

# Nornickel's strategy

The Company has embarked on a new investment cycle to secure its sustainable development and establish a platform for future growth. President's priorities include implementing the second stage of the unprecedented environmental programme, completing the production reconfiguration project, developing the Company's mining assets, reaching target performance levels for the Chita project, and delivering on the extensive infrastructure renewal programme, which, together with comprehensive efficiency improvement efforts, is helping to lay foundation for sustainable shareholder value growth.

## President's priorities



The 2023 development programme is designed to renew all production capacities and, ultimately, make Nornickel one of the most advanced and environmentally responsible companies in the industry.”

**Vladimir Potanin**



### Environmental programme

- Implementing environmental projects that lead to a many-fold decrease in SO<sub>2</sub> emissions across the Company's footprint
- Working with the “green” industries, including by manufacturing catalysts and electric transport



### Mining development and the new asset replacement cycle

- Consistently renewing the infrastructure and key production facilities
- Upgrading and refurbishing the production assets (reconfiguration project)
- Developing the Talnakh ores and maintaining a stable production level

### Shaping growth areas



### Consistent process efficiency improvement

- Comprehensive cost reduction and efficiency improvement programme
- Introducing ERP / automated control systems
- Introducing industrial automation systems

THE MAP TO ADVANCED, EFFICIENT, AND ENVIRONMENTALLY FRIENDLY PRODUCTION



2018–2020 key strategic investments

USD **1.4–1.6** bn

- 1 Optimising the smelting shop capacity utilisation rates to decrease SO<sub>2</sub> emissions
- 2 Implementing the comprehensive environmental programme

USD **4.4–4.8** bn

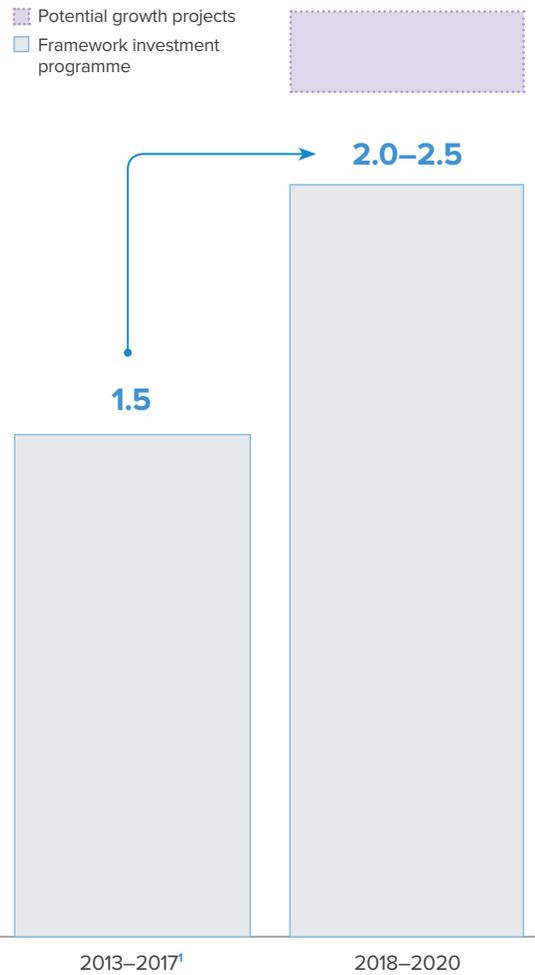
- 3 Infrastructure development and maintenance
- 4 Intensive development of the Talnakh ore mining base
- 5 Completion of the current reconfiguration programme
- 6 Chita Project

- 7 Potential construction of the third stage of Talnakh Concentrator
- 8 Development of the Southern Cluster
- 9 Greenfield PGM production project in the Norilsk Industrial District
- Search for new growth areas in other Russian regions

USD **0.3–0.5** bn

- Efficiency improvement initiatives covering IT, automation, R&D, machinery productivity

Average annual investment // USD bn p.a.



<sup>1</sup> Excluding Chita Project.



**-75%**

target reduction of SO<sub>2</sub> emissions in the Norilsk Industrial District by 2023

**-50%**

target reduction of SO<sub>2</sub> emissions in the settlement of Nickel (Kola MMC) by 2019

## Environmental programme

The integrated environmental programme expected to receive ca. USD 2.5 bn in investments by 2023 is one of the priority focus areas of Nornickel's strategy. The programme is designed to decrease SO<sub>2</sub> emissions by 75% in the Norilsk Industrial District and by 50% on the Kola Peninsula.



We are launching the second stage of our environmental programme, the Sulphur Project, on a scale that is unprecedented not only in Russia but worldwide."

**Vladimir Potanin**

# Improvement of environmental conditions across Russian operations and globally

# Environmental programme 2.0

## **Kola Peninsula** Kola MMC

### Objective

Cut emissions in the Kola Peninsula by 50%

### Goal

Optimise the smelting shop capacity utilisation rates in the settlement of Nickel by separating the concentrate produced at Kola Concentrator

## **Taimyr Peninsula,** Polar Division

[Sulphur Project](#)

### Objective

Cut sulphur dioxide emissions by 75% (as compared to 2015) by 2023 leveraging the most effective technological solution

#### The programme includes two stages

Stage 1 was completed in 2016 as a part of the downstream reconfiguration programme that included upgrade of concentrating and smelting capacities as well as the shutdown of Nickel Plant, the oldest and least environmentally friendly site in the Polar Division, to substantially reduce emissions in the residential area of Norilsk. At present, the Company is working to achieve Stage 2 goals.

### Goals (Stage 2)

#### Copper plant

- Reconstruct copper production chain, including the shutdown of environmentally harmful conversion operations
- Expand and upgrade the existing sulphur production

#### Nadezhda Metallurgical Plant

- Launch a new continuous copper matte converting facility
- Implement a comprehensive SO<sub>2</sub> capture solution including production of sulphuric acid and its subsequent neutralisation with natural limestone

[More details on the Sulphur Project](#)

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# Investing in pure metal



Providing the growing electric vehicle industry with critically important metals

**Ni, Cu, Co**

[More details](#)

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Providing catalyst producers with critically important metals

**Pt, Pd**

[More details](#)

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USD **4.4–4.8** bn  
Investments in core projects, 2018–2020

## Key investments

The framework investment programme provides for large-scale modernisation and expansion of the production capacities, consistent renovation and upgrade of the infrastructure, development of the Talnakh ores, and maintaining a stable production level. The Chita project, one of the largest greenfield projects in Russia's mining industry, is also part of the framework investment programme.



Over the next three years, we will be going through a higher CAPEX stage which will allow us to both maintain stable production levels and establish a strong foundation for new high-potential projects.”

**Vladimir Potanin**

# Large-scale asset modernization and development of the mining base

# Mining projects

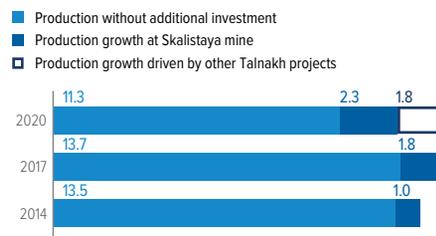
## Taimyr Peninsula Polar Division

### In the mid-term, the investment programme will ensure a stable level of production

- Increased rich ore production at Skalistaya mine will preserve metal content in commercial ore at the current level.

- The resource base of the Talnakh Ore Cluster has a strong potential for further development. In 2018–2019, the Company will make decisions on expanding the production capacities at the Oktyabrskoye and Talnakhskoye Fields.

### Production volumes at Talnakh Ore Cluster // mt



**USD 1.5 bn**

investments in Talnakh mines development in 2018–2020

# Development project

## Chita Project GRK Bystrinskoye

### Achieving target financial indicators is one of the MMC's key priorities

- Hot commissioning started in November 2017.
- Planned processing capacity post-2021 – 10 mt.
- Target metal output in concentrates:
  - ~70–75 kt of copper,
  - ~250–260 koz of gold,
  - ~2,900 kt of magnetite concentrate.
- Life of the project – over 30 years.

The reserves are estimated at

**336 mt of ore**

 **295 t**

 **2.3 mt**

 **73 mt**

Project investments

**~USD 1.7 bn**

More details on the project

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# Reconfiguration of the processing capacities

 **Kola Peninsula**  
Kola MMC

### Establishment of a nickel refining hub at Severonickel Plant

Works are underway to expand nickel refining capacities from 165 ktpa to 190 ktpa and to switch nickel electrolysis shop-2 to a new chlorine leaching technology.

 **Taimyr Peninsula**  
Polar Division

### Upgrade and ramp-up of Talnakh Concentrator

The capacity of Talnakh Concentrator increased from 7.5 mtpa in 2015 to 10.2 mtpa in 2018. Nickel content in nickel-pyrrhotite concentrate increased by more than 60%.

### Upgrade of the flagship Nadezhda Metallurgical Plant

We have upgraded and ramped up smelting capacities of Nadezhda Metallurgical Plant, which has become the smelting hub for all nickel feedstock of Polar Division. Compared to 2014, the capacity grew by 26%.

#### Nickel Plant shutdown

In August 2016, the Company shut down Nickel Plant, which had been in operation since 1942. The shutdown involved providing strong social guarantees to the plant workers. The project resulted in 30–35% reduction of SO<sub>2</sub> emissions in the residential area of Norilsk.



**+25** ktpa

nickel refining capacity expansion at Kola MMC

**+2,7** mt

concentration capacity expansion at Talnakh Concentrator by 2018

# Infrastructure upgrades

## Project highlights

As part of its strategy, Nornickel will allocate USD 1.1–1.2 bn to infrastructure renewal and upgrades during 2018–2020. The projects include a large-scale infrastructure renewal: renovation of worn out gas transportation and hydropower facilities, replacement of power units, and reconstruction of critical production assets, transport infrastructure, and power grid.

**USD 1.1–1.2 bn**

investments in infrastructure projects, 2018–2020

### 2018–2022 targets



#### Power supply

- Gradual replacement of six retiring power units with the total capacity of 550 MW



#### Auxiliary operations

- Replacing the required resources, including construction of a new limestone quarry



#### Core operations

- Replacing core types of equipment to enhance its overall performance
- Transition to new rock bolting systems to improve safety



#### Transport infrastructure

- Reconstruction of critical facilities (airport, seaport, oil depot, warehouses, etc.)



#### Power and utilities

- Parts of the comprehensive programmes: power line replacement (30 km), gas distribution networks (111 km), drinking water supply to Dudinka, etc.

[More on gas and power assets](#)

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Scheduled for replacement in 2018–2022 are:



six power units with the total capacity of

**550 MW**



gas distribution networks with the total length of

**111 km**



a power line with the total length of

**30 km**



## Shaping growth areas

Development driven by Tier 1 assets is the Company's long-term strategic goal.

What are Tier 1 assets?

Target annual revenue

> USD 1<sub>bn</sub>

EBITDA margin

40%

Reserves-to-production ratio

>20<sub>years</sub>

Potentially, growth areas will be centred around the existing assets of Polar Division, with a possibility of initiating a new copper project in Russia's Far East.

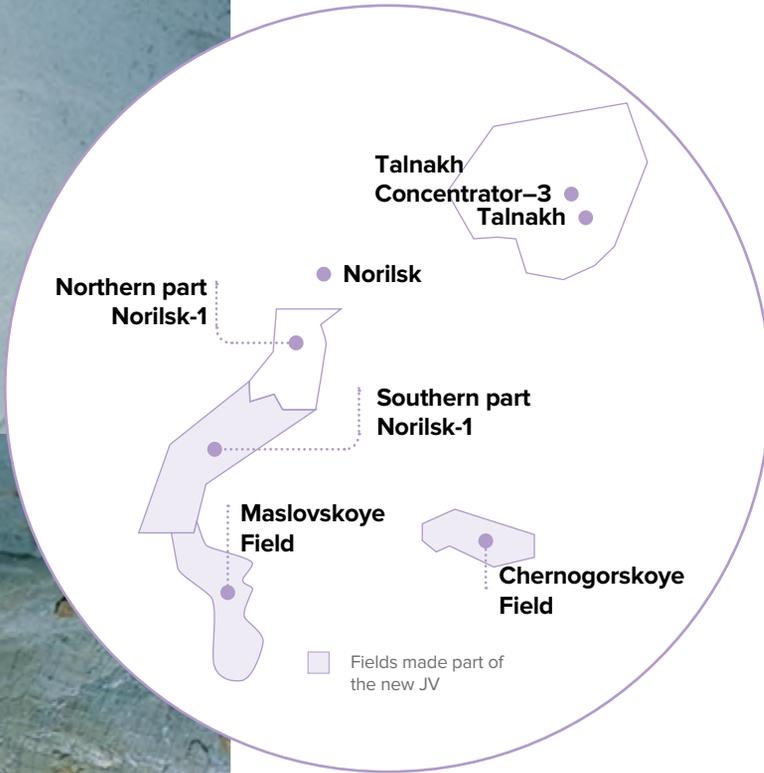


We believe in stronger demand for our products going forward and deem it necessary to put together a portfolio of growth projects. During the next few years, we will be exploring potential development of the Southern Cluster, further expansion of Talnakh Concentrator, and the joint project with Russian Platinum to develop disseminated ore fields in the southern part of the Norilsk Industrial District."

Vladimir Potanin

# Boosting Tier 1 asset potential

# Optional projects



**Strategic partnership with Russian Platinum**  
*The southern part of the Norilsk Industrial District*

Nornickel is considering a strategic joint venture with Russian Platinum, of a calibre comparable to Polar Division in terms of scale of PGM production. The joint venture is set to become one of the largest global PGM producers.

Target PGM output of the new JV

**70–100**  
 mtpa

**Southern Cluster**  
*Investment decision – 2018*

- Potential to become a Top 5 global PGM producer.
- Optimal capacity utilisation at Norilsk Concentrator (post Talnakh Concentrator–3).
- Potential to raise project financing.

**Talnakh Concentrator–3**  
*Investment decision – 2018*

- Efficient disseminated ore processing technologies deliver greater metal recovery rates.
- Opportunity to utilise the economies of scale by using several existing facilities of Talnakh Concentrator.
- Opportunity to optimise costs of transporting Talnakh ores to Norilsk Concentrator.

More details on the project

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**Russian Far East**

Looking for Tier 1 assets for long-term development in the Far East, a poorly developed region with a vast resource potential and proximity to Asian markets.





Target outcome – costs reduced, since 2020, by

USD **200–300** m

## Efficiency improvement programme

The comprehensive programme was enabled by the platform created in the past, including industrial automation and automated control systems, ongoing ERP deployment, and new production processes and standards.



We must ensure that all our process chains are built in the most efficient manner aligned with our objectives.”

**Vladimir Potanin**

# Shaping a comprehensive cost reduction ecosystem

## Base programmes

Upgrading production assets

Developing and integrating new production processes and standards

Reconfiguring and shutting down outdated production facilities

Introducing ERP / automated control systems

Introducing industrial automation systems

Introducing new approaches to management

## IT infrastructure upgrade as a tool for achieving operational excellence



### SAP ERP deployment

- Pilot project completed
- 2017 – Chita project, 2018 – Polar Division



### New DCP architecture

- Upgraded server infrastructure and data storage systems according to the Company's needs
- Upgraded data network



### Underground radio communications and positioning systems at the mines

- 369 km of optic fibre cable
- 1,052 Wi-Fi spots
- Real-time control of mining personnel and machinery



### MES layer (Manufacturing Execution System)

- Machinery control system pilot project in Norilsk
- Completed 3D modelling of one mine's shafts; now the system is rolled out to other mines
- Talnakh Concentrator successfully piloted the metal balance project; the system is rolled out to other plants and mines



### Optic fibre line to Norilsk

- The 956 km 40 Gbps line is now live
- Unprecedentedly challenging line construction environment
- Enabling the use of advanced IT systems
- Better living standards in Norilsk

More details on the project

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