

# BELLONA

## NORNICKEL ENVIRONMENTAL AMBITIONS

2019



# **NORNICKEL**

## ENVIRONMENTAL AMBITIONS

2019

The Bellona Foundation is an international environmental NGO based in Norway. Founded in 1986 as a direct action protest group, Bellona has become a recognized technology and solution-oriented organization with offices in Oslo, Brussels, St. Petersburg and Murmansk. Altogether, some 60 engineers, ecologists, nuclear physicists, economists, lawyers, political scientists and journalists work at Bellona.

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## INTRODUCTION

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Norilsk Nickel, also known as Nornickel is a world-leading producer of nickel, palladium and other metals. It has its key company assets in the Russian Arctic, on the Taymyr and Kola Peninsula. On the Kola Peninsula, company assets are operated by the subsidiary Kola Mining and Metallurgical Company (Kola MMC). Processing facilities are located in Monchegorsk, as well as the towns of Nikel and Zapolyarny near the borders to Norway and Finland. Moreover, Nornickel has its facilities in Trans-Baikal Territory (Bystrinsky Mining and Processing Plant), Finland (Norilsk Nickel Harjavalta), Australia (Honeymoon Well Project) and South Africa (Norilsk Nickel Nkomati).

Any mining and metallurgical production, including that of Nornickel, is a source of emissions and waste discharges, primarily sulfur dioxide and metals, that have a big impact on the environment and health of people working at facilities and living in close proximity to them. When industrial activity of Nornickel causes unacceptable levels of SO<sub>2</sub>, NO<sub>x</sub>, heavy metals (Ni, Cu) and some other pollutants emitted into the air and discharged into water bodies, this might negatively affect people's health and put pressure on flora and fauna.

The company recognizes its responsibility for negative impact on the environment. Besides, the environmental actions are stimulated by constant attention towards company's activity. Wide range of actors, including state and regional authorities, neighboring countries, non-governmental organizations, individuals, are interested in the company's improvements related to its environmental performance.

Nornickel puts great attention on informing the public about its activity and measures aimed at improving the environmental situation in the regions of presence. The publication of reports on sustainable development, disclosure of information on achieving the UN goals in the field of sustainable development, holding a dialogue with foreign partners on environmental issues, hosting conferences, implementing a corporate volunteering program, these are some of the company's measures aimed at increasing its transparency.

In recent years Nornickel has been firmly announcing its environmental concerns. The main focuses of environmental policy entail gradual reduction of air pollutant emissions and wastewater discharges, designing places of waste storage. These measures taken by Nornickel and intended to mitigate negative environmental impact were not always strong. However, the reality changes, public pressure increases and company's management comes to an understanding that new solutions and technologies should be introduced. In addition, the Nornickel's management team understands that entering the international arena by the company requires social and environmental responsibility, therefore Nornickel shows good will and tries to comply with international standards.

Worth noticing that Nornickel, being aware of its footprint, tries to compensate the damage by investing in social projects, environmental campaigns, support of natural parks, historical museums and others. In May 2019 the company received the annual award “The best social projects of Russia” in the category “Promoting sport and healthy lifestyle”.

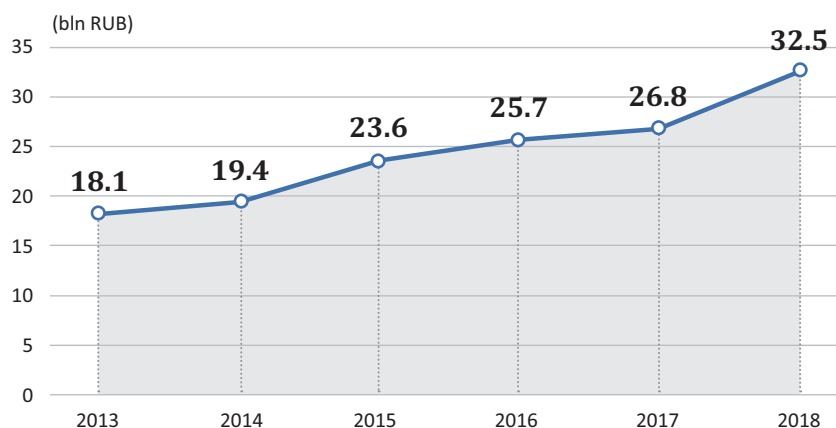
The present report aims to show recent achievements and plans related to the environmental impact of company’s activity. This report discusses Nornickel’s progress in emissions reduction and other measures aimed to strengthen environmental component of industrial processes. The report also covers the legal framework that regulates emissions in Russia. Moreover, an example of a roadmap is proposed, which makes it possible to follow the main company’s efforts aimed to reduce its negative environmental impact. In addition, the tendencies towards Nornickel’s transparency and establishing public relations are identified.



## 1. SPENDING ON ENVIRONMENTAL ACTIVITIES

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Nornickel regularly states its environmental spending (figure 1.1).



**Figure 1.1.** Environmental expenditures of Nornickel from 2013 to 2018

We have compiled an overview of statements and promises about investments from various representatives of the company on different levels (table 1.1). The overview covers the years of 2016 and 2017, and are thus most probably closely connected to the year of Ecology in Russia in 2017. Regardless of the context in which the promises have been made, there was, as the table shows, little information available on what the funds were actually going to be spent on, and thus how much each project costs. The lack of a comprehensive plan with an overview of projects and the environmental impact of the enterprise made it hard to keep track of the promises.

**Table 1.1.** Overview of promises around the start of the Year of Ecology

Who	How much	On what	Over how many years
Vladimir Potanin, CEO, Nor Nickel <sup>1</sup>	14 billion dollars	Making the world's biggest nickel producer an example of environmental responsibility	7 years (from 2016)
Vladimir Potanin, CEO, Nor Nickel <sup>2</sup>	250 billion rubles	Channeled to environmental activities	Within the framework of the Modernization Strategy up to 2023
Kola MMC <sup>3</sup>	27.7 billion rubles	Modernization and development project geared toward environmental effectiveness	Over two years (from early 2017)
Igor Ryskel, former CEO of Kola MMC <sup>4</sup>	20 billion rubles (343 million dollars)	Projects on modernization of nickel production, and besides, construction of new treatment facilities at the Severny mine in Zapolyarny	Late 2017

However, from 2017 we see several improvements, both in terms of provided information and launched projects. From 2017 to 2018 environmental expenditures increased by 21% and amounted to 32.5 billion rubles. This growth was due to the capital investment that rose by 150% compared to 2017. Moreover, the amount of money paid for damage caused by non-compliance with environmental legislation (except fees) dropped from 244 to 1.5 million rubles<sup>5</sup>.

Nor Nickel provides total numbers of its operating expenditures and capital investments, but there is no detailed information on all the included measures. The simple summing up of the capital investments that are provided for the main projects aimed to reduce environmental impact does not give the same number as the total. This fact does not allow us to draw proper conclusions on all the measures counted by the company as environmental expenditures. Despite the lack of a detailed plan and costs of all environmental measures included at environmental spending of Nor Nickel, we see that the year of 2018 was important for developing several main projects (table 1.2), which will be discussed in the next chapter.

<sup>1</sup> Information edition vedomosti.ru. In Russian (see: <https://www.vedomosti.ru/business/characters/2016/12/20/670501-nravyatsyazarplata>).

<sup>2</sup> Financial magazine Forbes Russia. In Russian (see: <http://www.forbes.ru/milliardery/338301-potanin-reshil-vlozhit-1-trln-rublej-vmodernizaciyu-nornikelya>).

<sup>3</sup> Information agency tass.ru. In Russian (see: <http://tass.ru/v-strane/3958242>).

<sup>4</sup> Russian news agency (see: <http://tass.com/economy/987118>).

<sup>5</sup> Nor Nickel, sustainability report. The new Nor Nickel: strategy in action, 2018. In Russian (see: [https://www.nornickel.ru/upload/iblock/28a/NN\\_SR2018.pdf](https://www.nornickel.ru/upload/iblock/28a/NN_SR2018.pdf)).



**Table 1.2.** Capital investments in the main processing projects at Kola MMC and the Polar Division in 2018<sup>6</sup>

Project description	Period cost (2018)	Project cost
Modernization of Talnakh, phase 3. Polar Division	0.8 billion rubles (12 million dollars)	40 billion rubles (0.6 billion dollars)
Tank-house refurbishment. Monchegorsk	10.8 billion rubles (169 million dollars)	about 22 billion rubles (0.33 billion dollars)
Concentrate loading facility. Zapolyarny	1.1 billion rubles (17 million dollars)	4.9 billion rubles (85 million dollars)
Sulphur project. Polar Division	2.3 billion rubles (36 million dollars)	up to 2.5 billion dollars



**Nadezhda Metallurgical Plant**

*Photo: Nor Nickel*

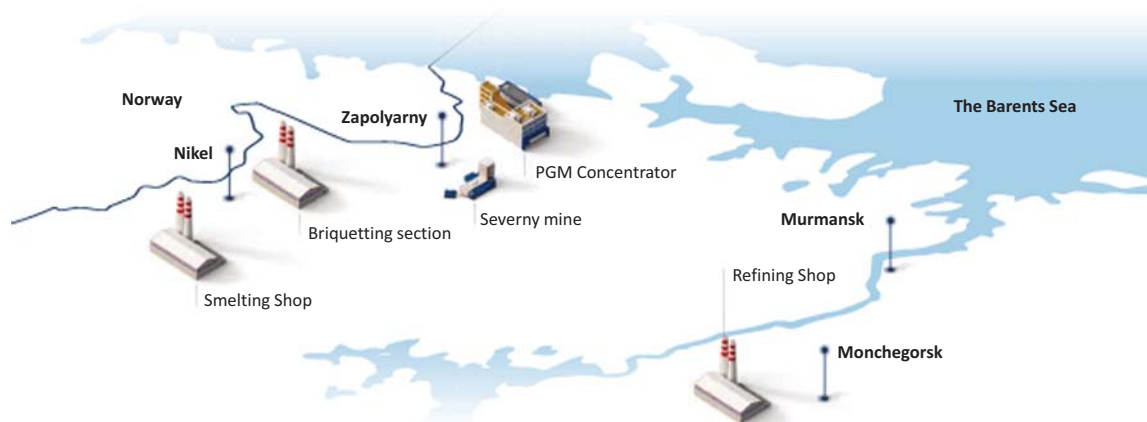
<sup>6</sup> The table is based on the information from the Nor Nickel's annual report. Progress towards sustainable growth, 2018. In Russian (see: [https://www.nornickel.ru/upload/iblock/4d0/Godovoy\\_otchet\\_2018.pdf](https://www.nornickel.ru/upload/iblock/4d0/Godovoy_otchet_2018.pdf)).

## 2. ENVIRONMENTAL PROGRESS AT NORNICKEL'S FACILITIES

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### 2.1. Kola MMC. Plans and achieved results

Production assets of Kola MMC are concentrated in Nikel, Zapolyarny and Monchegorsk (figure 2.1). Kola MMC has four areas developed for mining: the Kotselvaara and Semiletka fields located near the town of Nikel and the Zhdadnovskoye and Zapolyarnoye fields located further east near the town of Zapolyarny.



**Figure 2.1.** Production assets of Kola MMC

Source: <https://www.nornickel.com/business/assets/kola/>

The Zapolyarny Concentrator produces briquetted copper-nickel concentrate that is further delivered to the Smelting Shop in order to produce converter matte. In Monchegorsk converter matte from Nikel's Smelting Shop and Polar Division is processed into nickel and copper cathodes, nickel powder and cobalt. The refining of precious metals that are produced by Kola MMC takes place at Gulidov Krasnoyarsk Non-Ferrous Metals Plant.

Currently there are several ongoing projects at Kola MMC aimed to reduce SO<sub>2</sub> emissions and decrease polluted wastewater discharges (table 2.1).

**Table 2.1. Environmental projects at Kola MMC <sup>7</sup>**

Site	Project description	Project timing	Environmental objectives
<b>Zapolyarny</b>	Switching to concentrate briquetting technology (Zapolyarny Concentrator switched to briquetting technology making it possible to prepare the concentrate for pyro-processing only by mechanical briquetting using a binding agent; the sinter roasting shop was shut down)	Q1 2010 – Q4 2016	Reduction of SO <sub>2</sub> emissions by 90% in Zapolyarny, compliance with permitted emissions levels
	Construction of a concentrate loading facility at the concentration plant (Putting in place the scheme to ship the concentrated copper/nickel ore to a third-party consumer)	Q3 2017 – Q2 2019	Compliance with SO <sub>2</sub> permitted emissions levels at the Nikel site
<b>Nikel</b>	Major overhaul of ore thermal furnace № 5 (Optimization of the production facilities due to the lower smelting shop utilization rates; the overhaul resulted in the installation of a gas-tight roof arch, modernization of a charge batch feeding system, smelting control system and gas removal system)	Q1 2014 – Q2 2016	Reduction of SO <sub>2</sub> emissions from briquetting smelting
<b>Monchegorsk</b>	Refinery upgrade (Converting sulfates and chlorides of sodium, boric acid, that were up to here discharged in the wastewaters from the Nickel Electrolysis Shop, into commodity sulfate and chloride of sodium, boric acid and heat for a follow-on sale)	Q2 2013 – Q3 2017	Compliance with sulfates and chlorides allowable discharge rates for the Monchegorsk site, full stop of discharging boron compounds into wastewaters
	Construction of a concentrate loading facility at the refining shop (Expanding the filter capacity and preventing disruptions in shipping rough nickel concentrate to NNH plant in Finland in case of Latham filter press breakdown)	Q3 2016 – Q1 2019	Elimination of environmental risks of exceeding permitted emissions levels at the Monchegorsk site in case of increased nickel and copper production
	Production of copper cathode utilizing roast-leach-electrowin (RLE) process (switching to modern innovative copper cathode production technology)	Q1 2019 – Q3 2023	Reduction of SO <sub>2</sub> emissions at the Monchegorsk site by 45% from the currently permitted emissions levels (39 900 tons) that is to guarantee an air emission margin for further production growth
	Construction of a sulfuric acid section for RLE process (Providing capacities to ensure guaranteed recycle of sulfur using the modern technology)	Q1 2019 – Q3 2023	Compliance with the 39 900 tons permitted emissions levels

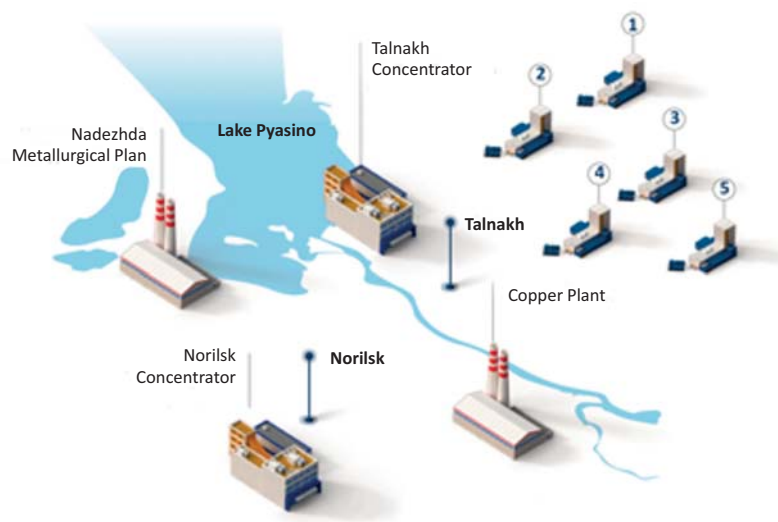
<sup>7</sup> The table is based on the information from Nornickel's presentation "Kola MMC Environmental Investment Projects", 2018. The presentation was provided by Nornickel to the Bellona Foundation in June 2019.

The implementation of briquetting technology at the Zapolyarny site resulted in 90% reduction of SO<sub>2</sub> emissions and compliance with maximum permitted emissions levels (see chapter 4.1). However, as it seems another project – concentrate loading facility, was postponed. This project was supposed to be accomplished by the second quarter of 2019, however in the beginning of June it was reported that public consultations on this project were just held<sup>8</sup>. Thus, the delay in reaching the planned 50% reduction of SO<sub>2</sub> emissions at the Nikel site might be related to this concentrate loading facility project in Zapolyarny, as after its completion the load at the Smelter Shop in Nikel will be significantly reduced, allowing decommissioning of one of the ore-thermal furnaces and subsequent reduction of sulfur dioxide emissions.

The projects in Monchegorsk are promising. The company shows willingness to strive for further reduction of pollutants emitted into the atmosphere in order to guarantee an air emission margin in case of a future production growth.

## 2.2. Polar Division. Plans and achieved results

Polar Division is the main production asset of Nor Nickel (figure 2.2). At the same time, Norilsk is the city that is annually included into the Priority list of Russian cities with the highest level of air pollution.



**Figure 2.2.** Production assets of Polar Division

Source: <https://www.nornickel.com/business/assets/taimyr/>

<sup>8</sup> Web-based media Kn51.ru. Public consultations were held in the Pechengsky district on the project of the construction of a concentrate loading facility. In Russian (see: [http://kn51.ru/news/company/monchegorsk\\_and\\_pechenga/2019/6/03/v-pechenskom-rayone-proshliobshchestvennye](http://kn51.ru/news/company/monchegorsk_and_pechenga/2019/6/03/v-pechenskom-rayone-proshliobshchestvennye)).

The company operates copper-nickel sulphide ore deposits of the Talnakhskoye and Oktyabrskoye Fields that are developed by Taimyrsky, Oktyabrsky, Komsomolsky (including Komsomolskaya and Skalistaya Mines), Mayak Mines, and the Norilsk-1 Field. The processing of all produced ore takes place at Talnakh and Norilsk Concentrators. Thickened concentrates are transported to Nadezhda Metallurgical Plant and Copper Plant, and further processed there. All nickel is refined at Kola MMC and Norilsk Nickel Harjavalta.

The table 2.2. provides detailed information on the environmental projects at the Polar Division.

**Table 2.2. Environmental projects at the Polar Division**

Project description	Project timing	Environmental objectives
Shutdown of the Nickel plant	2016	cessation of air emissions of 370 000 tons/year; 30% reduction of SO <sub>2</sub> emissions in the residential zone of Norilsk
Upgrade of Talnakh Concentrator (Reconstruction of existing floatation capacities and replacing flotation machines, upgrading equipment)	2014-2017	increase of production capacity by 30%
Change in off-gas removal process, elimination of ground-level emission sources at Copper Plant	2014-2017	cessation of ground-level emissions – 11 000 tons/year; reduction of surface concentrations of pollutants in the residential area of Norilsk for sulfur dioxide – by 2.65 MPC
Sulphur Project (expansion and upgrade of the existing Sulphur production facilities at Copper Smelter; transferring converting operations from Copper to Nadezhda Smelter; SO <sub>2</sub> capturing program implying production of sulphuric acid and neutralization with limestone)	2018-2023	compliance with maximum permissible emissions levels; decrease of SO <sub>2</sub> emissions in the Norilsk industrial area by 75% (base year – 2015)

The Polar Division works on gradual reduction of SO<sub>2</sub> emissions. Several steps were already taken that resulted in 30% reduction of SO<sub>2</sub> emissions in the residential area of Norilsk. Furthermore, the Sulphur project is supposed to lead to 75% reduction of SO<sub>2</sub> by 2023.

In order to control the implementation of the projects, on 28<sup>th</sup> of December 2018 the deputy Prime Minister of the Russian Federation Gordeev approved “The comprehensive action plan for the reduction of emissions of polluting substances into the atmosphere for the period 2019-2024”. Among others, the plan includes measures on air monitoring in Norilsk, as well as the development of the system of socio-hygienic monitoring funded by the federal budget and consolidated budget of the Krasnoyarsk kray<sup>9</sup>.

<sup>9</sup> Nor Nickel, sustainability report. The new Nor Nickel: strategy in action, 2018. In Russian (see: [https://www.nornickel.ru/upload/iblock/28a/NN\\_SR2018.pdf](https://www.nornickel.ru/upload/iblock/28a/NN_SR2018.pdf)).



### 2.3. Production of the main metals and related pollution of the atmosphere

In 2013 Nornickel adopted a new strategy that introduced environmental projects aimed to reduce SO<sub>2</sub> emissions. The year of 2015 was chosen as a base year for defined goals (50% reduction of SO<sub>2</sub> emissions in Nikel and 75% reduction – across the Norilsk Industrial area).

From 2013 to 2017 the company has managed to decrease the emitted pollutants by 12%. The 12% reduction of pollutant emissions into the atmosphere was mainly related to the reduction of SO<sub>2</sub> emissions. These pollutants decreased from 2033 kt in 2013 to 1785 kt in 2017. The main reason for this improvement was the shutdown of Nickel Plant in 2016. This was an important step within the framework of the modernization strategy.

In contrast, the period of 2017 to 2018 was characterized by an increase of total Nornickel's emissions by 4.3% that took place due to the increased processing of sulfur-containing materials. As explained by the company, this increase was expected and is a part of the plan towards further emissions reduction.

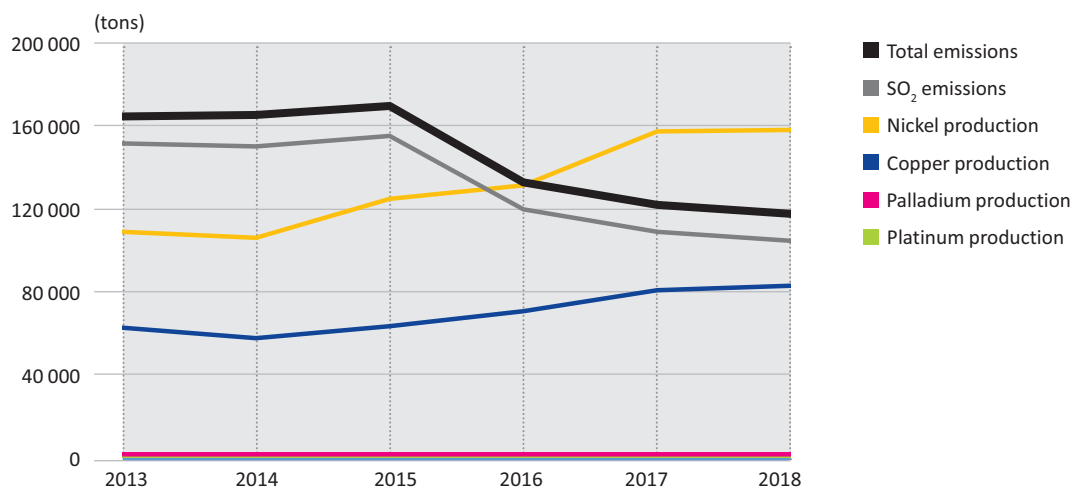


**Copper Plant**

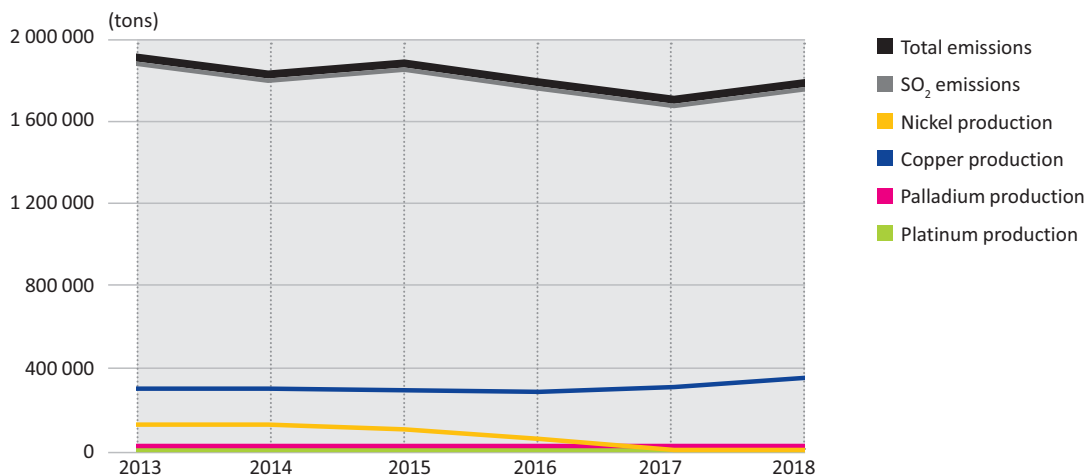
*Photo: Nornickel*



At both sites, Kola MMC and the Polar Division, the period of 2013 to 2018 marked a reduction of air pollutant emissions, by 30% and 6% respectively (figures 2.3 and 2.4). The responsible factor of this reduction was the reduced emissions of SO<sub>2</sub>.

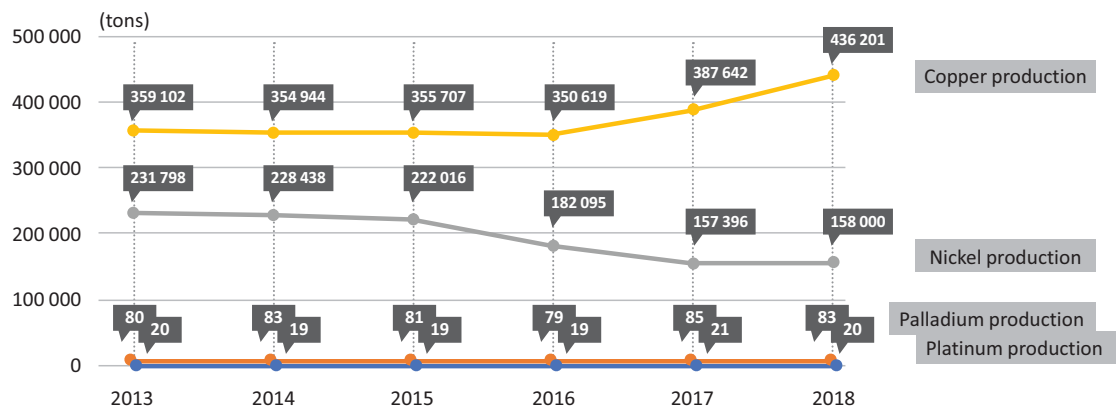


**Figure 2.3.** Production of main metals and emitted pollutants at Kola MMC



**Figure 2.4.** Production of main metals and emitted pollutants at the Polar Division

The production of platinum and palladium stayed relatively stable over the period 2013-2018 (figure 2.5). There was a rise of copper production by 21% throughout these years. The growth is associated with the gradual attainment of projected capacity of Bystrinsky GOK, an increase in the extraction of ore with a high copper grade, and the processing of copper concentrate purchased from Rostec State Corporation. Whereas, nickel production dropped by 32%. The decrease in physical volumes is due to the reconfiguration of production towards domestic raw materials and the reduction of low-margin processing of raw materials coming from third parties<sup>10</sup>.



**Figure 2.5.** Total production of main metals by Nor Nickel

## 2.4. Water and soil pollution

The problem of discharges of pollutants from Nor Nickel's activities is not less important than air pollution. Norilsk, Monchegorsk and Nikel are hot spots of the Russian Arctic that are subject to high level of surface water pollution.

The total Nor Nickel's pollutants discharged as part of the wastewater were amounted to 232 367 tons in 2018, which is 65% more than in 2014 and 7% more than in 2017. However, Nor Nickel declares that the company's wastewater discharges are carried out mainly within the established limits, including within the rate of maximum permissible exposures on water bodies, and do not have a significant impact on the biodiversity of water bodies and their associated habit areas<sup>11</sup>.

<sup>10</sup> Nor Nickel, press-release of 25.04.2019. In Russian (see: [https://www.nornickel.ru/upload/iblock/a81/proizvodstvo\\_1\\_kv\\_2019\\_rus\\_final\\_full.pdf](https://www.nornickel.ru/upload/iblock/a81/proizvodstvo_1_kv_2019_rus_final_full.pdf)).

<sup>11</sup> Nor Nickel, sustainability report. The new Nor Nickel: strategy in action, 2018. In Russian (see: [https://www.nornickel.ru/upload/iblock/28a/NN\\_SR2018.pdf](https://www.nornickel.ru/upload/iblock/28a/NN_SR2018.pdf)).

Meanwhile, over 85% of all cases of high and extremely high pollution levels of surface waters in the Russian Arctic zone were accounted for water objects of the Murmansk oblast. In 2017, 102 cases of high and 50 cases of extremely high levels of pollution on 16 water bodies were registered<sup>12</sup>.

The maximum concentration of surface water pollution with nickel was 97 MPC – river Kolos-Yoki, Nikel. Compared to 2016, the presence of copper and nickel in the river at an elevation of 14.7 km above Nikel increased on average during the year. The copper concentration exceeded the permissible levels in 100% of test samples, nickel – in 93%<sup>13</sup>. On the river Nuduay, Monchegorsk the concentration of copper in water was 169.4 MPC. In 2017, on lake Imandra, the exceeded concentrations of copper (in 100% of test samples) and nickel (in 80% of samples) were detected<sup>14</sup>.

In their turn, the soils of Murmansk oblast are in relatively good condition. However, the hygienic standards for several substances in certain territories are exceeded. Thus, in the city of Monchegorsk the presence of copper and nickel in the soil is above the hygienic standards<sup>15</sup>.

In order to decrease the impact of its activities on water bodies, in 2017 Nor Nickel implemented the project of refinery upgrade in Monchegorsk. This led to the reduction of sodium, sulfates, chlorides, boron and nickel in wastewaters<sup>16</sup>. Despite that, having been exposed to constant pressure from industrial facilities during a long period of time, the water bodies have a low ability of self-purification<sup>17</sup>. Thus, the effect of the refinery upgrade might not be so fast-gaining and further environmental measures will probably be required.

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<sup>12</sup> Ministry of Natural Resources and Environment of Russia. State report on the state and protection of the environment of the Russian Federation in 2017. In Russian (see: [http://www.mnr.gov.ru/docs/o\\_sostoyanii\\_i\\_ob\\_okhrane\\_okruzhayushchey\\_sredy\\_rossiyskoy\\_federatsii/gosudarstvennyy\\_doklad\\_o\\_sostoyanii\\_i\\_ob\\_okhrane\\_okruzhayushchey\\_sredy\\_rossiyskoy\\_federatsii\\_v\\_2017](http://www.mnr.gov.ru/docs/o_sostoyanii_i_ob_okhrane_okruzhayushchey_sredy_rossiyskoy_federatsii/gosudarstvennyy_doklad_o_sostoyanii_i_ob_okhrane_okruzhayushchey_sredy_rossiyskoy_federatsii_v_2017)).

<sup>13</sup> Ministry of Natural Resources and Environment of Murmansk oblast. Report on the state and protection of the environment of Murmansk oblast in 2017. In Russian (see: [https://gov-murman.ru/upload/iblock/a35/Doklad\\_za-2017-god\\_ITOG\\_1.pdf](https://gov-murman.ru/upload/iblock/a35/Doklad_za-2017-god_ITOG_1.pdf)).

<sup>14</sup> Ministry of Natural Resources and Environment of Russia. State report on the state and protection of the environment of the Russian Federation in 2017. In Russian (see: [http://www.mnr.gov.ru/docs/o\\_sostoyanii\\_i\\_ob\\_okhrane\\_okruzhayushchey\\_sredy\\_rossiyskoy\\_federatsii/gosudarstvennyy\\_doklad\\_o\\_sostoyanii\\_i\\_ob\\_okhrane\\_okruzhayushchey\\_sredy\\_rossiyskoy\\_federatsii\\_v\\_2017](http://www.mnr.gov.ru/docs/o_sostoyanii_i_ob_okhrane_okruzhayushchey_sredy_rossiyskoy_federatsii/gosudarstvennyy_doklad_o_sostoyanii_i_ob_okhrane_okruzhayushchey_sredy_rossiyskoy_federatsii_v_2017)).

<sup>15</sup> Ibid.

<sup>16</sup> The table is based on the information from Nor Nickel's presentation "Kola MMC Environmental Investment Projects", 2018. The presentation was provided by Nor Nickel to the Bellona Foundation in June 2019.

<sup>17</sup> Ministry of Natural Resources and Environment of Murmansk oblast. Report on the state and protection of the environment of Murmansk oblast in 2017. In Russian (see: [https://gov-murman.ru/upload/iblock/a35/Doklad\\_za-2017-god\\_ITOG\\_1.pdf](https://gov-murman.ru/upload/iblock/a35/Doklad_za-2017-god_ITOG_1.pdf)).

### 3. NORNICHEL'S ROADMAP

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#### 3.1. Key information for the roadmap

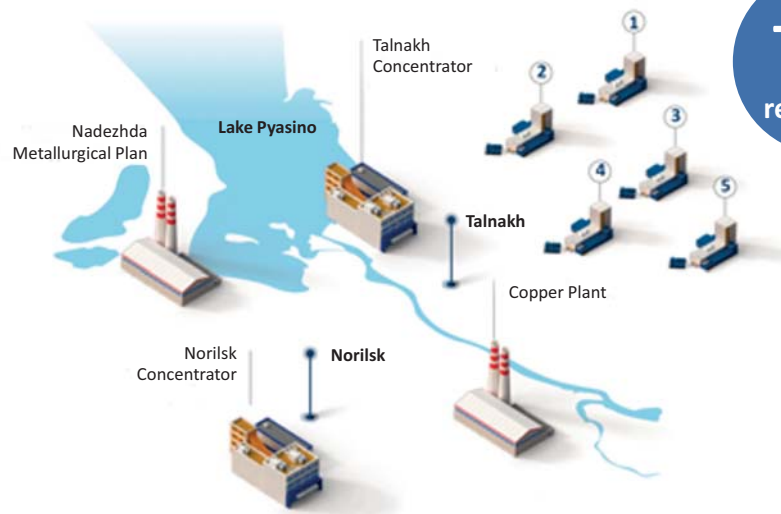
In order to illustrate any company's plan for achieving emission reduction results, a roadmap is an established concept. It serves as a representation of the key processes that ensure the improvements and steps that a company is making to reach its defined goals. A properly made roadmap provides stakeholders with all the necessary information to follow the company's achievements and progress.

At the moment, Nor Nickel does not provide a proper roadmap for its efforts to decrease the negative environmental impact. On the basis of the information on SO<sub>2</sub> emissions at Kola MMC and the Polar Division, quantitative objectives and main related measures, Bellona proposes an example of such a roadmap (figure 3.1). The roadmap shows future goals for each part of the enterprise that are analyzed in the following chapters.

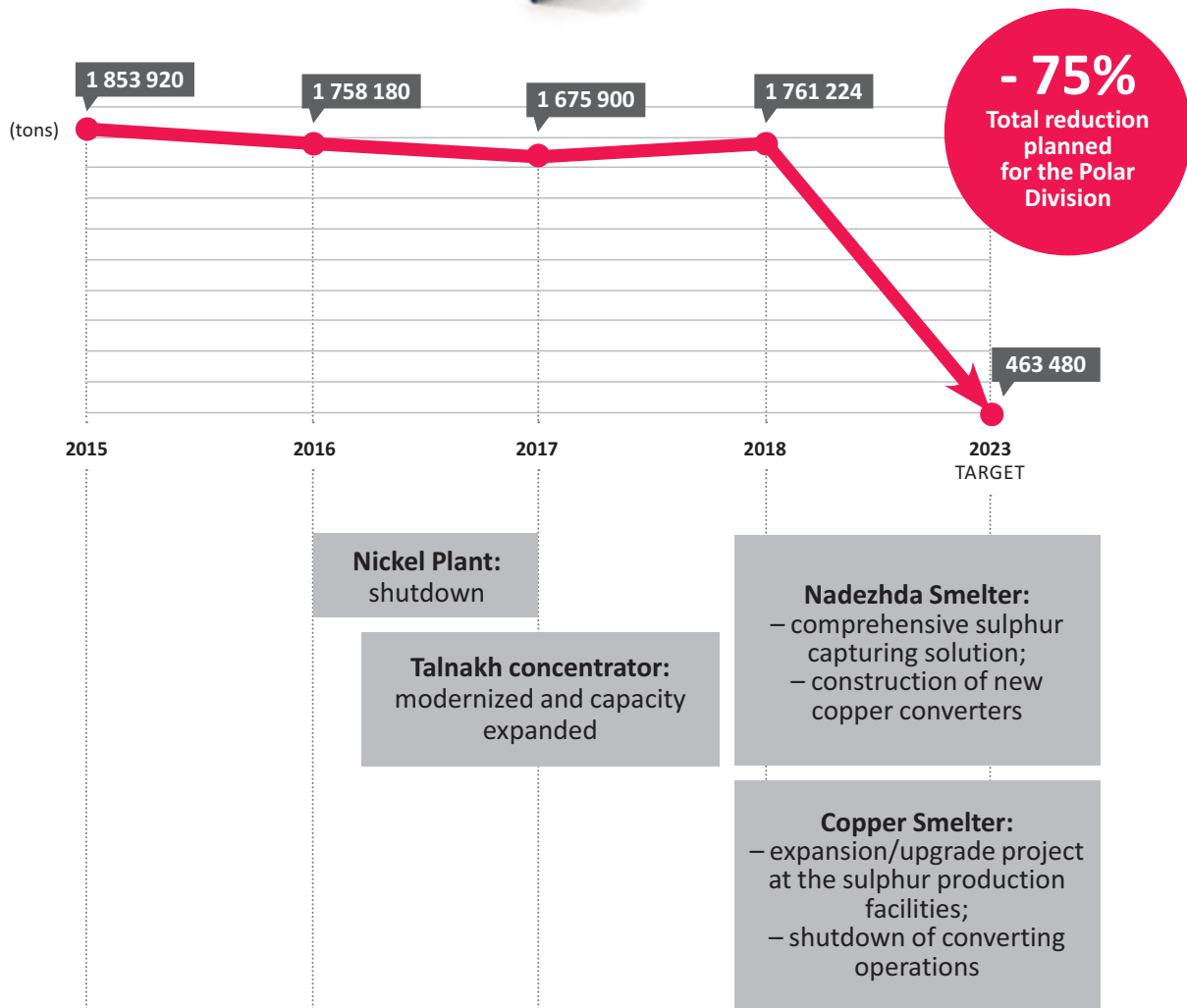
At the same time, it is worth mentioning that a lack of the information on the planned SO<sub>2</sub> reduction of each measure, their contribution towards reaching the proposed goal and the real effect after implementation does not allow us to create a complete roadmap illustrating all the aspects of Nor Nickel's environmental performance.

## Measures towards reduction of SO<sub>2</sub> emissions. Roadmap

### POLAR DIVISION



**- 5%**  
Actual  
reduction



## KOLA MMC

**- 32%**  
Actual  
reduction

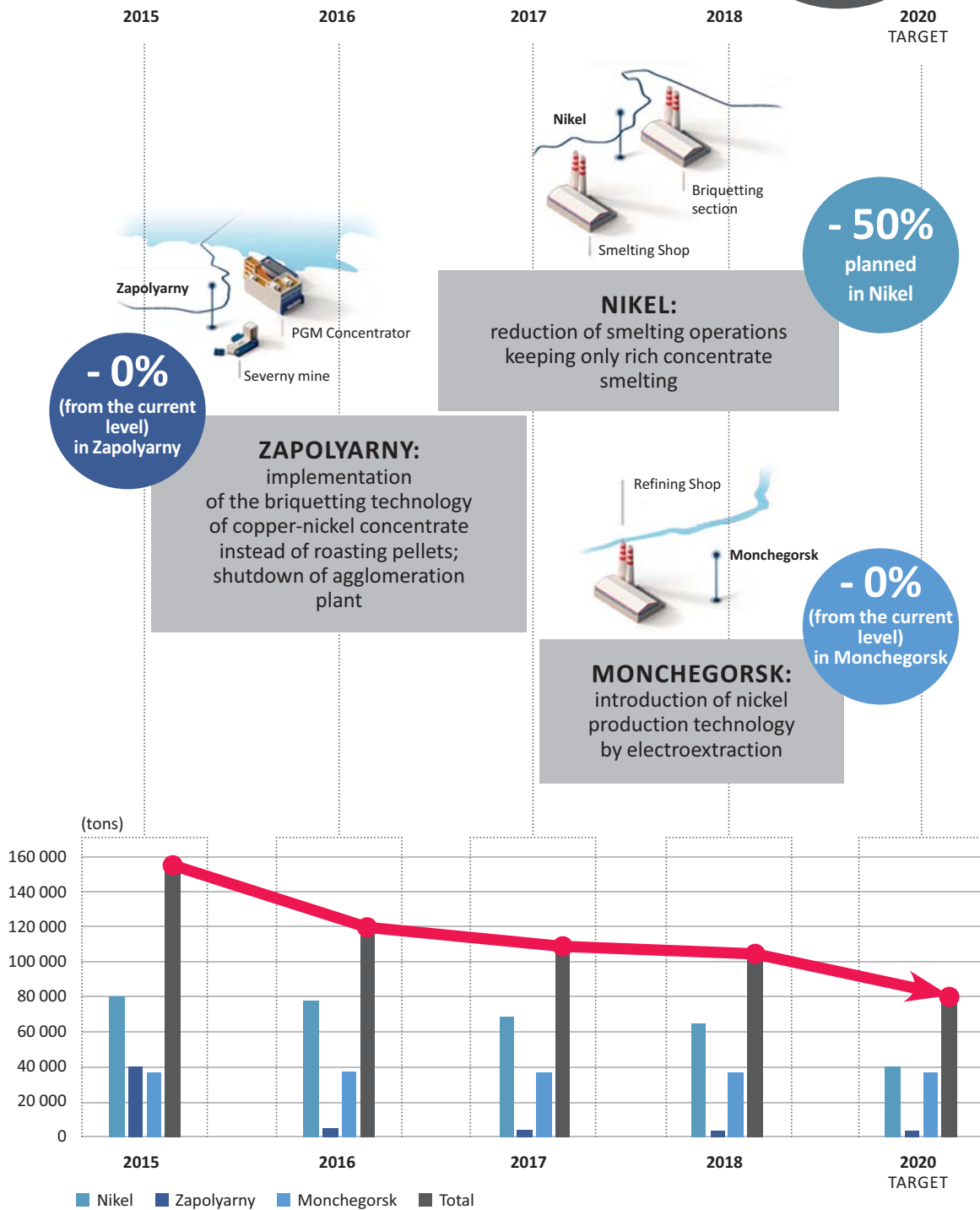


Figure 3.1. An example of Nornickel's roadmap



### 3.2. Comments on the roadmap

At the Polar Division, from 2015, there has been a 5% reduction of SO<sub>2</sub> emissions. The main contributing factors were shutdown of the Nickel Plant and modernization of Talnakh concentrator. The further reduction is supposed to reach 75% by 2023. It will mainly be possible due to the implementation of a comprehensive Sulphur project at Nadezhda and Copper Smelters.

As for Kola MMC, the reduction of SO<sub>2</sub> reached 32% (2015-2018). The most significant measure was change-over to the briquetting technology in Zapolyarny. The reduction of smelting operations in Nikel provided by selling of poor concentrate to third parties should result in 50% reduction by 2020 and compliance with the MPE standards.

As we see from the roadmap above, there are no further goals for Monchegorsk and Zapolyarny. The company explained it by the fact that both of the sites have been complying with the maximum permissible emissions levels (see the chapters 4.1 and 4.2).

Meanwhile it should be noted that the data presented in published materials sometimes look confusing, which evokes certain problems to understanding the real situation and conducting a precise analysis. Thus, for example, the implementation of the briquetting technology in Zapolyarny in 2016 led to a significant reduction of SO<sub>2</sub> emissions. However, according to one source<sup>18</sup> these emissions reached 1616 tons in 2017, according to another<sup>19</sup> – 4031 tons. It means that if the emissions were indeed 1 616 tons, then the year of 2018 experienced recurring growth, and the total SO<sub>2</sub> emitted by the Zapolyarny facilities amounted to 3700 tons. What are the factors that caused this upturn? Are they related to some problems with briquetting technology? If not and the emissions in 2017 indeed reached 4031 tons, then we can observe the descending trend.

Regarding Nikel, it is situated in a close proximity to the Norwegian border which makes the public attention to the air quality situation there even greater. Nornickel announces 50% reduction of SO<sub>2</sub> emissions in reference to 2015 as a base year in Nikel. First this result was expected for 2019<sup>20</sup>. Meanwhile, in the presentation of November the year to reach this 50% objective was shifted, and a new year of 2020 was indicated<sup>21</sup>. At the same time, in February 2019 the company announced 30% reduction of SO<sub>2</sub> emissions at Kola MMC<sup>22</sup>.

<sup>18</sup> Nornickel, presentation “Improvement of environmental conditions across Kola MMC production sites in Nikel and Zapolyarny”, 2018. The presentation was provided by Nornickel to the Bellona Foundation in June 2019.

<sup>19</sup> Official webpage of Kola MMC. Environmental activity. In Russian (see: <http://www.kolagmk.ru/ecology/aspects>).

<sup>20</sup> Nornickel, presentation “Financial results”, 2018. In Russian (see: <https://www.nornickel.ru/news-and-media/media-library>).

<sup>21</sup> Nornickel, presentation “Moving towards sustainable development”, 2018. In Russian (see: <https://www.nornickel.ru/news-and-media/media-library>).

<sup>22</sup> Nornickel, presentation “Financial results”, 2018. In Russian (see: <https://www.nornickel.ru/news-and-media/media-library>).

As it seems, the work on reconstruction of the concentration plant in Zapolyarny, that was previously supposed to be finished by the second quarter of 2019, has started only recently<sup>23</sup>. It means the planned improvements of air quality situation in Nikel might be also postponed, as the project in Zapolyarny implies significant load reduction at the smelter shop in Nikel and putting out of operation one of its ore-thermal furnaces. The company explains the delay in achieving the planned emission reduction targets by rescheduling of the concentrate loading facility project by the contractor Outotec. At the same time Nornickel confirms that the necessary measures to uphold 50% reduction promise by 2020 will be taken<sup>24</sup>.

The objective that is given for Polar Division is related to SO<sub>2</sub> emissions reduction in the Norilsk Industrial Area. In the presentation of financial results on March 6, 2018 the 70% reduction of total SO<sub>2</sub> emissions in the Norilsk Industrial Area was previewed by 2023 (with 2015 as a base year). Several months later, in November 2018, Nornickel mentioned a number of 75% for the same period (2015-2023).

Worth noticing that with only 5% reduction of SO<sub>2</sub> emissions that Nornickel has reached at Polar Division since 2015, the number of 75% looks quite ambitious. Besides, after 75% reduction, the Polar Division will continue to emit 463 480 tons of SO<sub>2</sub> each year. This number is comparable to the 440 550 tons that constitute total SO<sub>2</sub> emissions of Norway, Sweden, Finland, Denmark and Germany taken together<sup>25</sup>.

### 3.3. Prospects for further development

For the moment the company specifies two main quantitative goals to achieve, 50% reduction of SO<sub>2</sub> in Nikel by 2020 and 75% – at Polar Division by 2023. For Polar Division the main project that is supposed to ensure achievement of the goal, is the Sulphur project. From the year of 2017 to 2018, according to the data from Nornickel, SO<sub>2</sub> emissions increased by 5% despite 15% increase of copper production (smelting) at Polar Division<sup>26</sup>. This statement demonstrates an interdependence between production and emissions growth.

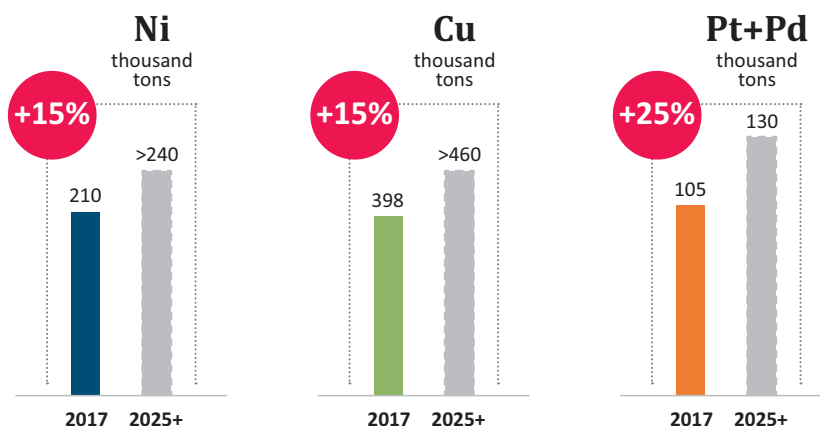
If so, the planned growth in production of all the main metals of the Nornickel's group (figure 3.2) going with the opening of new production sites (development of South Cluster and expansion of Talnakh) might be also associated with increased SO<sub>2</sub> emissions, unless the new technologies manage to break this pattern.

<sup>23</sup> Nornickel, sustainability report. The new Nornickel: strategy in action, 2018. In Russian (see: [https://www.nornickel.ru/upload/iblock/28a/NN\\_SR2018.pdf](https://www.nornickel.ru/upload/iblock/28a/NN_SR2018.pdf)).

<sup>24</sup> Nornickel, annual report. Progress towards sustainable growth, 2018. In Russian (see: [https://www.nornickel.ru/upload/iblock/4d0/Godovoy\\_otchet\\_2018.pdf](https://www.nornickel.ru/upload/iblock/4d0/Godovoy_otchet_2018.pdf)).

<sup>25</sup> Organisation for Economic Cooperation and Development, 2016. Emissions of air pollutants (see: [https://stats.oecd.org/Index.aspx?DataSetCode=AIR\\_EMISSIONS](https://stats.oecd.org/Index.aspx?DataSetCode=AIR_EMISSIONS)).

<sup>26</sup> Nornickel, Financial results, 2018. In Russian (see: <https://www.nornickel.ru/news-and-media/media-library>).

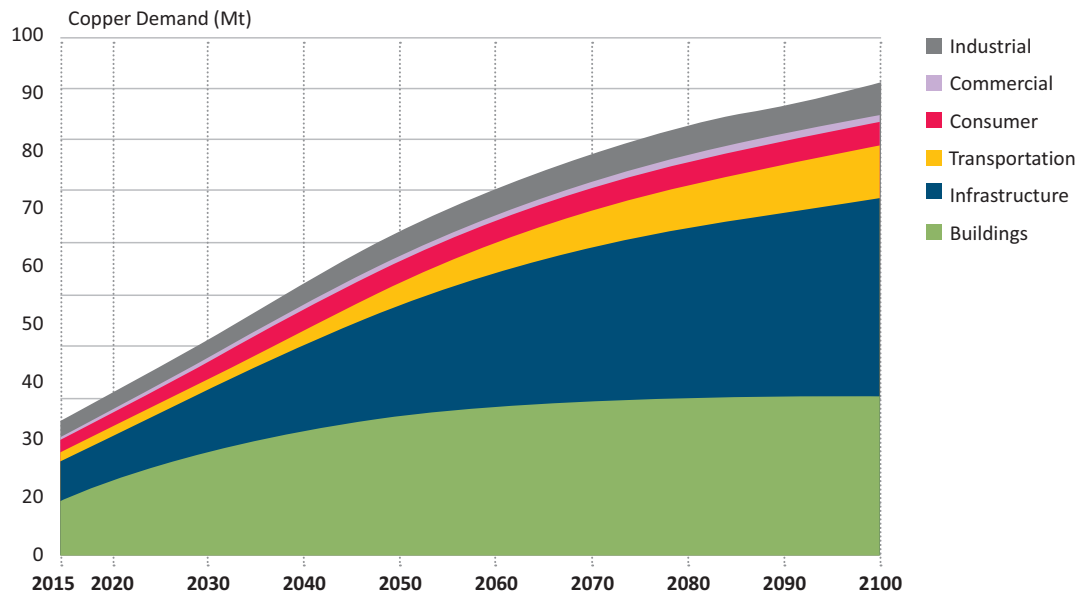


**Figure 3.2.** Strategic production objectives for the period up to 2025 and longer  
Source: <https://www.nornickel.ru/news-and-media/media-library>

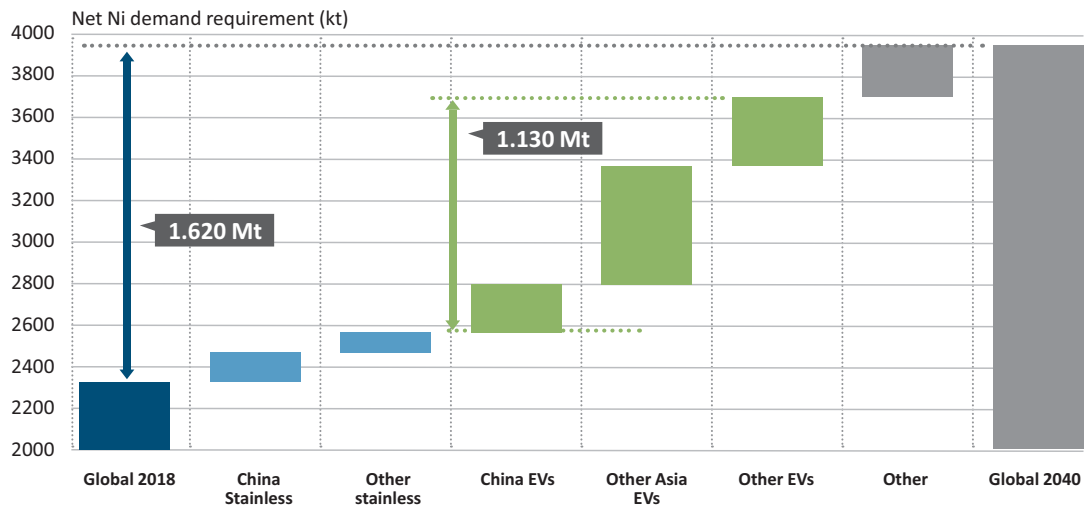
The demand for metals grows and production methods have to be in line. Copper and nickel demands are estimated to double in the next 20 years and to continue going up (figures 3.3 and 3.4). With such growth rate the implementation of measures aimed to reduce environmental impact is of primary importance.

Meanwhile, the announced 75% decrease of SO<sub>2</sub> emissions at Polar Division by 2023 absolutely requires decoupling of metals production growth and released emissions. In order to keep leading market positions in a situation of increasing demand for metals, the company has to adapt to new realities.

How the production growth will correspond with pollutants emitted into the atmosphere? Will it be possible to keep up with the promised reduction of emissions satisfying at the same time growing needs for metals? Which other environmental measures can contribute to the decoupling? These are all open questions that will define how Nornickel faces current challenges and what are the strategies of the company to keep and strengthen its market positions.



**Figure 3.3.** Global copper demand by product category until 2100  
Source: <https://www.sciencedirect.com/science/article/pii/S0921344918300041>



**Figure 3.4.** Sources of long term incremental nickel demand until 2040  
Source: <https://www.woodmac.com/reports/metals-global-nickel-long-term-outlook-q4-2018-61059892>

## 4. AIR POLLUTION LAWS AND REGULATIONS

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### 4.1. Maximum permissible emissions

For the purpose of state regulation of emissions of harmful (polluting) substances into the air for stationary sources, the following norms are established: maximum permissible emissions; maximum permissible standards of harmful physical impacts on the atmosphere; technological emission standards<sup>27</sup>.

The maximum permissible emission is the standard of emission of a harmful (polluting) substance into the atmosphere. It is defined as the volume or mass of a chemical substance or a mixture of chemical substances, microorganisms, other substances, allowed to be emitted into the atmosphere by a stationary source and (or) by a set of stationary sources, and in compliance with which the requirements in the field of air protection are met<sup>28</sup>.

Maximum permissible emissions for a particular stationary source of emissions of harmful (polluting) substances into the atmosphere and for a legal entity are established by territorial bodies of the Federal Supervisory Natural Resources Management Service (with the exception of radioactive substances) provided there is a sanitary-epidemiological certificate of compliance of emission limits with sanitary rules. Thus, maximum permissible emissions are defined by Interregional directorate of the Federal Supervisory Natural Resources Management Service for Krasnoyarsk kray and the Republic of Tyva for the Polar Division<sup>29</sup> and by the directorate of the Federal Supervisory Natural Resources Management Service for Murmansk oblast for Kola MMC<sup>30</sup>.

Permission № 461 dated 28.09.2017 defined sulfur dioxide emission limits for Kola MMC Nickel site. For the period 28.09.2017 – 27.09.2018 these limits were set as of 80 496 tons per year, including: within MPE (maximum permissible emissions) – 31 101 tons per year and within TAE (temporary agreed emissions) – 49 395 tons per year<sup>31</sup>. As is planned, 50% reduction of SO<sub>2</sub> emissions is expected on the Nickel site, and in 2020 the site will comply with the permitted emissions levels<sup>32</sup>.

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<sup>27</sup> Federal Law on Protection of Atmospheric Air of 04.05.1999 № 96-FZ, last updated 29.07.2018, art. 12. In Russian (see: [http://www.consultant.ru/document/cons\\_doc\\_LAW\\_22971](http://www.consultant.ru/document/cons_doc_LAW_22971)).

<sup>28</sup> Ibid, art. 1.

<sup>29</sup> Current permission for emissions of harmful substances (except radioactive) into the atmosphere for the period up to 31.12.2019 (see: <http://ru.nornik2.3ebra.com/investors/disclosure/significant-facts/YNytOPDbpESFTHo35fgdug-B-B/>).

<sup>30</sup> Current permission for emissions of harmful substances (except radioactive) into the atmosphere for the period up to 28.08.2024 (see: <https://www.nornickel.ru/investors/disclosure/significant-facts/iGKToFclIEi27HIzW-AcWRA-B-B/>).

<sup>31</sup> Nornickel, presentation “Kola MMC Environmental Investment Projects”, 2018. The presentation was provided by Nornickel to the Bellona Foundation in June 2019.

<sup>32</sup> Nornickel, annual report. Progress towards sustainable growth, 2018. In Russian (see: [https://www.nornickel.ru/upload/iblock/4d0/Godovoy\\_otchet\\_2018.pdf](https://www.nornickel.ru/upload/iblock/4d0/Godovoy_otchet_2018.pdf)).

The sulfur dioxide emission limits for Zapolyarny are equal to 6851 tons per year<sup>33</sup> and the site has been complying with the MPE rates since 2017<sup>34</sup>. As for the Monchegorsk site, the limits are set on the level of 39 900 tons per year, and the site has been complying with this number since 2007. Besides, the 45% reduction of emissions (from the currently permitted levels) is expected by 2023 as an outcome of a project of implementation of an innovative copper cathode production technology at the Monchegorsk site<sup>35</sup>. The objective is aimed to guarantee compliance with the current MPE in case of a future increase of finished product output. If both objectives are reached (reduction of emissions and production growth), it means that due to introduction of the mentioned measures, SO<sub>2</sub> emissions per tons of production will be decreased.

Regarding the Polar Division, Nor Nickel announces that once 75% reduction of SO<sub>2</sub> emissions is achieved, the normative quality of the air in Norilsk will be guaranteed no matter the wind direction and speed<sup>36</sup>. However, the maximum permissible emissions levels themselves are not provided, which does not allow us to follow the progress of the company towards this goal.

## **4.2. Maximum permissible concentrations**

Compliance of the maximum permissible emissions with sanitary rules is determined on the basis of hygienic standards for atmospheric air quality.

Hygienic standards – the maximum permissible concentration (MPC) of atmospheric pollution of chemical and biological substances are the basis for regulating the air quality in populated areas. Adherence to these standards ensures the absence of direct or indirect impact on the health of the population and the living conditions<sup>37</sup>.

The sanitary and epidemiological service in exercise of sanitary supervisory functions systematically monitors compliance with the standards of the MPC in the water bodies of household water use, in the ambient air and in the air of production areas.

To have a better understanding of the air quality values in different countries, the comparative table of the adopted MPC was made (table 4.1). Depending on the country, the standards might be set as a maximum permissible one-time concentration, average daily, 1-hour average, annual mean and even as a 10-minute mean.

<sup>33</sup> Nor Nickel, presentation “Kola MMC Environmental Investment Projects”, 2018. The presentation was provided by Nor Nickel to the Bellona Foundation in June 2019.

<sup>34</sup> Nor Nickel, presentation “Improvement of environmental conditions across Kola MMC production sites in Nikel and Zapolyarny”, 2018. The presentation was provided by Nor Nickel to the Bellona Foundation in June 2019.

<sup>35</sup> Nor Nickel, presentation “Kola MMC Environmental Investment Projects”, 2018. The presentation was provided by Nor Nickel to the Bellona Foundation in June 2019.

<sup>36</sup> Nor Nickel, annual report. Progress towards sustainable growth, 2018. In Russian (see: [https://www.nornickel.ru/upload/iblock/4d0/Godovoy\\_otchet\\_2018.pdf](https://www.nornickel.ru/upload/iblock/4d0/Godovoy_otchet_2018.pdf)).

<sup>37</sup> Sanitary and epidemiological rules and regulations 2.1.6.1032-01 of 17.05.2001. Hygienic requirements for atmospheric air quality in populated areas. In Russian (see: <http://docs.cntd.ru/document/901787814>).



**Table 4.1.** Maximum permissible (average daily if other is not indicated) concentrations (MPC) of pollutants in ambient air in some countries

Country	Type of pollutant, mg/m <sup>3</sup>			
	SO <sub>2</sub>		NO <sub>2</sub>	
Russia <sup>38</sup>	0.05	0.5 (one time)	0.04	0.2 (one time)
Norway <sup>39</sup>	0.125	0.35 (hourly)	0.2 (hourly)	0.04 (annual)
EU <sup>40</sup>	0.125	0.35 (hourly)	0.2 (hourly)	0.04 (annual)
Switzerland <sup>41</sup>	0.1	0.03 (annual)	0.08	0.03 (annual)
Japan <sup>42</sup>	0.113	0.266 (hourly)	0.122	n/a
WHO guidelines <sup>43</sup>	0.02	0.5 (10-minute mean)	0.2 (hourly)	0.04 (annual)
USA <sup>44</sup>	0.196 (hourly)	n/a	0.188 (hourly)	0.1 (annual)

As one can see from the table, the accepted values of the MPC in Russia are more stringent compared to those used in other countries, including Norway. However, the legal regulations of these values in Russia do not guarantee compliance with them, and in practice, the environmental standards are not always respected due to the weak enforcement mechanism.

The Ministry of Natural Resources states the very high level of air pollution in the city of Norilsk. However, with the shutdown of Nickel plant and the launch of modernized Talnakh factory, the emissions in Norilsk are going down. By 2023 with the implementation of the Sulphur project the situation is supposed to stabilize and norms of MPE to be respected.

As for the Kola Peninsula, currently the observational network of the Murmansk weather control and environmental monitoring service encompasses automated information-measuring complexes that are installed in nine industrial cities, including Zapolyarny, Monchegorsk, Nikel, for continuous monitoring of pollutants.

<sup>38</sup> Decision of the main state sanitary doctor of the Russian Federation of 22.12.2017 № 165 "On the approval of hygienic standards GN 2.1.6.3492-17 maximum permissible concentrations (MPC) of pollutants in the atmospheric air of urban and rural settlements". In Russian (see: <http://www.consultant.ru/cons/cgi/online.cgi?req=doc&base=LAW&n=300614&fld=134&dst=100001,0&rnd=0.02852720982242196#02124571934021503>).

<sup>39</sup> Ministry of the Climate and Environment of Norway. Pollution regulation of 01.06.2004, last updated 17.06.2019 (see: [https://lovdata.no/dokument/SF/forskrift/2004-06-01-931/\\*##KAPITTEL\\_3](https://lovdata.no/dokument/SF/forskrift/2004-06-01-931/*##KAPITTEL_3)).

<sup>40</sup> Directive of the European Parliament and of the Council № 2008/50/EC of 21.05.2008 on "Ambient air quality and cleaner air for Europe" (see: <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32008L0050&from=en>).

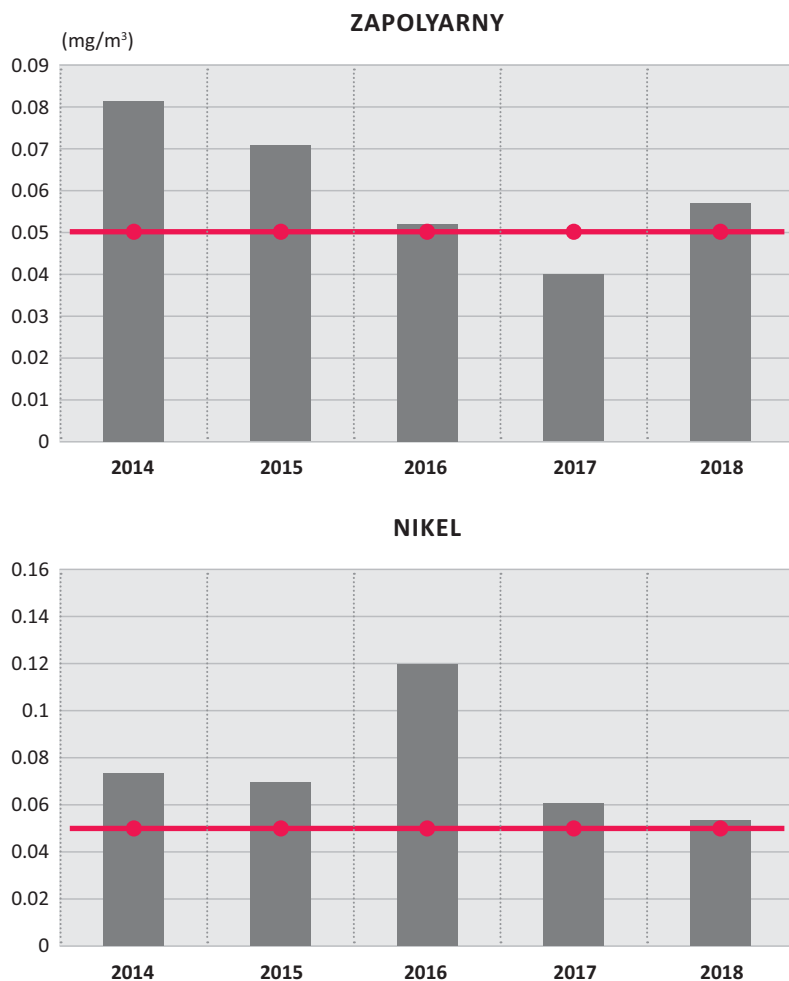
<sup>41</sup> Decree on Air quality of 16.12.1985, last updated 16.04.2019. In French (see: <https://www.admin.ch/opc/fr/classified-compilation/19850321/index.html>).

<sup>42</sup> Ministry of the Environment of Japan. Environmental quality standards in Japan. Air quality (see: <https://www.env.go.jp/en/air/aaq/aaq.html>).

<sup>43</sup> WHO Air quality guideline values (see: [http://www.who.int/news-room/fact-sheets/detail/ambient-\(outdoor\)-air-quality-and-health](http://www.who.int/news-room/fact-sheets/detail/ambient-(outdoor)-air-quality-and-health)).

<sup>44</sup> United States Environmental Protection Agency. Reviewing national ambient air quality standards (NAAQS): scientific and technical information (see: <https://www.epa.gov/criteria-air-pollutants/naaqs-table>).

In 2018 the Ministry of Natural Resources and Environment of Murmansk oblast stated the low level of pollution for Monchegorsk. In its turn, as is seen from the figure 4.1, the annual average concentrations of SO<sub>2</sub> in the air in Zapolyarny had been decreasing from 2014 and reached the norms in 2017. However, the exceedance of maximum permissible concentrations in Zapolyarny was stated again in 2018. As for Nickel, the concentrations were above the threshold within all the period (2014-2018).



**Figure 4.1.** Average yearly SO<sub>2</sub>-concentrations in the air in Zapolyarny and Nikel. Red line shows the threshold  
Source: [https://gov-murman.ru/upload/iblock/4a3/Doklad\\_za-2018-god\\_28-05-2019\\_ITOG.pdf](https://gov-murman.ru/upload/iblock/4a3/Doklad_za-2018-god_28-05-2019_ITOG.pdf)

The Monchegorsk site has been complying with the maximum permissible emissions of sulfur dioxide since 2007, and the Zapolyarny site – from 2017<sup>45</sup>. However, for both cities, the exceedances of maximum one-time concentrations of sulfur dioxide in the atmosphere are observed periodically.

<sup>45</sup> Nornickel, presentation “Improvement of environmental conditions across Kola MMC production sites in Nikel and Zapolyarny”, 2018. The presentation was provided by Nornickel to the Bellona Foundation in June 2019.

Thus, for example, on 9<sup>th</sup> of May 2019 the maximum one-time concentration of sulfur dioxide in the atmosphere of Monchegorsk was equal to 3.1 MPC; on 13<sup>th</sup> of March – 4.0 MPC; on 12<sup>th</sup> of March – 3.6 MPC; on 8<sup>th</sup> of March – 4.5 MPC (for comparison: on 7<sup>th</sup> of March 2018 – 9.0 MPC). As for the city of Zapolyarny, on 10<sup>th</sup> of April 2019 the maximum one-time concentration of sulfur dioxide in the atmosphere was equal to 3.1 MPC; on 31<sup>st</sup> of March – 2.0 MPC; on 26<sup>th</sup> of March – 2.5 MPC; on 12<sup>th</sup> of March – 3.6 MPC; on 7<sup>th</sup> of March – 2.5 MPC; on 26<sup>th</sup> of January – 4.5 MPC; on 15<sup>th</sup> of January – 3.9 MPC (for comparison: on 3<sup>rd</sup> of February 2018 – 6.3 MPC)<sup>46</sup>.

Taking into consideration the fact that both of these sites have been complying with the norms of the MPE, there are several questions that come to the mind. What are the possible causes of periodic exceedance of maximum one-time concentrations? Are the established norms of the MPE sufficiently strict to ensure the normative air quality? Are there any future measures planned to avoid such exceedance and to ensure compliance with the MPC?

In the words of the company, the increased concentrations of sulfur dioxide are observed under adverse weather conditions, contributing to the accumulation of harmful impurities in the atmospheric air. In order to prevent exceeding MPC levels the company takes additional actions, right down to a complete stop of a number of processes. Moreover, the main emissions of sulfur dioxide in Zapolyarny are not related to a briquetting section but to an oil-fired thermal power station providing heating to the residential area and industrial site.

As for the town of Nikel, the exceedance of the MPC is observed quite often. From time to time this exceedance is very significant. On 26<sup>th</sup> of May 2019 the maximum one-time concentration of SO<sub>2</sub> in the atmosphere of Nikel was equal to 10.0 MPC, on 20<sup>th</sup> of May – 5.6 MPC, on 12<sup>th</sup> of May – 5.2 MPC, on 2<sup>nd</sup> of May – 9.8 MPC, on 27<sup>th</sup> of April – 7.4 MPC<sup>47</sup>. With regards Nikel, the company plans to reduce SO<sub>2</sub> emissions and to meet the MPE standards by 2020. The time will show whether these measures are sufficient to avoid the exceedance and guarantee safe air quality in the area.

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<sup>46</sup> Weather control and environmental monitoring service of Murmansk, 2019. In Russian (see: [http://kolgimet.ru/monitoring-zagryazneniya-okruzhajushchei-sredy/sostojanie-i-zagryaznenie-atmosfernogo-vozdukh/?no\\_cache=1](http://kolgimet.ru/monitoring-zagryazneniya-okruzhajushchei-sredy/sostojanie-i-zagryaznenie-atmosfernogo-vozdukh/?no_cache=1)).

<sup>47</sup> Ibid.

### 4.3. Technological emissions norms

In their turn, the technological emissions norms are the standard of emission of a harmful (polluting) substance into the atmosphere, established for main production technological processes and for the equipment related to the fields of application of the best available technologies, using the technological indicator of emission<sup>48</sup>. Technological norms are developed by legal entities and self-employed individuals engaged in the activities at facilities of the first category<sup>49</sup>.

In 2016 the Russian government was implementing a law, originally introduced in 2014, to demand that the best available technologies are adopted by the industry within the country. Such legislation, called BAT for short, has been the norm in several places in the world since before the turn of the millennia. In the European Union, BAT-standards for each sector are defined in so called BREFs, that is, BAT reference documents. This makes it possible for the industry to know what demands are relevant for their own sector<sup>50</sup>. In Russia, the standards for BAT are under development, and will first be introduced as a pilot project for the 300 most polluting companies in the country, one of which happens to be Nornickel.

In the presidential address of 2019 it was mentioned that residents of the largest industrial centers of Russia, including Norilsk, should feel the positive effect of the transition of the industries to the best available technologies and strict environmental standards<sup>51</sup>.

As far as we know, the Russian system for BAT will be accompanied by a new reward-system for those companies that do reduce their emissions of pollutants to the environment. The Ministry of Finance of the Russian Federation has stated that it will introduce a new tax-system that should benefit those that conform to the new standards under the BAT-regime. Companies that hold true to the standards will be exempt from a range of taxes on the disposal of pollutants. The main issue is whether the standards will be good enough to have a significant impact on pollution across the board.

Among others measures, the decree of the Russian Government of 13.03.2019 № 262 “On approval of the rules for the establishment and operation of the automatic control system for emissions of polluting substances and (or) discharges of polluting substances” addresses this acute necessity in BAT. For the moment, according to the information provided by Nornickel, in order to ensure standardization in the field of environmental protection based on the technological indicators of the BAT, the company is taking the necessary measures to obtain a Comprehensive Environmental Permit within the period specified by law – until December 31, 2022. As a result of these measures, Nornickel is going to comply with the above-mentioned decree.

Nornickel was one of the first companies to test using the technological emissions norms in order to regulate the emitted pollutants. In 2002, at the initial stage, data on about 1500 sources of emissions from mining, concentration and metallurgical production of the Polar

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<sup>48</sup> Federal Law on Protection of Atmospheric Air of 04.05.1999 № 96, last updated 29.07.2018, art. 1. In Russian (see: [http://www.consultant.ru/document/cons\\_doc\\_LAW\\_22971/](http://www.consultant.ru/document/cons_doc_LAW_22971/)).

<sup>49</sup> Federal Law on Protection of Environment of 10.01.2002 № 7, last updated 27.12.2018, art. 23. In Russian (see: [http://www.consultant.ru/document/cons\\_doc\\_LAW\\_34823](http://www.consultant.ru/document/cons_doc_LAW_34823)).

<sup>50</sup> European Commission. Reference documents (see: <http://eippcb.jrc.ec.europa.eu/reference>).

<sup>51</sup> Presidential Address to the Federal Assembly, 2019 (see: <http://kremlin.ru/events/president/news/59863>).

Division were collected and processed. They formed the basis of the emission inventory. For that moment, SO<sub>2</sub> specific emissions at Polar Division were about 3 tons per 1 ton of produced copper and nickel<sup>52</sup>.

In March 2013, a meeting of the Public Council of the Territorial Administration of Rosprirodnadzor for the Krasnoyarsk kray was held, at which proposals for technological standards for emissions into the atmosphere for the main production of the Polar Division of Nor Nickel were presented. The company then pointed out its readiness to accept the comments of the members of the board to refine and improve the system of technological standards<sup>53</sup>.

Once installed the automatic control system might provide the ground for prompt response on exceeded concentrations. To date, Nor Nickel does not furnish with information on technological emissions norms for its technological processes. Nevertheless, if we make rough estimations of SO<sub>2</sub> emissions per 1 ton of production, neglecting the effect of other pollutants emitted from nickel and copper production and considering that SO<sub>2</sub> was emitted mainly from nickel and copper production, the numbers will be the following (table 4.2).

**Table 4.2.** Tons of SO<sub>2</sub> emissions per 1 ton of nickel and copper production in 2013-2018

	2013	2014	2015	2016	2017	2018
Polar Division	4.48	4.28	4.76	5.31	5.46	4.98
Kola MMC	0.88	0.92	0.82	0.59	0.46	0.43

Based on the table, the improvements are seen for Kola MMC. Thus, to produce 1 ton of nickel and copper in 2013, 0.88 tons of SO<sub>2</sub> were emitted. Whereas in 2018 this number decreased by two and was equal to 0.43 tons of SO<sub>2</sub> per 1 ton of production.

For the Polar Division, the values are less optimistic. Within 6 years period for production of 1 ton of nickel and copper about 5 tons of SO<sub>2</sub> were released. In 2018, after the shutdown of the Nickel plant in 2016, we see 0.5 tons decrease, but the values are still high.

Meanwhile, with the planned decrease of SO<sub>2</sub> emissions by 75% by 2023, even if we consider that production rates stay the same (which are in reality supposed to growth with the increased demand for metals), the ratio will be 1.31 tons of SO<sub>2</sub> per 1 ton of nickel and copper production. That would show the progress towards environmental improvements in the region. Unless this 75% reduction is reached, the emission/production ratio does not look promising for the Polar Division.

<sup>52</sup> Smolin M. A. The usage of technical standards for the regulation of air pollutants emitted into the atmosphere. In Russian (see: <http://pmi.spmi.ru/index.php/pmi/article/view/3260/3362>).

<sup>53</sup> Web-based media BezFormata. Nor Nickel presented its proposals on technical standards for air emissions for the main production facilities of the Polar Division. In Russian (see: <http://krasnoyarsk.bezformata.com/listnews/potekhnicheskim-normativam-vibrosoy/10496862>).

## CONCLUSION

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*(and Bellona's opinion on possible ways to improve environmental performance of Nor Nickel, its public acceptance and compliance with international standards)*

As our research shows, in recent years the principal shareholder and company's management has understood that the company should move toward improving its environmental performance. As a result, Nor Nickel's production should be carried out in a way that does the least possible harm to the environment.

From the statistics shown in the report, it is apparent that Nor Nickel is gradually increasing its costs for projects aimed at solving environmental problems. This has already resulted in emissions reduction at several of the company's production sites in Russia. The company is modernizing its facilities to cope with the growing demand for both metals and environmentally friendly production. International standards and competition require the company minimize environmental impact across the entire production chain.

Nor Nickel seeks to increase its ambitions in order to become a world leader in the production of important metals in an environmentally friendly manner. However, Bellona has no information available as to what Nor Nickel plans to do if they reach their current emissions reduction goals. As we have seen, the current SO<sub>2</sub> emission reduction goals of the company consist of a goal of 50% reduction of SO<sub>2</sub> emissions in Nickel on the Kola Peninsula, as well as a 75% reduction for the whole Polar Division. Bellona interprets this as the company being content with the current emissions in Monchegorsk and Zapolyarny on the Kola Peninsula, as the latter two are currently emitting within the maximum permissible emission levels defined by the Russian state. Meanwhile, the periodical exceedance of maximum one-time concentrations is still a problem in Monchegorsk, Zapolyarny and Nickel.

For many years Bellona has been following what is happening at the enterprises of Nor Nickel, especially on the Kola Peninsula. Therefore, Bellona has an understanding of what steps Nor Nickel should take in order to improve its environmental performance, as well as its acceptance at public and international levels. Bellona's opinion and propositions are based on the experience of cooperation with various state, private and public structure – a trust Bellona has gained over more than thirty years of vigorous activity, including in Russia.

**Compliance with international standards.** The attention of the international community to mining and processing of mineral resources has led to the introduction of new certification schemes that require companies striving to be competitive in the market to certify their production according to a recognized independent certification system. These schemes increase the focus on documenting emissions and discharges affecting the environment throughout the life cycle of a particular product by analyzing that cycle or by declaring the environmental impact of the product in question. Certification might affect the competitiveness of a given company because it makes it easier to compare the environmental impact of different companies.



In addition, the new ISO standard, used throughout the cycle, will facilitate the “documentation of the cyclicity” of various products. This means that companies that also use by-products in their main or other production chain will gain a competitive advantage. The demand for minerals is so great that almost any company will be able to sell its production. Meanwhile if companies do not take steps to meet the requirements arising from public opinion and environmental standards for products, they might face a lower price for their products.

**Implementation of environmental and social projects.** As mentioned in the report, Nornickel has an environmental strategy, as well as environmental programs and projects. From the year 2013 to 2018, some of the company’s negative impacts were reduced, mainly on the Kola Peninsula, and as a result of the closure of the Nickel Plant in Norilsk. The targets announced by Nornickel are promising provided that the company follows its declared path, especially in its Sulphur project for the Polar Division, which is supposed to solve air pollution problems in the Norilsk Industrial area.

For an accurate understanding of how the environmental strategy of the company is being implemented, it would be advisable to present experts and the public with a roadmap containing information on the specific practical steps that the company plans to take in order to achieve a clearly defined goal – that goal being to make production as environmentally friendly as possible with minimal emissions and discharges of harmful substances into the environment. The roadmap should include what measures the company plans to take, an estimated timeline on which the measures will be adopted, as well as the expected results of the harm reduction measures for specific production facilities. It is recommended that the roadmap be discussed with public interest groups and experts in regions where Nornickel operates. This would make it possible not only to understand how and where the company is developing, but also to monitor its achievements and progress towards defined goals.

**Disclosure of information.** A company that seeks public acceptance and international recognition should first ensure that its content and press services are as accessible and open to the public as possible. It is important that information be provided on time, especially when force majeure events take place – for example, when adverse weather conditions cause environmental destruction. It would be advisable for Nornickel to work out a system of answering questions posed by concerned citizens and public interest organizations. Otherwise, misunderstanding arises when information from the company differs from information coming from supervisory authorities (for example, Roshydromet). Such cases require prompt responses so that there is no suspicion that the company is shielding facts from public view. The company’s website should offer opportunities to communicate with the public through a “live page” with a feedback function.

Disclosure of information does not only mean the provision of information through information resources. It would be advisable to introduce the practice of technical-information tours of the company’s facilities. This would allow media representatives, public organizations and local administrations to see whether the company is following through on its stated goals.

**Interaction with civil society and public participation.** As practice shows, large companies and corporations that have a negative impact on the environment must work to establish public participation as well as close contact with civil society groups. Public participation, public monitoring, and company interaction with citizens and non-profit organizations are signs of a democratic society. Nornickel is a private company, but its operations affect vast territories and the population. Bellona thinks it is advisable for Nornickel to create a public consultative structure similar to the public councils seen at state corporations to facilitate interaction with the citizens and public organizations. This would solve a number of important issues for people living in single-industry towns and operations areas of Nornickel. Moreover, this would help to ensure the company's interaction with public and industry associations, as well as with local authorities.

**International cooperation.** Nornickel operates in zones bordering on foreign states. The company has its facilities abroad and is interested in developing them and expanding capacities. In addition, Nornickel is a company whose products will be in demand in the coming years serving many purposes, – specifically the manufacture of energy storage devices for use in electric transport and industrial application. This and other reasons should force Nornickel to intensify its efforts in developing international cooperation with state, commercial and public organizations.

Foreign countries and international business are interested in cooperating with Nornickel no less than Nornickel is interested in cooperating with them. It is therefore necessary to determine where those points of interest lie. As mentioned above, international cooperation will require transparency, high environmental standards and the public's acceptance of the company.

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