

## PROTECTION OF WATER BODIES

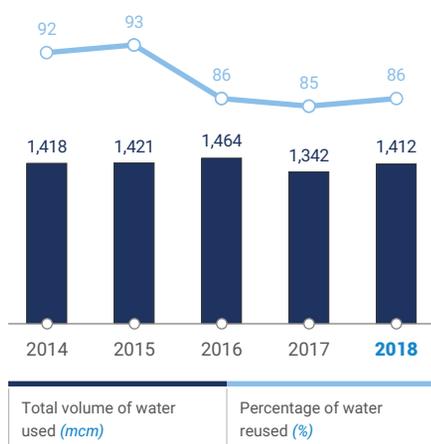
The Company's major production assets are located in regions with sufficient water resources. However, cognisant of the fact that certain regions of the world suffer from lack of water resources, the Company is extremely careful about its use of fresh water and strictly complies with restrictions applicable to industrial water withdrawal.

Nornickel's key facilities have a closed water circuit in place enabling them to reduce water withdrawal. Furthermore, the Company never withdraws water from protected natural areas. In 2018, 86% of all water used by the Company was recycled and reused. All sources of water used by the Company are subject

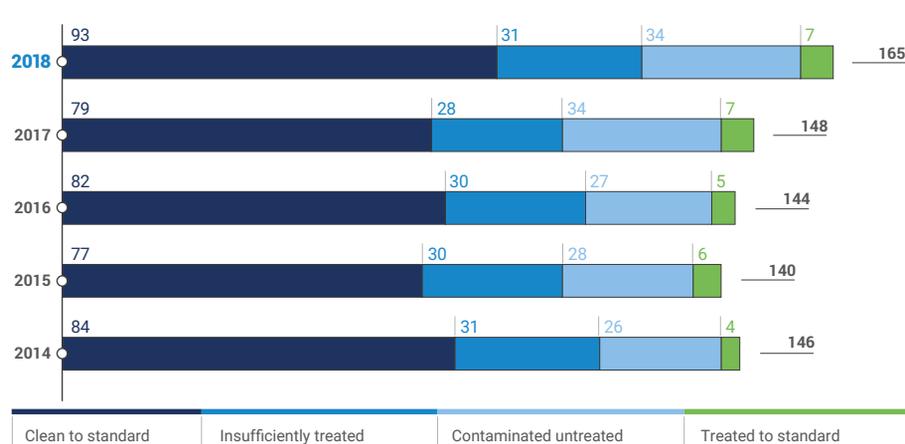
to government-approved surveillance programmes for water and water protection zones.

Wastewater effluents also do not exceed the approved limits or have any major impact on biodiversity of water bodies and related habitats.

Volume of water used



Wastewater discharge (mcm)



## EMISSIONS

High sulphur dioxide emissions resulting from smelting sulphide concentrates with high sulphur content is one of the Company's key environmental issues. Nornickel's strategic plan is to transform the Company into a cleaner and environmentally safe enterprise through implementing the Sulphur Project and environmental initiatives at Kola MMC. In 2019, the Company plans to introduce light unmanned aerial vehicles for monitoring environmental conditions on the Kola Peninsula and in the Norilsk Industrial District.

**The Sulphur Project** is the umbrella name for the second stage of Nornickel's large-scale environmental programme to achieve a 75% reduction in aggregate sulphur dioxide emissions across the Norilsk Industrial District by 2023. This will guarantee that Norilsk air meets

the air quality requirements regardless of wind speed or direction. The total CAPEX for the Sulphur Project is estimated in the range of USD 2.5 bn.

As part of the programme, **Nadezhda Metallurgical Plant** will receive new facilities capturing sulphur-rich gases, while sulphur acid will be neutralised with natural limestone, with waste gypsum produced as a result. The gypsum will be stored in a dedicated structure. Under another project, a revolutionary continuous copper matte converting unit will be built on the Plant's site. Its emissions will also be used to produce sulphur acid. In the reporting year, the design of these projects was completed and submitted for state expert review.

Meanwhile, **Copper Plant** will see its elemental sulphur production capacities

retrofitted and the entire converter section shut down, which will eliminate low-height emissions of low grade converter gases that have a pronounced effect on ground level concentrations of sulphur dioxide during unfavourable weather conditions. The total capacity for recovering sulphur from gases at Copper Plant is expected to reach ca. 280 ktpa of sulphur by 2022. Nornickel started implementing its Sulphur Project at Copper Plant in September 2018.

**Kola MMC** continues implementing the action plan to reduce sulphur dioxide emissions from Smelting Shop at the Nickel site by upgrading the equipment (reconstruction of feeding and sealing systems of ore-thermal furnaces, gas duct replacement, preparation of furnace charge for smelting, etc.) and lowering smelting shop utilisation through the Outotec project

of concentrate separation and shipment facility at Zapolyarny while selling part of Kola MMC's concentrate to third parties. This is expected to have an environmental impact of at least 50% reduction of sulphur dioxide emissions in Nickel by 2020 vs 2015 and achieving maximum permissible emission rates.

In 2018, emissions of Norilsk Nickel's Russian operations totalled 1,927 kt, up 4.3% y-o-y. The growth was caused by a temporary increase in sulphur dioxide emissions at Polar Division. This increase resulted from the processing of an extra amount of sulphur-containing copper concentrate purchased from Rostec. Although the emissions became higher,

they were still within the permissible emission rates applicable to the Company. Air pollutant emissions at Polar Division totalled 1,789 kt in 2018, up 84 kt y-o-y (+4.9%) mainly as a result of higher sulphur dioxide emissions (+5.3%).

In 2018, the Company made efforts to control pollutant emissions during unfavourable weather conditions with 140 instances of suspending operations at its metallurgical plants. To inform the local community of the environmental impact of its metallurgical operations on the quality of air in Norilsk, the Company maintains an automatic toll-free enquiry service line offering environmental forecasts for the city area to anyone dialling 420 007.

The Company's transport and logistics subsidiaries and units have all the necessary environmental permits and comply with the applicable environmental regulations, namely:

- air pollutant emissions from mobile sources do not exceed the maximum permissible concentrations;
- marine fuels are purchased from vendors that have all the required documents confirming fuel quality. The quality of fuel is verified by a third-party laboratory;
- onboard wastewater treatment plants are subject to annual certification for the avoidance of pollution and contamination of water bodies and marine environment;
- oil-containing water is transferred to specialist contractors at sea ports.

#### Air pollutant emissions across the Group (kt)

Air pollutants	2016	2017	2018
<b>GROUP TOTAL</b>	<b>1,936.4</b>	<b>1,845.6</b>	<b>1,926.6</b>
Including:			
sulphur dioxide (SO <sub>2</sub> )	1,878.0	1,785.1	1,869.6
nitrogen oxide (NO <sub>x</sub> )	10.1	11.4	11.2
solids	14.3	13.5	14.5
other	34.1	35.6	31.3

#### Polar Division

TOTAL	2016	2017	2018
<b>TOTAL</b>	<b>1,787.6</b>	<b>1,705.0</b>	<b>1,789.0</b>
Including:			
sulphur dioxide (SO <sub>2</sub> )	1,758.2	1,675.9	1,764.7
nitrogen oxide (NO <sub>x</sub> )	1.5	1.6	0.6
solids	6.2	6.1	5.5
other	21.7	21.5	18.2

#### Kola MMC

TOTAL	2016	2017	2018
<b>TOTAL</b>	<b>132.9</b>	<b>121.9</b>	<b>117.5</b>
Including:			
sulphur dioxide (SO <sub>2</sub> )	119.7	109.1	104.8
nitrogen oxide (NO <sub>x</sub> )	1.1	1.2	1.8
solids	7.4	6.9	7.6
other	4.7	4.7	3.3

Air pollutants	2016	2017	2018
<b>Other branches and subsidiaries</b>			
<b>TOTAL</b>	<b>16.0</b>	<b>18.7</b>	<b>20.2</b>
Including:			
sulphur dioxide (SO <sub>2</sub> )	0.1	0.1	0.2
nitrogen oxide (NO <sub>x</sub> )	7.5	8.6	8.8
solids	0.7	0.5	1.4
other	7.7	9.5	9.8

#### Sulphur dioxide (SO<sub>2</sub>) emissions (kt)

