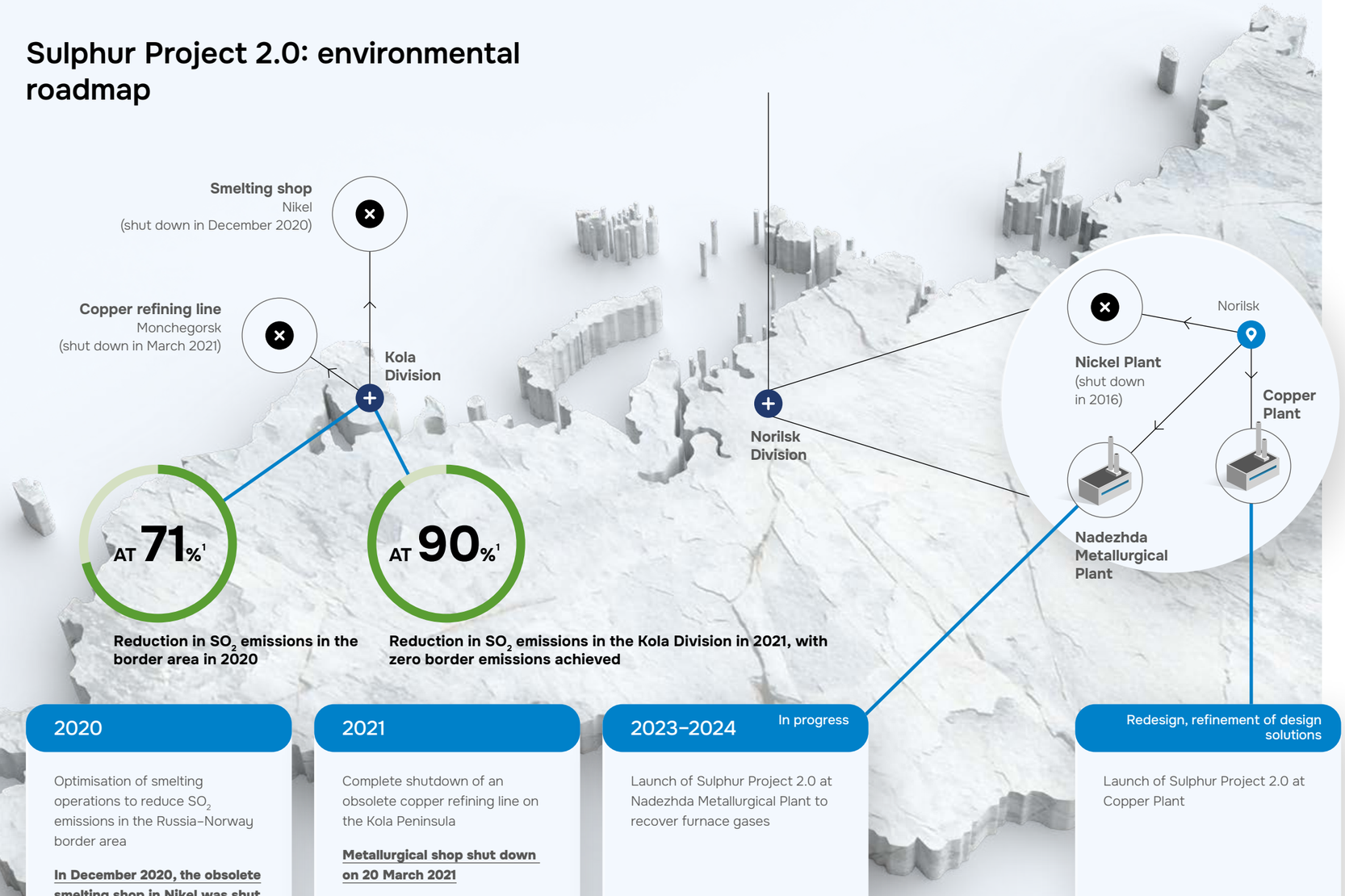
Sulphur Project 2.0: environmental roadmap



2020

Optimisation of smelting operations to reduce SO_2 emissions in the Russia–Norway border area

In December 2020, the obsolete smelting shop in Nikel was shut down

50%[1]
Reduction in SO_2 emissions in Nikel and Zapolyarny

2x

2021

Complete shutdown of an obsolete copper refining line on the Kola Peninsula

Metallurgical shop shut down on 20 March 2021

90%[1]
Reduction in total SO_2 emissions at the Kola Division facilities

7x

2023–2024 In progress

Launch of Sulphur Project 2.0 at Nadezhda Metallurgical Plant to recover furnace gases

45%[1]
Reduction in SO_2 emissions in the Norilsk Division once the design capacity is reached

~2x

Redesign, refinement of design solutions

Launch of Sulphur Project 2.0 at Copper Plant

up to 90%[1]
Reduction in SO_2 emissions in the Norilsk Division

10x

[1] From a 2015 baseline.

Sulphur Project 2.0: Norilsk Division

Nadezhda Metallurgical Plant

The Sulphur Project at Nadezhda Metallurgical Plant includes technological upgrades to recover SO_2 from off-gases of the main smelting units (flash smelting furnaces) by converting them into sulphuric acid and then neutralising it with limestone to produce gypsum – practically non-hazardous waste to be placed in a gypsum storage facility.

2023 highlights:
- Construction of core and infrastructure facilities under the Sulphur Project at Nadezhda Metallurgical Plant
- Installation and pre-commissioning of process equipment
- Comprehensive testing of the first process line started in October 2023, first sulphur dioxide recovery

Sulphur Project 2.0 facilities at Nadezhda Metallurgical Plant are expected to ramp up to design capacity by the end of 2024

Copper Plant

The Sulphur Project at Copper Plant comprises the development and deployment of technology solutions to reduce SO_2 emissions from Copper Plant operations to the level specified by applicable standards and includes several interconnected initiatives. Amid external restrictions, the Company is taking comprehensive efforts to refine the design solutions to incorporate technology and equipment import substitution options.

2023 highlights:
- Survey and engineering works, refinement of design solutions to meet the need for import substitution of technology and equipment for core facilities
- Positive opinions of the Main Department of State Expertise (Glavgosexpertiza) and State Environmental Review Office were secured for several facilities following expert reviews of the design documents
- Priority upgrades were made as part of a retrofit project for the wet gas cleaning facility