 6, Euro 6d, the US's Tier 3, etc.).

The average palladium price in 2019 reached USD 1,538/oz, 49% more than the previous all-time high in 2018.

Palladium, together with rhodium, remained among the strongest performers in the commodity markets, with its premium to platinum rising throughout the year and coming close to 100% by the year-end.

MARKET BALANCE

Since 2010, there has been a sustained undersupply in the physical palladium market covered by the inventories accumulated in previous years. Even though production grew faster than industrial consumption in 2019, market deficit stood at 24 t due to dwindling government reserves of palladium and ETF inventories.

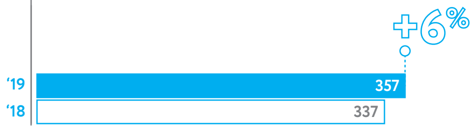
Palladium market balance[1] (t)

Palladium production and consumption balance	–29
Outflows from ETFs	4
Destocking by mining companies	1
Supply and demand balance	–24

CONSUMPTION

In 2019, industrial consumption of palladium increased by 20 t (up 6%) y-o-y, hitting a new all-time high of 357 t.

Industrial consumption of palladium (t)



AUTOMOTIVE INDUSTRY

Exhaust treatment systems account for the bulk of total palladium consumption. In this sector, palladium is used in catalytic converters to detoxify exhaust fumes. In most countries, such converters are legally required to be installed on all motor vehicles.

Due to its unique catalytic properties ensuring effective chemical reactions throughout the entire vehicle life cycle, there are almost no alternatives to palladium in this sector except for platinum, which is used mostly in diesel vehicles, and rhodium. Given the already significant share of the automotive industry in rhodium consumption and small market size (annual global production stands at 23 t), rhodium is subject to high price volatility and constant risk of physical metal shortage.

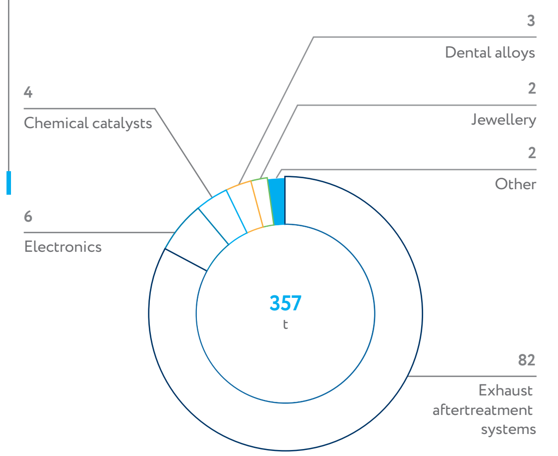
In 2019, palladium consumption by the automotive industry increased by 25 t, hitting a new all-time high of 294 t. This was mostly driven by tougher regulations on pollutant emissions, including the Worldwide Harmonised Light Vehicle Test Procedure (WLTP) – a new procedure for testing cars' emissions that took effect in the EU and Japan in September and October 2019, respectively. WLTP is designed to make tests more rigorous by extending their distance and duration, increasing the car weight, requiring faster acceleration, and stipulating that testing should be performed at different altitudes and temperatures. The Real Driving Emissions (RDE) test is another recently introduced regulation, in effect as of September 2019. These developments forced automakers to implement more sophisticated exhaust treatment systems and expand the use of PGMs per catalytic converter.

The marked increase in palladium consumption by the automotive industry in China came in the wake of tougher environmental requirements as part of the China 6b rollout across the country starting from 2019. The China 6b standard is based on best practices in emission control as developed in the USA and the EU, and sets out certain additional requirements. About 70% of all cars manufactured in China in 2019 met the new standard.

Changes in the fleet mix also boosted palladium consumption among automakers as light diesel vehicles were further replaced with petrol cars and hybrids, which make greater use of palladium-based catalytic converters for exhaust fumes. In 2019, the market share of diesel cars in Europe (27 countries) dropped from 36% to 31%, an all-time low since 2000.

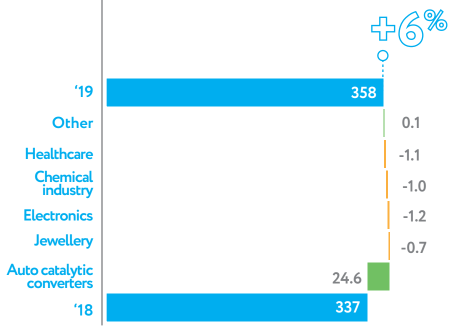
Vehicle hybridisation is another trend driving palladium consumption. In 2019, production of mild, full and plug-in HEVs (PHEVs) increased by 22%, 26% and 3%, respectively. Since hybrids include petrol engines, they mostly use palladium-based catalytic converters. With the same engine displacement as the regular petrol vehicle, the hybrid uses more of the metal due to more frequent cold starts.

Palladium consumption by industry (%)



Source: Company data

Change in palladium consumption by application area (t)



Source: Company data

The growing use of PGMs in the automotive industry is also indirectly driven by consumers migrating from sedans to larger-engine crossovers. In 2019, the share of SUVs and pickups in the USA increased by 2% to 64%, completely offsetting the overall decline of the national automotive industry's output in terms of palladium consumption.

Vehicles using batteries without PGM-based exhaust catalytic converters have remained a niche market (under 2% of the global car production), which showed no significant growth in 2019 due to cuts in government subsidies for buyers of electric vehicles in China.

The global automotive industry's overall output and sales declines (down 4% y-o-y) were a drag on the industry's palladium consumption, with the world's largest market, China, showing the biggest decline (down 8%). Vehicle production in the North America, Europe and Japan largely remained flat from 2018, and none of the world's regions saw any significant growth. The negative effect from the decreasing overall global vehicle production was fully offset by more extensive use of palladium per vehicle.

The average premium of palladium vs platinum ranged from USD 400/oz to USD 1,000/oz and stood at USD 950/oz as of the end of the year. Contrary to most players' expectations expressed in the last two years regarding imminent substitution of palladium with platinum in catalytic converters used for petrol engines, no signs of such substitution were observed in 2019.

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[1] Excluding reallocated other reserves

ELECTRONICS

Palladium consumption in the electronics industry continued a moderate downward trend in 2019 (down 1.2 t) In recent years, the use of palladium in multi-layer ceramic capacitors has been in decline, becoming limited to the most sophisticated products with a focus on reliability and performance in harsh environments, such as those in the defence and aerospace industries. Given the metal price inelasticity of demand, consumption in these sectors is expected to remain flat. However, the use of palladium as an electroplating material for connectors and lead frames continued to decrease due to a decline in the global production of electronic devices.

CHEMICAL INDUSTRY

The use of palladium in chemical catalysts decreased by 1 t y-o-y after significant growth in 2018. In the mid-term, growing consumption of palladium in the chemical industry will be driven by newly launched terephthalic acid projects in China.

HEALTHCARE

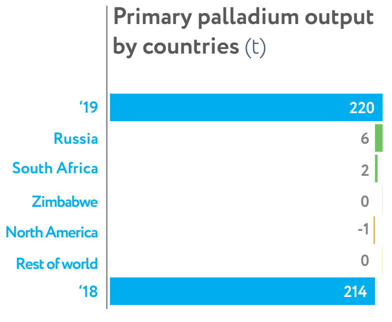
The consumption of palladium in the healthcare sector continued a downward trend and declined by 11%, or 1 t, y-o-y due to the substitution of palladium with composite material alternatives. In Japan, the largest consumer of the metal for dental prostheses, demand for palladium has been declining in recent years by an average of 5% to 10% per year.

JEWELLERY

> Russia, the leading palladium producing country, posted an output increase (up 6 t)

Palladium is used in white gold alloys or, in its pure form, to make wedding rings among other items. In 2019, jewellery-related consumption of palladium decreased by another 0.7 t. A drop in Chinese demand for these products amidst a general slowdown in consumer spending and a shift to other luxury goods were the primary cause of the continued sales decline. Palladium jewellery sales were also affected by growing prices for the metal.

Primary palladium output by countries (t)



Source: Company data

INVESTMENTS

Investor demand for palladium kept shrinking in 2019 mostly due to outflows from exchange-traded funds (ETFs), which had their inventories reduced by 4 t to 22 t – an all-time low since 2008. The outflows amid growing palladium prices were driven by a wave of profit taking and by investors reallocating their capital to other palladium investment options to benefit from a swing to backwardation.

PRODUCTION

In 2019, primary refined palladium production increased by 3% to 220 t.

South Africa, the world second largest palladium producer, also demonstrated a y-o-y increase (up 2 t). In Zimbabwe, palladium output remained stayed flat from 2018.

Primary palladium production in Canada declined by 1 t, while in the USA it remained largely flat.

The main sources of recycled palladium are scrapped auto catalytic converters, as well as jewellery and electronic scrap. In 2019, recycled output grew by 12 t to 109 t as demand grew for catalytic converter scrap on the back of increased prices for palladium and steel scrap. Recycling capacity utilisation rates are currently near 100%. Jewellery and electronic scrap volumes remained flat.

The sources of previously accumulated palladium stockpiles include trading companies, financial institutions, government reserves, and consumers' surplus inventories. In 2017–2018, Nornickel's Global Palladium Fund (GPF) supplied the market with more than 1 Moz of palladium on top of Nornickel's own output. The stockpile had been created through purchases from third parties.

PLATINUM (Pt)

KEY TRENDS IN THE PLATINUM MARKET

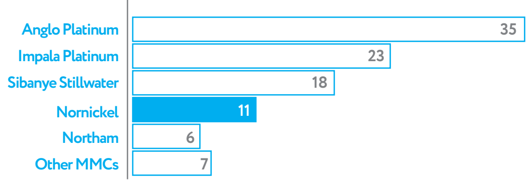
2019: A growing deficit in the market driven by high investor demand which has fully offset the decline in platinum use by the automotive, jewellery, glass, and other industries.

Following a significant drop in late 2018, the price of platinum remained stable throughout 2019 and showed some fluctuation while staying within the range of USD 780/oz to USD 920/oz in the first half of 2019. In the second half of 2019, the price increased as investor demand recovered, triggering sharp inflows into platinum ETFs (31 t in total). At year-end, the price of platinum stood at USD 971/oz.

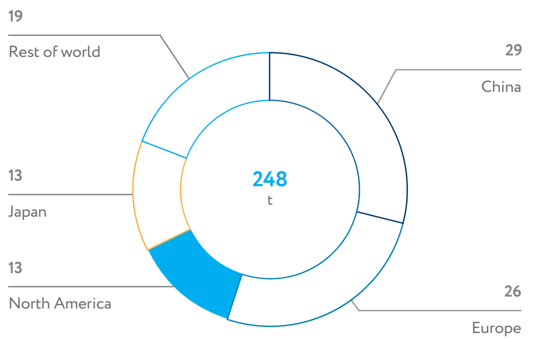
Platinum and gold prices moved closely together in 2019, indicative of platinum prices being highly dependent on macroeconomic factors, which had an overall positive influence on precious metals during the year. The US Fed's decision to put interest rate hikes on hold led to a weaker US dollar and thus bolstered precious metals prices. And as inflation expectations rose compared to 2018, investors were more inclined to move to precious metals as a safe-haven asset.

During the year, platinum traded 40% lower against gold. In April and May, the gap reduced to 30%, driven by recovering investor demand for platinum and an increase in net-long speculative positions in NYMEX. As the price and the speculative sentiment went down at the end of the first half of 2019, the spread soon rebounded to a 40% mark.

No. 4 in platinum production (%)[1]



Platinum consumption by region (%)



Source: Company data

The key fundamentals behind this included a drop in platinum consumption by the automotive industry due to a shrinking share of diesel cars in key markets (primarily, Western Europe), the lack of anticipated recovery in demand from Chinese jewellers due to a threatened trade war between China and the USA, and primary producers not being too sensitive to low prices.

The average platinum price in 2019 was USD 863/oz (a 15-year low), down 2% y-o-y.

Average annual platinum prices (USD/oz)

2014	2015	2016	2017	2018	2019
1,385	1,053	989	949	880	863

Source: LBMA Platinum price

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[1] Refined metal including production from own feedstock by third parties under tolling agreements.

MARKET BALANCE

The platinum market went into a deficit in 2019: even though platinum production exceeded consumption, much of the excess supply was absorbed by investor demand.

Platinum market balance (t)

Platinum production and consumption balance	18
Investor demand	42
Destocking by mining companies	3
Supply and demand balance	–22

CONSUMPTION

Industrial consumption of platinum in 2019 declined to 243 t, down 6 t (or 3%) y-o-y.

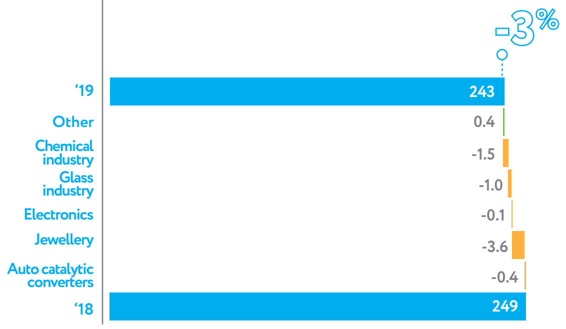
The automotive industry is the predominant consumer of platinum. Over 80% of platinum in this industry is used to manufacture exhaust gas catalysts for diesel vehicles.

In 2019, platinum consumption in the automotive sector marginally decreased y-o-y by 0.4 t mainly due to a decreased share of diesel vehicles in their key market – Europe. In 2019, the market share of diesel cars in Europe (27 countries) dropped from 36% to 31%, an all-time low since 2000.

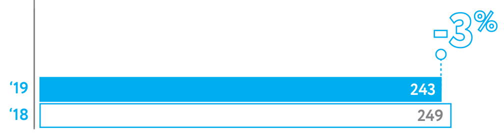
Diesel engines are giving way to petrol-based solutions, while more expensive vehicles utilise petrol-electric hybrids. The lower platinum consumption by car makers was partially offset by increased manufacturing of trucks, the catalytic devices of which still rely on platinum.

The second-largest platinum consumer is the jewellery industry, accounting for a third of demand. The reporting period saw a sustained downward trend in platinum consumption in the industry (down 3.6 t), persisting over the last few years. The decrease was primarily driven by lower jewellery demand in China due to consumers switching to other investment options, and the falling demand for luxury goods amid concerns over the country's sustained economic growth. While China is currently facing growing competition in the platinum jewellery sector from gold items, other major markets (India, Japan, USA, and Europe) have seen increased platinum jewellery sales.

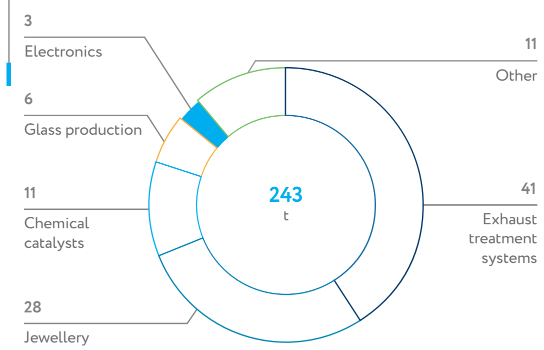
Platinum consumption by application area (t)



Consumption of platinum (t)



Platinum consumption in 2019 by industry (t)



CHEMICAL INDUSTRY

In 2019, primary platinum consumption in industrial catalyst manufacturing decreased by 1.5 t due to lower refining volumes and falling oil prices.

GLASS INDUSTRY

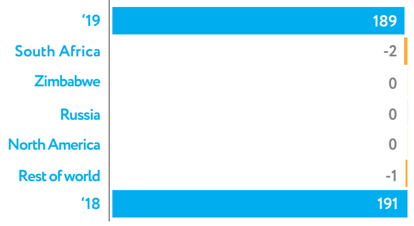
Platinum is needed to produce glass fibre and optical glass. In 2019, the industry's demand for platinum declined (down 1 t) after several years of continuous growth.

Platinum consumption in electronics slightly decreased (down 0.1 t).

INVESTMENTS

Platinum is widely used as an investment instrument. Physical investments may vary from coins and smaller bars to investments in physical platinum ETFs, which accumulate large amounts of platinum in standard bars. In 2018, the demand for platinum bars from retail investors slightly rose (up 9 t) due to low prices coupled with expectations of growth. During the year, investments in platinum ETFs fell by 7 t to 76 t.

Primary platinum production by countries (t)



Source: Company data

PRODUCTION

Global production of primary refined platinum in 2019 decreased y-o-y by 2 t to 189 t.

In the reporting period, supply from South Africa, the world's largest platinum producer, declined by 2 t. Russia recorded a slight increase of 0.3 t in platinum output, with continued production declines at the alluvial deposits in the Far East region driven by a depleting mineral resource base. The negative trend was offset by an increase in Nornickel's output.

The platinum output in other regions remained largely unchanged.

The main sources of recycled platinum include used exhaust gas catalysts and jewellery scrap. Recycled output in 2019 grew by 6 t to 71 t. However, the growth of recycling was hampered by difficulties in using new types of silicon carbide-based diesel catalysts. Being a refractory material, it can damage furnaces unfit to handle it. This requires processors to sort through catalysts and separately process material with a high silicon content, requiring extra time and resources.

The sources of previously accumulated platinum stockpiles include trading companies, financial institutions, and surplus inventories of consumers, while the movement of these inventories is non-transparent.

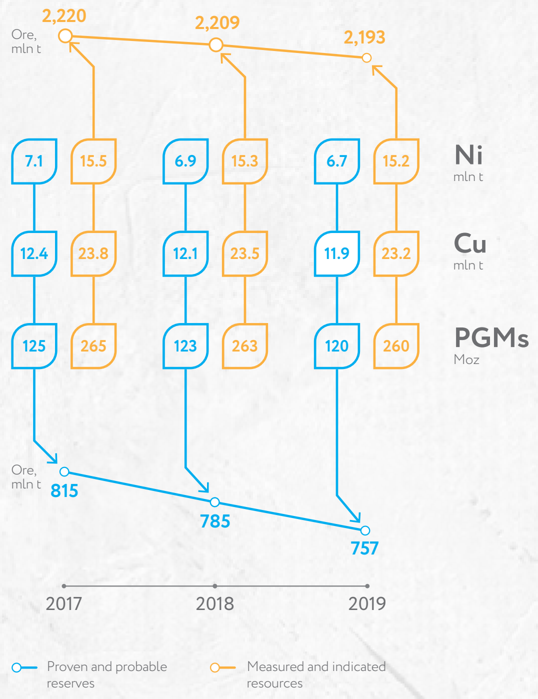
Business

Overview

MINERAL BASE

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 expanding its resource base is essential to its long-term development.

MINERAL RESOURCES AND ORE RESERVES[1]



EXISTING DEPOSITS

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

>80

years

of resources at the current production rate

For more details on mineral resources and ore reserves, please see p. 326

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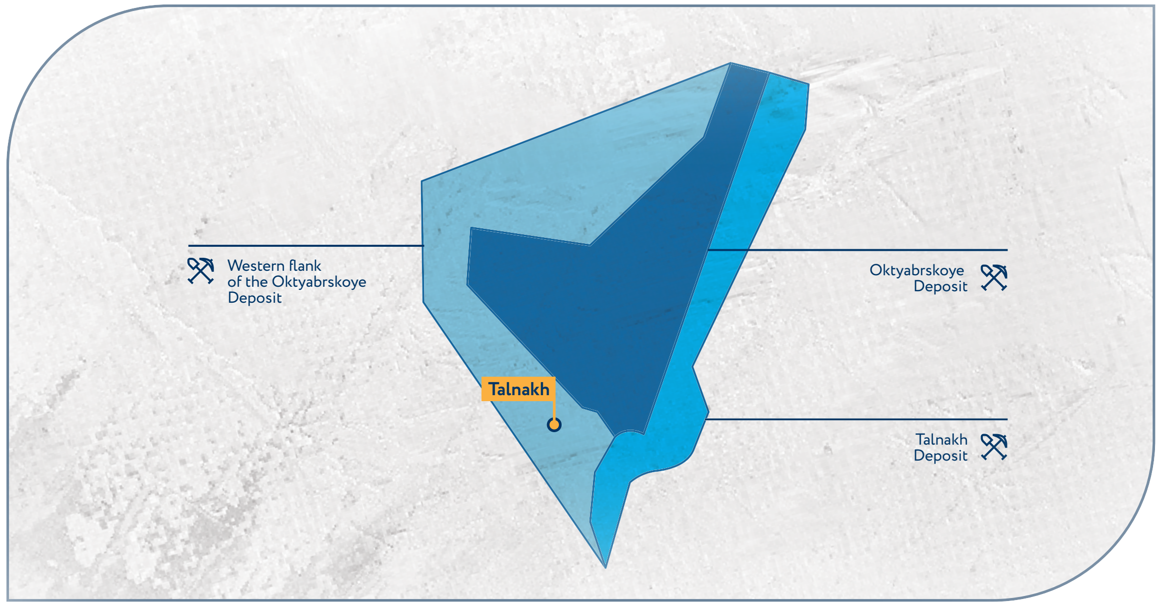
[1] Data on mineral resources and ore reserves are based on the data on ore and metal balance reserves from the Russian divisions (reported in Form No. 5-gr under the Russian classification), analysed and converted as necessary to estimates under the Australasian Code for Reporting of Mineral Resources and Ore Reserves (the JORC Code). The estimates are JORC-compliant, use the terms recommended by the Russian Code for the Public Reporting of Exploration Results, Mineral Resources and Mineral Reserves (the NAEN Code), and are based on the rules and regulations developed by Micon International Limited which conducts regular audits of the Group's reserves in Russia.
The reserves and resources include wholly owned international assets (the Honeymoon Well project), net of GRK Bystrinkoye's deposits.
Platinum group metals (PGMs) are platinum, palladium, rhodium, ruthenium, osmium, and iridium.



TALNAKH ORE CLUSTER

Location and profile

The Talnakh ore cluster is located in the Norilsk Industrial District, on the right bank of the Norilskaya River. It includes the world's largest Oktyabrskoye and Talnakhskoye copper-nickel deposits located on the north-western margin of the Siberian Craton. In the early 1960s, multiple ore bodies 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 Polar Division.

Proven and probable reserves

631

mln t of ore

Ni – 6 mln t
Cu – 11 mln t
PGMs – 112 Moz

Measured and indicated resources

1,554

mln t of ore

Ni – 11 mln t
Cu – 22 mln t
PGMs – 234 Moz

Balance reserves growth in 2019

4

mln t of ore

Ni – 109 kt
Cu – 123 kt
PGMs – 1 Moz

Balance metal reserves involved in 2019

14

mln t of ore

Ni – 259 kt
Cu – 448 kt
PGMs – 4 Moz

Balance reserves

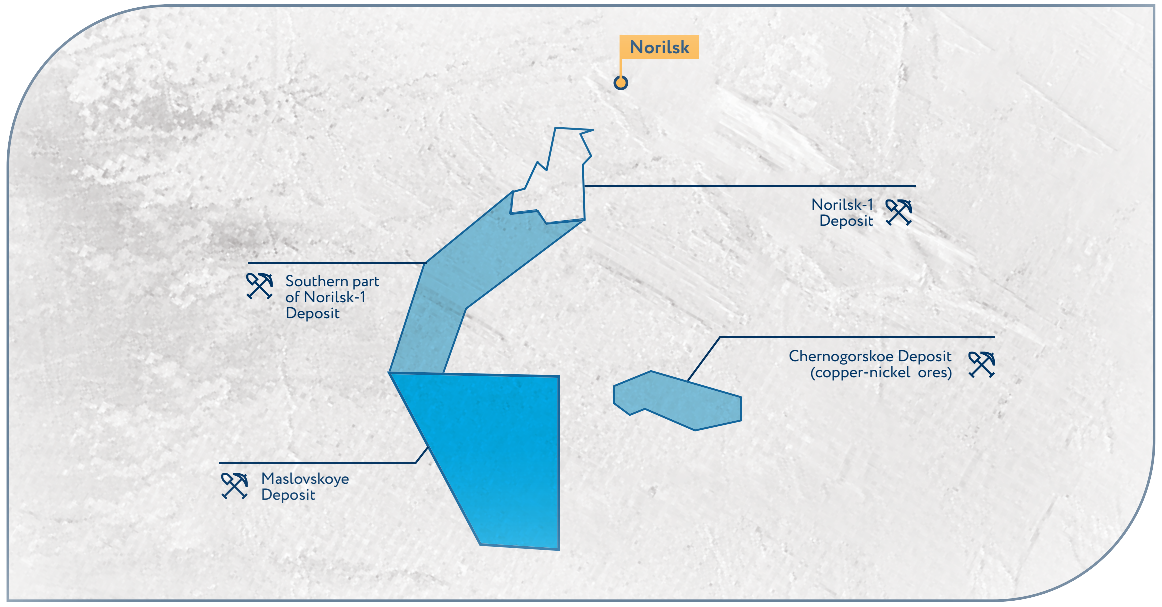
1,991

mln t of ore

Ni – 15 mln t
Cu – 29 mln t
PGMs – 312 Moz

Average metal content

Ni – 3.0%, **Cu** – 3.3%, **PGMs** – 8.6 g/t



NORILSK ORE CLUSTER

Location and profile

The Norilsk ore cluster (NID) is located in the Norilsk Industrial District. Brownfields include the northern part of the Norilsk-1 deposit producing disseminated sulphide ores since the 1930s.

To finance brownfield expansion in the northern part of the Norilsk-1 deposit, Nornickel launched the South Cluster project. A licence to develop Norilsk-1 and also some of the Polar Division's 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.

Balance reserves growth in 2019

1

mln t of ore

Ni – 2 kt
Cu – 3 kt
PGMs – 0.1 Moz

Balance metal reserves involved in 2019

2

mln t of ore

Ni – 7 kt
Cu – 10 kt
PGMs – 0.4 Moz

Average metal content

Ni – 3.0%, **Cu** – 0.5%, **PGMs** – 2.3 g/t

Proven and probable reserves

42

mln t of ore

Ni – 0.1 mln t
Cu – 0.2 mln t
PGMs – 8 Moz

Measured and indicated resources

145

mln t of ore

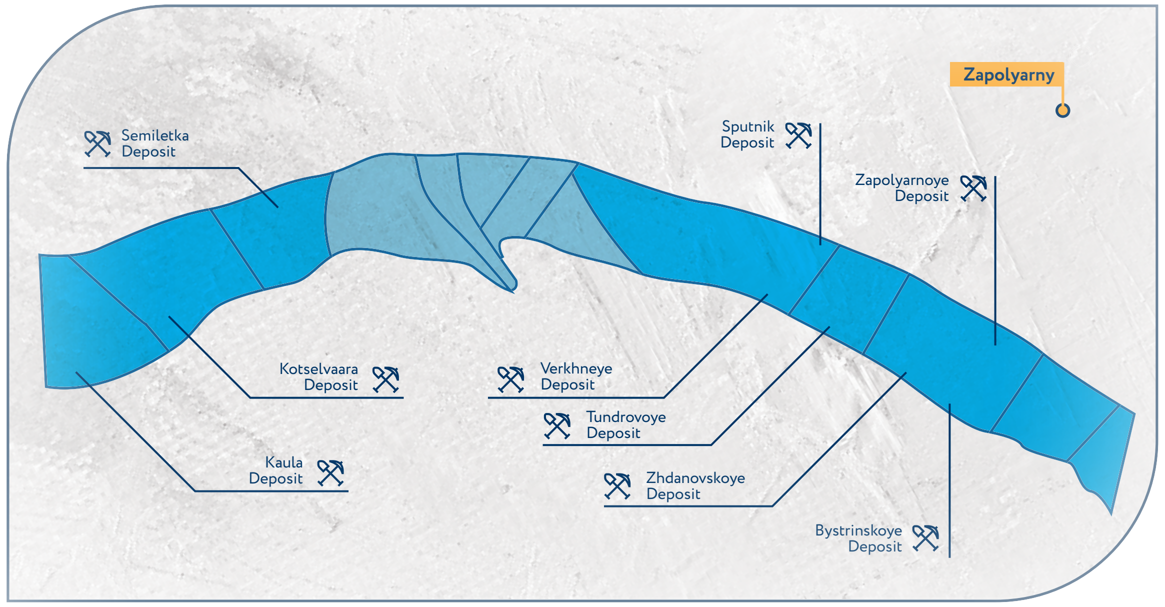
Ni – 0.4 mln t
Cu – 0.5 mln t
PGMs – 25 Moz

Balance reserves

146

mln t of ore

Ni – 0.4 mln t
Cu – 0.6 mln t
PGMs – 25 Moz



KOLA MMC DEPOSITS

Location and profile

Kola MMC develops deposits located within a 25 km stretch between Nickel 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.

Balance metal reserves involved in 2019

7

mln t of ore

Ni – 47 kt
Cu – 21 kt

Proven and probable reserves

85

mln t of ore

Ni – 0.5 mln t
Cu – 0.3 mln t

Measured and indicated resources

321

mln t of ore

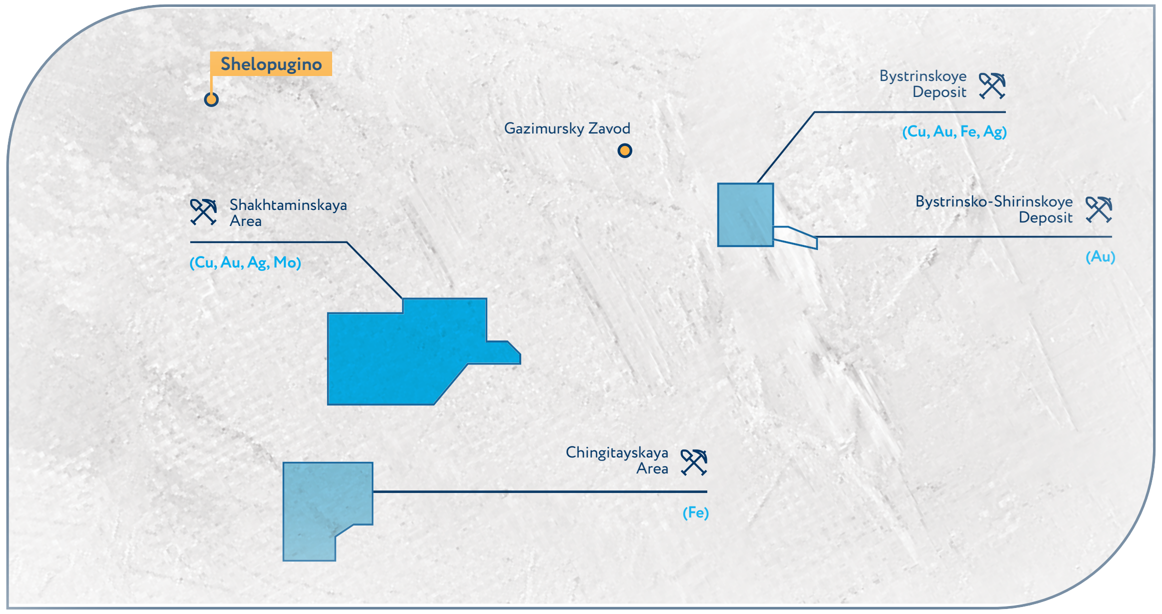
Ni – 2 mln t
Cu – 1 mln t

Balance reserves

465

mln t of ore

Ni – 3 mln t
Cu – 1.5 mln t



BYSTRINSKOYE DEPOSIT

Location and profile
The Bystrinskoye deposit is located in the Zabaykalsky Region, 16 km east of Gazimursky Zavod. Nornickel owns 50.01% of GRK Bystrinskoye which develops gold-iron-copper ores of the Bystrinskoye deposit. The Bystrinskoye deposit and Bystrinsky GOK came online in 2019.

Balance reserves

316

mln t of ore

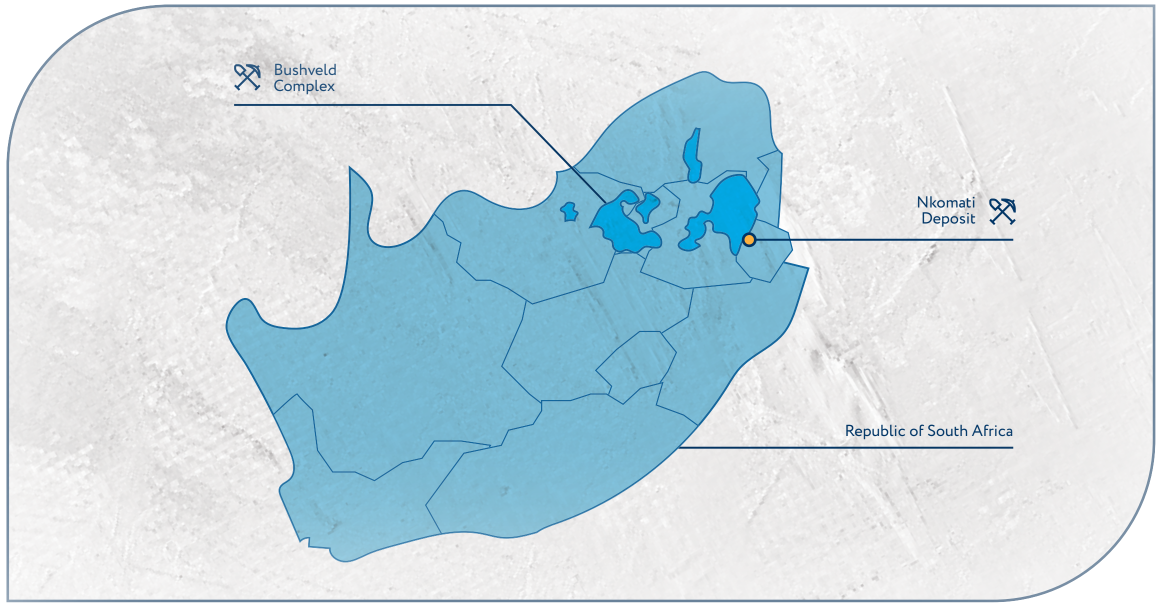
Cu – 2 mln t
Au – 9 Moz
Ag – 38 Moz
Fe – 70 mln t

Balance reserves involved in 2019

10

mln t of ore

Cu – 61 kt
Au – 317 koz
Ag – 823 koz
Fe – 2 mln t



NKOMATI DEPOSIT

Location and profile
The Nkomati disseminated copper-nickel sulphide ore deposit is part of the Bushveld Complex in South Africa. The deposit consists of several ore bodies. The major ones are a solid sulphide ore body (high-grade nickel ore) and the main mineralisation zone (MMZ ore). It also includes a peridotite chromite mineralisation zone (PCMZ) with a lower metal content vs the main mineralisation zone. The deposit is developed by Nkomati (50%-owned by Nornickel). In 2019, the Group and its operating partner, African Rainbow Minerals, reached an agreement to scale down production at Nkomati Nickel Mine during 2020. As part of this process, the partners will elaborate in due course a plan contemplating the cessation of the mining operations and the placing of the mine in care and maintenance.

Proven and probable reserves

8

mln t of ore

Ni – 22 kt
Cu – 8 kt
Co – 1 kt
PGMs – 0.2 Moz

Measured and indicated resources

173

mln t of ore

Ni – 602 kt
Cu – 236 kt
Co – 32 kt
PGMs – 5.2 Moz

GROWTH PROJECTS

MASLOVSKOYE DEPOSIT

Location and profile
The Maslovskoye deposit is located in the Norilsk Industrial District, 12 km south of the Norilsk-1 deposit.

The Company received the licence to explore and mine the Maslovskoye deposit's platinum-copper-nickel sulphide ores in 2015.

Balance reserves
A feasibility study of permanent exploratory standards and a reserve statement for the Maslovskoye deposit were approved by the State Reserves Commission of the Russian Ministry of Natural Resources and included into the State Register of Mineral Reserves (Minutes No. 5561 dated 12 October 2018).

B + C_1 + C_2 mineral reserves

Item	Ore	Metal content in ore
Total ore	207 mln t	–
PGMs	49 Moz	7.4 g/t
Palladium	33 Moz	5.0 g/t
Platinum	13 Moz	2.0 g/t
Nickel	1 mln t	0.3%
Copper	1 mln t	0.5%
Cobalt	26 kt	0.01%
Gold	1 Moz	0.2 g/t

BUGDAINSKOYE DEPOSIT

Location and profile
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 in a low-price global molybdenium market, and in 2017 extended the suspension of operations for another five years, until 31 December 2022.

Balance reserves

Item	Reserves
Ore	812 mln t
Molybdenum	600 kt
Gold	360 koz
Silver	6,221 koz
Lead	41 kt

HONEYMOON WELL

The Group holds a mining licence to develop the Honeymoon Well project in Australia, which comprises deposits containing disseminated nickel sulphide ore (the Hannibals, Harrier, Corella and Harakka deposits), and massive and stockwork ores (the Wedgetail deposit). The total measured and indicated mineral resources of the Honeymoon Well project are estimated at 173 mln t of ore at an average grade of 0.68% nickel.

In 2017, Nornickel halted the development of the Wedgetail deposit for five years, until 7 October 2021.

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 2019, technical and economic viability of the potential development option was evaluated for the Bystrinsko-Shirinskoye gold ore deposit based on the results of a scoping study conducted to evaluate development options.

TALNAKH ORE CLUSTER DEPOSITS

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 high-grade and cuprous ore reserves.

Eastern flank of the Oktyabrskoye deposit

In 2018, Nornickel conducted surface exploration within its licence boundaries as part of the Follow-Up Exploration of the Oktyabrskoye Deposit project. The results included multiple drill-hole intersections of rich ores outside the boundaries of the approved reserves, adding to the quantity of the high-grading ore reserves of the Severnaya 4 and Severnaya 3 Lens deposits. A quantitative estimate of the additions is planned following the project completion in 2020.

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. Prospecting on the property continued in 2019, with chemical analysis and laboratory tests completed for the 2018 prospecting results.

NON-METALLIC MINERAL DEPOSITS IN THE NORILSK REGION

Mokulaevskoye deposit

The Mokulaevskoye deposit lies 10 km north-west of the Oktyabrsky and Taimyrsky Mines. A mining licence for this limestone deposit was obtained upon its discovery in 2017. In 2018, the State Reserves Commission of the Russian Ministry of Natural Resources reviewed the feasibility study of permanent exploratory standards and the reserve statement for the deposit, including its limestone reserves into the State Register of Mineral Reserves for potential use in cement and lime production and in desulphurisation. The deposit can be developed through open-pit mining.

Its B + C_1 + C_2 balance reserves of limestone are 135,661 kt.

Gribanovsky licence area

In 2017, Nornickel obtained an exploration licence to prospect for and appraise silica sand deposits within the Gribanovsky licence area on the Yenisey River, 22.5 km south of Dudinka. A prospecting and appraisal programme for the property was completed in 2019. A feasibility study of permanent exploratory standards and a silica sand reserve statement for the deposit were completed based on its results and submitted to the State Reserves Commission of the Russian Ministry of Natural Resources for review.

The estimated C_1 + C_2 reserves of silica sand are 88,371 kt.

Ozero Lesnoye deposit

In 2017, Nornickel obtained a survey, exploration and mining licence for the basalt reserves of the Ozero Lesnoye deposit (licence area No. 2), located 22 km north of Norilsk.

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 $C_1 + C_2$ balance reserves of basalt are 187,911,000 m^3.

PROMISING AREAS AND PROSPECTS

Khalilskaya area

The Razvedochny, Mogensky, Khalilsky, Nizhne-Khalilsky, and Nirungdinsky copper-nickel sulphide ore prospects lie within the Khalilskaya area, located 150–160 km south-east of Norilsk.

In 2014, Nornickel obtained an exploration licence to prospect for and appraise deposits within the area. In 2019, the Company conducted surface prospecting and geochemistry, and identified promising areas for drilling to confirm the geology.

The Lebyazhninskaya area

The Lebyazhninskaya copper-nickel sulphide ore prospect is located 20 km north-west of Norilsk.

In 2014, Nornickel obtained an exploration licence to prospect for and appraise deposits within the area. In 2019, laboratory tests were conducted for previous prospecting results.

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 an exploration licence to prospect for and appraise deposits within the area.

Mikchangdinskaya area

The Yuzhno-Neralakhsky, Snezhny and Neralakhsky copper-nickel sulphide ore prospects lie within the Mikchangdinskaya area, located 70 km north-east of Norilsk. In 2019, Nornickel obtained an exploration licence to prospect for and appraise deposits within the area.

OPERATIONAL PERFORMANCE

Sergey Dyachenko
First Vice-President –
Chief Operating Officer

In 2019, the Company increased the output of all key metals as a result of improved operating efficiency, optimization of production flow and ongoing ramp-up of Bystrinsky project.
Total nickel output increased 5% year-on-year to 229 kt owing to the ramp-up of the refining shop operating new chlorine leaching technology and expansion of carbonyl nickel production capacity at Kola MMC. Total copper output increased 5% year-on-year to a record of 499 kt driven by improved operating efficiency, increased mined ore volumes and higher copper grades at Talnakh mines as well as the ramp-up of Bystrinsky (Chita) project that was fully commissioned in September 2019. Palladium and platinum output increased 7% and 8% year-on-year to 2.9 moz and 0.7 moz, respectively, owing primarily to the release of work-in-progress inventory.

Ore output (mln t)

Asset	2017	2018	2019
Assets in Russia (copper-nickel sulphide ore)	25.0	25.2	26.3
Polar Division and Medvezhy Ruchey	17.4	17.3	18.4
Kola MMC	7.6	7.9	7.9
Assets in Russia (gold-iron-copper ores)	0	7.9	10.5
GRK Bystrinkoye	0	7.9	10.5
Nkomati (South Africa)[1]	3.5	3.1	3.5

Average mined grades

Asset	2017	2018	2019
Nickel, %			
Polar Division and Medvezhy Ruchey	1.3	1.3	1.3
Kola MMC	0.5	0.6	0.5
Nkomati	0.3	0.3	0.3
Copper, %			
Polar Division and Medvezhy Ruchey	2.2	2.2	2.2
Kola MMC	0.2	0.2	0.2
GRK Bystrinkoye	n/a	0.4	0.6
Nkomati	0.1	0.1	0.1
PGMs, g/t[2]			
Polar Division and Medvezhy Ruchey	6.8	6.8	6.9
Kola MMC	0.1	0.1	0.1
Nkomati	n/a	n/a	n/a

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[1] All metrics for Nkomati are hereinafter shown based on the 50% ownership. Nkomati's operating results are not consolidated into the Group's total results.
[2] Five platinum group metals: palladium, platinum, rhodium, ruthenium, and iridium.

Metals recovery in concentration[1]

Asset	2017	2018	2019
Nickel, %			
Polar Division and Medvezhy Ruchey	79.9	81.5	83.1[1]
Kola MMC	69.8	69.5	67.9
Nkomati	70.7	65.9	64.2
Copper, %			
Polar Division and Medvezhy Ruchey	94.7	94.6	95.2[1]
Kola MMC	75.4	74.1	73.2
GRK Bystrinkoye	n/a	82.9	87.7
Nkomati	90.9	88.4	87.7
PGMs, %			
Polar Division and Medvezhy Ruchey	81.5	82.7	85.2[1]

Metals recovery in smelting

Asset	2017	2018	2019
Nickel, %			
Polar Division and Medvezhy Ruchey[2]	93.9	94.6	94.6
Kola MMC[3]	96.5	96.7	96.7
Kola MMC[4]	98.2	98.0	97.0
Norilsk Nickel Harjavalta[4]	98.5	97.9	97.9
Copper, %			
Polar Division and Medvezhy Ruchey[2]	94.0	94.4	94.1
Kola MMC[3]	96.2	96.1	96.2
Kola MMC[4]	97.4	97.6	96.5
Norilsk Nickel Harjavalta[4]	99.7	99.7	99.8
PGMs, %			
Polar Division and Medvezhy Ruchey[2]	95.6	95.9	95.8
Kola MMC[4]	96.7	94.0	91.6
Norilsk Nickel Harjavalta[4]	99.3	99.8	99.8

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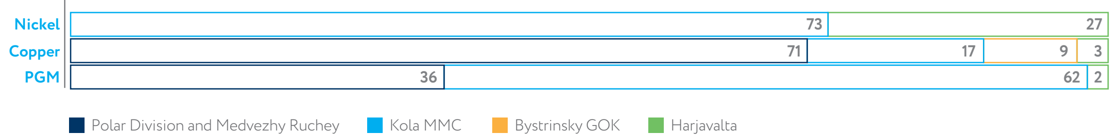
[1] Metals recovery in bulk concentrate.
[2] Feedstock to finished products.
[3] Feedstock to converter matte.
[4] In refining, converter matter to finished products.

Saleable metals production

Product	2017	2018	2019
Group total			
Nickel, kt	217.1	218.8	228.7
– from own Russian feedstock	210.1	216.9	225.2
Copper, kt	401.1	473.7	499.1
– from own Russian feedstock	397.8	473.5	498.8
Palladium, koz	2,780	2,729	2,922
– from own Russian feedstock	2,728	2,729	2,919
Platinum, koz	670	653	702
– from own Russian feedstock	650	653	700
Assets in Russia			
Nickel, kt	157.4	158.0	166.3
Copper, kt	387.6	455.6	486.2
Palladium, koz	2,738	2,671	2,868
Platinum, koz	660	642	690
Norilsk Nickel Harjavalta (Finland)			
Nickel, kt	59.7	60.8	62.4
Copper, kt	13.4	18.0	12.9
Palladium, koz	42	58	54
Platinum, koz	10	11	12
Nkomati (South Africa)[5]			
Nickel, kt	8.0	6.6	6.5
Copper, kt	4.5	3.1	3.4
Palladium, koz	46	33	33
Platinum, koz	20	13	14

Production breakdown by asset in 2019 (share of the Group's total production) (%)



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[5] Nkomati's operating results are not consolidated into the Group's total results.

POLAR DIVISION AND MEDVEZHY RUCHEY, TAIMYR PENINSULA

The Polar Division and Medvezhy Ruchey are the Group's flagship assets boasting a full metals production cycle from ore mining to the shipment of finished products to customers. They are located in the Taimyr Peninsula in Russia, in the north of the Krasnoyarsk Region beyond the Arctic Circle, and linked to other regions by the Yenisey River, the Northern Sea Route, and by air.

Operating the Company's largest deposits, they mine over 18 Mtpa of copper-nickel sulphide ore.

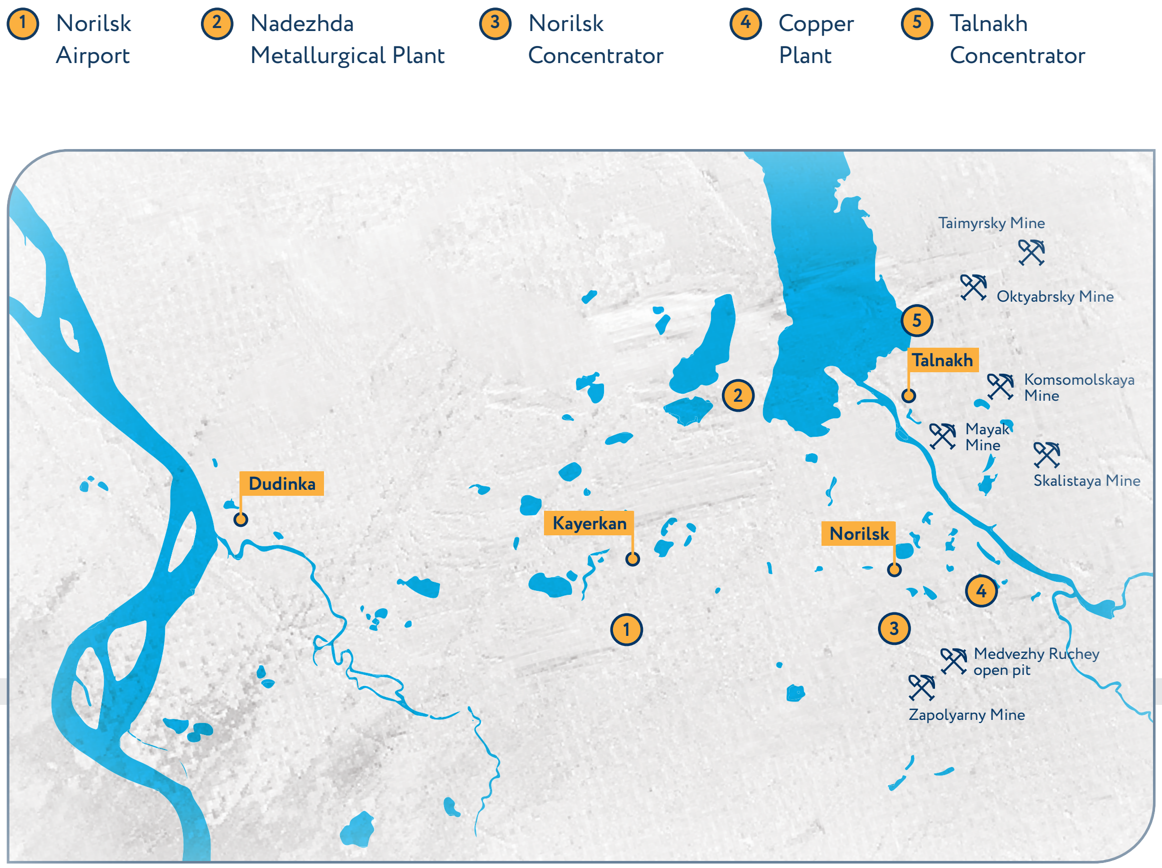
> In 2019, the Polar Division and Medvezhy Ruchey accounted for 71% and 36% of the Group's total output of copper and PGMs, respectively.

MINING

The Polar Division and Medvezhy Ruchey mine copper-nickel sulphide ores of three grades: rich ores, characterised by a higher content of base and precious metals; cuprous ores, with a higher copper content vs nickel; and disseminated ores, with a lower content of all metals.

The Talnakhskoye and Oktyabrskoye deposits are developed by Taimyrsky, Oktyabrsky, Komsomolsky, Skalisty, and Mayak Mines. The mines deploy slicing and chamber methods with the cut-and-fill system. Stopes are refilled with backfill mixtures, with their composition adjusted in each case to technological requirements to mine backfill durability.

The Norilsk-1 deposit is developed by Medvezhy Ruchey's Zapolyarny Mine through open-pit and underground mining. Underground mining is carried out through sublevel (level) caving using front ore passes and self-propelled vehicles.



In 2019, a feasibility study of Zapolyarny Mine was completed to assess the combined development options for the remaining disseminated ore reserves at the Norilsk-1 deposit. Based on the study results, disseminated ore production at Medvezhy Ruchey is expected to increase to 9 Mtpa by 2027.

Combined ore production from the Polar Division and Medvezhy Ruchey was 18.4 mln t in 2019, up 1.1 mln t y-o-y (+ 6%). Rich and cuprous ore production increased by 8% and 10%, respectively, with Taimyrsky and Skalisty Mines also increasing their combined rich ore production by 12% y-o-y. Oktyabrsky and Komsomolsky Mines increased cuprous ore production by 10% while disseminated ore production was almost flat (+ 0.3%). The change in the mined ore output was in line with the annual production plan.

Ore output (mln t)

Mining asset, ore type	Mine type	2017	2018	2019
Total ore		17.38	17.32	18.42
– rich		6.57	6.78	7.35
– cuprous		5.56	5.24	5.75
– disseminated		5.23	5.30	5.32
Polar Division				
Oktyabrskoye deposit:		8.82	8.95	9,45
Oktyabrsky Mine	Underground	5.23	5.17	5.37
– rich		1.13	0.98	0.88
– cuprous		3.15	2.98	3.38
– disseminated		0.95	1.21	1.11
Taimyrsky Mine	Underground	3.59	3.79	4.08
– rich		3.59	3.79	4.08
Talnakhskoye and Oktyabrskoye deposits:		6.92	6.70	7.34
Komsomolsky Mine	Underground	5.86	3.82	4.00
– rich		1.83	0.11	0.10
– cuprous		2.41	2.18	2.28
– disseminated		1.63	1.53	1.62
Skalisty Mine	Underground	n/a	1.95	2.34
– rich		n/a	1.87	2.25
– cuprous		n/a	0.09	0.09
Mayak Mine	Underground	1.06	0.93	1.00
– rich		0.03	0.04	0.04
– disseminated		1.03	0.89	0.97
Medvezhy Ruchey				
Norilsk-1 deposit, Zapolyarny Mine, disseminated ore	Open-pit/ underground	1.64	1.67	1.63

CONCENTRATION

Concentration facilities

- Talnakh Concentrator
- Norilsk Concentrator (part of Medvezhy Ruchey)

Talnakh Concentrator processes rich, 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.

Thickened concentrates are transported from Talnakh and Norilsk Concentrators via slurry pipelines to the Polar Division for further processing.

In 2019, the Company's concentration facilities processed a total of 18.2 mln t across all types of ore feedstocks (including rich, cuprous, and disseminated ores).

Talnakh Concentrator processed 10.7 mln t of ore in 2019 (up 0.3 mln t y-o-y). Its nickel recovery into bulk flotation concentrate, including the output of metal-bearing pyrrhotite products, increased by 2.7% y-o-y to 85.9% due to the optimised technology for obtaining metal-bearing pyrrhotite products deployed at Talnakh Concentrator.

Norilsk Concentrator processed 6.8 mln t of ore in 2019 (down 0.7 mln t y-o-y), in line with the mining plan. The facility's nickel recovery into bulk concentrate was 0.6% lower y-o-y at 71.3%. During the year, the facility also processed significant amounts of low-grade ores from Copper Plant.

SMELTING

Smelting assets of the Polar Division

- Nadezhda Metallurgical Plant
- Copper Plant
- Copper Plant's smelting shop

Nadezhda Metallurgical Plant produces converter matte and elemental sulphur by processing:

- Talnakh Concentrator's nickel-pyrrhotite concentrate and metal-bearing products
- Norilsk Concentrator's nickel concentrate
- pyrrhotite concentrate from Kayerkansky open-pit coal mine's storage.

PRODUCTION CHAIN

The produced concentrates, including steam cured sulphide concentrate, are fed into flash smelting furnaces at Nadezhda Metallurgical Plant. Steam cured sulphide concentrate is leached at 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, as well as third-party feedstocks, to obtain copper cathodes, elemental sulphur and sulphuric acid for the operational needs of the Polar Division.

Copper Plant's smelting 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 Polar Division are refined at Krastsvetmet and URALINTECH under tolling agreements.

The Polar Division produces metals from its own feedstock. Since the fourth quarter of 2016, all nickel converter matte from Nadezhda Metallurgical Plant has been processed at Kola MMC due to Nickel Plant shutdown.

The Polar Division products:

- Copper cathodes
- Nickel converter matte sent for processing to Kola MMC
- Precious metal concentrates
- Technical sulphur, selenium
- Tellurium in billots

> Copper production remained basically flat y-o-y in 2019, with a slight increase of 1% driven by a higher copper content in the ore mined. Production of PGMs grew by 4% y-o-y, mainly through drawdowns in high-value work-in-progress inventory.

Sulphide ores processed (mln t)

Concentrator	2017	2018	2019
Talnakh Concentrator	10.0	10.4	10.7
Norilsk Concentrator	7.5	6.8	7.5

Nickel recovery (%)

Concentrator	2017	2018	2019
Talnakh Concentrator	81.7	83.2	85.9
Norilsk Concentrator	71.7	71.9	71.3

Production volumes

Product	2017	2018	2019
Copper, t	306,859	353,131	355,706
Palladium, koz	956	987	1,042
Platinum, koz	259	260	251

KOLA MMC, KOLA PENINSULA

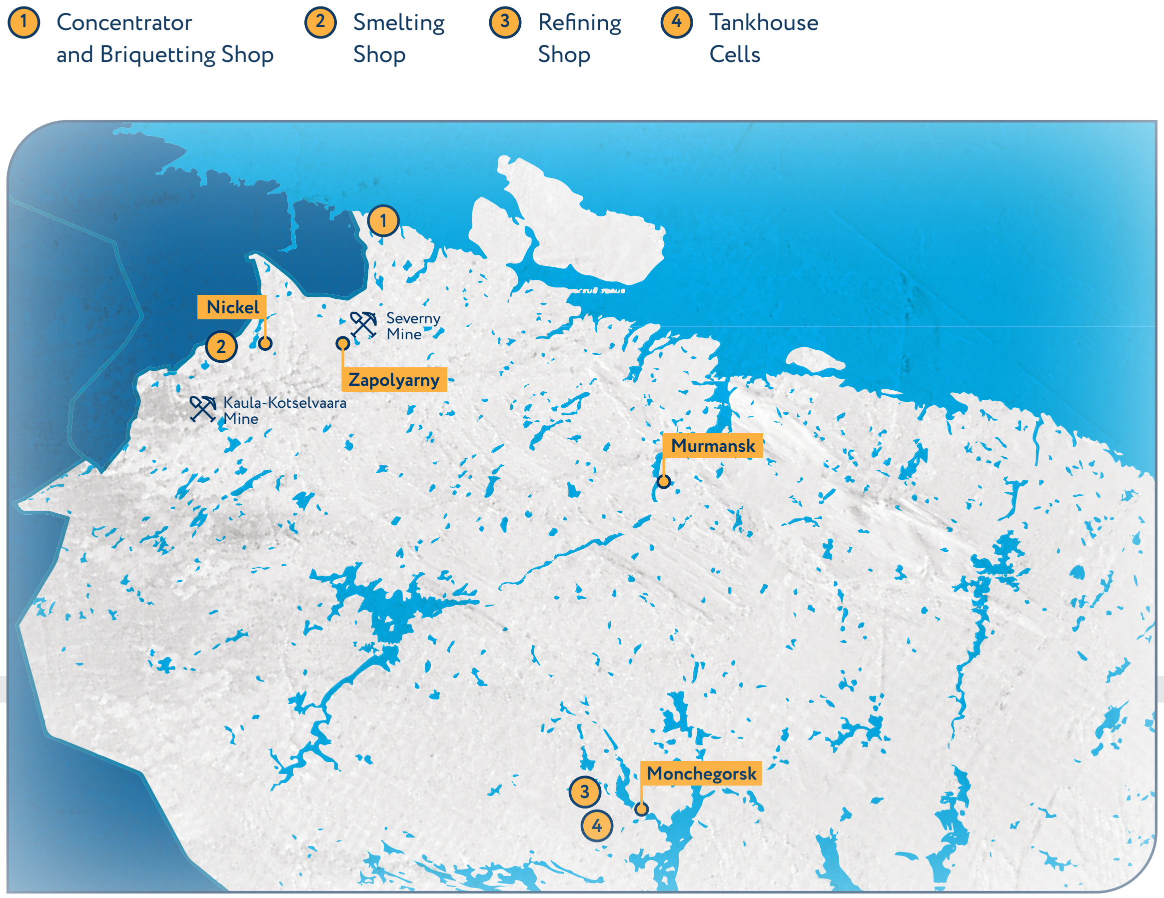
Kola MMC is Nornickel's wholly owned subsidiary and a valuable production asset located in the Kola Peninsula in the Murmansk Region of Russia.

In 2019, Kola MMC accounted for 73%, 17% and 62% of the Group's total nickel, copper, and PGM finished products, respectively.

MINING

Kola MMC's mines disseminated copper-nickel sulphide ores.
At Kola MMC, various ore mining methods are used:

- 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. To ensure full utilisation of the concentrator's design capacity, off-balance open-pit mining waste is processed as well.
- The Kotselvaara and Semiletka deposits primarily use stoping from sublevel drifts and sublevel caving. Room-and-pillar short-hole and long-hole stoping are also used on a limited scale.



Ore output (mln t)

Mining asset	Mine type	2017	2018	2019
Total ore		7.64	7.90	7.91
Zhdanovskoye deposit		6.81	7.14	7.25
– Severny Mine	Underground	6.55	6.56	6.49
– Severny Mine	Open-pit	0.26	0.58	0.77
Zapolyarnoye deposit		0.14	0.08	0.06
– Severny underground section	Underground	0.14	0.08	0.06
Kotselvaara and Semiletka deposits:		0.70	0.68	0.60
– Kaula-Kotselvaara mine	Underground	0.70	0.68	0.60

In 2019, Kola MMC produced about 8 mln t of ore (up 0.2% y-o-y). The slight increase was due to off-balance open-pit mining waste processing to ensure full utilisation of the concentrator's design capacity, in line with the annual production plan.

CONCENTRATION

Concentration facilities

- Zapolyarny Concentrator

The concentrator produces briquetted copper-nickel concentrate. Briquettes are delivered to the smelting shop to produce converter matte.

In 2019, Kola MMC's concentrator processed 7.6 mln t of ore, down 0.3 mln t y-o-y. The rate of metals recovery in bulk concentrate decreased as well, due to a higher share of complex morphology ores with disseminated sulphide minerals in the charge.

SMELTING

Downstream facilities

- Smelting Shop (Nickel)
- Briquetting section (Zapolyarny)
- Smelting Shop (Monchegorsk)
- Refining Shop (Monchegorsk)
- Tankhouses 1 and 2 (Monchegorsk)

Nornickel continues upgrading Tankhouse 2 to launch nickel cathode production using the technology of nickel electrowinning from chlorine dissolved tube furnace nickel powder. The project is expected to boost Tankhouse 2 production capacity from 120 ktpa to 145 ktpa of electrolytic nickel while also improving the recovery rate by 1%. In 2019, Nornickel commissioned the second, the fourth and a part of the third series of electrowinning cells. The project is expected to ramp up to full design capacity in Q2 2020. Pre-commissioning is also in progress for a new precious metal concentrate section of Kola MMC's Smelting Shop. The section's commissioning is an integral and essential part of Nornickel's plan to optimise the configuration of refining facilities.

In 2019, Kola MMC used only Nornickel's own Russian feedstock in metals production. The y-o-y increase in nickel and copper output was driven by the expansion of carbonyl nickel production capacity and supplies of richer copper concentrate from the Polar Division. The increase in PGMs output in 2019 was due to drawdowns in high-value work-in-progress inventory.

Products:

- Nickel cathodes
- Nickel carbonyl
- Saleable nickel concentrate
- Copper cathodes
- Saleable copper concentrate from converter matte separation
- Electrolytic cobalt
- Cobalt concentrate
- Precious metal concentrates
- Sulphuric acid
- Crushed converter matte for Harjavalta

Production volumes

Product	2017	2018	2019
Nickel, t	157,396	158,005	166,265
– from own Russian feedstock	155,110	157,519	166,265
Copper, t	80,781	83,070	86,976
– from own Russian feedstock	78,587	82,987	86,976
Palladium, koz	1,782	1,684	1,826
– from own Russian feedstock	1,737	1,684	1,826
Platinum, koz	401	381	439
– from own Russian feedstock	385	381	439

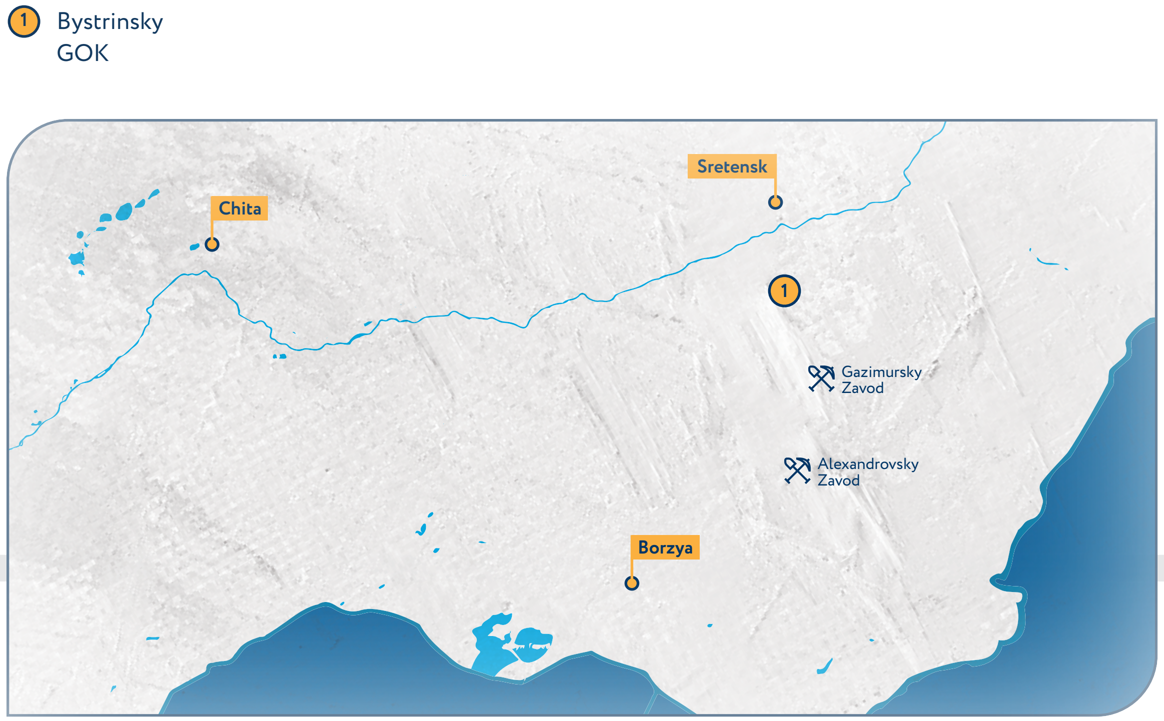
GRK BYSTRINKOYE, ZABAYKALSKY REGION

GRK Bystrinskoye (Bystrinsky GOK) is Nornickel's 50.01%-owned subsidiary. Bystrinsky GOK is located in the Gazimuro-Zavodsky District, Zabaykalsky Region, 16 km east of Gazimursky Zavod village, 350 km away from Chita.

Nornickel's new asset is the largest greenfield project in the Russian metals industry, integrating ore mining, concentration and shipment of end products to customers. The expected volume of ore mined and processed at Bystrinsky GOK is approximately 10 Mtpa.

Nornickel commenced the construction of Bystrinsky GOK in 2013. The construction project includes open-pit mining at the Bystrinskoye deposit, a mining and processing plant (MPP) along with all of the associated infrastructure, including a power line and a 227-km Borzya–Gazimursky Zavod railway line, and a rotation camp. In October 2017, Nornickel started the pre-commissioning activities, and in September 2019 Bystrinsky GOK was commissioned. The project is expected to ramp up to design capacity by 2021.

In 2019, Bystrinsky GOK accounted for 9% of the Group's total copper end products.



MINING

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

Ore output (mln t)

Mining asset	Mine type	2018	2019
Total ore		7.86	10.49
Bystrinskoye deposit		7.86	10.49
– Verkhneildikansky open pit mine	Open-pit	7.43	8.60
– Bystrinsky-2 open pit mine	Open-pit	0.43	1.89

CONCENTRATION

Concentration facilities

- Concentrator

The concentrator construction commenced in 2015; the facility's purpose is to process ores of the Bystrinskoye deposit into copper, iron ore, and gold concentrates. The key processing stages include crushing, milling, flotation, thickening, filtration and end product packaging. The concentrator has two processing lines. In 2018, Bystrinsky GOK started pre-commissioning of the processing lines, and in 2019 the concentrator was commissioned.

In 2019, it processed 7.5 mln t of ore (2018: 3.8 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 Polar Division.

Products:

- Copper concentrate
- Gold concentrate
- Iron ore concentrate.

Production volumes

Product	2018	2019
Ore processing, mln t	3.8	7.5
Copper (in copper concentrate), t	19,417	43,489
– copper content in the concentrate, %	25.4	25.5
Gold (in copper and gold concentrates), koz	89	177
– gold content in the concentrate, g/t	6,218	4,034
Iron ore concentrate, kt	346	1,311
– iron content in the concentrate, %	64.1	64.6

NORILSK NICKEL HARJAVALTA, FINLAND

Norilsk Nickel Harjavalta is Nornickel's wholly owned subsidiary, acquired by the Group in 2007. The Harjavalta facility 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 2019, Norilsk Nickel Harjavalta accounted for 27%, 3% and 2% of the Group's total nickel, copper and PGM finished products, respectively.

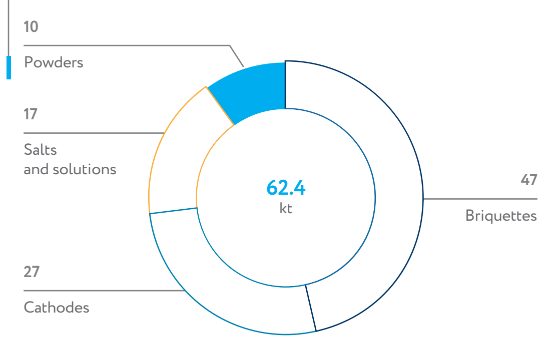
① Norilsk Nickel Harjavalta Plant

SMELTING

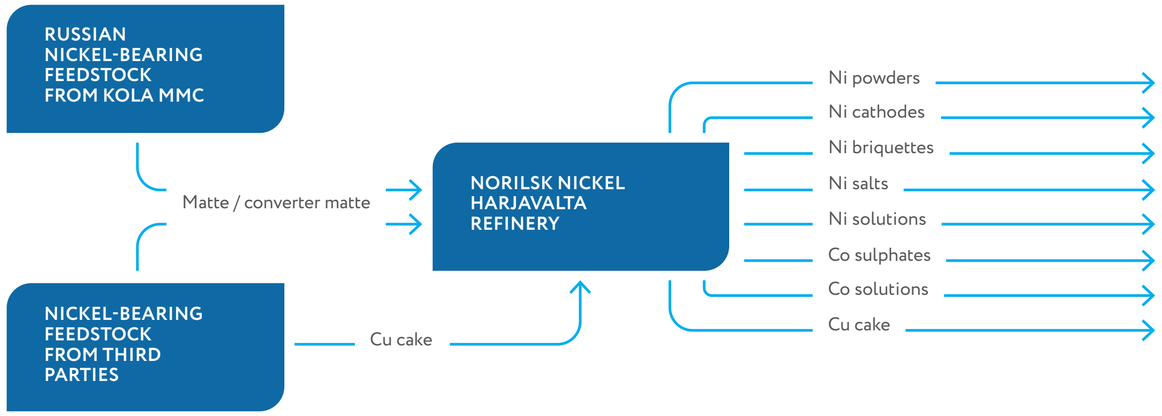
Facility's process chart

n 2019, the refining facilities of Kola MMC were gradually increasing their nickel feedstock supplies to Norilsk Nickel Harjavalta in line with the Group's downstream reconfiguration strategy. Third-party feedstock supplies, i.e., converter matte from Boliden and nickel salts from other suppliers, were regular and marginal in 2019. Metal recovery rates remained flat y-o-y.

Saleable nickel output by product in 2019 (%)



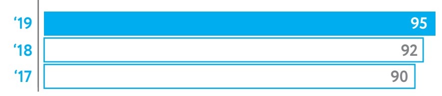
In 2019, Norilsk Nickel Harjavalta produced 62 kt of saleable nickel (up 3% y-o-y), an all-time high for the refinery. The growth was driven by the reconfiguration of refining facilities and increased nickel feedstock supplies from Kola MMC. The production of copper in copper cake totalled 13 kt, down 28% y-o-y, while the output of saleable palladium in copper cake decreased by 8% y-o-y and platinum output increased by 5% y-o-y. The decrease in copper and palladium output was due to the start of copper cake shipments to the Polar Division for further processing.



Products:

- Nickel cathodes and briquettes
- Nickel salts, powders, and solutions
- Cobalt sulphate and solutions
- PGM-bearing copper cake

Refining capacity utilisation (%)



Production volumes

Product	2017	2018	2019
Nickel, t	59,716	60,765	62,422
– from own Russian feedstock	55,021	59,337	58,939
Copper (in copper cake), t	13,441	18,036	12,948
– from own Russian feedstock	12,328	17,980	12,667
Palladium (in copper cake), koz	42	58	54
– from own Russian feedstock	35	58	51
Platinum (in copper cake), koz	10	11	12
– from own Russian feedstock	6	11	9

NKOMATI, SOUTH AFRICA

Nkomati is a joint venture between Nornickel (50% interest) and African Rainbow Minerals. Nkomati's performance is reflected in Nornickel's financial results using proportional consolidation, based on our stake.

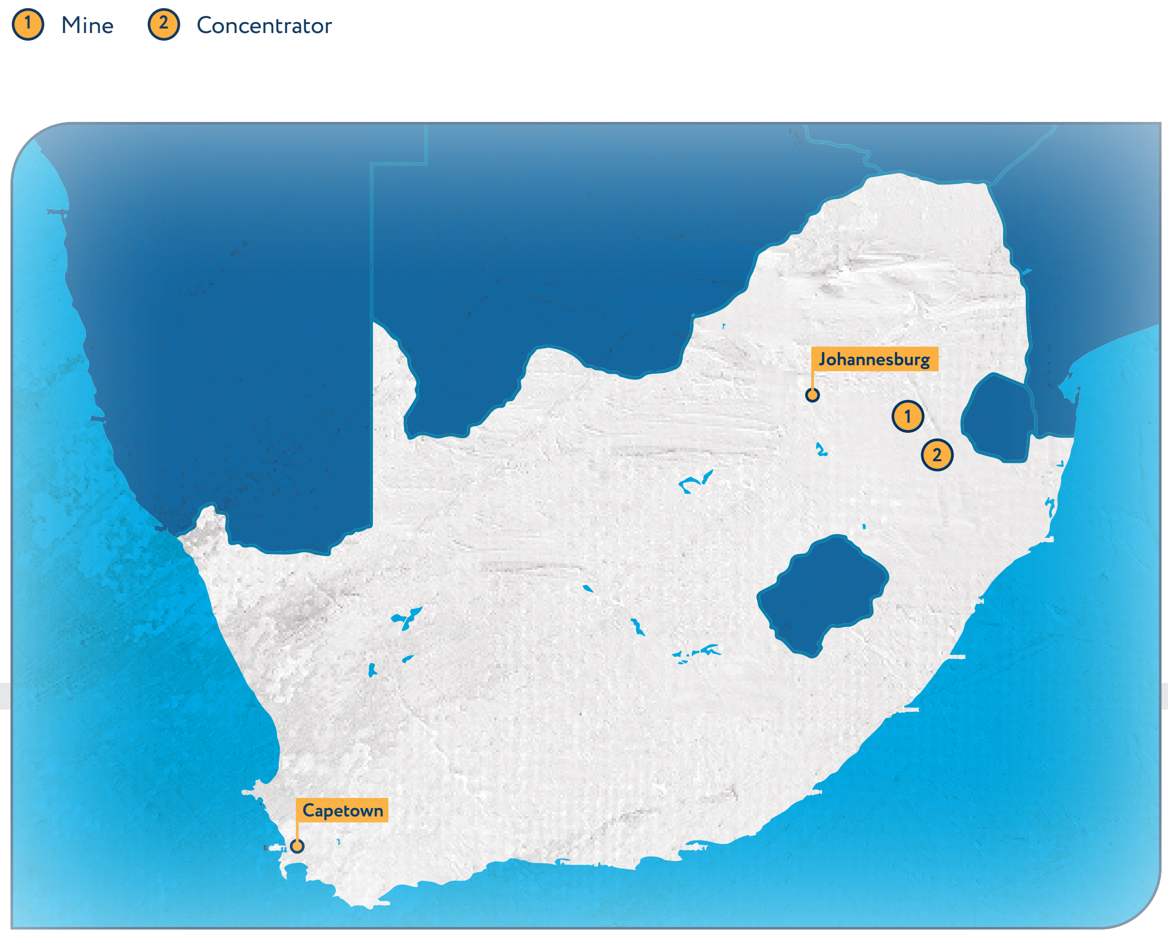
> In 2019, total ore mined by Nkomati reached 3.5 mln t (attributable to the Group's 50% shareholding) with an average nickel content of 0.26% and copper content of 0.11%.

Nkomati is located in the Mpumalanga Province, South Africa, 300 km east of Johannesburg.

It is the only South African company to produce nickel concentrate, which also contains copper, cobalt, and PGMs. Nkomati produces chrome concentrate as well.

MINING

The Nkomati deposit has a substantial resource base represented by disseminated copper-nickel sulphide ores. The deposit consists of several ore bodies. The major ones are a solid sulphide ore body with a high nickel content and a peridotite chromite mineralisation zone with a relatively lower nickel content and a relatively higher chrome content.



CONCENTRATION AND SMELTING

Concentration facilities

- Concentrator for ore mined in the main section, with installed capacity of 375 kt per month.
- Concentrator for ore mined in the peridotite chromite section, with installed capacity of 250 kt per month.

The mined ore is processed at concentrators using the sulphide flotation technology, with the resulting concentrates then sold by Nornickel to third parties.

In 2019, Nkomati produced 6.5 kt of nickel (down 2% y-o-y), 3.4 kt of copper (up 12% y-o-y), 33 koz of palladium (down 1% y-o-y), and 14 koz of platinum (up 6% y-o-y) (attributable to the Group's 50% shareholding). The drop in nickel and palladium production and the increase in copper and platinum output were due to changes in the processed ore composition and the commencement of production ramp-down as part of plans to scale down production at Nkomati Nickel Mine during 2020.

Products:

- Saleable concentrate.

Production volumes[1]

Product (in concentrate)	2017	2018	2019
Nickel, kt	8.0	6.6	6.5
Copper, kt	4.5	3.1	3.4
Palladium, koz	46	33	33
Platinum, koz	20	13	14

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[1] Volumes based on the 50% ownership.

SALES AND DISTRIBUTION

In 2019, Nornickel maintained its long-standing reputation as a reliable supplier of high-quality products. The integrated index of customer satisfaction with the Company's products and services matched the target level.

As a top global producer of base and platinum group metals, Nornickel sees its role as leading the industry on building an improved ecosystem for all market players and to this end launched a project to digitise all metal sale contracts in 2019.

The Company supplies its products to 37 countries and has products registered for delivery against contracts at the London Metal Exchange and the Shanghai Futures Exchange. Registration at the world's top exchanges ensures the liquidity and premium pricing for the Company's products.

PRODUCT RANGE

One of Nornickel's objectives is to make sure its product range matches the current and anticipated global metals demand.

Nickel product diversification is a priority in developing the product range as the Company is implementing a range of initiatives to enhance and expand its existing product range, with a particular focus on changes in the metals demand structure, including the rapid growth in the share of the electric vehicles and batteries. In particular, Nornickel continues active interactions with the battery sector players to expand its product range to meet the new requirements for shape and quality emerging in the market.

Norilsk Nickel Harjavalta is recognised as one of world's foremost producers of nickel used to make precursors (semi-products essential for manufacturing the cathode material that forms part of batteries). 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 manufacturing various shape products, which enables it to factor in consumer preferences in developing its product portfolio.

Main consuming industries and sales markets

POLAR DIVISION AND MEDVEZHY RUCHEY

Cu
Copper cathodes

Se
Commercial selenium (powder)

S
Commercial sulphur

Te
Tellurium ingots

KOLA MMC

Ni
Nickel cathodes, nickel carbonyl (powder and pellets), intermediate products

Cu
Copper cathodes, copper matte

Co
Cobalt cathodes, cobalt concentrate

Na_2SO_4
Sodium sulphate

H_2SO_4
Sulphuric acid

NORILSK NICKEL HARJAVALTA

Ni
Nickel cathodes, nickel briquettes, electrolytic nickel powder, nickel sulphate, nickel hydroxycarbonate

Cu
Copper cake

Co
Cobalt sulphate

GRK BYSTRINSKOYE

Cu
Copper concentrate

Fe
Iron ore concentrate

KRASTSVETMET[1]

Pt
Platinum

Pd
Palladium

Rh
Rhodium

Ir
Iridium

Ru
Ruthenium

Ag
Silver

Au
Gold

Sales markets:

- Russia
- Europe
- Asia
- Americas

Main consuming industries:

- Cables and wires
- Rolled products and pipes
- Metallurgy
- Chemical industry
- Glass making
- Electrical engineering
- Feeds and fertilizers
- Fertilisers, paper and pipes
- Rubber vulcanisation
- Stainless steel
- Alloys and superalloys
- Non-ferrous metallurgy
- Rubber industry
- Photo- and thermoelements
- Special steels and alloys
- Electroplated coatings
- Welding electrodes
- Synthetic detergents
- Pulp & paper
- Textiles
- Leather goods
- Healthcare and veterinary
- Batteries
- Additives and catalysts
- Rolled products
- Special steels
- Jewellery
- Investments
- Auto catalytic converters
- Electronics
- Electrochemical industry

[1] 100% of shares are owned by the government. Precious metals are refined from raw materials produced by the Polar Division and Kola MMC under a tolling agreement.

SALES STRATEGY

Sales, along with production, have traditionally been a key value adding part of Nornickel's business.

When it comes to nickel products, the sales strategy focuses on achieving a balance between supplies to stainless steel manufacturers and other industries. Electric vehicles and batteries are a priority segment in the nickel consumption structure, as its growth rates suggest that in a few years time it will become a key source of demand, second only to stainless steel.

Therefore, the Company is running a programme to support high-growth applications of nickel applications, primarily in the battery sector. Cooperation with the growing battery sector relies on our wide range of nickel products, high reliability of supplies, availability of the Company's own global sales platform and a long track-record of partnering with automotive manufacturers and chemical companies. The Company also maintains an ongoing, proactive dialogue with new leading players. All these factors make Nornickel well-positioned to become a key element in the battery components value chain.

In the battery segment, the Company is set to support the electric vehicles market and related value chains, build long-term partnerships with key industry players, and expand the market and its accessibility for nickel and cobalt products. Nornickel's sales team is closely monitoring changes in the technical requirements for nickel and cobalt products in the sector. The Company is actively engaging major players in the battery segment, as evidenced by its agreement with BASF, signed in 2018. Under the agreement, pilot production facilities were launched, commencing supplies of test product batches for certification by consumers in 2019.

In the alloys and special steels sector, we seek to maximise the benefits of our product portfolio and improve product quality to boost our share in high-quality, premium segments.

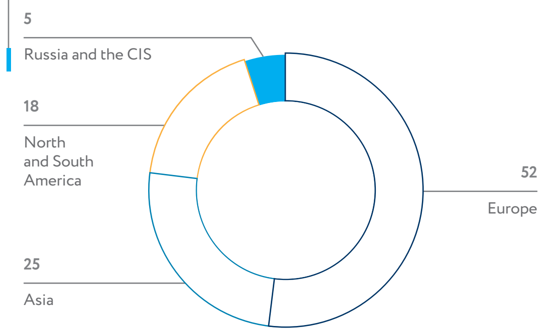
In the electroplating sector, Nornickel is optimising its product offering to better meet customer needs and acquire new customers in China and other markets. The Shanghai Futures Exchange completed the approval procedure for the NORNICKEL brand of electrolytic nickel produced by Kola MMC, with a registration certificate expected to be issued early in 2020.

In 2019, the London Metal Exchange (LME) added the NORILSK I brand of electrolytic cobalt produced by Kola MMC to its list of brands approved for LME delivery.

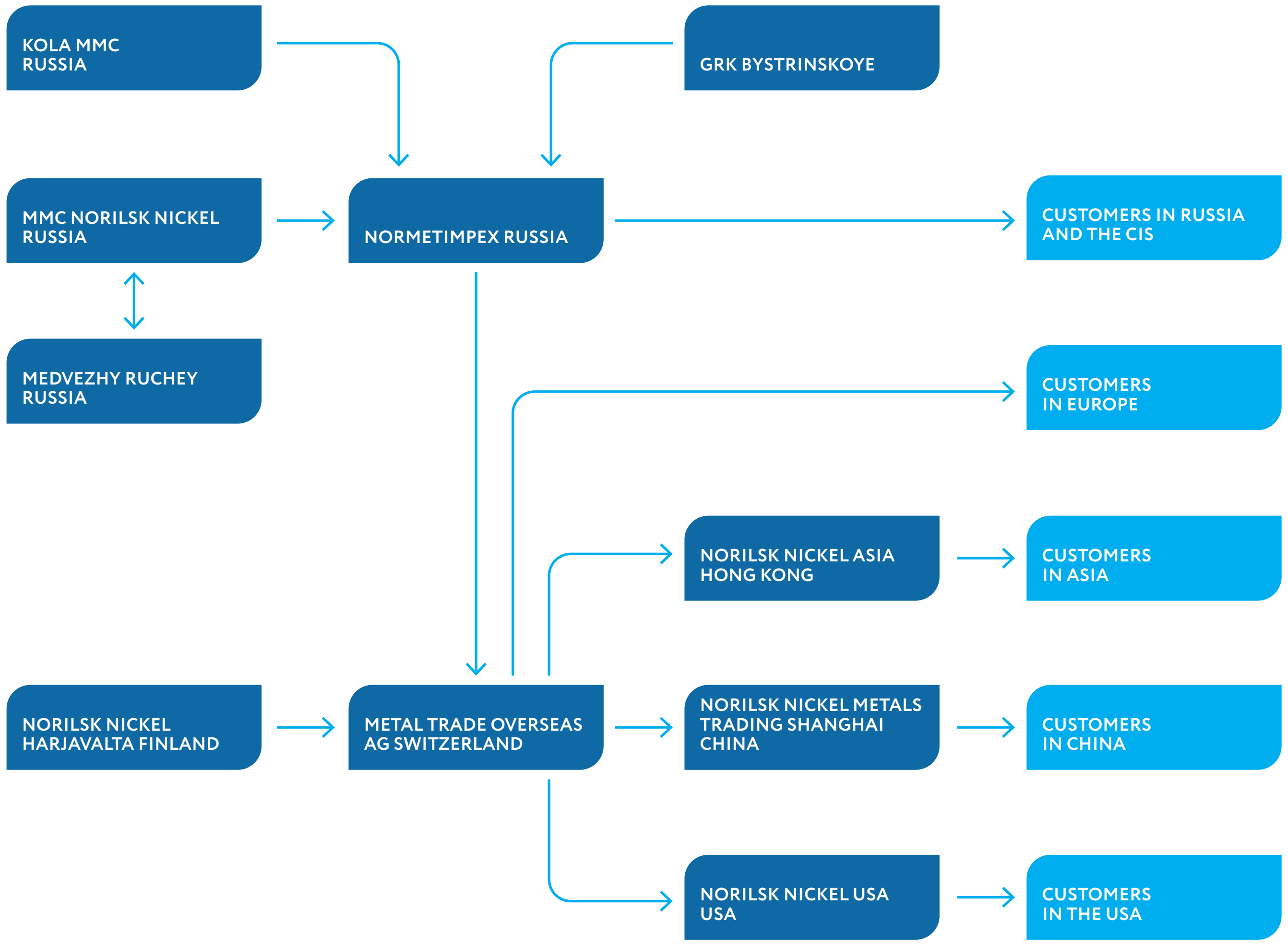
As the world's largest producer of palladium, the Company continues to implement its strategy of entering into direct long-term contracts with end consumers to ensure sustainable and strong demand for platinum group metals.

One of Nornickel's priorities is to ensure stable supply of palladium as the world palladium market remains significantly undersupplied. As the leading supplier of this metal, the Company's strategy includes a number of measures to ensure long-term stability of the palladium market, including greenfield and brownfield expansion project such as the South Cluster.

Sales by region (%)



The Company's product distribution diagram



ENERGY ASSETS

Nornickel owns an integrated network of fuel and energy assets, including four hydrocarbon deposits.

Most of Nornickel's production facilities are located beyond the Arctic Circle, operating in sub-zero temperatures for eight months of the year. It is therefore critical for the Group to ensure energy supplies to its production and infrastructure facilities, as well as to communities in its regions of operation.

Norilskgazprom (100% stake) produces gas and gas condensate at the Pelyatkinskoye, Yuzhno-Soleninskoye and Severo-Soleninskoye gas condensate fields, as well as the Messoyakhskoye gas field. The Pelyatkinskoye gas condensate field was transferred to Norilskgazprom in 2019 following the reorganisation of Taimyrgaz.

2,803.5
mln Mcm
natural gas production

92
kt
gas condensate production

44.5%
electricity generated from renewable sources

- **Start of production:** 1969
- **Gas reserves:** 246.6 bcm
- **Gas condensate reserves:** 4,727 kt
- **Gas production in 2019:** 2,803.5 Mcm
- **Gas condensate production in 2019:** 92 kt

Production[1]

Asset	2017	2018	2019
Natural gas, Mcm	3,014	2,896	2,804
– Taimyrgaz	2,086	2,027	0
– Norilskgazprom	928	869	2,804
Gas condensate, kt	100	90	92
– Taimyrgaz	98	88	0
– Norilskgazprom	2	2	92

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[1] Data on gas condensate production include production losses (carryover with separation gas).

Norilsktransgaz (100% stake) transports natural gas and gas condensate from deposits to consumers.

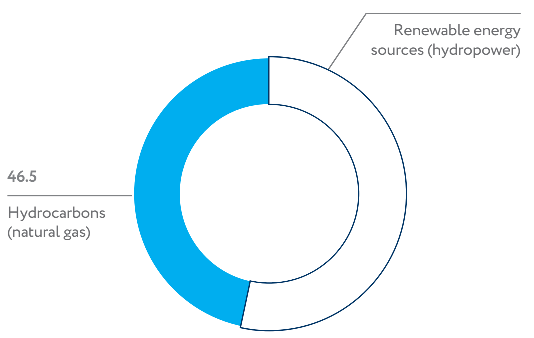
The length of gas and gas condensate pipelines totals 1,588 km. The pipelines were commissioned between 1969 and 2018.

NTEK (100% stake) is focused on electricity and heat generation, transmission and sales harnessing the assets of Norilskenergo, a branch of Nornickel. Energy is produced from both renewable (e.g. hydropower) and non-renewable (e.g. natural gas) sources. NTEK supplies electricity, heat, and water to households in the city of Norilsk and to all production facilities within the Norilsk Industrial District. In terms of its location and operational mode, the local electricity grid is 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 installed electricity generation capacity of 1,190 MW, and two hydropower plants (HPPs) with total installed capacity of 1,091 MW. The total installed capacity of all plants is 2,281 MW.

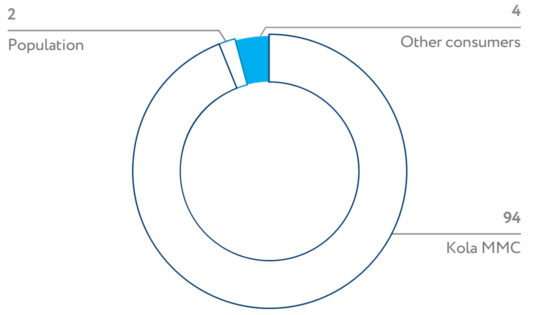
Ust-Khantayskaya and Kureyskaya HPPs (491 MW and 600 MW of installed capacity, respectively) are Nornickel's two renewable electricity generation facilities. In 2019, renewables accounted for 44.5% of total electricity consumed by the Group and 53.5% of total electricity consumption within the Norilsk Industrial District.

To boost the share of renewables such as hydropower, capture fuel and energy savings, and improve the reliability of energy and gas supplies, Nornickel's investment programme contains a number of large-scale priority projects. In 2019, the spending under the programme totalled about RUB 7.7 bn (USD 119 mln).

Power generation breakdown in the Norilsk Industrial District in 2019 (%)



Arctic-Energo electricity sales breakdown in 2019 (%)



Selected major projects being implemented by Nornickel to improve equipment reliability, enhance energy efficiency, and boost product output:

- Replacement of seven hydropower units at Ust-Khantayskaya HPP
- Replacement of power units at CHPP-2 and CHPP-3 in Norilsk
- Upgrade of power grids, main gas pipelines, and gas distribution networks within the Norilsk Industrial District

Arctic-Energo (100% stake) is a default electricity supplier to Kola MMC in Monchegorsk, established to ensure efficient and uninterrupted electricity supply at cheapest rates to Kola MMC operations. In 2019, it sold 2,719,610 thousand kWh of electricity.

TRANSPORT ASSETS

Nornickel owns a modern transport infrastructure capable of handling most challenging freight logistics tasks and ensuring continuity and sustainability of operations. Nornickel's transportation and logistics assets cover the full range of transportation and freight forwarding services.

① Murmansk Transport Division (Murmansk terminal, 6 heavy-duty ice-class vessels)

② Arkhangelsk Transport Division

③ Norilsk Airport, Norilsk Avia, NordStar Airlines (100% stake)

④ Polar Transport Division (Dudinka Port)

⑤ Krasnoyarsk Transport Division, Krasnoyarsk River Port (89% stake) and Nornickel-ERP LLC

⑥ Yenisey River Shipping Company (82% stake)

⑦ Bystrinsky Transport Division

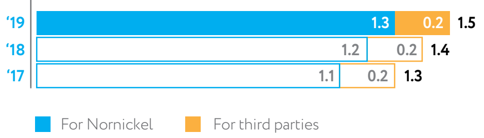
⑧ Lesosibirsk Port (51% stake)

FREIGHT SHIPPING SERVICES

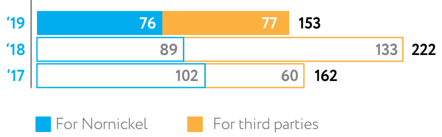
Nornickel has a unique Arctic fleet comprising five dry cargo vessels and one Yenisey heavy-duty ice-class tanker (ARC 7 as per the classification of the Russian Maritime Register of Shipping). The vessels are capable of breaking through Arctic ice up to 1.5 m thick without icebreaker support. The Yenisey tanker carries gas condensate exports from the Pelyatkinskoye gas condensate deposit to European ports, and makes commercial voyages to other destinations.

Nornickel's dry cargo fleet provides year-round freight shipping services between Dudinka, Murmansk, Arkhangelsk, Rotterdam, and Hamburg sea ports while also making commercial voyages to other destinations. In 2019, 68 voyages were made from Dudinka (2018:66), including 11 direct voyages to European ports (2018:10).

Dry cargo transportation by Nornickel's fleet (mln t)



Transportation by Yenisey tanker (kt)



AVIATION ASSETS

Norilsk Avia (Nornickel interest 100%) serves the transportation needs of local communities in the Norilsk and Taimyrsky Dolgano-Nenetsky Districts of the Krasnoyarsk Region. The air company has its own fleet of 16 helicopters and provides air services related to the operations of the Norilsk Nickel Group, emergency air medical assistance, search-and-rescue operations, and local passenger traffic.

NordStar Airlines (Nornickel interest 100%) is an aviation project that has been steadily growing since its establishment in 2008. Its fleet comprises 13 aircraft. 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 (Nornickel interest 100%) 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.

During 2019, the public private partnership between Nornickel and the Federal Air Transport Agency (Rosaviatsiya) renovated the airport's patrol road, security fencing, utility and communication networks; and the renovation of the airport apron's concrete pavement was 95% complete at end-2019.

The renovation programme is scheduled for completion in 2020.

Norilsk Nickel's transportation and logistics assets include:

- sea fleet — 6 heavy-duty ice-class vessels;
- river fleet — 556 vessels, including 161 self-propelled and 395 towed vessels;
- rail car and locomotive fleet — 118 container flatcars, 1 switch locomotive, 1 Yermak electric locomotive, and 1 2M62 diesel locomotive;
- aircraft fleet — 16 helicopters operated by Norilsk Avia and 15 planes operated by NordStar Airlines.

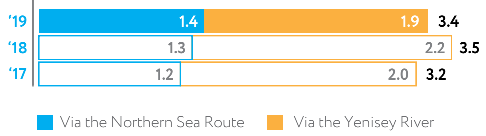
TRANSPORT DIVISIONS AND PORTS

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, 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 Yenisey River freeze over. At this period, Dudinka Port handles only sea vessels using icebreakers to de-ice the berths and provide support during manoeuvring and mooring operations. In May and June, during the flooding, the service is suspended to be resumed for sea and river vessels when ice flows pass and the water level goes down.

Dudinka Port transships cargoes destined for 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 Yenisey River and via sea routes. Converter matte and metal products are shipped by sea from Dudinka throughout the year.

Cargo traffic at Dudinka port (mln t)



Cargo traffic at Murmansk terminal (mln t)

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 Yenisey Rivers, while also investing in bioresource management (e.g. releasing fingerlings).

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

- Shipment of Nornickel's finished metal products from Murmansk 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, 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, Murmansk Transport Division's Information Security Management System was certified to ISO/IEC 27001:2013.

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

Krasnoyarsk Transport Division is based in Krasnoyarsk. This division is responsible for transportation and forwarding of Nornickel's.

In 2019, **Nornickel- Yenisey River Shipping Company** (100%) was established to coordinate operations of Krasnoyarsk port and Yenisey River Shipping Company, which operate a strictly seasonal service due to the Yenisey River getting frozen in winter. When ice flows pass, the Group uses the ports to transship Nornickel's cargoes to Dudinka, including crushed granite, clinker, materials, equipment, and socially significant cargoes (as part of the Northern Deliveries programme).

Yenisey River Shipping Company (82%) carries the bulk of the Group's and third-party cargoes shipped on the Yenisey River. The company owns over 600 river vessels, including self-propelled and towed ones. The fleet operates in the Yenisey, Angara, Nizhnyaya Tunguska and Podkamennaya Tunguska Rivers, and their largest tributaries.

Krasnoyarsk River Port (89%) is one of the largest ports in the Yenisey 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 – Yenisey, Zlobino, and Peschanka.

Lesosibirsk Port (51%) is located 40 km downstream of the point of confluence of the Angara and Yenisey Rivers and downstream of the hard-to-navigate rapids. This secures the delivery of Nornickel's cargoes at times of low water on the Yenisey and the use of fully loaded ships. The port's unique benefits:

- The only dedicated port on the Yenisey 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 the navigation periods)
- Has access to the Baikal (M53) federal highway via the Krasnoyarsk–Yeniseysk highway
- A railway to Achinsk links Lesosibirsk to the Trans-Siberian Railway.

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

INVESTMENT IN TRANSPORTATION AND LOGISTICS ASSETS

In 2019, Nornickel completed scheduled repairs of vessels, overhauled several berths and port cranes, deployed integrated security technologies and solutions, upgraded communications hardware, introduced fuel consumption metering, and launched a programme to replace mobile port cranes at Dudinka Port.

Investment in transportation and logistics assets

Expenditure	2017		2018		2019	
	USD mln	RUB bn	USD mln	RUB bn	USD mln	RUB bn
TOTAL	46.2	2.7	35.1	2.2	55.6	3.6
Capital construction	22.2	1.3	6.4	0.4	3.1	0.2
Equipment purchases	15.4	0.9	12.8	0.8	40.2	2.6
Other	8.6	0.5	15.9	1.0	12.4	0.8

WHY WE DO THIS

We develop digital technologies to deliver operational efficiency gains

Technology Breakthrough

A programme aimed at embedding advanced digital solutions into designing, planning and operational control processes throughout mining operations

17 **SYSTEMS** went live

50 **NEW INITIATIVES** slated for rollout before 2024

RESEARCH AND DEVELOPMENT INNOVATIONS

RESEARCH AND DEVELOPMENT

R&D is a major driver behind the implementation of the Company's strategic priorities. In 2019, Nornickel's R&D and feasibility studies mainly focused on providing research data for the updated Norilsk Nickel Group Strategic Development Plan. Operations. Mining, processing, metallurgy.

Gipronickel Institute is Nornickel's main R&D facility. Part of the Norilsk Nickel Group, it is also one of Russia's largest research and engineering hubs for mining, concentration, metallurgy and processing of minerals, providing a wide range of research and technology services.

PATENTS AND LICENCES

Implementation of uniform approaches to intellectual property (IP) management is a major driver of Nornickel's innovative development.

The Company registers its exclusive rights to inventions and means of identification both in Russia and beyond.

International registration process for Nornickel's Method for Continuously Converting Nickel-Containing Copper Sulphide Materials is now in progress, with a Kazakhstan patent for this invention granted in 2019.

A Certificate of State Registration for 10-day/shift Operations Planing and Control System for Underground Mines software was also granted in 2019. The software solution is being rolled out across the Group as part of its mining automation project.

Also in 2019, the Company completed the registration process and obtained an international certificate of registration for the NORNICKEL trademark in the USA for the first time in its history.

DIGITISATION

Nornickel is the industry's digital leader:

- Nornickel won the first place and the gold award in the Business Transformation Category at SAP Quality Awards in the CIS region for two years in a row – 2018 and 2019 – for its project to roll out SAP ERP
- The Company won the first place for the Machine Vision-Based Detection of Ore Contaminants on Concentrator Conveyors project
- Bronze award was given for the Smart Tailing Dump project leveraging all currently available state-of-the-art dam movement monitoring technologies
- Nornickel's project to optimise flotation processes at Talnakh Concentrator was awarded a BCG Olympics medal in 2019 as the best project internationally to win this highly prestigious annual global competition

Adoption of state-of-the-art technology, including digital solutions, is critical to business competitiveness. Nornickel places considerable emphasis on researching and adopting various digital technologies to optimise production processes, improve overall business performance, and eliminate bottlenecks, resulting in a higher conversion productivity, lower costs and a streamlined organisation. The Company has built a portfolio of various applied technology solutions which can be of interest to other players in the metals and mining industry as well as other industries.

In July 2019, Rosbank and Nornickel migrated the interface between their information systems to a host-to-host digital platform developed by Rosbank and Nornickel's experts supported by BDO Unicon Business Solutions. The host-to-host solution provides a high-speed secure data transfer directly between Nornickel's corporate SAP system and Rosbank's host-to-host service.

It now takes Nornickel's Treasury barely a moment to send payment orders to Rosbank and receive settlement account statements from it. Migration to the host-to-host solution has not only made payments faster and more secure but also streamlined Nornickel's internal processes and going forward enables fundamentally new, digital business use cases around interfaces with banks and counterparties.

TECHNOLOGY BREAKTHROUGH PROGRAMME

The Company runs the Technology Breakthrough programme to integrate advanced technologies into the design, planning and operational control processes of its mining activities, driving the operational efficiency of its production processes. About 40 IT initiatives were developed during its first phase (Technology Breakthrough 1.0).

The key projects within the programme: development of mining equipment and personnel positioning and communication systems; mining operations planning and dispatch; and deployment of various solutions including geological modelling and mine planning solutions, metals balance calculation, industrial asset management, process data storage, and health and safety systems.

Basic infrastructure building

Nornickel has equipped all of its underground mines with positioning and communication systems. More than 300 kilometres of fibre have been laid, with over 1,000 Wi-Fi access points installed underground. Every day, each person out of more than 6,500 is given special equipment with an RFID tag to track the person's movements within the mine. Similar tracking solutions are installed on moving machinery, totalling more than 500. Video surveillance is provided for key infrastructure facilities underground. A control room operator monitors movements of each employee and can contact them by phone. An anti-collision technology is used to warn drivers of people in the way. The Company has deployed a powerful system providing complete information on people and machinery positions and ore flows in mines by feeding virtually unlimited volumes of data from the surface underground and back.

Geological modelling and mine planning solutions

The deployment of geological modelling and mine planning solutions has enabled the development of a single mining database and 3-D models of underground ore bodies. The software can also be used to design underground workings and obtain survey data. The system enables data preparation and feeding to automated drill rigs, with significant gains to be achieved in drilling and blasting performance. Geological modelling and mine planning software can also accelerate development and analysis of multiple mining options to identify the most effective one and plan mining accordingly.

Simulation modelling system

The software analyses data on underground workings, their geometry, underground transport and ore production plans to calculate an optimal quantity of required underground machinery. The purpose is to optimise ore production and transportation from the mine to the surface. Nornickel's mid-term plans are to use the simulation modelling system to test the use of remotely controlled underground machinery.

Smart digital mines

It took a lot of time and effort to develop underground infrastructure across all mines operated by the Company before operational control centres could launch and assume associated control and management functions. Wireless data transmission system points and fibre links were installed under the Polar Division's machinery tracking and radio communication project, implemented as part of the Technical Breakthrough programme. Each underground working now has Wi-Fi access and is fitted with video cameras.

The Company has also developed a unique 10-day/shift scheduling software to eliminate the decentralised approach and manual planning for certain mine parts. The software allocates tasks and equipment to workings and shifts in accordance with the process cycles and pre-set inputs to create the mine operation 10-day/shift schedule with 10-day increments and task scheduling for each specific shift. Mining plans covering different periods and parts of all underground mines are integrated into higher-level plans within a single centralised planning system. The operational control centres now operate in accordance with the new mining planning processes. The 10-day/shift scheduling software creates work plans using data from the Micromine geological modelling and mine planning software which creates a 3D model of the mined ore body with a clear representation of beds and seams and helps optimise reserve development sequencing and production techniques.

Process data storage

All data is fed into a process data warehouse, which also collects telemetry data from moving machinery: motor RPM, fuel consumption, working hours, etc. The single process data warehouse collates over 60,000 parameters for all enterprises of Nornickel. The data is then used in other Technology Breakthrough systems such as Production Dispatch, Metals Balance, and in the SAP ERP equipment maintenance and repair management system.

Technical Breakthrough 1.0 has improved total metal recovery and increased the quality of saleable ore by 6.5% between 2016 and 2019, achieving total savings of billions of Russian roubles.

In 2020, Nornickel will launch the second phase of the programme – Technical Breakthrough 2.0, which will include 11 projects. The second phase will mostly focus on Industry 4.0 levers, with certain autonomy embedded in all mine development projects. The Company will now harness big data to improve production planning and overhaul the production process, implementing projects to roll out artificial intelligence, robotics, digital twins, etc.

Nornickel is developing a database enabling it to plan for unmanned production. In particular, mining at depths between 2 km and 2.5 km in the Glubokaya mine (at the Skalisty Mine site) will maximise the use of autonomous mining systems.

DIGITAL LAB

Nornickel actively deploys digital technologies to address local production tasks. Its R&D division Digital Lab has been active for almost two years.

Two initiatives of the Digital Lab won awards at the Mine Digital contest held as part of the Minex Russia geological forum. The gold winner was the Conveyor Contaminant Identification project applying artificial intelligence technology to recognise non-metallic matter on the conveyor which, if entering the concentrator's crusher, can damage the equipment. Bronze award was won for the Smart Tailing Dump project which focuses on the analysis of satellite radiolocation data to track potential strata movements with a millimetre accuracy.

Concentrator conveyor contaminant identification system

The Digital Lab won the gold award for this initiative at the Mine Digital contest held as part of the Minex Russia geological forum.

The system uses artificial intelligence technology to recognise non-metallic matter on the conveyor which, if entering the concentrator's crusher, can damage the equipment. The system will reduce the wear of crushing equipment and the frequency of unscheduled repairs, and is planned to be launched in the mid-term across all of Nornickel's sites.

Industrial exoskeletons

In 2019, Nornickel made its first-ever public presentation of an exoskeleton system developed jointly with the South-West State University. The presentation featured rapid training and testing of exoskeletons on a testing ground, providing the companies in the audience with an opportunity to get a first-hand feel for the new solution. The presentation generated great interest from many companies, and as a result several exoskeletons were shipped for testing to production sites of several Russian metals companies. The exoskeletons were also presented by Nornickel at an advanced project exhibition held by the Agency for Strategic Initiatives.

Industrial exoskeletons are designed for use in harsh environments, helping to resolve health and safety issues and improve operational efficiency. An exoskeleton is put on over the safety workwear and is attached to the person's body by special straps. It can help persons lifting or carrying weights of up to 60 kg by taking up to 90% of the weight. Thanks to its small size, an exoskeleton can be used in hard-to-reach areas inaccessible to specialised machinery. Nornickel's exoskeletons have some smart features: apart from the exoskeleton itself, the system also includes an onboard computer to monitor ambient air pollution concentrations, temperature, illuminance levels, and the user's operating modes in real time.

H&S compliance monitoring solution

Health and safety violations are detected and recorded by video cameras using machine vision and artificial intelligence. The system drives employee accountability, simplifies monitoring and reduces accidents at work.

Short circuit detection in copper electrolysis at metallurgical plants

An integrated hardware/software solution has been developed to detect short circuits in copper electrolysis, stabilising the electrolysis process and increasing the output of copper cathodes.

Drones for aerial surveillance of hard-to-reach areas

Nornickel is developing drones capable of video recording and autonomous movement deep underground without relying on GPS. The drones will be used to inspect the condition of facilities in hard-to-reach areas, enabling faster inspections, reduced diagnostic costs, and most importantly, improved safety. Nornickel has also designed drones for automatic scanning of mine areas that are out of bounds for employees, which will also prevent unscheduled shutdowns and accidents.

Mine surveying robot

Nornickel has piloted a robotic system capable of laser scanning and autonomous movement in workings, which enables high-quality 3D surveying including for hard-to-reach areas. The Company will be able to use the data feed from the robot for integration with its geological modelling and mine planning system.

WHY WE DO THIS

We are looking for solutions

to drive operational efficiency within the existing asset portfolio and ease the workload of metallurgists

Digital Lab

Nornickel actively deploys digital technologies to address local production tasks. Its R&D unit Digital Lab has been active for almost two years now

6 INITIATIVES

moved into large-scale rollout

53 INITIATIVES

Digital Lab worked on

FINANCIAL PERFORMANCE (MD&A)

2019 HIGHLIGHTS

- **Consolidated revenue increased 16%** y-o-y to USD 13.6 billion owing to higher production volumes of all key metals and growth of palladium and nickel prices;
- **EBITDA expanded 27%** y-o-y to USD 7.9 billion owing to higher metal revenue and tight control of operating expenses, with EBITDA margin reaching 58%. Reported EBITDA includes negative impact of the USD 190 million provisions accrued in respect of the upcoming shutdown of certain production facilities at Kola Division;
- **EBITDA generated by the Bystrinsky project** that was fully commissioned in September 2019 amounted to USD 349 million;
- **CAPEX decreased 15%** y-o-y to USD 1.3 billion owing to the completion of large investment projects in 2018;
- The Company made **final investment decisions on strategic growth projects** such as the expansion of the Talnakh concentrator (TOF-3 project) and the development of South Cluster mining project and also updated its environmental programme, which is scheduled to go into active construction phase in 1H2020;
- **Net working capital increased to USD 1.0 billion** in line with the medium-term target level;
- **Free cash flow amounted to USD 4.9 billion**, almost unchanged y-o-y;
- **Net debt/EBITDA ratio decreased to 0.9x as of December 31, 2019**;
- **Cash interest paid decreased 17%** y-o-y to USD 460 million owing to the ongoing optimization of debt portfolio;
- **At the annual Capital Markets Day in November, the Company provided its strategic vision until 2030** with the focus on development prospects of Taimyr mining operations, debottlenecking of downstream assets and dramatic reduction of sulfur dioxide emissions at both key operating units in Russia: Polar division and Kola MMC.

RECENT DEVELOPMENTS

- **On January 14, 2020, the Company paid interim dividend** for the nine months of 2019 in the amount of RUB 604.09 (approximately USD 9.9) per ordinary share for the total of approximately USD 1.6 billion;
- **On February 20, 2020, the Company entered into agreement to revise terms and conditions of the USD 2.5 billion syndicated term loan** originally signed in December 2017 with a group of international banks, whereby increasing the total facility amount to USD 4.15 billion, reducing the interest rate and rescheduling the repayment of outstanding amount from the period of December 2020 - December 2022 to the period of February 2023 - February 2025.

Key corporate highlights

USD million (unless stated otherwise)	2019	2018	Change,%
Revenue	13,563	11,670	16%
EBITDA[1]	7,923	6,231	27%
EBITDA margin	58%	53%	5 p.p.
Net profit	5,966	3,059	95%
Capital expenditures	1,324	1,553	(15%)
Free cash flow[2]	4,889	4,931	(1%)
Net working capital	985	867	14%
Net debt	7,060	7,051	0%
Net debt, normalized for the purpose of dividend calculation[3]	4,952	5,160	(4%)
Net debt/12M EBITDA	0.9x	1.1x	(0.2x)
Net debt/12M EBITDA for dividends calculation	0.6x	0.8x	(0.2x)
Dividends paid per share (USD)[4]	26.3	21.3	23%

In 2H2019, the Group updated its management accounting system in line with business changes. As a result, the South Cluster segment was separated from GMK Group segment in 2019.

In 2019, revenue of Group GMK segment increased 42% to USD 13,836 million. This was primarily driven by the growth of intersegmental sales revenue due to the launch of direct sales of semi-products to KGMK Group, which was additionally supported by higher refined metals production volumes and palladium price.

The revenue of South cluster segment amounted to USD 864 million.

The revenue of Group KGMK segment increased more than three times to USD 3,115 million due to the launch of direct sales of semi-products supplied by GMK Group segment.

Revenue of NN Harjavalta increased 14% to USD 1,172 million. Higher sales volumes were supported by higher nickel price.

Revenue of GRK Bystrinskoye amounted to USD 201 million, which included sales of semi-products since the full commissioning of Bystrinsky project in September 2019.

Revenue of Other mining segment increased 23% to USD 133 million mostly driven by higher semi-products sales volumes and palladium price.

Revenue of Other non-metallurgical segment decreased 7% to USD 1,412 million. Lower sales volumes of Palladium Fund were partly compensated by higher palladium prices.

In 2019, EBITDA of GMK Group segment increased 44% to USD 9,522 million owing primarily to higher revenue and depreciation of Russian rouble. EBITDA of GMK Group segment included profit from the sale of semi-products to Group KGMK segment, which was eliminated from EBITDA of the Group.

The EBITDA of South cluster segment amounted to USD 475 million.

EBITDA of Group KGMK segment decreased 69% to USD 58 million primarily owing to the start of direct purchases of GMK Group segment semi-products.

EBITDA of NN Harjavalta increased by USD 3 million to USD 74 million.

EBITDA of GRK Bystrinskoye segment increased by USD 253 million and amounted to USD 349 million due to higher production volumes.

EBITDA of Other non-metallurgical segment decreased 38% to USD 31 million following one-off expenses in 2019.

EBITDA of Unallocated segment insignificantly changed 3% to a negative USD 785 million.

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/ Normalized on interim dividends (at the rate of the Board of Directors meeting date) and deposits with maturity of more than 90 days.
4/ Paid during the current period.

Key segmental highlights[1]

USD million (unless stated otherwise)	2019	2018	Change,%
Revenue	13,563	11,670	16%
GMK Group	13,836	9,742	42%
South cluster	864	–	p.p.
KGMK Group	3,115	911	3x
NN Harjavalta	1,172	1,026	14%
GRK Bystrinskoye	201	8	n.a.
Other mining	133	108	23%
Other non-metallurgical	1,412	1,514	(7%)
Eliminations	(7,170)	(1,639)	4x
EBITDA	7,923	6,231	27%
GMK Group	9,522	6,602	44%
South cluster	475	–	n.a.
KGMK Group	58	190	(69%)
NN Harjavalta	74	71	4%
GRK Bystrinskoye	349	96	4x
Other mining	(31)	(6)	5x
Other non-metallurgical	31	50	(38%)
Eliminations	(1,770)	(13)	n.a.
Unallocated	(785)	(759)	3%
EBITDA margin	58%	53%	5 p.p.
GMK Group	69%	68%	1 p.p.
South cluster	55%	n.a.	n.a.
KGMK Group	2%	21%	(19 p.p.)
NN Harjavalta	6%	7%	(1 p.p.)
GRK Bystrinskoye	n.a.	n.a.	n.a.
Other mining	(23%)	(6%)	(17 p.p)
Other non-metallurgical	2%	3%	(1 p.p.)

Sales volume and revenue

Index	2019	2018	Change,%
Metal sales			
Group			
Nickel, thousand tonnes[2]	230	217	6%
– from own Russian feed	213	208	2%
– from 3d parties feed	3	2	50%
– in semi-products[4]	14	7	2x
Copper, thousand tonnes[2,3]	479	455	5%
– from own Russian feed	433	431	0%
– in semi-products[4]	46	24	92%
Palladium, koz[2]	2,988	2,974	0%
– from own Russian feed	2,890	2,913	(1%)
– in semi-products[4]	98	61	61%
Platinum, koz[2]	714	668	7%
– from own Russian feed	698	657	6%
– in semi-products[4]	16	11	45%
Rhodium, koz[2]	78	62	26%
– from own Russian feed	69	62	11%
– in semi-products[4]	9	–	100%
Cobalt, thousand tonnes[2]	7	4	75%
– from own Russian feed	5	3	67%
– from 3d parties feed	2	1	2x
Gold, koz[2,3]	235	161	46%
– from own Russian feed	184	155	19%
– in semi-products[4]	51	6	9x
Average realized prices of refined metals produced by the Group			
Nickel (USD per tonne)	14,355	13,531	6%
Copper (USD per tonne)	6,047	6,566	(8%)
Palladium (USD per oz)	1,524	1,025	49%
Platinum (USD per oz)	862	877	(2%)
Rhodium (USD per oz)	3,948	2,194	80%
Cobalt (USD per tonne)	26,756	68,604	(61%)
Gold (USD per oz)	1,393	1,264	10%
Revenue, USD million[5]			
Nickel	3,388	3,013	12%
– including semi-products	285	175	63%
Copper	2,877	2,977	(3%)
– including semi-products	257	144	78%
Palladium	5,043	3,674	37%
– including semi-products	194	98	98%
Platinum	628	596	5%
– including semi-products	27	20	35%
Other metals	915	702	30%
– including semi-products	172	55	3x
Revenue from metal sales	12,851	10,962	17%
Revenue from other sales	712	708	1%
Total revenue	**13,563**	**11,670**	**16%**

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[1] Segments are defined in the consolidated financial statements.

[2] All information is reported on the 100% basis, excluding sales of refined metals purchased from third parties and semi-products purchased from Nkomati.

[3] Includes semi-products, produced by GRK "Bystrynskoe" after ramp-up of Bystrinsky project that was fully commissioned in September 2019.

[4] Metal volumes represent metals contained in semi-products.

[5] Includes metals and semi-products purchased from third parties and Nkomati. Includes revenue from semi-products, produced by GRK "Bystrynskoe", after ramp-up of Bystrinsky project that was fully commissioned in September 2019.

REVENUE

NICKEL

Nickel sales contributed 26% to the Group's total metal revenue in 2019, down from 27% in 2018. A 1 p.p. decrease was driven by palladium price that outperformed nickel price in the reported period.

In 2019, nickel revenue was up by 12% amounting to USD 3,388 million. The growth was driven both by higher realized nickel price (+USD 188 million) and increase in sales volume (+USD 187 million).

The average realized price of refined nickel increased 6% to USD 14,355 per tonne in 2019 vs USD 13,531 per tonne in 2018.

Sales volume of refined nickel produced from own Russian feed, increased by 2% (or +5 thousand tonnes) to 213 thousand tonnes owing to higher production volumes.

Sales volume of nickel produced from third-party feed increased 50% to 3 thousand tonnes primarily due to the increased processing of third-party feed at Harjavalta refinery.

In 2019, sales of nickel in semi-products increased 63% to USD 285 million primarily owing to higher sales volume of semi-products.

COPPER

In 2019, copper sales accounted for 22% of the Group's total metal sales, decreasing 3% (or -USD 100 million) to USD 2,877 million primarily owing to lower realized price (-USD 227 million) which was partly compensated by higher sales volume (+USD 127 million).

The average realized price of refined copper decreased 8% from USD 6,566 per tonne in 2018 to USD 6,047 per tonne in 2019.

Physical volume of refined copper sales from the Company's own Russian feed remained unchanged at 433 thousand tons.

Revenue from copper in semi-products in 2019 increased 78% to USD 257 million primarily due to the ramp-up of Bystrinsky project that was fully commissioned in September 2019.

PALLADIUM

In 2019, palladium accounted for 39% of total metal revenue, increasing 5 p.p. y-o-y. Palladium revenue increased 37% (or +USD 1,369 million) to USD 5,043 million due to higher realized price (+USD 1,484 million) and increased sales volume (+USD 34 million).

The average realized price of refined palladium increased 49% from USD 1,025 per troy ounce in 2018 to USD 1,524 per troy ounce in 2019.

Physical volume of refined palladium sales from the Company's own Russian feed remained stable y-o-y and amounted to 2,890 thousand troy ounces in 2019. Higher base effect in 2018 (from the sale of metal from stock accumulated in the Company's Palladium Fund in 2017) was compensated by higher sales volume in 2019 due to release of work-in-progress inventory.

Revenue of palladium in semi-products increased 98% to USD 194 million in 2019 primarily owing to higher sales volume of semi-products.

In 2019, revenue from the resale of palladium purchased from third parties amounted to USD 444 million (vs USD 593 million in 2018).

PLATINUM

In 2019, platinum sales increased 5% (or +USD 32 million) to USD 628 million and remained at 5% of the Group's total metal revenue. The higher sales volume (+USD 42 million) was partly compensated by decline of realized platinum price (-USD 10 million).

Physical volume of refined platinum sales from the Company's own Russian feed in 2019 increased 6% (or +41 thousand troy ounces) to 698 thousand troy ounces primarily due to release of PGM work-in-progress inventory.

Revenue of platinum in semi-products in 2019 increased 35% to USD 27 million primarily due to higher sales volume of semi-products.

OTHER METALS

In 2019, revenue from other metals increased 30% (or +USD 213 million) to USD 915 million. This was primarily due to higher revenue from gold (+USD 123 million) mainly due to the ramp-up of Bystrinsky project, higher revenue from rhodium (+USD 155 million) resulting from the increase in price, which was partly negatively compensated by decrease in cobalt revenue (-USD 108 million) primarily due to price decrease.

OTHER SALES

In 2019, other sales increased 1% to USD 712 million. Revenue growth in real terms that was primarily driven by higher fuel sales volumes was offset by the negative effect of Russian rouble depreciation.

Other sales

USD million (unless stated otherwise)	2019	2018	Change, %
Air transport	250	257	(3%)
Fuel-power complex	184	178	3%
Water transport	52	56	(7%)
Food retail	38	38	0%
Zapolyarye Health Resort	19	17	12%
Other	169	162	4%
Total	712	708	1%

COST OF SALES

COST OF METAL SALES

In 2019, the cost of metal sales was unchanged and amounted to USD 4,509 million. Main factors contributing to it were as follows:

- Increase in cash operating costs by 2% (or +USD 75 million);
- Increase in depreciation and amortisation by 13% (or +USD 82 million);
- Change in metal inventories y-o-y leading to cost of metal sales decrease of USD 153 million.

CASH OPERATING COSTS

In 2019, total cash operating costs increased 2% (or +USD 75 million) to USD 3,818 million.

The positive effect of Russian rouble depreciation was fully offset by inflationary growth of cash operating costs.

Cash operating costs related to Bystrinsky project after its full commissioning amounted to USD 62 million in 2019.

Cash operating costs

USD million	2019	2018	Change,%
Labour	1,295	1,283	1%
Materials and supplies	712	727	(2%)
Purchases of refined metals for resale	438	430	2%
Purchases of raw materials and semi-products	402	436	(8%)
Third party services	239	200	20%
Mineral extraction tax and other levies	221	212	4%
Electricity and heat energy	155	143	8%
Fuel	101	87	16%
Transportation expenses	88	70	26%
Sundry costs	167	155	8%
Total cash operating costs	3,818	3,743	2%
Depreciation and amortisation	735	653	13%
(Increase)/decrease in metal inventories	(44)	109	n.a.
Total cost of metal sales	**4,509**	**4,505**	**0%**

Labour

In 2019, labour costs increased 1% (or USD 12 million) to USD 1,295 million amounting to 34% of the Group's total cash operating costs driven by the following:

- -USD 44 million - cost decrease owing to the Russian rouble depreciation against US Dollar;
- +USD 52 million - increase in real terms primarily driven by the indexation of salaries and wages in line with the terms of collective bargaining agreement;
- +USD 15 million - cost increase driven by ramp-up of Bystrinsky project that was fully commissioned in September 2019;
- -USD 15 million - cost decrease following the decrease of production staff headcount primarily due to disposal of a subsidiary.

Purchases of raw materials and semi-products

In 2019, purchases of raw materials and semi-products decreased 8% (or USD 34 million) to USD 402 million driven by the following:

- -USD 15 million - cost decrease owing to the Russian rouble depreciation against US Dollar;
- -USD 73 million - cost decrease owing to lower volumes of Rostec concentrate processing;
- +USD 29 million - cost increase owing to higher volumes of purchased semi-products from Boliden for processing at NN Harjavalta;
- +USD 24 million - cost increase driven by higher purchases of Nkomati concentrate.

Purchases of refined metals for resale

In 2019, expenses related to purchase of refined metals for resale increased 2% to USD 438 million owing to the increase in palladium price, most of which was offset negatively by decrease of purchased volume.

Materials and supplies

In 2019, materials and supplies decreased 2% (or USD 15 million) to USD 712 million driven by the following factors:

- -USD 18 million - positive effect of the Russian rouble depreciation;
- +USD 13 million - cost increase driven by commissioning of Bystrinsky project;
- -USD 10 million - lower materials and supplies expenses primarily related to lower consumption of materials, which was partly offset by inflationary growth of expenses.

Third-party services

In 2019, cost of third party services increased 20% (or USD 39 million) to USD 239 million mainly driven by:

- -USD 7 million - positive effect of the Russian rouble depreciation;
- +USD 15 million - costs increase primarily due to higher PGM refining costs due to release of PGM work-in-progress inventory and tariffs revision;
- +USD 10 million - cost increase owing to the commissioning of Bystrinsky project;
- ·USD 13 million - cost increase mainly driven by higher Nkomati stripping costs.

Mineral extraction tax and other levies

In 2019, mineral extraction tax and other levies increased by 4% (or USD 9 million) to USD 221 million driven by the following:

- -USD 7 million - positive effect of the Russian rouble depreciation;
- +USD 13 million - cost increase driven by higher volumes of ore mined.

Electricity and heat energy

In 2019, electricity and heat energy expenses increased by USD 12 million to USD 155 million driven by the following:

- -USD 7 million - positive effect of the Russian rouble depreciation;
- +USD 14 million - cost increase driven by inflationary growth of expenses;
- +USD 3 million - cost increase owing to the commissioning of Bystrinsky project.

Fuel

In 2019, fuel expenses increased 16% (or USD 14 million) to USD 101 million driven by the following:

- -USD 3 million - positive effect of the Russian rouble depreciation;
- +USD 6 million - higher oil price;
- +USD 5 million - cost increase driven by commissioning of Bystrinsky project.

Transportation expenses

In 2019, transportation expenses increased 26% (or +USD 18 million) to USD 88 million driven by the following:

- -USD 1 million - positive effect of the Russian rouble depreciation;
- +USD 9 million - costs increase driven by higher volumes of third-party transportation services in Norilsk industrial region;
- +USD 10 million - cost increase owing to the commissioning of Bystrinsky project.

Sundry costs

In 2019, sundry costs increased 8% (or +USD 12 million) to USD 167 million mainly driven by inflationary growth of expenses and commissioning of Bystrinsky project.

Depreciation and amortisation

In 2019, depreciation and amortisation expenses increased 13% (or USD 82 million) to USD 735 million.

Positive effect of Russian rouble depreciation amounted to -USD 19 million.

Depreciation charges in real terms increased by USD 101 million mainly due to transfers from construction in progress to production assets and full commissioning of Bystrinsky project.

(Increase)/decrease in metal inventories

In 2019, comparative effect of change in metal inventory amounted to -USD 153 million resulting in a decrease of cost of metal sales, primarily driven by accumulation of work -in-process and semi-products in 2019 excluding the changes in Rostec concentrate.

COST OF OTHER SALES

In 2019, cost of other sales increased by USD 62 million to USD 684 million.

Cost of other sales increased primarily due to higher fuel sales, higher repairs and inflationary cost growth, which were partly positively compensated by the Russian rouble depreciation.

SELLING AND DISTRIBUTION EXPENSES

Selling and distribution expenses

USD million	2019	2018	Change,%
Marketing expenses	45	31	45%
Transportation expenses	43	39	10%
Staff costs	15	14	7%
Other	14	8	75%
Total	117	92	27%

In 2019, selling and distribution expenses increased 27% (or USD 25 million) to USD 117 million primarily due to increase in marketing expenses (USD 14 million).

GENERAL AND ADMINISTRATIVE EXPENSES

General and administrative expenses

USD million	2019	2018	Change,%
Staff costs	601	569	6%
Third party services	117	96	22%
Taxes other than mineral extraction tax and income tax	77	103	(25%)
Depreciation and amortisation	69	38	82%
Transportation expenses	15	9	67%
Rent expenses	5	23	(78%)
Other	54	52	4%
Total	938	890	5%

In 2019, general and administrative expenses increased 5% (or USD 48 million) to USD 938 million. Positive effect of Russian rouble depreciation amounted to -USD 24 million. Changes of the general and administrative expenses in real terms were primarily driven by the following:

- +USD 48 million – increase in staff costs mainly due to one-off payments related to management bonuses, as well as salaries indexation;
- +USD 23 million – increase of third party services related to the automatization of production processes and roll out of digital technologies;
- -USD 24 million – reduction of property tax owing to changes in tax legislation in 2019.

OTHER OPERATING EXPENSES

Other operating expenses, net

USD million	2019	2018	Change,%
Social expenses	224	207	8%
Provision on production facilities shut down	190	–	100%
Change in other provisions	39	21	86%
Net income earned during the pre-commissioning stage	(192)	(106)	81%
Other, net	42	(27)	n.a.
Total	303	95	3x

In 2019, other operating expenses, net increased by USD 208 million to USD 303 million driven by the following factors:

- Provision related to shut down of certain production facilities located at Kolskaya GMK (+USD 190 million);
- Net income generated by GRK "Bystrinskoye" from products sale during the hot commissioning stage (-USD 86 million);
- Change in other provisions, primarily including provision for obsolete and slow-moving inventory (+USD 18 million).

FINANCE COSTS

Finance costs, net

USD million	2019	2018	Change,%
Interest expense, net of amounts capitalised	340	382	(11%)
Unwinding of discount on provisions and payables	84	100	(16%)
Changes in fair value of non-current liabilities	64	46	39%
Interest expense on lease liabilities	12	2	6x
Fair value (gain)/loss on the cross-currency interest rate swap	(199)	51	n.a.
Other, net	5	(1)	n.a.
Total	306	580	(47%)

The 47% decrease in finance costs in 2019 was primarily attributed to a change in the fair value of cross-currency interest rate swaps due to appreciation of Russian ruble against the US dollar as of December 31, 2019 as compared to the exchange rate as of December 31, 2018.

Furthermore, despite the increase in total debt, the average cost of the Group's debt portfolio decreased moderately owing to the monetary policies easing undertaken by the Federal Reserve of the USA and the Bank of Russia, both of which had a positive impact on debt obligations with a floating interest rate.

In 2019, Nornickel continued to optimize its debt portfolio aiming at the extension of debt maturity, which allowed to optimize a number of the Group's bilateral credit facilities totaling USD 962 million.

INCOME TAX EXPENSE

In 2019 income tax expense increased 85% to USD 1 558 million driven mostly by the increase of taxable profit.

The effective income tax rate in 2019 of 20.7% was above the Russian statutory tax rate of 20%, which was primarily driven by non-deductible social expenses.

The breakdown of the income tax expense

USD million	2019	2018	Change,%
Current income tax expense	1,924	812	2x
Deferred tax (benefit)/expense	(366)	31	n.a.
Total	1,558	843	85%

The breakdown of the current income tax expense by tax jurisdictions

USD million	2019	2018	Change,%
Russian Federation	1,883	789	2x
Finland	16	11	45%
Rest of the world	25	12	2x
Total	1,924	812	2x

EBITDA

In 2019, EBITDA increased 27% (or +USD 1,692 million) to USD 7,923 million with the EBITDA margin amounting to 58% (up from 53% in 2018) owing to higher metal revenue and stringent cost control.

EBITDA

USD million	2019	2018	Change,%
Operating profit	7,036	5,416	30%
Depreciation and amortisation	911	765	19%
Impairment of non-financial assets	(24)	50	n.a.
EBITDA	7,923	6,231	27%
EBITDA margin	58%	53%	5 p.p.

STATEMENT OF CASH FLOWS

Statement of cash flows

USD million	2019	2018	Change,%
Cash generated from operations before changes in working capital and income tax	8,226	6,339	30%
Movements in working capital	(307)	941	n.a.
Income tax paid	(1,910)	(787)	2x
Net cash generated from operating activities	6,009	6,493	(7%)
Capital expenditure	(1,324)	(1,553)	(15%)
Other investing activities	204	(9)	n.a.
Net cash used in investing activities	(1,120)	(1,562)	(28%)
Free cash flow	4,889	4,931	(1%)
Interest paid	(460)	(551)	(17%)
Dividends paid	(4,166)	(3,369)	24%
Other financing activities	1,003	(384)	n.a.
Net cash used in financing activities	(3,623)	(4,304)	(16%)
Effects of foreign exchange differences on balances of cash and cash equivalents	130	(91)	n.a.
Net change in cash and cash equivalents	**1,396**	**536**	**3x**

In 2019, free cash flow remained stable at approximately USD 4.9 billion. Lower cash generated from operating activities was almost offset by lower cash used in investing activities.

In 2019, net cash generated from operating activities decreased 7% to USD 6.0 billion primarily driven by comparative effect of working capital increase in 2019 (versus decrease in 2018) and increase in income tax payments due to higher taxable profit and changes in intra-group operations which was partly positively offset by increase in EBITDA in 2019.

Interest paid reduced 17% to USD 460 million as a result of the optimization of debt portfolio.

Reconciliation of the net working capital changes between the balance sheet and cash flow statement is presented below.

In 2019, CAPEX decreased 15% (-USD 229 million) primarily due to adjustment of sulfur project schedule and optimization of certain production projects investment schedules.

Reconciliation of the net working capital changes between the balance sheet and cash flow statement

USD million	2019	2018
Change of the net working capital in the balance sheet	(118)	1,282
Foreign exchange differences	112	(277)
Change in income tax payable	(26)	(5)
Change of long term components of working capital included in CFS	(158)	131
Settlement of tax reserves	(9)	(143)
Other changes including reserves	(108)	(47)
Change of working capital per cash flow	(307)	941

Capital investments breakdown by project

USD million	2019	2018	Change,%
Polar Division, including:	502	696	(28%)
Skalisty mine	58	218	(73%)
Taymirsky mine	67	71	(6%)
Komsomolsky mine	54	44	23%
Oktyabrsky mine	27	40	(33%)
Talnakh Concentrator	14	29	(52%)
Sulfur project	24	36	(33%)
Other Polar Division project	258	258	0%
Kola MMC	221	292	(24%)
Bystrinsky (Bystrinsky) project	103	168	(39%)
Other production projects	489	386	27%
Other non-production assets	9	11	(18%)
Total	1,324	1,553	(15%)

DEBT AND LIQUIDITY MANAGEMENT

Debt and liquidity management

USD million	As of 31 December 2019	As of 31 December 2018	Change, USD million	Change,%
Non-current loans and borrowings	8,533	8,208	325	4%
Current loans and borrowings	1,087	209	878	5x
Lease liabilities	224	22	202	10x
Total debt	9,844	8,439	1,405	17%
Cash and cash equivalents	2,784	1,388	1,396	2x
Net debt	7,060	7,051	9	0%
Net debt /12M EBITDA	0.9x	1.1x	(0.2x)	

As of December 31, 2019, the Company's total debt increased by 17% (or USD +1,405 million) to USD 9,844 million as compared to December 31, 2018. The increase of total debt owed to new debt raised in the second half of 2019 in the form of two bond issues on the Russian and international debt capital markets, respectively, for a total amount of more than USD 1.1 billion, and recognition of obligations under lease contracts stemming from application of IFRS 16 Leases, which became effective on January 1, 2019.

In spite of the increase in total debt, the Company's net debt remained virtually unchanged due to doubling of the amount of cash and cash equivalents. Net debt/12M EBITDA ratio decreased from 1.1x as of December 31, 2018 to 0.9x as of the end of 2019 entirely due to an increase in 12M EBITDA.

On February 12, 2019, international rating agency Moody's upgraded the Company's credit rating from "Baa3" with "Positive" outlook to "Baa2" with "Stable" outlook in the wake of change of Russia's credit rating to investment grade "Baa3" with "Stable" outlook. As of December 31, 2019, Nornickel had investment grade credit ratings assigned from all three international rating agencies Fitch, Moody's and S&P Global, and Russian rating agency "Expert RA".

Sustainable Development

HUMAN RESOURCES

One of the Company's focus areas is to nurture corporate culture aimed at boosting employee performance and commitment to delivering against targets. Nornickel views its employees as its key asset and keeps investing in their professional and personal development, while also creating an environment promoting employee performance and engagement.

The Company makes sure all employees enjoy equal rights and treatment regardless of gender, age, race, nationality, and origin. Nornickel provides all its talent with the same opportunities to unlock their potential and promotes them solely on the basis of professional competencies.

Respect for each employee and their rights lies at the heart of Nornickel's business. The protection of human rights is reflected in a number of by-laws, including the Company's Code of Business Ethics, Personal Data Policy, Reguations on Anti-Embezzlement, and Human Rights Policy. The Company does not use child labour.

Nornickel is committed to achieving operational excellence and has implemented standard approaches to developing its business unit structures and put together a list of job titles to standardize job creation.

AWARDS AND INDUSTRY RECOGNITION

In 2019, Nornickel entered a number of best employers lists:

- Forbes Global 2000: The World's Best Employers: No. 1 among Russian companies; No. 36 among 2,000 the world's best employers. Nornickel is the only Russian company in the Top 100 of the list
- The World's Most Attractive Employers by Universum: No. 1 among students and professionals in the Metals & Mining category
- HeadHunter's Russian Employers Rating: No. 4 among Top 100 employers

In 2019, the Group's average headcount totalled

73.7
thousand people

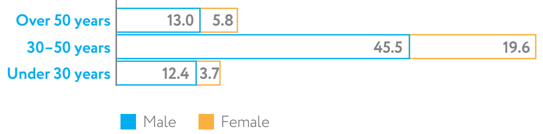
The Group's average headcount (people)

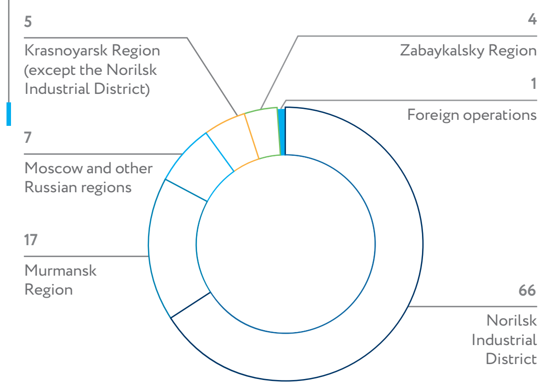
Location	2017	2018	2019
Russia	77,991	74,926	72,782
Africa	605	617	577
Europe	326	330	326
Asia	13	13	16
USA	10	10	9
Australia	5	5	5
TOTAL	78,950	75,901	73,715

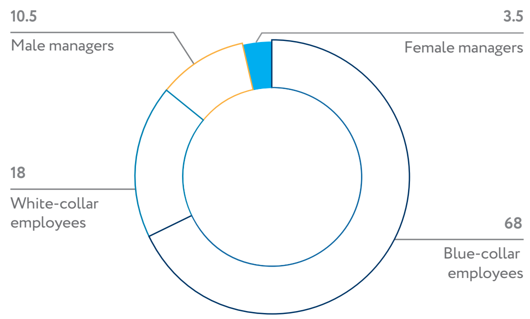
STAFF COMPOSITION

The decrease in the average headcount in 2019 was caused by structural changes within the Group and implementation of a programme to improve labour productivity and reduce costs.

Nornickel is among the main employers in the Norilsk Industrial District and Kola Peninsula, hiring 67% and 17% employees, respectively. Local population accounts for 99.7% of the headcount.


Headcount breakdown by age and gender (%)[1]


Headcount by region (%)


Headcount breakdown by category (%)[1]

RECRUITMENT

PARTNERSHIPS WITH UNIVERSITIES

To make jobs in the metals and mining industry more attractive for young people and make sure highly skilled specialists are available, Nornickel pays special attention to collaboration with Russian universities. In 2019, the Company selected and invited 322 students from 25 Russian industry-oriented universities to take part in its Career Start-Up programme. The students learned practical skills as part of their apprenticeship at the Company's major facilities, while also gaining unique knowledge by taking part in the Conquerors of the North business game. The initiative was specifically designed to develop knowledge and competencies most sought after by Nornickel.

Over the summer, the programme participants received hands-on training and competed in a multi-stage business game with a focus on teamwork to try and tackle some of the Company's real tasks. The Company engaged 20 of its top experts to provide mentorship support to the contestants. Nornickel was the first company in the Russian mining industry to engage students and graduates in solving actual business challenges. In 2019, the project resulted in the Group employing 93 participants of the business game.

Nornickel is committed to promoting engineering professions among school graduates and university students and raising the profile of engineering education in Russia. In 2019, Nornickel sponsored Cup Technical and Metall Cup, Russian and international case-solving championships among students of technical universities. During the contest, students dealt with cases related to Nornickel's operations, gaining insight into the Company's real business processes and proposed their own solutions.

In 2019, an apprenticeship programme kicked off for the first time in the Head Office, taking on board the best graduates of the leading Moscow universities. Upon completion of the programme, seven out of nine apprentices were offered jobs in various business units of the Head Office.

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[1] Russian operations.

ASSISTANCE PROGRAMME

Since the Company's production sites are located in remote areas, Nornickel actively sources personnel for its production facilities from other regions of Russia. A programme called Assistance to New Employees in Adapting to the New Place of Residence in Norilsk and the Taimyrsky Dolgano-Nenetsky Municipal District (the Assistance Programme) aims at helping with getting adjusted to the new environment. The programme targets not only highly qualified specialists and managers, but also young talent and workers with hard-to-find skills. Today, it covers 1,530 of the Company's employees, including 352 new participants who joined in 2019. With this programme, the Company seeks to provide comfortable living conditions for the invited employees and reimburse their relocation and resettlement costs.

PERSONNEL DEVELOPMENT

In 2019, Nornickel's work to develop corporate culture centred around:

- Personnel engagement
- Corporate dialogues and forums
- Comprehensive training in corporate culture
- Training of corporate coaches
- Promotion and communication

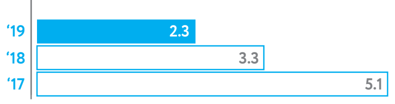
ENGAGEMENT

Nornickel goes through the engagement management cycle every year to maintain an engaging environment. This cycle includes several phases: conducting the "Let Everyone Be Heard. What Do You Think?" survey; analysing survey findings; development and implementation of resulting solutions/initiatives.

In 2019, the engagement index grew by 6 p. p. and the Senior Management index – by 10 p. p.

The survey includes polling and focus group research among 75,000 employees from 32 Nornickel's enterprises. All governance levels, from units of individual enterprises to the Group as a whole, are involved in both survey data analysis and development and implementation of improvements. A total of 850 actions were planned for 2019.

Financing under the Assistance programme (USD mln)



CORPORATE DIALOGUES AND FORUMS

A project to enhance dialogue between senior management and regular employees has been underway for the second year now to improve employee awareness, gain ownership of the Company's goals and values and develop trust between labour and management. In 2019, the project included 30 corporate dialogues, 35 communication trainings for managers, 270 informal meetings, Nornickel Live video conference and six video interviews with Nornickel vice presidents. More than 400 managers were trained under the project. A total of 5,500 Nornickel's employees participated in these initiatives.

Corporate culture and engagement workshops were held at 10 functional conferences and as part of Leaders of Nornickel, On the Path to Efficiency, and IamHR educational corporate programmes. Total coverage exceeded 1,000 people.

COMPREHENSIVE TRAINING IN CORPORATE CULTURE

Training in corporate culture and promotion of the Company's values include programmes at all levels from senior management to regular employees.

Nornickel provides practical training in corporate culture (based on the Company's White Paper) for its managers. A total of 49 practical training sessions were attended by more than 500 managers in 2019. An assessment of the training results showed an increase of the Corporate Culture Importance for Business index by 20 p. p. and of the Understanding How to Nurture Corporate Culture index, by 34 p. p.

All enterprises showed a much better alignment of employee behaviour conformity with corporate values Group-wide, with a 1.5–2 times increase in average alignment revealed by the management team survey. The Immediate Superiors Making Decisions in Line with Corporate Values index was at 62%, up by 7 p. p. from 2018.

In order to build a centre of excellence for corporate value training and embedding, the Our Values training module was developed, with 75 corporate coaches competitively selected who were trained and later delivered over 400 programmes based on this module for more than 10,000 employees.

INTERNAL COMMUNICATIONS

Promotion and internal communications focused on the coverage of engagement and corporate culture events by the corporate media and web portal. In total, 10 interviews were conducted with vice presidents, 10 videos on corporate culture were filmed, programme handouts (leaflets, flyers) were prepared, the Nornickel Live website and brand were updated, and a collection of corporate culture materials featuring best practices of various enterprises was published in 2019.

TALENT POOL

In 2019, the Company kept rolling out the talent pool management system across its production facilities to cover recruiting of lower and middle line managers. The project was joined by Medvezhy Ruchey, Polar Construction Company, Norilsktransgaz, and Norilskgazprom. 250 new succession pool members commenced their training in the Corporate University. Manuals for mentors and succession pool members including useful tools and techniques for the development and application of managerial skill were put together to supplement classroom training.

CORPORATE DEVELOPMENT PROGRAMME

The assessment of senior and middle manager potential, performance and future development continued in 2019. Over 500 managers were assessed. In 2019, assessment focused on Top 100, first and second line managers of Operations. Apart from the assessment outcome and future development options, HR committees also discussed the security of top positions and readiness of candidates for succession in the near future. As a result, successors were identified for 200 key managerial positions.

The Leaders of Nornickel corporate development programme involving 54 high-potential managers was completed in April 2019. The programme focused on project work to improve process efficiency across the Company's business units based on lean manufacturing. During the last module, the programme participants presented the results of their work including activities to improve Nornickel's business processes to the Company's management.

Larisa Zelkova

Senior Vice President for HR, Social Policy and Public Relations

> The Leaders of Nornickel programme uses a gradual approach. Everything is designed to prepare its participants for project work. Surely, one of the most important outcomes of the training is development of specific business cases to help improve corporate business processes. However, it offers even more added value. Although it cannot be measured, the emotional part of training should not be overlooked. Friendships that come from shared trainings stay to help participants in their future work. As one of last year participants put it, "Alumni are forever". "It's very well said – we stay in touch even when the training is over.

Such programmes are in high demand from both businesses and key management members. A new group of managers commenced their training under the Leaders of Nornickel 2.0 corporate programme in September 2019. The programme consists of four modules with each module including theory training, practice effectively transforming knowledge into specific skills, master classes, and project work. 55 managers enrolled on the programme, with most selected through a contest. This year, there were three applicants per place.

The On the Path to Efficiency corporate programme for middle management kicked off in June 2019. The programme focuses on developing managerial competencies and executive reasoning, learning continuous improvement tools and personnel management practices. Training will run for 10 months in three cities: Norilsk, Monchegorsk, and Krasnoyarsk. The programme consists of five modules and is attended by 139 participants. Each participant's performance – classroom training engagement and activity level, homework between modules, project work, participation in online training, etc. – is monitored. The participants can use the training portal not only to view the calendar of events, select convenient training dates, complete an assignment, communicate with a coach and other participants, but also to see their current rating. The programme uses state-of-the-art formats and methods of adult training.

The IamHR corporate programme for professional development of HR employees was completed in March 2019. It aimed to improve the human capital management function, promote interaction between the business and HR, and introduce the most advanced solutions and best practices in HR management. The participants followed up the programme by putting together a catalogue of HR practices and management tools, a Guide to Employee Relations. Interviewing a Candidate and Ecofriendly Dismissal practical trainings included master classes delivered as part of corporate management training programmes.

In October 2019, the IamHR programme was followed up with the IamHR Region programme for local HR specialists in Kola MMC.

Also in 2019, the 360-Degree module based on SAP HCM was developed for the annual 360-degree competency review. Its implementation will enable rolling out competence review to all enterprises of the Group and developing a uniform system for identification of management development priorities. The review uses the corporate competence model based on values and managerial competencies. Depending on its results and relevant feedback from one's superior, each participant can choose the right path for their development and select required tools and methods for the next year's development from a special library of development activities.

The implementation of a comprehensive project to develop professional competencies of the Company's managers and white-collar employees continued in 2019. Professional competency models were developed for the health and safety service, the operations of the Polar Transport Division, the metallurgists of the Polar Division, and Kola MMC. Over 1,000 employees were assessed against the models with special tests. The results were used to identify directions and focus areas for future professional development.

In 2019, about 400 employees went through tailor-made training programmes based on the results of their professional competency assessment in 2018.

In 2019, the Company also continued implementing professional standards. 60 professions were analysed against 14 professional standards covering about 5,000 employees. The Company is represented and actively participates in the activities of the Board for Professional Competencies in Mining and Metals and the Board for Professional Competencies in HR Management.

ENHANCING PROFESSIONAL EXCELLENCE

With the reconfigured production cycle, upgraded operations, new technologies, operating procedures and professional standards, development and implementation of new professional qualifications set new requirements for employee knowledge, skills, and competencies. The corporate training framework must provide employees with a quick and unhindered access to new knowledge helping them master new professional skills and receive training and development support for horizontal and vertical job rotation.

The Group will continue employee competence diagnostics and management across its enterprises in 2020, building professional competency models for functional and production divisions of the Company, defining knowledge and skills requirements for each position and developing a set of test questions to assess professional competencies of employees in temporary fill positions.

Nornickel intends to continue implementing professional standards within the Company. The Company's involvement in the activities of boards for professional competencies helps enhance the national competency framework.

In 2019, the Company continued its efforts to educate and upgrade its employees. About 70,000 employees went through various training and retraining programmes, with about a third of them completing two different courses. A total of 4,655 staff-hours of training were delivered to 40,800 employees in corporate training centres.

An area of special attention is the use of advanced technologies to train various categories of personnel. In 2019, 6,500 employees attended online H&S training sessions hinging on staff expertise. The Company produced 58 distance learning H&S courses, 33 videos (3D computer models), and seven multimedia briefings for blue-collar professions. The Company leverages internal expertise and today's formats to quickly produce new high-quality interactive training courses to accomplish its business tasks.

REMUNERATION

Remuneration of Nornickel's employees depends on the work complexity, individual expertise and skills, and their personal contribution to the Company's performance.

Principles of remuneration:

- Internal equity – remuneration management is based on the job description and grading methodology. The Company has a unified grading system across all functions
- External competitiveness – remuneration is based on the labour market data, with adjustments made for a company's focus, business location, and job grades
- Performance-based incentives – pay level is reviewed subject to the annual performance assessment outcome
- Simplicity of the remuneration system – pay level calculation and review procedures are transparent, and employees know how they can improve their remuneration

In 2019, one of the key tasks was to keep the grading system up to date. The Company assessed and reassessed more than 9,500 jobs. The grading system was also introduced at newly established or restructured enterprises.

In 2020, Nornickel will continue to update its grading system and automate some job description and assessment processes.

The remuneration package consists of fixed and variable components (73% and 27%, respectively), with the latter linked to the Company's operating performance and achievement of relevant KPIs.

Average monthly salaries of Nornickel's employees are much higher than the minimum living wage in the Company's operating regions.

Minimum living wage in Nornickel's operating regions

Region	RUB '000	USD
Murmansk Region	25.9	401
Norilsk Industrial District	29.3	453
Krasnoyarsk Region (excluding NID)	11.3	174
Moscow	20.2	312
Zabaykalsky Region	16.9	261

Average monthly salaries of Nornickel's employees[1]

Currency	2017	2018	2019
USD[2]	1,784	1,780	1,835
RUB '000	104.1	111.6	118.8

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[1] Russian operations.

[2] Based on the average annual RUB/USD exchange rates of 58.35 in 2017, 62.71 in 2018, and 64.74 in 2019.

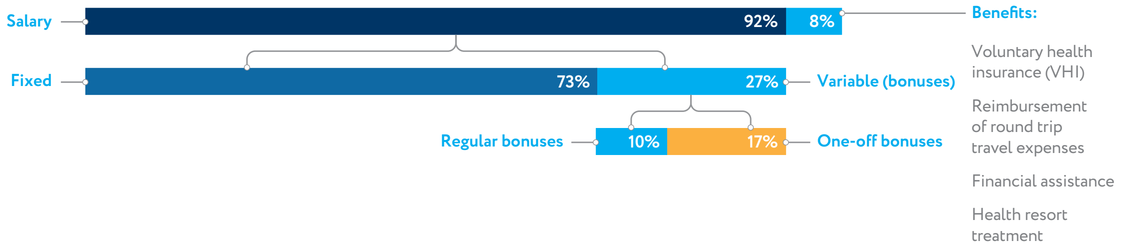
In addition to salaries, Nornickel's employees enjoy a variety of benefits and compensations making up 7% of the remuneration package, including the following:

- Voluntary health insurance and major accident coverage
- Discounted tours for health resort treatment and recreation of employees and their families
- Reimbursements of round trip travel expenses and baggage fees for employees and their families living in the Far North and territories equated thereto
- One-off financial assistance to employees at different life stages or in difficult life situations
- Complementary corporate pensions
- Other types of social benefits under the existing collective bargaining agreements and local regulations.

Nornickel's employee benefit costs (per year)

Expenses	2017	2018	2019
Total expenses (USD mln)	122.6	127.6	147.3
including per employee (USD)	1,571	1,703	2,023

Remuneration package across the Group's Russian operations



REWARDING PERFORMANCE

In 2018, MMC Norilsk Nickel approved its Award Policy which sets out the goals, principles, rules, requirements, and limitations of Nornickel's awarding activities. The Award Policy aims, first and foremost, at employee development and performance improvement. A new version of the Regulations on Corporate Rewards and Incentives came out in the first quarter of 2019 to implement the principles of the Award Policy. In addition to existing awards, these Regulations introduced nine new honorary titles in Nornickel's priority areas to be awarded starting from 2019.

Underlying principles of the award policy

- **Objective and transparent** nomination and awarding process. Nornickel uses objective, relevant, and transparent criteria for each award, on one hand, and ensures clear understanding by the awarded employees and their colleagues which achievements are recognised, on the other; a perception that the award is fair and well-deserved.
- **Popular, attainable, and valuable awards.** Nornickel maintains a balance between employees' desire to be awarded and the ease of getting an award. The balance is struck by an objective allocation of award quotas, transparency and objectivity of procedures, and a significant tangible and intangible value of rewards, awards, and recognition events.
- **Communication and awareness.** Nornickel ensures that the documents governing the Award Policy, award conditions, criteria and procedures for nomination and awarding, and the list of award categories and awards are clearly stated and available to personnel.
- **Maximum awareness** of award winners by all employees. The award process is open and enjoys various types of information support. Information on the awarded employees is communicated to staff via all internal communications channels.
- **Frequency.** Awarding campaigns and events are evenly distributed throughout the calendar year.

- **Equal opportunities** for employees from different locations and segments to be nominated and awarded. Nornickel ensures there is no discrimination on gender, nationality, or religion in the nomination and awarding of employees.
- **Development of employees** in line with strategic priorities and corporate values through better use of their potential and motivation to enhance their professional excellence.

The Award Policy is closely linked to Nornickel's values and strategic priorities through corporate incentives. The Company rewards its employees for outstanding professional achievements and contribution, innovations that drive growth and add value, efforts going beyond formal agreements with Nornickel and contributing to overall performance of the business. Nornickel praises and distinguishes employees showing unmatched production, engineering and managerial competencies by awarding those who delivered remarkable operating and management performance and contributed a lot to advancing production.

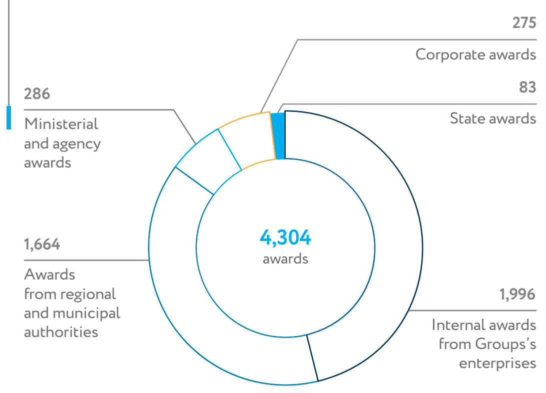
There are several categories of incentives in the Company. They include corporate incentives or Company-level awards that can be granted to Nornickel's employees, and internal incentives with nomination and awarding criteria set in compliance with the Award Policy. Top performers may be nominated for agency and state awards. Nornickel welcomes agency and state recognition of its employees and nominates those who achieved prodigious results in operations and management and made significant contributions to production development.

Award events are the pinnacle of the award policy. Nornickel bestows corporate awards at special ceremonies attended by its staff and senior management. Data on awarded employees are featured in corporate publications and communicated Group-wide. December 2019 saw the first ever ceremony of bestowing honorary titles at the award event marking year-end results.

Awards and nominations

TRADITIONAL AWARDS (INTRODUCED BEFORE 2019)	NEW TITLES (INTRODUCED IN 2019)
BADGE OF HONOUR	BEST YOUNG EMPLOYEE
HONORARY TITLES: BEST MANAGER, BEST SPECIALIST, BEST WORKER	BEST START OF THE YEAR
CERTIFICATE OF MERIT	CHANGE LEADER
COMMENDATION	CORPORATE LIFE LEADER
VALUABLE GIFT	BEST INVENTOR
ONE-OFF BONUS	IN H&S: BEST UNIT MANAGER, BEST LINE MANAGER, BEST SPECIALIST, BEST WORKER IN H&S COMPLIANCE

Employee awards in 2019 (ps)



REMUNERATION FRAMEWORK

The key performance indicators adopted by Nornickel serve to build a transparent incentive and performance assessment system. Remuneration is linked to KPIs approved for different job grades and rewards employees exceeding targets.

Nornickel put in place its performance management system in 2014, with assessment reliant on a variety of key performance indicators (KPIs) covering social responsibility, occupational safety, operating efficiency, and capital management and responding to cross-functional interests of stakeholders. In 2019, 11,300 employees of the Group were assessed against its key performance indicators.

The system is instrumental in streamlining performance assessment criteria and enabling the management and employees to align the current year's priorities with the Company's performance and link an employee's performance to their pay level.

Automation of the KPI-based employee assessment commenced in 2018. The automated system will help standardise talent pool management methods across the Company, consolidate relevant data into a shared database, and provide access to the assessment process through personal accounts for each employee. By the end of 2019, the system was used by 28 divisions of the Company. In 2020, Nornickel will roll it out across all Russian assets of the Company.

To improve the performance of the Head Office staff, Nornickel approved the Procedure for Assessing Employee Performance and the Regulations on Annual Performance Bonuses. The Procedure primarily seeks to link remuneration, development and promotion of employees to the assessment outcome, whereas the Regulations on Annual Performance Bonuses serve to review employee performance in the reporting period against team and individual KPIs.

To boost employee performance across its Russian operations, the Company put in place the Procedure for Assessing Management Performance whereby performance is managed by setting KPI targets and evaluating manager achievements against these targets.

HEALTH AND SAFETY

The health and safety of our people as well as mitigation of ore mining and processing risks is a top priority in Nornickel's operations.

CERTIFICATION

In 2019, the Company commenced preparations for certification under ISO 45001:2018 Occupational health and safety management systems. The preparations included an external diagnostic audit, workshops for senior management and business unit heads as well as master classes on health and safety management system audit with practical work in production units for internal auditors. In addition, a new occupational safety management regulation was developed to comply with the requirements of ISO 45001:2018 and a preliminary audit of occupational safety management certification documents was carried out.

As at the end of 2019, all key production enterprises of the Group had health and safety certification:

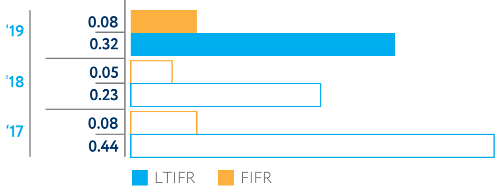
- Kola MMC, OHSAS 18001
- Polar Division GOST R 54934-2012 (Russian standard identical to OHSAS 18001)
- Norilsk Nickel Harjavalta, OHSAS 18001
- Norilsknickelremont, GOST 12.0.230-2007 (interstate standard identical to ILO-OSH 2001)

The Company's health and safety management system prioritises the life and health of our people over operating results and keeps pace with the most advanced international standards. In 2013, the Company embarked on a mission to reduce injury rates and promote health and safety culture.

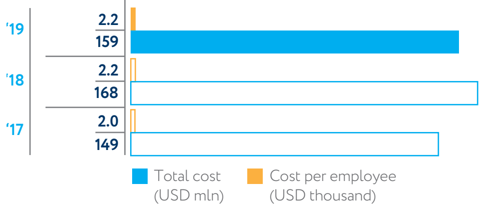
STRATEGIC GOALS

- **Continuous reduction in injury rates**: Reduce lost time injury frequency rate (LTIFR) by 20% every year for three years starting from 2013 and by 15% every year afterwards;
- **Zero fatalities**: Zero-tolerance policy on work-related fatalities

Injury rates, per million hours worked



Industrial safety costs



RESPONSIBILITY AND ACCOUNTABILITY

The Audit and Sustainable Development Committee deals with health and safety matters. The committee reviews management reports on health and safety performance every quarter, with management required to provide detailed account of causes of injuries, measures taken to prevent similar injuries occurring in the future and disciplinary actions taken against the employees at fault.

Nornickel's First Vice President – Chief Operating Officer is directly responsible for the development of health and safety initiatives and ensuring compliance with the relevant requirements. The KPIs of the COO and heads of production units include safety targets with weightings between 12% and 28% of the overall KPI. A failure to prevent a fatality blocks them from receiving a performance bonus.

The heads of production units are personally responsible for the life and health of each of their subordinates. Managers' focus on improving safety includes:

- Personal involvement in industrial safety risk assessments
- Regular visits to production facilities
- Acting as a second party in external industrial safety audits
- Meetings with enterprise teams to promote employee ownership of industrial safety improvement
- Personal participation in incident investigations

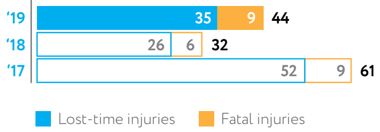
The Company's Health, Safety and Environment Committee is led by the First Vice President — Chief Operating Officer and is focused on improving efficiency and accountability in health and safety. The committee meets quarterly at various production sites of the Group to discuss H&S management improvement, including:

- Analysis of the circumstances and causes of severe and fatal work-related injuries
- Status of measures planned and implemented to prevent similar injuries
- A programme of organisational and technical measures to improve health and safety.

OCCUPATIONAL SAFETY

BNornickel has corporate health and safety standards that apply to both the Group's employees and contractors' personnel deployed at the Group's production sites.

Work-related injuries (people)



Nornickel's production enterprises have process-, job- and operation-specific regulations and guidelines in place containing dedicated health and safety sections. In addition, the Group's collective bargaining agreements also have health and safety provisions. At the end of 2018, key players of the copper and nickel and supporting industries developed and signed an interregional cross-industry agreement setting out among other things the obligations and commitments of the parties in relation to health and safety. The Company and most of its subsidiaries have joint health and safety committees made up of management, employee and trade union representatives.

As all maintenance and construction operations at the existing production facilities are classified as high-hazard, contractors' workers are required to attend induction and target briefings on health and safety prior to the commencement of any work. Work permits also include occupational safety requirements to be observed during work preparation and performance. A special standard setting requirements for contractors at the contractor selection phase was developed and implemented in 2018 to better monitor and promote the safety of work performed by contractors on the sites of Nornickel enterprises. In 2019, Nornickel continued to consistently implement the standard and monitor compliance with it including through joint inspections of compliance with work safety requirements and meetings of health and safety councils (committees) involving contractor representatives. Contractors failing to comply with health and safety requirements were fined for a total of more than RUB 11 mln (USD 170,000) in 2019.

The Group's production units are regularly audited for compliance with applicable health and safety requirements. A total of 81 audits took place in 2019 in accordance with the approved schedule (45 in 2018), with production site managers also involved in the audits.

ACCIDENT RATE REDUCTION PROGRAMMES

In 2018, Nornickel launched the programme to implement the H&S process management system, which went live across the Group's key sites following a test period. The system is based on a modern risk management model focused on pro-active identification of hazards in existing processes and incident cause analysis, including:

- Consideration of actual working conditions; identification of the most significant safety risks for various production operations and work areas
- Identification of actual and potential risks during incident recording and investigation or when recording identified gaps and irregularities
- Prevention of potential incidents using historical data on risks and near-misses, incidents and accidents
- Risk elimination and mitigation action planning, follow-up and performance assessment.

Since 2015, the Company has run another H&S programme, **the Technology Breakthrough**, which improves work safety through new technology:

Mine support design improvement programme was launched in 2017 to promote mining safety, in particular by minimising personnel access to unsupported parts of workings. The programme concept provides for the following measures, in particular to reduce the risk of rock fall

- Use of powered rock bolting systems, mesh hanging and scaling of workings
- Use of new methods to erect protective and temporary supports.

TRAINING PROGRAMMES

The Company is committed to ensuring its people have all the necessary knowledge, skills and capabilities to perform their duties in a safe and responsible manner.

Each new hire receives a preliminary safety induction briefing upon employment, followed by subsequent workplace briefings. Briefings are then repeated regularly in accordance with the existing corporate programmes. There are also interactive training courses for employees in main production and mining occupations.

The Technology Breakthrough programme

Measures	Description
Mine automation system	The automation system scans individual tags assigned to the employees and self-propelled machinery, ensuring wireless connectivity to every employee via their personal phones.
Gas protection for self-propelled machinery	Self-propelled machinery is equipped with automated gas monitoring and control systems shutting down the machinery if an explosive gas concentration is detected in the ambient air.
Radio communication and positioning system	An automated system is in place to track personnel and vehicles in mines and detect dangerous proximity between people and vehicles.
3D training simulators	Nornickel has deployed 3D training simulators with virtual reality elements to train personnel and check their skills not only in operations but also in safety.
Remote control technology	The Company has rolled out remote control solutions for its stationary equipment, enabling cuts in the number of employees deployed within hazardous work areas. Going forward, there are plans to use driverless or remotely controlled self-propelled machinery in mines, significantly reducing the number of people deployed underground.

PERSONAL SAFETY

Employees are provided with safety clothing, footwear and other personal protective equipment to mitigate the adverse impact of work-related harm and hazards. Employees working in contaminated conditions are provided with free-of-charge wash-off and decontaminating agents. In 2019, the Nornickel purchased personal protective equipment worth approximately RUB 2.4 bn (USD 37 mln).

Workers with on-site production experience of less than three years wear special red helmets with the word "Caution" on them and protective clothing with "Caution" badges that make them stand out.

INDUSTRIAL SAFETY COMPLIANCE

The Company has a zero-tolerance approach to unsafe behaviours, as prevention of safety breaches plays an important role in reducing injuries and accidents.

Nornickel has put in place an industrial safety compliance monitoring system featuring multi-tier control with ad-hoc, targeted and comprehensive inspections. The first tier control involves the line manager or the supervisor (aided by designated members of the H&S team) and focuses primarily on workplace set-up. The second and higher control tiers involve special H&S commissions with representatives of management and employees.

In addition to the above prevention and control initiatives, the Company regularly conducts behavioural audits in accordance with the approved schedule. The prevention and control team has identified and disciplined 12,000 non-compliant employees, including by partially or completely stripping them of their bonuses. A total of 221 breaches of critical safety rules have been identified with 159 employees dismissed (105 in 2018).

PREVENTION OF OCCUPATIONAL DISEASES

The Company promotes healthy lifestyle amongst its staff to minimise the risk of occupational diseases, with management focused on communicating to all employees the importance of complying with safety requirements and protecting one's own health. Nornickel also seeks to introduce meaningful occupational health initiatives taking into account both workplace and individual risk factors.

The Company offers its staff regular disease prevention screening in line with recommendations from the healthcare authorities. Employees undergo compulsory pre-employment, regular and ad-hoc medical examinations at the Company's expense. Special medical examinations are provided to employees exposed to hazardous substances.

Production enterprises have dedicated medical aid posts to perform pre-shift health checks and provide medical assistance on request during working hours.

Implementation of electronic medical examination system has been underway since 2018 to automate pre- and post-shift health checks of employees.

If necessary, employees are provided free-of-charge with personal protective equipment (PPE), including respiratory protection (respirators, gas masks), hearing protection (earmuffs, earplugs), eye protection (glasses/goggles with UV filters, visors), skin protection (gloves, protective and regenerative creams, protective outerwear).

Occupational diseases

Indicator	2017	2018	2019
Total	361	318	290

Employees working in harmful and hazardous conditions receive free food, milk, and other nutritional products for therapeutic and preventive purposes.

All these initiatives not only raise the living standards of the workforce, but also provide economic benefits by reducing the number of lost time illnesses and injuries.

INDEPENDENT SAFETY ASSESSMENTS

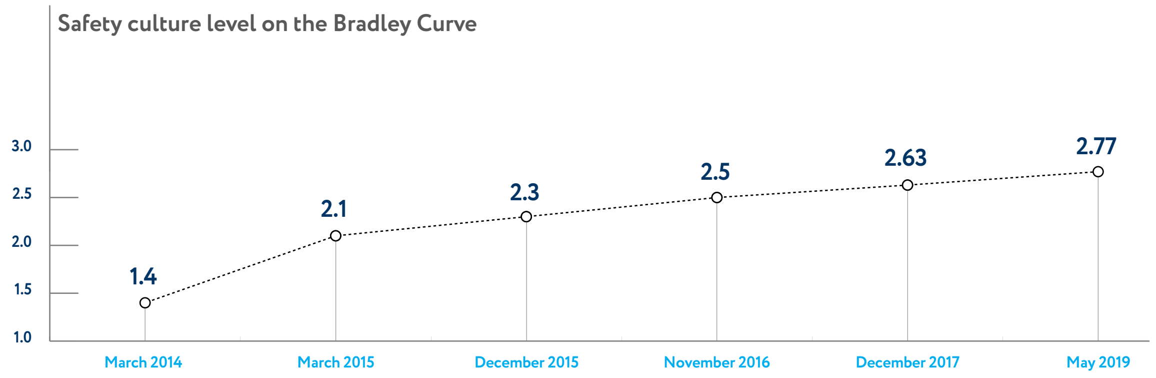
Nornickel's safe operation culture has been assessed annually by independent consultancies since 2014. According to the latest report, Nornickel's safety culture level in May 2019 was 2.77 points according to the Bradley Curve (2.63 in 2017). The Company is currently at the third level of safety culture maturity when employees internalise the value of industrial safety, and compliance with health and safety rules and regulations is their own deliberate choice as above all they see how they benefit from it. The gradual improvements in the safety culture level were driven by increased employee engagement on safety matters and leadership demonstrated by senior management of enterprises as well as improved knowledge of risk assessment and management.

INJURY RATES

Unfortunately, the Company was unable to reduce lost time injury frequency rate (LTIFR) and fatal injury frequency rate (FIFR) in 2019. LTIFR grew from 0.23 to 0.32 over the reporting year but is still below the global industry average. There were 9 fatalities in 2019, including one accident with multiple fatalities at Taimyrsky Mine in October.

All circumstances of the fatalities were reported to the Board of Directors and thoroughly investigated to avoid similar injuries in the future. Nornickel's management views safety and zero work-related fatalities as its key strategic priorities and continues dedicated programmes to prevent and avoid work-related injuries.

For more details on the Company's health and safety initiatives, please see the 2019 Sustainability Report


Safety culture level on the Bradley Curve

Main causes of fatalities

Indicator	2017	2018	2019
Fall from height	0	1	1
Falling objects	1	0	0
Moving objects/parts	1	0	2
Rock fall	0	1	0
Road traffic accident (RTA)	0	1	0
Electrocution	1	0	0
Exposure to extreme temperatures	0	0	1
Explosion	4	0	1
Other	1	3	4
TOTAL	9	6	9

Injury rates

Indicator	2017	2018	2019
FIFR	0.08	0.05	0.08
LTIFR	0.44	0.23	0.32
Work-related injuries (people)	61	32	44
– fatal injuries	9	6	9
– lost-time injuries	52	26	35
Contractors' work-related injuries (people)	16	19	9
– fatal injuries	1	2	1

ENVIRONMENT

ENVIRONMENTAL MANAGEMENT SYSTEM[1]

In 2019, the Environmental Management System (EMS) continued to operate as part of the Corporate Integrated Quality and Environmental Management System (CIMS). This has enabled coordination of environmental activities with activities in other areas such as production, finance, health and overall safety management. This approach improves both overall and environmental performance of the Company. With the EMS now fully in place, the Group's enterprises reap multiple benefits, as it highlights our compliance with global environmental standards.

SYSTEM AUDIT

In line with ISO 14001:2015, the Company confirms the EMS compliance with the standard by engaging Bureau Veritas Certification (BVC) to conduct surveillance audits once a year and recertification audits every three years. In October–November 2019, Nornickel successfully passed a surveillance audit of its CISM. BVC auditors confirmed CISM compliance with ISO 14001:2015 and ISO 9001:2015.

Throughout 2019, the Company carried out internal audits and a corporate audit as per the CIMS procedures in accordance with international standards and Norilsk Nickel's corporate documents. The internal audits and the corporate audit were conducted by specially trained, competent personnel.

In line with ISO 14001 and principles of environmental openness and transparency, the Company cooperates with the legislative and executive authorities, control and supervision agencies, international organisations and NGOs, mass media, shareholders, investors, local communities, and other stakeholders.

International quality and environmental certification

Company	Certificates	Independent audits in 2019	Certification body	Scope of certification
MMC Norilsk Nickel	ISO 9001:2015, ISO 14001:2015	Surveillance audit	Bureau Veritas Certification (BVC)	Production, project management, storage, shipments, and product sales
Kola MMC	ISO 9001:2015, ISO 14001:2015	Recertification audit	Bureau Veritas Certification (BVC)	Ore mining and concentration, production
Gipronickel Institute	ISO 9001:2015	Surveillance audit	Societe Generale de Surveillance (SGS)	Research, engineering and design, engineering surveys, environmental protection
Norilsk Nickel Harjavalta	ISO 9001:2015, ISO 14001:2015	Recertification audit	DQS GmbH (DQS&UL)	Production of nickel and cobalt products

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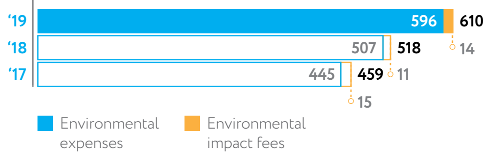
[1] MMC Norilsk Nickel's Environmental Management System (EMS) has been successfully operated since 2005, covering production, project management, storage, shipments (including by sea), and product sales.

EMISSIONS

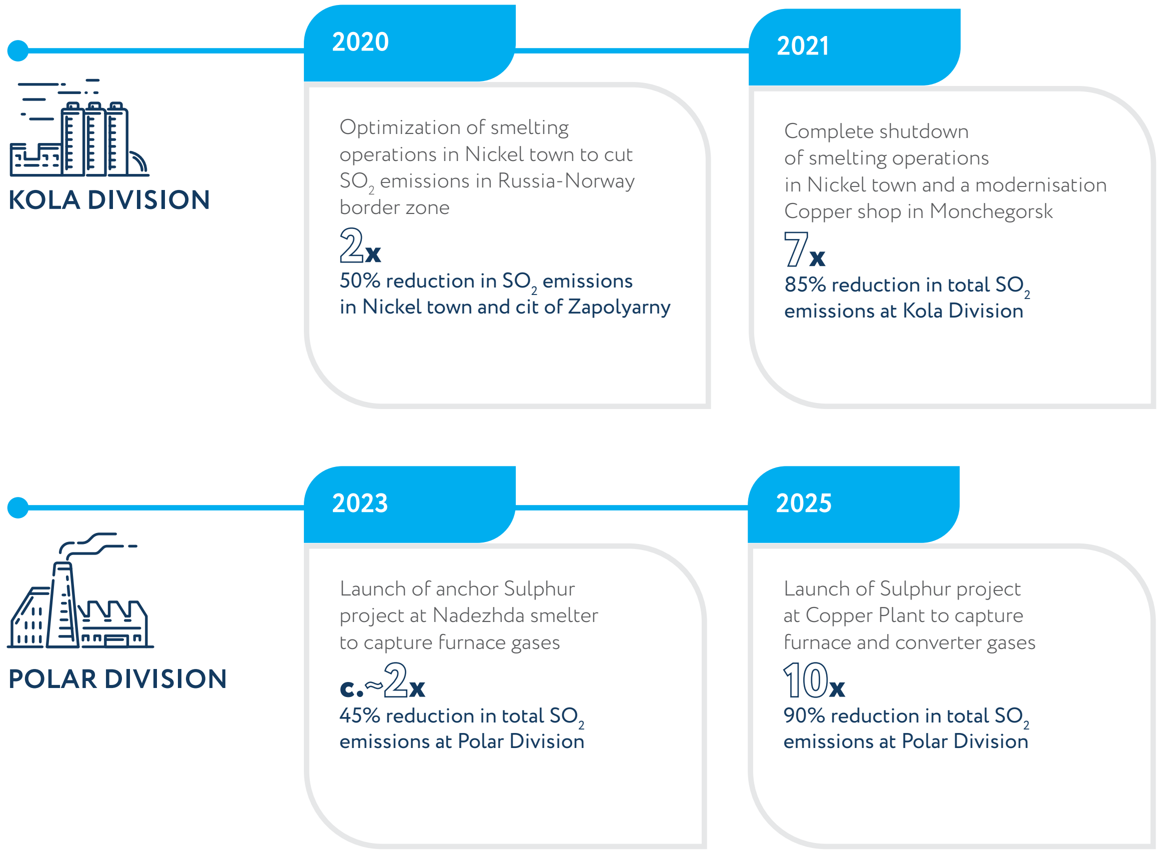
High sulphur dioxide emissions from the smelting of sulphide concentrates with high sulphur content are a key environmental issue for the Company. Nornickel's strategic plan is to transform the Company into an environmentally clean and safe business by implementing the Sulphur Programme at the Polar Division and Kola MMC. In 2020, the Company plans to introduce light unmanned aircraft systems for monitoring environmental conditions on the Kola Peninsula and in the Norilsk Industrial District.

Environmental expenses
(USD mln)



The Sulphur Programme is a major environmental project aimed at gradual reduction of sulphur dioxide emissions in the Norilsk Industrial District and Kola Peninsula.

Sulphur Programme Roadmap



KOLA DIVISION

2020

Optimization of smelting operations in Nickel town to cut SO_2 emissions in Russia-Norway border zone

2x

50% reduction in SO_2 emissions in Nickel town and cit of Zapolyarny

2021

Complete shutdown of smelting operations in Nickel town and a modernisation Copper shop in Monchegorsk

7x

85% reduction in total SO_2 emissions at Kola Division

POLAR DIVISION

2023

Launch of anchor Sulphur project at Nadezhda smelter to capture furnace gases

c.≈2x

45% reduction in total SO_2 emissions at Polar Division

2025

Launch of Sulphur project at Copper Plant to capture furnace and converter gases

10x

90% reduction in total SO_2 emissions at Polar Division

The Sulphur Programme in the Polar Division is expected to reduce sulphur dioxide emissions in the Norilsk Industrial District by 45% in 2023 and by 90% in 2025.

As part of this programme, Nadezhda Metallurgical Plant is implementing a project to capture the off-gases from flash smelting furnaces and neutralise the resulting sulphuric acid with limestone to produce gypsum. In 2019, the project documentation successfully passed a state environmental review; negotiations commenced for equipment supply contracts; and construction site preparations were completed.

At Copper Plant, a major production process upgrade is scheduled, including capturing sulphur dioxide from sulphur-rich off-gases and shutdown of low-grade gas converter operations, which have a significant effect on air quality in Norilsk during unfavourable weather conditions.

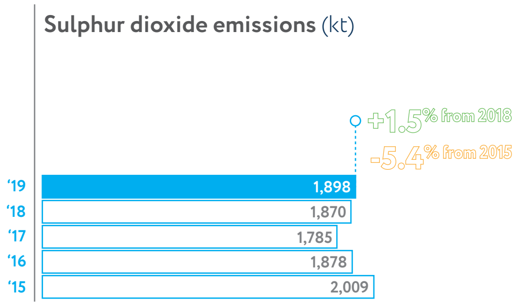
The Sulphur Programme at Kola MMC provides for shutdown of obsolete production shops in Nickel near the Norwegian border and a modernisation copper shop in Monchegorsk. These measures will completely eliminate sulphur dioxide emissions in the Russia-Norway border area and significantly reduce adverse impact on the environment in Monchegorsk. The Programme is expected to reduce sulphur dioxide emissions from Kola MMC by 50% in 2020 and by 85% in 2021 (from a 2015 baseline).

The total CAPEX for the Sulphur Project is estimated at about USD 3.5 bn.

In 2019, emissions from Nornickel's Russian operations totalled 1,953 kt, up 1.4% y-o-y. The increase was driven by a temporary growth in sulphur dioxide emissions from the Polar Division due to increased production and processing of sulphur-containing feedstock. Despite the increase, emissions did not exceed the Company's set limits. During adverse weather conditions, the Company takes extra measures to control pollutant emissions in residential areas. Production process at metallurgical plants was stopped for this reason 262 times in 2019. Furthermore, Norilsk maintains an automatic toll-free enquiry service line offering forecasts on the impact of metallurgical operations on the city air quality to anyone dialling 420 007. 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

Sulphur dioxide emissions (kt)



Air pollutant emissions across the Group (kt)

Indicator	2017	2018	2019
Sulphur dioxide (SO2)	1,785.0	1,869.6	1,898.1
Nitrogen oxide (NOx)	11.5	11.2	10.3
Particulate matter	14.0	14.5	13.3
Other pollutants	35.3	31.3	30.9
TOTAL	1,845.8	1,926.6	1,952.7

PRODUCTION WASTE

The Company reuses most of its industrial waste as approximately 96% of the waste generated are class 5, i.e. non-hazardous waste. This is mostly waste from the mining and smelting operations, including rock and overburden, tailings, and metallurgical slags. Ore extraction waste is used as backfill for underground workings and open pits, road fill, or for tailings dam reinforcement. In 2019, Nornickel reused about 63% of all waste (70% in 2018), with the balance turned over to specialised contractors for reuse or decontamination. Higher waste generation in 2019 was due to increased processing volumes.

Waste generation by hazard class (kt)

Hazard class	2017	2018	2019
V	30,722	29,517	35,300
IV	1,190	1,191	1,115
III	12	15	5
II	2.4	1.1	0.03
I	0.1	0.1	0.04
TOTAL	31,926	30,725	36,420

TAILING DUMPS

Nornickel currently operates six tailing dumps: four in the Polar Division and Medvezhy Ruchey, taking tailings from Talnakh and Norilsk concentrators and Nadezhda Metallurgical Plant; one at Kola MMC, storing tailings from Zapolyarny Concentrator; and Bystrinsky GOK tailing dump.

Nornickel acts responsibly to ensure tailing dump safety and monitors the condition of tailing dump hydraulic structures and the environment within the dump sites and affected areas on a regular basis. In line with governmental requirements, Nornickel has developed safety criteria each operating tailings facility is required to meet and got them approved by supervisory authorities. Primary oversight is provided by the Federal Environmental, Industrial and Nuclear Supervision Service of Russia (Rostechnadzor).

Hydraulic structures are subject to comprehensive audits every five years, with mandatory prior preparation of the hydraulic structure safety declarations. The declarations are produced by an independent expert agency accredited by Rostechnadzor only after detailed inspections of the hydraulic structures.

All tailings facilities operated by Nornickel are situated far from production sites and human settlements. Potential damage estimates made for a safety declaration show minimum risks of adverse impact on communities, eco-systems, and critical infrastructures in case of a disaster or a tailings dam failure. It should be noted that over the last five years no environmental incidents have been recorded across the Company's hydraulic structures and no orders from supervisory agencies were received to correct critical or pre-critical conditions.

Hydraulic structures are monitored by operating personnel and Nornickel's environmental team on an ongoing basis. Nornickel employees involved in the operation of tailing dumps complete regular specialised trainings and knowledge assessments by Rostechnadzor.

After the Brumadinho and Samarco dam disasters in Brazil, Nornickel published a special report on the safety of all its hydraulic structures following an inquiry from a group of investors led by the Church of England Pensions Board and the Council on Ethics of the Swedish National Pension Funds (AP Funds) and guided by the UN Principles for Responsible Investment (PRI). The report is available in the link below.

Special report on safety of tailings storage facilities

Tailing dumps

Branch/subsidiary	Number of tailing dumps	Asset using the tailing dump
Polar Division	2	Talnakh Concentrator, Nadezhda Metallurgical Plant
Medvezhy Ruchey	2	Norilsk Concentrator
Kola MMC	1	Zapolyarny Concentrator
GRK Bystrinskoye	1	Bystrinsky GOK Concentrator

WATER BODIES

The Company's major production assets are located in regions with sufficient water resources. Nonetheless, the Company is extremely careful about its use of fresh water and strictly complies with restrictions applicable to industrial water withdrawal. Nornickel's key production facilities use closed water circuits to reduce water withdrawal. Furthermore, the Company never withdraws water from protected natural areas. In 2019, 87% of all water used by the Company was recycled or reused. Water is mostly withdrawn from surface and underground water bodies as well as from wastewater of other companies and natural water inflow. Natural water inflow and meltwater accounted for 12% of the total water withdrawal in 2019. All facilities using water have programmes in place to monitor water bodies and water protection areas..

Wastewater discharge also does not exceed the approved limits or have any major impact on biodiversity of water bodies and related habitats..

> The Company is committed to sustainable use of water resources and prevention of water body pollution.

Water consumption and discharge framework

WITHDRAWAL → **CONSUMPTION** → **DISCHARGE**

WITHDRAWAL

319 Mcm:

227 Mcm
surface sources

26 Mcm
underground sources

21 Mcm
wastewater

37 Mcm
natural water flow

9 Mcm
other

CONSUMPTION

1 344 Mcm:

272 Mcm new + **1 072 Mcm** reused and recycled water

31 Mcm
water reused in other production processes (2%)

1 141 Mcm
recycled water (85%)

DISCHARGE

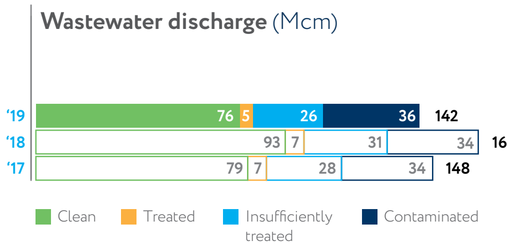
142 Mcm:

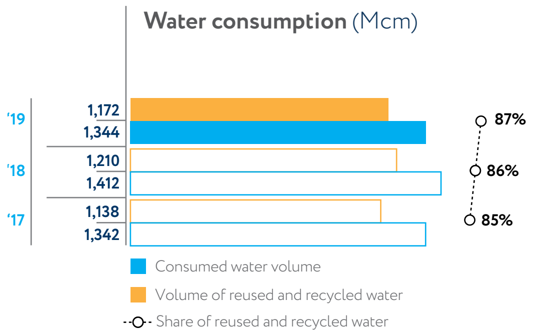
76 Mcm
clean

5 Mcm
treated

26 Mcm
insufficiently treated

36 Mcm
contaminated





ENVIRONMENTAL PERFORMANCE OF THE COMPANY'S FOREIGN ASSETS

Norilsk Nickel Harjavalta

The company is fully environmentally permitted and operates a certified integrated management system compliant with ISO 9001 and ISO 14001.

Norilsk Nickel Harjavalta's main environmental impact comes from air emissions of ammonia (NH$_3$) and nickel (Ni), and water discharges of nickel, sulphates (SO$_4^{2}$) and ammonium ions (NH$_4$+). In 2019, Norilsk Nickel Harjavalta met all permit requirements for emissions, discharges and waste disposal volumes.

Environmental indicators

Indicator	2017	2018	2019
Industrial wastewater, Mm^3	0.9	1.0	1.0
Total water consumption, Mcm	11.1	11.8	11.5
Pollutants in industrial wastewater, kt			
Ni	0.001	0.001	0.001
SO$_4^{2}$	26	30	30
NH$_4^+$ (expressed as nitrogen)	0.1	0.1	0.1
Air pollutant emissions, t	71	85	40
Ni	1.7	1.2	1.6
NH$_3$	69	84	38
Waste generation, kt	5.5	2.8	5.7
Waste disposal, kt	0.8	1.1	1.3

Nkomati

The company operates in accordance with both local environmental protection regulations and Nornickel corporate standards. Nkomati pays close attention to environmental safety, is certified and regularly audited for compliance with ISO 14001.

Environmental indicators

Indicator	2017	2018	2019
Water consumption, Mcm	0.064	0.429	0.254
Waste generation, t	431	358	1,243
Waste disposal, t	845	725	670
Environmental protection expenditures, USD mln	0.27	0.31	0.33

CLIMATE CHANGE

Nornickel closely monitors for global initiatives to reduce greenhouse gas emissions and is developing a strategy to manage the Company's impact on climate change. The Company also has a long-term development strategy providing for the modernisation of its production assets through the deployment of best available technologies, improvement of energy efficiency, energy saving, and energy intensity reduction. The Company's strategy takes into account key non-financial risks, including climate risk, as well as current trends in this space.

Nornickel's Board of Directors considers climate change issues as a matter of priority and includes them in its discussions of the Company's environmental strategy. The climate change matters are also high on the Company's strategic and operational agendas and overseen by the First Vice President – Chief Operating Officer.

In 2019, the Company set up a working group including its Vice Presidents to monitor environmental programmes and initiatives including ones related to climate change. The group is led by Gareth Penny, Chairman of the Board of Directors.

CLIMATE RISK MANAGEMENT

Global warming and other consequences of climate change may affect the Company's operations in the longer run. Their impact may include abnormal weather or lasting changes in weather patterns. Physical consequences of climate change can include droughts and permafrost thawing, which can have a material adverse effect on Nornickel's operations.

9.9
mln t

totalled CO_2 emissions (Scope 1+2), the lowest level among global majors

As part of its risk management strategy, Nornickel implements a range of measures to monitor and control these risks. These activities enable Nornickel to keep climate risks at an acceptable level. Occurrence of climate risks may also unlock additional opportunities for Nornickel, driven by a strong demand for metals essential for the development of a low-carbon economy:

Furthermore, the metals produced by the Company are widely used in transition to low-carbon economy: platinum group metals (PGMs) are used in auto catalytic converters, nickel is a key component in EV batteries, and copper is used in EV charging infrastructure.

Hydropower is the main source of renewable energy for the Company. The use of other renewables such as solar, geothermal, and wind energy is limited, as Nornickel's main production assets are located north of the Arctic Circle in harsh climatic conditions.

Since its establishment in 1935, the Company has been developing in these challenging climatic conditions and had to consider them in building its energy assets, relying on low-carbon fuels, i.e. natural gas (about 90% of the energy mix), and renewable hydropower (about 10%).

45%

Share of electricity from renewable sources was 45% in 2019

KEY CLIMATE CHANGE RISKS

Insufficient water resources: water shortages in storage reservoirs of Nornickel's hydropower facilities may result in insufficient water head at HPP turbines leading to lower power output as well as drinking water shortages in Norilsk.

HARSH CLIMATIC CONDITIONS OF THE ARCTIC CIRCLE

- Air temperatures stay below freezing point for about eight months a year
- Strong gusts of wind with speeds of up to 50 m/s are followed by dead calms lasting for weeks
- Polar nights and twilights last for more than 100 days
- On average, there are no more than 70 sunny days per year
- Permafrost is 300 to 500 metres deep
- Soils and ice are prone to seasonal thawing

Insufficient water resources

Category	Description
Key risk factors	Extreme weather events (droughts) caused by climate change
Impact on Nornickel's development goal and strategy	Efficient delivery of finished products (metals) in line with the production programme. Timely supply of products to consumers. Social responsibility: comfort and safety of people living in Nornickel's regions of operation
Risk assessment	Impact on goals: medium. Source of risk: external. Year-on-year change in risk: none
Mitigation	The Company manages the risk through: · Closed water circuits to reduce water withdrawal from external sources · Regular hydrological observations to forecast water levels in rivers and other water bodies · Cooperation with the Federal Service for Hydrometeorology and Environmental Monitoring (Rosgidromet) in setting up permanent hydrological and meteorological monitoring stations to improve the accuracy of water level forecasts for major rivers across Nornickel's regions of operation · Dredging the Norilskaya River and reducing energy consumption at production facilities in case of risk occurrence · Replacing hydropower plant equipment to increase electricity output through improving the efficiency of hydropower units (implementation period: 2012–2021)

Permafrost thawing: loss of bearing capacity of soil under pile foundations can lead to deformation and subsequent collapse of buildings and structures.

Permafrost thawing

Category	Description
Key risk factors	Climate change, increase in average annual temperature over the last 15 to 20 years Increased depth of seasonal permafrost thawing.
Impact on Nornickel's development goal and strategy	Efficient delivery of finished products (metals) in line with the production programme. Timely supply of products to consumers. Social responsibility: comfort and safety of people living in Nornickel's regions of operation
Risk assessment	Impact on goals: medium. Source of risk: external. Year-on-year change in risk: none
Mitigation	The Company manages the risk through: · Regular monitoring of soil condition under the foundations of buildings and structures built on permafrost · Geodetic monitoring of buildings movement · Measurements of soil temperatures under building foundations · Monitoring the compliance of its facilities with operational requirements for crawl spaces · Recommendations and corrective action plans to ensure safe operating conditions for buildings and structures

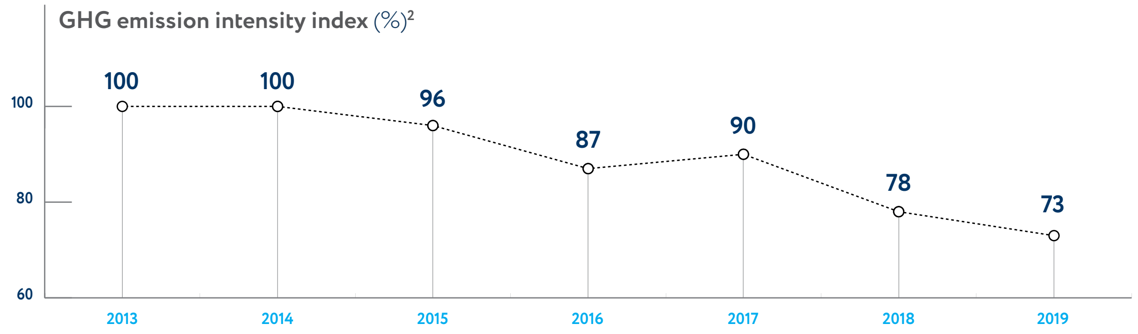
GHG EMISSIONS

Including its planned projects to upgrade and expand production facilities, and its major environmental performance improvement programme, Nornickel's ambition is to stabilise its annual greenhouse gas emissions at a level not exceeding 10 to 12 mln t of CO_2-equivalent.

GHG emissions (mln t of CO2 equivalent)[1]

Indicator	2017	2018	2019
Scope 1	10.2	9.9	9.8
Scope 2	0.1	0.1	0.1
Total emissions (Scope 1+2)	10.3	10.0	9.9

GHG emission intensity index (%)[2]

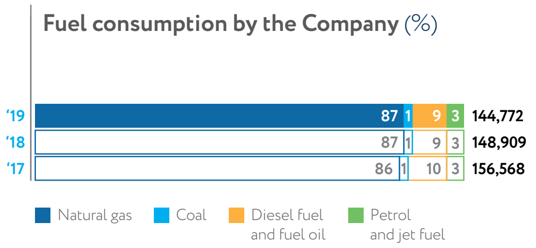


USE OF RENEWABLES AND ENERGY EFFICIENCY

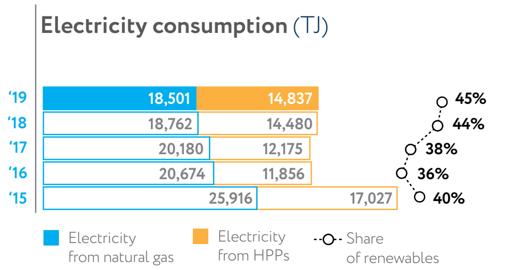
The Company sources energy locally, primarily from low-carbon natural gas and renewable energy sources, namely two hydropower plants. Diesel fuel, fuel oil, petrol and jet fuel are used by its transport assets. Use of high-carbon fuel by energy assets is minimised. Only small amounts of coal are used in certain production processes. As a result of Nickel Plant shutdown, estimated coal consumption declined by 40–70 ktpa.

The Company's priority energy source is hydropower generated by Ust-Khantayskaya and Kureyskaya HPPs. In 2019, renewables accounted for 45% of total electricity consumed by the Group and 54% of power consumption in the Norilsk Industrial District.

Fuel consumption by the Company (%)



Electricity consumption (TJ)



Group's electricity generation and electricity and fuel consumption (TJ)[3]

Indicator	2017	2018	2019
1. Fuel consumption by the Company[4]	156,569	148,910	144,772
– natural gas	134,709	129,335	125,329
– diesel fuel and fuel oil	15,221	13,788	13,535
– petrol and jet fuel	5,178	4,127	3,820
– coal[5]	1,460	1,660	2,087
2. Electricity and heat from own renewable sources (HPPs)	12,414	14,877	15,058
3. Electricity and heat purchased from third parties	10,483	10,931	11,331
4. Sales of electricity and heat to third parties	19,503	18,926	18,766
Total consumption of electricity and fuel (1 + 2 +3 – 4)	159,962	155,792	152,395

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[1] The estimate was made in 2019 as per the GHG Protocol Guidelines and includes carbon dioxide (CO2) and methane (CH4) emissions).

[2] Carbon intensity index is calculated as carbon emissions per tonne of copper equivalent as a percentage relative to its level in 2013, assumed as 100%.

[3] For a detailed breakdown of the Group's energy consumption by company, please see the 2019 Sustainability Report.

[4] Including the fuel used to generate electricity for Norilsk.

[5] Coal is only used in production processes, with Kola MMC accounting for 45% of total consumption, GRK Bystrinskoye 27%, the Polar Division 13%, cement production 9%, and other subsidiaries 6%.

Nornickel is committed to the responsible use of heat and electricity. 87.5% of electricity is generated by own energy companies supplying electricity to both the Company's facilities and third parties.

Nornickel's investment programme prioritises several major projects to fully unlock the potential of renewable power sources (hydropower) and drive energy savings.

In 2019, spending under the programme totalled about RUB 16 bn (USD 246 mln).

Major projects completed in 2019 included:

- Replacement of hydropower units at Ust-Khantayskaya HPP (turbine and electrical shops)
- Replacement of power unit equipment at CHPP-2

In 2019, the Group invested significant efforts in improving energy efficiency, achieving total savings of 49,924 tonnes of reference fuel. In 2019, fuel consumption per unit of electricity supplied by CHPPs was 271 g/kW•h, exceeding the target by 17 g/kW•h. The Company's subsidiaries also achieved total savings of 15 Mcm of natural gas by reducing their process needs and transportation losses.

BIODIVERSITY CONSERVATION

COOPERATION WITH NATURE RESERVES

Nornickel's production facilities are relatively close to nature reserves on the Taimyr and Kola Peninsulas. In the Murmansk Region, the Pasvik and the Lapland Nature Reserves are only 10 to 15 km away from Kola MMC. In the Krasnoyarsk Region, the boundaries of the Putoransky Reserve buffer zone are at a distance of between 80 km and 100 km from the Polar Division's production sites.

To help protect the unique arctic nature, the Company has been providing support to nature reserves for more than 10 years now, with its total annual value running into hundreds of millions of roubles. These efforts are well-aligned with Nornickel's overall strategy to go greener within the next five years, for which the Company has launched a new investment cycle to drive sustainable growth.

In the Zabaykalsky Region, the Company supports the development of research capabilities and environmental awareness programmes of the Relict Oaks State Reserve.

Pasvik Nature Reserve (Kola Peninsula)

The Pasvik State Nature Reserve is included in the "shadow list" of wetlands of international importance under the name of Fjærvann–Schaanning research ground. The reserve covers an area of more than 14,000 ha. Pasvik is the only natural reserve in Russia holding a certificate from the EUROPARC Federation awarded to the best protected areas globally. The certificate is an important pre-requisite for international cooperation with international nature reserves.

The reserve is home to animal species included in the Red List of Threatened Species and the Red Data Book of the Russian Federation. Since 2006, the Pasvik Nature Reserve has been commissioned to conduct ecological assessments of natural environment in the area of Kola MMC (Zapolyarny, Nickel and their suburbs, Pasvik State Nature Reserve), and develop a long-term environmental monitoring programme.

The reserve is also implementing projects that received the Company's grants under the World of New Opportunities charitable programme. The projects target Russian and Norwegian audiences and cover a broad range of topics such as traditional use of natural resources, environmental education in schools, promoting research conducted in natural reserves.

Nornickel supports the research carried out by the nature reserve, its efforts to protect natural and cultural heritage, promote tourism and environmental education. The Company participates in establishing an international natural historical open-air museum on the Varlam island. Nornickel sponsored publication of the book titled The Varlam Island – the Pearl of Pasvik. In 2019, the Company helped purchase a unique mobile environmental laboratory. The visitor centre of the Pasvik Nature Reserve built with the Company's support is a venue for international research conferences and environmental protection education events.

Lapland Nature Reserve (Kola Peninsula)

The Lapland Nature Reserve is one of the largest protected areas in Europe, covering 278,000 ha. Established with the aim of saving the wild reindeer from extinction, it now boasts a reindeer population of over 1,000, the largest reindeer herd in Northern Europe. The European beaver population has also been successfully restored.

Since 2002, the Lapland Nature Reserve has maintained contracts providing for the restoration of disturbed natural environments affected by multi-year emissions from Rola MMC. Cooperation with the reserve also includes monitoring of areas adjacent to the Monchegorsk site and the reserve area. The research provides insights for further remediation of disturbed lands and improvement of sanitary condition and fire protection of forested areas.

The Company helped develop several ecotrails including the first ecotrail for kids A Curious Child out in the Woods and publish books on the founders of the reserve.

Another socially important project sponsored by the Company is Educational Saami Exhibition In the Land of Flying Rock. The project aims at improving knowledge of the Northern nature and Saami people, a small community indigenous to the Kola Peninsula.

Under an agreement between the Company and the Murmansk Region Government, work is underway to build ecotrails and informational facilities on a territory of more than 83,000 ha within the Rybachy and Sredny Peninsulas Nature Park.

Putoransky Nature Reserve (Taimyr Peninsula)

The Putoransky Nature Reserve was listed as a World Heritage Site by UNESCO in 2010 and is one of Russia's largest nature reserves, covering over 1,887,000 ha of land. The reserve, along with the Taimyr and Great Arctic Nature Reserves, as well as the Purinsky and Severozemelsky natural protected areas, is managed by the Joint Directorate of Taimyr Nature Reserves.

Pasvik Nature Reserve

The directorate implements environmental projects that won awards of the Social Responsibility Initiatives Competition held as part of the World of New Opportunities charitable programme. The projects focus on environmental education and protection, engagement of local communities, landscaping and planting.

In 2019, the Joint Directorate of Taimyr Nature Reserves won the Social Responsibility Initiatives Competition and received RUB 4.5 mln (USD 70,000) to implement the Friends of Taimyr Peninsula Nature Reserves – Clean Ayan project. The project aims to engage the Taimyr volunteer community on restoring the environmental safety of the central part of Putorana Plateau to make the region more attractive to tourists. Last summer, as part of the project, volunteers and the Joint Directorate of Taimyr Nature Reserves staff collected 638 metal barrels and a few hundred kilograms of legacy pollution scrap metal. Using the Company's grant, a 24-day expedition was airlifted to a remote area on Putorana Plateau, set up a camp at the Southern Ayan Checkpoint and cleaned up the area.

Oak grove (Zabaykalsky Region)

Covering 30,000 ha along the Argun River, the oak grove in the Gazimuro-Zavodsky District is the only natural oak grove extant in Siberia. Under an agreement with the Zabaykalsky Region Government, Nornickel provides charitable aid to the Relict Oaks Preserve to facilitate effective protection and scientific study of its environmental systems. The Company assisted the preserve in obtaining video surveillance equipment and intends to provide support for building and equipping research facilities and launching educational programmes for adults and children.

ENVIRONMENTAL PROTECTION PROGRAMMES

Nornickel is committed to environmental protection and sustainable use of natural resources. As part of this commitment, the Company presented its 10-year Sustainable Growth Strategy and Comprehensive Environmental Programme Until 2030 at its 2019 Capital Markets Day. The programme provides for phased reduction of sulphur dioxide emissions by 95% by 2030, maintaining industry's lowest carbon footprint, and contributing to global transition to green mobility.

Environmental education and experience sharing are another top priority. The Company co-organised the 8th Ecological Forum Corporate Responsibility to the Future. Technology for Society and Nature, held in Moscow on 17–18 October 2019. The forum focused on production efficiency and striking a balance between economic development, social improvement, and nature conservation, which is impossible without sustainable local development, availability of skilled workforce and minimised harmful environmental impact of industrial operations. More than 200 experts from all over Russia and Arctic countries attended the event.

Water resources

The Company has been running for years a programme to breed and release valuable fish species into water bodies to replenish their populations. Valuable fish species including those listed in the Red Data Book are bred by specialised contractors and the juvenile fish is released into water bodies. For example, 4,000 young ciscoes were released into Lumbolka Lake (Kola Peninsula) in 2019 to facilitate reproduction of aquatic bioresources. The Polar Division released a total of about 1 million young fish, including 201,000 Siberian sturgeons, into the Yenisei River between 2017 and 2019. The costs of these activities over the past three years exceeded RUB 110 mln (USD 2 mln). Also in 2019, the Company continued land improvement efforts in the vicinity of Lake Dolgoye in Norilsk.

The Company intends to continue breeding and release of young valuable fish species into natural water bodies in 2020.

Planting and clean-ups

In Norilsk, the Company's employees jointly with the city administration conduct regular clean-ups and planting in the summertime. In 2019, we also continued yet another annual environmental initiative involving employee volunteers.

The fourth Poneslos (Let's Roll) environmental initiative kicked off across Nornickel's operating regions in May 2019, with about 250 volunteers participating in Norilsk. The volunteers organised more than 100 events involving 3,000 city residents, collected about 20 tonnes of garbage, held festivals and master classes, improved several sites in the city, set up a plastic recycling shop, and laid an ecotrail. Catch the Eco Wave environmental quest was held in Monchegorsk involving over 140 people in 35 teams.

An eco-convention held in the Caucasus Nature Reserve (Sochi) in October 2019 brought together 72 most active participants in the initiative from the Company's operating regions. The volunteers spent three days participating in a strategy session, sharing their experiences with colleagues and developing the European Bison Trail. The trail is an interactive and engaging way of highlighting European bisons and will be part of the Caucasus Nature Reserve visitor centre. The event culminated with a showing of Caring, a documentary about Nornickel volunteers which won awards at Cannes and Los Angeles film festivals.

Land conservation and restoration

The Company takes all necessary measures to restore disturbed land by remediation, rehabilitation, regeneration and other applicable methods. Remediation consists of technical and biological phases. The first phase includes landscaping and planting activities such as backfilling, earth filling, terracing, grading and covering with clayey soil to improve the adaptation of young plants. During the second phase, conifer trees such as pines, larches, and cedars as well as shrubs mixed with trees start growing on horizontal and sloping surfaces, further reinforcing the slopes.

In accordance with applicable Russian laws, design documentation for any natural resource development project, including mining, must detail activities covering environmental protection and monitoring of changes in the ecosystem components and implemented during facility operation and in case of accidents.

The Company has mine plans, as well as abandonment and remediation project documents in place for all deposits developed by the Company, with special provisions made for remediation. The design documentation covers grading, slope formation, construction of hydraulic and irrigation structures, and other activities. Importantly, the Company's deposits are in commercial development and will not be abandoned or mothballed before 2050.

Nornickel complies with all legal requirements covering remediation and other environmental protection measures required during development, construction and other activities.

Nornickel is the world's largest metals and mining company, playing an important role in the Russian economy. Due to its geography and financial strength, Nornickel has a strong impact on the social and economic life in the regions in which it operates. With its facilities located mostly in single-industry towns, Nornickel seeks to maintain a favourable social climate and comfortable urban environment, providing its employees and their family members with ample opportunities for creative pursuits and self-fulfilment.

The core principle behind this social contribution is a partnership involving all stakeholders in the development and implementation of social programmes based on the balance of interests, cooperation, and social consensus.

The harsh climate faced by Nornickel employees in life and at work, the remoteness of the Company's key industrial facilities, and the increasing competition for human capital across the industry call for a highly effective, human-centred social policy that would promote Nornickel's reputation as an employer of choice.

SOCIAL AND CHARITY INITIATIVES

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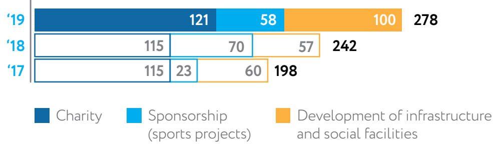
SOCIAL PARTNERSHIP

The Group companies have in place a social partnership framework aimed at aligning the interests of employees and employers in the regulation of social and labour relations.

Social and charity expenses (USD mln)[1]



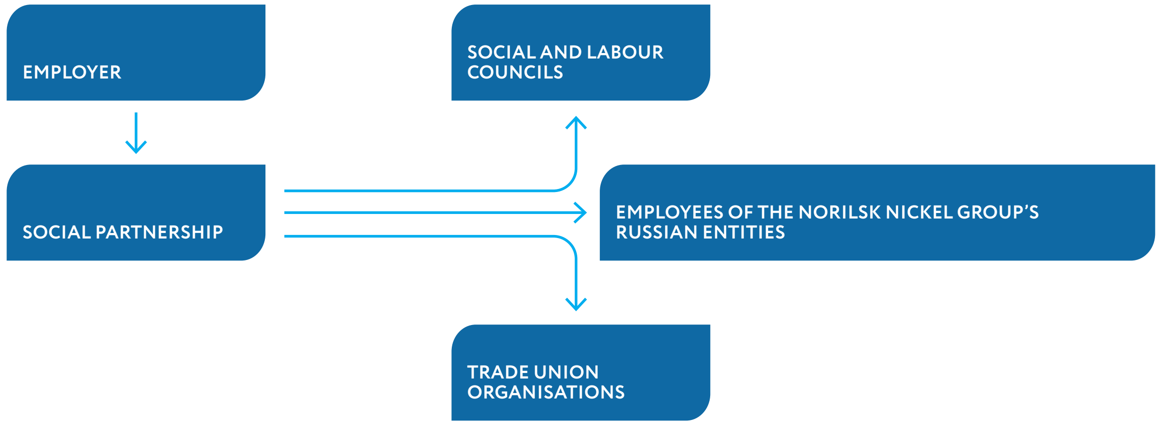
Nornickel meets all its obligations under the Labour Code of the Russian Federation, collective bargaining agreements, and joint resolutions.

Key tasks of employee representatives in a social partnership are to represent employee's rights and protect their interests when holding collective bargaining negotiations, signing or amending a collective bargaining agreement, overseeing its performance, and resolving labour disputes.

Within the current social partnership framework, employee representatives are involved in resolving issues relating to the regulation of social and labour relations, conducting special assessments of working conditions, and implementing measures to prevent work-related injuries and occupational diseases.

In line with the requirements of the labour law, the opinion of employee representatives is taken into account when adopting local regulations on key aspects of labour relations, compensation, work hours, labour standards, provision of guarantees and allowances, occupational health, etc.

Social partnership framework



TRADE UNION ORGANISATIONS

The Trade Union of MMC Norilsk Nickel Employees is an interregional public organisation that unites local trade union organisations at the Group enterprises located in the Norilsk Industrial District and Murmansk Region, as well as primary trade union organisations in other regions of operation.

The trade union of MMC Norilsk Nickel, its subsidiaries and controlled companies is a public organisation that unites 38 primary trade union organisations of Norilsk Nickel Group entities located in the Norilsk Industrial District.

The local trade union organisation of Kola MMC and its subsidiaries, along with the primary trade union organisation of Kolskaya Mining and Metallurgical Company, unite 17 primary trade union organisations of Norilsk Nickel Group entities located in the Murmansk Region.

The trade unions of transport and logistics divisions are members of the Yenisey Basin Trade Union of Russia's Water Transport Workers, headquartered in Krasnoyarsk.

A total of 9.5% of employees of the Group's Russian entities were members of trade union organisations at end-2019.

During the reporting year, the relationship between Nornickel and the trade union was governed by the Social Partnership Agreement signed in 2014 to formalise the procedure for joint efforts to improve operational and financial performance by ensuring stable operations, create safe working conditions, improve living standards of employees, protect their health, and improve the system of social guarantees.

Throughout the year, trade union organisations were actively involved in discussing and approving draft collective bargaining agreements at the Group entities where such agreements expired in 2019. Employees' trade union maintained overall supervision over the process, reviewing employee proposals for compliance with the labour law and social partnership principles, and forwarding them to the employer for consideration.

SOCIAL AND LABOUR COUNCILS

Group companies located in the Norilsk Industrial District and in the Murmansk Region established social and labour councils back in 2006 to represent the interests of all employees within the framework of social partnership at the local level.

Social and labour councils are authorised to raise issues relating to health resort treatment, recreation and leisure programmes for employees, disease prevention, catering and workplace arrangements, and provision of personal protective equipment.

Development of uniform approaches to, and standards of, social and labour activities is the responsibility of the Group's corporate social and labour council, an advisory and consultative body comprising authorised representatives of the Group employees in the Krasnoyarsk Region.

In 2019, the percentage of employees represented by social and labour councils was 79% of the total headcount across the Group.

OFFICES FOR OPERATIONAL, SOCIAL AND LABOUR MATTERS

In addition to the Corporate Trust Service speak-up programme, the Group launched offices for operational, social and labour matters back in 2003. They are primarily tasked with response to employee queries, follow-up, and prompt resolution of conflicts. On a regular basis, the offices monitor social environment across operations, enabling timely responses to reported issues. In 2019, Group companies in the Norilsk Industrial District operated 24 offices which received about 40,000 queries and requests from employees (74%), former employees (25%), and other individuals (1%).

COLLECTIVE BARGAINING AGREEMENTS

In 2018, Nornickel developed and started implementing uniform approaches to regulating social and labour relations within the social partnership framework. Collective bargaining agreements at the Group's Russian companies comply with the applicable laws and mostly meet employee expectations.

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[1] Excluding expenses on social programmes for employees.

WHY WE DO THIS

We run this cross-cultural project

to promote Siberia globally

FOLLOW UP SIBERIA!

The participating travel bloggers have been sharing their experiences of travelling to Siberian cities and meeting local people, thus helping their audiences to overcome the stereotype of Siberia being some remote, foreboding corner of Russia

53

Since the project's launch, its online contest has received entries from

COUNTRIES

19

and was joined by travel bloggers from

COUNTRIES

In 2019, Group enterprises entered into 11 collective bargaining agreements for a term of three years, including two enterprises that signed these agreements for the first time.

The percentage of employees covered by collective bargaining agreements stood at 83% in 2019[1].

Collective bargaining commissions perform ongoing monitoring of the performance of obligations under collective bargaining agreements by the parties throughout the agreement term.

The Group entities have also set up labour dispute commissions, social benefits commissions/committees, social insurance commissions, occupational safety commissions/committees, social and labour relations commissions, etc.

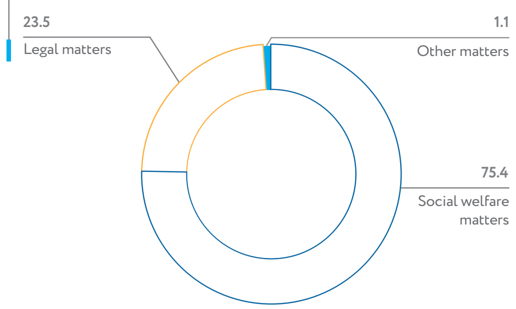
No breaches of collective bargaining agreements, and no strikes or lockouts were recorded across the Group entities in 2019.

INTERREGIONAL CROSS-INDUSTRY AGREEMENT

The Interregional Cross-Industry Association of Employers "Union of Copper and Nickel Producers and Production Support Providers" (the "Association") was registered in 2018 at the initiative of the Group's two Russian enterprises located in the Krasnoyarsk Region and Murmansk Region.

Based on the collective bargaining process between the Association and Nornickel employees' trade union in 2019, the Interregional Cross-Industry Agreement for 2019–2022 was signed. The Agreement governs social and labour relations between the Association member employers and their employees, and defines uniform corporate approaches to compensation, provision of guarantees, allowances and benefits to employees, work and rest hours, occupational health, and other matters.

Main topics of queries and requests (%)



In 2019, the Agreement was rolled out to 22 Group enterprises, covering 89% of employees.

EMPLOYEE PLACEMENT FOLLOWING THE CLOSURE OF THE SMELTING SHOP IN NICKEL

In order to comply with the requirements of environmental laws and reduce emissions in the Pechengsky District, a decision was made in late 2019 to close the smelting shop in Nickel.

The closure of the smelting operation will affect a total of 660 employees of the smelting shop and support functions.

In December 2019, Nornickel developed a redundancy programme to offer social support to the affected employees of the smelting operations, whereby Nornickel has undertaken to support them through the process of relocation, retraining and finding a new job. The programme was agreed with the social and labour council and primary trade union organisations of Kola MMC and Pechengastroy:

- In case of placement with another business unit of Nornickel:
  - Housing rent reimbursement in case of relocation
  - A full salary level paid during one calendar year
  - Compensation for actual travel expenses of employees and their families
  - Participation in corporate programmes to purchase housing at the new location
  - Training/retraining/certification in a new trade/job

- In case of redundancy:
  - Severance pay in the amount of six average monthly wages
  - Early provision of a corporate pension
  - Compensation for travel expenses of employees and their families
  - Financial assistance for housing purchase under the Our Home/My Home programme
  - Voluntary medical insurance policy maintained for one calendar year from the termination date
  - Succession programme provides training of an affected employee by another Nornickel employee (above the retirement age) with a severance pay to the mentor upon completion.

In addition, Nornickel's dedicated Employment Centre will be launched in 2020 to provide all-round support to affected employees of the smelting operations about to be shut down (including providing information, advice, and career guidance) and to partner with Norilsk Nickel Group entities, the government of the Murmansk Region, and local employers on job opportunities for redundant employees.

All staff-related decisions and actions will be carried out in compliance with the requirements of the Russian labour law, Federal Law No. 1032-1 On Employment in the Russian Federation dated 19 April 1991, and Nornickel's social support programme.

SOCIAL PROGRAMMES FOR EMPLOYEES

HEALTH IMPROVEMENT PROGRAMMES

Given the harsh climate of the Far North and the difficult working conditions at mining facilities, Nornickel has been consistently investing in health programmes for employees and their families. Health improvement and health resort treatment programmes are a key priority of Nornickel's social policy.

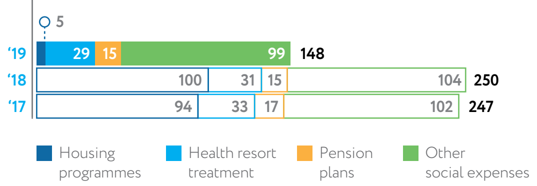
In 2019, 14,200 people (employees and their families) had recreation and treatment in Zapolyarye Health Resort (Sochi). Some 8,500 people spent their holidays in other health resorts, including 4,400 who travelled to Bulgarian resorts and 1,100 who went to Hainan, China. The Company compensates its employees an average of about 84% of the trip voucher cost.

The health resort treatment programme is designed to prevent the development of chronic diseases in employees' children and give them an opportunity to take full advantage of their summer holidays. As part of the initiative, about 1,400 children spent their holidays in Anapa and Bulgaria.

SPORTS PROGRAMMES

Given the harsh climate of the Far North, supporting healthy lifestyle behaviours is a key focus area in the personal development of Nornickel employees. Sports programmes seek to promote a healthy lifestyle, build a sense of corporate solidarity, improve interpersonal interactions, and develop a strong corporate culture.

Social programmes for employees (USD mln)[1]



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[1] Including enterprises that have no collective bargaining agreements in place but have approved relevant local regulations and are covered by MMC Norilsk Nickel's Collective Bargaining Agreement, including foreign assets.

Nornickel pays special attention to corporate competitions, including the employees' popular sports such as hockey, futsal, volleyball, basketball, alpine skiing, snowboarding, and swimming. Family sports contests are yet another focus area. One of Nornickel's social policy highlights is the support of amateur sports.

To ensure further development of amateur hockey, in 2019, Norilsk hosted the Night Hockey League games, with ten teams including Nornickel employees taking part in the event.

Other events include regular Spartakiads and various mass sports events held across its footprint and involving not just Nornickel employees and their families but also local residents.

About 30,500 employees as well as local residents took part in corporate mass sports events, Spartakiads, and other sports competitions held across the Group's footprint in 2019.

HOUSING PROGRAMMES

Nornickel currently operates several housing programmes for its employees.

In 2019, Nornickel continued its consolidated housing programme, Our Home/My Home, purchasing ready-to-live apartments across Russia. Apartments are usually purchased in the Moscow and Tver Regions, as well as in the Krasnodar Region, with the Company seeking to buy closely located properties to create a more comfortable living environment for employees by developing additional infrastructure and optimising maintenance for the property management company.

Each Programme member buys an apartment through co-investment: the employer covers up to half the purchase price payable but not more than RUB 3 mln (USD 46,000), with the rest paid by the employee within a certain period of employment with the Group (five to ten years). The cost of housing is fixed for the entire period of the participation. The property title is registered in the name of the employee only at the end of their participation in the programme; however, the participant may move in immediately after the apartment is purchased. Since the programme launch in 2010, the Company has purchased 3,826 ready-to-move-in apartments.

A new housing programme, Your Home, was launched in 2019. It will be implemented similarly to the Our Home/My Home programme, except that the title to the apartment will be immediately registered in the name of the employee, through encumbered by a mortgage. The encumbrance is removed from the property once the employee fully repays the debt to the seller. Since the launch of the programme, the Company has purchased 1,176 ready-to-move-in apartments.

Nornickel also operates the Corporate Social Subsidised Loan Programme offering Nornickel employees an interest-free loan to pay the initial instalment and reimbursing a certain percentage of interest paid to the bank on the mortgage loan. Overall, more than 400 employees took part in the programme.

PENSION PLANS

Nornickel offers its employees private pension plans. Under the Co-Funded Pension Plan, Nornickel and its employees make equal contributions to the plan. The Complementary Corporate Pension Plan provides incentives for pre-retirement employees with considerable job achievements and a long service record at Nornickel facilities.

Pension plans coverage

Item	2017	2018	2019
Co-Funded Pension Plan			
Financing, USD mln	8.6	7.7	7.6
Number of participants	15,700	13,916	12,304
Complementary Corporate Pension Plan			
Financing, USD mln	8.5	6.7	6.1
Number of participants	718	545	525
Other pension plans			
Financing, USD mln	0.1	0.9	1.0
Number of participants	1,118	1,114	1,151

SOCIAL INVESTMENTS

SUPPORT FOR INDIGENOUS PEOPLES

Nornickel recognises the right of northern indigenous minorities to preserve their traditional way of life, and addresses their needs for decent living standards of modern societies. For many years, the Company has been engaged in projects to improve the quality of life for Taimyr indigenous minorities.

Nornickel adopted the Indigenous Rights Policy which defines Nornickel's key related commitments. No violations infringing on the rights of indigenous minorities were recorded across the Group's operating regions in 2019.

To preserve ethnic traditions and culture of indigenous minorities, Nornickel supports annual festivals for tundra inhabitants celebrating the traditional Reindeer Herder's Day and the Fisherman's Day. To that end, the Company purchases items that are most popular among local communities, including tents, petrol power generators, household equipment, outboard motors, inflatable boats, GPS navigators, sleeping bags, binoculars, etc.

Nornickel also supports the staging of a unique ethnic street festival, Bolshoy Argish, which has received lots of positive feedback from the local communities.

Nornickel also offers regular assistance in response to specific requests from Taimyr municipalities and sponsorship support for indigenous peoples of the North, including through arranging air transportation and supplies of construction materials and diesel fuel.

Nornickel's expenses on support for northern indigenous minorities totalled about RUB 100 mln (~USD 2 mln) for the year.

International Year of Indigenous Languages

On 19 December 2016, the General Assembly of the United Nations proclaimed 2019 as the International Year of Indigenous Languages pursuant to a resolution of the UN Permanent Forum on Indigenous Issues. The International Year of Indigenous Languages aims to focus attention on the risks confronting indigenous languages, improve quality of life, wider international cooperation and visibility and strengthened intercultural dialogue to reaffirm the continuity of indigenous languages and cultures.

Nornickel has supported this initiative by financing a project to create the writing system for the Enets people at Siberian Federal University. The Enets people were the last people of the Siberian Arctic with no official writing system. The 2010 census showed the extremely small number of Enets people left – just 221.

The writing system has been created since then, with federal agencies engaged to include it in educational programmes and adapt to educational requirements.

The project was presented at the 18th session of the UN Permanent Forum on Indigenous Issues, where Nornickel shared its experience in implementing its corporate policy on supporting northern indigenous minorities and specific projects to maintain the ethnic traditions and improve living standards of Taimyr's indigenous people.

Through this project, Nornickel has demonstrated its commitment to sustainability and stakeholder engagement in supporting indigenous minorities in Russia.

SUPPORT FOR LOCAL COMMUNITIES

In supporting regional development, Nornickel focuses on financing projects that create both commercial and social value. Nornickel makes a significant contribution to the development of local communities across its footprint and runs voluntary social programmes and projects to build an inclusive and people-friendly environment, protect the environment, and support local communities, both independently and in partnership with municipalities, regional and federal authorities, not-for-profits, NGOs, and professional associations. These programmes and projects address specific regional issues to drive economic growth and improve the local social situation.

The Company also contributes to the social and economic development across regions by organising and holding forums and conferences for representatives of government, business, and society to share their opinions and establish positive dialogues on topics that matter for the regional economies and social life. The fact that two regions within the Company's footprint are located along Russia's borders (the Murmansk Region and the Zabaykalsky Region) and two are part of the Russian Arctic (the Krasnoyarsk Region and the Murmansk Region) makes such forums, conferences, and other similar events a key driver in attracting investments, addressing environmental protection issues, and facilitating the development of the Arctic fleets, ports, and navigation along the Northern Sea Route. At the end of the day, these efforts help integrate the regions into a common economic space of the Arctic and the wider global economy.

In November 2019, Nornickel representatives attended the 18th session of the General Conference of the United Nations Industrial Development Organisation (UNIDO) held in Abu Dhabi, UAE. During the session, LI Yong, Director General of UNIDO, and Dmitry Pristanskov, Vice President of Nornickel, signed a joint declaration to team up in developing projects aimed at reducing environmental impact and ensuring sustainable development across Nornickel's regions of operations. The partnership with UNIDO enables Nornickel to leverage the international organisation's global experience and expertise when developing environmentally sound technologies for the metals industry and verifying that Nornickel's environmental projects meet the highest standards of advanced technology.

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RELOCATION PROGRAMME

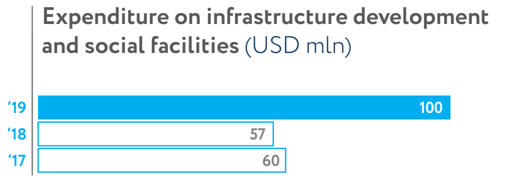
In 2019, Nornickel and the Russian Government continued their joint implementation of a long-term target programme to relocate people from Norilsk and Dudinka (Krasnoyarsk Region) to other Russian regions with a better climate. The programme provides for financing families entitled to relocation under government programmes and registered to purchase an apartment in Norilsk or Dudinka. The programme runs from 2011 and to 2020, with Nornickel operating as its sponsor.

Since its launch until the end of 2019, the Company has donated a total of RUB 7,821 mln (USD 195 mln) under the programme. In 2011–2019, 7,586 families purchased and moved into new homes on the "mainland" under the programme.

INFRASTRUCTURE DEVELOPMENT

In 2019, Nornickel and the administration of Norilsk continued landscaping the embankment of Lake Dolgoye in Norilsk. According to the plan, the project's phased implementation takes place over a five-year period completing by the end of 2021. Its concept design provides for constructing sports areas and children's playgrounds, a rental outlet to rent skis, roller skates, bicycles and other equipment, a boat station, a cafe, a skate park, and a rollerdrome, street landscape lighting, hardscaping, asphalt paving and planting.

Expenditure on infrastructure development and social facilities (USD mln)



The following projects implemented in the Murmansk Region were financed by Kola MMC in partnership with local municipalities and non-governmental organisations:

- Renovation of the central embankment and a part of the road network in Monchegorsk
- A new modern cinema theatre built and improvements made to a sports and play area in Zapolyarny.

In 2019, Nornickel and the Zabaykalsky Region Government continued implementing their cooperation agreement, with the Company allocating RUB 420 mln (USD 6.5 mln) to finance social projects of the Zabaykalsky Region Government and local municipalities. Initiatives so financed include:

- initiatives to engage the general public in socially beneficial activities, identify and roll out best practices, including fostering non-governmental and not-for-profit organisations (the Power of People project, support for the Veterans Council, etc.) and key culture and arts projects (Zabaykalsky International Film Festival, and support for publishers)
- educational projects to find young talent and unlock their potential (Quantorium science park for children, as well as Territory of Growth! and Successful School – Successful Future projects)
- projects and initiatives to promote healthy lifestyles and amateur sports (Healthy Zabaykalsky Region project)
- social and economic development projects of the Gazimuro-Zavodsky District
- projects to build a people-friendly environment reflecting the local environmental and climatic profile (Green Zabaykalsky Region project)
- renovation of the Dekabristov Square in Chita, with a modern, people-friendly space created in the city centre over three years as a place for social events and a recreation magnet for locals, featuring themed leisure and sports zones.

ENGAGEMENT WITH THE GOVERNMENT ON SOCIAL INITIATIVES

Nornickel interacts with federal legislative and executive authorities, and civil society institutions. Nornickel is represented and promotes its interests in 23 committees, councils, commissions, expert panels, and working groups established by the government in association with the business community, thus supporting socially important projects. Currently, Nornickel mainly cooperates with the working groups of the Government Commission on the Use of Natural Resources and Environmental Protection. Nornickel is also actively involved in the expert councils of regional authorities across its geographies, including the Krasnoyarsk Region Governor's Council for Strategic Development and Priority Projects.

Nornickel's representatives take part in parliamentary hearings and round table discussions organised by the Federation Council and State Duma of the Federal Assembly of the Russian Federation, Government of the Russian Federation, Russian Union of Industrialists and Entrepreneurs, Chamber of Commerce and Industry of the Russian Federation, the Association of Managers interregional public organisation, etc.

Nornickel's experts engage in draft regulation discussions as part of open government and local councils under federal executive bodies, as well as in anti-corruption due diligence and regulatory impact assessments. This all helps to maintain a constructive dialogue with the government, cut red tape, and improve the country's business climate.

The retrofit of Norilsk Airport was an important step in developing the infrastructure of the Russian Arctic. Between 2016 and 2018, the airport's runway was repaved without interrupting the air traffic. In 2019, the apron was also repaved; the patrol road, perimeter fencing, wastewater treatment facilities, and emergency response station were completed, and power supply facilities were retrofitted. Capital investment in the project totalled about RUB 12.5 bn (USD 193 mln), including RUB 5 bn (USD 77 mln) invested by Nornickel. The retrofitted Norilsk Airport will become one of the most advanced airport complexes in the Arctic.

CHARITY PROGRAMMES

World of New Opportunities programme

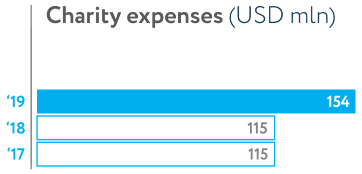
Nornickel runs the World of New Opportunities charity programme to provide sustainable development capabilities and opportunities to communities across its regions of operation. The programme aims at developing soft skills in local communities, demonstrating and introducing new social technologies, supporting and encouraging community initiatives, and creating a favourable environment for cross-sector partnerships.

The programme was updated in September 2019.

Develop! — partnership for local development. Key activities: the Socially Responsible Initiatives Competition, We Are the City! social technologies forum, Social Engineering Bureau, Non-Profit Accelerator, We Are the City! PicNick event, City Event Workshop, Peremena education project, School of Urban Competencies, and travel grants for social entrepreneurs. In 2019, the Socially Responsible Initiatives Competition received 507 entries – a record high since the project was launched in 2014.

Act! — service economy development and growth. Within the initiative, Nornickel runs the following programmes: the Social Entrepreneurship training course, Mentor Institute, Social Entrepreneur Club, Convention of Social Entrepreneurs from the North, Social Entrepreneurship Accelerator Programme, and travel grants for social entrepreneurs. In 2019, five social entrepreneurs were granted business development loans under the World of New Opportunities charity programme.

Charity expenses (USD mln)



Create! — building the infrastructure for accelerated regional development and improved living standards in Nornickel's regions of operation. The initiative is implemented through the Norilsk Development Agency and the Second School Centre across four areas: Business, Development/Urban Environment, Tourism, and Social and Cultural Projects.

During 2019, over 45,000 local residents in Nornickel's regions of operation took part in Nornickel's social programmes.

The City Resident's Social Portrait survey

From October 2018 to February 2019, Nornickel ran the "City Resident's Social Portrait" survey aimed to gain insight into the real state of affairs in our communities by compiling the local populations' social portraits and use the findings to inform local development priorities for the next decade. The survey is unique in that it uses computational sociology, i.e. machine learning, to analyse respondents' digital profiles.

The survey covered a total 8,078 residents in Norilsk, Monchegorsk, Zapolyarny, and Nickel, with over 33,000 opinions and proposals received from local communities. The respondents' perspectives on the existing gaps and their vision for what their community will be like in 10–15 years enabled the survey team to identify and understand the key trends for community development.

Nornickel will consider local residents' expectations when developing production and social programmes for its employees and communities in its regions of operation.

The Plant of Goodness corporate volunteer programme

Nornickel's social policy remains a key pillar of its development strategy and the foundation of its corporate social responsibility. A shift from paternalism to partnership has enabled Nornickel to build mutually beneficial relations not only with business and local communities but also with its employees.

The Plant of Goodness project is a vivid example of such engagement: it has institutionalised and consolidated Nornickel's existing experience and traditions of social and environmental initiatives. Originally launched in Moscow only, the programme has since been extended to Norilsk, Monchegorsk, Zapolyarny, and Chita, acting as an engagement tool that creates new opportunities, unlocks people's potential and strengthens their links to their communities. When people are directly involved in transforming their social environment, they inevitably become more engaged with it.

The Poneslos ("Let's Roll") environmental initiative that grew out of regular volunteer weekends has become one of Nornickel's most prominent social projects. In addition to urban landscaping, the initiative now includes environmental awareness activities, and has grown to 17,000 participants.

The programme's key areas:

- Personal donations programme (through the corporate intranet portal)
- Corporate charity events
- Volunteers in the City partnership project
- Poneslos ("Let's Roll") environmental initiative
- Eco-convention
- Employee volunteering projects
- Volunteer studios
- Skill building programmes
- Plant of Goodness leaders

In 2019, the Plant of Goodness corporate volunteer programme raised over RUB 4 mln through charitable donations by employees and ran 209 volunteer campaigns and events.

SPONSORSHIP

Rosa Khutor Ski Resort

In 2016–2019, Nornickel invested USD 250.5 mln in developing the Rosa Khutor Ski Resort as part of the programme to support mass sports in Russia. The funding helped transform the Olympic complex into a year-round tourist destination. By way of consideration, Nornickel was granted a minority stake in the Rosa Khutor project.

Russian Olympic Committee

As a partner of the Russian Olympic Committee and the Russian Olympic team, Nornickel supports youth sports and professional sports, in particular, by facilitating the implementation of Olympic educational programmes developed by the Russian International Olympic University.

Another area of cooperation between the Company and the Russian Olympic Committee is the inclusion of Nornickel's regions of operation in the pan-Russian Olympic Patrol project. In 2019, renowned athletes visited Krasnoyarsk and Norilsk and shared their personal Olympic experiences, did autograph and photo sessions, and hosted master classes and fitness tests.

Nornickel also helped organise the 30th National Olympic Day, a sports festival aimed at promoting healthy lifestyle, mass fitness and sports among Russian citizens. As part of the event, Nornickel set up a sports area combining a dedicated section of the 2019 Winter Universiade's general partner and a streetball ground of CSKA Professional Basketball Club, the EuroLeague 2019 champion.

CSKA Professional Basketball Club

Nornickel remains the general sponsor of Russia's successful and acclaimed basketball club. In 2019, the Club team won the VTB United League and became a fourth time winner of the most prestigious continental tournament, the EuroLeague Final Four.

Funding for sports projects (USD mln)

International University Sports Federation

Nornickel supports the International University Sports Federation (FISU), the organiser of universiades. In September 2019, Nornickel provided support for the FISU Volunteer Leaders Academy, a regular international forum attended in 2019 by volunteer leaders from more than 80 countries, representatives of sports delegations, and public officials responsible for university sports. The forum provided a platform to foster greater interaction between volunteers and national university sports federations, and share knowledge and experience in organising major international sporting events, including the 2019 Winter Universiade in Krasnoyarsk.

29th International Winter Universiade in Krasnoyarsk

As the general partner of the 29th International Winter Universiade held in Krasnoyarsk in 2019, Nornickel fully met its commitments to assist in preparing and holding the international student games.

Nornickel's contribution to the success of the student games was highly praised by international sports federations, participating countries, the local organising committee, and Russia's leaders. The Company received a number of prestigious awards: Regional Development. The Best for Russia, Sport Leaders, and Best Social Projects in Russia awards, as well as BISPO Award and MARSPO Award.

Along with financial support and provision of infrastructure for the international student games, Nornickel made additional commitments to train the required staff, develop its own volunteering programme, and help spread modern Siberia's new image around the world. For the first time ever, a dedicated team of corporate volunteers made up of Nornickel employees and their family members helped run the Universiade. Nornickel allocated funds to arrange trainings for sports facilities managers, functional heads, and sports executives, as well as volunteer team leaders, at the Russian International Olympic University and Siberian Federal University. Nornickel's support contributed to the non-material heritage of the 2019 Winter Universiade and the development of the Krasnoyarsk Region's talent pool in general.

Nornickel contributed a total of over RUB 2.4 bn, net of VAT, (USD 37 mln) to prepare and hold the 2019 Winter Universiade.

In line with the existing arrangements, once the Universiade was over, the newly built facilities were not handed over to the state. Instead, Nornickel will continue to finance their ongoing maintenance and operation, drawing on many years of experience in building and operating multifunctional and specialised sports complexes. The new sports and training complex is already a venue for futsal and basketball trainings and tournaments. The facility was upgraded to improve accessibility for children and adults with special needs and to offer an even safer and more comfortable leisure experience to the city's residents and guests.

Norilsk Nickel Futsal Club

In 2016, the team and administrative personnel of Norilsk Nickel Futsal Club moved to Norilsk. Nornickel is the Club's general sponsor. The team takes part in the Russian Super League Championship and Russian Futsal Cup. The Russian Futsal Association and MMC Norilsk Nickel work closely together to ensure the success of the Futsal to Polar Schools project. As part of this initiative, the Club's futsal players run master classes for schoolchildren and special workshops for coaches.

Nornickel Football Cup – New Hopes

For the second year running, Nornickel organised the Nornickel Cup – New Hopes inter-regional football tournament which brought together youth teams from the Krasnoyarsk, Zabaykalsky, and Murmansk Regions. The tournament winners were awarded with cups and diplomas, and all participants received commemorative gifts..

All-Russian Federation of DanceSport and Acrobatic Rock'n'Roll

In 2019, Nornickel supported the All-Russian Federation of DanceSport and Acrobatic Rock'n'Roll in developing and promoting these sports. As part of the partnership, we helped set up a corporate acrobatic rock'n'roll club in Norilsk, which successfully competes in national and regional contests. Nornickel is a partner of the Federation.

Rosgonki and Sochi Autodrom

Since 2018, Nornickel has partnered with Rosgonki and Sochi Autodrom to support and promote motor racing in Russia. Under the sponsorship agreement between Rosgonki and Nornickel, the Company provides assistance in preparing and holding sporting events at the Formula One Circuit Race Track.

Corporate Governance

LETTER FROM DEPUTY CHAIRMAN OF THE BOARD OF DIRECTORS

Year after year, MMC Norilsk Nickel increases focus and efforts on enhancing its corporate governance framework through continuous improvements to the quality and maturity of existing governance practices. Good corporate governance is an essential driver of Nornickel's corporate strategy of creating shareholder value and fuelling overall sustainable growth. It is not only an important factor in building a compelling investment case and shareholder and investor confidence but also a driver of Nornickel's efficiency and competitive edge.

Aware of its key role in the overall corporate governance framework, the Board of Directors continued in 2019 to focus on Nornickel's business priorities, strategy, innovative development and the use of new technology to boost operational efficiency. Nornickel's programme to improve operational efficiency and cut operating costs was reviewed and further implemented, along with initiatives to enhance our HSE performance.

In 2020, Nornickel will continue to improve its corporate governance practice. Nornickel's Board of Directors, Board committees, and management are aware of the areas for improvement and recognise the importance of this challenge.

Andrei Bougrov
Senior Vice President,
Deputy Chairman of the Board
of Directors,
MMC NORILSK NICKEL

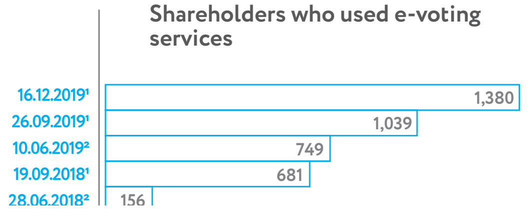
2019 HIGHLIGHTS

In 2019, to further the implementation of Nornickel's Corporate Governance Framework Improvement Programme (2014), the Board of Directors closely analysed and reviewed matters related to the Company's business priorities and strategy. The following focus points dominated the agenda of the Board of Directors and its Committees in 2019:

- Exploring innovation-driven development opportunities and embedding new technology across our operations
- Implementing the operational efficiency and cost optimisation programme
- Running regular activities and reporting on Nornickel's HSE performance (including the Sulphur Project)
- Reviewing the implementation status of the investor relations strategy

PLANS FOR 2020

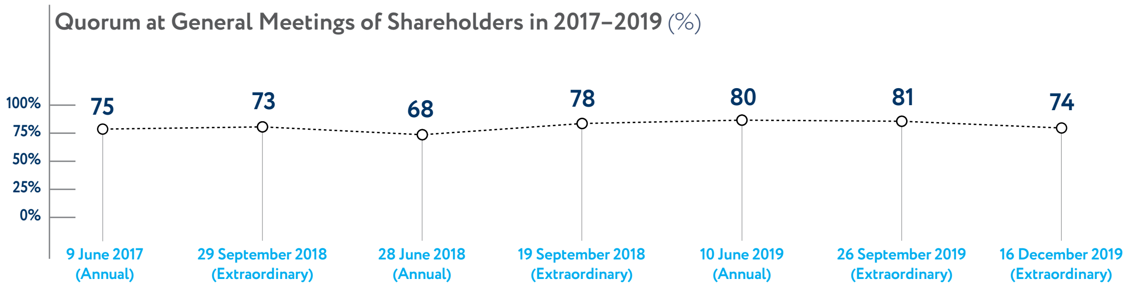
Nornickel's senior management reiterates its commitment to further improve corporate governance in 2020 in order to boost the Company's operational efficiency and drive its competitive edge in the domestic and global markets. Driving shareholder value creation is Nornickel's priority for 2020, and this task requires good governance. This is why Nornickel maintains a strong focus on this aspect and will improve its governance principles, aligning its corporate governance framework with the highest international standards.



GENERAL MEETING OF SHAREHOLDERS

General Meetings of Shareholders held in 2019

Date	Meeting	Results
10 June 2019	Annual General Meeting of Shareholders (held in person)	• The Meeting approved the Annual Report, annual accounting (financial) statements and consolidated financial statements • Profit for the period was distributed, and the resolution on FY 2018 dividend payout was passed • A new Board of Directors and Audit Commission were elected; resolutions on remuneration of members of the Board of Directors and the Audit Commission were passed • Interested party transactions were approved • The auditor was approved to audit Nornickel's accounting (financial) statements, consolidated financial statements, and interim consolidated financial statements prepared under the Russian Accounting Standards • The Meeting approved Nornickel's joining the Interregional Cross-Industry Association of Employers "Union of Copper and Nickel Producers and Production Support Providers", and resolved other matters
26 September 2019	An Extraordinary General Meeting of Shareholders (held in absentia)	A resolution to pay the 1H 2019 dividend was passed
16 December 2019	An Extraordinary General Meeting of Shareholders (held in absentia)	A resolution to pay the 9M 2019 dividend was passed



1/ Extraordinary
2/ Annual

BOARD OF DIRECTORS

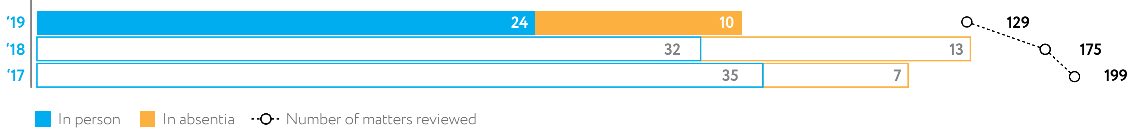
CHANGES IN THE COMPOSITION OF THE BOARD OF DIRECTORS

The Annual General Meeting of Shareholders held on 10 June 2019:

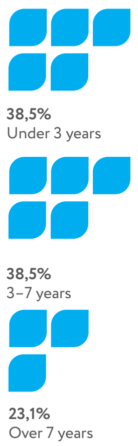
Elected new members:
- Sergey Volk
- Maxim Poletaev
- Vyacheslav Solomin
- Evgeny Shvarts

Terminate the office:
- Artem Volynets
- Andrey Likhachev
- Vladislav Soloviev
- Maxim Sokov

Number of Board meetings



Tenure on the Board of Directors



Gareth Penny

Chairman of the Board of Directors since 2013 (Independent Director)

Andrei Bougrov

Deputy Chairman of the Board of Directors since 2013

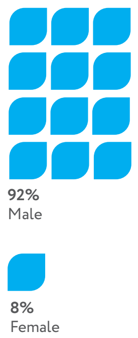
Sergey Barbashev

Member of the Board of Directors since 2011

Alexey Bashkirov

Member of the Board of Directors since 2013

Board composition by gender



Marianna Zakharova

Member of the Board of Directors since 2010

Roger Munnings

Member of the Board of Directors since 2018

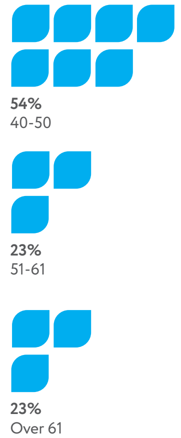
Stalbek Mishakov

Member of the Board of Directors since 2012

Maxim Poletaev

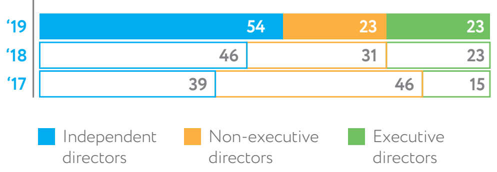
Member of the Board of Directors since 2019

Board composition by age group

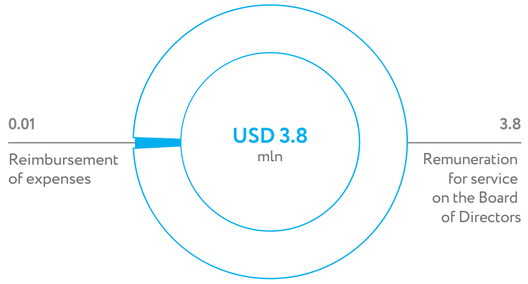


The Board committees and their composition:
- Strategy Committee (five members, including four independent directors (80%) and one non-executive director)
- Audit and Sustainable Development Committee (five members, including three independent directors (60%) and two non-executive directors)
- Budget Committee (five members, including three independent directors (60%) and two non-executive directors)
- Corporate Governance, Nomination and Remuneration Committee (five members, including three independent directors (60%) and two non-executive directors)

Status of Board members (%)



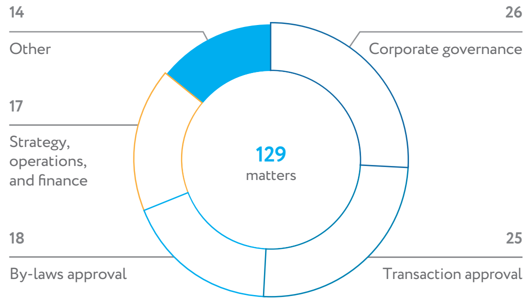
Remuneration to Board members in 2019 (USD mln)



Sergey Volk

Member of the Board of Directors since 2019

Matters reviewed by the Board of Directors in 2019 (%)



Vyacheslav Solomin

Member of the Board of Directors since 2019

Evgeny Shvarts

Member of the Board of Directors since 2019

Robert Edwards

Member of the Board of Directors since 2013

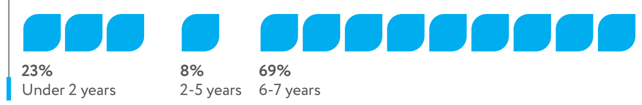
🟩 Executive Director
🟧 Non-Executive Director
🟦 Independent Director

MANAGEMENT BOARD

CHANGES IN THE COMPOSITION OF THE MANAGEMENT BOARD

Alexander Grubman's office was terminated, on 12 July 2019.

Tenure on the Management Board



Vladimir Potanin

Chairman of the Management Board since 2012

🟩 **Sergey Barbashev**

Member of the Management Board since 2018

Sergey Batekhin

Member of the Management Board since 2013

🟩 **Andrei Bougrov**

Member of the Management Board since 2013

Sergey Dyachenko

Member of the Management Board since 2013

🟩 **Marianna Zakharova**

Member of the Management Board since 2016

Larisa Zelkova

Member of the Management Board since 2013

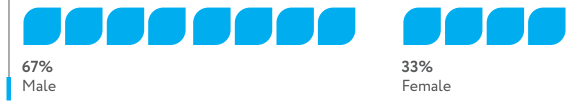
Elena Savitskaya

(until 27 December 2019 – Kondratova)

Member of the Management Board since 2014

🟩 Executive Director

Management Board composition by gender



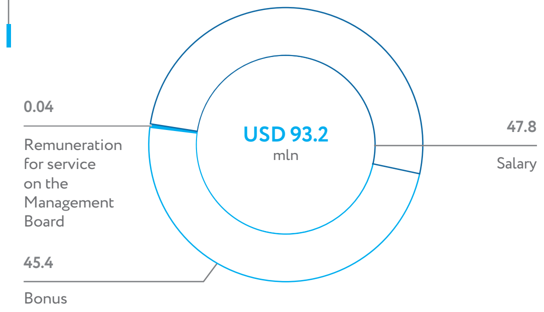
Vladislav Gasumyanov

Management Board since 2014

Sergey Dubovitsky

Management Board since 2018

Remuneration to Management Board members in 2019 (USD mln)



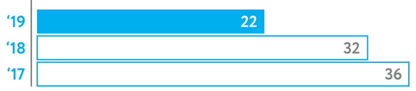
Sergey Malyshev

Management Board since 2013

Nina Plastinina

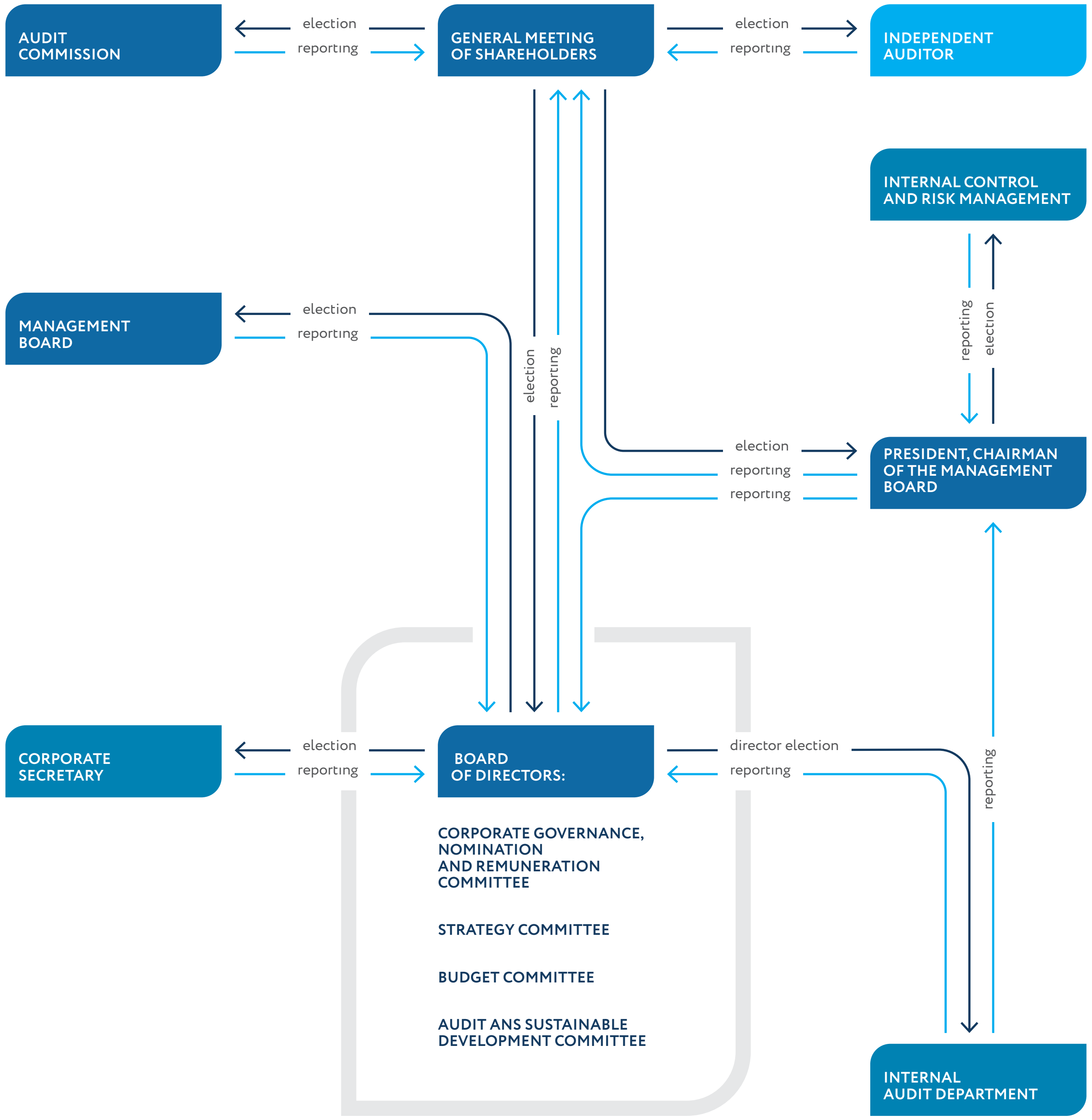
Management Board since 2013

Number of the Management Board meetings



GOVERNANCE STRUCTURE

Governance chart



CORPORATE GOVERNANCE FRAMEWORK

In its corporate governance practice, Nornickel is governed by applicable laws, listing rules, and recommendations of the Corporate Governance Code. Nornickel's corporate governance framework is designed to balance the interests of our shareholders, the Board of Directors, management and employees, as well as other stakeholders involved in Nornickel's activities. The approach, key principles and mechanisms underpinning Nornickel's efforts to build a robust corporate governance framework are based on the applicable Russian laws, including the Corporate Governance Code recommended by the Bank of Russia.

Nornickel's corporate governance framework relies on key principles that imply effective leadership and control of the Company and equal treatment of all shareholders. For more details on the principles formalised in Nornickel's by-laws, please see the Disclosure subsection, Investors section of the Company's website.

DEVELOPMENT AND FURTHER IMPROVEMENT OF THE CORPORATE GOVERNANCE FRAMEWORK

To support shareholder value creation and ensure robust protection of shareholder rights and interests, in 2019 Nornickel continued to focus on its strategy and business priorities, and improve its corporate governance and social responsibility framework, seeking to achieve excellence in governance so as to mitigate investment risks.

In the reporting year, Nornickel paid significant attention to innovative development and the use of new technology as part of its operational excellence drive. Nornickel's dedicated programme covered initiatives to step up operational efficiency, cut operating costs, and improve HSE performance across the Company's footprint. A smart strategy and an in-depth analysis of market developments helped propel Nornickel to an entirely new level of efficiency, reaffirming its status as one of the most compelling investment cases in Russia.

Nornickel continuously improves its corporate governance framework and adopts global best practice, keeping in mind their significant impact on the Company's sustainable development and valuation. Corporate governance improvement is seen as an integral part of Nornickel's overall efforts to achieve operational excellence. The process is constantly supervised by Nornickel's Board of Directors and executive bodies. The Bank of Russia's Corporate Governance Code serves as the main benchmark for improving Nornickel's corporate governance framework.

Comparison of Nornickel's 2017[1], 2018, and 2019 reports on compliance with the Corporate Governance Code demonstrates positive progress on the implementation of the Code's principles and recommendations. The number of the Code's principles fully complied with has increased from 55 in 2017 to 61 in 2019, or 77% of the total.

The biggest progress was made on the standards set out in Chapter 2, Board of Directors, and Chapter 5, Risk Management and Internal Control Framework, of the Code.

Nornickel fully complies with the standards outlined in Chapter 3, Corporate Secretary, Chapter 4, Disclosures, and Chapter 5, Risk Management and Internal Control Framework, of the Code.

Nornickel's efforts to improve corporate governance have been acknowledged by international ESG score providers. Their scores are a direct evidence of Nornickel's corporate governance quality and business efficiency.

Compliance with the Corporate Governance Code principles and recommendations

Corporate governance principles	Number of principles recommended by the Code	2017			2018			2019		
		🟦	🟧	🟩	🟦	🟧	🟩	🟦	🟧	🟩
	79%	55	22	2	59	19	1	61	17	1
	100%	70%	28%	2%	75%	24%	1%	77%	22%	1%
Rights and equal opportunities for shareholders in exercising their rights	13	12	1		12	1		12	1	
Board of Directors	36	24	11	1	27	9	–	27	9	–
Corporate Secretary	2	2	–	–	2	–	–	2	–	–
Remuneration system for members of the Board of Directors and senior management	10	3	6	1	4	5	1	4	5	1
Risk management and internal control system	6	4	2	–	4	2	–	6	–	–
Company disclosures	7	7	–	–	7	–	–	7	–	–
Material corporate actions	5	3	2	–	3	2	–	3	2	–

🟦 Full compliance 🟧 Partial compliance 🟩 No compliance

In line with the recommendations of the Bank of Russia's Corporate Governance Code, Nornickel collaborated with the registrar to introduce e-voting through shareholder's personal accounts. By using this service, shareholders may attend meetings remotely. The service was first made available to the Extraordinary General Meeting of Shareholders as early as in September 2017. Since then, the service has functioned well and undergone further development: as of 2019, shareholders have been able to use the national Unified Identification and Authentication System to log into their personal accounts via the registrar's mobile app.

In 2019, Nornickel actively promoted e-voting among its shareholders (including via text messages). As a result, shareholders widely used e-voting at General Meetings throughout the year. Nornickel will continue to use and develop e-voting as an efficient tool for engaging its shareholders in corporate activities and helping them exercise their governance rights.

Awards received by Nornickel's managers are another evidence of its robust corporate governance: in 2019, they were among the business leaders listed in the Top 1000 Russian managers rating released annually by the Russian Managers Association and the Kommersant Publishing House. Such awards acknowledge executives' leadership in the Russian business community and the recognition of their professional achievements by industry experts and peers. Vladimir Potanin, President of Nornickel, was recognised as one of Russia's top business leaders. Sergey Malyshev, Nornickel's Senior Vice President – Chief Financial Officer, was listed among the Top 100 CFOs in the metals and mining industry. Andrei Bougrov, Nornickel's Senior Vice President, was ranked among the Top 50 GR officers. Marianna Zakharova, Nornickel's First Vice President for Corporate Governance, Shareholder Matters and Legal, was among the Top 50 CLOs. Sergey Batekhin, Nornickel's Senior Vice President for Sales, Procurement and Innovation, was one of the Top 25 logistics directors in the metals industry. Larisa Zelkova, Nornickel's Senior Vice President for HR, Social Policy and Public Relations, was one of the Top 100 PR and corporate communication directors in the metals and mining sector. Svetlana Ivchenko, Head of the Social Policy Department, was among the Top 25 CSR directors.

A special category award was also given to Roger Munnings, Chairman of the Audit and Sustainable Development Committee of Nornickel's Board of Directors, who was named the Best Independent Director, while Pavel Platov, Nornickel's Corporate Secretary, was named the winner of the Director of the Year national award in the Corporate Governance Director/Corporate Secretary category.

STAKEHOLDER ENGAGEMENT IN CORPORATE GOVERNANCE

To achieve operational excellence and further improve corporate governance, Nornickel focuses on engaging its stakeholders in corporate governance, thus enhancing support and minimising resistance from stakeholders while boosting our prospects for success.

In 2019, the Nornickel 5+ Forum was held in the Moscow Region with a key focus on Nornickel's commitment to building employee engagement. The forum was the fifth such meeting of top leaders from across Nornickel's branches, with the top managers engaging in frank dialogues, debating and jointly seeking solutions, summing up progress and sharing outlooks on Nornickel's further development.

Another highlight of the year was the Company's first-ever videoconference between Nornickel's senior management and employees. Employees had the chance to ask their questions directly

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[1] In 2017, Nornickel prepared its inaugural report on compliance with the Corporate Governance Code using the template recommended by the Bank of Russia's Letter No. IN-06-52/8.

to Nornickel's top leaders – First Vice President Sergey Dyachenko, Senior Vice President Larisa Zelkova, and Senior Vice President Sergey Malyshev.

Nornickel's continued focus on expanding the horizons of sustainable growth was highlighted during its annual Capital Markets Day in November 2019 which involved Nornickel's Board members and senior management. Thanks to senior management's well-coordinated and well-placed efforts, the investment community received up-to-date information on Nornickel's operational and financial performance, and gained an insight into an outlook for the metals market, and the Company's strategic vision to 2030.

Nornickel reiterates its commitment to follow global best practice in corporate governance and acknowledges that the Company's long-term success stems from teamwork involving senior management alongside frontline staff, investors, bankers, and other partners. By building mutually beneficial relationships with each stakeholder, Nornickel drives its sustainable growth and strong competitive edge.

LIABILITY INSURANCE

In line with best practice and recommendations of the Corporate Governance Code, Nornickel provides liability insurance for members of its Board of Directors and Management Board. The insurance covers potential damages arising from errors in the course of managing the Company. The policy terms and conditions and the amount of insurance coverage are consistent with international best practice in insuring such risks. Material terms and conditions of the insurance policy are subject to approval by the General Meeting of Shareholders.

MANAGING CONFLICTS OF INTEREST

Nornickel has implemented measures to prevent potential conflicts of interest involving Board members and senior managers. As of December 2016, Board members have filed annual disclosure forms providing information about their relatives and family members. Nornickel also has in place procedures for identifying interested party transactions. Nornickel's efforts to identify and prevent conflicts of interest help minimise the probability of adverse impact on the Company.

GENERAL MEETING OF SHAREHOLDERS

The General Meeting of Shareholders is the supreme governance body of MMC Norilsk Nickel responsible for making decisions on matters most crucial to the Company. A full list of matters within the remit of the General Meeting of Shareholders is detailed in the Company's Articles of Association. Nornickel has in place the Regulations on the General Meeting of Shareholders detailing the procedures for convening, preparing and holding general meetings.

The Annual General Meeting of Shareholders is held on an annual basis not earlier than three months before and not later than six months after the end of the financial year. General meetings other than Annual General Meeting of Shareholders are deemed Extraordinary General Meetings of Shareholders and are convened as per resolution of the Board of Directors at its discretion or at the request of the Audit Commission, the Company's auditor, or shareholders who hold at least 10% of Nornickel's voting shares as of the date of the request.

The notice of a General Meeting of Shareholders is published in the Rossiyskaya Gazeta and Taimyr newspapers, and posted on Nornickel's website at least 30 days prior to the date of the general meeting. If a general meeting is held in the form of absentee voting, the notice is given in the above mentioned newspapers at least 30 days prior to the deadline set for the collection of voting ballots.

Articles of Association

Regulations on the General Meeting of Shareholders

Holders of MMC Norilsk Nickel shares who are registered in the shareholder register receive a ballot directly from the Company and are entitled to exercise their voting right by sending the ballot to the Company or by attending the General Meeting of Shareholders (in person or by proxy).

Shareholders of MMC Norilsk Nickel who own the Company shares via nominal holders receive the voting ballot from the nominal holder. They are entitled to vote at the meeting in the same way as the holders registered in the shareholder register or instruct the nominal holder to do the same as prescribed by the Russian securities law. Nominal holders duly instructed by their clients communicate the voting instructions to the registrar. The receipt of instructions by the registrar shall be equivalent to voting by ballot.

ADR holders do not receive voting ballots directly from the Company. According to the depository agreement, Nornickel notifies the depository, which as soon as possible, and provided it is not prohibited by the Russian law, notifies ADR holders about the general meeting and encloses voting materials and a document describing the voting procedure for ADR holders. To exercise their voting rights, ADR holders instruct the depository accordingly.

Except for the cumulative voting to elect members of the Board of Directors, each voting share represents one vote at the General Meeting of Shareholders.

Three General Meetings of Shareholders were held in 2019, and a high level of shareholders' attendance was maintained. A General Meeting of Shareholders shall be considered properly convened (having a quorum) if the shareholders who hold collectively more than 50% of the votes granted by the Company's outstanding voting shares are present at the meeting.

Continued successful use of e voting at the meetings held in 2018–2019 enabled shareholders to participate in the voting regardless of their location. Evoting is available both on the gosuslugi.ru website accessible to general public and via the Shareholder's Personal Account, a dedicated online resource for Nornickel's shareholders. The number of shareholders taking advantage of evoting has increased noticeably since the service was introduced.

BOARD OF DIRECTORS

The Board of Directors is responsible for the general management of Nornickel's operations, excluding matters reserved to the General Meeting of Shareholders. The Board of Directors plays a crucial role in designing and developing the corporate governance system, ensures the protection and exercise of shareholders rights, and supervises executive bodies. The Board of Directors sets the fundamental principles of business conduct and is responsible for nurturing Nornickel's business and social culture.

The Board's authority and formation process, as well as procedures for convening and holding Board meetings are determined by the Articles of Association and Regulations on the Board of Directors.

According to Nornickel's Articles of Association, the Board of Directors has 13 members. Members

the Shareholder's Personal Accounet

of the Board are elected at the Annual General Meeting of Shareholders for a period until the next Annual General Meeting of Shareholders. The Board of Directors may recommend that the General Meeting of Shareholders amends the Articles of Association by changing the number of Board members, and may only be elected after the relevant amendments to the Articles of Association are approved by the General Meeting of Shareholders and their state registration is completed. Until a new Board of Directors with the new number of members is elected, the decision-making rights and process of the then active Board remain unchanged, with the Board making its recommendations as to nominee Board members including independent directors. The current size of the Board of Directors is best aligned with Nornickel's goals and objectives, and its appropriate independence mix ensures that decision making considers the interests of various stakeholders and enhances the quality of managerial decisions. The current Board of Directors comprises seven independent directors, beyond the minimum requirement set out in the Listing Rules and the Corporate Governance Code, which enables highly professional, independent judgements on matters on the agenda.

INDUCTION OF NEW MEMBERS OF THE BOARD OF DIRECTORS

Since 2014, Nornickel has in place the Professional Development Policy for Members of Board of Directors. To comply with the Policy's requirements as well as to maintain good governance at Nornickel and ensure its continuous improvement, newly elected Board members get immersed into the business processes through a series of meetings with executives and key employees where they discuss key aspects of Nornickel's business. In September 2019, an off-site session was arranged for members of the Board of Director in Norilsk to make site visits to production facilities operated by Nornickel's Polar Division and have working meetings with Nikolay Utkin, Director of the Polar Division, and heads of production units. The meetings focused primarily on production development, environment (including the implementation status of the Sulphur Project), as well as occupational health and safety. In 2020, members of the Board of Directors also plan a number of site visits to Nornickel's production facilities.

In 2019, Nornickel's Board of Directors held 34 meetings, including 10 meetings in person, and reviewed

129

matters

BOARD OF DIRECTORS' PERFORMANCE

At its meetings in 2019, the Board focused on Nornickel's corporate governance, financial and business operations, operations of controlled entities, approval of interested-party transactions, as well as aspects of priority business lines.

QUALITY ASSESSMENT OF THE BOARD OF DIRECTORS

Since 2014, Nornickel has run annual internal assessments (self-assessments) of the Board of Directors' performance using the methodology developed by independent consultants in line with global best practice. Directors are invited to fill in an online questionnaire in accordance with the current Performance Evaluation Policy for the Board of Directors following the schedule approved by the Board of Directors.

The questionnaire contains 76 questions, divided into three parts and 15 sections. All questions are graded on a scale from 1 to 10. Each questionnaire features a text field where directors may enter open-text comments. Answering all questions is mandatory.

Based on the evaluation results, the Corporate Governance, Nomination and Remuneration Committee prepares a statement (Report) on the Board of Director's performance in the reporting year and makes improvement

Directors' attendance at Board meetings during 2019[1]

In 2019, attendance at Board meetings was 100%.

Directors	Status	Board of Directors			Strategy Committee	Budget Committee	Audit and Sustainable Development Committee	Corporate Governance, Nomination and Remuneration Committee
		Total	In person	In absentia				
Gareth Penny	Independent Director	34/34	10/10	24/24	7/7	–	–	–
Andrei Bougrov	Executive Director	34/34	10/10	24/24	–	–	–	–
Sergey Barbashev	Executive Director	34/34	10/10	24/24	–	–	–	–
Alexey Bashkirov	Non-Executive Director	33/34	9/10	24/24	7/7	4/4	8/8	12/12
[redacted]	Independent Director	34/34	10/10	24/24	7/7	4/4	8/8	12/12
Marianna Zakharova	Executive Director	34/34	10/10	24/24	–	–	–	–
Roger Munnings	Independent Director	34/34	10/10	24/24	–	4/4	8/8	–
Stalbek Mishakov	Non-Executive Director	34/34	10/10	24/24	–	3/4	4/8	12/12
Robert Edwards	Independent Director	34/34	10/10	24/24	–	–	8/8	12/12
New Directors after the Annual General Meeting of Shareholders (10 June 2019)								
Sergey Volk	Independent Director	20/34	7/10	13/24	–	3/4	–	–
Maxim Poletaev	Independent Director	20/34	7/10	13/24	5/7	–	–	–
Vyacheslav Solomin	Non-Executive Director	20/34	7/10	13/24	–	–	4/8	–
Evgeny Shvarts	Independent Director	20/34	7/10	13/24	5/7	–	–	–
Directors before the Annual General Meeting of Shareholders (10 June 2019)								
Artem Volynets	Independent Director	14/34	3/10	11/24	2/7	1/4	–	–
Vladislav Soloviev	Non-Executive Director	14/34	3/10	11/24	–	–	–	–
Andrey Likhachev	Independent Director	14/34	3/10	11/24	–	–	–	6/12
Maxim Sokov	Non-Executive Director	14/34	3/10	11/24	2/7	1/4	–	–

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[1] The attendance by Board members is represented as X/Y, where X is the number of meetings attended by the Director, and Y is the number of meetings held.

recommendations for areas where the Board scores were below average. The Report is approved by Nornickel's Board of Directors taking into account the recommendations of the Corporate Governance, Nomination and Remuneration Committee. Information on the performance assessment is published in the Annual Report and on Nornickel's corporate website.

In line with best corporate governance practices, the Board of Directors will continue performing annual self-assessments while also engaging an independent expert to evaluate its performance at least once every three years. No independent performance assessment of the Board of Directors was carried out in 2019. To view the results of the 2018 independent performance assessment of the Board of Directors, please see the 2018 Annual Report.

COMPOSITION OF THE BOARD OF DIRECTORS

Following the Annual General Meeting of Shareholders on 10 June 2019, Sergey Volk, Maxim Poletaev, Vyacheslav Solomin, and Evgeny Shvarts were elected, succeeding Artem Volynets, Vladislav Soloviev, Andrey Likhachev, and Maxim Sokov.

As of 31 December 2019, the Board of Directors had 13 members, of which:

- seven independent directors: Gareth Peter Penny, [redacted], Sergey Volk, Roger Munnings, Maxim Poletaev, Evgeny Shvarts, and Robert Edwards
- three non-executive directors: Alexey Bashkirov, Stalbek Mishakov, and Vyacheslav Solomin
- three executive directors: Sergey Barbashev, Andrei Bougrov, and Marianna Zakharova.

CHAIRMAN OF THE BOARD OF DIRECTORS

The Chairman of the Board of Directors organises the Board's work, convenes and chairs meetings, and chairs the General Meetings of Shareholders. The key responsibilities of the Chairman of the Board of Directors are to ensure high levels of trust at Board meetings and constructive cooperation between the Board members and corporate management.

Since March 2013, the Board of Directors has been chaired by Gareth Peter Penny, who in line with global best practice is an independent director. Gareth Penny's external non-executive directorships enable Nornickel's Board of Directors to better keep abreast of global best practice in corporate governance.

Professional Development Policy for Members of Board of Directors

INDEPENDENT DIRECTORS

Nornickel complies with the international standards as well as the recommendations of the Corporate Governance Code of the Bank of Russia regarding an adequate number of independent directors. Independent directors play an important role in effective performance of the Board's duties by helping it make balanced decisions that consider the interests of various stakeholder groups, as well as ensuring a higher quality of decision making.

As of the end of the reporting year, the Board of Directors had five independent members fully meeting the requirements of the Listing Rules of the Moscow Exchange and recommendations of the Corporate Governance Code, i.e., they were not related to the Company, its substantial shareholder, substantial counterparty or competitor, or to the government. Gareth Peter Penny, [redacted], Roger Munnings, Robert Edwards, and Evgeny Shvarts satisfy these independence requirements. Two other directors, Sergey Volk and Maxim Poletaev, were determined to be independent despite being related to a substantial counterparty as the relation does not affect their ability to make independent, unbiased judgements in good faith.

Performance Evaluation Policy for the Board of Directors

Thus, as of the end of 2019, 7 out of the 13 Directors, or 53.8%, were independent.

The Board of Directors considered matters of compliance with the independence criteria and assessed the independence of Nornickel's Directors twice during 2019:

1/ when assessing nominees to the Board of Directors in preparation for the Annual General Meeting of Shareholders
2/ based on their performance as members of the current Board of Directors.

The Board's skill mix

Board member	Tenure on the Board of Directors	Key skills				
		Strategy	Law and corporate governance	Finance and audit	Metals and mining/ engineering	International economic relations
As of 31 December 2019, the average tenure on the Board of Directors was six years		5	6	8	8	5
Gareth Peter Penny	2013–present	+			+	+
Andrei Bougrov	2002–present		+		+	+
Sergey Barbashev	2011–present		+			
Alexey Bashkirov	2013–present	+		+		+
[redacted]	2013–present	+	+	+	+	
Marianna Zakharova	2010–present		+		+	
Roger Munnings	2018–present			+	+	
Stalbek Mishakov	2012–present		+	+	+	+
Robert Edwards	2013–present		+	+	+	
New Directors after the Annual General Meeting of Shareholders (10 June 2019)						
Sergey Volk	2019–present			+		
Maxim Poletaev	2019–present	+		+		
Vyacheslav Solomin	2019–present			+		+
Evgeny Shvarts	2019–present	+			+	
Directors before the Annual General Meeting of Shareholders (10 June 2019)						
Artem Volynets	2018	+		+		
Vladislav Soloviev	2008–2011, 2013		+		+	
Andrey Likhachev	2018		+	+		
Maxim Sokov	2008	+	+		+	+

BIOGRAPHICAL DETAILS OF BOARD MEMBERS[1]

Gareth Peter Penny

Chairman of the Board of Directors since 2013 (Independent Director), Member of the Strategy Committee

Born in: 1962

Nationality: United Kingdom

Shareholding and transactions: holds no shares in MMC Norilsk Nickel and made no transactions with them in the reporting year

Education

Diocesan College (Bishops), (Cape Town, South Africa)

Eton College (UK)

Rhodes Scholar, Master in Philosophy, Politics and Economics, University of Oxford (UK)

Experience in the last five years

2017–present: member of the Board of Directors of Amulet Diamond Corp.
2017–present: non-executive Chairman of the Board of Directors of Edcon Holdings Limited
2016–2018: non-executive Chairman of the Board of Directors of Pangolin Diamonds Corp.
2012–2016: member of the Board of Directors of OKD
2012–2016: executive Chairman at New World Resources PLC, executive director at New World Resources N. V.
2007–2019: member of the Board of Directors of Julius Baer Group Ltd.
2019–present: non-executive Chairman of the Board of Directors of Ninety One

Andrei Bougrov

Deputy Chairman of the Board of Directors since 2013 (Executive Director), Member of the Management Board since 2013, Senior Vice President

Born in: 1952

Nationality: Russian Federation

Shareholding and transactions: holds no shares in MMC Norilsk Nickel and made no transactions with them in the reporting year

Education

Degree in International Economic Relations, Candidate of Economical Sciences, Moscow State Institute of International Relations (MGIMO University)

Experience in the last five years

2018–present: member of the Advisory Council of the Russo-British Chamber of Commerce
2018–present: member of the Expert Council on Corporate Governance at the Russian Ministry of Economic Development
2018–present: Chairman of the Council for Non-Financial Reporting of the Russian Union of Industrialists and Entrepreneurs
2016–present: Chairman of the Share Issuers Committee of the Moscow Exchange
2016–present: member of the Expert Council on Corporate Governance at the Bank of Russia
2015–present: member of the National Council on Corporate Governance non-profit partnership
2015–2016: member of the Investment Committee of Federal Hydro-Generating Company RusHydro
2013–present: Deputy CEO (2013–2015), Vice President (2015–2016), Senior Vice President (2016–present) of MMC Norilsk Nickel
2014–present: member of the Expert Committee of the Russian President's Anti-Corruption Office
2014–present: member of the Board of Directors of Inter RAO UES
2013–present: President of Interros Holding Company
2006–present: member of the Management Board and Vice President (since 2013) of the Russian Union of Industrialists and Entrepreneurs
2002–present: member of the Council on Foreign and Defence Policy non-governmental association

Alexey Bashkirov

Member of the Board of Directors since 2013 (Non-Executive Director), Chairman of the Budget Committee, member of the Audit and Sustainable Development Committee, Strategy Committee, and Corporate Governance, Nomination and Remuneration Committee

Born in: 1977

Nationality: Russian Federation

Shareholding and transactions: holds no shares in MMC Norilsk Nickel and made no transactions with them in the reporting year

Education

Degree in International Economic Relations, Moscow State Institute of International Relations (MGIMO University)

Experience in the last five years

2016–present: CEO of Translaininvest
2016–present: managing director at Winter Capital Advisors
2016–2018: member of the Board of Directors of iGlass Technology Inc.
2016–present: member of the Board of Trustees of the Night Hockey League non-profit amateur hockey foundation
2014–present: member of the boards of directors of Petrovax Pharm and Zaodno
2009–present: executive director, director of the Investment Department (2009–2015), Deputy Chief Investment Officer (2009–2018), member of the Management Board (2011–2018), CEO and Chairman of the Management Board (2018–present) of Interros Holding Company

Sergey Barbashev

Member of the Board of Directors since 2011 (Executive Director)

Born in: 1962

Nationality: Russian Federation

Shareholding and transactions: holds no shares in MMC Norilsk Nickel and made no transactions with them in the reporting year

Education

Degree in Law, Moscow Higher School of Militia of the Ministry of Internal Affairs of the USSR

Experience in the last five years

2018–present: member of the Management Board, First Vice President – Head of Corporate Security at MMC Norilsk Nickel
2016–present: member of the Board of Endowment Fund for Education, Science and Culture
2015–2018: director at a branch of Olderfrey Holdings Ltd
2011–2019: Chairman of the Board of Directors of Rosa Khutor Ski Resort Development Company
2008–present: member of the Board of the Vladimir Potanin Foundation
2008–2018: CEO, Chairman of the Management Board of Interros Holding Company

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[1] Positions are indicated at the end of 2019. Biographical details of previous members of the Board of Directors are available in the 2018 Annual Report.

Roger Llewelyn Munnings

Member of the Board of Directors since 2018 (Independent Director), Chairman of the Audit and Sustainable Development Committee, member of the Budget Committee

Born in: 1950

Nationality: United Kingdom

Shareholding and transactions: holds no shares in MMC Norilsk Nickel and made no transactions with them in the reporting year

Education

Master in Politics, Philosophy and Economics (advanced course), University of Oxford (UK)

Fellow of the Institute of Chartered Accountants in England and Wales

Experience in the last five years

2017–present: Director of 3 Lansdown Crescent Limited
2017–present: member of the Council of National Representatives (UK) at the Association of European Businesses in Russia
2015–present: member of the Board of Directors of LUKOIL
2013–present: member of the Board of Trustees of International Business Leaders Forum
2013–present: trustee at Kino Klassika Foundation
2013–present: member of the National Council on Corporate Governance non-profit partnership
2010–present: member of the Board of Directors of Sistema
2010–2016: member of the Board of Directors of Wadswick Energy Limited
2009–2016: trustee at the John Smith Trust
2003–present: member of the Board of Directors, Chairman of the Board of Directors of the Russo-British Chamber of Commerce

Marianna Zakharova

Member of the Board of Directors since 2010 (Executive Director), Member of the Management Board since 2016

Born in: 1976

Nationality: Russian Federation

Shareholding and transactions: holds no shares in MMC Norilsk Nickel and made no transactions with them in the reporting year

Education

Master in Law, Peoples' Friendship University of Russia (RUDN)

Experience in the last five years

2015–present: First Vice President for Shareholder Relations, Corporate and Legal at MMC Norilsk Nickel
2010–2015: member of the Board of Directors of ProfEstate
2010–2015: member of the Management Board, Deputy Director for Legal Affairs at Interros Holding Company

Stalbek Mishakov

Member of the Board of Directors since 2012 (Non-Executive Director), Member of the Corporate Governance, Nomination and Remuneration Committee and Budget Committee

Born in: 1970

Nationality: Russian Federation

Shareholding and transactions: holds no shares in MMC Norilsk Nickel and made no transactions with them in the reporting year

Education

Degree in International Law, Moscow State Institute of International Relations (MGIMO University)

Master of Science, University of Notre Dame (USA)

Candidate of Economic Sciences, Diplomatic Academy of the Russian Ministry of Foreign Affaires

Experience in the last five years

2019–present: function director at RUSAL Management
2018–2019: function director at RUSAL Global Management B. V.
2013–2018: Deputy CEO at En+ Management
2013–2016: member of the Board of Directors of United Company RUSAL PLC
2010–2018: advisor to the President of RUSAL Global Management B. V.

Sergey Volk

Member of the Board of Directors since 2019 (Independent Director), Member of the Budget Committee of the Board of Directors

Born in: 1969

Nationality: Ukraine

Shareholding and transactions: holds no shares in MMC Norilsk Nickel and made no transactions with them in the reporting year

Education	Experience in the last five years
Master of Business Administration (majoring in Finance), University of Texas at Austin (USA)	2019–present: member of the Board of Directors of Fortenova grupa d.d. (Zagreb, Croatia) 2018–present: member of the Supervisory Board of Mercator d.d. (Ljubljana, Slovenia) 2016–present: senior banker at Sberbank of Russia 2013–2016: consulting specialist, business management consultant

Maxim Poletaev

Member of the Board of Directors since 2019 (Independent Director), Chairman of the Strategy Committee of the Board of Directors, member of the Corporate Governance, Nomination and Remuneration Committee

Born in: 1971

Nationality: Russian Federation

Shareholding and transactions: holds no shares in MMC Norilsk Nickel and made no transactions with them in the reporting year

Education	Experience in the last five years
Degree in Accounting and Business Analysis, P. G. Demidov Yaroslavl State University	2019–present: member of the Board of Directors of United Company RUSAL PLC 2019–present: Chairman of the Board of Directors of Fortenova grupa d.d. (Zagreb, Croatia) 2018–present: advisor to the President of Sberbank of Russia 2013–2018: First Deputy Chairman of the Management Board of Sberbank of Russia

Vyacheslav Solomin

Member of the Board of Directors since 2019 (Non-Executive Director), Member of the Audit and Sustainable Development Committee of the Board of Directors

Born in: 1975

Nationality: Russian Federation

Shareholding and transactions: holds no shares in MMC Norilsk Nickel and made no transactions with them in the reporting year

Education	Experience in the last five years
Degree in International Economics, Far Eastern Federal University	2018–present: director at En+ Holding Limited and United Company RUSAL PLC 2018–present: executive director at En+ Management 2014–2018: CEO of EuroSibEnergo 2011–present: director at YES Energo Limited

Robert Edwards

Member of the Board of Directors since 2013 (Independent Director), Chairman of the Corporate Governance, Nomination and Remuneration Committee and Audit and Sustainable Development Committee

Born in: 1966

Nationality: United Kingdom

Shareholding and transactions: holds no shares in MMC Norilsk Nickel and made no transactions with them in the reporting year

Education	Experience in the last five years
Degree in Mining Engineering, Camborne School of Mines (UK)	2018–present: member of the Board of Directors of Scriptfert New Zealand Ltd 2018–present: member of the Board of Directors of Chaarat Gold Holdings Ltd 2016: Chairman of the Board of Directors of Sierra Rutile Limited (SRX) 2014–2018: member of the Board of Directors of GB Minerals Ltd 2013–present: head of Highcross Resources Ltd

Evgeny Shvarts

Member of the Board of Directors since 2019 (Independent Director), Member of the Strategy Committee of the Board of Directors

Born in: 1958

Nationality: Russian Federation

Shareholding and transactions: holds no shares in MMC Norilsk Nickel and made no transactions with them in the reporting year

Education	Experience in the last five years
Degree in Biology/Zoology and Botanics, Lomonosov Moscow State University Candidate of Geographical Sciences (Biogeography and Soil Geography), Institute of Geography, Academy of Sciences of the Soviet Union Doctor of Geographical Sciences (Geoecology), Institute of Geography, Russian Academy of Sciences	2007–2019: director at the Department of Conservation Policy (2007–2016 and 2018–2019), director for Conservation Policy (2016–2018) at the World Wide Fund for Nature 1993–present: member of the Board of the Biodiversity Conservation Center charitable foundation

Biographical details of previous members of the Board of Directors are available in the 2018 Annual Report.

BOARD COMMITTEES

Committees established by Nornickel's Board of Directors are responsible for preliminary review of key matters and making recommendations to the Board of Directors. To discharge their responsibilities in the most effective way, the committees may consult Nornickel's governance bodies and seek opinions from independent external consultants. Nornickel has four Board committees, each comprised of five members:

- Audit and Sustainable Development Committee
- Strategy Committee
- Budget Committee
- Corporate Governance, Nomination and Remuneration Committee

AUDIT AND SUSTAINABLE DEVELOPMENT COMMITTEE

Members of the Audit and Sustainable Development Committee are appointed by the Board of Directors. In accordance with its Terms of Reference, the Audit and Sustainable Development Committee of the Board of Directors has five members, all of them independent directors. If it is reasonably impracticable to meet the above requirement, independent directors should make up the majority of Committee members, while the remaining Committee members may include members of the Board of Directors, except for the Company's CEO and/or members of its Management Board. Only an independent director may chair the Committee.

In accordance with its Terms of Reference, the current Audit and Sustainable Development Committee is made up of five directors, three of whom are independent directors, including its Chairman (i.e. 60% of the Committee members are independent directors). On average, Committee members have more than 10 years of experience in finance.

In 2019, the Committee held eight meetings, including six in person, and two in absentia.

The Committee discharges its responsibilities by overseeing:

- financial reporting
- risk management and internal controls
- external and internal audit
- prevention of wrongdoing by Nornickel employees and third parties
- health, safety, and environment matters.

The Audit and Sustainable Development Committee plays an important role in enabling controls and accountability, and has become an effective interface between the Board of Directors, Audit Commission, independent auditor, Internal Audit Department, and management of Nornickel.

During 2019, the Audit and Sustainable Development Committee prepared for the Board of Directors a number of recommendations on the accuracy, completeness, and reliability of Nornickel's financial accounts, as well as on health, safety and environment matters, and approval of the Company's auditors. The Committee also considered and took note of audit reports by the Internal Audit Department and Internal Control Department, Report by Nornickel's management on adopting a new standard, IFRS 15 Revenue from Contracts with Customers, the Norilsk Nickel Group's 2018 Sustainability Report, Report on Improvements to Procurement, Corporate Risk Appetite Statement for 2019, and information about the development status of the risk management framework and the implementation status of activities addressing obsolete inventories.

Status of Board Committee members as of 31 December 2019

Members of the Audit and Sustainable Development Committee in 2019

Before the Annual General Meeting of Shareholders (before 10 June 2019)	After the Annual General Meeting of Shareholders (after 10 June 2019)
Roger Munnings (Chairman, Independent Director)	Roger Munnings (Chairman, Independent Director)
Alexey Bashkirov	Alexey Bashkirov
[redacted] (Independent Director)	[redacted] (Independent Director)
Stalbek Mishakov	Vyacheslav Solomin
Robert Edwards (Independent Director)	Robert Edwards (Independent Director)

STRATEGY COMMITTEE

Members of the Committee are appointed by the Board of Directors. In accordance with its Terms of Reference, the Strategy Committee of the Board of Directors has five members, all of them non-executive directors. At least one Committee member must be an independent director. The Committee Chair may serve on other Board committees, but may not chair more than two Committees at a time.

In accordance with its Terms of Reference, the current Strategy Committee is made up of five directors, four of whom are independent directors, including its Chairman (i.e. 80% of the Committee members are independent directors). In 2019, the Committee held seven meetings in person.

The Strategy Committee assists the Board of Directors by pre-reviewing matters related to:

- building a sustainability strategy
- investment planning and structural changes
- engagement with capital markets and government relations.

In 2019, the Strategy Committee considered matters related to environment, health, safety, and climate change, including the infrastructure development and energy capacity expansion strategy, as part of building Nornickel's Environmental Vision. The Strategy Committee's key areas of focus:

- Supporting Nornickel's Board of Directors in developing, following up, and adjusting the corporate strategy
- Recommending updates to the strategy

During the year, the Strategy Committee made recommendations to the Board of Directors to inform decision-making on updating Nornickel's development strategy and a number of functional strategies. The Committee also reviewed the progress and status updates on Nornickel's major investment projects (including the Bystrinsky project, 3rd Stage of Talnakh Concentrator Upgrade, and the South Cluster), and prepared the Progress Report on Production Reconfiguration, Report on the Comprehensive Insurance Programme (including a review of property insurance quality), and Progress Report on the IT Programme, including progress on the ERP and Technology Breakthrough programmes. The Committee also considered the progress updates on Volta Shared Services Centre and Stable Coin projects. To ensure efficient strategic planning at Nornickel, the Committee reviewed its production report and progress on the programme designed to improve operational efficiency and reduce operating costs.

Members of the Strategy Committee in 2019

Before the Annual General Meeting of Shareholders (before 10 June 2019)	After the Annual General Meeting of Shareholders (after 10 June 2019)
Maxim Sokov (Chairman)	Maxim Poletaev (Chairman, Independent Director)
Alexey Bashkirov	Alexey Bashkirov
[redacted] (Independent Director)	[redacted] (Independent Director)
Artem Volynets (Independent Director)	Evgeny Shvarts (Independent Director)
Gareth Peter Penny (Independent Director)	Gareth Peter Penny (Independent Director)

BUDGET COMMITTEE

Members of the Committee are appointed by the Board of Directors. In accordance with its Terms of Reference, the Budget Committee of the Board of Directors has five members, all of them non-executive directors. At least one Committee member must be an independent director. The Committee Chair may serve on other Board committees, but may not chair more than two Committees at a time.

In accordance with its Terms of Reference, the current Budget Committee is made up of five directors, three of whom are independent directors (i.e. 60% of the Committee members are independent directors).

In 2019, the Budget Committee focused on making recommendations to the Board of Directors to inform decision-making on the amount of dividends and on the record date to be suggested by the Board of Directors. The Budget Committee also approved and recommended that the Board of Directors approve Nornickel's 2020 budget.

Members of the Budget Committee in 2019

Before the Annual General Meeting of Shareholders (before 10 June 2019)	After the Annual General Meeting of Shareholders (after 10 June 2019)
Alexey Bashkirov (Chairman)	Alexey Bashkirov (Chairman)
[redacted] (Independent Director)	[redacted] (Independent Director)
Artem Volynets (Independent Director)	Sergey Volk (Independent Director)
Roger Munnings (Independent Director)	Roger Munnings (Independent Director)
Maxim Sokov	Stalbek Mishakov

CORPORATE GOVERNANCE, NOMINATION AND REMUNERATION COMMITTEE

Members of the Corporate Governance, Nomination and Remuneration Committee are appointed by Nornickel's Board of Directors. The Committee has five members in accordance with its Terms of Reference. The Board of Directors, however, may increase the membership of the Committee. The Committee members may only include independent directors. If it is reasonably impracticable to meet the above requirement, independent directors other than the Company's CEO and/or members of its Management Board should make up the majority of Committee members.

In accordance with its Terms of Reference, the current Budget Committee is made up of five directors, three of whom are independent directors, including its Chairman (i.e. 60% of the Committee members are independent directors).

The Corporate Governance, Nomination and Remuneration Committee supports the Board of Directors by:

- evaluating, overseeing, and improving Nornickel's corporate governance framework
- ensuring succession planning for Nornickel's Board of Directors and Management Board
- providing incentives, assessing the performance of Nornickel's Board of Directors, Management Board, President, and Corporate Secretary, and setting relevant remuneration policies
- supervising the development and implementation of Nornickel's information policy.

In the reporting year, the Committee held twelve meetings, including ten in absentia, and two in person.

The Committee made recommendations to the Board of Directors to inform decision-making on convening, preparing, and holding the Annual and Extraordinary General Meetings of Shareholders, and on matters reserved to the General Meeting of Shareholders (remuneration and reimbursement of expenses of members of the Board of Directors and the Audit Commission, and liability insurance and indemnity for members of the Board of Directors and the Management Board).

The Corporate Governance, Nomination and Remuneration Committee advised the Board of Directors on assessment of the Board of Directors' performance in 2018. The Committee reviewed the updates on the Our Home and My Home programmes, Corporate Social Subsidised Loan Programme, and Nornickel's Charitable Policy. The Committee also considered an external assessment of the Board of Directors' performance in 2018, which concluded that the Board of Directors and the Corporate Secretary of Nornickel were effective, and assessed the independence of nominees to the Company's Board of Directors.

Members of the Corporate Governance, Nomination and Remuneration Committee in 2019

Before the Annual General Meeting of Shareholders (before 10 June 2019)	After the Annual General Meeting of Shareholders (after 10 June 2019)
[redacted] (Chairman, Independent Director)	Robert Edwards (Chairman, Independent Director)
Alexey Bashkirov	Alexey Bashkirov
Stalbek Mishakov	Stalbek Mishakov
Andrey Likhachev (Independent Director)	[redacted] (Independent Director)
Robert Edwards (Independent Director)	Maxim Poletaev (Independent Director)

CORPORATE SECRETARY

The Corporate Secretary's key functions:

- Involvement in preparing and holding the General Meeting of Shareholders
- Preparing and holding meetings of the Board of Directors and its committees
- Contributing to the improvement of Nornickel's corporate governance framework and practice
- Managing the activities of the Secretariat
- Other functions in accordance with Nornickel's by-laws

The Corporate Secretary reports administratively to the President and is accountable to, and controlled by, the Board of Directors.

At present, Pavel Platov is Nornickel's Corporate Secretary. In December 2018, the Board of Directors extended Pavel Platov's term as Corporate Secretary by another three years.

In 2019, Pavel Platov won the national Director of the Year award in the Corporate Governance Officer/Corporate Secretary category, one of Russia's most prestigious awards in corporate governance.

The role of the Corporate Secretary is to ensure compliance with the procedures for the protection of shareholder rights and legitimate interests, as prescribed by applicable laws and Nornickel's by-laws, and to monitor such compliance. According to the Articles of Association, the Corporate Secretary is appointed by the Board of Directors for a three-year term. The Board of Directors may terminate the office of the Corporate Secretary before the end of the term.

At its 15 January 2020 meeting, the Board of Directors approved a new version of the Regulations on the Corporate Secretary of MMC Norilsk Nickel following a preliminary review by the Corporate Governance, Nomination and Remuneration Committee. The new version of the Regulations contains updated terms and definitions which are fully compliant with the Bank of Russia's Corporate Governance Code.

Pavel Platov

2011–present: Corporate Secretary

Born in: 1975

Nationality: Russian Federation

Shareholding and transactions: holds no shares in MMC Norilsk Nickel and made no transactions with them in the reporting year.

Education

Dobrolyubov Linguistics University of Nizhny Novgorod

Academy of National Economy under the Government of the Russian Federation

Experience in the last five years

2017–present: Corporate Secretary of MMC Norilsk Nickel (2011–2017: Company Secretary)

EXECUTIVE BODIES

The President and the Management Board are Nornickel's executive bodies in charge of day-to-day operations.

Executive bodies ensure:

- compliance with resolutions of the Board of Directors and the General Meeting of Shareholders
- implementation of Nornickel's key plans and programmes
- continuous operation of an effective risk management and internal control framework.

The President is Nornickel's sole executive body in charge of day-to-day operations. The President is elected by the General Meeting of Shareholders for an indefinite term and acts as Chairman of the Management Board.

The President reports to the Board of Directors and the General Meeting of Shareholders. Since 1 July 2016, election and dismissal of the President is reserved to the General Meeting of Shareholders. Since 2015, this position has been held by Vladimir Potanin (Nornickel's CEO in 2012–2015).

The Management Board is a collegial executive body in charge of Nornickel's day-to-day operations within its scope of authority as set out in the Articles of Association; it ensures the implementation of resolutions passed by the General Meeting of Shareholders and the Board of Directors.

Members of the Management Board are elected by the Board of Directors for an indefinite term. The Board of Directors may at any time terminate the office of any member of the Management Board. As of 31 December 2019, the Management Board had 12 members.

COMPOSITION OF THE MANAGEMENT BOARD

The Management Board had 13 members at the start of 2019, according to the composition approved by the Board of Directors on 24 December 2018. On 11 July 2019, the Board of Directors resolved to terminate the office of Alexander Grubman as of 12 July 2019 and to institute a 12-member Management Board as of 13 July 2019. Biographical details of previous members of the Management Board are available in the 2018 Annual Report.

In 2019, the Management Board held

22

meetings in absentia.

Biographical details of previous members of the Management Board are available in the 2018 Annual Report.

Composition of the Management Board in 2019

Member of the Management Board	Tenure on the Management Board	Meetings attended/total number of meetings
Vladimir Potanin	7	22/22
Sergey Barbashev	1	22/22
Sergey Batekhin	7	22/22
Andrei Bougrov	7	22/22
Vladislav Gasumyanov	6	22/22
Alexander Grubman[1]	1	10/22
Sergey Dubovitsky	1	22/22
Sergey Dyachenko	7	22/22
Marianna Zakharova	4	22/22
Larisa Zelkova	7	22/22
Elena Savitskaya[2]	6	22/22
Sergey Malyshev	7	22/22
Nina Plastinina	7	22/22

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[1] Left the Management Board on 12 July 2019 as per the Board of Directors' resolution.

[2] Until 27 December 2019 — Elena Kondratova.

BIOGRAPHICAL DETAILS OF MEMBERS OF THE MANAGEMENT BOARD[3]

Vladimir Potanin

Chairman of the Management Board since 2012, President of the Company since 2015 (CEO in 2012–2015)

Born in: 1961

Nationality: Russian Federation

Shareholding and transactions: holds no shares in MMC Norilsk Nickel and made no transactions with them in the reporting year

Education

Degree in International Economics, Moscow State Institute of International Relations (MGIMO University)

Experience in the last five years

Degree in International Economics, Moscow State Institute of International Relations (MGIMO University)
Experience in the last five years:
2018–present: member of the Board of Trustees of the Russia-U.S. Council on Business Cooperation trade association
2018–present: member of the Board of Trustees of the Solovki Archipelago Preservation and Development Foundation
2017–present: Chairman of the Supervisory Board of the Norilsk Development Agency
2016–present: member of the Board of Endowment Fund for Education, Science and Culture, Chairman of the Board of Trustees of the Night Hockey League non-profit amateur hockey foundation
2013–present: President of Interros Holding Company
2014–present: member of the Board of Trustees of the ROZA Club for Sport Development and Support
2012–present: CEO (2012–2015), President (2015–present), and the Chairman of the Management Board (2012–present) of MMC Norilsk Nickel
2011–present: member of the Board of Trustees of the State Hermitage Museum Endowment Fund non-profit organisation and the Moscow Church Construction Foundation
2010–present: member of the Board of Trustees of the Russian Geographical Society
2009–present: Deputy Chairman of the Board of Trustees of the Russian International Olympic University
2009–2016: Chairman of the Supervisory Board of the Russian International Olympic University
2008–present: member of the Board of the Vladimir Potanin Foundation
2007–present: member of the Board of Trustees of Saint Petersburg State University, Deputy Chairman of the Board of Trustees of MGIMO Endowment Fund
2006–present: Deputy Chairman of the Board of Trustees of MGIMO Endowment Fund, member of the Board of Trustees, member of the Management Board of the Graduate School of Management at Saint Petersburg State University
2005–present: member of the Board of Trustees, member of the Board of the Russian Olympians Foundation non-profit charitable organisation
2004–present: Chairman, member of the Presidium of the National Council on Corporate Governance non-profit partnership
2003–present: Chairman of the Board of Trustees of the State Hermitage Museum
2001–present: member of the Board of Trustees of the Solomon R. Guggenheim Foundation (New York)
2000–present: member of the Bureau of the Management Board and member of the Management Board of the Russian Union of Industrialists and Entrepreneurs
1995–present: member of the Presidium of the International Foundation for the Unity of Orthodox Christian Nations

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[3] Positions are indicated at the end of 2019.

Sergey Barbashev

Member of the Management Board since 2018, First Vice President – Head of Corporate Security at

Born in: 1962

Nationality: Russian Federation

Shareholding and transactions: holds no shares in MMC Norilsk Nickel and made no transactions with them in the reporting year

Education

Degree in Law, Moscow Higher School of Militia of the Ministry of Internal Affairs of the USSR

Experience in the last five years

2018–present: member of the Management Board, First Vice President – Head of Corporate Security at MMC Norilsk Nickel
2016–present: member of the Board of Endowment Fund for Education, Science and Culture
2015–2018: branch director at Olderfrey Holdings Ltd
2011–2019: Chairman of the Board of Directors of Rosa Khutor Ski Resort Development Company
2008–present: member of the Board of the Vladimir Potanin Foundation
2008–2018: CEO, Chairman of the Management Board of Interros Holding Company

Andrei Bougrov

Member of the Management Board since 2013, Senior Vice President

Born in: 1952

Nationality: Russian Federation

Shareholding and transactions: holds no shares in MMC Norilsk Nickel and made no transactions with them in the reporting year

Education

Degree in International Economic Relations, PhD in Economics, Moscow State Institute of International Relations (MGIMO University)

Experience in the last five years

2018–present: member of the Advisory Council of the Russo-British Chamber of Commerce
2018–present: member of the Expert Council on Corporate Governance at the Russian Ministry of Economic Development
2018–present: Chairman of the Council for Non-Financial Reporting of the Russian Union of Industrialists and Entrepreneurs
2016–present: Chairman of the Share Issuers Committee of the Moscow Exchange
2016–present: member of the Expert Council on Corporate Governance at the Bank of Russia
2015–present: member of the National Council on Corporate Governance non-profit partnership
2015–2016: member of the Investment Committee of Federal Hydro-Generating Company RusHydro
2013–present: Deputy CEO (2013–2015), Vice President (2015–2016), Senior Vice President (2016–present) at MMC Norilsk Nickel
2014–present: member of the Expert Committee of the Russian President's Anti-Corruption Office
2014–present: member of the Board of Directors of Inter RAO UES
2013–present: President of Interros Holding Company
2006–present: member of the Management Board and Vice President (since 2013) of the Russian Union of Industrialists and Entrepreneurs
2002–present: member of the Council on Foreign and Defence Policy non-governmental association

Sergey Batekhin

Member of the Management Board since 2013, Senior Vice President – Head of Sales, Procurement and Innovation

Born in: 1965

Nationality: Russian Federation

Shareholding and transactions: holds no shares in MMC Norilsk Nickel and made no transactions with them in the reporting year

Education

Major in foreign languages (military and political translation), Krasnoznamenny Military Institute of the Ministry of Defence of the USSR

Degree in Finance and Credit, Plekhanov Russian Academy of Economics

Master of Business Administration, Moscow International Higher Business School (MIRBIS Institute)

Experience in the last five years

2019–present: member of the Board of Directors of Jokerit Hockey Club Oy, Chairman of the Presidium of the Night Hockey League non-profit amateur hockey foundation
2018–present: member of the Board of Directors of LLC Kontinental Hockey League
2013–present: Deputy CEO – Head of Sales, Commerce and Logistics (2013–2015), Vice President – Head of Sales, Commerce and Logistics (2015–2016), Senior Vice President – Head of Sales, Commerce and Logistics (2016–2018), Senior Vice President – Head of Sales, Procurement and Innovation (2018–present) at MMC Norilsk Nickel
2013–2015: member of the Board of Directors of Metal Trade Overseas SA, Norilsk Nickel Marketing (Shanghai) Co. and Norilsk Nickel (Asia) Limited (2013–2014)
2012–2015: Chairman of the Board of Directors of Interport Management Company
2009–2015: member of the Board of Directors of LLC Kontinental Hockey League

Vladislav Gasumyanov

Member of the Management Board since 2014, Senior Vice President for Public–Private Partnership Development

Born in: 1959

Nationality: Russian Federation

Shareholding and transactions: holds no shares in MMC Norilsk Nickel and made no transactions with them in the reporting year

Education

Kiev Civil Aviation Engineering Institute

North-West Academy of Public Administration

Experience in the last five years

2019–present: member of the Board of Trustees of All-Russian Fitness-Sports Society Dynamo in Moscow
2019–present: member of the Supervisory Board of the Russian Volleyball Federation
2019–present: member of the Presidium of National Association of International Security
2017–present: member of the Board of Directors of Norilsk Nickel Africa (Pty) Ltd and Norilsk Nickel Mauritius, member of the Executive Committee of Nkomati
2017–present: Head of the Corporate Security Department at the International Institute of Energy Policy and Diplomacy, MGIMO University
2017–2019: member of the Board of Directors of Dynamo Moscow Football Club
2014–2016: member of the Board of Directors of Yenisey River Shipping Company
2012–present: Director for Corporate Security – Head of Security (2012–2015), Vice President, Director for Corporate Security – Head of Security (2015), Vice President – Head of Corporate Security (2015–2018), State Secretary – Vice President for Government Relations (2018–2019), Senior Vice President (2019), Senior Vice President for Public–Private Partnership Development (2019–present) at MMC Norilsk Nickel

Sergey Dubovitsky

Member of the Management Board since 2018, Vice President – Head of Strategy and Strategic Projects

Born in: 1978

Nationality: Russian Federation

Shareholding and transactions: holds no shares in MMC Norilsk Nickel and made no transactions with them in the reporting year

Education

Degree in International Information, Moscow State Institute of International Relations (MGIMO University)

Master of Business Administration, INSEAD Business School

Experience in the last five years

2013–present: Director of the Strategic Planning Department (2013–2016), Vice President for Strategic Planning (2016–2019), Vice President – Head of Strategy and Strategic Projects (2019–present) at MMC Norilsk Nickel

Marianna Zakharova

Member of the Management Board since 2016, First Vice President for Corporate Governance, Shareholder Matters and Legal

Born in: 1976

Nationality: Russian Federation

Shareholding and transactions: holds no shares in MMC Norilsk Nickel and made no transactions with them in the reporting year

Education

Master in Law, Peoples' Friendship University of Russia (RUDN)

Experience in the last five years

2015–present: First Vice President for Corporate Governance, Shareholder Matters and Legal at MMC Norilsk Nickel
2010–2015: member of the Board of Directors of ProfEstate
2010–2015: member of the Management Board, Deputy Director for Legal at Interros Holding Company

Elena Savitskaya

(until 27 December 2019 – Kondratova)

Member of the Management Board since 2014, Vice President – Chief of Staff

Born in: 1972

Nationality: Russian Federation

Shareholding and transactions: holds no shares in MMC Norilsk Nickel and made no transactions with them in the reporting year

Education

Degree in Psychology, Moscow Pedagogical State University

Experience in the last five years

2015–present: Vice President – Chief of Staff (until 2015 – Chief of Staff) at MMC Norilsk Nickel
2013–present: advisor to the President of Interros Holding Company (part-time)

Sergey Dyachenko

Member of the Management Board since 2013, First Vice President – Chief Operating Officer

Born in: 1962

Nationality: Russian Federation

Shareholding and transactions: holds no shares in MMC Norilsk Nickel and made no transactions with them in the reporting year

Education

Degree in Mining Engineering, Plekhanov Leningrad State Mining Institute

Master, University of Pretoria (South Africa)

Experience in the last five years

2019–present: member of the Board of Trustees of the North Caucasian Institute of Mining and Metallurgy
2017–present: member of the Board of Directors of MPI Nickel Pty Ltd, Norilsk Nickel Cawse Pty Ltd, Norilsk Nickel Avalon Pty Ltd, Norilsk Nickel Wildara Pty Ltd, Norilsk Nickel Africa (Pty) Ltd, Norilsk Nickel Mauritius, member of the Executive Committee at Nkomati
2017–2018: member of the Board of Directors of Norilsk Nickel Harjavalta Oy
2016–present: member of the Supreme Mining Council of the Russian Mining Council non-profit partnership
2013–present: First Deputy CEO – Chief Operating Officer (2013–2015), First Vice President – Chief Operating Officer (2015–present) at MMC Norilsk Nickel

Sergey Malyshev

Member of the Management Board since 2013, Senior Vice President – Chief Financial Officer

Born in: 1969

Nationality: Russian Federation

Shareholding and transactions: holds no shares in MMC Norilsk Nickel and made no transactions with them in the reporting year

Education

Degree in Finance and Credit, Finance Academy under the Government of the Russian Federation

Degree in Public and Municipal Administration, Institute of Advanced Training at the Russian Presidential Academy of National Economy and Public Administration

Degree in Mechanical Engineering, Kosygin Russian State University

Experience in the last five years

2013–present: member of the Management Board, Deputy CEO – Head of Economics and Finance (2013–2015), Vice President – Head of Economics and Finance (2015–2016), Senior Vice President – Head of Economics and Finance (2016), Senior Vice President – Chief Financial Officer (2016–present) at MMC Norilsk Nickel

Larisa Zelkova

Member of the Management Board since 2013, Senior Vice President – Head of HR, Social Policy and Public Relations

Born in: 1969

Nationality: Russian Federation

Shareholding and transactions: holds no shares in MMC Norilsk Nickel and made no transactions with them in the reporting year

Education	Experience in the last five years
Degree in Journalism, Lomonosov Moscow State University	2019–present: member of the council on the endowment funds for the replenishment of the Tretyakov Gallery's collection and development of its small museums 2017–present: member of the Supervisory Board, member of the Management Board of the Norilsk Development Agency 2016–present: member of the Board of Trustees of Endowment Fund for Education, Science and Culture 2015–present: member of the Board of Trustees of the Hermitage Foundation UK, member of the Board of Trustees of the Russian Academy of Education 2014 – present: Chairwoman of the Board, President (2014–2018) of the Vladimir Potanin Foundation 2013–present: member of the Management Board, Deputy CEO for Social Policy and Public Relations (2013–2015), Vice President – Head of HR, Social Policy and Public Relations (2015–2016), Senior Vice President – Head of HR, Social Policy and Public Relations (2016–present) at MMC Norilsk Nickel 2012–2018: member of the Russian Presidential Council for Culture and Art 2011–2016: member of the Supervisory Board of the Russian International Olympic University 2011–present: member of the Board of Directors of Rosa Khutor Ski Resort Development Company, Chairwoman of the Management Board of the State Hermitage Museum Endowment Fund 2009–present: member of the Board of Trustees of the Pavlovsk Gymnasium private autonomous non-profit organisation 2007–present: member of the Presidium of MGIMO Endowment Fund

Nina Plastinina

Member of the Management Board since 2013, Vice President – Head of Internal Control and Risk Management

Born in: 1961

Nationality: Russian Federation

Shareholding and transactions: holds no shares in MMC Norilsk Nickel and made no transactions with them in the reporting year

Education	Experience in the last five years
Degree in Mechanical Engineering, Moscow Chemical Machine Building Institute Post-graduate degree in Economics and Production Management, Bauman Moscow Technical Institute	2013–present: member of the Management Board, Director of the Internal Control Department (2013–2015), Vice President – Head of Internal Audit (2015–2016), Vice President – Head of Internal Control and Risk Management (2016–present) at MMC Norilsk Nickel

REMUNERATION

The Board of Directors directly supervises the remuneration framework at Nornickel. The Corporate Governance, Nomination and Remuneration Committee of the Board of Directors is responsible for:

- developing the Remuneration Policy for Members of the Board of Directors, Members of the Management Board, and the President of Nornickel
- overseeing the implementation and execution of the Policy
- reviewing the Policy on a regular basis.

Nornickel does not issue loans to members of the Board of Directors and the Management Board but encourages them to invest in Nornickel shares.

Remuneration paid to members of Nornickel's governance bodies in 2019 totalled RUB 6.3 bn (USD 97.0 mln), including salaries, bonuses, commissions, benefits, and reimbursed expenses)[1].

DIRECTORS' REMUNERATION

Under Paragraph 2, Article 64 of the Federal Law On Joint Stock Companies and Clause 8.8. of Nornickel's Articles of Association, members of the Board of Directors may be paid remuneration and/or reimbursed for expenses incurred by them in performing their duties as members of the Board of Directors, subject to a resolution by the General Meeting of Shareholders. Nornickel also insures third-party liability of members of the Board of Directors related to their roles. Agreements can be signed with members of the Board of Directors to reimburse them for expenses incurred by them in performing their duties as members of the Board of Directors.

The Board of Directors' annual remuneration is set out in the Remuneration Policy for Members of the Board of Directors approved by the General Meeting of Shareholders in June 2014. The Policy was adopted to attract and properly incentivise top talent with required skill sets and experience to serve on the Board of Directors. The Policy also provides for presenting shareholders with a full report on all components of the remuneration payable to members of the Board of Directors and for facilitating long-term sustainability at Nornickel. The Corporate Governance, Nomination and Remuneration Committee of the Board of Directors reviews the Policy for consistency with stated objectives and best practices in corporate governance. If the Policy needs revision, the relevant changes are submitted to Nornickel's General Meeting of Shareholders for approval. The Policy was not updated in 2019, and is not planned to be updated in 2020.

The Remuneration Policy for Members of the Board of Directors

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[1] The amount of remuneration paid does not include the remuneration accrued but not yet paid as of 31 December 2019, as well insurance premiums and voluntary health insurance (VHI) contributions. Adding the amounts above, remuneration of members of Nornickel's governance bodies for 2019 as per the 2019 consolidated IFRS financial statements totalled RUB 8.7 bn (USD 134 mln).

LIABILITY INSURANCE

Additional benefits for all Board members include liability insurance and reimbursement of losses incurred in connection with their service on the Board of Directors. The Bank of Russia's Corporate Governance Code recommends companies to insure liability of their directors to be able to recover potential losses through the insurer. Apart from ensuring stronger commitment from directors, the insurance encourages competent leaders to join the Board.

On 10 June 2019, the annual General Meeting of Shareholders resolved to take a one-year directors' liability insurance policy with a Russian insurer, with a minimum liability limit of USD 200 mln, as well as grant an indemnity of up to USD 115 mln each to members of Nornickel's Board of Directors and Management Board against losses arising from the performance of their duties. In 2019, Nornickel neither reimbursed members of its Board of Directors for losses incurred by them, nor made insurance payments under directors' liability insurance policy.

REMUNERATION OF THE CHAIRMAN OF THE BOARD OF DIRECTORS

Remuneration of the Chairman of the Board of Directors differs from remuneration payable to other non-executive directors, due to the Chairman's enhanced scope of expertise and responsibilities. Subject to a resolution of the General Meeting of Shareholders, the Chairman of the Board of Directors may be entitled to additional remuneration and benefits other than those set out in the Policy.

Under the Policy, the annual base remuneration of the Chairman of the Board of Directors is USD 1 mln. The Chairman of the Board of Directors is not entitled to any additional remuneration for serving on Board committees.

REMUNERATION OF NON-EXECUTIVE DIRECTORS

Under the above Policy, all non-executive directors receive equal remuneration. The Policy sets forth the following annual remuneration for non-executive directors:

- Base remuneration of USD 120,000 for Board membership
- Additional remuneration:
  - of USD 50,000 for membership on a Board committee
  - of USD 150,000 for chairing a Board committee

Non-executive directors are not eligible for any forms of short-term or long-term cash incentives, or non-cash remuneration, including shares (or share-based payments), share options (option agreements), or other non-cash rewards or benefits.

REMUNERATION OF EXECUTIVE DIRECTORS

In line with the approved Policy, executive directors do not receive any additional remuneration for their service on the Board of Directors to avoid any potential conflict of interest.

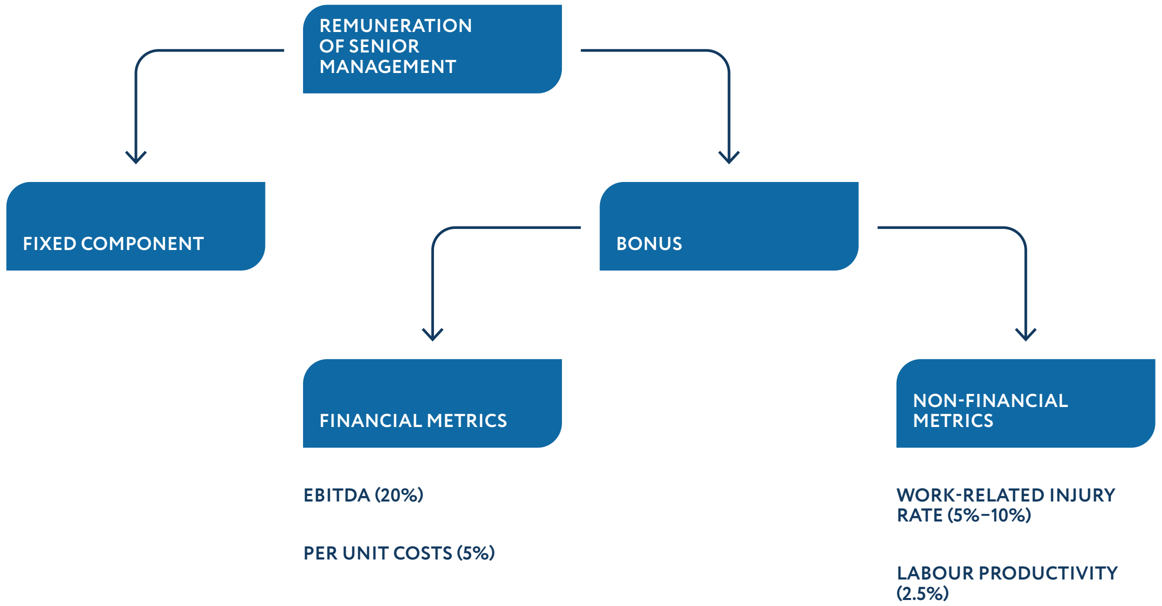
Directors' remuneration in 2019

Type	Amount	
	RUB mln	USD mln
Total	249.0	3.84
Remuneration for serving on the Board of Directors	248.2	3.83
Salary	0	0
Bonuses	0	0
Commissions	0	0
Benefits	0	0
Reimbursement	0.8	0.01
Other	0	0

SENIOR MANAGEMENT REMUNERATION

KPIs used to assess senior management's performance are aligned to Nornickel's strategic goals. In line with Nornickel's Articles of Association, the remuneration and reimbursement payable to the President and members of the Management Board are determined by the Board of Directors.

Remuneration payable to senior management is comprised of basic salary and bonuses. Bonuses are linked to Nornickel's performance, including both financial (EBITDA, per unit costs) and non-financial metrics (work-related injury rates and labour productivity). The variable component of the remuneration payable to members of the Management Board reflects KPIs, which are annually updated and approved by the Corporate Governance, Nomination and Remuneration Committee of the Board of Directors. The Board of Directors decides whether to pay the President a performance bonus for the reporting year.



Management Board's remuneration in 2019

Type	Amount	
	RUB mln	USD mln
Total	6,032.0	93.2
Remuneration for serving on the Management Board	2.4	0.04
Salary	3,091.9	47.8
Bonuses	2,937.7	45.4
Commissions	0	0
Benefits	0	0
Reimbursement	0	0
Other	0	0

CONTROL SYSTEM

INTERNAL CONTROL

In addition to the risk management framework (RMF) detailed in the Risk Management section of this Report, Nornickel also has in place an internal control framework (ICF) covering key business processes and all management levels across the Group.
The ICF is aimed at improving operational effectiveness and efficiency, keeping reliable and accurate financial and management accounts, and ensuring compliance with the requirements of Russian laws and Nornickel's by-laws.
Nornickel has the Internal Control Policy adopted by resolution of the Board of Directors in October 2018. In addition, internal control requirements, procedures, and processes are set forth in the Procedure for Internal Control Processes as well as in regulations on business units and other guidelines.
The internal control entities are structured into a multi-level hierarchy comprising Nornickel's and subsidiaries' governance bodies, business units and employees as well as the following dedicated control bodies:

1/ Audit and Sustainable Development Committee
2/ Internal Audit Department
3/ Audit Commission
4/ Internal Control and Risk Management, comprising the Internal Control Department, Financial Control Service, and the Risk Management Service.

The performance of ICF elements is evaluated annually as part of a financial statement audit and ICF self-assessment. Reports containing the ICF evaluation results are reviewed by Nornickel's management and the Audit and Sustainable Development Committee of the Board of Directors.

The Financial Control Service audits financial and business operations of Nornickel and its subsidiaries to make updates and recommendations for the President and members of the Board of Directors. The Head of the Financial Control Service is appointed by resolution of the Board of Directors.

INTERNAL CONTROL FUNCTIONS

Internal control aims to build an effective internal control framework as a totality of organisational measures, policies and guidelines, control procedures, corporate culture standards and activities of the internal control entities to provide reasonable assurance that Nornickel will achieve its goals. This includes the following activities:

- Development and improvement of the robust ICF
- Ensuring a consistent approach to the design, operation, and development of the ICF
- Identification and prevention of any waste, misuse, or embezzlement of funds or property of the Company or its subsidiaries
- Ensuring accuracy of metrics and measurement standards for the control and accounting of metal-bearing products
- Arranging and implementing internal controls to combat money laundering and financing of terrorism
- Managing the Corporate Trust Service speak-up programme

INTERNAL AUDIT FUNCTIONS

The Internal Audit Department was established to assist the Board of Directors and executive bodies in enhancing Nornickel's management efficiency and improving its financial and business operations through a systematic and consistent approach to the analysis and evaluation of risk management and internal controls as tools providing reasonable assurance that Nornickel will achieve its goals.

The Internal Audit Department conducts objective and independent audits to assess the effectiveness of the internal controls and the risk management framework. Based on the audits, the Department prepares reports and proposals for management on how to improve internal controls, and monitors the development of remedial action plans. In order to ensure independence and objectivity, the Internal Audit Department functionally reports to the Board of Directors through the Audit and Sustainable Development Committee and has an administrative reporting line to Nornickel's President.

In 2019, the Audit and Sustainable Development Committee:

- reviewed the annual audit plan, and internal audit development plans
- reviewed bonus-related performance targets (KPI scorecards) of the Internal Audit Department Director
- discussed the results of completed audits, including gaps identified and remedial actions designed by management to improve internal controls and minimise risks.

In 2019, the Board Audit and Sustainable Development Committee also reviewed performance assessment reports on internal controls and the risk management framework, as well as performance reports of the Internal Audit Department, concluding it was effective.

The Internal Audit Department continuously monitors the implementation of initiatives developed by management. The Department's monitoring covered 263 initiatives of 2019, with the resulting insights regularly reviewed by the Audit and Sustainable Development Committee.

Corporate Risk Management Framework and Internal Control Framework. The frameworks were assessed according to the guidelines approved by the Board of Directors in 2018. The review concluded that the Corporate Risk Management Framework and Internal Control Framework remain effective overall, with some minor improvements required.

In 2019, the Internal Audit Department conducted a total of 21 audits of production-related business processes, as well as corporate governance, IT management, and project management processes at Nornickel.

In line with the functional development plan, the Internal Audit Department oversees the deployment of the SAP Audit Management system at Nornickel. The project was piloted in December 2019, and will enhance the effectiveness of audit through automating standard procedures for planning, auditing, reporting, and making and following up recommendations. It will also ensure the management of databases on controls and risks for internal audit.

AUDIT COMMISSION

The Audit Commission is Nornickel’s standing internal control body that monitors its financial and business operations. The activities of the Audit Commission are guided by Russian laws, Nornickel’s Articles of Association, and Regulations on the Audit Commission. The Commission audits Nornickel’s financial and business operations following the end of its fiscal year and at any time as decided by the Commission, the General Meeting of Shareholders, or the Board of Directors, or as requested by shareholders who hold collectively at least 10% of voting shares in Nornickel. The Audit Commission works in the shareholders’ interests and reports to the General Meeting of Shareholders, which elects members of the Audit Commission to hold office until the next Annual General Meeting of Shareholders. The Audit Commission is independent from the officers of Nornickel’s governance bodies, and its members do not serve on the Company’s governance bodies.

In 2019, the Audit Commission audited Nornickel’s business operations for 2018, with the auditors’ report presented to the shareholders as part of materials for the Annual General Meeting of Shareholders. Nornickel’s business operations for 2019 will be audited in 2020, with the audit findings to be presented to shareholders during the preparation for the Annual General Meeting of Shareholders reviewing the FY 2019 performance.

The following members were elected to the Audit Commission at the Annual General Meeting of Shareholders on 10 June 2019.Alexey Dzybalov, Georgy Svanidze, and Vladimir Shilkov were nominated to the Commission by Nornickel shareholders, while Anna Masalova and Elena Yanevitch were nominated by the Board of Directors.

Alexey Dzybalov replaced Artur Arustamov as a new member of the Audit Commission elected by the 2019 Annual General Meeting of Shareholders. Other members were reelected to the Audit Commission. The elected members of the Audit Commission have the necessary business experience and expertise in accounting, finance, and control to contribute to the Commission’s effectiveness and its objectives.

Remuneration payable to members of the Audit Commission who are not Nornickel employees was approved by the Annual General Meeting of Shareholders on 10 June 2019. Members who are Nornickel employees are remunerated for performing their roles under their employment contracts.

Regulations on the Audit Commission

Members of the Audit Commission from 10 June 2019

Name	Primary employment and position
Alexey Dzybalov	Analyst, United Company RUSAL PLC
Anna Masalova	Chief Financial Officer, Moscow–McDonalds CJSC
Georgy Svanidze	Head of the Financial Department, Member of the Management Board at Interros Holding Company
Vladimir Shilkov	Chief Investment Officer at CIS Investment Advisers, Deputy Project Manager of the Financial Control Service at MMC Norilsk Nickel
Elena Yanevitch	CEO of Interpromleasing

111

USD 000’

Remuneration paid to members of the Audit Commission in 2019

MANAGING CONFLICTS OF INTEREST

Timely prevention and management of conflicts of interest are central to anti-corruption. Conflicts of interest are addressed and managed in line with the Regulations on the Prevention and Management of Conflicts of Interest. As part of the Regulations, Nornickel has approved the standard conflict of interest reporting form to be filled in by candidates applying for vacant positions at Nornickel or by its employees as required. The Regulations apply to all employees of the Company and outline key principles, which include the obligation of each employee to disclose any conflict of interest, as well as non-retaliation for reporting them.

For more details on managing conflicts of interest related to members of the Board of Directors and senior management, please see the Corporate Governance Framework section.

COMPLIANCE

Anti-corruption

Nornickel complies with anti-corruption laws of the Russian Federation and other countries in which it operates, as well as any applicable international laws and Nornickel’s own by-laws. This commitment enhances Nornickel’s reputation and boosts trust and confidence among our shareholders, investors, business partners, and other stakeholders.

Nornickel openly declares its zero tolerance to corruption in any form or manifestation. Members of Nornickel’s Board of Directors/Management Board and senior management role model a zero-tolerance approach to corruption in any form or manifestation at all levels across the organisation. In addition, facilitation payments and political contributions to obtain or reward the retention of a business advantage are strictly prohibited by Nornickel’s policy. Nornickel will not tolerate any retaliation against an employee who reports a concern about suspected bribery or corruption, or refuses to accept or offer a bribe, facilitate bribery, or take part in any other corrupt activities, even if their refusal to do so has resulted in a lost opportunity or a failure to obtain a business or competitive advantage for Nornickel.

The corporate Anti-Corruption Policy is Nornickel’s key anti-corruption document, setting out the main objectives, principles, and scope of anti-corruption efforts.

As part of its anti-corruption efforts, Nornickel has developed and approved the following anti-corruption policies:
- Code of Business Ethics
- Code of Conduct and Business Ethics for Members of the Board of Directors
- Anti-Corruption Policy
- Regulations on the Product Procurement Procedure for Norilsk Nickel Group Enterprises
- Standard anti-corruption agreement – an appendix to the employment contract
- Regulations on Information Security
- Regulations on the Prevention and Management of Conflicts of Interest
- Regulations on Business Gifts
- Procedure for Anti-Corruption Due Diligence of Internal Documents by the Head Office of MMC Norilsk Nickel
- Regulations on the Conflict of Interest Commission
- Regulations on the Information Policy

Having joined the Russian Anti-Corruption Charter for Business, Nornickel is implementing a range of dedicated anti-corruption measures based on the Charter and set forth in Nornickel’s Anti-Corruption Policy. In November 2016, Nornickel joined the United Nations Global Compact, which seeks to encourage businesses around the world to recognise and adopt the ten universal principles in the areas of human rights, labour, environment, and anti-corruption.

Anti-Corruption Policy

Starting from 2015, all Nornickel employees make their personal anti-corruption commitments by signing a relevant form. The corporate Anti-Corruption Policy and related regulations are communicated to all employees upon commencement of employment. From June 2019, all new hires attend an anti-corruption briefing as part of their onboarding process.

Nornickel maintains a Corruption Prevention and Combating section on its corporate intranet, providing information on anti-corruption regulations and measures taken to combat and prevent corruption, provide legal education, and promote lawful behaviours among employees.

Nornickel's Corporate Security continuously works to identify, analyse, and assess financial, corruption, reputational, and other risks naturally inherent in major business processes, with a particular emphasis on considerations such as the integrity, solvency, and financial stability of Nornickel's potential partners and counterparties.

Antitrust

Over the last four years, no administrative actions or sanctions were taken against Nornickel for breaches of antitrust laws.

Insider information

In accordance with Federal Law No. 224-FZ On Prevention of Unlawful Use of Insider Information and Market Manipulation and on Amendments to Certain Legislative Acts of the Russian Federation, dated 27 July 2010, as well as Regulation (EU) No. 596/2014 of the European Parliament and of the Council of 16 April 2014 On Market Abuse, Nornickel maintains a list of insiders and reviews by-laws and corporate events to control the implementation of measures as provided for in the Russian and international laws, including disclosure of insider information. Nornickel also takes other measures to prevent unlawful use of insider information.

CORPORATE TRUST SERVICE SPEAK-UP PROGRAMME

Nornickel runs the Corporate Trust Service speak-up programme established within the Internal Control Department to respond promptly to reports of non-compliance, wrongdoing, or embezzlement. Its operating procedures are detailed in the Procedure for the Corporate Trust Service of MMC Norilsk Nickel approved by the President of Nornickel. The Service's performance is evaluated annually at a meeting of the Audit and Sustainable Development Committee of the Board of Directors.

Employees, shareholders, and other stakeholders can report any actions that cause or may cause financial or reputational damage to Nornickel. The key principles underlying the operation of the Corporate Trust Service include guaranteed anonymity for whistleblowers, and timely and unbiased review of all reports. Nornickel will in no circumstances retaliate against an employee who raises a concern via the Corporate Trust Service, meaning that no disciplinary action will be taken (dismissal, demotion, forfeiture of bonuses, etc.).

Reports can be submitted via toll-free hotlines 8 800 700 19 41 and 8 800 700 19 45, via e-mail skd@nornik.ru or the reporting form on Nornickel's website.

For more details on report statistics, please see the Sustainability Report.

COMPREHENSIVE SECURITY FRAMEWORK

In 2019, MMC Norilsk Nickel enhanced corporate security through consistent upgrades and implementation of its comprehensive security framework driven by the ongoing analysis of the entire range of challenges and threats in the context of the changing external environment. The consistent implementation of the Management by Objectives (MBO) model in economic, corporate, information, physical, and transport security enabled timely responses to key risks, prevention of embezzlement and illicit trafficking of precious metals and metal-bearing materials, and initiatives to prevent internal corruption.

To ensure effective prevention of embezzlement of products containing precious metals, Nornickel has in place measures to identify, prevent and stop damage to its economic interests in mining and processing, and metallurgy operations, as well as in analytical monitoring and accounting for metal products. The Corporate Security team is making further improvements to its identification methodology for products containing precious metals which have been stolen or illicitly traded. The methodology reliably identifies the nature and origin of seized products.

Report statistics

Indicator	2017	2018	2019
Total number of reports	765	961	1,181
Total number of reports that triggered investigation	342	394	481
Percentage of corruption reports	2.9% (10 reports, including 0 substantiated)	1.5% (6 reports, including 0 substantiated)	0.2% (1 report, including 1 substantiated)

A milestone in combating illicit trafficking in metal products was UN's approval of the resolution on combating transnational organised crime and its links to illicit trafficking in precious metals, drafted at Nornickel's initiative and with its input in collaboration with global majors.

Anti-terrorism and improved physical security of critical industrial, energy and transport facilities remain Nornickel's top priorities. Through interactions with law enforcement agencies, Nornickel prevented any unauthorised interference with these infrastructures in 2019.

Information security

Nornickel consistently implements its Information Security Policy covering business processes and domains, including strategic and tactical management processes, operating processes, and information security responsibilities of governance bodies.

In 2018, Nornickel launched a project to protect automated process control systems, continued providing project support for its IT initiatives programme, and rolled out an Information Security Management System compliant with ISO/IEC 27001:2013 at the Murmansk Transport Division. It also continuously upgrades its comprehensive system preventing external cyber interference with operating and production processes.

As part of its day-to-day activities to minimise information security risks associated with human error in using data assets or IT infrastructure systems and elements, Nornickel runs a range of activities to raise awareness and deepen the understanding of information security issues among its employees.

Nornickel fully ensures the safety and confidentiality of employee and counterparty personal data. Audits of Nornickel by the Federal Service for Supervision of Communications, Information Technology, and Mass Media of the Russian Federation (Roskomnadzor) did not identify any issues.

Monitoring of cyber security performance is part of Nornickel's information security management system and information security assessment and reporting. The results performance assessments of cyber security systems are reviewed at the corporate level and communicated to governance bodies and employees through corporate procedures and initiatives.

Nornickel stepped up its international efforts in information security, including through a number of policy initiatives to normalise cyber behaviours, presented at such major events as the Partnership of State Authorities, Civil Society and the Business Community in Ensuring International Information Security scientific forum in Garmisch-Partenkirchen, Germany; the Conference of the Barents Countries in Kirkenes, Norway; the Session of the Central American Parliament in Guatemala; the International Forum on the Use of Information and Communications Technology for Peaceful Purposes in Havana, Cuba; and a major Asia-Pacific forum in Singapore.

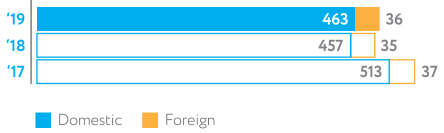
SUPPLY CHAIN AND PROCUREMENT CONTROL

Supply chain management at Nornickel ensures continuous operation of the Group and reliable shipments to its customers. Nornickel seeks to work with partners who are committed to occupational safety and environmental protection. The Company also expects its suppliers to follow global best practices in sustainable use of resources and materials, and maintain relevant certificates.

Nornickel pays close attention to fostering ties with reliable domestic suppliers and contractors to drive import substitution and thus cut costs. In 2019, Nornickel continued to apply a life cycle costing approach to sourcing (based on the costs of ownership, operation, and disposal). The selected suppliers are invited to sign a set of agreements detailing both delivery obligations and the suppliers' responsibility to ensure required availability rates for their equipment and its uninterrupted operation

Nornickel is particularly focused on building relations with suppliers (manufacturers) whose equipment is unique and critical for the stable operation of its production facilities. Unique equipment or individual process materials are sourced only from exclusive suppliers under long-term and mutually beneficial agreements or contracts. 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's suppliers and contractors (units)



Along with saving jobs, ESG-driven supplier selection supports unique enterprises whose continuous operation is essential to the well-being of both their employees and local communities. The use of advanced equipment, technology, and materials combined with pilot tests and operational improvements facilitate lean resource management and reduce the environmental footprint, directly improving the environmental performance of Nornickel's operations.

Nornickel is committed to increasing local content and has developed a centralised pilot testing procedure to drive competition and replace imported materials and equipment with local alternatives. Foreign suppliers are mainly engaged to deliver unique equipment or systems that do not have Russian alternatives.

In 2019, Nornickel completed 24 pilot tests of equipment and materials, including 16 successful tests (of which 12 were on Russian equipment and materials). Another 22 pilot tests were in progress as of the end of 2019.

Nornickel seeks to create an environment of shared knowledge and values in its relationships with suppliers. An ESG clause is incorporated into the standard Master Agreement with its suppliers and contractors. Nornickel adheres to the codes of conduct of its business partners drafted by foreign manufacturers.

Nornickel's experts are looking into alternative technology such as alternative fuels and energy sources to further reduce its environmental footprint and costs. A supplier's willingness to engage in Nornickel's alternative fuel programmes is viewed as a critical advantage in a bidding procedure.

In engaging with suppliers, Nornickel focuses on building effective feedback loops. Nornickel's SAP SRM, an automated solution for supplier relationship management, provides its suppliers with a continuous access to its tender process information. Over 3,200 potential suppliers have registered in the system and successfully passed accreditation.

Procurement

Nornickel's procurement is aimed at facilitating the timely and full satisfaction of its needs in required products supplied to the specified quality and reliability standards at affordable price, as well maximising the value for money spent on such products.

Nornickel's procurement process is certified to ISO 9001 and ISO 14001. The KPIs set for the procurement team cover streamlining supply chains and supplier mix (by increasing the share of manufacturers, their marketing arms, and major traders in total procurement) as well as on-time delivery and price control.

Procurement activities can be either centralised or organised independently by business units of the Head Office, Nornickel branches or Group companies. Depending on the purchase budget, procurement can be organised either as a bidding procedure, simple procurement, or simplified procurement. Procurement procedures may involve different levels of collective procurement bodies, such as the tender committee, tender commissions of the Head Office, procurement and tender commissions of branches and companies of the Group. Over 3,000 agreements were signed in 2019 for the supply of inventories under centralised procurement procedures, worth about RUB 51.2 bn (USD 791 mln) in total.

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 37 category procurement policies were in place at Nornickel at the end of 2019, including three new policies approved in 2019. In 2019, about 53% of inventories were purchased for our core operations under the category procurement policies.

Requirements planning and inventory management

Procurement requirements are determined based on production plans and the needs of other business segments. During the planning phase, the Company determines health, safety and environment requirements, as well as other mandatory and optional requirements for products and suppliers, including availability of certificates, permits, and licences. The resulting data are used as inputs for a procurement plan.

Accurate planning and stock availability are key to uninterrupted operations across the Group while also facilitating inventory optimisation to minimise the Group's working capital. Nornickel's requirements planning and inventory management are governed by the Internal Procedure for Procurement Plan Development, Review and Approval, as well as the Corporate Standard of Inventory Management System for Materials and Supplies at MMC Norilsk Nickel.

In 2019, Nornickel's management successfully continued developing its inventory management system and streamlining its planning and procurement processes. The roll-out of processes to optimise surplus inventories across Nornickel's major assets reduced their surplus inventories by as much as 9%, or RUB 1.5 bn (USD 23 mln) in absolute terms both for core operations and investment activities. The overall level of inventories across these assets was reduced by 7% or RUB 4.5 bn (USD 70 mln) in absolute terms. The management's efforts are focused on preventing the build-up of slow-moving inventories through further streamlining of business processes.

Preventing corruption and other misconduct

In order to mitigate potential engagement risks, Nornickel evaluates business standing, integrity, and solvency of its potential counterparties. To prevent procurement misconduct and maximise value capture through unbiased selection of best proposals, Nornickel's procurement owner, customer, and secretary of a collective procurement body adhere to the following rules:

- Commercial proposals, quotes and technical specifications submitted by suppliers are compared using objective and measurable criteria approved prior to sending a relevant request for proposal
- The qualification results and the winning bidder are approved by the collective procurement body comprised of representatives from various functions of Nornickel
- A Master Agreement containing an anti-corruption clause is updated and signed with each supplier on an annual basis. The anti-corruption clause outlines the course of action to be taken between the supplier and Nornickel with respect to risks of abuse. Moreover, by signing the Agreement, suppliers acknowledge that they have read MMK Norilsk Nickel's Anti-Corruption Policy published in the Anti-Corruption section on Nornickel's corporate website

The Anti-Corruption section

EXTERNAL AUDIT

Norilsk Nickel uses the Company's existing procedure to run a competitive bidding process for pre-selection of an auditor for MMC Norilsk Nickel's consolidated financial statements in accordance with IFRS (international financial reporting standards) and RAS accounts (Russian Accounts Standards). The Board's Audit and Sustainable Development Committee reviews the pre-selection results and makes a recommendation to the Board of Directors regarding a candidate for the independent auditor to be submitted to the General Meeting of Shareholders of MMC Norilsk Nickel for approval.

In 2019, the General Meeting of Shareholders approved JSC KPMG as the auditor for MMC Norilsk Nickel's RAS and IFRS financial statements for 2019 as recommended by the Board of Directors in its Report on the Agenda of the Annual General Meeting of Shareholders.

In 2019, the fee paid to JSC KPMG for its audit and non-audit services provided to MMC Norilsk Nickel and its subsidiaries totalled RUB 202.1 mln (USD 3.1 mln), net of VAT, with the share of non-audit services accounting for 38% of the total amount.

JSC KPMG has in place policies and procedures safeguarding the independence of auditors in line with the requirements of the International Ethics Standards Board for Accountants (IESBA), the Code of Professional Ethics of Auditors in Russia, the Russian Rules for the Independence of Auditors and Audit Organisations, and other applicable standards.

Auditor's fee

Service type	RUB mln, net of VAT	USD mln, net of VAT
Audit and related services	125.6	1.9
Non-audit services, including:	76.6	1.2
quality control for the SAP ERP roll-out project	19.6	0.3
Total auditor's fee	202.1	3.1
Share of non-audit services		38%

Risk Report

RISK MANAGEMENT

Nornickel continuously manages risks that can affect its strategic and operational goals. This process comprises the following stages:

- Identification of risks that have external and (or) internal sources
- Risk assessment based on their impact on key financial and non-financial metrics
- Development and implementation of measures to prevent risks and (or) minimise their implications.

Nornickel pursues the following key risk management objectives:

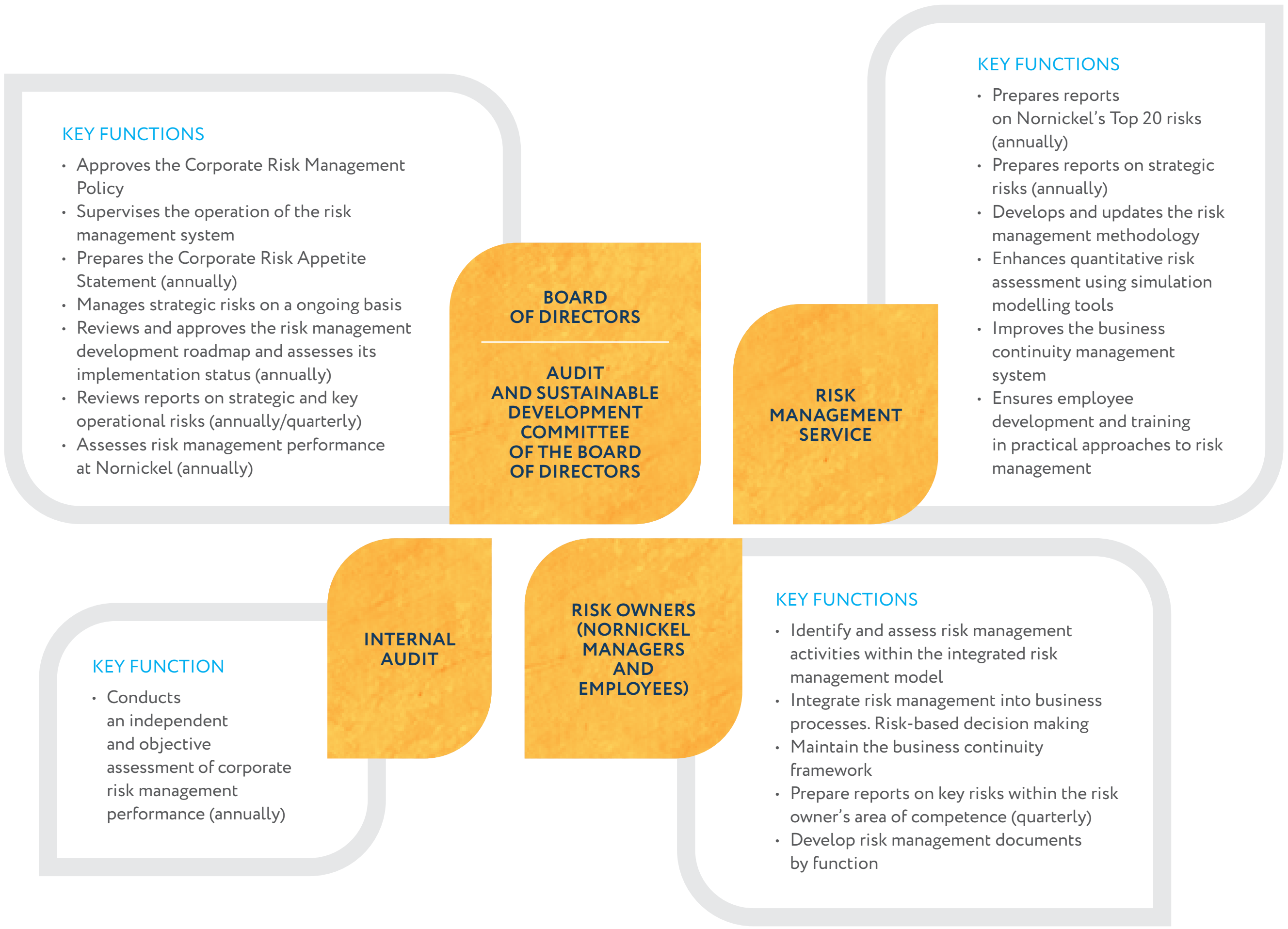
- Increase the likelihood of achieving the Group's goals
- Improve resource allocation
- Boost Nornickel's investment case and shareholder value.

The risk management framework is based on the principles and requirements set out in Russian and international laws, as well as professional standards, including the Corporate Governance Code recommended by the Bank of Russia, GOST R ISO 31000–2010 (Risk Management), and COSO ERM (Enterprise Risk Management: Integrating with Strategy and Performance).

To manage production and infrastructure risks, Nornickel develops, approves and updates business continuity plans which in case of emergency consecutively set out:

1/ a procedure for interaction between business units in rescuing people, minimising property damage, and ensuring process sustainability
2/ a current operations support or resumption plan
3/ a rehabilitation or retrofit plan for affected assets.

RISK MANAGEMENT FRAMEWORK



KEY FUNCTIONS

- Approves the Corporate Risk Management Policy
- Supervises the operation of the risk management system
- Prepares the Corporate Risk Appetite Statement (annually)
- Manages strategic risks on a ongoing basis
- Reviews and approves the risk management development roadmap and assesses its implementation status (annually)
- Reviews reports on strategic and key operational risks (annually/quarterly)
- Assesses risk management performance at Nornickel (annually)

BOARD OF DIRECTORS

AUDIT AND SUSTAINABLE DEVELOPMENT COMMITTEE OF THE BOARD OF DIRECTORS

RISK MANAGEMENT SERVICE

KEY FUNCTIONS

- Prepares reports on Nornickel's Top 20 risks (annually)
- Prepares reports on strategic risks (annually)
- Develops and updates the risk management methodology
- Enhances quantitative risk assessment using simulation modelling tools
- Improves the business continuity management system
- Ensures employee development and training in practical approaches to risk management

INTERNAL AUDIT

KEY FUNCTION

- Conducts an independent and objective assessment of corporate risk management performance (annually)

RISK OWNERS (NORNICKEL MANAGERS AND EMPLOYEES)

KEY FUNCTIONS

- Identify and assess risk management activities within the integrated risk management model
- Integrate risk management into business processes. Risk-based decision making
- Maintain the business continuity framework
- Prepare reports on key risks within the risk owner's area of competence (quarterly)
- Develop risk management documents by function

In 2017–2019, Nornickel improved its risk management framework as follows.

1/ Relevant risk management documents were developed and approved (risk management policies, regulations and procedures by function, guidelines for development of business continuity plans).
2/ Nornickel's key risks were identified and are presented to the Audit and Sustainable Development Committee on a regular basis as a strategic risk map and Top 20 risks. Based on risk assessment, mitigation measures are adopted, in particular, risk management action plans are developed and approved.
3/ The corporate risk management framework was extended to the Group's key subsidiaries. Subsidiaries' risk reports are now regularly reviewed at all levels and consolidated at the Head Office level.
4/ A risk appetite statement was developed, approved and updated annually by the Board of Directors.
5/ Business continuity plans covering the most critical production and infrastructure risks were developed and approved.
6/ A decision was taken to replicate quantitative risk assessments for investment projects and regularly review them at Nornickel's investment committees to enable risk-based decision making.
7/ In-person risk trainings for employees of the Head Office, Polar Division, Kola MMC and Gipronickel are offered on a regular basis.
8/ An interactive online training course in operational risk management was developed for Nornickel employees.
9/ A set of documents was developed to design an automated risk management system (ARMS) based on a GRC system.
10/ Audits of the risk management framework's performance are conducted annually, and the risk management development roadmap is updated. In addition, performance self-assessment of the corporate risk management framework (CRMF) is conducted on an annual basis.

Qualitative indicators of the Risk Management Service's performance in 2019 cover the following activities:

- Rollout of quantitative risk assessment methods for investment projects
- Implementation of measures to improve the business continuity management system
- Corporate risk management trainings for Nornickel employees
- Automation of internal control and risk management processes based on a GRC system
- Technical and production risk management system improvement, including risk register updates and quantitative assessment / scoring methods testing.

2020+ Development Roadmap envisages the following activities to improve the risk management framework:

- Launch of activities to automate the risk management process
- Refinement of algorithms for prompt communication of all emerging risks using a GRC system
- Regular CRMF self-diagnostic and assessment for compliance with global best practices
- Launch of activities to define key risk indicators as part of the project to implement a GRC system
- Improvement of risk management practices in strategic and operational planning
- Rollout of the approach implying the use of simulation modelling for investment project risk assessment
- Enhancement of the methodology to analyse and manage various categories of technical and production risks
- Extending the business continuity management perimeter to cover non-production processes: information technology, security, staffing, etc.

NEW EMERGING RISKS

Nornickel's new emerging risks typically have external sources. These risks are often hard to analyse and prevent due to the lack of information. Effective management of new emerging risks is critical to fostering Nornickel's long-term sustainability, managing change and maintaining Nornickel's competitive edge in the metals market. Nornickel assesses and manages new emerging risks based on their potential implications and on how fast they can materialise, as well as considering its actual capabilities to prevent and/or curb their impact.

New emerging risks are identified and tracked early on by relevant internal experts. For example, a team of risk champions is involved in reviewing new emerging risks, identifying and assessing risks related to all activities of Nornickel. Once the severity of a new emerging risk is assessed and mitigation measures are identified, risk owners become responsible for managing the risk.

New emerging risk management focuses on preventing risk occurrence and mitigating their potential negative implications. Nornickel's approach includes controls such as business continuity plans to manage external risks that can have a disastrous effect on Nornickel's operations and business processes. These controls increase Nornickel's resilience to external shocks. New emerging risks are assessed on a regular basis, including their reassessment and evaluation of their criticality to Nornickel.

CLIMATE CHANGE

Global warming and other repercussions of climate change may affect Nornickel's operations in the longer run. Their impact may include abnormal weather or lasting changes in weather patterns. The physical implications of climate change can include drought and permafrost thawing, which can have a material adverse effect on Nornickel's operations. As part of its risk management strategy, Nornickel implements a range of measures to monitor and control these risks. A significant share of renewables in Nornickel's energy consumption, the high share of recycled water, and one of the industry's lowest CO_2 emission levels suggest that the risk remains within tolerance limits. Climate-related risks may also unlock additional opportunities for Nornickel driven by the strong demand for metals required in a future low-carbon economy.

INSURANCE

Insurance is an essential tool used by Nornickel to manage its risks and finances, as well as to protect its property interests and shareholders against any unforeseen losses related to operations, including due to external effects.

Nornickel has centralised its insurance function to consistently implement uniform policies and standards supporting a comprehensive approach to managing insurance policies and fully covering every risk at all times. Nornickel annually approves a comprehensive insurance programme that defines key parameters by insurance type and key project. Nornickel has implemented a corporate insurance programme that covers assets, equipment failures and business interruptions across the Group.

Nornickel maintains corporate insurance policies with major Russian insurers under the corporate insurance programme, involving an international broker to ensure that Nornickel's risks are underwritten by highly reputable international re-insurers.

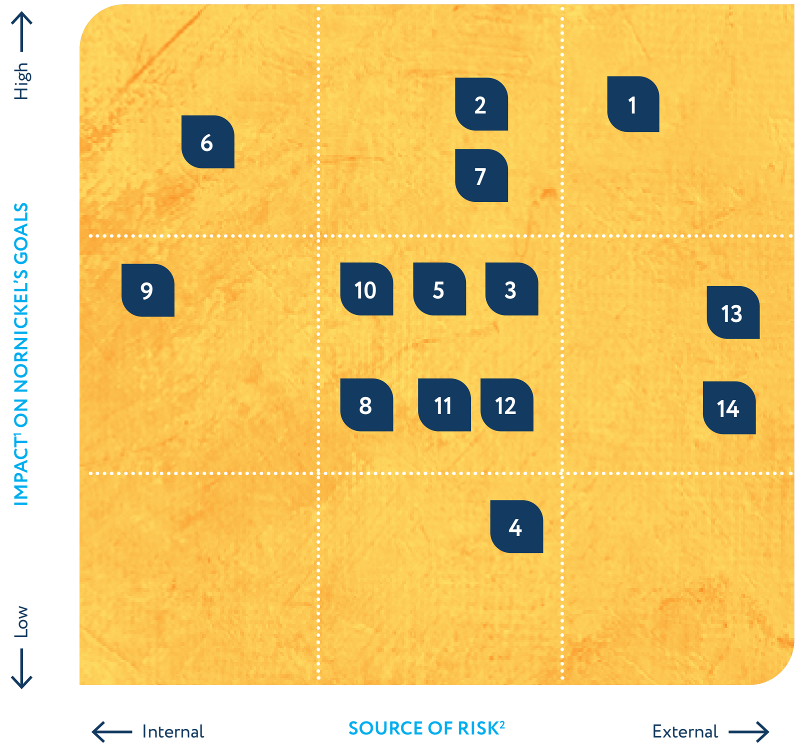
The same principles of centralisation apply to Nornickel's freight, construction and installation, aircraft and watercraft insurance programmes. The Group's entities, directors and officers carry relevant liability insurance. Nornickel applies the industry's best practices to negotiate the best insurance and insured risk management terms.

MAP OF NORNICKEL'S MATERIAL RISKS WITH YEAR-ON-YEAR CHANGE IN 2019

Below is a high-level map of Nornickel's material risks reflecting global best practices in risk management.

The risk map ranks material risks by their impact on the Group's goals and by source.

RISK MAP – NORNICKEL'S 2019 ANNUAL REPORT



1. Price risk (decline in market prices for Nornickel metals) —
2. Market risk (lower competitiveness of Nornickel products) —
3. Tighter environmental regulations —
4. FX risk —
5. Investment risk —
6. Workplace injury risk —
7. Information security risk —
8. Technical and production risk ↘
9. Power outages at production and social facilities in the Norilsk Industrial District —
10. Compliance risk —
11. Social risk[3] ↗
12. Changes in legislation and law enforcement practices —
13. Lack of water resources —
14. Permafrost thawing —

↗ Risk increased year-on-year.
↘ Risk decreased year-on-year.
— Risk has not changed year-on-year.

1/ Risk: an impact of uncertainty on the goals (ISO/GOST R 31000).
2/ Source of risk: an element which, alone or in combination with other elements, may cause a risk (ISO/GOST R 31000).
3/ Nornickel implements a range of additional measures to mitigate the risk (see risk description).

KEY RISKS

Nornickel's risks are all inherent to its strategic and operational development and business continuity goals. Key risks have a varying degree of impact on Nornickel's ability to achieve its goals. Some risks also affect several goals at a time. An overview of goals affected by key risks is provided in the description of these risks below.

STRATEGIC RISKS

Impact on goals: high

Source of risk: external

Year-on-year change in risk: stable

PRICE RISK
(decline in the market prices for Nornickel metals due to the global market situation)

Potential decrease in sales revenues due to lower prices for Nornickel metals subject to actual or potential changes in demand and supply in certain metals markets, global macroeconomic trends, and the financial community's appetite for speculative/investment transactions in the commodity markets.

Key risk factors	Impact on Nornickel's development goal and strategy	Mitigation
Lower demand for metals produced by Nornickel. A slowdown in the global economy in general and in the economies consuming Nornickel metals in particular. Supply and demand imbalance in metals markets	Enhancing and monetising Nornickel's leadership in the nickel and palladium markets	Nornickel is consciously accepting the existing price risk for now. To manage this risk, Nornickel: • continuously monitors and forecasts supply and demand dynamics for key metals • secures feedstock supplies for key consumers through long-term contracts to supply metals in fixed volumes • as a member of the global Nickel Institute and the International Platinum Group Metals Association, works with other nickel and PGM producers to maintain and expand the demand for these metals. Should the price risk materialise, Nornickel will consider cutting capital expenditures (revising the investment programme for projects that do not have a material impact on Nornickel's development strategy)

Impact on goals: high

Source of risk: mixed

Year-on-year change in risk: stable

MARKET RISK
(lower competitiveness of Nornickel products)

Lower competitiveness of Nornickel products in the market may result in discounts to the market price and a decrease in Nornickel's income.

Key risk factors	Impact on Nornickel's development goal and strategy	Mitigation
Stricter market requirements on product quality. Competition from producers of cheaper nickel. Car makers switching from palladium to platinum as the preferred catalyst in petrol engines. Sanctions	Enhancing and monetising Nornickel's leadership in the nickel and palladium markets	To manage this risk, Nornickel: • cooperates with other market participants to monitor changes in market requirements on product quality • diversifies its metal product sales across industries and geographies • improves and diversifies its product range • seeks partnership opportunities with key producers of batteries for electric vehicles • maintains strategic partnerships with car makers based on guarantees of long-term palladium supplies • reviews market requirements on product quality • seeks partnerships with key producers of batteries for electric vehicles

Impact on goals: medium

Source of risk: mixed

Year-on-year change in risk: stable

TIGHTER ENVIRONMENTAL REGULATIONS

Environmental regulations are tightening, including environmental permitting process and stricter governmental control over environmental compliance.

Key risk factors	Impact on Nornickel's development goal and strategy	Mitigation
Domestic and international focus on environmental protection and sustainability. Extensive changes in environmental laws and regulations. For example, the environmental permitting framework was amended on 1 January 2019, introducing a single environmental permit and a new system of standards setting out technological limits. Technological restrictions related to mine water and industrial wastewater treatment	Compliance by Nornickel and Norilsk Nickel Group entities with the applicable laws, regulatory requirements, corporate standards, and business codes	To manage this risk, Nornickel: • carries out an environmental action plan to reduce emissions and discharges, as well as to ensure timely waste management • involves its employees in working groups of dedicated committees, regional ministries, and government agencies • takes part in joint projects with nature reserves located within Nornickel's regions of operation

Impact on goals: low

Source of risk: mixed

Year-on-year change in risk: stable

FX RISK

US dollar depreciation against the rouble, including due to changes in the Russian economy and the policy of the Bank of Russia, may adversely affect Nornickel's financial performance, as most of its revenues are denominated in US dollars, while most of its expenses are denominated in roubles.

Key risk factors	Impact on Nornickel's development goal and strategy	Mitigation
Increase in Russia's balance of payments, higher oil exchange prices, and lower imports. Country-specific macroeconomic changes. Change in ratings. Lower volatility in financial markets of Russia and other emerging markets	Maintaining investment-grade credit ratings. A debt portfolio with a well-balanced profile in terms of maturity, currency composition, and sources of financing	To manage this risk, Nornickel: • maintains a balanced debt portfolio with USD-denominated borrowings prevailing to ensure a natural hedge • implements regulations that limit pricing for expenditure contracts with prices fixed in foreign currencies • uses derivatives to mitigate its exposure by balancing USD-denominated cash flows from revenues and cash flows from liabilities denominated in other currencies

Impact on goals: medium

Source of risk: mixed

Year-on-year change in risk: stable

INVESTMENT RISK

Risk related to time and budget overruns, and performance targets of Nornickel's major investment projects.

Key risk factors	Impact on Nornickel's development goal and strategy	Mitigation
Changes in forecasts of ore volumes, grades and properties resulting from follow-up exploration. Delays in implementing investment projects. Further changes to budgets of investment projects. Project performance targets revised in the course of project implementation	Strategic goal: growth driven by Tier 1 assets. Developing the mining, concentration and metallurgical assets. Developing the mineral resource base and upgrading core production processes at Nornickel's Tier 1 assets	To manage this risk, Nornickel: • carries out proactive exploration and updates the mining plan (a long-term production plan) based on the progress of its major investment projects developing the mineral resource base • holds external expert audits of geological data • develops an in-house mining and geological information system • as part of the project assurance process, conducts internal (cross-functional) audits of major investment projects at each stage in their life cycle • enhances incentives for project delivery • implements an integrated system for managing capital projects • ensures that short-term, mid-term and long-term planning processes for capital projects are in sync

OPERATIONAL RISKS

Impact on goals: high
Source of risk: internal
Year-on-year change in risk: stable

WORKPLACE INJURY RISK

Failure to comply with Nornickel's health and safety (H&S) rules may result in threats to employee health and life or temporary suspension of operations, or cause property damage.

Key risk factors	Impact on Nornickel's development goal and strategy	Mitigation
Suboptimal methods of work organisation. Disruptions in technological processes. Exposure to hazardous factors. Non-compliance with H&S laws regarding obtaining licenses to operate hazardous equipment in a timely manner	Occupational health and safety	Pursuant to the Occupational Health and Safety Policy approved by the Board of Directors, Nornickel: • continuously monitors compliance with H&S requirements • improves the working conditions for its employees and contractors deployed at Nornickel's production facilities, including by implementing new technologies and labour-saving solutions, and enhancing industrial safety at production facilities • provides employees with certified state-of-the-art personal protective equipment • carries out preventive and therapeutic interventions to reduce the potential impact of harmful and hazardous production factors • regularly trains and briefs employees on health and safety, assesses their health and safety performance and conducts corporate workshops, including by deploying special simulator units • enhances methodological support for H&S functions, including through the development and implementation of corporate H&S standards • improves the risk assessment and management framework at the Group's production facilities as part of the Risk Control project • reviews the competencies of line managers at Nornickel's production facilities, develops H&S training programmes and arranges relevant training sessions • provides training for managers under the programme to determine root causes of accidents using global best practices (Root Cause and Threat Tree, Five Whys, etc.) • communicates the circumstances and causes of accidents to all Nornickel employees, conducts ad hoc safety briefings • introduces frameworks to manage technical, technological, organisational and HR changes

Impact on goals: high
Source of risk: mixed
Year-on-year change in risk: stable

INFORMATION SECURITY RISK

Potential cybercrimes may result in an unauthorised transfer, modification or destruction of information assets, disruption or reduced efficiency of Nornickel's IT services, business, technological and production processes.

Key risk factors	Impact on Nornickel's development goal and strategy	Mitigation
Growing external threats. Unfair competition. Rapid development of Nornickel's IT infrastructure and automation of technological and business processes. Unlawful acts by employees and/or third parties	Mitigation of the information security risk and risk of cyberattacks on Nornickel's process control systems	To manage this risk, Nornickel: • ensures compliance with Russian laws and regulations with respect to personal data and trade secret protection, insider information, and critical information infrastructure • implements MMC Norilsk Nickel's Information Security Policy • categorises information assets and makes information security risk assessments • raises information security awareness among employees • uses technical means to ensure information security of assets and manage access to information assets • ensures information security of process control systems • monitors threats to information security and the use of technical protection means, including vulnerability analysis, penetration testing, cryptographic protection of communication channels, controlled access to removable media, protection from confidential data leaks, and mobile device management • develops an information security framework • sets up and certifies the information security management system

— Impact on goals: medium

↗ Source of risk: internal

— Year-on-year change in risk: stable

TECHNICAL AND PRODUCTION RISK

Technical, production, or natural phenomena which, once materialised, could have a negative impact on the implementation of the production programme and cause equipment breakdown or reimbursable damage to third parties and the environment.

Key risk factors	Impact on Nornickel's development goal and strategy	Mitigation
Harsh natural and climatic conditions, including low temperatures, storm winds, and snow load. Unscheduled stoppages of core equipment caused by fixed assets' wear and tear. Release of explosive gases and flooding of mines. Collapse of buildings and structures. Infrastructure breakdowns	Efficient delivery of finished goods (metals) in line with the production programme. Timely supply of products to consumers	To manage this risk, Nornickel: • ensures proper and safe operation of its assets in line with the requirements of technical documentation, as well as technical rules and regulations as prescribed by local laws across Nornickel's geographic footprint • develops ranking criteria and criticality assessment for the Norilsk Nickel Group's key industrial assets • timely replaces its fixed assets to achieve production safety targets • implements automated systems to control equipment process flows, uses state-of-the art engineering controls • improves the maintenance and repair system • trains and educates its employees both locally, on site, and centrally, through its corporate training centres • systematically identifies and assesses technical and production risks, implements a programme of organisational and technical measures to mitigate relevant risks • improves the system of stationary gas analysers, provides employees with portable gas analysers • develops the technical and production risk management system, including by engaging independent experts to assess the system's performance and completeness of data • develops and tests business continuity plans which set out a sequence of actions to be taken by Nornickel's personnel and internal contractors in case of technical and production risk causing maximum damage. These plans are aimed at the earliest resumption of Nornickel's production operations • engages, on an annual basis, independent surveyors to analyse Nornickel's exposure to disruptions in the production and logistics chain and make assessments of related risks. In 2019, insurance was taken out against key technical and production risks as part of the property and business interruption (downtime) insurance programme, with emphasis on best risk management practices in the mining and metals industry

— Impact on goals: medium

↗ Source of risk: internal

— Year-on-year change in risk: stable

POWER OUTAGES AT PRODUCTION AND SOCIAL FACILITIES IN THE NORILSK INDUSTRIAL DISTRICT

Failure of core equipment at generating facilities and transmission grid facilities may result in power, heat and water shortages at key production facilities of Nornickel's Polar Division and social facilities in the Norilsk Industrial District.

Key risk factors	Impact on Nornickel's development goal and strategy	Mitigation
Isolation of the Norilsk Industrial District's power grid from the national grid (Unified Energy System of Russia). Harsh natural and climatic conditions, including low temperatures, storm winds, and snow load. Length of power, heat and gas transmission lines. Wear and tear of core production equipment and grid infrastructures	Efficient delivery of finished goods (metals) in line with the production programme. Timely supply of products to consumers. Social responsibility: comfort and safety of people living in Nornickel's regions of operation	To manage this risk, Nornickel: • operates and maintains generating and mining assets as required by the technical documentation, industry rules and standards, and applicable laws • timely constructs and launches transformer facilities, timely replaces transmission towers • timely executes retrofits (replaces equipment) of TPP and HPP power units • timely upgrades and repairs trunk gas and condensate pipelines and gas distribution networks

Impact on goals: medium
Source of risk: mixed
Year-on-year change in risk: stable

COMPLIANCE RISK

The risk of legal liability and/or legal sanctions, significant financial losses, suspension of production, revocation/suspension of a licence, loss of reputation, or other adverse effects arising from Nornickel's non-compliance with the applicable laws, regulations, instructions, rules, standards or codes of conduct.

Key risk factors	Impact on Nornickel's development goal and strategy	Mitigation
Discrepancies in rules and regulations. Considerable powers and a high degree of discretion exercised by supervision agencies.	Compliance by Nornickel and Norilsk Nickel Group entities with the applicable laws, regulatory requirements, corporate standards, and business codes	To manage this risk, Nornickel: • ensures its compliance with the applicable laws • defends its interests during regulatory inspections and administrative proceedings • uses pre-trial and trial remedies to defend its interests • ensures that agreements signed by Nornickel contain clauses safeguarding its interests • implements anti-corruption, anti-money laundering, counter-terrorist financing, and counter-proliferation financing initiatives • takes actions to prevent unlawful use of insider information and market manipulation • ensures timely and reliable information disclosures as required by the applicable Russian and international laws • has its employees attend insider information management and anti-corruption training courses • ensures that all employees receive anti-corruption induction briefing. In addition, the following internal documents have been developed and approved: • Regulations on Antitrust Compliance with Respect to Economic Concentration in the Russian Federation • Procedure for Interaction between MMC Norilsk Nickel Units and Norilsk Nickel Group Entities in Preparing Securities Market Disclosures. Procedure for Maintaining and Accessing MMC Norilsk Nickel 's Permit Document Register

Impact on goals: medium
Source of risk: mixed
Year-on-year change in risk: increased

SOCIAL RISK

Tensions may escalate among the workforce due to the deterioration of social and economic conditions in Nornickel's regions of operation.

Key risk factors	Impact on Nornickel's development goal and strategy	Mitigation
Headcount/staff composition optimisation projects. Rejection of Nornickel's values by individual employees and/or third parties. Limited ability to perform annual wage indexation. Dissemination of false and inaccurate information about Nornickel's plans and operations among the Group's employees. Reallocation of funds originally intended for social programmes and charity	Social responsibility: • partnering with regional and local authorities to develop a social infrastructure that supports a safe and comfortable living environment for local communities • facilitating the employees' professional and cultural development and building up talent pools across Nornickel's regions of operation • implementing long-term charity programmes and projects	To manage this risk, Nornickel: • strictly adheres to the terms and conditions of collective bargaining agreements between the Group entities and their employees. In 2018, MMC Norilsk Nickel signed a new collective bargaining agreement for 2018–2021 • actively interacts with regional authorities, municipalities and civil society institutions • fulfils its social obligations under public private partnership agreements • implements the World of New Opportunities charity programme aimed at supporting and promoting regional civil initiatives • implements the Norilsk Upgrade project to introduce innovative solutions for sustainable social and economic development of the region • implements regular sociological monitoring across its operations • surveys Norilsk residents on living standards, employment, migration trends, and general social sentiment to identify major issues • implements social projects and programmes aimed at supporting employees and their families, as well as Nornickel's former employees • maintains dialogues with stakeholders and conducts questionnaire surveys while preparing the Group's public sustainability reports • provides adequate social support to redundant staff under Kola MMC's social programmes and develops the Social and Economic Development Strategy of the Pechengsky District

Impact on goals: medium

Source of risk: mixed

Year-on-year change in risk: stable

CHANGES IN LEGISLATION AND LAW ENFORCEMENT PRACTICES

Changes in legislation may cause financial damages (extra costs to ensure compliance with stricter requirements, a heavier tax and levy burden, etc.). Changes in law enforcement and judicial practices, uncertain legal treatment of certain matters may hamper Nornickel's business, entail extra expenses and delay or raise the cost of its investment projects.

Key risk factors	Impact on Nornickel's development goal and strategy	Mitigation
Unstable legal environment (including lack of codified/uniform regulations in various areas). Frequent changes to legislation. Complicated geopolitical situation. Lack of treasury funds (the government needs to boost its tax and other proceeds)	Compliance by Nornickel and Norilsk Nickel Group entities with the applicable laws, regulations, corporate standards, and business codes	To manage this risk, Nornickel: • continuously monitors changes in legislation and law enforcement practices across all of its business areas • conducts legal review of draft laws and regulations as well as relevant amendments • participates in discussions of draft laws and regulations, both publicly and as part of expert groups • engages its employees in relevant professional and specialist training programmes, corporate workshops, and conferences • cooperates with government agencies to ensure that new laws and regulations take into account Nornickel's interests

CLIMATE CHANGE RISKS

Impact on goals: medium

Source of risk: external

Year-on-year change in risk: stable

LACK OF WATER RESOURCES

Water shortages in storage reservoirs of Nornickel's hydropower facilities may result in failure to achieve required water pressure at HPP turbines leading to limited power production and in drinking water shortages in Norilsk.

Key risk factors	Impact on Nornickel's development goal and strategy	Mitigation
Abnormal natural phenomena (drought) caused by climate change	Efficient delivery of finished goods (metals) in line with the production programme. Timely supply of products to consumers. Social responsibility: comfort and safety of people living in Nornickel's regions of operation	To manage this risk, Nornickel: • implements a closed water circuit to reduce water withdrawal from external sources • carries out regular hydrological observations to forecast water levels in rivers and other water bodies • cooperates with the Federal Service for Hydrometeorology and Environmental Monitoring (Rosgidromet) on setting up permanent hydrological and meteorological monitoring stations in order to improve the accuracy of water level forecasts for major rivers across Nornickel's regions of operation • dredges the Norilskaya River and prepares its production facilities for reducing their electricity consumption in an emergency case • refurbishes its hydropower plants to increase power output through improving the hydroelectric units' performance (implementation period: 2012–2021)

Impact on goals: medium

Source of risk: external

Year-on-year change in risk: stable

PERMAFROST THAWING

Loss of bearing capacity by pile foundation beds may lead to deformation and collapse of buildings and structures.

Key risk factors	Impact on Nornickel's development goal and strategy	Mitigation
Climate change, average annual temperature increase over the last 15 to 20 years. Increased depth of seasonal permafrost thawing	Efficient delivery of finished goods (metals) in line with the production programme. Timely supply of products to consumers. Social responsibility: comfort and safety of people living in Nornickel's regions of operation	To manage this risk, Nornickel: • regularly monitors the condition of foundation beds underneath buildings and structures built on permafrost • performs geodetic monitoring of the movement of buildings • monitors soil temperature in buildings' foundations • monitors the compliance of its facilities with operational requirements for crawl spaces • develops recommendations and corrective action plans to ensure safe operating conditions for buildings and structures

Shareholder Information

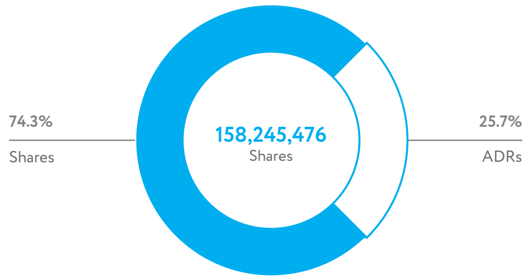
SHARE CAPITAL

Nornickel's **authorised capital** is made up of 158,245,476 ordinary shares with a par value of RUB 1 each. No preferred shares are issued. The Company's capitalisation at the end of 2019 increased by 62.6% year-on-year and amounted to USD 48.3 bn.

Nornickel **shares** have been trading on the Russian securities market since 2001 and are included in the Blue Chip Index of the Moscow Exchange (ticker symbol: GMKN) ranking among the most liquid instruments in the Russian securities market.

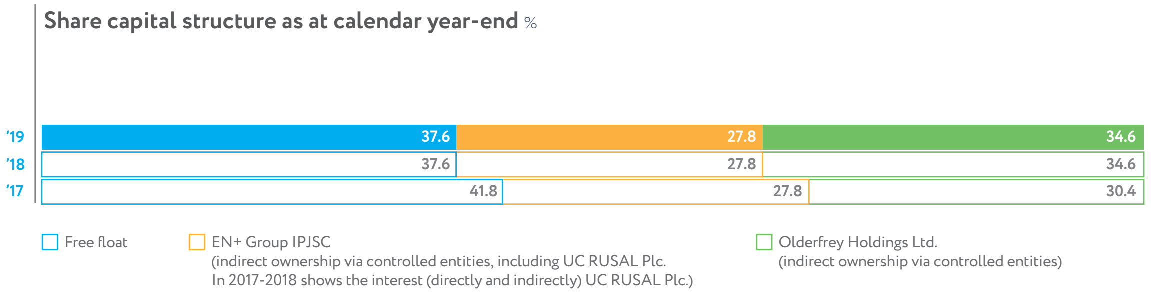
In 2001, Nornickel issued **American depositary receipts (ADRs)** to represent its shares. Currently, shares are convertible into ADRs at a ratio of 1:10. Depositary services for the ADR programme and custody services are provided by the Bank of New York Mellon and VTB Bank, respectively. ADRs are traded in the electronic trading system of OTC markets of the London Stock Exchange (ticker symbol: MNOD), on the US OTC market (ticker symbol: NILSY), and on other exchanges. As at 31 December 2019, the total number of ADRs representing MMC Norilsk Nickel shares was 406,485,700 or 25.7% of the authorised capital. The number of ADRs traded on stock exchanges is not constant, as depositary receipt holders may convert their securities into shares and vice versa.

Share and ADR split at the end of 2019

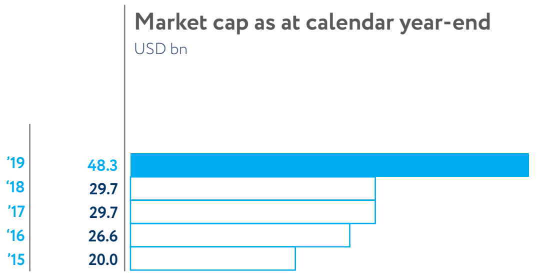


At the end of 2019
Nornickel capitalisation amounted

USD 48 bn



In the reporting period, EN+ GROUP PLC acquired 1.98% of the voting shares in UC RUSAL Plc, bringing its voting share ownership in UC RUSAL Plc to 50.1%. UC RUSAL Plc held 0.0006% of shares in Nornickel directly and 27.8238% indirectly (via indirect control over Aktivium Holding B.V., which held 27.8238% of the voting shares in Nornickel). In 2019, EN+ GROUP PLC and Aktivium Holding B.V. were registered in Russia as EN+ GROUP International Public Joint-Stock Company (EN+ GROUP IPJSC) and International Limited Liability Company AKTIVIUM (MK AKTIVIUM), respectively.



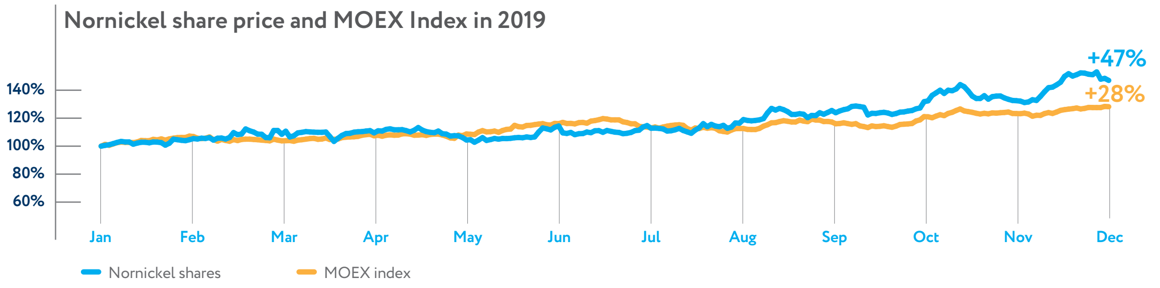
Source: Bloomberg

As of the end of 2019, the largest shareholders' stakes remained the same, with the stake of Olderfrey Holdings Ltd totalling 34.6%, and the stake of EN+ Group IPJSC (formerly UC RUSAL Plc) totalling 27.8%. 37.6% of shares and ADRs are in free float or are owned by institutional and private investors based in Russia or USA, as well as in European, Asian, and other countries.

Share price and trading volume on the Moscow Exchange

Period	Share price, RUB			Trading volume, mln shares	Market cap as at the period end, RUB bn
	low	high	as at the period end		
2019	12,993	19,890	19,102	42	3,023
First quarter	12,993	14,594	13,720	10.9	2,171
Second quarter	13,358	14,868	14,308	8.8	2,264
Third quarter	14,146	16,686	16,686	10.6	2,640
Fourth quarter	15,894	19,890	19,102	11.8	3,023
2018	9,170	13,349	13,039	46	2,063
2017	7,791	11,610	10,850	49	1,717
2016	8,050	11,070	10,122	48	1,602
2015	8,590	12,106	9,150	58	1,448

Source: Nornickel's calculations based on the Moscow Exchange price



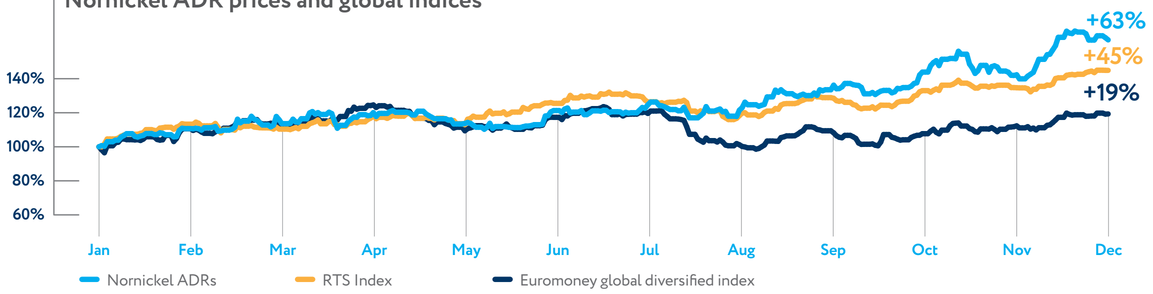
Source: Bloomberg

ADR price and trading volume on the OTC market of the LSE

Period	ADR price, USD			Trading volume, mln shares	Market cap as at the period end, USD mln
	low	high	as at the period end		
2019	18.8	31.5	30.6	337	48,344
First quarter	18.8	22.7	21.1	88	33,421
Second quarter	20.7	23.0	22.7	82	35,938
Third quarter	22.0	25.7	25.6	87	40,511
Fourth quarter	24.5	31.5	30.6	80	48,344
2018	14.9	21.2	18.8	491	29,687
2017	13.0	20.2	18.7	738	29,655
2016	10.4	18.2	16.8	647	26,569
2015	12.4	21.6	12.7	722	20,042

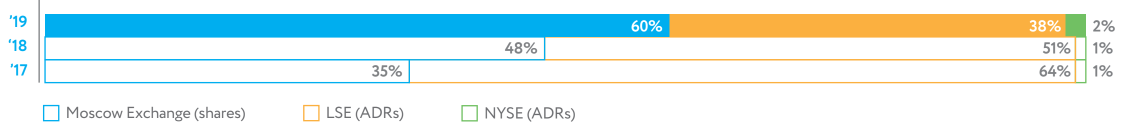
Source: Nornickel's calculations based on the LSE price

Nornickel ADR prices and global indices



Source: Bloomberg

Share of Nornickel securities on the major exchanges



For more details on trading performance, please see the Interactive Database section of the website.

REGISTRAR

Independent Registrar Company acted as Nornickel's registrar before 5 February 2019. Following its reorganisation completed on 4 February 2019, Independent Registrar Company became part of the IRC – R.O.S.T. Group. As a legal successor of Independent Registrar Company, IRC – R.O.S.T. has maintained Nornickel's shareholder register and provided a full range of registrar services from 5 February 2019. As of 31 December 2019, IRC – R.O.S.T. acts as Nornickel's registrar.

The Shareholder's Personal Account service developed by the registrar, has enabled shareholders, including those owning shares via nominal holders, to participate in general meetings via e-voting ballots. The Personal Account provides registered shareholders with the following benefits:

1/ Viewing of shareholder account information and details
2/ Electronic document exchange with the registrar (e.g. sending requests, receiving statements from the register and/or shareholder account statements)
3/ Text and e-mail notifications of any instructions regarding registered shareholders' accounts, viewing details of the documents received
4/ Viewing information on dividends accrued and the payment history
5/ Preparation of registered shareholder's instructions

To get access to the Personal Account, shareholders need to contact an IRC – R.O.S.T. office. Individual shareholders with a verified Public Services Portal account can access their personal account remotely. The access procedure for the Shareholder's Personal Account is detailed on the registrar's website.

SHAREHOLDER RIGHTS

All shareholders, including minority and institutional shareholders, enjoy equal rights and treatment in their relations with Nornickel, in particular the rights to:

1/ participate in General Meetings of Shareholders and vote on all matters within their competence, unless otherwise provided for by Federal Law No. 208-FZ On Joint Stock Companies dated 26 December 1995
2/ receive dividends if the General Meeting of Shareholders passes the relevant resolution
3/ receive part of Nornickel's property in case of its liquidation
4/ have access to information about Nornickel's operations.

Nornickel's Regulations on the General Meeting of Shareholders detail procedures to convene, prepare, and conduct its general meetings.

The Annual General Meeting of Shareholders is held once a year, between on April 1st and on June 30th after of the financial year. General Meetings of Shareholders other than the Annual General Meeting of Shareholders are considered extraordinary meetings. They are convened as per resolution of the Board of Directors at its discretion, or at the request of the Audit Commission, Nornickel's auditor, or shareholders owning at least 10% of Nornickel voting shares as at the date of the request.

Shareholders can exercise other rights as prescribed by the federal laws On Joint Stock Companies and On the Securities Market, as well as other regulations of the Russian Federation.

DIVIDEND POLICY

MMC Norilsk Nickel's Dividend Policy aims to balance the interests of the Company and its shareholders, enhance the Company's investment case, boost its market cap, and protect shareholder rights.

The Company's Regulations on the Dividend Policy approved by the Board of Directors seek to ensure the transparency of the mechanism for determining the amount of dividend and the dividend payout procedure.

When determining dividends, MMC Norilsk Nickel factors in the cyclical nature of the metals market and the need to maintain a high level of creditworthiness. As a result, the dividend amount may change depending on the Company's operating profit and leverage.

The decision to pay dividends is made by the General Meeting of Shareholders based on recommendations of the Board of Directors. The General Meeting of Shareholders determines the dividend amount and record date, which, as per the Russian law, shall be set no earlier than 10 days before and no later than 20 days after the General Meeting of Shareholders.

Dividends to a nominee shareholder listed on the shareholder register shall be paid within 10 business days, while dividends to other persons listed on the shareholder register shall be paid within 25 business days after the record date.

DIVIDEND REPORT

Individuals/entities whose rights to shares are recorded in the shareholder register are paid dividends by the registrar, IRC – R.O.S.T., upon Nornickel's instruction.

Individuals/entities whose rights to shares are recorded by a nominee shareholder are paid dividends via their nominee shareholder.

Any person who has not received the declared dividend due to the fact that their accurate address or banking details were not available to the Company or the registrar as required, or due to any other delays on the part of the creditor, may, in accordance with Clause 9 of Article 42 of Federal Law No. 208-FZ On Joint Stock Companies dated 26 December 1995, request payment of unpaid dividend within three years from the date of the resolution to pay dividends.

On 26 September 2019, the Extraordinary General Meeting of Shareholders approved a dividend of RUB 883.93 per share (about USD 13.27 at the exchange rate of the Bank of Russia as at 20 August 2019, the date of the Board of Directors' recommendation) for the first six months of 2019.

On 16 December 2019, the Extraordinary General Meeting of Shareholders approved a dividend of RUB 604.09 per share (about USD 9.48 at the exchange rate of the Bank of Russia as at 11 November 2019, the date of the Board of Directors' recommendation) for the first nine months of 2019.

On 7 April 2020, the Company's Board of Directors recommended that the General Meeting of Shareholders approve a dividend of RUB 557.2 per share (about USD 7.29) for FY2019.

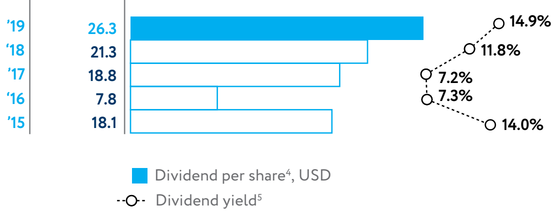
Dividend history[1]

Period	Declared dividend		Dividend per share	
	RUB mln	USD mln[2]	RUB	USD[2]
Total for 2019	323,647	4,754	1,488	22.75
FY2019[3]	88,174	1,154	557	7.29
9M 2019	95,595	1,500	604	9.48
6M 2019	139,878	2,100	884	13.27
Total for 2018	248,214	3,739	1,569	23.63
FY2018	125,413	1,939	793	12.25
6M 2018	122,802	1,800	776	11.37
Total for 2017	131,689	2,162	832	13.66
FY2017	96,210	1,562	608	9.87
6M 2017	35,479	600	224	3.79
Total for 2016	140,894	2,339	890	14.78
FY2016	70,593	1,239	446	7.83
9M 2016	70,301	1,100	444	6.95
Total for 2015	135,642	2,148	857	13.57
FY2015	36,419	548	230	3.46
9M 2015	50,947	800	322	5.06
6M 2015	48,276	800	305	5.06

Dividends paid

Year[4]	Total dividends paid	
	RUB mln	USD mln
2019	265,233	4,166
2018	218,873	3,369
2017	176,246	2,971
2016	86,712	1,232
2015	154,227	2,859

Dividend yields



Dividend yield for 2019 amounted

14.9%

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[1] Earlier dividend history is available at our website.
[2] Calculated at the exchange rate of the Bank of Russia as at the date of the Board of Directors' meeting.
[3] On 7 April 2020, the Company's Board of Directors recommended that the Annual General Meeting of Shareholders approve a dividend for FY2019.
[4] Dividends paid in the calendar year.
[5] Recommended dividend to average ADR price (Bloomberg) for the calendar year.

TAXATION

Income from securities is taxable pursuant to the applicable tax laws of the Russian Federation[1].

Item	Income from securities transactions	Interest income on securities	Dividend income on securities
Individuals			
Residents	13%[2]	13%	13%
Non-residents	30%[3]	30%	15%
Legal entities			
Russian entities	20%[2]	20%	13%[4]
Non-resident entities	20%[5]	20%	15%

Tax treatment of income from securities

Reduced tax rates or exemptions may apply to individuals and foreign entities who are not tax residents of Russia pursuant to international double tax treaties. Starting from 1 January 2017, in order to apply for tax benefits under international double tax treaties, foreign entities must confirm their permanent residence in a state which has a double tax treaty signed with Russia, and also provide the income paying tax agent with a document confirming the entity's right to receive such income (Clause 1, Article 312 of the Russian Tax Code). Should the entity fail to provide such confirmation by the date of the payout, the Russian tax agent shall withhold the tax at the standard rates stipulated by Clauses 2 and 3, Article 284 of the Russian Tax Code.

Dividend tax formula[6]

$$AT = P \times TR \times (D1 - D2)$$

where:

AT — amount of tax to be withheld from the income of the recipient of dividends

P — proportion of the dividend amount payable to one recipient to the total dividend amount to be distributed

TR — tax rate for Russian entities (0% or 13%)

D1 — dividend amount to be distributed among all recipients

D2 — dividend amount[7] received by the entity paying dividends, provided that previously these amounts were not included in the taxable income

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[1] Chapter 23 (Personal Income Tax) and Chapter 25 (Corporate Income Tax) of the Russian Tax Code.

[2] Or 0% if by the selling date the Company shares have been held for more than five years and the requirements for the share of real estate in the Company's assets as outlined in paragraph 2, Article 284.2 of the Russian Tax Code have been met.

[3] If the Company shares are sold in Russia. A 0% rate is applied if by the selling date the shares have been held for more than five years and the requirements for the share of real estate in the Company's assets as outlined in paragraph 2, Article 284.2 of the Russian Tax Code have been met.

[4] Or 0%, if as at the date of the dividend payout resolution a Russian entity has been owning an interest of 50% (and more) in the authorised capital of the entity paying dividends, for 365 days (and more).

[5] If the income is classified as income of a foreign entity from sources in the Russian Federation in accordance with Clause 1, Article 309 of the Russian Tax Code.

[6] The formula is not applicable to dividends paid to foreign entities and/or individuals who are not tax residents of Russia.

[7] Excluding the dividend amount eligible for a zero tax rate pursuant to Subclause 1, Clause 3, Article 284 of the Russian Tax Code.

DEBT INSTRUMENTS

CREDIT RATINGS

On 12 February 2019, Moody's upgraded Nornickel's credit rating to Baa2 with a Stable outlook following Russia's sovereign credit rating upgrade to Baa3 investment-grade level with a Stable outlook and country ceiling for foreign currency debt rising to Baa2.

A detailed overview of Nornickel's debt instruments is available in the Investors section of the Company's website.

Therefore, as of the end of 2019, Nornickel held investment grade credit ratings from all three major international rating agencies and Russian Expert RA:

1/ Fitch
BBB–/Stable

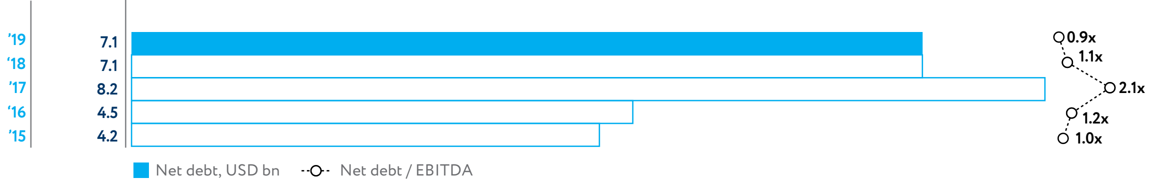
2/ Standard & Poor's
BBB–/Stable

3/ Moody's
Baa2/Stable

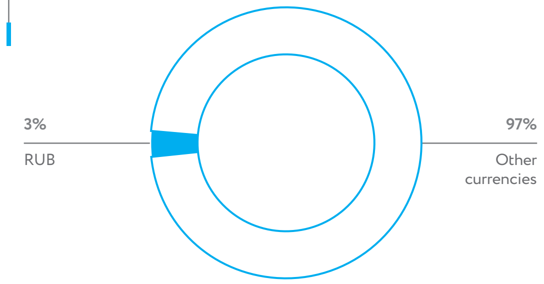
4/ Expert RA
ruAAA/Stable

DEBT PORTFOLIO MANAGEMENT

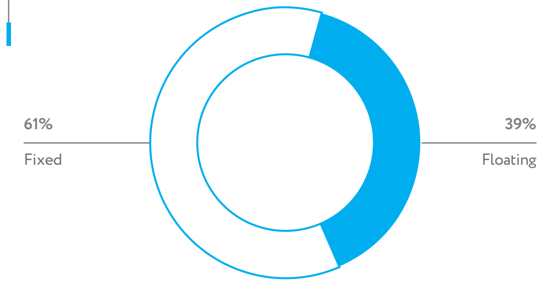
Debt
USD mln



Debt portfolio by currency[8]



Debt portfolio by interest rate[8]



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[8] RUB loans with currency swap applied disclosed as USD loans at the rate of swap initiation

BONDS

In late November 2018, Nornickel registered a 30-year exchange-traded bond programme on the Moscow Exchange for up to RUB 300 bn (or its equivalent in a foreign currency). In 2019, as part of the programme, we successfully placed a 7.2% RUB 25 bn bond maturing in 2024.

In 2019, Nornickel successfully placed a 3.375% USD 750 mln Eurobond maturing in 2024 recording the lowest coupon ever for the Company's Eurobond issues.

As of the end of 2019, Nornickel had five Eurobond issues outstanding for a total of USD 4.25 bn and two rouble exchange-traded bonds for a total of RUB 40 bn.

Eurobonds

Instrument	Eurobonds				
	2020 (LPN)	2022 (LPN)	2022 (LPN)	2023 (LPN)	2024 (LPN)
Issuer	MMC Finance D.A.C.				
Offering date	28.10.2013	08.06.2017	14.10.2015	11.04.2017	28.10.2019
Maturity date	28.10.2020	08.04.2022	14.10.2022	11.04.2023	28.10.2024
Issue size, USD mln	1,000	500	1,000	1,000	750
Coupon rate, %	5.550	3.849	6.625	4.100	3.375
Coupon dates	28 October / 28 April	08 October / 08 April	14 October / 14 April	11 October / 11 April	28 October / 28 April
Issue rating (F/M/S)	BBB–/Baa2/ BBB–	BBB–/–/BBB–	BBB–/Baa2/ BBB–	BBB–/–/BBB–	BBB–/Baa2/ BBB–

Rouble bonds

Instrument	Exchange-traded bonds, BO-05	Exchange-traded bonds, BO-001P-01
Issuer	PJSC MMC NORILSK NICKEL	
ISIN	RU000A0JW5C7	RU000A100VQ6
Offering date	19.02.2016	01.10.2019
Maturity date	06.02.2026	24.09.2024
Issue size, RUB bn	15	25
Coupon rate, %	11.60	7.20
Coupon dates	Every 182 days starting from the offering date	

INVESTOR RELATIONS

Nornickel maintains an active dialogue with a wide universe of international and Russian investors, seeking to follow global best practices in making mandatory disclosures. To make disclosures more meaningful and comprehensive, Nornickel uses an array of disclosure tools, including press releases, presentations, annual and sustainability reports, corporate action notices, and news feeds. With Nornickel's growth story appealing to both Russian and international investors, the Group provides parallel disclosure in Russian and in English languages via a disclosure service authorised by the UK regulator.

Nornickel's quarterly disclosures via its website include its operating performance, quarterly issuer reports, financial statements under the Russian Accounts Standards (RAS), and lists of affiliates. Financial statements in accordance with International Financial Reporting Standards (IFRS) are released on a semi-annual basis. IFRS disclosures are followed by webcasts and conference calls with the Group's senior management and one-on-one meetings with analysts. Nornickel also holds an annual Investor Day to share its corporate long-term strategy updates. To maintain strong investor relations, the Group makes extensive use of various communication tools, including conference speaking opportunities, road shows, site visits for investors, etc.[1]

During 2019, the Investor Relations Department continued to actively engage with investors, with about 300 one-on-one meetings held over the year.

In its IR communications, Nornickel places a particular emphasis on sustainability, with 25 meetings with investors centred around ESG (environmental, social and governance) matters and climate change. In 2017, in line with best practices, Nornickel set up a dedicated ESG Strategy section on its website highlighting all relevant information on environmental and sustainability matters. The section also features an ESG databook summarising the Group's current and historical sustainability performance since 2010. Nornickel also maintains a dialogue with major global and Russian ESG agencies.

Over the past several years, the Group has achieved a considerable progress on ESG, as reflected in its rating upgrades. In addition, a number of major European investors have cited the Group's improved ESG performance as the main reason behind their decision to re-invest in Nornickel shares.

Nornickel's sustainability highlights

Agency	Current rating	Date
FTSE4Good Emerging Index	Inclusion in the index is confirmed. Score at 3.0 (out of 5)	June 2019
ISS	Upgraded environmental score and social score to 2, and reaffirmed governance score – 4 (where 1 is low risk, and 10 is high risk). ESG rating updated to «C» medium.	October 2019
Robeco SAM	Upgraded to 37 (vs 27 in 2018)	September 2019
MSCI ESG	Reaffirmed at B	December 2019
Sustainalytics	Downgrade to 67 (vs 69 in 2018)	April 2019

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[1] Information about upcoming events is posted in the IR Calendar on the corporate website.

FRS

Financial statements

MINING AND METALLURGICAL COMPANY NORILSK NICKEL

ONSOLIDATED FINANCIAL STATEMENTS FOR THE YEARS ENDED 31 DECEMBER 2019, 2018 AND 2017

Index

STATEMENT OF MANAGEMENT'S RESPONSIBILITIES FOR THE PREPARATION AND APPROVAL OF THE CONSOLIDATED FINANCIAL STATEMENTS FOR THE YEARS ENDED 31 DECEMBER 2019, 2018 AND 2017

The following statement, which should be read in conjunction with the auditors' responsibility stated in the auditors' report set out on pages 2-5, is made with a view to distinguishing the respective responsibilities of management and those of the auditors in relation to the consolidated financial statements of Public Joint Stock Company "Mining and Metallurgical Company "Norilsk Nickel" and its subsidiaries (the "Group").

Management of the Group is responsible for the preparation of the consolidated financial statements that present fairly in all material aspects the consolidated financial position of the Group at 31 December 2019, 2018 and 2017 and consolidated statements of income, comprehensive income, cash flows and changes in equity for the years ended 31 December 2019, 2018 and 2017, in accordance with International Financial Reporting Standards ("IFRS").

In preparing the consolidated financial statements, management is responsible for:

- selecting suitable accounting principles and applying them consistently
- making judgements and estimates that are reasonable and prudent
- stating whether IFRS have been followed, subject to any material departures disclosed and explained in the consolidated financial statements; and
- preparing the consolidated financial statements on a going concern basis, unless it is inappropriate to presume that the Group will continue in business for the foreseeable future.

Management, within its competencies, is also responsible for:

- designing, implementing and maintaining an effective system of internal controls throughout the Group
- maintaining statutory accounting records in compliance with local legislation and accounting standards in the respective jurisdictions in which the Group operates
- taking steps to safeguard the assets of the Group; and
- detecting and preventing fraud and other irregularities.

The consolidated financial statements for the years ended 31 December 2019, 2018 and 2017 were approved by:

President
V.O. Potanin

Senior Vice President –
Chief Financial Officer
S.G. Malyshev

Moscow, Russia
26 February 2020

INDEPENDENT AUDITORS' REPORT

TO THE SHAREHOLDERS AND BOARD OF DIRECTORS OF PJSC "MINING AND METALLURGICAL COMPANY NORILSK NICKEL"

Opinion

We have audited the consolidated financial statements of PJSC "Mining and Metallurgical Company Norilsk Nickel" (the "Company") and its subsidiaries (the "Group"), which comprise the consolidated statements of financial position as at 31 December 2019, 2018 and 2017, the consolidated income statements, the consolidated statements of comprehensive income, changes in equity and cash flows for the years then ended, and notes, comprising significant accounting policies and other explanatory information.

In our opinion, the accompanying consolidated financial statements present fairly, in all material respects, the consolidated financial position of the Group as at 31 December 2019, 2018 and 2017, and its consolidated financial performance and its consolidated cash flows for the years then ended in accordance with International Financial Reporting Standards (IFRS).

Basis for Opinion

We conducted our audit in accordance with International Standards on Auditing (ISAs). Our responsibilities under those standards are further described in the Auditors' Responsibilities for the Audit of the Consolidated Financial Statements section of our report. We are independent of the Group in accordance with the independence requirements that are relevant to our audit of the consolidated financial statements in the Russian Federation and with the International Code of Ethics for Professional Accountants (including International Independence Standards), and we have fulfilled our other ethical responsibilities in accordance with the requirements in the Russian Federation and the International Code of Ethics. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

Key Audit Matters

Key audit matters are those matters that, in our professional judgment, were of most significance in our audit of the consolidated financial statements of the current period. These matters were addressed in the context of our audit of the consolidated financial statements as a whole, and in forming our opinion thereon, and we do not provide a separate opinion on these matters.

Audited entity: PJSC "Mining and Metallurgical Company Norilsk Nickel"	Independent auditor: JSC "KPMG", a company incorporated under the Laws of the Russian Federation, a member firm of the KPMG network of independent member firms affiliated with KPMG International Cooperative ("KPMG International"), a Swiss entity
Registration No. in the Unified State Register of Legal Entities 1028400000298.	Registration No. in the Unified State Register of Legal Entities 1027700125628
Dudinka, Krasnoyarsk region, Russian Federation	Member of the Self-regulatory Organization of Auditors Association "Sodruzhestvo" (SRO AAS). The Principal Registration Number of the Entry in the Register of Auditors and Audit Organisations: No. 12006020351

Implementation of the SAP ERP in the Polar division

The key audit matter	How the matter was addressed in our audit
Starting from 1 January 2019 SAP ERP was implemented in the Polar division. The Polar division represents mining and metallurgy operations of GMK Group segment and a major production facility of the Group.	We understood and evaluated the SAP ERP implementation project governance and data migration plan. We involved KPMG IT specialists to assist us in evaluating the design, implementation, and operating effectiveness of certain IT general controls over the migration. We evaluated design and implementation of process level controls over migration of financial data at 1 January 2019 and in addition, we tested accuracy and completeness of migrated data substantially as at 1 January 2019 by comparison to respective information as at 31 December 2018 in legacy systems.
During transition to SAP ERP system IT general and process level controls were updated in accordance with the specificity of the new IT environment.	We performed a walkthrough analysis for significant financial accounting processes that had been updated in relation to the activity of the Polar division. We evaluated design and implementation of controls applied at Group level to address risks arisen from the SAP ERP implementation in relation to the financial reporting process of the Polar division.
Given the significance of the operations of the Polar division to the Group, the increased data integrity risks inherent to migration of financial information as at 1 January 2019 and risks in respect of maintenance of accounting records throughout the reporting period, we consider implementation of SAP ERP in relation to the financial reporting process of the major production facility to be a key audit matter.	We decreased our materiality when performing our audit procedures in respect of transactions in the Polar division for the year ended 31 December 2019 resulting in further detailed substantive testing to specifically address the significant risks over accounting records.

Other Information

Management is responsible for the other information. The other information comprises the Financial Overview (MD&A) (but does not include the consolidated financial statements and our auditors' report thereon), which we obtained prior to the date of this auditors' report, and the information included in other sections of Annual Report for 2019, which is expected to be made available to us after that date.

Our opinion on the consolidated financial statements does not cover the other information and we do not and will not express any form of assurance conclusion thereon.

In connection with our audit of the consolidated financial statements, our responsibility is to read the other information identified above and, in doing so, consider whether the other information is materially inconsistent with the consolidated financial statements or our knowledge obtained in the audit, or otherwise appears to be materially misstated.

If, based on the work we have performed on the other information that we have obtained prior to the date of this auditors' report, we conclude that there is a material misstatement of this other information, we are required to report that fact. We have nothing to report in this regard.

Responsibilities of Management and Those Charged with Governance for the Consolidated Financial Statements

Management is responsible for the preparation and fair presentation of the consolidated financial statements in accordance with IFRS, and for such internal control as management determines is necessary to enable the preparation of consolidated financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the consolidated financial statements, management is responsible for assessing the Group's ability to continue as a going concern, disclosing, as applicable, matters related to going concern and using the going concern basis of accounting unless management either intends to liquidate the Group or to cease operations, or has no realistic alternative but to do so.

Those charged with governance are responsible for overseeing the Group's financial reporting process.

Auditors' Responsibilities for the Audit of the Consolidated Financial Statements

Our objectives are to obtain reasonable assurance about whether the consolidated financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditors' report that includes our opinion. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with ISAs will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these consolidated financial statements.

As part of an audit in accordance with ISAs, we exercise professional judgment and maintain professional scepticism throughout the audit. We also:

- Identify and assess the risks of material misstatement of the consolidated financial statements, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for our opinion. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control
- Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Group's internal control
- Evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by management
- Conclude on the appropriateness of management's use of the going concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the Group's ability to continue as a going concern. If we conclude that a material uncertainty exists, we are required to draw attention in our auditors' report to the related disclosures in the consolidated financial statements or, if such disclosures are inadequate, to modify our opinion. Our conclusions are based on the audit evidence obtained up to the date of our auditors' report. However, future events or conditions may cause the Group to cease to continue as a going concern
- Evaluate the overall presentation, structure and content of the consolidated financial statements, including the disclosures, and whether the consolidated financial statements represent the underlying transactions and events in a manner that achieves fair presentation
- Obtain sufficient appropriate audit evidence regarding the financial information of the entities or business activities within the Group to express an opinion on the consolidated financial statements. We are responsible for the direction, supervision and performance of the group audit. We remain solely responsible for our audit opinion

We communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that we identify during our audit.

We also provide those charged with governance with a statement that we have complied with relevant ethical requirements regarding independence, and communicate with them all relationships and other matters that may reasonably be thought to bear on our independence, and where applicable, related safeguards.

From the matters communicated with those charged with governance, we determine those matters that were of most significance in the audit of the consolidated financial statements of the current period and are therefore the key audit matters. We describe these matters in our auditors' report unless law or regulation precludes public disclosure about the matter or when, in extremely rare circumstances, we determine that a matter should not be communicated in our report because the adverse consequences of doing so would reasonably be expected to outweigh the public interest benefits of such communication.

The engagement partner on the audit resulting in this independent auditors' report is:

Natalia Velichko

JSC "KPMG"
Moscow, Russia
26 February 2020

КПМГ
KPMG
ОГРН 1027700125628

CONSOLIDATED INCOME STATEMENT FOR THE YEARS ENDED 31 DECEMBER 2019, 2018 AND 2017

US Dollars million

		For the year ended 31 December		
	Notes	2019	2018	2017
Revenue				
Metal sales	7	12,851	10,962	8,415
Other sales		712	708	731
Total revenue		13,563	11,670	9,146
Cost of metal sales	8	(4,509)	(4,505)	(3,939)
Cost of other sales		(684)	(622)	(632)
Gross profit		8,370	6,543	4,575
General and administrative expenses	9	(938)	(890)	(788)
Selling and distribution expenses	10	(117)	(92)	(75)
Impairment of non-financial assets	15	24	(50)	(227)
Other operating expenses, net	11	(303)	(95)	(362)
Operating profit		7,036	5,416	3,123
Foreign exchange gain/(loss), net		694	(1,029)	159
Finance costs, net	12	(306)	(580)	(535)
Gain from disposal of subsidiaries	21	2	–	20
Income from investments	13	98	95	77
Profit before tax		7,524	3,902	2,844
Income tax expense	14	(1,558)	(843)	(721)
Profit for the year		5,966	3,059	2,123
Attributable to:				
Shareholders of the parent company		5,782	3,085	2,129
Non-controlling interests		184	(26)	(6)
		5,966	3,059	2,123
Earnings per share				
Basic and diluted earnings per share attributable to shareholders of the parent company (US Dollars per share)	22	36.5	19.5	13.5

CONSOLIDATED STATEMENT OF COMPREHENSIVE INCOME FOR THE YEARS ENDED 31 DECEMBER 2019, 2018 AND 2017

US Dollars million

	2019	2018	2017
Profit for the year	5,966	3,059	2,123
Other comprehensive income/(loss)			
Items to be reclassified to profit or loss in subsequent periods:			
Effect of translation of foreign operations	(4)	(2)	15
Other comprehensive (loss)/income to be reclassified in subsequent periods, net	(4)	(2)	15
Items not to be reclassified to profit or loss in subsequent periods:			
Effect of translation to presentation currency	488	(905)	277
Other comprehensive income/(loss) not to be reclassified in subsequent periods, net	488	(905)	277
Other comprehensive income/(loss) for the year, net of tax	484	(907)	292
Total comprehensive income for the year, net of tax	6,450	2,152	2,415
Attributable to:			
Shareholders of the parent company	6,226	2,232	2,417
Non-controlling interests	224	(80)	(2)
	6,450	2,152	2,415

CONSOLIDATED STATEMENT OF FINANCIAL POSITION AT 31 DECEMBER 2019, 2018 AND 2017

US Dollars million

	Notes	At 31 December		
		2019	2018	2017
ASSETS				
Non-current assets				
Property, plant and equipment	15	11,993	9,934	10,960
Intangible assets		215	163	148
Other financial assets	16	223	141	192
Deferred tax assets	14	98	73	77
Other non-current assets	18	370	386	732
		12,899	10,697	12,109
Current assets				
Inventories	18	2,475	2,280	2,689
Trade and other receivables	19	362	204	327
Advances paid and prepaid expenses		74	75	71
Other financial assets	16	51	147	99
Income tax receivable		68	92	82
Other taxes receivable	17	644	271	296
Cash and cash equivalents	20	2,784	1,388	852
Other current assets		117	97	110
		6,575	4,554	4,526
TOTAL ASSETS		19,474	15,251	16,635
EQUITY AND LIABILITIES				
Capital and reserves				
Share capital	22	6	6	6
Share premium		1,254	1,254	1,254
Translation reserve		(4,899)	(5,343)	(4,490)
Retained earnings	28	7,452	7,306	7,557
Equity attributable to shareholders of the parent company		3,813	3,223	4,327
Non-controlling interests	23	474	250	331
		4,287	3,473	4,658

US Dollars million

	Notes	At 31 December		
		2019	2018	2017
Non-current liabilities				
Loans and borrowings	24	8,533	8,208	8,212
Lease liabilities	24	180	16	24
Provisions	26	674	365	464
Trade and other long-term payables		37	200	402
Derivative financial instruments		–	61	–
Deferred tax liabilities	14	60	385	407
Other long-term liabilities		281	185	116
		9,765	9,420	9,625
Current liabilities				
Loans and borrowings	24	1,087	209	813
Lease liabilities	24	44	6	4
Trade and other payables	27	1,706	1,551	783
Dividends payable	28	1,553	6	6
Employee benefit obligations	25	393	307	377
Provisions	26	100	77	189
Derivative financial instruments		–	5	24
Income tax payable		36	35	9
Other taxes payable	17	503	162	147
		5,422	2,358	2,352
TOTAL LIABILITIES		15,187	11,778	11,977
TOTAL EQUITY AND LIABILITIES		19,474	15,251	16,635

CONSOLIDATED STATEMENT OF CASH FLOWS FOR THE YEARS ENDED 31 DECEMBER 2019, 2018 AND 2017

US Dollars million

	For the year ended 31 December		
	2019	2018	2017
OPERATING ACTIVITIES			
Profit before tax	7,524	3,902	2,844
Adjustments for:			
Depreciation and amortisation	911	765	645
Impairment of non-financial assets	(24)	50	227
Loss on disposal of property, plant and equipment	19	1	9
Gain from disposal of subsidiaries	(2)	–	(20)
Change in provisions and allowances	220	61	41
Finance costs and income from investments, net	208	485	458
Foreign exchange (gain)/loss, net	(694)	1,029	(159)
Other	64	46	58
	8,226	6,339	4,103
Movements in working capital:			
Inventories	48	297	(346)
Trade and other receivables	(122)	102	(174)
Advances paid and prepaid expenses	14	(5)	10
Other taxes receivable	(331)	(15)	(5)
Employee benefit obligations	62	11	9
Trade and other payables	(247)	676	(1,118)
Provisions	(35)	(28)	(48)
Other taxes payable	304	(97)	2
Cash generated from operations	7,919	7,280	2,433
Income tax paid	(1,910)	(787)	(670)
Net cash generated from operating activities	6,009	6,493	1,763
INVESTING ACTIVITIES			
Purchase of property, plant and equipment	(1,262)	(1,480)	(1,940)
Purchase of intangible assets	(62)	(73)	(62)
Purchase of other non-current assets	–	(104)	(88)
Loans issued	(3)	(7)	(18)
Proceeds from repayment of loans issued	54	13	48
Net change in deposits placed	78	5	(80)
Proceeds from sale of other financial assets	–	–	9
Proceeds from disposal of property, plant and equipment	10	3	29
(Net cash outflow)/net cash inflow from disposal of subsidiaries (Note 21)	(20)	—	99
Interest and other investment income received	85	81	67
Net cash used in investing activities	(1,120)	(1,562)	(1,936)
FINANCING ACTIVITIES			
Proceeds from loans and borrowings	3,212	2,173	4,233
Repayments of loans and borrowings	(2,163)	(2,547)	(3,140)
Payments of lease liabilities	(45)	(9)	(10)
Dividends paid (Note 28)	(4,166)	(3,369)	(2,971)
Dividends paid to non-controlling interest	(1)	(1)	(1)
Interest paid	(460)	(551)	(642)
Proceeds from sale of a non-controlling interest in a subsidiary (Note 23)			294
Net cash used in financing activities	(3,623)	(4,304)	(2,237)
Net change in cash and cash equivalents	1,266	627	(2,410)
Cash and cash equivalents at the beginning of the year	1,388	852	3,325
Effects of foreign exchange differences on balances of cash and cash equivalents	130	(91)	(63)
Cash and cash equivalents at the end of the year	2,784	1,388	852

CONSOLIDATED STATEMENT OF CHANGES IN EQUITY FOR THE YEARS ENDED 31 DECEMBER 2019, 2018 AND 2017

US Dollars million

		Equity attributable to shareholders of the parent company								
	Notes	Share capital	Share premium		Translation reserve	Retained earnings	Total	Non controlling interests	Total
Balance at 1 January 2017		6	1,254		(4,778)	7,340	3,822	74	3,896
Profit/(loss) for the year						2,129	2,129	(6)	2,123
Other comprehensive income					288		288	4	292
Total comprehensive income/(loss) for the year					288	2,129	2,417	(2)	2,415
Dividends	28					(1,846)	(1,846)	(1)	(1,847)
Increase in non-controlling interest due to decrease in ownership of a subsidiary	23					35	35	259	294
Other effects related to transactions with non-controlling interest owners						(100)	(100)		(100)
Decrease in non-controlling interest due to increase in ownership of a subsidiary						(1)	(1)	1	
Balance at 31 December 2017		6	1,254		(4,490)	7,557	4,327	331	4,658
Profit/(loss) for the year					–	3,085	3,085	(26)	3,059
Other comprehensive loss					(853)		(853)	(54)	(907)
Total comprehensive income/(loss) for the year					(853)	3,085	2,232	(80)	2,152
Dividends	28				–	(3,336)	(3,336)	(1)	(3,337)
Balance at 31 December 2018		6	1,254		(5,343)	7,306	3,223	250	3,473
Profit for the year						5,782	5,782	184	5,966
Other comprehensive income					444		444	40	484
Total comprehensive income for the year					444	5,782	6,226	224	6,450
Dividends	28					(5,636)	(5,636)		(5,636)
Balance at 31 December 2019		6	1,254		(4,899)	7,452	3,813	474	4,287

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS FOR THE YEARS ENDED 31 DECEMBER 2019, 2018 AND 2017

US Dollars million

1. GENERAL INFORMATION

Organisation and principal business activities
Public Joint-Stock Company "Mining and Metallurgical Company "Norilsk Nickel" (the "Company" or "MMC "Norilsk Nickel") was incorporated in the Russian Federation on 4 July 1997. The principal activities of the Company and its subsidiaries (the "Group") are exploration, extraction, refining of ore and nonmetallic minerals and sale of base and precious metals produced from ore. Further details regarding the nature of the business and structure of the Group are presented in Note 34.

Major production facilities of the Group are located in Taimyr and Kola Peninsulas and the Zabaikalsky region of the Russian Federation, and in Finland.

2. BASIS OF PREPARATION

Statement of compliance
The consolidated financial statements of the Group have been prepared in accordance with International Financial Reporting Standards ("IFRS").

The entities of the Group maintain their accounting records in accordance with the laws, accounting and reporting regulations of the jurisdictions in which they are incorporated and registered. Accounting principles in certain jurisdictions may differ from those generally accepted under IFRS. Financial statements of such entities have been adjusted to ensure that the consolidated financial statements are presented in accordance with IFRS.

The Group issues a separate set of IFRS consolidated financial statements to comply with the requirements of Russian Federal Law No. 208-FZ On consolidated financial statements ("Law 208-FZ") dated 27 July 2010.

Basis of measurement
The consolidated financial statements of the Group are prepared on the historical cost basis, except for mark-to-market valuation of certain classes of financial instruments, in accordance with IFRS 9 Financial Instruments (IAS 39 Financial Instruments: Recognition and Measurement for comparative information at 31 December 2017).

3. CHANGES IN ACCOUNTING POLICIES

The accounting policies applied in the preparation of these consolidated financial statements are generally consistent with those applied in the preparation of the Group's consolidated financial statements at and for the years ended 31 December 2018 and 2017 except for changes related to the adoption of IFRS 9 Financial instruments and IFRS 15 Revenue from contracts with customers from 1 January 2018 and IFRS 16 Leases from 1 January 2019.

Adoption of new and revised standards and interpretations during the year ended 31 December 2019
The Group initially adopted IFRS 16 Leases in the preparation of these consolidated financial statements for the year ended 31 December 2019 from 1 January 2019. In accordance with the modified retrospective approach on the initial application of the standard the comparative information for the years ended 31 December 2018 and 2017 has not been restated.

In accordance with modified retrospective approach as of the date of initial application:
- for leases previously classified as operating lease in line with IAS 17 Leases lease liabilities were recognised at the present value of the remaining lease payments, discounted using the weighted average incremental borrowing rate at that date (at 1 January 2019: 5.55% per annum)
- right-of-use assets were recognised in the amount equal to the lease liability, adjusted by the amount of any prepaid or accrued lease payments relating to the respective lease contracts

On the initial application of IFRS 16 Leases the Group has recognised additional lease liabilities (both current and non-current) in the amount of USD 204 million (see below). These leases were classified as operating lease applying IAS 17 Leases and not recognised as lease liabilities before 1 January 2019.

	At 1 January 2019
Future minimum lease payments due under non-cancellable operating lease agreements at 31 December 2018	611
Less	
– Current leases	(13)
– Variable lease payments that do not depend on an index or a rate	(103)
– Future lease payments for leased items not transferred to the lessee at 1 January 2019	(158)
– Effect of discounting of payments	(133)
Lease liabilities additionally recognised at 1 January 2019	204
Plus	
– Finance lease liabilities recognised at 31 December 2018	22
Lease liabilities recognised at 1 January 2019	226

The Group applied the following practical expedients on the initial application of IFRS 16 Leases:
- applied this standard to the contracts that were previously identified as leases in line with IAS 17 Leases and IFRIC 4 Determining whether an Arrangement contains a Lease
- did not recognise lease liabilities in respect of the current leases expiring within 12 months of the date of the initial application
- did not perform impairment review of right-of-use assets due to the absence of the onerous lease contracts according to IAS 37 Provisions, Contingent Liabilities and Contingent Assets immediately before the date of initial application
- excluded initial direct costs from the measurement of right-of-use assets
- used hindsight, such as determination of the lease term if the contract contains options to extend or terminate the lease

Adoption of other new and revised standards and interpretations during the year ended 31 December 2019
Adoption of amendments to the following Standards did not have material impact on the accounting policies, financial position or results of the Group:
- IFRIC 23 Uncertainty over Income Tax Treatments
- IFRS 9 Financial Instruments (amended)
- IAS 28 Investments in Associates and Joint Ventures (amended)
- IAS 19 Employee Benefits (amended)
- Annual Improvements to IFRSs 2015-2017 Cycle

Adoption of new and revised standards and interpretations during the year ended 31 December 2018
The Group has initially adopted IFRS 15 Revenue from Contracts with Customers and IFRS 9 Financial Instruments from 1 January 2018.

The Group has adopted IFRS 15 Revenue from Contracts with Customers at the date of initial application using the cumulative effect method with no material effect on the Group's consolidated financial statements at 31 December 2018 and for the year then ended. Comparative information for the year 31 December 2017 has not been restated.

The Group has taken an exemption not to restate comparative information for prior periods with respect to classification requirements of IFRS 9 Financial Instruments. Therefore, the information presented at 31 December 2017 does not generally reflect the requirements of classification of IFRS 9 Financial Instruments but rather those of IAS 39 Financial Instruments: Recognition and Measurement.

Trade receivables under provisionally priced contracts where price is not settled until a predetermined future date have been classified at 31 December 2018 at fair value through profit or loss and are remeasured at each reporting date using the forward price for the period till the price settlement date outlined in the contract (mark-to-market adjustment). Previously such receivables were classified as loans and receivables under IAS 39 Financial Instruments: Recognition and Measurement.

There were no material differences in the carrying amounts of financial assets and financial liabilities resulting from the adoption of IFRS 9 Financial Instruments at 31 December 2018.

The significant accounting policies in respect of revenue from contracts with customers and financial instruments in effect from 1 January 2018 are set out in Note 4.

Adoption of other new and revised standards and interpretations during the year ended 31 December 2018
Adoption of amendments to the following Standards for annual periods from 1 January 2018 did not have material impact on the accounting policies, financial position or results of the Group:

- IFRS 1 First-time Adoption of International Financial Reporting Standards (amended)
- IFRS 2 Share-based Payment (amended)
- IFRS 4 Insurance Contracts (amended)
- IAS 28 Investments in Associates and Joint Ventures (amended)
- IAS 40 Investment Property (amended)
- IFRIC 22 Foreign Currency Transactions and Advance Consideration

Adoption of new and revised standards and interpretations during the year ended 31 December 2017
Adoption of amendments to the following Standards for annual periods from 1 January 2017 did not have material impact on the accounting policies, financial position or results of the Group:

- IFRS 12 Disclosure of interests in other entities (amended)
- IAS 7 Statement of cash flows (amended)
- IAS 12 Income taxes (amended)

Standards and interpretations in issue but not yet effective
The Group has not early adopted any other standard, interpretation or amendment that has been issued but is not yet effective.

Standards and Interpretations	Effective for annual periods beginning on or after
IFRS 3 Business combinations (amended)	1 January 2020
IFRS 7 Financial Instruments: Disclosures (amended)	1 January 2020
IFRS 9 Financial Instruments (amended)	1 January 2020
IAS 1 Presentation of Financial Statements (amended)	1 January 2020
IAS 8 Accounting Policies, Changes in Accounting Estimates and Errors (amended)	1 January 2020
IAS 39 Financial Instruments: Recognition and Measurement (amended)	1 January 2020
Revised Conceptual Framework for Financial Reporting	1 January 2020
IFRS 17 Insurance Contracts	1 January 2021

Management of the Group plans to adopt all of the above standards and interpretations in the Group's consolidated financial statements for the respective periods.

Reclassification
Finance lease liabilities recognised in line with IAS 17 Leases are presented as lease liabilities in the consolidated statement of financial position at 31 December 2018 and at 31 December 2017 (previously presented in loans and borrowings).

For the year ended 31 December 2019 and 2018, revenue from sales of semi-products is allocated to revenue from each metal sales as per respective metal content in a semi-product rather than being presented under a separate "semi-products" caption (refer to Note 7). Information for the year ended 31 December 2017 has been reclassified to conform with this presentation.

For the year ended 31 December 2017 management reassessed classification of some expenses of cost of metal sales and selling and distribution expenses in order to better align cost of sales structure with management accounts and reporting.

4. SIGNIFICANT ACCOUNTING POLICIES

Basis of consolidation

Subsidiaries
The consolidated financial statements incorporate financial statements of the Company and its subsidiaries, from the date that control effectively commenced until the date that control effectively ceased. Control is achieved where the Company is exposed to, or has rights to, variable returns from its involvement with the entity and has the ability to affect those returns through its power over the entity.

Non-controlling interests in net assets (excluding goodwill) of the consolidated subsidiaries are identified separately from the equity of the shareholders of the Company therein. Non-controlling interests include interests at the date of the original business combination and a non-controlling share of changes in net assets since the date of the combination. Total comprehensive income must be attributed to the shareholders of the Company and to the non-controlling interests even if this results in the non-controlling interests having a deficit balance.

Non-controlling interests may be initially measured either at fair value or at the non-controlling interests' proportionate share of the recognised amounts of the acquiree's identifiable net assets. The choice of measurement basis is made on a transaction-by-transaction basis.

All intra-group balances, transactions and any unrealised profits or losses arising from intra-group transactions are eliminated in full on consolidation.

Changes in the Group's ownership interest in a subsidiary that do not result in the Group losing control are accounted for within the equity.

When the Group loses control of a subsidiary it derecognises the assets and liabilities and related equity components of the former subsidiary. Any gain or loss is recognised in the consolidated income statement. Any investment retained in the former subsidiary is measured at its fair value at the date when control is lost.

Joint arrangements
Investments in joint arrangements are classified as either joint operations or joint ventures, depending on the contractual rights and obligations of each investor. The Group recognises in relation to its interest in a joint operation: its assets, including its share of any assets held jointly; its liabilities, including its share of any liabilities incurred jointly; its revenue from the sale of its share of the output arising from the joint operation; its share of the revenue from the sale of the output by the joint operation; and its expenses, including its share of any expenses incurred jointly. The Group accounts for its investments in joint ventures using the equity method.

Business combinations

Acquisitions of businesses are accounted for using the acquisition method. The consideration transferred in a business combination is measured at fair value, which is calculated as the sum of fair values of the assets transferred by the Group, liabilities incurred by the Group to the former owners of the acquiree and the equity interests issued by the Group at the date of acquisition in exchange for control of the acquiree.

Where an investment in a subsidiary, an associate or a joint venture is made, any excess of the sum of the consideration transferred, the amount of any non-controlling interests in the acquiree, and the fair value of the acquirer's previously held equity interest in the acquiree (if any) over the fair value of the identifiable assets acquired and the liabilities assumed at the acquisition date is recognised as goodwill. Goodwill in respect of subsidiaries and joint operations is disclosed separately and goodwill relating to associates and joint ventures is included in the carrying value of the investment in associates or joint ventures. Goodwill disclosed separately is reviewed for impairment at least annually. If impairment has occurred, it is recognised in the consolidated income statement during the period in which the circumstances are identified and is not subsequently reversed.

If, after reassessment, the fair value of the identifiable assets acquired and liabilities assumed at the acquisition date exceeds the sum of the consideration transferred, the amount of any non-controlling interests in the acquiree and the fair value of the acquirer's previously held interest in the acquiree (if any), the excess is recognised in the consolidated income statement immediately as a bargain purchase gain.

Acquisition-related costs are recognised in the consolidated income statement as incurred.

If the initial accounting for a business combination is incomplete by the end of the reporting period in which the combination occurs, the Group reports provisional amounts for the items for which the accounting is incomplete. Those provisional amounts are retrospectively adjusted during the measurement period (a maximum of twelve months from the date of acquisition), or additional assets or liabilities are recognised, to reflect new information obtained about facts and circumstances that existed at the acquisition date that, if known, would have affected the amounts recognised at that date.

Functional and presentation currency

The individual financial statements of each Group entity are presented in its functional currency.

The Russian Rouble ("RUB") is the functional currency of the Company, all of its subsidiaries located in the Russian Federation and all foreign subsidiaries of the Group, except for the following subsidiaries operating with a significant degree of autonomy. The functional currency of Norilsk Nickel Harjavalta Oy is US Dollar, and the functional currency of Norilsk Nickel Africa Proprietary Limited and Nkomati Nickel Mine is South African Rand.

The presentation currency of the consolidated financial statements of the Group is US Dollar ("USD"). Using USD as a presentation currency is common practice for global mining companies. In addition, USD is a more relevant presentation currency for international users of the consolidated financial statements of the Group. The Group also issues consolidated financial statements to comply with Law 208-FZ, which use the Russian Rouble as the presentation currency.

The translation of components of the consolidated statement of financial position, consolidated income statement, consolidated statement of cash flows and consolidated statement of changes in equity into presentation currency is made as follows:

- all assets and liabilities, both monetary and non-monetary, in the consolidated statement of financial position are translated at the closing exchange rates at the end of the respective reporting period
- income and expense are translated at the average exchange rates for each quarter (unless this average rate is not a reasonable approximation of the cumulative effect of the rates prevailing at the dates of the transactions, in which case income and expenses are translated at exchange rates at the dates of the transactions)
- all equity items are translated at the historical exchange rates
- all resulting exchange differences are recognised as a separate component in other comprehensive income; and
- in the consolidated statement of cash flows, cash balances at the beginning and the end of each period presented are translated at exchange rates at the respective dates
- all cash flows are translated at the average exchange rates for each quarter with the exception of proceeds from and repayments of loans and borrowings, dividends paid and advances received, proceeds from disposal of subsidiaries, which are translated at exchange rates at the dates of the transactions
- resulting exchange differences are presented in the consolidated statement of cash flows as effects of foreign exchange differences on balances of cash and cash equivalents.

Foreign currency transactions

Transactions in currencies other than the entity's functional currency (foreign currencies) are recorded at exchange rates prevailing at the dates of the transactions. All monetary assets and liabilities denominated in foreign currencies are translated at the closing exchange rates at the end of the respective reporting period. Non-monetary items carried at historical cost are translated at exchange rates at the dates of the transactions. Non-monetary items carried at fair value are translated at exchange rates that existed when the fair values were determined. Exchange differences arising from changes in exchange rates are recognised in the consolidated income statement.

Exchange rates used in the preparation of the consolidated financial statements were as follows:

	At 31 December		
	2019	2018	2017
Russian Rouble / US Dollar			
31 December	61.91	69.47	57.60
Average for the year ended 31 December	64.74	62.71	58.35
South African Rand / US Dollar			
31 December	13.99	14.35	12.36
Average for the year ended 31 December	14.44	13.18	13.30
Euro / US Dollar			
31 December	0.89	0.87	0.84
Average for the year ended 31 December	0.89	0.85	0.89

Revenue recognition

Metal sales revenue

Accounting policies after 1 January 2018

Revenue from metal sales is recognised at a point of time when control over the asset is transferred to a customer and represents the invoiced value of all metal products shipped to customers, net of value added tax (if any).

Revenue from contracts that are entered into and continue to meet the Group's expected sale requirements designated for that purpose at their inception and are expected to be settled by physical delivery of the goods, is recognised in the consolidated financial statements as and when they are delivered. A gain or loss on forward contracts expected to be settled by physical delivery or on net basis is measured at fair value recognised in revenue and disclosed separately from revenue from contracts with customers.

As a practical expedient, the Group does not adjust the promised amount of consideration for the effects of a significant financing component, if the expected period between when the Group transfers a promised good or service to a customer and the customer pays for that good or service will be one year or less.

Certain contracts are provisionally priced so that price is not settled until a predetermined future date based on the market price at that time. Revenue from these transactions is initially recognised at the market price at the time of sale. Price adjustment on provisionally priced contracts is recorded in revenue.

Accounting policies before 1 January 2018

Revenue from metal sales is recognised when the significant risks and rewards of ownership are transferred to the buyer and represents invoiced value of all metal products shipped to customers, net of value added tax.

Other revenue

Revenue from contracts with customers on sale of goods, other than metals, is recognised at a point of time when control over the asset is transferred to the customer in accordance with the shipping terms specified in the sales agreements.

Revenue from service contracts is recognised over-time when the services are rendered.

Dividend and interest income

Dividend income from investments is recognised when the Group's right to receive payment has been established. Interest income is accrued using the effective interest method.

Leases

Accounting policies after 1 January 2019

The Group assesses at the inception of a contract whether it or its components is, or contains, a lease. The Group recognises a right-of-use asset and a corresponding lease liability, if a lease contract transfers to the lessee the right to control the use of the identified asset for a period of time in exchange for a consideration, except for current leases with the term of 12 months or less. The Group recognises lease payments associated with current leases as an expense on a straight-line basis over the lease term. Land plots lease payments are treated as variable payments, if they are linked to land cadastral value and changes in the latter do not depend on market rental rates. The Group recognises variable lease payments as an expense in the period when the event that triggers those payments occurs.

Right-of-use assets are initially recognised at cost that comprise when applicable:

- the initial amount of the lease liability;
- any lease payments made at or before the lease commencement date;
- any initial direct costs incurred by the lessee;
- an estimate of costs to be incurred by the lessee for retirement of the underlying asset and restoration of the site on which it is located.

Right-of-use assets are subsequently measured at cost less any accumulated depreciation and any accumulated impairment losses, adjusted for any remeasurement of the lease liability. Right-of-use assets are depreciated on a straight-line basis over their estimated economic useful lives or over the term of the lease, if shorter. Right-of-use assets are presented in property, plant and equipment in the consolidated statement of financial position.

Lease liabilities (refer to Note 24) are initially measured at the present value of the lease payments that are not paid at the commencement date and subsequently remeasured to reflect changes to the lease payments. The lease payments are discounted using interest rate implicit in the lease (if that rate can be readily determined) or using Group incremental borrowing rate at the commencement date determined based on lease term and currency of the lease payments.

Accounting policies before 1 January 2019

Leases under which the Group assumes substantially all the risks and rewards of ownership are classified as finance leases. Assets subject to finance leases are capitalised as property, plant and equipment at the lower of fair value or present value of future minimum lease payments at the date of acquisition. Simultaneously, related lease obligation is recognised at the same value. Assets held under finance leases are depreciated over their estimated economic useful lives or over the term of the lease, if shorter. If there is reasonable certainty that the lessee will obtain ownership at the end of the lease term, the period of expected use is the useful life of the asset.

Finance lease payments are allocated using the effective interest rate method, between the lease finance cost, which is included in finance costs, and the capital repayment, which reduces the related lease obligation to the lessor.

Leases where the lessor retains substantially all the risks and benefits of ownership of the asset are classified as operating leases. Operating lease payments are recognised as an expense in the consolidated income statement on a straight-line basis over the lease term, except where another systematic basis is more representative of the time pattern in which economic benefits from the leased asset are consumed. Contingent rentals arising under operating and finance leases are expensed in the period in which they are incurred.

Finance costs

Finance costs directly attributable to the acquisition, construction or production of qualifying assets, which are assets that necessarily take a substantial period of time to get ready for their intended use or sale, are added to the cost of those assets, until such time when the assets are substantially ready for their intended use or sale.

Investment income earned on the temporary investment of specific borrowings pending their expenditure on qualifying assets is deducted from the borrowing costs eligible for capitalisation.

Government grants

Government grants are recognised when there is reasonable assurance that the grant will be received and all conditions and requirements attaching to the grant will be met. Government grants related to assets are deducted from the cost of these assets in arriving at their carrying value.

Employee benefits

Remuneration to employees in respect of services rendered during a reporting period is recognised as an expense in that period. Long-term employee benefits obligations are discounted to present value.

Defined contribution plans

The Group contributes to the following major defined contribution plans:

- Pension Fund of the Russian Federation
- Mutual accumulated pension plan

The only obligation of the Group with respect to these and other defined contribution plans is to make specified contributions in the period in which they arise. These contributions are recognised in the consolidated income statement when employees have rendered respective services.

Income tax expense

Income tax expense represents the sum of the current and deferred tax.

Income tax is recognised as an expense or income in the consolidated income statement unless it relates to other items recognised directly in other comprehensive income, in which case the tax is also recognised directly in other comprehensive income. Where current or deferred tax arises from the initial accounting for a business combination, the tax effect is included in the accounting for the business combination.

Current tax

Current tax is based on taxable profit for the year. Taxable profit differs from profit before tax as reported in the consolidated income statement because it excludes items of income or expense that are taxable or deductible in other years and it also excludes items that are never taxable or deductible.

Deferred tax

Deferred tax is recognised on temporary differences between the carrying amounts of assets and liabilities in the financial statements and the corresponding tax bases used in computation of taxable profit. As a general rule, deferred tax liabilities are recognised for all taxable temporary differences, and deferred tax assets are recognised for all deductible temporary differences to the extent that it is probable that taxable profits will be available against which those deductible temporary differences can be utilised. Deferred tax assets and liabilities are not recognised, if temporary differences arise from goodwill or from the initial recognition of assets and liabilities other than in a business combination which, at the time of the transaction, affects neither taxable profit nor accounting profit.

Deferred tax liabilities are recognised for taxable temporary differences associated with investments in subsidiaries, joint ventures, associates and interests in joint operations, unless the Group is able to control the reversal of the temporary difference, and it is probable that the temporary difference will not reverse in the foreseeable future. Deferred tax assets arising from deductible temporary differences associated with such investments and interests are only recognised to the extent that it is probable that there will be sufficient taxable profits against which to utilise the benefits of the temporary differences and they are expected to reverse in the foreseeable future.

The carrying amount of deferred tax assets is reviewed at the end of each reporting period and adjusted to the extent that it is probable that sufficient taxable profits will be available to allow all or part of the asset to be recovered.

The measurement of deferred tax liabilities and assets reflects the tax consequences of the manner in which the Group expects at the reporting date to recover or settle the carrying amount of its assets and liabilities. Deferred tax assets and liabilities are offset when there is a legally enforceable right to set off current tax assets against current tax liabilities and when they relate to income taxes levied by the same taxation authority.

Property, plant and equipment and mine development costs

Mining assets

Mine development costs are capitalised and comprise expenditures directly related to:

- acquiring mining and exploration licences
- developing new mining operations
- estimating revised content of minerals in the existing ore bodies; and
- expanding capacity of a mine

Mine development costs include directly attributable borrowings costs.

Mine development costs are transferred to mining assets and start to be depreciated when a new mine reaches commercial production quantities.

Mining assets are recorded at cost less accumulated depreciation and impairment losses. Mining assets include cost of acquiring and developing mining properties, pre-production expenditure, mine infrastructure, plant and equipment that process extracted ore, mining and exploration licenses and present value of future decommissioning costs and borrowing costs eligible for capitalisation.

Carrying value of mining assets is depreciated over the lesser of their individual economic useful lives on a straight-line basis, or the remaining life of mine based on the amount of the commercial ore reserves on a units of production basis. When determining the life of mine, assumptions valid at the time of estimation may change in case new information becomes available. Useful lives are in average varying from 1 to 50 years.

Non-mining assets

Non-mining assets include metallurgical processing plants, buildings, infrastructure, machinery and equipment and other non-mining assets. Non-mining assets are stated at cost less accumulated depreciation and impairment losses.

Non-mining assets are depreciated on a straight-line basis over their economic useful lives.

Depreciation charge is calculated over the following economic useful lives:

• buildings, structures and utilities	2-50 years
• machinery, equipment and transport	1-30 years
• other non-mining assets	1-20 years

Capital construction-in-progress

Capital construction-in-progress comprises costs directly related to construction of buildings, processing plant, infrastructure, machinery and equipment, including:

- advances given for purchases of property, plant and equipment and materials acquired for construction of buildings, processing plant, infrastructure, machinery and equipment
- irrevocable letters of credit opened for future fixed assets deliveries and secured with deposits placed in banks
- borrowing costs eligible for capitalisation

Depreciation of an asset begins when it is available for use and it is in the location and condition necessary for it to be capable of operating in the manner intended by management.

Exploration expenditure

Exploration expenditure, including geophysical, topographical, geological and similar types of expenditure made within research, mining and exploration licences acquired, is capitalised and begins to be amortised over the life of mine, when commercial viability of the project is proved. Otherwise it is expensed in the period in which it is incurred.

Exploration expenditure written-off before development and construction starts is not subsequently capitalised, even if a commercial discovery subsequently occurs.

Intangible assets, excluding goodwill

Intangible assets are recorded at cost less accumulated amortisation and impairment losses. Intangible assets mainly include patents, licences, software and rights to use software and other intangible assets.

Amortisation of patents, licenses and software is charged on a straight-line basis over 1-10 years.

Impairment of tangible and intangible assets, excluding goodwill

At each reporting date, the Group analyses the triggers of impairment of its tangible and intangible assets to determine whether there is any indication that those assets have suffered an impairment loss. If any such indication exists, the recoverable amount of the asset is estimated in order to determine the extent of the impairment loss (if any). Where it is not practical to estimate the recoverable amount of an individual asset, the Group estimates the recoverable amount of the cash-generating unit to which the asset belongs.

Recoverable amount is the higher of fair value less cost to sell and value-in-use. In assessing value-in-use, the estimated future cash flows are discounted to their present value using a pre-tax discount rate that reflects current market assessments of the time value of money and the risks specific to the asset or cash-generating unit. If the recoverable amount of an asset (or cash-generating unit) is estimated to be less than its carrying amount, the carrying amount of the asset (or cash-generating unit) is reduced to its recoverable amount. An impairment loss is recognised in the consolidated income statement immediately.

Where an impairment loss subsequently reversed, the carrying amount of the asset (or cash-generating unit) is increased to the revised estimate of its recoverable amount, but only to the extent that the increased carrying amount does not exceed the original carrying amount that would have been determined had no impairment loss been recognised in prior periods. A reversal of an impairment loss is recognised in the consolidated income statement.

Inventories

Refined metals

Main jointly produced metals include nickel, copper, palladium, platinum; by-products include cobalt, gold, rhodium, silver and other metals. Main products are measured at the lower of cost of production or net realisable value. The cost of production of main products is determined as total production cost, allocated to each joint product by reference to their relative sales value. By-products are initially measured at net realisable value.

Work-in-process

Work-in-process includes all costs incurred in the normal course of business including direct material and direct labour costs and allocation of production overheads, depreciation and amortisation and other costs, incurred for producing each product, given its stage of completion.

Materials and supplies

Materials and supplies are valued at the weighted average cost less allowance for obsolete and slow-moving items.

Financial assets

Accounting policies after 1 January 2018

Financial assets are recognised when the Group has become a party to the contractual arrangement of the instrument and are initially measured at fair value, plus transaction costs, except for those financial assets classified at fair value through profit or loss, which are initially measured at fair value.

Financial assets are classified into the following specified categories:
- financial assets at amortised cost
- financial assets at fair value through other comprehensive income; and
- financial assets at fair value through profit or loss

The classification of financial assets depends on the Group's business model for managing the financial assets and the contractual terms of the cash flows and is determined at the time of initial recognition.

Effective interest method

The effective interest method is used for calculating the amortised cost of a financial asset and for allocating interest income over the relevant period. The effective interest rate is the rate that exactly discounts estimated future cash receipts (including transaction costs and other premiums or discounts) through the expected life of the financial asset, or, where appropriate, a shorter period.

Income is recognised on an effective interest basis for debt instruments other than those financial assets designated at fair value through profit or loss or fair value through other comprehensive income.

Financial assets at amortised cost

A financial asset is measured at amortised cost if it meets both of the following conditions and is not designated at fair value though profit or loss:
- it is held within a business model whose objective is to hold assets to collect contractual cash flows; and
- its contractual terms give rise on specified dates to cash flows that are solely payments of principal and interest on the principal amount outstanding

The Group generally classifies cash and cash equivalents, trade and other receivables (excluding trade receivables under provisionally priced contracts), loans issued and bank deposits as financial assets at amortised cost.

Financial assets at fair value through other comprehensive income

A debt instrument is measured at fair value through other comprehensive income if it meets both of the following conditions and is not designated at fair value though profit or loss:
- it is held within a business model whose objective is achieved by both collecting contractual cash flows and selling financial assets; and
- its contractual terms give rise on specified dates to cash flows that are solely payments of principal and interest on the principal amount outstanding

At initial recognition the Group may make an irrevocable election to present in other comprehensive income subsequent changes in the fair value of an investment in an equity instrument that is not held for trading. This election is made on an instrument-by-instrument basis.

Financial assets at fair value through profit or loss

All financial assets not classified as measured at amorised cost or fair value through other comprehensive income are classified as financial assets at fair value through profit or loss.

Trade receivables under provisionally priced contracts and derivative financial assets are measured at fair value through profit or loss. Trade receivables under provisionally priced contracts are remeasured at each reporting date using the forward price for the period till the price

Impairment of financial assets

The Group recognises an allowance for expected credit losses on a financial asset measured at amortised cost using one of the two methods:

Lifetime expected credit losses	Trade and other receivables Financial assets other than trade and other receivables if the credit risk on that financial asset has increased significantly since initial recognition
12-month expected credit losses since the reporting date	Financial assets other than trade and other receivables at initial recognition Financial assets other than trade and other receivables for which credit risk has not increased significantly since initial recognition

When determining whether the credit risk of the financial asset has increased significantly since initial recognition and when estimating expected credit losses, the Group considers reasonable and supportable information that is relevant and available, including both quantitative and qualitative information and analysis based on Group's historical experience and forward-looking information.

The Group applies the IFRS 9 Financial Instruments simplified approach to measuring expected credit losses which uses a lifetime expected loss allowance for all trade receivables. The Group assumes that expected credit loss for all trade and other receivables, which are overdue in excess of 365 days is equal to their carrying amount. To measure the expected credit losses, trade and other receivables that are past due for less than 365 days are grouped based on the length of the overdue period to which respective expected loss rates are applied. The expected loss rates are based on the historical credit loss experience, adjusted to reflect current and forward-looking information on the ability of the customers to settle the receivables.

When trade and other receivables are considered uncollectible, they are written off against the allowance for expected credit losses. Changes in the allowance are recognised in the consolidated income statement.

Derecognition of financial assets

The Group derecognises a financial asset only when the contractual rights to the cash flows from the asset expire; or it transfers the financial asset and substantially all the risks and rewards of ownership of the asset to another entity. If the Group neither transfers nor retains substantially all the risks and rewards of ownership and continues to control the transferred asset, the Group recognises its retained interest in the asset and an associated liability for the amounts it may have to pay. If the Group retains substantially all the risks and rewards of ownership of a transferred financial asset, the Group continues to recognise the financial asset and also recognises a collateralised borrowing for the proceeds received.

Accounting policies before 1 January 2018

Financial assets are recognised when the Group has become a party to the contractual arrangement of the instrument and are initially measured at fair value, plus transaction costs, except for those financial assets classified as at fair value through profit or loss, which are initially measured at fair value.

Financial assets are classified into the following specified categories:

- financial assets at fair value through profit or loss
- held-to-maturity investments
- available-for-sale financial assets; and
- loans and receivables

The classification depends on the nature and purpose of the financial assets and is determined at the time of initial recognition.

Financial assets at fair value through profit or loss

Financial assets are classified as at fair value through profit or loss where the financial asset is either held for trading or it is designated as at fair value through profit or loss.

A financial asset is classified as held for trading if:

- it has been acquired principally for the purpose of selling in the near future; or
- it is a part of an identified portfolio of financial instruments that the Group manages together and has a recent actual pattern of short-term profit-taking; or
- it is a derivative

Financial assets at fair value through profit or loss are stated at fair value, with any resultant gain or loss recognised in the consolidated income statement. The net gain or loss recognised in the consolidated income statement incorporates any dividend or interest earned on the financial asset.

Loans and receivables

Trade receivables, loans, and other receivables that have fixed or determinable payments which are not quoted in an active market are classified as loans and receivables. Loans and receivables are measured at amortised cost using the effective interest method, less any impairment. Interest income is recognised by applying the effective interest rate, except for short-term receivables when the recognition of interest would be immaterial.

Available-for-sale financial assets

Available-for-sale financial assets may include investments in listed and unlisted equity securities, that are not classified in other categories.

Listed equity securities held by the Group that are traded in an active market are measured at their market value. Gains and losses arising from changes in fair value are recognised in other comprehensive income in the investments revaluation reserve with the exception of impairment losses, interest calculated using the effective interest method and foreign exchange gains and losses on monetary assets, which are recognised directly in the consolidated income statement. Where an investment is disposed of or is determined to be impaired, the cumulative gain or loss previously recognised in the investment revaluation reserve is included in the consolidated income statement for the period.

Investments in unlisted equity securities that do not have a quoted market price in an active market are recorded at managements' estimate of fair value.

Impairment of financial assets

Financial assets, other than those at fair value through profit or loss, are assessed for indicators of impairment at each statement of financial position date. Financial assets are impaired where there is objective evidence that, as a result of one or more events that occurred after the initial recognition of the financial asset, the estimated future cash flows of the investment have been negatively impacted.

The Group has fully provided for all trade and other receivables which were due in excess of 365 days. Trade and other receivables that are past due for less than 365 days are provided according to expected probability of repayment and the length of the overdue period.

Objective evidence of impairment for accounts receivable could include the Group's past experience of collecting payments, an increase in the number of delayed payments as well as observable changes in economic conditions that correlate with defaults on receivables.

For financial assets carried at amortised cost, the amount of the impairment is the difference between the asset's carrying amount and the present value of estimated future cash flows, discounted at the financial asset's original effective interest rate.

The carrying amount of the financial asset is reduced by the impairment loss directly for all financial assets with the exception of trade and other receivables, where the carrying amount is reduced through the use of an provision for doubtful debts. When trade and other receivables are considered uncollectible, it is written off against the provision. Subsequent recoveries of amounts previously written off are credited against the provision. Changes in the provision are recognised in the consolidated income statement.

With the exception of available-for-sale debt and equity instruments, if, in a subsequent period, the amount of the impairment loss decreases and the decrease can be related objectively to an event occurring after the impairment was recognised, the previously recognised impairment loss is reversed through the consolidated income statement to the extent that the carrying amount of the investment at the date the impairment is reversed does not exceed what the amortised cost would have been had the impairment not been recognised.

When a decline in fair value of an available-for-sale investment has been recognised in other comprehensive income and there is objective evidence that investment is impaired, the cumulative loss that had been recognised in other comprehensive income is reclassified from other comprehensive income and recognised in the consolidated income statement even though the investment has not been derecognised. Impairment losses previously recognised through consolidated income statement are not reversed. Any increase in fair value subsequent to an impairment loss is recognised in other comprehensive income.

Financial liabilities

The Group classifies financial liabilities into loans and borrowings, trade and other payables. Such financial liabilities are recognised initially at fair value less any directly attributable transaction costs. Subsequent to initial recognition, these financial liabilities are measured at amortised cost using the effective interest method. Derivative financial liabilities are measured at fair value through profit or loss.

Effective interest method

The effective interest method is a method of calculating the amortised cost of a financial liability and of allocating interest expense over the relevant period. The effective interest rate is the rate that exactly discounts estimated future cash outflows through the expected life of the financial liability, or where appropriate, a shorter period.

Derecognition of financial liabilities

The Group derecognises financial liabilities when, and only when, the Group's obligations are discharged, cancelled or they expire.

Cash and cash equivalents

Cash and cash equivalents comprise cash balances, cash deposits in banks, brokers and other financial institutions and highly liquid investments with original maturities of three months or less and on demand deposits, which are readily convertible to known amounts of cash and are subject to an insignificant risk of changes in value.

Provisions

Provisions are recognised when the Group has a legal or constructive obligation as a result of past events for which it is probable that an outflow of economic benefits will be required to settle the obligation, and the amount of the obligation can be reliably estimated.

The amount recognised as a provision is the best estimate of the consideration required to settle the present obligation at the reporting date, taking into account the risks and uncertainties surrounding the obligation. Where a provision is measured using the cash flows estimated to settle the present obligation, its carrying amount is the present value of those cash flows.

Decommissioning obligations

Decommissioning obligations include direct asset decommissioning costs as well as related land restoration costs.

Future decommissioning and other related obligations, discounted to present value, are recognised at the moment when the legal or constructive obligation in relation to such costs arises and the future costs can be reliably estimated. These costs are capitalised as part of the initial cost of the related asset (i.e. a mine) and is depreciated over the useful life of the asset. The unwinding of the discount on decommissioning obligations is included in the consolidated income statement as finance costs. Decommissioning obligations are periodically reviewed in light of current laws and regulations, and adjustments are made as necessary.

5. CRITICAL ACCOUNTING JUDGEMENTS AND KEY SOURCES OF ESTIMATION UNCERTAINTY

In order to prepare the consolidated financial statements in accordance with IFRS the Group's management have to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the reporting date, and the reported amounts of revenues and expenses for the reporting period. Making estimates may require judgement based on historical experience, current and expected economic conditions, and all other available information. Actual results may differ from such estimates.

The most significant areas requiring the use of management estimates and assumptions are as follows:

- useful economic lives of property, plant and equipment
- impairment of non-financial assets
- provisions and allowances
- decommissioning obligations
- income taxes and
- contingencies.

Useful economic lives of property, plant and equipment

Carrying value of the Group's mining assets, classified within property, plant and equipment, is depreciated over the lesser of their individual economic useful lives on a straight-line basis or the remaining life of mine based on the amount of the commercial ore reserves on a unit of production basis. When determining the life of a mine, valid assumptions at the time of estimation may change in case of new information becomes available.

The factors that may affect the estimation of the life of mine include the following:

- changes in proved and probable ore reserves
- the grade of ore reserves varying significantly from time to time
- differences between actual commodity prices and commodity price assumptions used in the estimation and classification of ore reserves
- unforeseen operational issues at mine sites; and
- changes in capital, operating, mining, processing and decommissioning costs, discount rates and foreign exchange rates could possibly adversely affect the economic viability of ore reserves

Useful economic lives of non-mining property, plant and equipment are reviewed by management periodically. The review is based on the current condition of the assets and the estimated length of the period during which they will continue to bring economic benefit to the Group.

Impairment of non-financial assets

At the end of each reporting period, the Group reviews the carrying amounts of its tangible and intangible non-financial assets for an indication that these assets may be impaired or that a previously recognised impairment loss may have decreased. For the purpose of the impairment test, the assets that do not generate independent cash flows are allocated to an appropriate cash-generating unit. To calculate the value in use, management necessarily applies judgement in allocating assets that do not generate independent cash flows to appropriate cash-generating units, and in estimating the timing and value of the underlying cash flows. Subsequent changes to the assets allocation to cash generating units or the timing of cash flows may affect the carrying value of the respective assets.

Provisions and allowances

The Group creates an allowance for obsolete and slow-moving inventories. In addition, certain finished goods of the Group are carried at net realisable value. Estimates of net realisable value of inventories are based on the most reliable evidence available at the time the estimates are made. These estimates take into consideration fluctuations of price or cost directly relating to events occurring subsequent to the statement of financial position date to the extent that such events confirm conditions existing at the end of the period.

The Group creates provisions for social commitments, tax and other provisions. Provisions represent present value of the best estimate of the future outflow of economic benefits to settle these obligations.

Decommissioning obligations

The Group's mining and exploration activities are subject to various environmental laws and regulations. The Group estimates decommissioning obligations based on management's understanding of the current legal requirements in the various jurisdictions in which it operates, terms of the license agreements and internally generated engineering estimates. Provisions are recognised, based on present values, for decommissioning and land restoration costs as soon as the obligations arise. Actual costs incurred in future periods may differ materially from the amounts provided. Additionally, future changes to environmental laws and regulations, life of mine estimates and discount rates may affect the carrying amount of this provision.

Income taxes

The Group is subject to income taxes in numerous jurisdictions. Significant judgement is required in determining provision for income taxes due to the complexity of legislation in some jurisdictions. There are many transactions and calculations for which the ultimate tax determination is uncertain. The Group recognises provisions for anticipated tax audit issues based on estimates of whether additional taxes will be due. Where the final tax outcome of these matters is different from the amounts that were initially recorded, such differences will impact the income tax and deferred tax provisions in the period in which such determination is made.

Deferred tax assets are reviewed at each reporting date and adjusted to the extent that it is probable that sufficient taxable income will be available to allow all or part of the deferred tax asset to be utilised. The estimation of that probability includes judgements based on the expected performance.

Various factors are considered to assess the probability of the future utilisation of deferred tax assets, including past operating results, operational plans, expiration of tax losses carried forward, and tax planning strategies. If actual results differ from these estimates or if these estimates must be adjusted in future periods, the financial position, results of operations and cash flows may be affected.

Contingencies

By their nature, contingencies will only be resolved when one or more future events occur or fail to occur. The assessment of such contingencies inherently involves the exercise of significant judgement and estimates of the outcome of future events.

6. SEGMENT INFORMATION

Operating segments are identified on the basis of internal reports on components of the Group that are regularly reviewed by the Management Board.

During the second half of 2019, the Group has updated its management accounting system to account for business changes. As a result, South Cluster segment was presented separately from GMK Group segment at 31 December 2019 and for the year then ended. In May 2019, the Group replaced certain intersegment tolling arrangements with intersegment sales of semi-products for further processing with resulting segment revenue re-distribution between inter-segment metal sales and sales of metal sales to external customers, as further detailed below.

- GMK Group segment includes main mining, processing and metallurgy operations as well as transport services, energy, repair and maintenance services located in Taimyr Peninsula. GMK Group metal sales to external customers include metal volumes produced from semi-products purchased from South Cluster segment starting May 2019. Intersegment revenue from metal sales for 2019 included primarily sale of semi-products to KGMK Group segment for further processing (previously processed under intersegment tolling arrangements). GMK Group other sales to external customers primarily include revenue for energy and utilities services provided in Taimyr Peninsula
- South Cluster segment includes certain ore mining and processing operations located in Taimyr Peninsula which were previously reviewed within GMK Group segment. Intersegment revenue from metal sales included sale of semi-products to GMK Group for further processing starting May 2019 (previously processed under intersegment tolling arrangements). South Cluster segment revenue from other sales includes intersegment ore processing services under tolling arrangements provided to GMK Group segment
- KGMK Group segment includes mining and metallurgy operations, energy, exploration activities located in Kola Peninsula. KGMK Group metal sales to external customers included metal produced from semi-products purchased from GMK Group segments starting in 2019. Intersegment revenue from metal sales includes sale of semi-products to GMK Group and NN Harjavalta for further processing. KGMK Group revenue from other sales includes intersegment metal processing services under tolling arrangements provided to other segments and energy and utilities services provided to external customers in Kola Peninsula
- NN Harjavalta segment includes refinery operations located in Finland. NN Harjavalta metal sales to external customers primarily include metal produced from semi-products purchased from GMK Group and KGMK Group segments
- GRK Bystrinskoye segment includes ore mining and processing operations located in the Zabaikalsky region of the Russian Federation
- Other mining segment primarily includes 50% Group interest in metal mining and processing joint operations of Nkomati Nickel Mine ("Nkomati"), as well as certain other mining and exploration activities located in Russia and abroad. Other mining segment sales primarily include Group 50% share in sales of metal semi-products produced by Nkomati
- Other non-metallurgical segment includes resale of third party metal products, other trading operations, supply chain management, transport services, energy and utility, research and other activities located in Russia and abroad. Other non-metallurgical segment also includes resale of 50% metal semi-products produced by Nkomati. Other sales of Other non-metallurgical segment primarily include revenue from passenger air transportation, freight transportation services and fuel sales

Corporate activities of the Group do not represent an operating segment, include primarily headquarters' general and administrative expenses and treasury operations of the Group and are presented as Unallocated.

The amounts in respect of reportable segments in the disclosure below are stated before intersegment eliminations, excluding:
- Balances of intercompany loans and borrowings and interest accruals
- Intercompany investments
- Accrual of intercompany dividends

Amounts are measured on the same basis as those in the consolidated financial statements. Following a change in the composition of its operating segments the Group did not restate the corresponding items of the segment information for the years ended 31 December 2018 and 2017 since the necessary information is not practically available.

The following tables present revenue, measure of segment profit or loss (EBITDA) and other segment information from continuing operations regarding the Group's reportable segments for the years ended 31 December 2019, 2018 and 2017, respectively.

For the year ended 31 December 2019	GMK Group	South Cluster	KGMK Group	NN Harjavalta	GRK Bystrinskoye	Other mining	Other non-metallurgical	Eliminations	Total
Metal sales to external customers	8,208	349	2,271	1,145	182	133	563	–	12,851
Other sales to external customers	171	—	36	6	4	—	495	–	712
Inter-segment metal sales	5,177	336	608	21	12	—	4	(6,158)	—
Inter-segment other sales	280	179	200	–	3	—	350	(1,012)	—
Total revenue	13,836	864	3,115	1,172	201	133	1,412	(7,170)	13,563
Segment EBITDA	9,522	475	58	74	349	(31)	31	(1,770)	8,708
Unallocated									(785)
Consolidated EBITDA									7,923
Depreciation and amortisation									(911)
Reversal of impairment of non-financial assets									24
Finance costs									(306)
Foreign exchange gain, net									694
Other income and expenses, net									100
Profit before tax									7,524
Other segment information									
Purchase of property, plant and equipment and intangible assets	839	76	221	18	103	5	62	—	1,324
Depreciation and amortisation	669	25	104	26	54	1	32	—	911
Impairment of non-financial assets, net	(43)	—	(1)	—	—	13	7	—	(24)

For the year ended 31 December 2018	GMK Group	KGMK Group	NN Harjavalta	GRK Bystrinskoye	Other mining	Other non-metallurgical	Eliminations	Total
Metal sales to external customers	8,787	361	1,020	–	107	687	–	10,962
Other sales to external customers	160	33	6	6	1	502	–	708
Inter-segment metal sales	720	154	–	–	–	–	(874)	–
Inter-segment other sales	75	363	–	2	–	325	(765)	–
Total revenue	9,742	911	1,026	8	108	1,514	(1,639)	11,670
Segment EBITDA	6,602	190	71	96	(6)	50	(13)	6,990
Unallocated								(759)
Consolidated EBITDA								6,231
Depreciation and amortisation								(765)
Impairment of non-financial assets								(50)
Finance costs								(580)
Foreign exchange loss, net								(1,029)
Other income and expenses, net								95
Profit before tax								3,902
Other segment information								
Purchase of property, plant and equipment and intangible assets	1,016	292	18	168	21	38	–	1,553
Depreciation and amortisation	612	82	24	13	6	28	–	765
Impairment of non-financial assets, net	8	3	–	–	39	–	–	50

For the year ended 31 December 2017	GMK Group	KGMK Group	NN Harjavalta	GRK Bystrinskoye	Other mining	Other non-metallurgical	Eliminations	Total
Metal sales to external customers	6,712	347	835	–	128	393	–	8,415
Other sales to external customers	176	34	5	14	–	502	–	731
Inter-segment metal sales	500	122	–	–	–	–	(622)	–
Inter-segment other sales	59	394	–	1	–	391	(845)	–
Total revenue	7,447	897	840	15	128	1,286	(1,467)	9,146
Segment EBITDA	4,559	182	61	(65)	(3)	18	(34)	4,718
Unallocated								(723)
Consolidated EBITDA								3,995
Depreciation and amortisation								(645)
Impairment of non-financial assets								(227)
Finance costs								(535)
Foreign exchange gain, net								159
Other income and expenses, net								97
Profit before tax								2,844
Other segment information								
Purchase of property, plant and equipment and intangible assets	1,225	228	16	449	20	64	–	2,002
Depreciation and amortisation	463	61	25	–	72	24	–	645
Impairment of non-financial assets, net	101	3	–	–	122	1	–	227

The following table presents segment metal sales to external customers breakdown by metal for the years ended 31 December 2019, 2018 and 2017, respectively.

For the year ended 31 December 2019	GMK Group	South Cluster	KGMK Group	NN Harjavalta	GRK Bystrinskoye	Other mining	Other non-metallurgical	Total
Nickel	1,079	30	1,269	880	–	65	65	3,388
Copper	2,417	35	246	83	76	10	10	2,877
Palladium	3,634	209	588	106	–	31	475	5,043
Platinum	484	39	78	12	–	8	7	628
Other metals	594	36	90	64	106	19	6	915
	8,208	349	2,271	1,145	182	133	563	12,851

For the year ended 31 December 2018	GMK Group	KGMK Group	NN Harjavalta	Other mining	Other non-metallurgical	Total
Nickel	1,827	275	805	53	53	3,013
Copper	2,824	51	86	8	8	2,977
Palladium	2,990	1	55	18	610	3,674
Platinum	574	3	7	6	6	596
Other metals	572	31	67	22	10	702
	8,787	361	1,020	107	687	10,962

For the year ended 31 December 2017	GMK Group	KGMK Group	NN Harjavalta	Other mining	Other non-metallurgical	Total
Nickel	1,409	254	647	53	53	2,416
Copper	2,268	49	79	13	13	2,422
Palladium	2,056	11	36	23	308	2,434
Platinum	618	6	10	10	10	654
Other metals	361	27	63	29	9	489
	6,712	347	835	128	393	8,415

The following tables present assets and liabilities of the Group's reportable segments at 31 December 2019, 2018 and 2017, respectively.

At 31 December 2019	GMK Group	South Cluster	KGMK Group	NN Harjavalta	GRK Bystrinskoye	Other mining	Other non-metallurgical	Eliminations	Total
Inter-segment assets	3,286	163	315	100	28	5	38	(3,935)	–
Segment assets	10,416	375	4,177	486	1,791	78	984	(1,983)	16,324
Total segment assets	13,702	538	4,492	586	1,819	83	1,022	(5,918)	16,324
Unallocated									3,150
Total assets									19,474
Inter-segment liabilities	305	39	3,227	138	11	–	215	(3,935)	–
Segment liabilities	1,732	108	348	102	107	54	1,197	–	3,648
Total segment liabilities	2,037	147	3,575	240	118	54	1,412	(3,935)	3,648
Unallocated									11,539
Total liabilities									15,187

At 31 December 2018	GMK Group	KGMK Group	NN Harjavalta	GRK Bystrinskoye	Other mining	Other non-metallurgical	Eliminations	Total
Inter-segment assets	292	114	140	24	–	57	(627)	–
Segment assets	9,903	996	451	1,492	88	792	(56)	13,666
Total segment assets	10,195	1,110	591	1,516	88	849	(683)	13,666
Unallocated								1,585
Total assets								15,251
Inter-segment liabilities	139	63	122	39	5	259	(627)	–
Segment liabilities	1,756	134	100	68	26	1,028	–	3,112
Total segment liabilities	1,895	197	222	107	31	1,287	(627)	3,112
Unallocated								8,666
Total liabilities								11,778

At 31 December 2017	GMK Group	KGMK Group	NN Harjavalta	GRK Bystrinskoye	Other mining	Other non-metallurgical	Eliminations	Total
Inter-segment assets	346	207	172	2	9	54	(790)	–
Segment assets	11,536	975	390	1,518	118	935	(42)	15,430
Total segment assets	11,882	1,182	562	1,520	127	989	(832)	15,430
Unallocated								1,205
Total assets								16,635
Inter-segment liabilities	89	135	124	43	1	398	(790)	–
Segment liabilities	2,128	157	73	89	32	171	–	2,650
Total segment liabilities	2,217	292	197	132	33	569	(790)	2,650
Unallocated								9,327
Total liabilities								11,977

7. METAL SALES

The Group's metal sales to external customers are detailed below (based on external customers' locations).

For the year ended 31 December 2019	Total	Nickel	Copper	Palladium	Platinum	Other metals
Europe	6,680	1,399	2,354	1,892	574	461
Asia	3,243	1,329	226	1,476	32	180
North and South America	2,289	427	77	1,595	14	176
Russian Federation and CIS	639	233	220	80	8	98
	12,851	3,388	2,877	5,043	628	915
For the year ended 31 December 2018						
Europe	5,868	1,323	2,356	1,216	514	459
Asia	2,929	1,090	386	1,313	41	99
North and South America	1,619	348	26	1,111	34	100
Russian Federation and CIS	546	252	209	34	7	44
	10,962	3,013	2,977	3,674	596	702
For the year ended 31 December 2017						
Europe	4,753	1,084	2,130	756	449	334
Asia	1,939	804	115	825	119	76
North and South America	1,166	313	–	807	–	46
Russian Federation and CIS	557	215	177	46	86	33
	8,415	2,416	2,422	2,434	654	489

Revenue from metal sales for the year ended 31 December 2019 included net loss of USD (47) million in respect of forward contracts measured at fair value that are expected to be settled by physical delivery or on a net basis (for the year ended 31 December 2018: net gain in the amount of USD 12 million and for the year ended: 31 December 2017: net loss in the amount of USD (26) million).

8. COST OF METAL SALES

	For the year ended 31 December		
	2019	2018	2017
Labour	1,295	1,283	1,363
Materials and supplies	712	727	732
Purchases of refined metals for resale	438	430	530
Purchases of raw materials and semi-products	402	436	297
Third party services	239	200	242
Mineral extraction tax and other levies	221	212	221
Electricity and heat energy	155	143	143
Fuel	101	87	81
Transportation expenses	88	70	65
Sundry costs	167	155	152
Total cash operating costs	3,818	3,743	3,826
Depreciation and amortisation	735	653	630
(Increase)/decrease in metal inventories	(44)	109	(517)
Total	4,509	4,505	3,939

9. GENERAL AND ADMINISTRATIVE EXPENSES

	For the year ended 31 December		
	2019	2018	2017
Staff costs	601	569	507
Third party services	117	96	97
Taxes other than mineral extraction tax and income tax	77	103	79
Depreciation and amortisation	69	38	32
Transportation expenses	15	9	8
Rent expenses	5	23	25
Other	54	52	40
Total	938	890	788

10. SELLING AND DISTRIBUTION EXPENSES

	For the year ended 31 December		
	2019	2018	2017
Marketing expenses	45	31	14
Transportation expenses	43	39	38
Staff costs	15	14	13
Other	14	8	10
Total	117	92	75

11. OTHER OPERATING EXPENSES, NET

	For the year ended 31 December		
	2019	2018	2017
Social expenses	224	207	303
Provision on production facilities shut down	190	–	–
Change in other provisions	39	21	30
Net income earned during the pre-commissioning stage	(192)	(106)	–
Other, net	42	(27)	29
Total	303	95	362

12. FINANCE COSTS, NET

	For the year ended 31 December		
	2019	2018	2017
Interest expense, net of amounts capitalised	340	382	384
Unwinding of discount on provisions and payables	84	100	133
Changes in fair value of non-current liabilities	64	46	–
Interest expense on lease liabilities	12	2	2
Fair value (gain)/loss on the cross-currency interest rate swap	(199)	51	–
Other, net	5	(1)	16
Total	306	580	535

13. INCOME FROM INVESTMENTS

	For the year ended 31 December		
	2019	2018	2017
Interest income on bank deposits	64	59	39
Other, net	34	36	38
Total	98	95	77

14. INCOME TAX EXPENSE

	For the year ended 31 December 2019	2018	2017
Current income tax expense	1,924	812	686
Deferred tax (benefit)/expense	(366)	31	35
Total	1,558	843	721

A reconciliation of theoretic income tax, calculated at the statutory rate in the Russian Federation, the location of major production assets of the Group, to the amount of actual income tax expense recorded in the consolidated income statement is as follows.

	For the year ended 31 December 2019	2018	2017
Profit before tax	7,524	3,902	2,844
Income tax at statutory rate of 20%	1,505	780	569
Allowance for deferred tax assets	25	29	38
Non-deductible impairment of non-financial assets	–	4	7
Non-deductible social expenses	64	54	73
Effect of different tax rates of subsidiaries	(62)	(39)	8
Tax effect of other permanent differences	26	15	26
Total	1,558	843	721

The corporate income tax rates in other countries where the Group has a taxable presence vary from 0% to 30%.

Deferred tax balances

	At 31 December 2018, prior to adoption of IFRS 16	Adjustments on IFRS 16 adoption	At 1 January 2019, adjusted on IFRS 16 adoption	Recognised in income statement	Effect of translation to presentation currency	At 31 December 2019
Property, plant and equipment, right-of use assets	386	41	427	15	50	492
Inventories	107	–	107	(377)	(9)	(279)
Trade and other receivables	(7)	–	(7)	(3)	–	(10)
Decommissioning obligations	(53)	–	(53)	(51)	(9)	(113)
Loans and borrowings, lease liabilities, trade and other payables	(82)	(41)	(123)	(15)	(15)	(153)
Other assets	24	–	24	(3)	1	22
Other liabilities	(2)	–	(2)	38	–	36
Tax loss carried forward	(61)	–	(61)	30	(2)	(33)
Net deferred tax liabilities/ (assets)	312	–	312	(366)	16	(38)

	At 31 December 2017	Recognised in income statement	Disposed on disposal of subsidiaries	Effect of translation to presentation currency	At 31 December 2018
Property, plant and equipment	368	86	–	(68)	386
Inventories	124	–	–	(17)	107
Trade and other receivables	(3)	(5)	–	1	(7)
Decommissioning obligations	(69)	5	–	11	(53)
Loans and borrowings, trade and other payables	(69)	(28)	–	15	(82)
Other assets	46	(18)	–	(4)	24
Other liabilities	8	(10)	–	–	(2)
Tax loss carried forward	(75)	1	–	13	(61)
Net deferred tax liabilities	330	31	–	(49)	312

	At 31 December 2016	Recognised in income statement	Disposed on disposal of subsidiaries	Effect of translation to presentation currency	At 31 December 2017
Property, plant and equipment	350	2	(4)	20	368
Inventories	102	16	–	6	124
Trade and other receivables	(12)	9	–	–	(3)
Decommissioning obligations	(79)	16	–	(6)	(69)
Loans and borrowings, trade and other payables	(33)	(35)	–	(1)	(69)
Other assets	(10)	57	–	(1)	46
Other liabilities	6	2	–	–	8
Tax loss carried forward	(41)	(32)	–	(2)	(75)
Net deferred tax liabilities	283	35	(4)	16	330

Certain deferred tax assets and liabilities have been offset to the extent they relate to taxes levied on the Group's entities which entered into the tax consolidation group. Deferred tax balances (after offset) presented in the consolidated statement of financial position were as follows.

	At 31 December		
	2019	2018	2017
Deferred tax liability	60	385	407
Deferred tax asset	(98)	(73)	(77)
Net deferred tax (assets)/liabilities	(38)	312	330

Unrecognised deferred tax assets

Deferred tax assets have not been recognised as follows:

	At 31 December		
	2019	2018	2017
Deductible temporary differences	164	100	104
Tax loss carry-forwards	240	191	219
Total	404	291	323

Deferred tax assets have not been recognised in respect of these items because it is not probable that future taxable profit will be available against which the Group can utilise the benefits therefrom.

At 31 December 2019 deferred tax asset in the amount of USD 162 million related to tax loss arising on disposal of OJSC "Third Generation Company of the Wholesale Electricity Market" ("OGK-3") (31 December 2018: USD 145 million and 31 December 2017: USD 175 million) was not recognised as it was incurred by the Company prior to setting up of the tax consolidation group. This deferred tax asset can be utilised without expiry only if the Company exits the tax consolidation group.

At 31 December 2019 deferred tax assets in the amount of USD 78 million related to other non-expiring tax losses were not recognised due to specific rules stated by art. 283 of the Tax code of the Russian Federation (31 December 2018: USD 46 million and 31 December 2017: USD 44 million).

At 31 December 2019, the Group did not recognise a deferred tax liability in respect of taxable temporary differences of USD 628 million (31 December 2018: USD 1,558 million and 31 December 2017: USD 1,459 million) associated with investments in subsidiaries, because management believes that it is in a position to control the timing of reversal of such differences and does not expect its reversal in foreseeable future.

15. PROPERTY, PLANT AND EQUIPMENT

		Non-mining assets and right-of-use assets				
	Mining assets and mine development	Buildings, structures and utilities	Machinery, equipment and transport	Other	Capital construction-in-progress	Total
Cost						
Balance at 1 January 2017	7,314	2,855	2,976	215	1,387	14,747
Additions	1,429	–	–	–	840	2,269
Transfers	–	247	477	84	(808)	–
Change in decommissioning provision	(7)	(13)	–	–	–	(20)
Disposals	(124)	(150)	(90)	(23)	(12)	(399)
Other	(40)	42	(6)	2	2	–
Effect of translation to presentation currency	422	153	150	11	75	811
Balance at 31 December 2017	8,994	3,134	3,507	289	1,484	17,408
Additions	925	–	–	–	798	1,723
Transfers	–	304	348	9	(661)	–
Change in decommissioning provision	(6)	(1)	–	–	–	(7)
Disposals	(67)	(4)	(43)	(4)	(12)	(130)
Other	(12)	(13)	20	5	–	–
Effect of translation to presentation currency	(1,589)	(542)	(586)	(50)	(251)	(3,018)
Balance at 31 December 2018, before the adoption of IFRS 16	8,245	2,878	3,246	249	1,358	15,976
Effect of adoption of IFRS 16 (Note 3)	–	137	62	5	–	204
Balance at 1 January 2019, after the adoption of IFRS 16	8,245	3,015	3,308	254	1,358	16,180
Additions	614	–	–	–	855	1,469
Transfers	–	177	513	11	(701)	–
Change in decommissioning provision	79	4	–	–	–	83
Additions of right-of-use assets and remeasurement of the lease liability	–	9	15	5	–	29
Disposals	(52)	(43)	(69)	(6)	(32)	(202)
Other	91	38	(43)	–	(86)	–
Effect of translation to presentation currency	999	360	382	31	166	1,938
Balance at 31 December 2019	9,976	3,560	4,106	295	1,560	19,497
Accumulated depreciation and impairment						
Balance at 1 January 2017	(2,090)	(1,413)	(1,618)	(72)	(248)	(5,441)
Charge for the year	(347)	(97)	(264)	(24)	–	(732)
Disposals	107	56	79	5	4	251

		Non-mining assets and right-of-use assets				
	Mining assets and mine development	Buildings, structures and utilities	Machinery, equipment and transport	Other	Capital construction-in-progress	Total
Impairment loss, net	(154)	(87)	(7)	–	21	(227)
Other	4	(18)	16	(1)	(1)	–
Effect of translation to presentation currency	(120)	(78)	(82)	(4)	(15)	(299)
Balance at 31 December 2017	(2,600)	(1,637)	(1,876)	(96)	(239)	(6,448)
Charge for the year	(350)	(108)	(291)	(24)	–	(773)
Disposals	62	3	38	3	2	108
Impairment loss, net	(33)	(31)	(19)	(2)	35	(50)
Other	9	6	(12)	(3)	–	–
Effect of translation to presentation currency	460	274	329	19	39	1,121
Balance at 31 December 2018	(2,452)	(1,493)	(1,831)	(103)	(163)	(6,042)
Charge for the year	(437)	(145)	(314)	(27)	–	(923)
Disposals	41	36	54	4	15	150
Impairment loss, net	(32)	42	–	(1)	15	24
Other	7	(18)	19	1	(9)	–
Effect of translation to presentation currency	(286)	(182)	(214)	(13)	(18)	(713)
Balance at 31 December 2019	(3,159)	(1,760)	(2,286)	(139)	(160)	(7,504)
Carrying value						
At 31 December 2017	6,394	1,497	1,631	193	1,245	10,960
At 31 December 2018	5,793	1,385	1,415	146	1,195	9,934
At 31 December 2019	6,817	1,800	1,820	156	1,400	11,993

At 31 December 2019 capital construction-in-progress included USD 52 million of irrevocable letters of credit opened for fixed assets purchases (31 December 2018: USD 197 million and 31 December 2017: USD 225 million), representing security deposits placed in banks. For the year ended 31 December 2019 purchases of property, plant and equipment in the consolidated statement of cash flows include USD 221 million of irrevocable letters of credit (for the year ended 31 December 2018: USD 192 million and for the year ended 31 December 2017: USD 210 million).

Capitalised borrowing costs for the year ended 31 December 2019 amounted to USD 174 million (for the year ended 31 December 2018: USD 172 million and for the year ended 31 December 2017: USD 263 million). Capitalisation rate used to determine the amount of borrowing costs equals to 5.12% per annum (31 December 2018: 5.15% and 31 December 2017: 6.28%). At 31 December 2019 mining assets and mine development cost included USD 2,750 million of mining assets under development (31 December 2018: USD 2,868 million and 31 December 2017: USD 3,728 million).

At 31 December 2019 non-mining assets included USD 48 million of investment property (31 December 2018: USD 44 million and 31 December 2017: USD 55 million).

Impairment

At 31 December 2017 the Group reclassified Nkomati Nickel Mine (Nkomati) from assets classified as held for sale and tested the assets for impairment. As a result, impairment loss in the amount of USD 129 million was recognised in impairment of non-financial assets in the consolidated income statement for the year ended 31 December 2017.

During the years ended 31 December 2018 and 31 December 2019 the Group identified indicators of further impairment of Nkomati assets and performed impairment tests using a discounted cash flow model approach. As a result, the carrying value of the Group's share in Nkomati property, plant and equipment was impaired in full at 31 December 2019 (the value-in-use of the Group's share in Nkomati property, plant and equipment at 31 December 2018: USD 12 million). Impairment loss in the amount of USD 12 million was recognised in impairment of non-financial assets in the consolidated income statement for the year ended 31 December 2019 (31 December 2018: USD 39 million).

The most significant estimates and assumptions used in determination of value in use at 31 December 2019, 31 December 2018 and 31 December 2017 are as follows:

- Future cash flows were projected based on budgeted amounts, taking into account actual results for the previous years. Forecasts were assessed up to 2028
- Management estimated prices for metal concentrates based on adjusted commodity price consensus forecast
- Production forecasts were primarily based on internal production reports available at the date of impairment test and management's assumptions regarding future production levels
- The inflation rate separate forecasts for each period were in range of 2-5%. Forecast for exchange rates was made based on expected ZAR and USD inflation indices
- A pre-tax nominal ZAR discount rate was estimated at each reporting date in the range of 21,3-21,6% by reference to the weighted average cost of capital for the Group and management's estimates of the risks specific to the production units

During the year ended 31 December 2015, the Group revised its intention on the further use of the gas extraction assets. As a result, these assets are assessed as a separate cash-generating unit with its value-in-use being determined using a discounted cash flow model approach at each subsequent reporting date.

At 31 December 2019, the Group identified indicators for a decrease of previously recognised impairment loss, primarily due to an increase in regulated gas tariffs and an increase in gas production forecast, and performed assessment of the value-in-use.

The most significant assumptions used in the discounted cash flow model at 31 December 2019, 31 December 2018 and 31 December 2017 are as follows:

- Future cash flows were projected based on budgeted amounts, taking into account actual results for the previous years. Forecasts were assessed up to 2030. Measurements were performed based on discounted cash flows expected to be generated by gas extraction assets
- Management estimates prices for natural gas and gas condensate based on commodities price consensus forecasts and government regulated natural gas tariffs
- Production forecasts were primarily based on internal production reports available at the date of impairment test and management's assumptions regarding future production levels
- The amounts and timing of capital investments were based on management's forecast
- The inflation rate separate forecasts for each period were in range of 2-5%. A pre-tax nominal RUB discount rate of 16.5% (31 December 2018: 15.8%, 31 December 2017: 15.8%) was estimated by reference to the weighted average cost of capital and management's estimates of the risks specific to the production units

As a result, an impairment loss reversal of USD 70 million was recognised in the consolidated income statement for the year ended 31 December 2019 (for the year ended 31 December 2018: impairment loss of USD 8 million and for the year ended 31 December 2017: impairment loss of USD 48 million). Accumulated impairment loss, net of respective accumulated depreciation had no impairment been recognised, amounted to USD 153 million at 31 December 2019 (31 December 2018: USD 243 million).

During the year ended 31 December 2019 the Group recognised additional impairment losses in the amount of USD 34 million in respect of specific individual assets (for the year ended 31 December 2018: USD 3 million and for the year ended 31 December 2017: USD 50 million).

Right-of-use assets

	Buildings, structures and utilities	Machinery, equipment and transport	Other	Total
Balance at 1 January 2019, adjusted on IFRS 16 adoption	137	62	5	204
Additions of right-of-use assets and remeasurement of the lease liability	9	15	5	29
Depreciation	(23)	(18)	(3)	(44)
Effect of translation to presentation currency	16	7	–	23
Balance at 31 December 2019	139	66	7	212

16. OTHER FINANCIAL ASSETS

	At 31 December		
	2019	2018	2017
Non-current			
Loans issued and other receivables	113	130	190
Bank deposits	8	8	2
Derivative financial instruments	102	3	–
Total non-current	223	141	192
Current			
Loans issued and other receivables	47	57	1
Bank deposits	–	83	94
Derivative financial instruments	4	7	4
Total current	51	147	99

17. OTHER TAXES

	At 31 December		
	2019	2018	2017
Taxes receivable			
Value added tax recoverable	638	244	257
Other taxes	13	28	40
	651	272	297
Less: Allowance for value added tax recoverable	(7)	(1)	(1)
Other taxes receivable	644	271	296
Taxes payable			
Value added tax	397	74	66
Social security contributions	46	37	26
Property tax	15	23	22
Mineral extraction tax	16	15	17
Other	29	13	16
Other taxes payable	503	162	147

18. INVENTORIES

	At 31 December		
	2019	2018	2017
Refined metals and other metal products	407	526	655
Work-in-process and semi-products	1,339	1,138	1,333
Less: Allowance for work-in-process	(5)	(4)	(4)
Total metal inventories	1,741	1,660	1,984
Materials and supplies	811	662	739
Less: Allowance for obsolete and slow-moving items	(77)	(42)	(34)
Materials and supplies, net	734	620	705
Inventories	2,475	2,280	2,689

At 31 December 2019 part of metal semi-products stock in the amount of USD 52 million (31 December 2018: USD 88 million and 31 December 2017: USD 453 million) was presented in other non-current assets according to Group's production plans.

19. TRADE AND OTHER RECEIVABLES

	At 31 December		
	2019	2018	2017
Trade receivables from metal sales	277	143	251
Other receivables	151	131	168
	428	274	419
Less: Allowance for expected credit losses	(66)	(70)	(92)
Trade and other receivables, net	362	204	327

In 2019, 2018 and 2017, the average credit period on metal sales varied from 0 to 30 days. Trade receivables are generally non-interest bearing.

At 31 December 2019 trade and other receivables include USD 196 million of short-term trade accounts receivable measured at fair value through profit or loss, Level 2 of fair value hierarchy (31 December 2018: USD 120 million and 31 December 2017: USD 214 million).

At 31 December 2019, 2018 and 2017 there were no material trade accounts receivable which were overdue or individually determined to be impaired.

The average credit period on sales of other products and services for the year ended 31 December 2019 was 25 days (for the year ended 31 December 2018: 23 days and for the year ended 31 December 2017: 23 days). No interest was charged on these receivables.

Included in the Group's other receivables at 31 December 2019 were debtors with a carrying value of USD 43 million (31 December 2018: USD 29 million and 31 December 2017: USD 34 million) that were past due but not impaired. Management of the Group believes that these amounts are recoverable in full.

The Group did not hold any collateral for accounts receivable balances.

Ageing of other receivables past due but not impaired was as follows:

	At 31 December		
	2019	2018	2017
Less than 180 days	35	24	25
180-365 days	8	5	9
	43	29	34

Movement in the allowance for expected credit losses was as follows:

	At 31 December		
	2019	2018	2017
Balance at beginning of the year	70	92	81
Change in allowance	(8)	5	16
Accounts receivable written-off	(4)	(12)	(9)
Effect of translation to presentation currency	8	(15)	4
Balance at end of the year	66	70	92

20. CASH AND CASH EQUIVALENTS

	At 31 December		
	2019	2018	2017
Current accounts			
– – RUB	72	49	76
– – USD	918	398	334
– – EUR	34	13	10
– – other	60	64	14
Bank deposits			
– – RUB	1,357	–	–
– – USD	326	850	290
– – EUR	–	–	17
– – other	9	10	105
Restricted cash and cash equivalents	–	–	2
Other cash and cash equivalents	8	4	4
	2,784	1,388	852

Bank deposits

Interest rate on USD-denominated deposits held in banks at 31 December 2019 was in the range from 1.25% to 1.80% (31 December 2018: from 1.70% to 3.95% and 31 December 2017: from 1.07% to 2.29%) per annum. Interest rate on RUR-denominated deposits held in banks at 31 December 2019 was in the range from 5.90% to 6.26% per annum. Interest rate on deposits held in banks denominated in other currencies at 31 December 2019 was in the range from 0.40% to 3.80% (31 December 2018: from 0.75% to 2.29% and 31 December 2017: from 0.97% to 1.10%) per annum.

21. DISPOSAL OF SUBSIDIARIES

On 4 July 2019 the Group sold its interest in a subsidiary which provides construction services for a cash consideration of USD 5 million, resulting in a net cash outflow from disposal of the subsidiary in the amount of USD 20 million. Gain on disposal in the amount of USD 2 million was recognised in the consolidated income statement.

On 6 April 2017, the Group sold its interest in a subsidiary which owns real estate for a consideration of USD 113 million. Proceeds from disposal of the subsidiary in the amount of USD 95 million were recognised in the consolidated statement of cash flows, net of disposed cash and cash equivalents of USD 16 million and transaction costs of USD 2 million. Gain on disposal in the amount of USD 16 million was recognised in the consolidated income statement.

22. SHARE CAPITAL

Authorised and issued ordinary shares

At 31 December 2019, 2018 and 2017 the Group's number of authorised and issued ordinary shares was 158,245,476.

	For the year ended 31 December		
	2019	2018	2017
Basic earnings per share (US Dollars per share):	36.5	19.5	13.5

The earnings and weighted average number of shares used in the calculation of earnings per share are as follows:

	For the year ended 31 December		
	2019	2018	2017
Profit for the year attributable to shareholders of the parent company	5,782	3,085	2,129

Weighted average number of shares used in the calculation of basic and diluted earnings per share for the years ended 31 December 2019, 2018 and 2017 was 158,245,476 shares.

At 31 December 2019, 2018 and 2017, the Group had no issued financial instruments, which would have a dilutive effect on earnings per share of ordinary stock.

23. NON-CONTROLLING INTEREST

In May 2017 the Group sold a 2.66% share in Bystrinskoye project for USD 21 million to Highland Fund. In October 2017 the Group sold a 36.66% share in Bystrinskoye project for USD 275 million to a related party.

At 31 December 2019, 2018 and 2017 aggregate financial information relating to the subsidiary, LLC "GRK "Bystrinskoye", that has material non-controlling interest, before any intra-group eliminations, is presented below:

	At 31 December		
	2019	2018	2017
Non-current assets	1,486	1,222	1,281
Current assets	407	195	117
Non-current liabilities	(824)	(790)	(593)
Current liabilities	(142)	(139)	(156)
Net assets	927	488	649
Net assets attributable to non-controlling interest	464	244	325

	For the year ended 31 December		
	2019	2018	2017
Net profit/(loss) for the year	362	(61)	(32)
Other comprehensive income/(loss) for the year	76	(104)	31
Total comprehensive income/(loss) for the year	438	(165)	(1)
Profit/(loss) attributable to non-controlling interest	181	(31)	(6)
Other comprehensive income/(loss) attributable to non-controlling interest	38	(52)	5

	For the year ended 31 December		
	2019	2018	2017
Cash flows from/(used in) operating activities	302	72	(42)
Cash flows used in investing activities	(252)	(190)	(423)
Cash flows (used in)/from financing activities	(4)	142	458
Net increase/(decrease) in cash and cash equivalents	46	24	(7)

24. LOANS AND BORROWINGS, LEASE LIABILITIES

	Currency	Fixed or floating interest rate	Average nominal % rate during the year ended 31 December			Maturity	At 31 December		
			2019	2018	2017		2019	2018	2017
Unsecured loans	USD	floating	3.75%	3.45%	3.38%	2020-2028	3,746	3,837	2,898
	RUB	fixed	8.30%	8.30%	11.90%	2021	969	864	1,042
	EUR	floating	0.85%	0.85%	0.85%	2020-2028	30	19	4
Secured loans	USD	floating	-	-	6.72%	2018	–	–	582
	RUB	fixed	9.75%	9.75%	8.38%	2021-2022	10	9	34
Total loans							4,755	4,729	4,560
Bonds	USD	fixed	4.88%	5.24%	5.05%	2020-2024	4,220	3,472	4,206
	RUB	fixed	8.85%	11.60%	11.60%	2024-2026	645	216	259
Total bonds							4,865	3,688	4,465
Total loans and borrowings							9,620	8,417	9,025
Less: current portion due within twelve months and presented as current loans and borrowings							(1,087)	(209)	(813)
Non-current loans and borrowings							8,533	8,208	8,212

	Currency	Average borrowing rate during the year ended 31 December 2019,%	Maturity	At 31 December		
				2019	2018	2017
Lease liabilities	USD	4.57	2020-2031	148	2	4
	RUB	8.21	2020-2099	56	–	–
	EUR	2.18	2020-2050	19	19	23
	other	4.21	2020-2022	1	1	1
Total lease liabilities				224	22	28
Less: current lease liabilities				(44)	(6)	(4)
Non-current lease liabilities				180	16	24

The Group is obliged to comply with a number of restrictive financial and other covenants, including maintaining certain financial ratios and restrictions on pledging and disposal of certain assets.

Changes in loans and borrowings and lease liabilities, including interest, for the year ended 31 December 2019 consist of changes from financing cash flows in the amount of USD 544 million, effect of changes in foreign exchange rates of USD 164 million, adjustments on IFRS 16 adoption in the amount of USD 204 million and other non-cash changes of USD 505 million (for the year ended 31 December 2018: changes from financing cash flows in the amount of USD (934) million, effect of changes in foreign exchange rates of USD (230) million and other non-cash changes of USD 542 million and for the year ended 31 December 2017: changes from financing cash flows in the amount of USD 441 million, effect of changes in foreign exchange rates of USD 103 million and other non-cash changes of USD 667 million).

At 31 December 2019 loans were secured by property, plant and equipment with a carrying amount of USD 10 million (31 December 2018: USD 8 million and 31 December 2017: USD 15 million). At 31 December 2017 100% shares of the Group's subsidiary LLC "GRK "Bystrinskoye" were under pledge, which was released during 2018.

At 31 December 2019 lease liabilities with original maturity in excess of 15 years amounted to USD 15 million.

25. EMPLOYEE BENEFIT OBLIGATIONS

	At 31 December		
	2019	2018	2017
Wages and salaries	225	147	168
Accrual for annual leave	206	177	203
Other	32	22	22
Total obligations	463	346	393
Less: non-current obligations	(70)	(39)	(16)
Current obligations	393	307	377

Defined contribution plans

Amounts recognised within continuing operations in the consolidated income statement in respect of defined contribution plans were as follows:

	For the year ended 31 December		
	2019	2018	2017
Pension Fund of the Russian Federation	281	278	311
Mutual accumulated pension plan	7	7	8
Other	5	7	5
Total	293	292	324

26. PROVISIONS

	At 31 December		
	2019	2018	2017
Current provisions			
Tax provision	4	2	134
Provision for social commitments	51	53	28
Decommissioning obligations	29	21	26
Other provisions	16	1	1
Total current provisions	100	77	189
Non-current provisions			
Decommissioning obligations	633	316	396
Provision for social commitments	38	49	68
Other provisions	3	–	–
Total non-current provisions	674	365	464
Total	774	442	653

	Decommissioning	Social commitments	Tax	Other	Total
Balance at 1 January 2017	397	62	124	41	624
Provision accrued	6	42	2	2	52
Settlements during the year	–	(21)	(2)	(41)	(64)
Change in estimates	(38)	4	–	–	(34)
Unwinding of discount	35	6	–	–	41
Effect of translation to presentation currency	22	3	10	(1)	34
Balance at 31 December 2017	422	96	134	1	653
Provision accrued	–	47	21	2	70
Settlements during the year	(22)	(29)	(144)	(3)	(198)
Change in estimates	(21)	(2)	–	–	(23)
Unwinding of discount	29	5	–	–	34
Effect of translation to presentation currency	(71)	(15)	(9)	1	(94)
Balance at 31 December 2018	337	102	2	1	442
Provision accrued	187	32	4	38	261
Settlements during the year	(18)	(66)	(1)	(21)	(106)
Change in estimate	81	2	–	–	83
Unwinding of discount	30	8	–	–	38
Effect of translation to presentation currency	45	11	(1)	1	56
Balance at 31 December 2019	662	89	4	19	774

Decommissioning obligations

Key assumptions used in estimation of decommissioning obligations were as follows:

	At 31 December		
	2019	2018	2017
Discount rates Russian entities	5.6%-7.5%	7.7%-8.9%	6.9%-9.1%
Discount rates non-Russian entities	7.14%	8.17%	8.38%
Expected closure date of mines	up to 2060	up to 2068	up to 2071
Expected inflation over the period from 2020 to 2039	2.9%-4.6%	3.0%-4.3%	2.9%-4.9%
Expected inflation over the period from 2040 onwards	2.9%	2.9%-3.0%	2.9%

Present value of expected cost to be incurred for settlement of decommissioning obligations was as follows:

	At 31 December		
	2019	2018	2017
Due from second to fifth year	275	149	202
Due from sixth to tenth year	124	24	23
Due from eleventh to fifteenth year	102	27	39
Due from sixteenth to twentieth year	64	86	77
Due thereafter	68	30	55
Total	633	316	396

At 31 December 2019 the Group recognised a provision for expenditure to shutdown certain production facilities located in the Kola Peninsula starting from 2021 (Note 11). The amount of decommissioning obligation was calculated based on the best estimate of the amount and timing of future expenditures included in the detailed asset retirement programme, and accounted for accordingly.

Social commitments

In 2010 the Group entered into multilateral agreements with the Government of the Russian Federation and the Krasnoyarsk Regional Government for construction of pre-schools and other social facilities in Norilsk and Dudinka till 2020, and for resettlement of families currently residing in Norilsk and Dudinka to other Russian regions with more favorable living conditions till 2020. In 2017 the Group entered into agreements with the Zabaikalsky Regional Government for construction and development of industrial, social and other infrastructure till 2026. The provisions are measured at the best estimate of the present value of future expenditures to settle these obligations.

27. TRADE AND OTHER PAYABLES

	At 31 December		
	2019	2018	2017
Financial liabilities			
Trade payables	425	357	426
Payables for acquisition of property, plant and equipment	212	192	186
Other creditors	117	110	140
Total financial liabilities	754	659	752
Non-financial liabilities			
Advances received on contracts with customers	952	892	31
Total non-financial liabilities	952	892	31
Total	1,706	1,551	783

The maturity analysis for the Group's financial liabilities that shows the remaining contractual maturities was as follows:

	At 31 December		
	2019	2018	2017
Due within one month	260	183	194
Due from one to three months	199	192	244
Due from three to twelve months	295	284	314
Total	754	659	752

28. DIVIDENDS

On 16 December 2019, the Extraordinary General shareholders' meeting declared interim dividends in respect of the 9 months ended 30 September 2019 in the amount of RUB 604.09 (USD 9.66) per share with the total amount of USD 1,529 million. The dividends were paid to the shareholders in January 2020.

On 26 September 2019, the Extraordinary General shareholders' meeting declared interim dividends in respect of the 6 months ended 30 June 2019 in the amount of RUB 883.93 (USD 13.77) per share with the total amount of USD 2,179 million. The dividends were paid to the shareholders in October 2019 in the amount of USD 2,180 million recognised in the consolidated cash flow statement, using prevailing RUB/USD rates on the payment dates.

On 10 June 2019, the Annual General shareholders' meeting declared dividends for the year ended 31 December 2018 in the amount of RUB 792.52 (USD 12.19) per share with the total amount of USD 1,928 million. The dividends were paid to the shareholders in July 2019 in the amount of USD 1,986 million recognised in the consolidated cash flow statement, using prevailing RUB/USD rates on the payment dates.

On 19 September 2018, the Extraordinary General shareholders' meeting declared interim dividends in respect of the 6 months ended 30 June 2018 in the amount of RUB 776.02 (USD 11.45) per share with the total amount of USD 1,813 million. The dividends were paid to the shareholders in October 2018 in the amount of USD 1,841 million recognised in the consolidated cash flow statement, using prevailing RUB/USD rates on the payment dates.

On 28 June 2018, the Annual General shareholders' meeting declared dividends for the year ended 31 December 2017 in the amount of RUB 607.98 (USD 9.63) per share with the total amount of USD 1,524 million. The dividends were paid to the shareholders in July 2018 in the amount of USD 1,527 million recognised in the consolidated cash flow statement, using prevailing RUB/USD rates on the payment dates.

On 29 September 2017, the Extraordinary General shareholders' meeting declared interim dividends in respect of the 6 months ended 30 June 2017 in the amount of RUB 224.20 (USD 3.84) per share with the total amount of USD 607 million. The dividends were paid to the shareholders in October 2017 in the amount of USD 610 million recognised in the consolidated cash flow statement, using prevailing RUB/USD rates on the payment dates.

On 9 June 2017, the Annual General shareholders' meeting declared dividends for the year ended 31 December 2016 in the amount of RUB 446.10 (USD 7.83) per share with the total amount of USD 1,239 million. The dividends were paid to the shareholders in July 2017 in the amount of USD 1,188 million recognised in the consolidated cash flow statement, using prevailing RUB/USD rates on the payment dates.

On 16 December 2016, the Extraordinary General shareholders' meeting declared interim dividends in respect of the 9 months ended 30 September 2016 in the amount of RUB 444.25 (USD 7.21) per share with the total amount of USD 1,141 million. The dividends were paid to the shareholders in January 2017 in the amount of USD 1,172 million recognised in the consolidated cash flow statement, using prevailing RUB/USD rates on the payment dates.

29. RELATED PARTIES TRANSACTIONS AND OUTSTANDING BALANCES

Related parties include major shareholders and entities under their ownership and control; associates, joint ventures and joint operation; and key management personnel. The Group defines major shareholders as shareholders, which have significant influence over the Group activities. The Company and its subsidiaries, in the ordinary course of their business, enter into various sale, purchase and service transactions with related parties. Transactions between the Company and its subsidiaries, which are related parties of the Company, have been eliminated on consolidation and are not disclosed in this note. Details of transactions between the Group and other related parties are disclosed below.

	Sales of goods and services and participating shares		
Transactions with related parties	For the year ended 31 December 2019	For the year ended 31 December 2018	For the year ended 31 December 2017
Entities under ownership and control of the Group's major shareholders	–	7	279
Associates, joint ventures and joint operation	–	–	1
Total	–	7	280

	Purchase of assets and services and other operating expenses		
Transactions with related parties	For the year ended 31 December 2019	For the year ended 31 December 2018	For the year ended 31 December 2017
Entities under ownership and control of the Group's major shareholders	89	64	115
Associates, joint ventures and joint operation	136	86	107
Total	225	150	222

	Accounts receivable		
Outstanding balances with related parties	At 31 December 2019	At 31 December 2018	At 31 December 2017
Entities under ownership and control of the Group's major shareholders	1	1	–
Associates, joint ventures and joint operation	10	8	–
Total	11	9	–

Outstanding balances with related parties	Accounts payable At 31 December 2019	At 31 December 2018	At 31 December 2017
Entities under ownership and control of the Group's major shareholders	3	1	2
Associates, joint ventures and joint operation	8	3	9
Total	11	4	11

Terms and conditions of transactions with related parties
Sales to and purchases from related parties of electricity, heat energy and natural gas were made at government-regulated tariffs.

Compensation of key management personnel
Key management personnel of the Group consists of members of the Management Board and the Board of Directors. For the year ended 31 December 2019 remuneration of key management personnel of the Group included salary and performance bonuses amounted to USD 134 million (for the year ended 31 December 2018: USD 109 million and for the year ended 31 December 2017: USD 103 million).

30. COMMITMENTS

Capital commitments
At 31 December 2019, contractual capital commitments amounted to USD 930 million (31 December 2018: USD 544 million and 31 December 2017: USD 801 million).

Leases
The Group is a party to a number of lease contracts with variable lease payments that do not depend on an index or market rental rates, and hence are not recognised as lease liabilities. At 31 December 2019 total future non-discounted variable lease payments under such contracts with the maturity up to 2,068 amounted to USD 310 million.

At 31 December 2019 future non-discounted lease payments for leased items not transferred to the lessee and not recognised as lease liabilities amounted to USD 192 million.

Social commitments
The Group contributes to mandatory and voluntary social programs and maintains social facilities in the locations in which it operates. The Group's social assets as well as local social programme benefit the community at large and are not normally restricted to the Group's employees.

31. CONTINGENCIES

Litigation
At 31 December 2019 the Group is involved in legal disputes in the ordinary course of its operations, with the probability of their unfavorable resolution being assessed as possible. At 31 December 2019, total claims under unresolved litigation amounted to approximately USD 14 million (31 December 2018: USD 13 million and 31 December 2017: USD 25 million).

Taxation contingencies in the Russian Federation
The Russian Federation currently has a number of laws related to various taxes imposed by both federal and regional governmental authorities. Applicable taxes include value-added (VAT), income tax, mandatory social security contributions, mineral extraction tax and other levies. Tax returns, together with other legal compliance areas (for example, customs and currency control matters), are subject to review and investigation by government authorities, which are authorised by law to impose severe fines, penalties and interest charges. Generally, tax returns remain open and subject to inspection for a period of three years following the fiscal year.

While management of the Group believes that its has recognised adequate provisions for tax liabilities based on its interpretation of current and previous legislation, the risk remains that the tax authorities in the Russian Federation could take differing positions with regard to interpretive issues. This uncertainty may expose the Group to additional taxation, fines and penalties.

Transfer pricing legislation enacted in the Russian Federation starting from 1 January 2012 provides for major modifications making local transfer pricing rules closer to OECD guidelines, but creating additional uncertainty in practical application of tax legislation in certain circumstances.

These transfer pricing rules provide for an obligation for the taxpayers to prepare transfer pricing documentation with respect to controlled transactions and prescribe the basis and mechanisms for accruing additional taxes and interest in case prices in the controlled transactions differ from the market level.

Currently there is lack of practice of applying the transfer pricing rules by the tax authorities and courts, however, it is anticipated that transfer pricing arrangements will be subject to very close scrutiny potentially having effect on the financial results and the financial position of the Group.

In 2017 the Russian tax authorities completed the transfer pricing audit of the Group's metal export sales for the year ended 31 December 2013, which did not result in significant additional tax charges.

Environmental matters
The Group is subject to extensive federal, state and local environmental controls and regulations in the countries in which it operates. The Group's operations involve pollutant emissions to air and water bodies as well as generation and disposal of production waste.

Management of the Group believes that the Group is in compliance with all current existing environmental legislation in the countries in which it operates. However, environmental laws and regulations continue to evolve. The Group is unable to predict the timing or extent to which those laws and regulations may change. Such change, if it occurs, may require that the Group modernise technology to meet more stringent standards.

Russian Federation risk
As an emerging market, the Russian Federation does not possess a fully developed business and regulatory infrastructure including stable banking and judicial systems which would generally exist in a more mature market economy. The economy of the Russian Federation is characterised by a currency that is not freely convertible outside the country, currency controls, low liquidity levels for debt and equity markets, and continuing inflation. As a result, operations in the Russian Federation involve risks that are not typically associated with those in more developed markets. Stability and success of Russian economy and the Group's business mainly depend on the effectiveness of economic measures undertaken by the government as well as the development of legal system.

Starting 2014, the United States of America, the European Union and some other countries have imposed and expanded economic sanctions against a number of Russian individuals and legal entities. The imposition of the sanctions has led to increased economic uncertainty, including more volatile equity markets, a depreciation of the Russian rouble, a reduction in both local and foreign direct investment inflows and certain restrictions for operations with individuals and legal entities under sanctions, including financing and investment activities. Management assesses the changes in the Russian business environment did not significantly affect the operations, financial results and the financial position of the Group as of the date of issue of these consolidated financial statements. The longer-term effects of the imposed and possible additional sanctions are difficult to determine.

32. FINANCIAL RISK MANAGEMENT

Capital risk management
The Group manages its capital in order to safeguard the Group's ability to continue as a going concern and to maximise the return to shareholders through the optimisation of debt and equity structure.

The capital of the Group consists of long and short-term borrowings, equity attributable to shareholders of the parent company, comprising share capital, other reserves and retained earnings.

Management of the Group regularly reviews its level of leverage, calculated as the ratio of Net Debt to EBITDA, to ensure that it is in line with the Group's financial policy aimed at preserving investment grade credit ratings.

The Company maintains BBB- investment grade ratings, assigned by rating agencies Fitch and S&P's. On 12 February 2019 Moody's rating agency upgraded the Company's rating from the investment grade Baa3 to the investment grade level Baa2 with stable outlook.

Financial risk factors and risk management structure

In the normal course of its operations, the Group is exposed to a variety of financial risks: market risk (including interest rate and currency risk), credit risk and liquidity risk. The Group has an explicit risk management structure aligned with internal control procedures that enable it to assess, evaluate and monitor the Group's exposure to such risks. The Group has adopted and documented policies covering specific areas, such as market risk management system, credit risk management system, liquidity risk management system and use of derivative financial instruments.

Interest rate risk

Interest rate risk is the risk that changes in interest rates will adversely impact the financial results of the Group. The Group's interest rate risk arises from long- and short-term borrowings at floating rates.

The Group performs thorough analysis of its interest rate risk exposure regularly. Various scenarios are simulated. The table below details the financial results sensitivity to a 2 p.p. increase in floating interest rate. The sensitivity analysis is prepared assuming that the amount of loans and borrowings at floating rates outstanding at the reporting date was outstanding for the whole year.

	2 p.p. floating rate increase impact		
	For the year ended 31 December 2019	For the year ended 31 December 2018	For the year ended 31 December 2017
Loss before tax	76	77	70

For the year ended 31 December 2019 changes in interest rates impact the value of cross-currency interest swap was as follows: 1 p.p. increase in RUB interest rate results in a loss of USD 33 million (for the year ended 31 December 2018: loss of USD 20 million), 1 p.p. decrease in USD interest rate results in a loss of USD 32 million (for the year ended 31 December 2018: loss of USD 23 million). Management believes that the Group's exposure to interest rate risk fluctuations does not require additional hedging activities.

Currency risk

Currency risk is the risk that the fair value or future cash flows of a financial instrument denominated in foreign currency will fluctuate because of changes in exchange rates.

The major part of the Group's revenue and related trade accounts receivable are denominated in US dollars and therefore the Group is exposed primarily to USD currency risk. Foreign exchange risk arising from other currencies is assessed by management of the Group as immaterial.

The carrying amounts of monetary assets and liabilities denominated in foreign currencies other than functional currencies of the individual Group entities at 31 December 2019, 2018 and 2017 were as follows:

	At 31 December 2019			At 31 December 2018			At 31 December 2017		
	USD	EUR	Other currencies	USD	EUR	Other currencies	USD	EUR	Other currencies
Cash and cash equivalents	1,227	35	69	1,234	13	74	609	28	121
Trade and other receivables	398	13	4	265	3	4	384	4	4
Other assets	59	2	10	380	73	8	141	297	15
Total assets	1,684	50	83	1,879	89	86	1,134	329	140
Trade and other payables	213	66	8	249	114	10	290	80	14
Loans and borrowings, lease liabilities	8,113	33	2	7,308	19	3	7,684	5	–
Other liabilities	221	16	–	160	19	–	136	23	–
Total liabilities	8,547	115	10	7,717	152	13	8,110	108	14

Currency risk is monitored on a monthly basis utilising sensitivity analysis to assess if the risk of a potential loss is at an acceptable level. The Group estimates the financial impact of exchange rate fluctuations on USD-denominated monetary assets and liabilities in respect of the Group entities where functional currency is the Russian Rouble, as follows:

	US Dollar 20% strengthening against Russian Rouble		
	For the year ended 31 December 2019	For the year ended 31 December 2018	For the year ended 31 December 2017
Loss before tax	1,577	1,344	1,395

Given that the Group's exposure to currency risk for the net USD-denominated monetary assets and liabilities is offset by the revenue denominated in USD, management believes that the Group's exposure to currency risk is acceptable. The Group does not apply hedge instruments. The Group applies derivative financial instruments including cross-currency interest swaps in order to manage currency risk by matching cash flows from revenue denominated in USD and financial liabilities denominated in RUB.

Credit risk

Credit risk refers to the risk that a debtor will default on its contractual obligations resulting in a financial loss to the Group. Credit risk arises from cash and cash equivalents, bank deposits as well as credit exposures to customers, including outstanding uncollateralised trade and other receivables. The Group's exposure to credit risk is continuously monitored and controlled.

Before entering in a new contract, management assesses the creditworthiness of a potential customer or a financial institution. If the latter is rated by major independent credit-rating agencies, this rating is used to evaluate creditworthiness; otherwise it is evaluated using an analysis of the latest available financial statements and other publicly available information.

The outstanding balances with 5 financial institutions and 5 largest customers are presented below. The banks have a minimum of BB+ credit rating.

	Outstanding balance		
Cash and cash equivalents	Bank A	At 31 December 2018	At 31 December 2017
Bank A	821	417	224
Bank B	715	402	143
Bank C	485	214	125
Bank D	162	75	102
Bank E	152	64	80
Total	2,335	1,172	674
Trade and other receivables			
Customer A	31	50	66
Customer B	24	38	41
Customer C	22	34	23
Customer D	21	20	18
Customer E	21	15	16
Total	119	157	164

The Group is not economically dependent on a limited number of customers because the majority of its products are industrial metals traded on the world commodity markets. Metal and other sales to the Group's customers are presented below:

	For the year ended 31 December 2019			For the year ended 31 December 2018			For the year ended 31 December 2017		
	Number of customers	Revenue USD million	%	Number of customers	Revenue USD million	%	Number of customers	Revenue USD million	%
Largest customer	1	2,363	17	1	1,564	13	1	1,319	14
Next 9 largest customers	9	4,176	31	9	3,461	30	9	2,936	32
Total	10	6,539	48	10	5,025	43	10	4,255	46
Next 10 largest customers	10	2,382	18	10	1,965	17	10	1,494	16
Total	20	8,921	66	20	6,990	60	20	5,749	62
Remaining customers		4,642	34		4,680	40		3,397	38
Total		13,563	100		11,670	100		9,146	100

Management of the Group believes that with the exception of the cash and cash equivalents in banks indicated above there is no significant concentration of credit risk.

The following table provides information about the exposure to credit risk for cash and cash equivalents, issued loans, irrevocable letters of credit, secured by deposits, bank deposits other than included in cash and cash equivalents and trade and other receivables:

	At 31 December		
	2019	2018	2017
Cash and cash equivalents	2,784	1,388	852
Loans, trade and other receivables	522	394	518
Irrevocable letters of credit	61	203	248
Bank deposits	8	91	96

Liquidity risk

Liquidity risk is the risk that the Group will not be able to settle all liabilities as they fall due.

The Group has a well-developed liquidity risk management system to exercise control over its short-, medium- and long-term funding. The Group manages liquidity risk by maintaining adequate reserves, committed and uncommitted bank facilities. Management continuously monitors rolling cash flow forecasts and performs analysis of maturity profiles of financial assets and liabilities, and undertakes detailed annual budgeting procedures.

The following table contains the maturity profile of the Group's borrowings, lease liabilities and derivatives (maturity profiles for trade and other payables are presented in Note 27) based on contractual undiscounted payments, including interest:

At 31 December 2019	Total	Due within one month	Due from one to three months	Due from three to twelve months	Due in the second year	Due in the third year	Due in the fourth year	Due in the fifth year	Due there- after
Fixed rate bank loans and borrowings									
Principal	5,860	–	–	985	974	1,505	1,000	1,154	242
Interest	1,050	–	49	297	277	200	103	82	42
	6,910	–	49	1,282	1,251	1,705	1,103	1,236	284
Floating rate bank loans and borrowings									
Principal	3,797	–	–	104	1,204	1,541	833	100	15
Interest	346	12	23	108	118	68	16	1	–
	4,143	12	23	212	1,322	1,609	849	101	15
Lease obligation									
Lease principal	199	2	7	30	36	34	33	30	27
Cross-currency interest rate swap									
Payable	1,415	–	16	36	938	12	12	402	–
Receivable	(1,665)	–	(35)	(75)	(1,065)	(29)	(29)	(433)	–
	(250)	–	(19)	(38)	(127)	(17)	(17)	(31)	–
Total	11,002	14	60	1,486	2,482	3,331	1,968	1,336	326

At 31 December 2018	Total	Due within one month	Due from one to three months	Due from three to twelve months	Due in the second year	Due in the third year	Due in the fourth year	Due in the fifth year	Due there- after
Fixed rate bank loans and borrowings									
Principal	4,595	1	–	4	987	871	1,507	1,003	222
Interest	1,022	–	30	249	280	213	142	46	62
	5,617	1	30	253	1,267	1,084	1,649	1,049	284
Floating rate bank loans and borrowings									
Principal	3,883	5	–	205	957	1,202	1,302	202	10
Interest	363	4	21	102	123	77	33	3	-
	4,246	9	21	307	1,080	1,279	1,335	205	10
Cross-currency interest rate swap									
Payable	1,008	–	10	31	,41	926	–	–	–
Receivable	(1,067)	–	(18)	(54)	(72)	,(923)	–	–	–
	(59)	–	(8)	(23)	(31)	3	–	–	–
Total	9,804	10	43	537	2,316	2,366	2,984	1,254	294

At 31 December 2017	Total	Due within one month	Due from one to three months	Due from three to twelve months	Due in the second year	Due in the third year	Due in the fourth year	Due in the fifth year	Due there- after
Fixed rate bank loans									
Principal	5,586	1	1	766	6	988	1,049	1,506	1,269
Interest	1,189	–	36	239	258	257	188	106	105
	6,775	1	37	1,005	264	1,245	1,237	1,612	1,374
Floating rate bank loans									
Principal	3,510	9	–	29	236	996	1,028	808	404
Interest	246	5	8	51	65	52	33	20	12
	3,756	14	8	80	301	1,048	1,061	828	416
Total	10,531	15	45	1,085	565	2,293	2,298	2,440	1,790

At 31 December 2019 the Group had available committed bank facilities for the management of its day to day liquidity requirements of USD 5,044 million (31 December 2018: USD 4,290 million and 31 December 2017: USD 3,554 million).

33. FAIR VALUE OF FINANCIAL INSTRUMENTS

Financial instruments that are measured at fair value subsequent to initial recognition, are grouped into Levels 1 to 3 of fair value hierarchy based on the degree to which their fair value is observable as follows:

- Level 1 fair value measurements are those derived from quoted prices (unadjusted) in active markets for identical assets or liabilities
- Level 2 fair value measurements are those derived from inputs other than quoted prices included within Level 1 that are observable for the assets or liability, either directly or indirectly
- Level 3 fair value measurements are those derived from valuation techniques that include inputs for the asset or liability that are not based on observable market data

Management believes that the carrying value of current financial assets and liabilities: instruments such as cash and cash equivalents (refer to Note 20), other financial assets (refer to Note 16), trade and other accounts receivable (refer to Note 19) and accounts payable (refer to Note 27); as well as lease obligations approximates to their fair value or may not significantly differ from it. Derivative financial instruments measured at fair value through profit or loss include cross-currency interest rate swap contracts (Level 2 of fair value hierarchy). Other long-term liabilities classified as measured at fair value through profit or loss include a liability on the execution of a put option related to transactions with non-controlling interest owners, Level 3 of fair value hierarchy.

The information below presents financial instruments not measured at fair value, including loans and borrowings, trade and other long-term payables.

	At 31 December 2019		At 31 December 2018		At 31 December 2017	
	Carrying value	Fair value Level 1	Carrying value	Fair value Level 1	Carrying value	Fair value Level 1
Fixed rate bonds	4 865	5 100	3 688	3 705	4 465	4 685
Total bonds	4 865	5 100	3 688	3 705	4 465	4 685
Loans, including:	Carrying value	Fair value Level 2	Carrying value	Fair value Level 2	Carrying value	Fair value Level 2
Floating rate loans	3 776	3 814	3 856	3 654	3 484	3 439
Fixed rate loans	979	1 007	873	861	1 076	1 055
Total loans	4 755	4 821	4 729	4 515	4 560	4 494
	Carrying value	Fair value Level 2	Carrying value	Fair value Level 2	Carrying value	Fair value Level 2
Trade and other long-term payables	37	37	200	210	402	440
Total trade and other long-term payables	37	37	200	210	402	440

The fair value of financial liabilities presented in table above is determined as follows:

- The fair value of corporate bonds was determined based on market quotations existing at the reporting dates
- The fair value of floating rate and fixed rate loans and borrowings at 31 December 2019, 2018 and 2017 was calculated based on the present value of future cash flows (principal and interest), discounted at the best management estimation of market interest rates, taking into consideration currency of the loan, expected maturity and risks attributable to the Group existing at the reporting date
- The fair value of trade and other long-term payables at 31 December 2019, 2018 and 2017 was calculated based on the present value of future cash flows, discounted at the best management estimation of market interest rates

The fair value of cross-currency interest rate swap contracts is calculated as the present value of future cash flows discounted at the interest rates applicable to the currencies of the corresponding cash flows and available at the reporting date. The fair value is subject to a credit risk adjustment that reflects the credit risks of the Group and of the otherparty and is calculated based on credit spreads derived from current tradeable financial instruments.

34. INVESTMENTS IN SIGNIFICANT SUBSIDIARIES

			Effective % held		
Subsidiaries by operating segments	Country	Nature of business	31 December 2019	31 December 2018	31 December 2017
GMK Group					
JSC "Norilsky Kombinat"	Russian Federation	Rental of property	100	100	100
JSC "Taimyrgaz"	Russian Federation	Gas extraction	–	100	100
JSC "Norilskgazprom"	Russian Federation	Gas extraction	100	100	100
JSC "Norilsktransgaz"	Russian Federation	Gas transportation	100	100	100
JSC "Taimyrenergo"	Russian Federation	Rental of equipment	–	100	100
JSC "NTEK"	Russian Federation	Electricity production and distribution	100	100	100
LLC "ZSC"	Russian Federation	Construction	100	100	100
LLC "Norilsknickelremont"	Russian Federation	Repairs	100	100	100
LLC "Norilskyi obespechivaushyi complex"	Russian Federation	Production of spare parts	100	100	100
South Cluster					
LLC "Medvezhyi ruchey"	Russian Federation	Ore mining and processing	100	100	100
KGMK Group					
JSC "Kolskaya GMK"	Russian Federation	Mining and metallurgy	100	100	100
LLC "Pechengastroy"	Russian Federation	Repairs	100	100	100
Norilsk Nickel Harjavalta					
Norilsk Nickel Harjavalta OY	Finland	Metallurgy	100	100	100
GRK Bystrinskoye					
LLC "GRK "Bystrinskoye"	Russian Federation	Ore mining and processing	50.01	50.01	50.01
LLC "Vostokgeologiya"	Russian Federation	Geological works and construction	100	100	100
Other non-metallurgical					
Metal Trade Overseas A.G.	Switzerland	Distribution	100	100	100
Norilsk Nickel (Asia) Limited	Hong Kong	Distribution	100	100	100
Norilsk Nickel USA, Inc.	USA	Distribution	100	100	100
LLC "Institut Gypronickel"	Russian Federation	Research	100	100	100
JSC "TTK"	Russian Federation	Supplier of fuel	100	100	100
JSC "ERP"	Russian Federation	River shipping operations	100	100	100
LLC "Aeroport Norilsk"	Russian Federation	Airport	100	100	100
JSC "AK "NordStar"	Russian Federation	Aircompany	100	100	100

			Effective % held		
Joint operations by operating segments	Country	Nature of business	31 December 2019	31 December 2018	31 December 2017
Other mining					
Nkomati Nickel Mine	Republic of South Africa	Ore mining and processing	50	50	50

35. EVENTS SUBSEQUENT TO THE REPORTING DATE

In February 2020, the Company entered into an amendment agreement to revise terms and conditions of the USD 2,500 million syndicated term loan originally signed in December 2017 with a group of international banks, increasing the total facility amount to USD 4,150 million concurrently reducing the interest rate and rescheduling the repayment of the outstanding amount of USD 2,500 million from the period of December 2020 – December 2022 to the period of February 2023 – February 2025. At the signing date, the committed undrawn facility amounted to USD 1,265 million with the availability period expiring in October 2020.

Appendix

THE GROUP STRUCTURE: MAIN ASSETS[1]

TRANSPORT

Polar Transport Division

Murmansk Transport Division

Arkhangelsk Transport Division

Krasnoyarsk Transport Division

Bystrinsky Transport Division

Yenisey River Shipping Company (81.99% stake)

Krasnoyarsk River Port (89.3% stake)

Lesosibirsk Port (51% stake)

Norilsk Airport (100% stake)

NordStar Airlines (100% stake)

Norilsk Avia (100% stake)

Nornickel- Yenisey River Shipping Company (100%)

MINING AND METALLURGICAL

Polar Division

Medvezhy Ruchey (100% stake)

Kola MMC (100% stake)

GRK Bystrinskoye (50.01% stake)

Norilsk Nickel Harjavalta OY (Finland, 100% stake)

Nkomati Nickel Mine (South Africa, 50% stake)

ENERGY

Norilskenergo Division

NTEK (100% stake)

Norilskgazprom (100% stake)

TTK (100% stake)

Norilsktransgaz (100% stake)

Arctic-Energo (100% stake)

RESEARCH

Gipronickel Institute (100% stake)

GEOLOGICAL EXPLORATION

Norilskgeologiya (100% stake)

Vostokgeologiya (100% stake)

SUPPORTING BUSINESS

Norilsk Support Complex (100% stake)

Polar Construction Company (100% stake)

Norilsknickelremont (100% stake)

Pechengastroy (100% stake)

Nornickel – Shared Services Centre (100% stake)

SALES AND DISTRIBUTION

NORMETIMPEX (100% stake)

Metal Trade Overseas SA (Switzerland, 100% stake)

Norilsk Nickel (Asia) Limited (Hong Kong, 100% stake)

Norilsk Nickel USA Inc. (USA, 100% stake)

Norilsk Nickel Metals Trading (Shanghai) Co., Ltd. (China, 100% stake)

[1] Ownership Group in subsidiaries is indicated from the authorised capital (direct) as of December 31, 2019. (GRK Bystrinskoye is shown effective share).

OPERATING PERFORMANCE FOR THE PAST 10 YEARS

Norilsk Nickel group saleable metals production[1]	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Total nickel, t	**295,840**	**295,098**	**300,340**	**285,292**	**274,248**	**266,406**	**235,749**	**217,112**	**218,770**	**228,687**
including from own Russian feed	235,518	234,906	223,153	219,273	223,224	220,675	196,809	210,131	216,856	225,204
including from 3d parties feed	60,322	60,192	77,187	66,019	51,024	45,731	38,940	6,981	1,914	3,482
Total copper, t	**388,027**	**377,944**	**363,764**	**371,063**	**368,008**	**369,426**	**360,217**	**401,081**	**473,654**	**499,119**
including from own Russian feed	365,698	362,854	344,226	345,737	345,897	352,766	344,482	397,774	473,515	498,838
including from 3d parties feed	22,329	15,090	19,538	25,326	22,111	16,660	15,735	3,307	139	281
Total palladium, koz	**2,855**	**2,806**	**2,732**	**2,662**	**2,752**	**2,689**	**2,618**	**2,780**	**2,729**	**2,922**
including from own Russian feed	2,723	2,704	2,624	2,529	2,582	2,575	2,526	2,728	2,729	2,919
including from 3d parties feed	132	102	108	133	170	114	92	52	0	3
Total palladium, koz	**692**	**696**	**683**	**650**	**662**	**656**	**644**	**670**	**653**	**702**
including from own Russian feed	663	672	658	604	595	610	610	650	653	700
including from 3d parties feed	29	24	25	46	67	46	34	20	0	2
Polar division and kola mmc (russia)										
Nickel, t	**235,518**	**237,227**	**233,632**	**231,798**	**228,438**	**222,016**	**182,095**	**157,396**	**158,005**	**166,265**
Polar division	124,200	124,000	124,000	122,700	122,390	96,916	50,860	0	0	0
Kola MMC	111,318	113,227	109,632	109,098	106,048	125,100	131,235	157,396	158,005	166,265
including from own Russian feed	111,318	110,906	99,153	96,573	100,834	123,335	126,937	155,110	157,519	166,265
Copper, t	**365,698**	**363,460**	**352,466**	**359,102**	**354,943**	**355,707**	**350,619**	**387,640**	**436,201**	**442,682**
Polar division	309,320	303,940	295,610	296,760	297,552	292,632	280,347	306,859	353,131	355,706
Kola MMC	56,378	59,520	56,856	62,342	57,391	63,075	70,272	80,781	83,070	86,976
including from own Russian feed	56,378	58,914	48,616	48,977	48,345	60,134	63,542	78,587	82,987	86,976
Palladium, koz	**2,723**	**2,704**	**2,628**	**2,580**	**2,660**	**2,606**	**2,554**	**2,738**	**2,671**	**2,868**
Polar division	2,053	2,038	1,989	2,006	2,065	1,935	1,703	956	987	1,042
Kola MMC	670	666	639	574	595	671	851	1,782	1,684	1,826
including from own Russian feed	670	666	635	523	517	640	815	1,737	1,684	1,826
Platinum, koz	**663**	**672**	**660**	**627**	**627**	**622**	**622**	**660**	**642**	**690**
Polar division	529	536	529	504	500	488	449	259	260	251
Kola MMC	134	136	131	123	127	134	173	401	381	439
including from own Russian feed	134	136	129	100	95	122	159	385	381	439

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

Norilsk Nickel group saleable metals production[1]	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Grk Bystrinskoye (Russia, Zabaykalsky krai)[2]										
Copper (in concentrate) t,	0	0	0	0	0	0	0	0	19,417	43,489
Gold (in concentrate), koz	0	0	0	0	0	0	0	0	89	177
Iron ore concentrate t	0	0	0	0	0	0	0	0	346	1,311
Norilsk Nickel Harjavalta (Finland)										
Nickel, t	49,159	48,525	45,518	44,252	42,603	43,479	53,654	59,716	60,765	62,422
including from own Russian feed	0	0	0	0	0	424	19,012	55,021	59,337	58,939
Copper, t	11,279	5,681	1,006	6,549	10,629	13,048	9,598	13,441	18,036	12,948
including from own Russian feed	0	0	0	0	0	0	593	12,328	17,980	12,667
Palladium, koz	48	34	21	39	74	78	64	42	58	54
including from own Russian feed	0	0	0	0	0	0	8	35	58	51
Platinum, koz	15	12	9	16	31	33	22	10	11	12
including from own Russian feed	0	0	0	0	0	0	2	6	11	9
Nkomati (South Africa)[3]										
Nickel, t	5,525	5,815	9,624	11,920	11,359	11,350	8,486	8,006	6,597	6,485
Copper, t	3,082	2,927	4,594	5,034	4,938	5,301	4,007	4,504	3,055	3,419
Palladium, koz	23	24	32	46	48	53	40	46	33	33
Platinum, koz	7	9	12	20	19	20	15	20	13	14
Norilsk Nickel Tati (Botswana)[4]										
Nickel, t	17,401	11,163	9,346	12,215	6,416	3,207	911	0	0	0
Copper, t	11,050	8,803	10,292	5,412	2,436	671	0	0	0	0
Palladium, koz	84	68	83	43	18	5	0	0	0	0
Platinum, koz	14	12	14	7	4	1	0	0	0	0
Lake Johnston (Australia)										
Nickel, t	0	0	8,975	2,826	0	0	0	0	0	0

1/ Norilsk Nickel Group owns 50.01% of Bystrinsky GOK (Chita Copper Project). Production results are shown metal in concentrate for sale on 100% basis and fully consolidated in total operational results. The concentrator at the Bystrinsky project was launched in 2018 as part of the hot commissioning stage and was fully commissioned in 2019.

2/ Production results report metal contained in saleable concentrate on a 50% basis and are not consolidated in the Group's total operating results. In 2019, the Group and its operating partner, African Rainbow Minerals, reached an agreement to scale down production at Nkomati Nickel Mine during 2020. As part of this process, the partners will elaborate in due course a plan contemplating the cessation of the mining operations and the placing of the mine in care and maintenance.

3/ The sale of the asset was closed in 2015.

4/ XX

MINERAL RESOURCES AND ORE RESERVES

Measured and indicated recoures / proven and probable reserves as of December 31, 2019[1]	Ore kt	Metal grade						Contained metal					
		Ni%	Cu%	Pd g/t	Pt g/t	Au g/t	6 PGM g/t	Ni kt	Cu kt	Pd koz	Pt koz	Au koz	6 PGM koz
Taimyr Peninsula													
Proven and probable reserves	**672,815**	**0.92**	**1.72**	**4.19**	**1.11**	**0.24**	**5.55**	**6,176**	**11,598**	**90,585**	**23,967**	**5,200**	**119,987**
Proven reserves													
Talnakh ore field, including	321,482	0.79	1.53	3.78	1.02	0.23	5.00	2,539	4,906	39,038	10,508	2,330	51,705
rich	50,946	2.52	3.12	6.25	1.29	0.25	7.92	1,285	1,589	10,235	2,114	409	12,965
cuprous	17,118	0.96	3.88	9.48	2.29	0.63	11.91	164	665	5,216	1,261	348	6,553
disseminated	253,418	0.43	1.05	2.90	0.88	0.19	3.95	1,090	2,652	23,587	7,133	1,573	32,187
Norilsk-1 deposit (disseminated ore)	20,156	0.35	0.50	3.88	1.57	0.17	5.73	71	101	2,513	1,019	111	3,710
Probable reserves													
Talnakh ore field, including	309,474	1.13	2.10	4.63	1.13	0.26	6.05	3,505	6,512	46,041	11,232	2,625	60,149
rich	78,140	2.91	3.96	7.15	1.40	0.25	9.06	2,271	3,094	17,951	3,525	625	22,757
cuprous	61,096	0.75	3.15	7.06	1.84	0.51	9.12	456	1,923	13,858	3,618	1,008	17,914
disseminated	170,238	0.46	0.88	2.60	0.75	0.18	3.56	778	1,495	14,232	4,089	992	19,478
Norilsk-1 deposit (disseminated ore)	21,703	0.28	0.36	4.29	1.73	0.19	6.34	61	79	2,993	1,208	134	4,423
Measured and indicated resources	**1,698,853**	**0.69**	**1.30**	**3.53**	**1.00**	**0.21**	**4.74**	**11,778**	**22,167**	**193,056**	**54,456**	**11,428**	**259,157**
Talnakh ore field, including	1,553,511	0.73	1.39	3.52	0.96	0.21	4.68	11,349	21,618	175,939	47,775	10,715	233,986
rich	111,927	3.24	4.26	7.98	1.60	0.29	10.12	3,624	4,772	28,722	5,746	1,054	36,401
cuprous	66,249	0.97	4.03	9.23	2.36	0.66	11.85	640	2,669	19,666	5,030	1,397	25,229
disseminated	1,375,335	0.52	1.03	2.88	0.84	0.19	3.90	7,085	14,177	127,551	36,999	8,264	172,356
Norilsk-1 deposit (disseminated ore)	145,342	0.30	0.38	3.66	1.43	0.15	5.39	429	549	17,117	6,681	713	25,171
Inferred resources	**438,473**	**0.85**	**1.73**	**4.21**	**1.09**	**0.25**	**5.53**	**3,707**	**7,585**	**59,401**	**15,375**	**3,526**	**77,899**
Talnakh ore field	437,405	0.85	1.73	4.22	1.09	0.25	5.52	3,704	7,582	59,274	15,325	3,522	77,632
Norilsk-1 deposit (disseminated ore)	1,068	0.28	0.28	3.69	1.46	0.13	7.78	3	3	127	50	4	267
Kola Peninsula (disseminated ore)													
Proven and probable reserves	**84,682**	**0.62**	**0.30**	**0.03**	**0.02**	**0.01**	**0.05**	**524**	**256**	**78**	**51**	**24**	**130**
Proven ore reserves	**43,231**	**0.58**	**0.25**	**0.03**	**0.02**	**0.01**	**0.05**	**250**	**107**	**40**	**29**	**12**	**70**
Probable reserves	41,451	0.66	0.36	0.03	0.02	0.01	0.05	274	149	38	22	12	60
Measured and indicated resources	**320,943**	**0.69**	**0.33**	**0.05**	**0.03**	**0.02**	**0.08**	**2,204**	**1,070**	**480**	**307**	**174**	**846**
Inferred resources	**143,625**	**0.63**	**0.31**	**0.04**	**0.03**	**0.01**	**0.07**	**905**	**446**	**184**	**121**	**60**	**320**

Measured and indicated recoures / proven and probable reserves as of December 31, 2019[1]	Ore kt	Metal grade						Contained metal					
		Ni%	Cu%	Pd g/t	Pt g/t	Au g/t	6 PGM g/t	Ni kt	Cu kt	Pd koz	Pt koz	Au koz	6 PGM koz
Australia (Honeymoon Well)													
Measured and indicated resources (nickel sulfide ores)	**173,300**	**0.68**	**0**	**0**	**0**	**0**	**0**	**1,180**	**0**	**0**	**0**	**0**	**0**
Inferred resources (nickel sulfide ores)	**11,900**	**0.68**	**0**	**0**	**0**	**0**	**0**	**81**	**0**	**0**	**0**	**0**	**0**
Inferred resources (nickel laterite ores)	**339,000**	**0.81**	**0**	**0**	**0**	**0**	**0**	**2,746**	**0**	**0**	**0**	**0**	**0**
TOTAL RUSSIAN ASSETS													
Total proven and probable reserves	757,497	0.88	1.56	3.72	0.99	0.21	4.93	6,700	11,854	90,663	24,018	5,224	120,117
Total measured and indicated resources	2,019,796	0.69	1.15	2.98	0.84	0.18	4.00	13,982	23,237	193,536	54,763	11,602	260,003
Total inferred resources	582,098	0.79	1.38	3.18	0.83	0.19	4.18	4,612	8,031	59,585	15,496	3,586	78,219
TOTAL RUSSIAN AND INTERNATIONAL ASSETS													
Total proven and probable reserves	757,497	0.88	1.56	3.72	0.99	0.21	4.93	6,700	11,854	90,663	24,018	5,224	120,117
Total measured and indicated resources	2,193,096	0.69	1.06	2.74	0.78	0.16	3.69	15,162	23,237	193,536	54,763	11,602	260,003
Total inferred resources	932,998	0.80	0.86	1.99	0.52	0.12	2.61	7,439	8,031	59,585	15,496	3,586	78,219

MINERAL RESERVES AND RESOURCES as of June 30, 2019[2]	Ore kt	Metal grade				Contained metal			
		Ni%	Cu%	Co%	4PGM g/t	Ni kt	Cu kt	Co kt	4 elements koz
South Africa (Nkomati)									
Proven and probable reserves	7,580	0.29	0.11	0.02	0.90	22	8	1	219
Measured and indicated resources	172,670	0.35	0.14	0.02	0.94	602	236	32	5,214
Inferred resources	46,350	0.40	0.13	0.02	0.97	188	62	8	1,438

Notes:

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.
Data regarding the reserves and resources is based on the balance-sheet reserves of A, B, C1 and C2, categories (according to the terminology of the State Committee for Mineral Reserves) as of the end of the given calendar year.
The six platinum group metals (PGMs) are platinum, palladium, rhodium, ruthenium, osmium, and iridium. The four elements are platinum, palladium, rhodium and gold.
Ore losses applied ranged from 1.6 % to 26% and dilution from 6% to 31.9%.
Excluding deposits in Zabaykalsky Region.
Figures given as "Total" may differ from the sum of individual numbers due to rounding. Certain values may in some instances vary slightly from previously published values.

2/ The Company owns 50% of Nkomati. Nkomati's mineral reserves and resources are not included Group's total amounts.

MEASUREMENT UNITS AND CURRENCY EXCHANGE RATES

Measurement units

	Length		Area		Weigth
1 km	0.6214 mi	1 sq m	10.7639 sq ft	1 kg	2.2046 lb
1 m	3.2808 ft	1 sq km	0.3861 sq mi	1 metric tonne	1,000 kg
1 cm	0.3937 in	1 ha	2.4710 acres	1 short tonne	907.18 kg
1 mi	1.609344 km	1 sq ft	0.09290304 sq m	1 troy ounce	31.1035 g
1 foot	0.3048 m	1 sq m	2.589988 sq km	1 lb	0.4535924 kg
1 in	2.54 cm	1 acre	0.4046873 ha	1 g	0.03215075 oz t

Currency exchange rates in 2015–2019

Exchange rates used to translate the costs denominated in rouble

Index	2015	2016	2017	2018	2019
Average rate Russian Rouble / US Dollar for the year ended 31 December	60.96	67.03	58.35	62.71	64.74

GLOSSARY

Anode. Crude metal (nickel or copper) obtained from anode smelting and fed for electrolytic refining (electrolysis) whereby it is dissolved.

Refinement. The process of extracting high purity precious metals through their separation and removal of impurities.

Rich ores. Ores with high sulphide content (over 70%) and the following metal grades: 2–5% for nickel, 2–25% for copper, and 5–100 g/t for platinum group metals.

Probable ore reserves. Estimated based on the economically mineable part of indicated and, in some circumstances, measured mineral resources, including possible dilution and losses during mining operations.

Disseminated ores. Ores containing 5% to 30% sulphides, with the following metal grades: 0.2–1.5% for nickel, 0.3–2% for copper, and 2–10 g/t for platinum group metals.

Leaching. Selective dissolution of one or several components of the processed solid material in organic solvents or water solutions of inorganic substances. Kinds of leaching: acid leaching (leaching with acids as reagents), chlorine leaching.

Proven ore reserves. Estimated based on the economically mineable part of measured mineral resources, including possible dilution and losses during mining operations.

Metal extraction. The ratio between the quantity of a component extracted from the source material and its quantity in the source material (as a percentage or a fraction).

Cathode. Pure metal (nickel or copper) obtained as a result of electrolytic refining of anodes.

Cake. Solid residue from filtering pulp during leaching of ores, concentrates or metallurgical intermediates, and purification of processing solutions.

Conversion. Oxidation process to turn matte into converter matte (in smelting copper-nickel concentrates) or blister copper (in smelting copper concentrates) and remove slag (carbon, sulphur, iron and other impurities).

Concentrate. A product of ore concentration with a high grade of the extracted mineral, which gives its name to the concentrate (copper, nickel, etc.).

Cuprous ores. Ores containing 20% to 70% sulphides, with the following metal grades: 0.2–2.5% for nickel, 1.0–15.0% for copper, 5–50 g/t for platinum group metals.

Roasting. Heating ore to high temperatures to trigger chemical changes that enable subsequent metal recovery processes.

Concentration. Artificial improvement of metallurgical feedstock mineral grades by removal of a major portion of waste rock not containing any valuable minerals.

Oxide. A compound of a chemical element with oxygen.

Tailings pit. A complex of hydraulic structures used to receive and store mineral waste / tailings.

Vanyukov furnace. An autogenous smelter for processing concentrates, where smelting is performed in a bath of slag and matte, with intensive injection of air-oxygen mixture. The heat from oxidation reactions is actively used in the process.

Flash smelter. An autogenous smelter for processing dry concentrates, where the smelted substance is finely ground feedstock mixed with a gaseous oxidiser (air, oxygen), which holds melted metal particles suspended. The heat from oxidation reactions is actively used in the process.

Fluidised bed furnace. A furnace where solid particles are intensively mixed under a fluidising impact of heated gas (air, oxygen or flue gases) flowing through the bed of grainy material (powder, granules).

Pyrrhotite concentrate. By-product of copper-nickel ore concentration.

Sublevel caving. An underground mining method in which ore blocks are developed from top to bottom via sublevels, and ore is extracted by blasting or causing sublevels to cave in. The voids formed after extraction get filled with fractured rock.

Pulp. A mixture of finely ground rock with water or a water solution.

Ore. Natural minerals containing metals or their compounds in economically valuable amounts and forms.

Mine. A mining location for extraction of ores.

Thickening. Separation of liquid (water) and solid particles in dispersion systems (pulp, suspension, colloid) based on natural gravity settling of solid particles in settlers and thickeners, or centrifugal settling of solid particles in hydrocyclones.

Metal grade. The ratio between the weight of metal in the dry material and the total dry weight of the material expressed as a percentage or grammes per tonne (g/t).

Sulphides. Compounds of metals and sulphur.

Drying. Removal of moisture from concentrates performed in designated drying furnaces (to a moisture level below 9%).

Tolling agreement. An agreement to process foreign feedstock with subsequent shipping of finished product. The feedstock and end product are exempt from customs duties.

Converter matte. A metallurgical intermediate produced as a result of matte conversion. Depending on the chemical composition, the following types of converter matte are distinguished: copper, nickel and copper-nickel.

Filtration. The process of reducing the moisture level of the pulp by forcing it through a porous medium.

Flotation. A concentration process where specific mineral particles suspended within the pulp attach to air bubbles. Poorly wettable mineral particles attach to the air bubbles and rise through the suspension to the top of the pulp, producing foam, while well wettable mineral particles do not attach to the bubbles and remain in the pulp. This is how the minerals are separated.

Tailings. Waste materials left over after concentration processes and containing mostly waste rock with a minor amount of valuable minerals.

Ore mixture. A mixture of materials in certain proportions needed to achieve the required chemical composition of the end product.

Slag. Melted or solid substance with a varying composition that covers the surface of a liquid product during metallurgical processes (resulting from ore mixture melting, melted intermediate processing and metal refining) and includes waste rock, fluxes, fuel ash, metal sulphides and oxides, and products of interaction between the processed materials and lining of melting units.

Sludge. Powder product containing precious metals settling during electrolysis of copper and other metals.

Matte. Intermediate product in the form of an alloy of sulphides of iron and non-ferrous metals with a varying chemical composition. Matte is the main product accumulating precious metals and metal impurities the feedstock contains.

Electrolysis. A series of electrochemical reduction-oxidation reactions at electrodes immersed in an electrolyte as a result of passing of an electric current from an external source.

Electrowinning. Electrodeposition of metal from ores that have been put in solution. Ore or concentrate is leached with agents that dissolve metal-containing minerals or the entire material, so that the metal is deposited on the cathode. The electrolyte is typically reused in the process. The end product is high-purity metal cathode.

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