

## Key investment projects



### CAPACITY UPGRADE AND RAMP-UP AT TALNAKH CONCENTRATOR



Norilsk Industrial District, Krasnoyarsk Territory  
(Polar Division)



In April 2014, massive reconstruction of Talnakh Concentrator entered its main stage. In January 2015, Stage 1 was commissioned, followed by the launch of Stage 2 in May 2016. Decision on launching Stage 3 will be made in 1H 2018.

#### Highlights

Stage 1	Stage 2	Stage 3
<ul style="list-style-type: none"> <li>– Maintaining existing capacity at 7.5 mtpa;</li> <li>– Reconstructing existing flotation capacities and replacing flotation machines that are beyond their useful lives and building a new tailings pit (first phase)</li> </ul>	<ul style="list-style-type: none"> <li>– Ramping up capacity from 7.5 mtpa to 10.2 mtpa</li> <li>– Upgrading equipment;</li> <li>– Increasing nickel content in nickel-pyrrhotite concentrate from 5.8% to 9.5%;</li> <li>– Total CAPEX of ca. RUB 33.7 bn (USD 671 mln)</li> </ul>	<ul style="list-style-type: none"> <li>– Ramping up capacity from 10.2 mtpa to 18 mtpa;</li> <li>– Building the second phase of the tailings pit.</li> <li>– Investment decision on launching Stage 3 expected in 1H 2018.</li> </ul>

#### PROJECT SCHEDULE

- **2015**  
Launch and commissioning of Stage 1
- **2016**  
– Launch of Stage 2  
– Pilot-launched of new tailings pit
- **2017**  
– Full commissioning of Stage 2  
– 2017 CAPEX of total project of ca. RUB 5.2 bn (USD 89 mln)
- **2018**  
– Decision on commissioning Stage 3  
– Output of key assets of new tailings pit (first phase)



## MINING PROJECTS

### Skalistaya mine

 Norilsk Industrial District, Krasnoyarsk Territory  
(Polar Division)

Increasing ore production from 1.8 mtpa to 2.2 mtpa in 2018 and to 2.4 mtpa by 2024 by stripping and extracting rich cupriferous ore reserves of the Talnakhskiye and Oktyabrskoye Fields.

#### Highlights

Ore reserves	65.9 mt
2017 CAPEX of ca.	RUB 13 bn (USD 216 mln)
2018–2024 CAPEX of ca.	RUB 65 bn (USD 1.1 bn)

#### Average metal content



### Taimyrsky mine

 Norilsk Industrial District, Krasnoyarsk Territory  
(Polar Division)

Increasing ore production from 3.6 mtpa to 3.8 mtpa by 2020 by stripping rich copper-nickel ores at the Oktyabrskoye Field.

#### Highlights

Ore reserves of	63.0 mt
2017 CAPEX of ca.	RUB 5.4 bn (ca. USD 93 mln)
2018–2023 CAPEX of over	RUB 22 bn (ca. USD 371 mln)

#### Average metal content



#### PROJECT SCHEDULE

##### 2017

- Production ramp-up to 1.75 mt
- 152 m sinking of ventilation shaft–10 (total of 1.9 km out of 2.1 km)
- 322 m sinking of skip-cage shaft–1 (total of 1.7 km out of 2.1 km)
- Drifting of 4,519 m

##### 2018

- 500 kt capacity commissioning
- Completion of ventilation shaft

##### 2019

Completion of skip-cage shaft–1 construction

##### 2020

Completion of infrastructure construction

##### 2024

Production ramp-up to 2.4 mt

#### PROJECT SCHEDULE

##### 2016

300 kt capacity commissioning

##### 2017

1.8 km of underground workings completed and 100 kt of new capacity completed

##### 2018

- Capacity commissioning (500 kt of rich ore)
- Upgrading the hoist system at skip shaft No. 3

##### 2019

Capacity commissioning (200 kt of rich ore)

##### 2020

Capacity ramp-up to 3.8 mt

##### 2021

Capacity commissioning (400 kt of rich ore)

### Oktyabrsky mine

 Norilsk Industrial District, Krasnoyarsk Territory (Polar Division)

Increasing ore production to 5.2 mtpa by 2023 by stripping high-grade, disseminated and cupriferous ores at the Oktyabrskoye Field.

#### Highlights

Ore reserves of	96 mt
2017 CAPEX of ca.	RUB 4 bn ca. USD 69 mln
2018–2025 CAPEX of ca.	RUB 6.0 bn (ca. USD 95 mln)

#### Average metal content



### Komsomolsky mine<sup>1</sup>

 Norilsk Industrial District, Krasnoyarsk Territory (Polar Division)

Increasing ore production to 3.8–4.0 mtpa before 2020.

<sup>1</sup> excluding Skalistaya mine.

#### Highlights

Ore reserves of	22.9 mt
2017 CAPEX of ca.	RUB 1.2 bn (ca. USD 18 mln)
2018–2022 CAPEX of over	RUB 14 bn (ca. USD 234 mln)

#### Average metal content



#### PROJECT SCHEDULE


- **2017**
  - 7 km of underground workings completed,
  - Capacity ramped up by 250 kt of disseminated ore and 100 kt of rich ore
- **2019**
  - Capacity commissioning (150 kt of rich ore and 700 kt of cupriferous disseminated ore)
- **2020–2025**
  - Capacity commissioning (300 kt of cupriferous ore)

#### PROJECT SCHEDULE

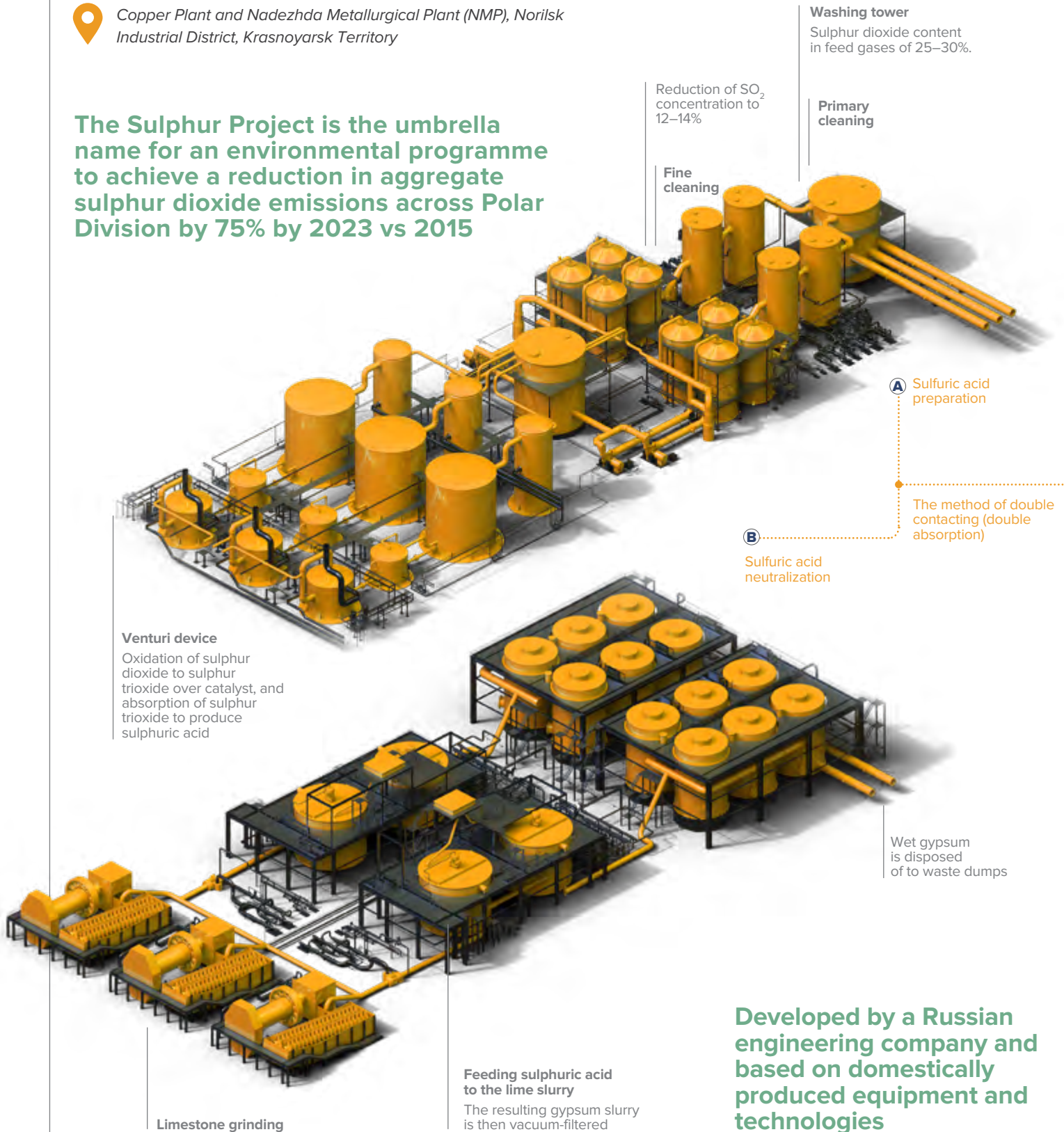
- **2017**
  - Power supply system completed at the southern ventilation shaft
  - Ca. 3 km of underground workings completed
  - 100 kt of rich ore capacity commissioned
- **2018**
  - Completion of the western backfilling shaft reconstruction
  - capacity commissioning (200 kt of cupriferous ore)
- **2019**
  - Capacity commissioning (175 kt of rich ore)
- **2020**
  - Capacity commissioning (225 kt of rich ore and 200 kt of disseminated ore)



## SULPHUR PROJECT

 Copper Plant and Nadezhda Metallurgical Plant (NMP), Norilsk Industrial District, Krasnoyarsk Territory

**The Sulphur Project is the umbrella name for an environmental programme to achieve a reduction in aggregate sulphur dioxide emissions across Polar Division by 75% by 2023 vs 2015**



**Developed by a Russian engineering company and based on domestically produced equipment and technologies**

# 1

## Nadezhda Metallurgical Plant

Nadezhda Metallurgical Plant will have new facilities capturing sulphur-rich gases, while sulphur acid will be neutralised with natural limestone, with waste gypsum produced as a result. In addition, a revolutionary continuous copper matte converting unit will be built. Its emissions will also be used to produce sulphur acid.

# 2

## Copper Plant

Meanwhile, Copper Plant will see its elemental sulphur production capacities ramped up and the entire converter section shut down.

### Highlights

2017 CAPEX of ca.	RUB 2.2 bn (ca. USD 37 mln)
Less sulphur dioxide emissions	75% by 2023
Estimated project costs of ca. (according to the feasibility study)	USD 2.6 bn
Completion scheduled for	2022



**Video about the Sulphur Project**

### PROJECT STATUS

#### 2016–2017

##### Nadezhda Metallurgical Plant:

- design specifications developed and approved, feasibility study prepared and approved;
- first long lead equipment arrangements made;
- design documents developed under a contract with Kazgiprotsvetmet

##### Copper Plant:

- design specifications developed, feasibility study prepared;
- engineering surveys required to develop key technical solutions to bring project up to date completed.

**New volume of the Maximum Permissible Emission Rates for the period until 2023 approved. Project approved and presented at Strategy Day in November 2017.**

#### 2018 targets:

##### Nadezhda Metallurgical Plant:

- launching the Implementation stage to prepare engineering documents;
- obtaining the State Expert Review Board's approval for the project;
- start tender procedures for long lead equipment and select an EPC contractor for the project.

##### Copper Plant:

- Gipronickel Institute preparing engineering documents for non-standardised equipment;
- launching the Implementation stage to prepare engineering documents;
- arranging a tender to select a contractor for further implementation of the project, with on-site preparations.

##### Continuous copper converting facility:

- Obtaining the State Expert Review Board's approval for the NMP project; launching the Implementation stage to prepare engineering documents, start tender procedures for long lead equipment and select an EPC contractor for the NMP project.



## TANK-HOUSE REFURBISHMENT



Severonickel Plant, Monchegorsk, Murmansk Region  
(Kola MMC)



Tank-House 1 saw refurbishment of buildings, equipment, and utility and ventilation systems. The project was completed in 2016. Tank-House 2 is to be transformed into an advanced, cost-efficient cathode nickel facility by introducing the technology of nickel electrowinning from chlorine dissolved tube furnace nickel powder.

### Highlights

#### Tank-House 1

Capacity commissioning of **45 ktpa**

CAPEX of ca. **RUB 0.8 bn**

Project completed in 2016.

#### Tank-House 2

Increasing the capacity from **120 ktpa to 145 ktpa of nickel**

Increasing the nickel recovery rate for converter matte by **more than 1%**

2017 CAPEX of ca. **RUB 7 bn (ca. USD 120 mln)**

CAPEX outstanding of ca. **RUB 14 bn (ca. USD 236 mln)**

Progress: **~40%**

### PROJECT SCHEDULE

#### 2017

42 electrolysis cells upgraded at Tank-House 2 to support chlorine leaching

#### 2018

Gradual capacity commissioning

#### 2019

Reaching the design capacity and performance targets



## CONSTRUCTION OF A COPPER-NICKEL ORE CONCENTRATE SHIPMENT FACILITY



Zapolyarny, Murmansk Region  
(Kola MMC)

The new facility will enable the Company to split its copper-nickel concentrate into low-grade and high-grade.

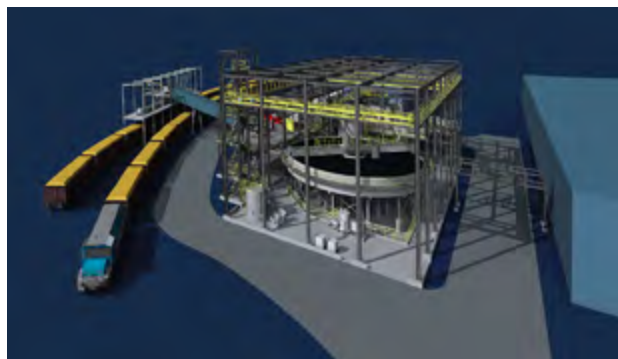
No low-grade concentrate processing will lead to significant cuts in sulphur dioxide emissions in Nickel. By re-arranging shipments of low-grade concentrate from Kola MMC to a third-party processor, the Company will be able to decommission ore-thermal furnace No 3 in the smelting shop and cut the operating costs.

### Highlights

Dried high-grade concentrate unit with a capacity **of 150 ktpa**

2017 CAPEX of **RUB 0.8 bn (ca. USD 14 mln)**

Outstanding CAPEX of **RUB 4 bn (ca. USD 71 mln)**



### PROJECT STATUS

#### September 2017

- Contract for engineering and equipment supplies signed with Outotec;
- Check-ups and surveys completed, preparation for utility systems dismantling and relocation in progress.

#### Q4 2018

Construction works of the project to be completed

#### Q2 2019

Output of key equipment



**BYSTRINSKY GOK  
(CHITA PROJECT)**



Gazimuro-Zavodsky District, Zabaykalsky Krai  
(GRK Bystrinskoye).



**PROJECT  
SCHEDULE**

**2017**

- Naryn-1 (Borzya) – Gazimursky Zavod railway commissioned
- 220 kV power lines commissioned
- Mining and processing plant pilot-launched
- Camp for 1,047 people built

**2021**

Plant reaching the design capacity

Constructing an open pit and a mining and processing plant to utilise untapped reserves, constructing a railway and power lines, building a camp.

**Average metal content**



**Highlights**

Output of	10 mtpa
Ore reserves of	333 mt
2017 CAPEX of over	RUB 26 bn (ca. USD 449 mln)
Project CAPEX of over	RUB 89 bn (USD 1.6 bn)
New jobs for	3 thousand employees

**Annual production volumes at design capacity (2021+)**

Cu (concentrate)	~65 kt
Fe (magnetite concentrate)	2.1 mt (Fe — 66%)
Au (concentrate)	220 koz

Company overview

Strategy overview

Market overview

Business overview

Corporate governance

Information for shareholders

Appendices