Environmental impact

The Company's environmental programme includes the upgrade of Talnakh Concentrator to increase sulphur disposal to tailings, shutdown of all operations at Nickel Plant and construction of recycling units to extract elemental sulphur (sulphuric acid) from waste gases at Nadezhda Metallurgical Plant and Copper Plant. Kola MMC has developed and is implementing a programme to reduce sulphur dioxide emissions by introducing the briquetting and briquette melting technology along with upgrading its melting equipment, including the reconstruction of feeding and sealing systems of ore-thermal furnaces and a set of measures to prepare low-grade ores for smelting. These steps will significantly reduce the negative impact of emissions from metallurgical operations at Polar Division and Kola MMC's Zapolyarny and Nikel sites.

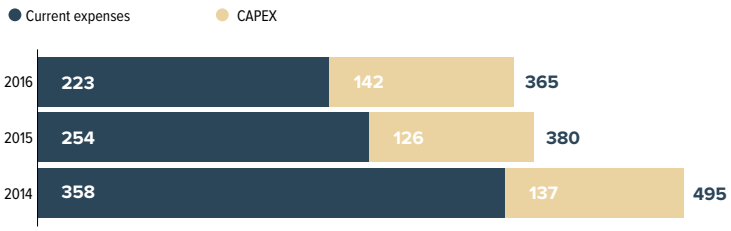
The reporting year saw the shutdown of Nickel Plant, the main source of pollution in the southern industrial area of the city of Norilsk operating within the city boundaries since 1942.

The Nickel Plant closure discontinued approximately 370 ktpa of air emissions and eliminated 600 stationary sources of air pollution, of which 458 had no purification facilities. The plant's two wastewater discharge points previously discharging approximately 37 kt of pollutants per annum were closed. Over one million tonnes of production waste is no longer generated, including coal processing products, metallurgical slag, ferrous cake and other wastes.

KEY STEPS TO MITIGATE THE GROUP'S ENVIRONMENTAL IMPACT

- comply with the applicable laws and international agreements, ISO 14001, industry and corporate environmental regulations;
- gradually reduce pollutant emissions and discharges, and expand the scope and volume of waste recycling;
- ensure sustainable use of natural resources;
- implement the best available technology.

Environmental protection expenses, *USD mln*[1]



Environmental impact metrics across Norilsk Nickel's Russian operations[1]

Item	2014	2015	2016
Total air pollutant emissions, mln t	2.01	2.06	1.94
incl. sulphur dioxide, mln t	1.95	2.01	1.88
incl. solids, mln t	0.02	0.02	0.01
Wastewater disposal, mln cubic meters	62	54	52
Pollutant discharges, mln t	0.17	0.18	0.19
Use and treatment of waste at the Company's own facilities, mln t	18	19	20
Waste disposal, mln t	17	15	14

As part of upgrading the sulphur dioxide recycling units at Copper Plant and Nadezhda Metallurgical Plant, the project design documents were developed and approved by Russia's State Expert Review Board. The Company selected the EPC contractor and signed a contract for the work to be performed at the next stages of the sulphur project at Nadezhda Metallurgical Plant.

In 2016, total emissions of Norilsk Nockel's Russian operations amounted to 1.9 mln t, which is 6% lower than in 2015. The decrease was due to lower sulphur dioxide emissions (-7%) primarily resulting from the shutdown of Nickel Plant, as well as the briquetting technology introduction and lower production of pellets at Kola MMC.

[1] Including Polar Division, Polar and Murmansk Transportation Branches, and Kola MMC.

In 2016, further steps were taken to reduce air emissions with a view to gradually achieving maximum permissible emission rates. The Company also continued its efforts to improve control over emissions during unfavorable weather conditions. In the reporting period, a total of 76 emission control cases were registered at Norilsk Nickel's metallurgical operations. To inform the local community of the environmental impact of its metallurgical operations on the quality of air in Norilsk, the Company continued running an automatic toll-free enquiry service line offering environmental forecasts for the city area to anyone dialing 007 or 420 007.

The decrease in total wastewater discharge by 2% was mainly due to the shutdown of Nickel Plant and lower discharge of mining waters at Kola MMC. Also, the discharge of wastewater pollutants in 2016 dropped by 18% and did not exceed the maximum permissible discharge rates.

In 2016, the Company continued implementing its wastewater discharge reduction plan allowing for phased achievement of maximum permissible discharge rates for each substance subject to limits.

Norilsk Nickel's waste management efforts seek to ensure the repeated use of waste in its production cycle along with meeting statutory waste disposal limits. In 2016, the Company's waste disposal did not exceed the limits. Re-usable waste mostly comes from extraction of ore mineral resources, including mined rock crushing, backfilling of mined-out areas and pits, and construction and strengthening of tailing dumps.

The discharge of wastewater pollutants in 2016 dropped by

18%

In 2011, a new concentrate briquetting section was commissioned at Zapolyarny site of Kola MMC replacing the roasting section. Two new briquetting lines are now in operation, and the briquetting technology is being fine-tuned to meet the required quality standards. The full-fledged roll-out of the briquetting technology will reduce sulphur dioxide emissions generated by the production processes from 4.8 kt in 2016 to approximately 1.0 kt. Since the start of its operations in 1998, Kola MMC also implemented a number of other projects at Zapolyarny and Nickel sites that enabled it to bring down sulphur dioxide emissions from 188 kt in 1998 to 82.4 kt in 2016.

Monchegorsk site is currently implementing a Nickel Electrolysis Shop project that will allow for electrowinning of nickel from chlorine dissolved tube furnace nickel powder with the capacity of 120 kt of electrolytic nickel per annum. The project includes reconstruction of cathode nickel facilities in the nickel electrolysis shop to replace the existing electrorefining technology with electrowinning of nickel from chlorine dissolved tube furnace nickel powder. The new technology will help to reduce air emissions thanks to elimination of anode smelting.

ENVIRONMENTAL IMPACT METRICS OF NORILSK NICKEL HARJAVALTA

Norilsk Nickel Harjavalta has all the necessary environmental permits and operates a certified integrated management system that meets the requirements of ISO 9001, ISO 14001 and OHSAS 18001. Its main environmental impact is emissions of ammonia (NH_3) and nickel into the air, and discharges of nickel (Ni), sulphates (SO_4^{2-}) and ammonia ions (NH_4^+) into water bodies. In 2016, Norilsk Nickel Harjavalta's actual emission, discharge and waste disposal volumes complied with the existing permits. Lower waste volumes came from the decreased use of feedstock from Terrafame (Talvivaara), as well as reduced processing of electric furnace matte from Boliden.

Environmental impact metrics of Norilsk Nickel Harjavalta

Indicator	2014	2015	2016
Industrial wastewater, thousand cubic meters	625	728	771
Pollutants in industrial wastewater, t			
Ni	0.4	0.4	0.4
SO_4^{2-}	19,281	20,051	22,457
NH_4^+ (converted to nitrogen)	45.4	36.0	49.5
Total water consumption, mln cubic meters	10.9	10.4	10
Total air pollutant emissions, t			
Ni	1.8	1.7	1.6
NH_3	50	70	70
Waste generation, kt	30.8	16.5	7.0
Waste disposal, kt	29.8	15.7	0.8

[1] Excluding 66,189 kg (Ni) discharged in July 2014 as Ni solution due to a heat exchanger failure at the reduction plant.