



Strategic objective: comprehensive efficiency improvement programme

The programme includes a package of interrelated initiatives covering the entire production chain

Target outcomes of the programme in the short term

Strict cost controls

Keeping cash costs below the inflation rate (cash costs do not include Bystrinsky GOK and Nkomati)

Increase in labour productivity (2020 vs 2017)

15%

Growth in metals output (2020 vs 2017)

5–8%

Transformation of the corporate culture

1

Production upgrade, introduction of new production standards and processes

2

Introduction of practices and tools for continuous improvement

3

Digital transformation of industrial and management communications

4

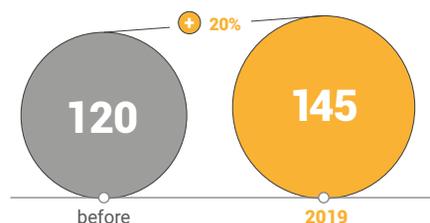
Integration of efficiency improvement KPIs into the employee incentive system

5

Production reconfiguration, implementation of innovative management approaches

Implementation of a cutting-edge chlorine leaching and nickel electrowinning technology with a 20% increase in the nickel refining capacity at Tank-House 2 and higher recovery rates

Refining capacity expansion at Tank-House 2 (kt)



Production

Mining

- Initiatives to improve labour productivity and equipment performance
- Planning of mining operations using simulation modelling systems
- Full-scale roll-out of control systems

Concentration

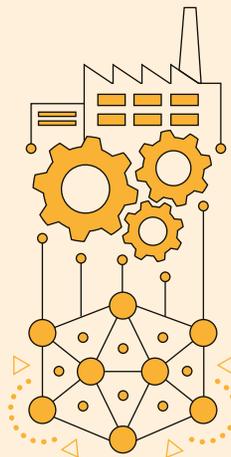
- Ensuring cost optimisation and higher recovery rates by fine-tuning the reagent mixes and modes of equipment operation
- Ore conversion ratio improvements through enhanced enrichment of pyrrhotite tailings at Talnakh Concentrator

Metallurgy

- Debottlenecking across the production chain
- Accelerated processing of additional secondary resources at Copper Plant

Digitisation

- Introduction of artificial intelligence technologies, robotisation systems, and digital twins of industrial facilities
- Putting in place a digital storage layer for all of the Company's data
- Cost optimisation and debottlenecking across the value chain



New IT platform opens up opportunities for **digitising** core operations

IT platform

Infrastructure

- 956 km long fibre optic communication line to Norilsk
- New data centres and data transfer network

Automation

- Production control
- Metal balance
- Detectors/sensors

Planning and record keeping

- SAP ERP available at all sites since 1 January 2019
- 3D-modelling of mines

Data analysis

- SAP-based data analysis to improve reporting
- Repairs planning and control



The Digital Economy national project is becoming one of Nornickel's priorities.

We already have over one hundred big data initiatives in place. But we are not going to stop at that. Our ambition is to create a digital platform to disrupt the entire industry.

Vladimir POTANIN
 President of Nornickel