

# ENVIRONMENTAL PROTECTION

## How has the Company's environmental approach evolved over the past 20 years?

Improving environment across the Company's footprint is one of our priorities. To reduce its environmental impact, Nor nickel takes various measures, including upgrade of existing operations, construction of new environmental protection facilities, introduction of modern technical and process solutions, and shutdown of obsolete production assets. The Company is actively implementing its flagship project, the Sulphur Programme, aimed at fundamentally changing the environmental situation in Norilsk and Kola Divisions by reducing sulphur dioxide emissions. The management of impacts on environmental components is reflected in the Environment and Climate Change Strategy, which was due to be updated in 2023.



# Nornickel's contribution to the Environment national project

## Relevant UN SDGs



The Environment national project is aimed at significantly improving the environmental conditions and delivering a positive impact on the health of people in Russia<sup>1</sup>.

### Relevant federal projects:

Clean Country (results of Clean Norilsk)	Clean Air
Clean Water	Conservation of Unique Water Bodies
Biodiversity Conservation and Ecotourism Development (results of the Big Scientific Expedition)	Implementing the Best Available Technologies

## Key focus areas

	Key projects	Key results
<b>Waste</b>	<ul style="list-style-type: none"> <li>Clean Norilsk</li> <li>Implementation of initiatives and projects contributing to increased waste recycling and treatment</li> </ul> <p>➔ For more details, please see the <a href="#">Sustainable Waste Management</a> subsection.</p>	<p>As part of the Clean Norilsk programme, <b>347 dilapidated buildings</b> were dismantled, over <b>80 kt of scrap metal</b> and <b>1 mt of waste</b> were collected and removed, and an area of <b>4.1 million m<sup>2</sup> was cleaned</b> as at the end of 2023</p> <p>Direct recycling at the Company's own facility <b>rose by 4% y-o-y to 18.5 mt</b></p> <p>In 2023, in-house waste disposal remained flat y-o-y at <b>29.9 mt</b>.</p>
<b>Water</b>	<ul style="list-style-type: none"> <li>Improving the closed water circuit</li> <li>Preventing pollution from entering rivers</li> <li>Cleaning polluted water bodies and their shores</li> </ul> <p>➔ For more details, please see the <a href="#">Water</a> section.</p>	<p>In 2023, <b>83%</b> of all water used by the Company was recycled and reused</p> <p>Total wastewater discharge <b>decreased by 12.5% y-o-y to 147 mcm</b></p> <p><b>13.3 kt</b> of wastewater and <b>1 kt</b> of waste were collected by trash interceptor vessels</p>
<b>Air</b>	<ul style="list-style-type: none"> <li>Sulphur Programme</li> <li>Air quality monitoring and forecasting system</li> </ul> <p>➔ For more details, please see the <a href="#">Air</a> section.</p>	<p>Air pollutant emissions reduced to <b>1.7 mt (down 6.1% y-o-y)</b></p> <p>In October 2023, the Company launched comprehensive testing of the first line of sulphur dioxide recovery from off-gases generated by flash smelters at Nadezhda Metallurgical Plant</p>

<sup>1</sup> <https://ecologyofrussia.ru/proekt/>

Key focus areas

Biodiversity

Key projects	Key results
<ul style="list-style-type: none"> <li>Big Scientific Expedition</li> <li>Cooperation agreements with the Russian Ministry of Natural Resources and Environment, natural reserves within our footprint</li> </ul> <p>➔ For more details, please see the <a href="#">Biodiversity</a> section.</p>	<p>Phase two of the Big Scientific Expedition ended in 2023</p> <p>Two new species discovered by the Big Scientific Expedition</p> <p>Two innovative scientific solutions introduced into assessment of ecosystem health</p> <p>IIEH<sup>1</sup> – a new method for integral assessment of ecosystem health</p>

Technology

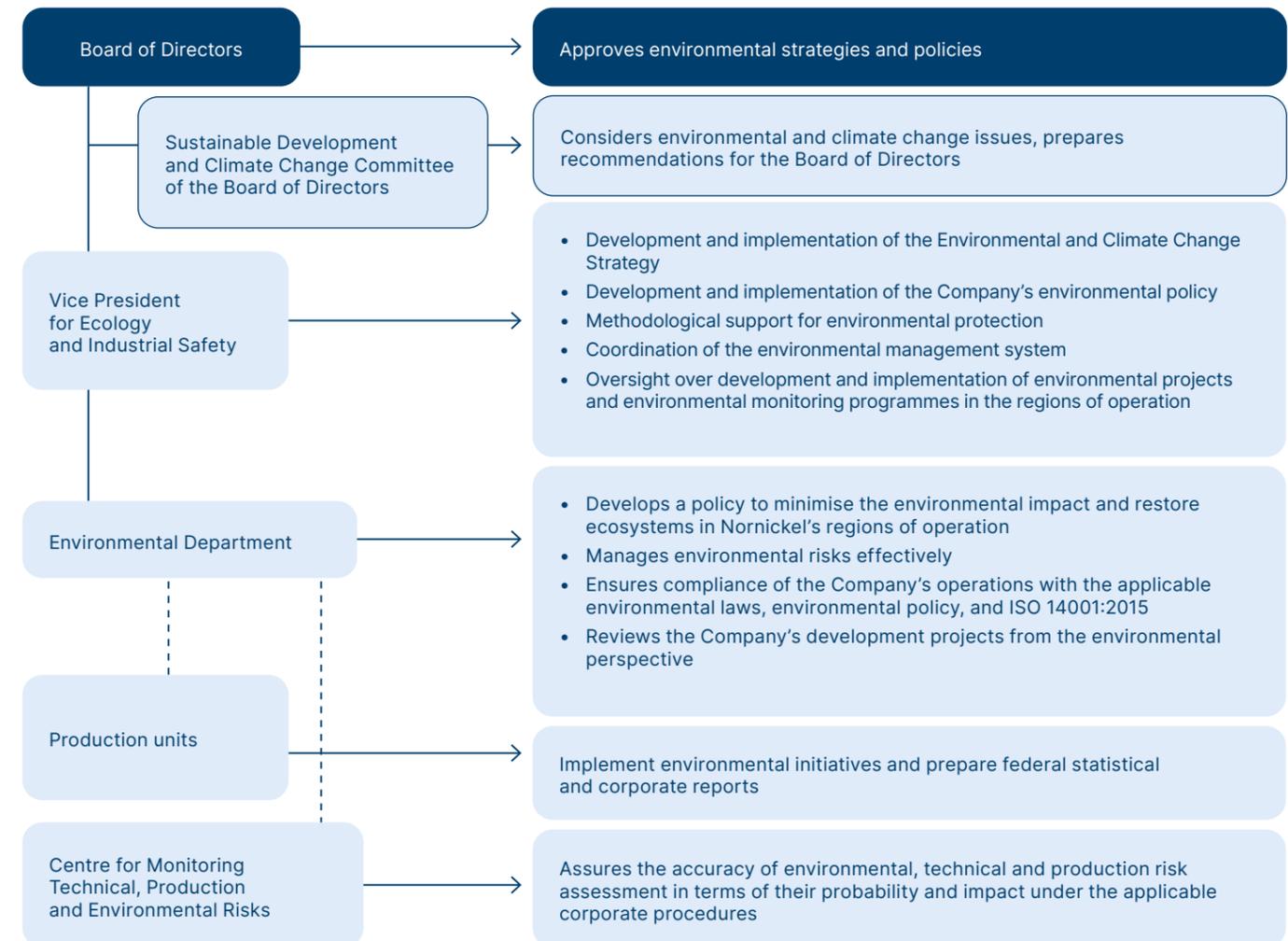
<ul style="list-style-type: none"> <li>Most of Nornickel's projects with a positive environmental effect rely on technological advances</li> </ul>	<p>➔ For more details on innovative environmental projects, please see the <a href="#">Innovation</a> section.</p>
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# ENVIRONMENTAL MANAGEMENT

The Company reaffirms its commitment to mitigate and where possible prevent a negative impact on land resources exerted by our production and supply operations.

Nornickel's senior executives and business units are responsible for meeting the Company's environmental obligations, goals, and KPIs. The Company's business units take steps to achieve the goals, comply with statutory requirements, and honour voluntary commitments in line with their competencies.

GRI 2-12, 2-13, 2-14



<sup>1</sup> Integral Indicator of Ecosystem Health.

Adopted in 2021, our [Environmental and Climate Change Strategy](#) helps us effectively manage the Company's environmental impact and monitor environmental conditions across our

footprint. Along with the said strategy and division-level programmes, Nornickel put in place dedicated by-laws drafted in accordance with Russian laws and best global practices.

**Key environmental management regulations**



Key environmental policies are subject to regular updates and approval by the Board of Directors. In 2023, the Board of Directors updated and approved MMC Norilsk Nickel's Tailings Management Policy. The reporting year also saw the Company draft a Procedure for Managing Technical and Production Risks and an Incident Notification, Registration, Recording, and Internal Investigation Standard.

Employees at business units take relevant compliance training in line with annual (quarterly) plans.

When planning our operations and in the course of our production activities, we comply with the applicable Russian environmental laws and regulations. During a state expert review, design documents and results

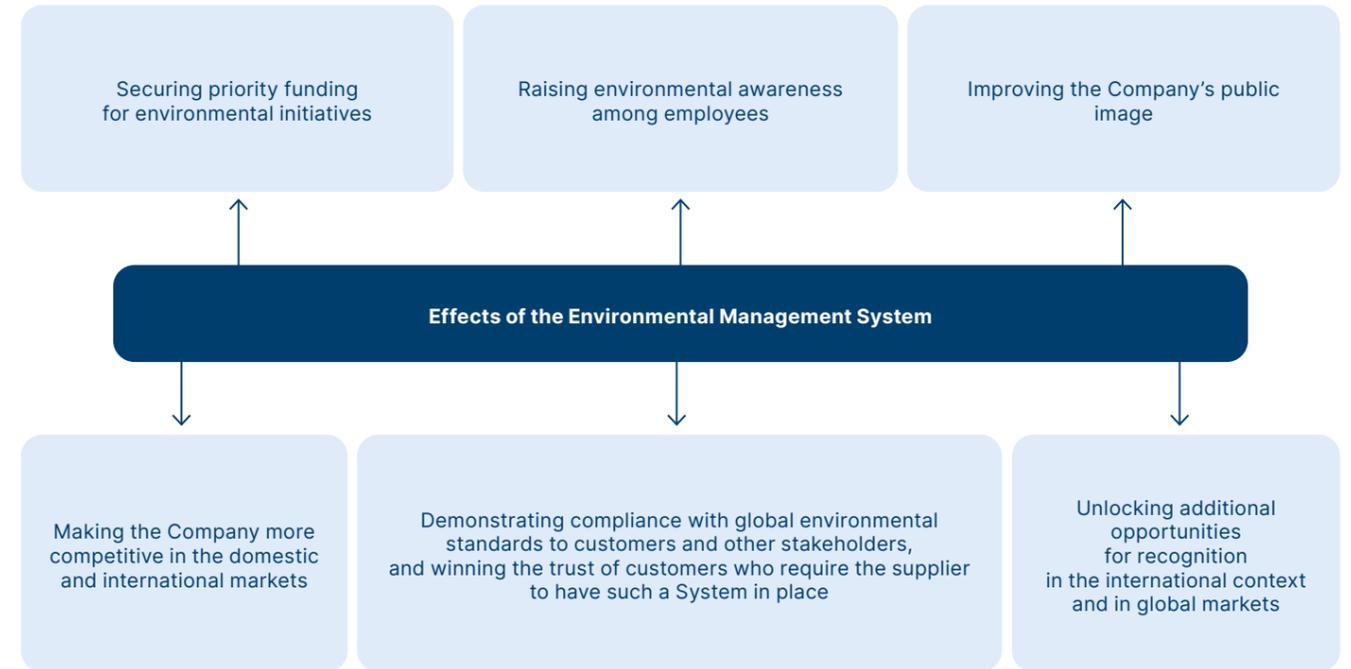
of engineering surveys for all the ongoing projects undergo mandatory assessment for compliance with the applicable laws.

**Environmental management system**

Launched in 2005, the Environmental Management System (the "System") continued to operate as part of the Corporate Integrated Quality and Environmental Management System

(CIMS), which enables the Company to harmonise environmental and quality management initiatives with operations of other functions (production management, finance, occupational health and safety,

etc.). The resulting synergies translate into better productivity across the Company in general and in environmental safety in particular.



The System is fully compliant with ISO 14001:2015. To confirm compliance, the Company and its business units' pass surveillance and recertification audits.

In November 2023, Bureau Veritas Certification Rus (BVC) held a recertification audit confirming the Company's compliance with ISO 14001:2015. Following the audit, Nornickel received a relevant certificate for the seventh certification period, as it succeeded in implementing, maintaining, and continuously improving the Corporate Integrated Management System.

In 2023, the Environmental Management System targeted the following areas:

- preservation of ecosystems across the footprint of production sites;
- dissemination of best practices in protecting the environment and biodiversity;
- implementing relevant programmes and initiatives, including those aimed at fostering corporate eco-volunteering culture;
- addressing challenges in industrial ecology and improving environmental laws;
- advancing the Sulphur Programme.

**Once a year**

surveillance audits

**Once every three years**

recertification audits

<sup>1</sup> MMC Norilsk Nickel, Kola MMC, GRK Bystrinskoye, Norilsk Nickel Harjavalta.

### Precautionary approach

GRI 2-23

Nornickel assesses potential impact of the Company's operations. In accordance with its Investment Project Risk Management Regulations, Nornickel analyses risks and assesses impacts and potential consequences using qualified expert review during both project planning and implementation. If the analysis identifies any material risks, mitigation initiatives are developed, and a decision may be taken to abandon the project.

In 2023, to minimise its negative environmental impact, prevent incidents, and strengthen the management of relevant risks, we approved a Procedure for Managing Technical and Production Risks and an Incident Notification, Registration, Recording, and Internal Investigation

Standard effective at MMC Norilsk Nickel and Nornickel Group's Russian business units. The document sets out the procedure for identifying, assessing and prioritising environmental risks, selecting a mitigation method, designing action plans to manage the risks and monitor the management process.

The Company runs day-to-day and major initiatives to minimise environmental risks, analyses their performance, and improves assessment tools.

Environmental KPIs are in place to motivate and encourage a more responsible attitude towards mitigation initiatives.

## Stakeholder engagement on environmental issues

Reducing an environmental footprint is included in the agenda of internal and public events.

In 2023, the Company joined the Arctic and biodiversity conservation team of Rosprirodnadzor's R&D Council to share experience with other businesses and strengthen its image of an environmentally responsible business and a leader in biodiversity protection.

In 2023, Nornickel took part in the COP28 UN Climate Change Conference.

As part of agreements with Rosprirodnadzor in 2022, Nornickel exchanged information, received advice on its high-potential investment projects as regards compliance with Russian environmental and resource use laws, and took part in joint environmental initiatives, including the Clean Air federal project and an initiative

to develop and introduce automated metering and monitoring tools for emissions and effluents.

In November 2023, Nornickel and the Siberian Branch of the Russian Academy of Sciences presented the results of the Big Scientific Expedition held in 2022–2023. The Krasnoyarsk Research Centre at the Siberian Branch hosted a round table discussion attended by federal and regional authorities, representatives of nature reserves, researchers, environmentalists, and Nornickel.

➔ For more details on the Big Scientific Expedition, please see the [Biodiversity](#) section.

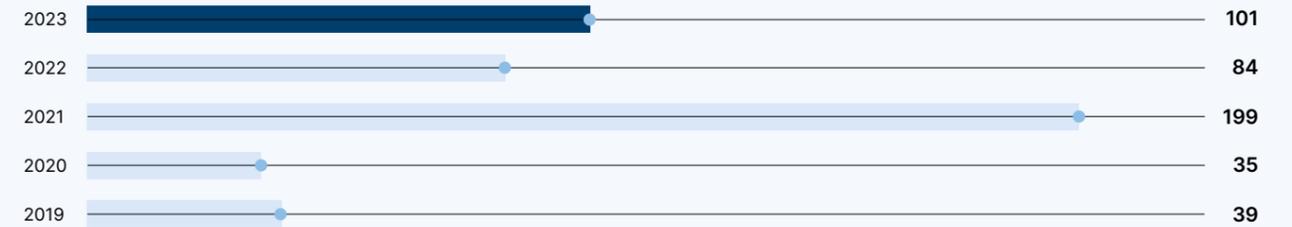
In 2023, Nornickel continued to fulfil its obligations under two agreements signed with the Russian Ministry of Natural Resources and Environment as part of the federal Biodiversity Conservation and Ecotourism Development project, with measures taken to protect gyrfalcons.

➔ For more details, please see the [Biodiversity](#) section.

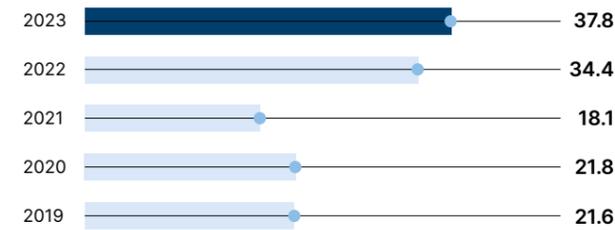
In the reporting year, the Company staged an environmental forum and corporate workshops on environmental legislation and risk management for its employees.

## Environmental protection expenditures

### Environmental costs and expenditures, RUB bn



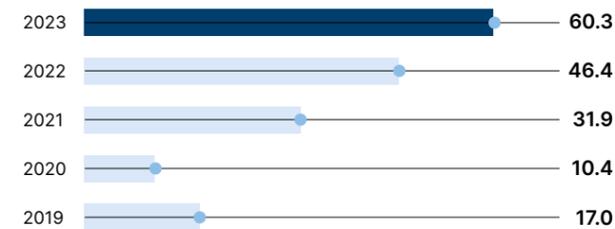
### Operating environmental expenditures, RUB bn



A 9.9% increase in operating environmental expenditures in 2023 is due to:

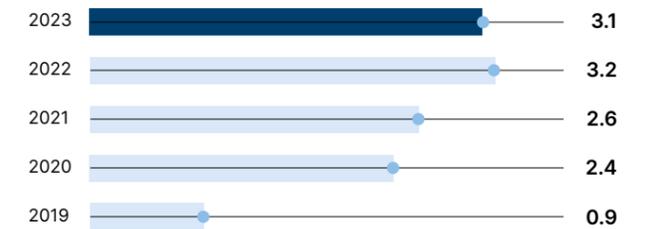
- higher costs and other expenses on the backfilling of mined-out areas as a result of more ore mined;
- scheduled environmental equipment repairs;
- rehabilitation of disturbed land and geological monitoring.

### Capital investments to ensure environmental protection and sustainable use of natural resources, RUB bn



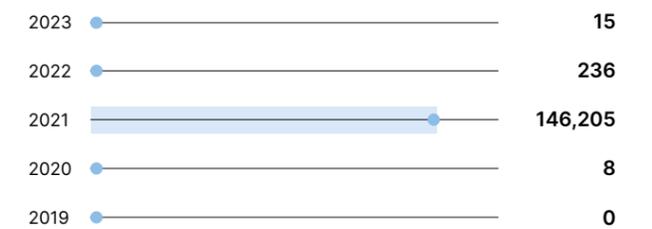
In 2023, capital investments increased due to an active construction stage of the Sulphur Programme, replacement of electrostatic precipitators, and an upgrade at the 4th technological system in the sulphuric acid section of Kola MMC's Refining Shop.

### Charges for permissible and surplus emissions (effluents) and disposal of production and consumption waste, RUB bn



In 2023, charges for permissible and surplus emissions (effluents) and disposal of production and consumption waste remained flat y-o-y.

### Charges paid by the Company to remedy damages arising from non-compliance with environmental laws (excluding environmental fines) <sup>1</sup>, RUB mln



Charges paid by the Company in 2023 to remedy damages arising from non-compliance with environmental laws are due to the following:

- 1) damage caused to a water body (Yenisey River) by TFC as a result of discharging effluents with pollutant concentrations above the permissible level (Dudinka Oil Depot);
- 2) damage caused to soils by a mining water stream at discharge point No. 170 of Oktyabrsky Mine (Polar Division).

<sup>1</sup> RUB 146 bn paid in 2021 to compensate for the damage sustained by environmental facilities as a result of the fuel spill at NTEC's CHP-3 in 2020.

# AIR

GRI 413-2



Norilsk Division operations emit over 60 pollutants into the air, with sulphur dioxide accounting for 99% of the total volume. Given this, one of Nor Nickel's priorities is to cut sulphur dioxide emissions as set out in its Environmental and Climate Change Strategy through 2031.

In line with the Environmental Policy, MMC Norilsk Nickel and its business units undertake to implement strategic environmental projects and initiatives to reduce emissions. Our major effort in this area in terms of scale and funding is the Sulphur Programme, a landmark initiative under the Clean Air federal project (Environment national project).



## Sulphur Programme

The Sulphur Programme is Nor Nickel's large-scale environmental project on sulphur dioxide (SO<sub>2</sub>) capture and recovery, which is one-of-a-kind globally. The technology leveraged by the Sulphur Programme involves intermediate production of sulphuric acid with a high rate of sulphur dioxide recovery and subsequent acid neutralisation to obtain gypsum.



The programme envisages a phased reduction of SO<sub>2</sub> emissions in our key regions of operation.

On the Kola Peninsula the programme was completed in 2021, with Kola Division's SO<sub>2</sub> emissions declining by **90%** vs 2015.

In the Norilsk Industrial District, phase 1 started at Nadezhda Metallurgical Plant in the reporting year, while Copper Plant saw FEED conducted and design solutions adjusted as part of phase 2 to take into account import substitution of technologies and equipment for key facilities.

### Progress against the Sulphur Programme in Norilsk Division

On 25 October 2023, the Company launched comprehensive testing of the first line of sulphur dioxide recovery from off-gases generated by flash smelters at Nadezhda Metallurgical Plant.

The integrated project implemented at Nadezhda Metallurgical Plant as part of the Sulphur Programme will run in stages. Comprehensive machinery testing includes the phased launch of core process equipment and sourcing of off-gases from a flash smelter to be recycled into the first batch of sulphuric acid. The startup and adjustment of certain machines, as well as the entire chain of sulphuric acid production and neutralisation, revealed a consistently growing environmental effect of sulphur dioxide recovery.

To confirm that pollutant concentrations went down to the planned level during the phased project implementation, a certified laboratory performed an instrumental measurement of industrial sulphur dioxide emissions, with information on fulfilling the obligations and achieving the emission reduction targets communicated to Rosprirodnadzor's Central Office, the Ministry of Environment Protection and Natural Resources of the Krasnoyarsk Territory, and the Clean Air PMO.

As the project reaches target parameters, the Company will meet statutory requirements on cutting pollutant emissions in Norilsk.

Nor Nickel's investments in the full implementation of the Sulphur Programme will total RUB 180 bn.

The Company together with the Institute of Economic Forecasting of the Russian Academy of Sciences assessed the benefits from the construction and operation of sulphur capture and recovery facilities for the Russian economy and society, with the following outcomes expected going forward:

growing output of enterprises from allied sectors;	redistribution of additional profits throughout wider economy in the form of salaries for employees, earnings for businesses, and taxes paid to the budget of Russia;	improved environmental well-being and quality of life for local communities (positive trend in public health and lower excess mortality in Norilsk).
an increase in end demand for domestically produced goods;	a positive macroeconomic impact on GDP growth;	

As part of air pollution management efforts, we are upgrading a system to remove dust from gases generated by Kola MMC's Refining Shop and used

in sulphur production, which includes replacing electrostatic precipitators and heat exchangers.

« I have been working at Nadezhda Metallurgical Plant practically from its inception, and I cannot live without my job. I know equipment at our elemental sulphur shop like the back of my hand, and I am eager to share my knowledge and expertise with novices. Nadezhda Metallurgical Plant has a continuous production process.

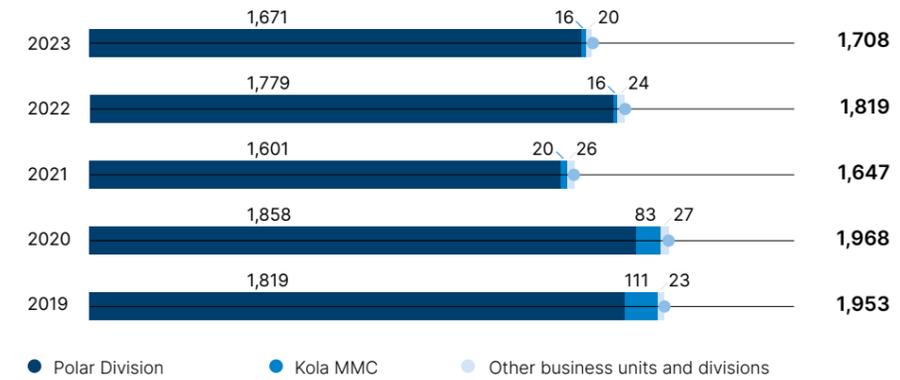
We decided to make commemorative medals the size of a hockey puck from elemental sulphur and inscribe them "Norilsk. Elemental Sulphur Shop No. 1" The souvenir is popular, with around 100 medals distributed as memorable gifts.

**Alexander Khokhlachyov,**

hydrometallurgical operator, grade 6, Nadezhda Metallurgical Plant, Polar Division of MMC Norilsk Nickel (length of service with the Company – 43 years).

GRI 305-7/ SASB EM-MM-120a.1

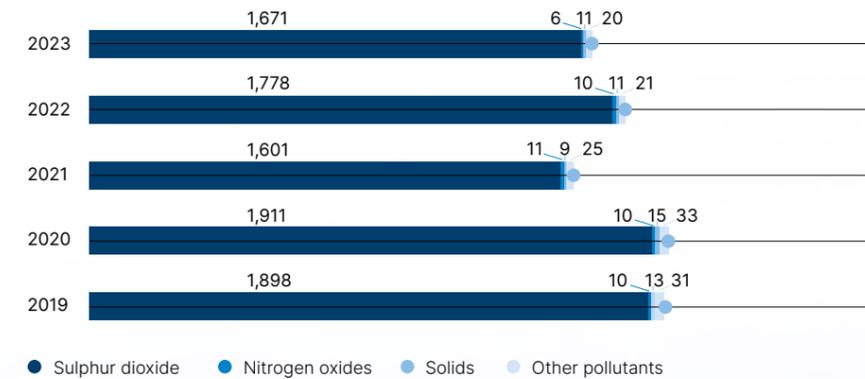
Air pollutant emissions, kt



In 2023, the Group's total emissions amounted to 1.7 mt, down 6.1% y-o-y.

- The decrease is due to:
- use of low-sulphur fuel at the Monchegorsk site (average sulphur content in fuel oil used at the CHP went down 21% y-o-y);
  - lower sulphur content in the concentrate fed to smelting facilities at Polar Division.

Air emissions by pollutant, kt



### Use of ozone-depleting substances

Nornickel neither produces nor uses ozone-depleting substances (ODS), except for extremely limited amounts with the following applications:

- a chemical agent for laboratory-based chemical analysis;
- filling and topping compressors in air conditioning units and carbonated water machines that produce water used as a cooling agent for medium- and low-temperature refrigerating equipment.

The Company reports on the use of such substances to the Russian Ministry of Natural Resources and Environment as required.

There were no ODS emissions in 2023.

### Air quality monitoring and forecasting system

In 2023, the Company continued to develop automatic monitoring systems for sources of emissions at industrial facilities and piloted air quality monitoring solutions in towns<sup>1</sup> in the real-time mode. In 2024, we plan to put the systems into operation in towns and at industrial facilities.

### Stakeholder engagement on air protection

Nornickel is a member of TC-457 Air Quality and TC-409 Environmental Protection technical standardisation committees. We review draft national standards in air protection and technical specifications for gas analysers.

Our representatives sit on the Public Council under the Russian Ministry of Natural Resources and Environment,

Rosprirodnadzor and Federal Service for Hydrometeorology and Environmental Monitoring (Rosgidromet).

We presented our proposals on air protection at the ATMOSPHERE annual international congress, a gas scrubbing R&D conference, and an Environmental Protection in the Energy Industry international R&D conference.

# WATER

## Protection of water bodies

GRI 303-1, 303-2, 303-3, 303-4, 303-5/ SASB EM-MM-140a.2

In accordance with its obligations set out in the Environmental and Climate Change Strategy through 2031 and the Position Statement of MMC Norilsk Nickel on Water Stewardship, the Company is committed to sustainable use of water resources and prevention of water pollution. In keeping with this priority, Nornickel:

- withdraws water for production needs and discharges wastewater strictly in line with the pre-approved limits;

- never withdraws water from protected areas or bodies included in the Ramsar Convention on Wetlands of International Importance;
- consistently ensures compliance with permissible limits;
- improves closed water circuit;
- assesses the quality of water resources;
- installs treatment facilities.

### Key principles of Nornickel's water stewardship:

Complying with applicable national laws and rules

Enabling information accessibility and transparency as regards water stewardship

Working towards water consumption and discharge targets, efficient water use

Adherence to international best practices and requirements of leading sustainability associations

Liaising with government bodies to participate in drafting environmental responsible water protection regulations

No Company's or its branches' operations in waterscarce areas as they are defined in the World Resources Institute's Aqueduct Water Risk Atlas

Proactively engaging stakeholders on matters of external water resource management to support predictable, consistent and effective regulation

Making sure that the employees of the production facilities belonging to the Company and its branches comply with the 2021 Position Statement on Water Stewardship at all stages of these facilities' life cycle

Fostering employee knowledge and skills in responsible water use at our sites and branches, identifying meaningful incentives to stimulate responsible water use

<sup>1</sup> Norilsk, Monchegorsk, Nickel, and Zapolyarny.



Nornickel's assets are located in regions with sufficient water resources. In 2023, as in previous years, there was no deficit of water resources<sup>1</sup>, and sufficient volumes of water were supplied to production sites and local communities.

Nornickel's key production assets have a closed water circuit to make sure water withdrawal remains fairly low. For its drinking, production and process supply needs, the Group uses water from surface and underground sources, as well as from other entities' wastewater and natural inflow.

Wastewater discharges into water bodies do not exceed the pre-approved limits and have no major impact on biodiversity of water bodies and related habitats.

The Company aims to ensure that concentrations of substances in wastewater meet regulatory requirements. All of the Company's divisional programmes provide for appropriate activities to achieve the goals. Wastewater quality is assessed in accredited laboratories from time to time as required by the applicable Russian laws.

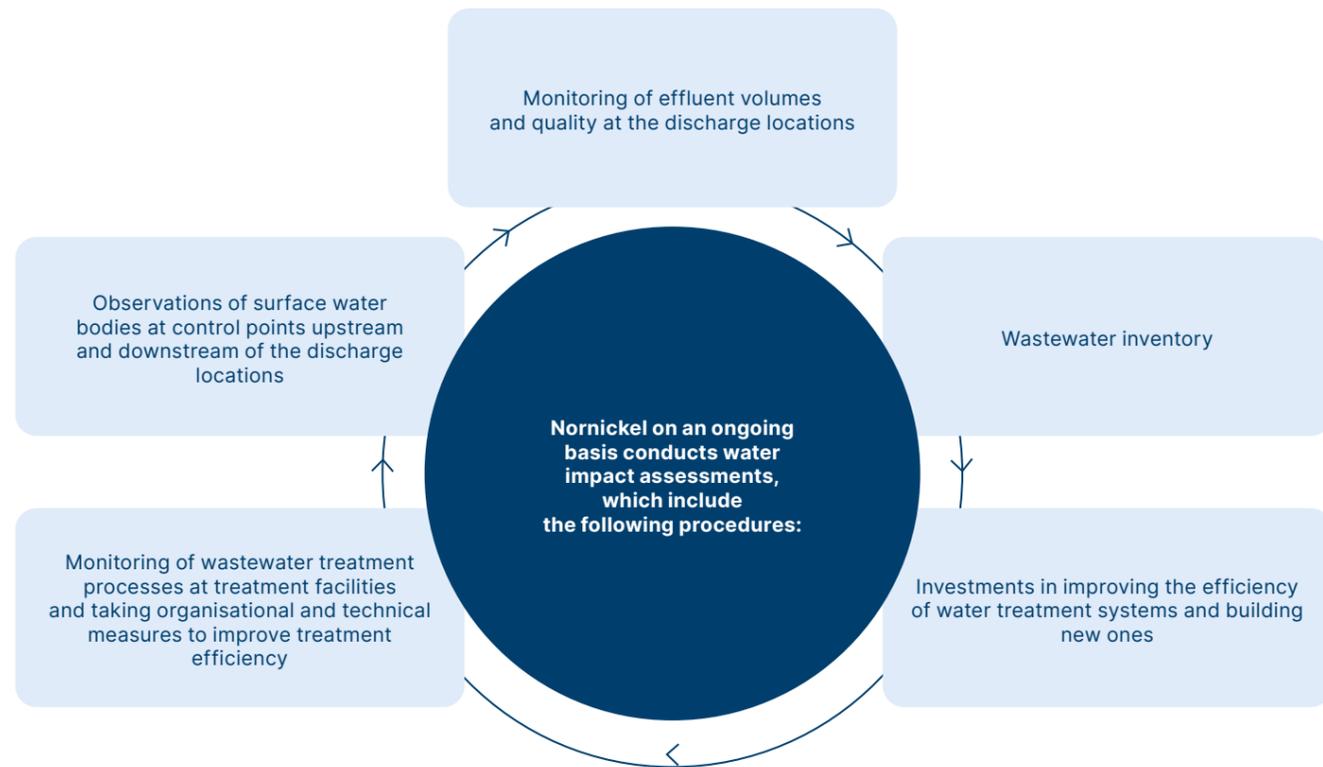
Some production and mine wastewater is sent for reuse in industrial processes (to the concentrator).

All utility wastewater outlets are equipped with biological or physicochemical treatment facilities bringing water released into water bodies in line with the applicable water quality standards.

**In 2023, no major impact of Nornickel's operations on water bodies was identified; water withdrawal was within the pre-approved limits**

**82.7%**  
of all water used by the Company was recycled or reused in 2023

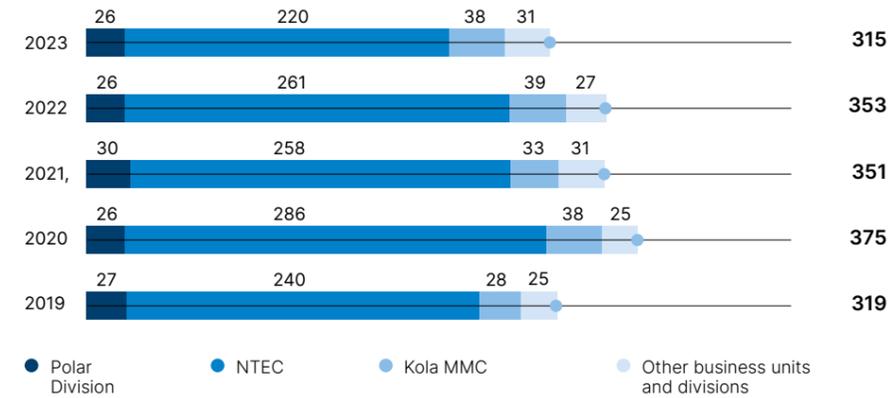
**Management of water stewardship risks**



<sup>1</sup> The methodology to identify water-scarce areas is based on the data of the Aqueduct project of the World Resources Institute and Climate Zoning of the Russian Federation.

**GRI 303-3**

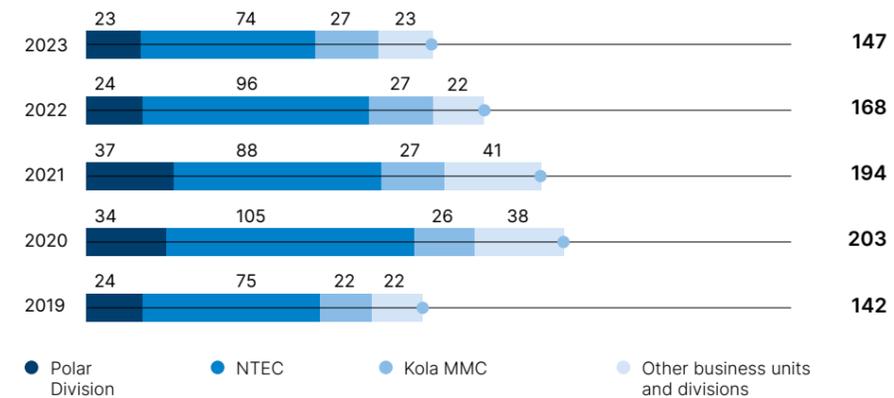
**Total water withdrawal from external sources<sup>1</sup>, mcm**



In 2023, total water withdrawal from external sources declined by 10.8% or 38 mcm y-o-y following the automation of power consumption metering for commercial purposes, water conservation, and reduction in the volumes of withdrawal of water used for CHP equipment cooling. Natural inflow made 16.3% of 2023 water withdrawal. All of the Company's facilities using water implement surveillance programmes for water bodies and water protection zones.

**GRI 303-4**

**Total effluents, mcm**



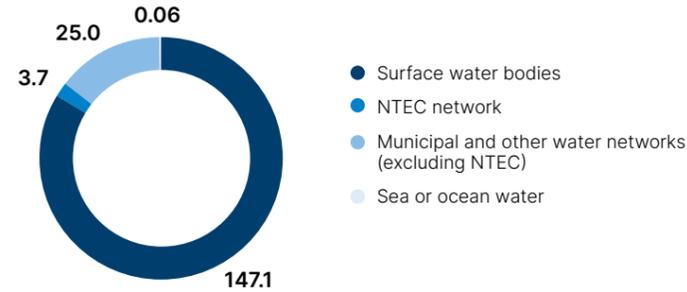
The Russian laws determine wastewater quality requirements, including process limits and maximum permissible concentrations of substances in water bodies used for fishery or cultural and household purposes. Nornickel's wastewater discharges into water bodies are predominantly in line with the pre-approved limits. Effluent discharge in 2023 went down by 12.5% y-o-y.

In 2023, pollutants in effluents totalled 157.3 kt, down 25% y-o-y. The list of pollutants in effluents is determined based on the applicable processes.

<sup>1</sup> Excluding water withdrawn from NTEC. Until and including 2019, the water withdrawal of Polar Division also accounted for the water withdrawal of Norilskenergo (MMC Norilsk Nickel's branch); since 2020, the latter has been accounted for as part of NTEC's water withdrawal. Data includes the natural inflow of mine water.

GRI 303-4

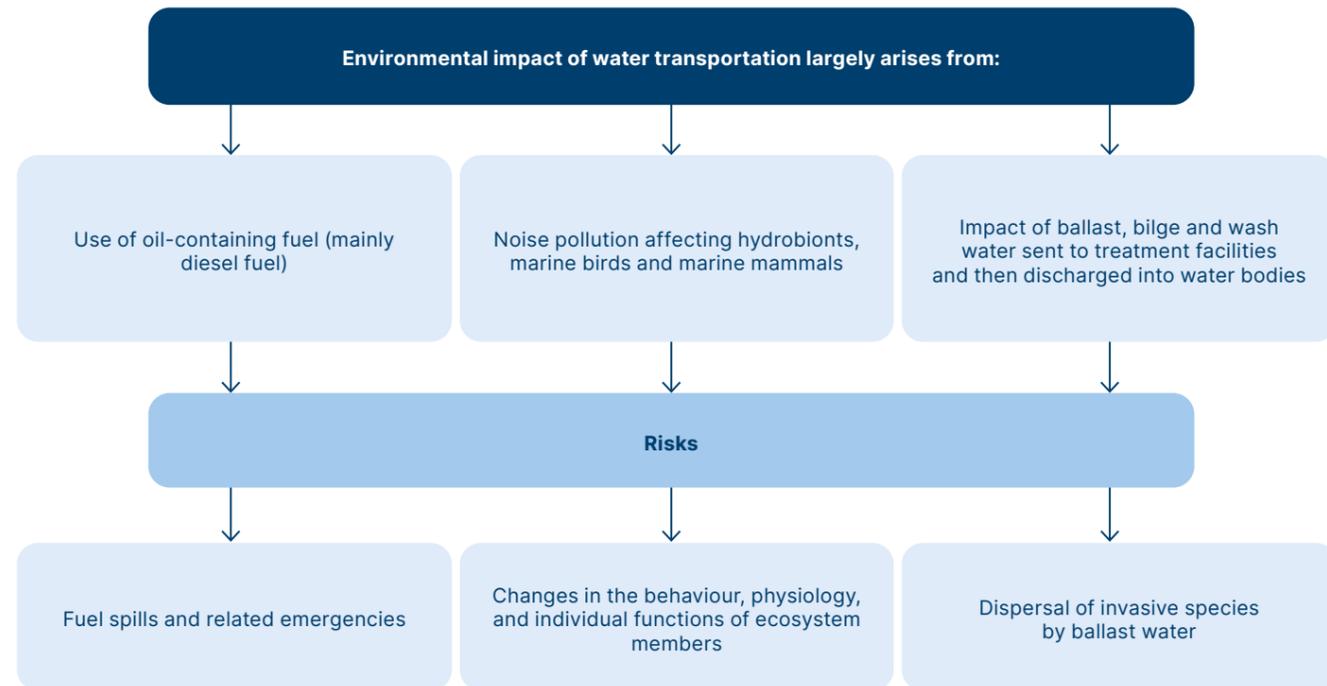
Effluents by destination in 2023, mcm



Impact of transport on water bodies

GRI 303-1

The Group possesses transportation assets, including water transport, the operation of which impacts the environment. Nornickel's impact on water bodies was analysed during the Big Scientific Expedition in 2022–2023.



RUB **4.7** bn  
OPEX for wastewater collection, treatment and disposal in 2023

RUB **1.1** bn  
CAPEX for protection and sustainable use of water resources in 2023

Risks associated with the negative impact of the Company's transport on water bodies are identified and mitigated within the framework of the environmental risk management system. To respond to such risks, Nornickel implements environmental protection measures and programmes, including those aimed at reducing fuel consumption and preventing contamination of the Dudinka and Yenisey rivers. To compensate for the estimated damage to aquatic biological resources, Nornickel regularly releases juvenile fish.

➔ For more details, please see the [Biodiversity](#) section.

Yenisey River Shipping Company (YRSC), a member of the Group, is one of the main cargo carriers on the waterways of the Yenisey basin. YRSC pays a lot of attention to the condition and technical support of its fleet, as this is a prerequisite for the compliance with the applicable environmental laws on the prevention of water bodies pollution by vessels.

The company implements environmental protection measures on an annual basis, including those implemented in 2023:

- maintenance and operation of environmental protection vessels;
- monitoring of surface water quality in navigation areas in accordance with the conditions of public health protection;
- operation of vessel systems to prevent pollutants from being released into the water;
- industrial environmental control over the condition of atmospheric air;
- employee training in environmental safety programmes.

During every navigation period, the shipping company deploys environmental protection vessels on the Yenisey and Lower Angara rivers:

- 5** waste collecting vessels
- 2** treatment plants
- 2** vessels for complex waste processing

The shipping company's auxiliary fleet provides the vessels with drinking water, and collects and transports pollutants from ships, including rubbish, faecal sewage and bilge water.

In 2023, the company's waste collecting vessels collected a total of

- 13.3** kt of wastewater
- 3.8** kt of oil-containing water
- >1** kt of rubbish

while also delivering

- 4.36** kt of drinking water

In the reporting year, the shipping company spent more than **> RUB 343** mln on environmental protection + 15%



# TAILINGS AND WASTE

## Sustainable waste management

GRI 306-1, 306-2, SASB EM-MM- 150a.10, EM-MM-540a.2

In line with top-priority national goals in waste management, Norinickel seeks to manage waste in a safe way by minimising waste disposal and increasing recycling and reuse as stated in its Environmental and Climate Change Strategy.

We handle waste in accordance with Russian laws which, among other things, require that we maintain records of waste generated, treated, recovered, neutralised, transferred to or received from third parties, and disposed of; these records are aggregated on a quarterly and annual basis.

The Company monitors management of waste throughout its entire life cycle, including waste management by third parties. Contracts for further waste management are made with third parties possessing all necessary permits, licences, state expert conclusions, technical regulations, and specifications.

From 1 January 2023, Norinickel introduced environmental protection requirements for contractors obliging them to abide by relevant standards established both by the government and the Company. The document envisages ongoing contractor

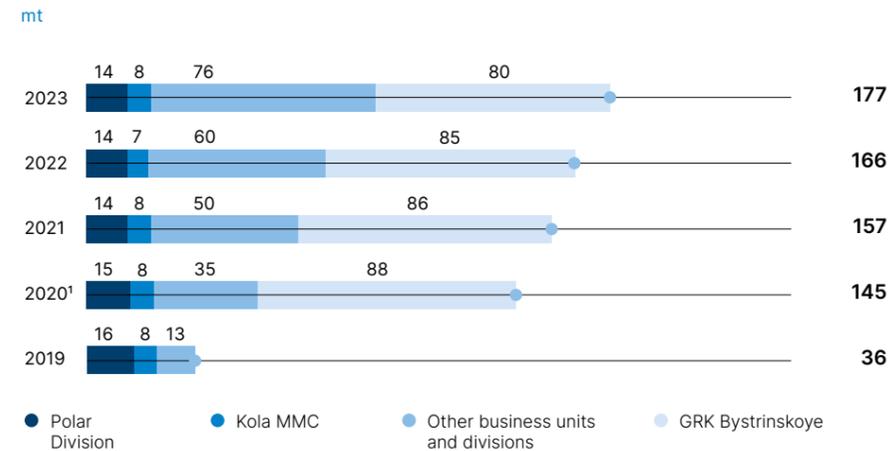
monitoring and sanctions for violating the requirements and damaging the environment. Special attention is paid to amended laws on waste management, use and protection of water resources, and environmental requirements with respect to capital construction projects and their registration.

### Waste categorisation

Norinickel operations generate hazard class 1-5 waste.

Hazard class	Waste generation in 2023, t	Share of total waste generation, %	Description
Hazard class 1	20.4	0.00001	Hazard class 1-2 (highly hazardous) waste includes mercury lamps and thermometers, batteries, acids and alkalis used in batteries, uninterruptible power supplies, and oils. As required by Russian laws, Norinickel transfers highly hazardous waste to a federal operator by signing an agreement in the federal state information system
Hazard class 2	47.2	0.00003	
Hazard class 3	8,018.6	0.0045	Waste associated with production or other economic activities, or coming from materials and products that have lost their consumer properties after having been used according to their intended purpose
Hazard class 4	1,595,458.0	0.9	Over 97% of hazard class 4-5 waste is generated by mining and concentration operations (overburden, host rock, and tailings). Mining and concentration hazard class 4 waste accounted for 894.9 kt (100% of tailings), while class 5 waste totalled 171.5 mt, including 29.9 mt of tailings and 141.6 mt of overburden.
Hazard class 5	175,290,849.8	99.1	
<b>TOTAL</b>	<b>176,894,394.1</b>	<b>100.0</b>	

### Waste generation



A 6.6% increase in waste generation from 166 mt in 2022 to 177 mt in 2023 is associated with the development of the new Mokulaevskoye limestone deposit.

### Contribution to combating contamination with waste

GRI 306-2, 306-4

To foster non-waste production, Norinickel takes the following steps:

- develops and applies in-house waste recovery techniques;
- makes efforts to clean up the existing pollution.



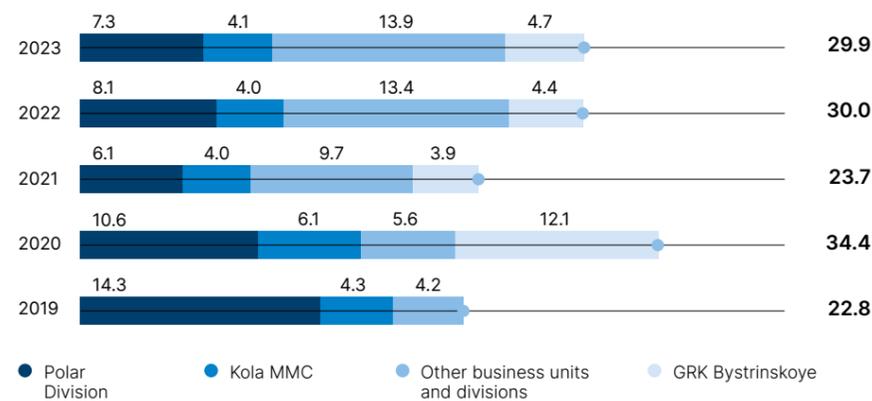
Recovery provides for the economic utilisation of waste and reduction of landfill disposal, which helps minimise adverse environmental impact.

<sup>1</sup> A significant increase in waste generation in 2020 is due to including Bystrinsky GOK in the reporting scope and more feedstock processed.

Key projects and initiatives contributing to increased waste recycling and treatment

Initiatives	Expected effect	2023 results
Building a crushing unit for processing construction waste into certified crushed stone	15% of waste generated by the Company will be recovered	104.5 kt of construction waste is recovered
Constructing a ferrous scrap recycling shop	Ferrous scrap metal processing capacity will reach 100 ktpa	Project initiation
Building a non-ferrous scrap recycling shop	Non-ferrous scrap metal processing capacity will reach 2 ktpa	Preparation of design documents
Organising temporary waste storage and treatment sites at Kola MMC in line with the applicable Russian laws	Share of non-mineral waste recycling (other than gypsum and cake waste) at Kola MMC is expected to reach 60% by 2031	Share of non-mineral waste recycling (other than gypsum and cake waste) at Kola MMC is estimated at 58.5%
Processing large tyres and rubber products into crumb rubber / pyrolysis fuel	All of the Company's rubber products waste will be recycled	Project initiation. Funds are allocated to conduct a feasibility study for recycling options

In-house waste disposal, mt<sup>1</sup>



In 2023, in-house waste disposal remained flat y-o-y at

**29.9 mt**

Operating expenditures on waste management in 2023

RUB **26.9** bn

Capital expenditures on waste management in 2023

RUB **0.3** bn

Clean Norilsk programme

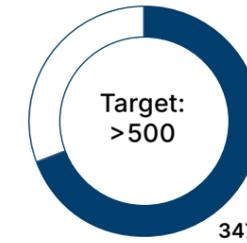
Our large-scale effort to clean up and revamp industrial territories as a way to improve environment in the Norilsk Industrial District and the Arctic, and restore affected and used land to the condition required by environmental, sanitary and epidemiological standards continued in 2023.

The 10-year programme is implemented in stages due to a large scope of works, seasonality, and significant distance between to-be cleaned areas and disposal sites. According to preliminary estimates, investments in the programme will exceed RUB 40 bn, with expenditures on works performed in 2021–2023 totalling RUB 11.5 bn.

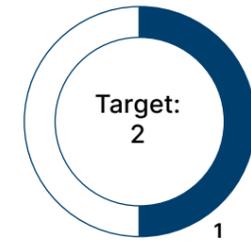
In 2023, along with demolition of abandoned buildings, clean-up, collection and removal of scrap metal and waste, the Company arranged for the biological reclamation of 78.8 ha of disturbed land.

Clean Norilsk goals through 2030 and actual 2021–2023 results

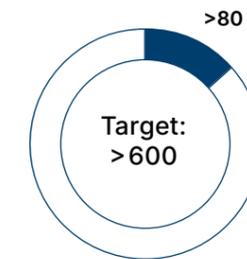
Demolition of abandoned buildings



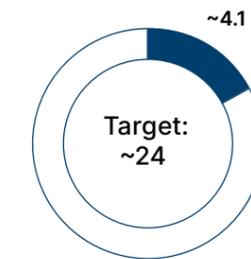
Waste removal, mt



Removal of scrap metal, kt



Clean-up, million m<sup>2</sup>



In 2023, the programme received a prize as the best environmental project in the Arctic as part of the national contest of best practices in environmental protection called "Reliable Partner in Ecology".

RUB **3.3** bn

Operating expenses under the Clean Norilsk programme in 2023



<sup>1</sup> Medvezhy Ruchey has the biggest share among other facilities.

# Waste disposal

SASB EM-MM-540a.1, EM-MM-540a.2

Tailing dumps are assets with elevated risks capable of having a material impact on the environment and local communities. MMC Norilsk Nickel and its business units take steps to ensure safe storage of tailings, regularly monitor the state of hydraulic structures, and inspect discharge locations and adjacent areas. To regulate relevant matters, the Company approved a list of by-laws.

## Tailing dumps

The Company currently operates the following tailings dumps:

Division/subsidiary	Number of tailing dumps	User
Polar Division	2	<ul style="list-style-type: none"> <li>Talnakh Concentrator</li> <li>Nadezhda Metallurgical Plant</li> </ul>
Medvezhy Ruchey	2	<ul style="list-style-type: none"> <li>Norilsk Concentrator</li> </ul>
Kola MMC	1	<ul style="list-style-type: none"> <li>Zapolyarny Concentrator</li> </ul>
GRK Bystrinskoye	1	<ul style="list-style-type: none"> <li>Bystrinsky Concentrator</li> </ul>

Norilsk hosts a gypsum storage facility as part of the Sulphur Programme, which is currently at the pre-commissioning stage.

Our tailing dumps comply with Russian laws and have all permits along with design and expert documentation in place for the commencement of construction and operation.

Additionally, we developed mandatory safety criteria to operate each tailing dump and had them approved by regulators. At least once in five years,

In 2023, the Company updated MMC Norilsk Nickel's Tailings Management Policy setting out goals, principles, rules, requirements, and restrictions related to the Company's operations to ensure the safe operation of tailing dumps throughout their life cycle. The updated policy was approved by the Board of Directors. In the reporting year,

the regulator (Rostekhnadzor) performs a mandatory audit preceded by drafting a safety declaration for hydraulic structures. The declaration is issued

the Company also continued to draft a standard to operate hydraulic structures at tailing dumps, which will describe, among other things, an approach to and frequency of reporting on tailings management from the section to executive level. The standard will be implemented before the end of 2024.

by an independent expert organisation approved by Rostekhnadzor following an inspection of said structures.

**In 2023, an independent company conducted an audit with subsequent reporting on the compliance of tailings management processes in the Company with the Global Industry Standard on Tailings Management (GISTM) for two facilities:**

- a tailing dump at Nadezhda Metallurgical Plant (operating facility);
- gypsum storage at Nadezhda Metallurgical Plant (facility under construction).

## Tailing safety monitoring

Every facility has a safety monitoring system that encompasses internal production control and environmental monitoring.

For each tailing dump, there is a safety monitoring project for hydraulic structures defining the scope (type) and time frames of such monitoring. Daily visual monitoring is the responsibility of operators, while instrumental measurements (surveying, environmental and hydrogeological control, etc.) are performed in line with project timelines.

In 2023, we started designing an automated monitoring solution for hydraulic structures at three tailing dumps of Norilsk Division (Polar Division and Medvezhy Ruchey). Design completion and implementation of project solutions are scheduled for 2024–2025.

In 2023, we completed inspection of the tailing dump at Kola MMC Concentrator (Zapolyarny). In 2024–2025, we plan to develop a strategy for setting up the tailing dump's analytical situation centre, after which new process solutions will be tested for automating the monitoring of hydraulic structures.

All hydraulic structures are subject to ongoing comprehensive monitoring for industrial safety. Tailing dumps are also inspected for stability by competent independent organisations certified by Rostekhnadzor.

## Assessment of tailing dump risks

There are two processes in place to assess the Company's tailing dump risks:

- estimates of potential damage to life and health of individuals, and to property of individuals and legal entities as a result of an emergency at a hydraulic structure. The estimates are prepared at least once every five years, when developing a safety declaration. The document outlines emergency scenarios, assessment of potential emergency risks and negative impact on communities, ecosystems, and critical infrastructure in case of a disaster / dam break, defines the most probable and serious emergency that may occur at a hydraulic structure, and predicts the parameters of a dam-break wave along with flooding and flow spreading boundaries in case of a hydrodynamic accident at a tailing dam;
- assessment of technical and production risks carried out in line with Norinickel's Regulations on Technical and Production Risk Management.

To address tailing dump-related risks, the Company has organisational units and officers providing regular reports to the management. Such units engage qualified and experienced staff.

The Company identifies tailing dumps, reviews the timeframes for decommissioning, and determines the future closure and land rehabilitation costs. Based on the results, the Company calculates the present (discounted) value of future costs, recognising its environmental provision with respect to the tailing dumps.

## Preparedness to respond to accidents and emergencies

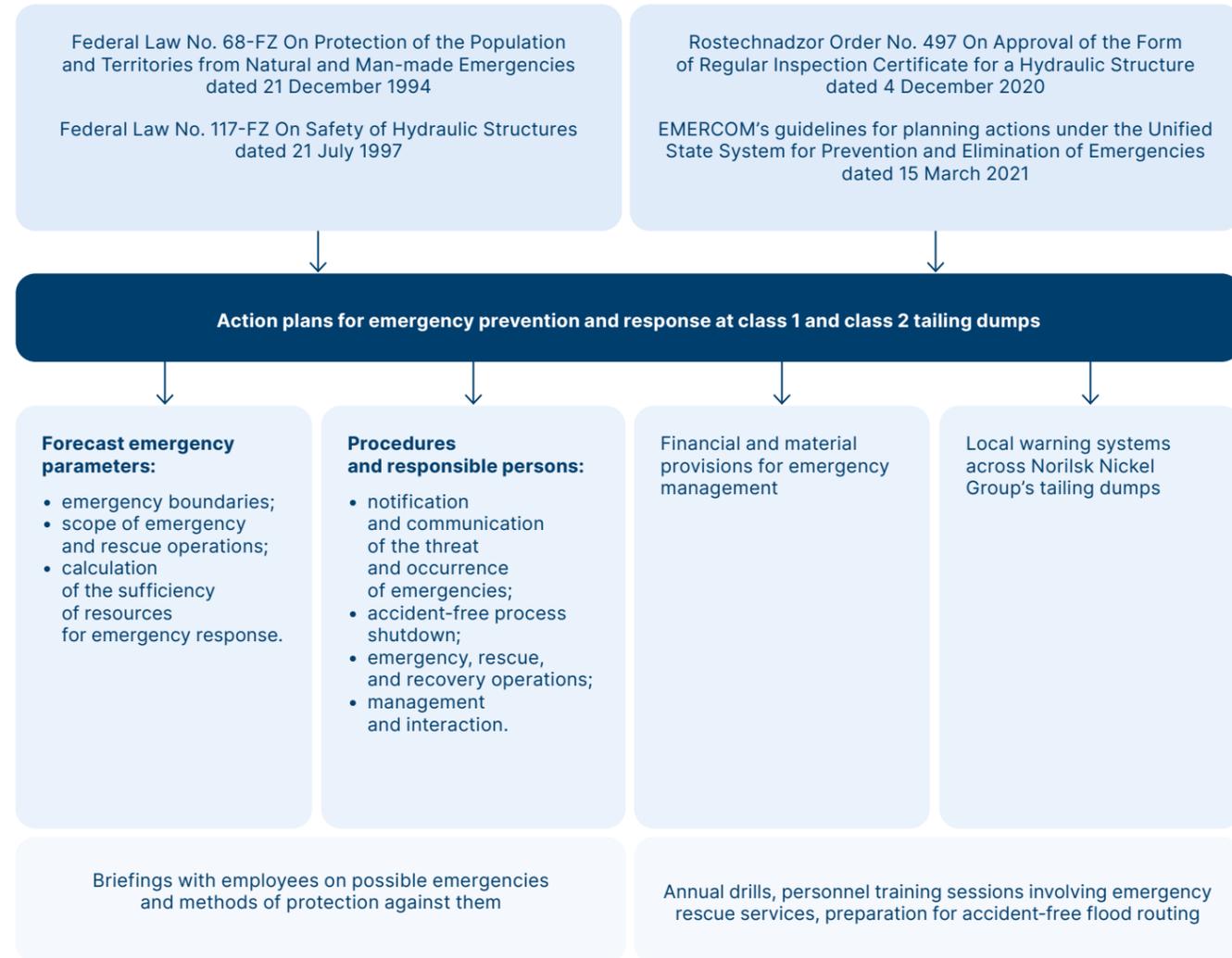
SASB EM-MM-540a.3

Although all tailings facilities operated by the Company and its Russian business units are located far from production sites and residential areas, we view them as assets with elevated risks capable of having a material impact on the environment and local communities.

In accordance with the Russian laws and the principles of responsible tailings management, the Company and Russian business units simulate the occurrence of accidents at tailing dumps. For the most unfavourable and most probable scenario of an accident that can translate into an emergency, the development of an action plan for emergency prevention and response is underway. The plan calculates parameters of such an emergency and describes in detail the emergency response actions of the personnel and rescue teams aimed at protecting the life and health of employees and the public, reducing the amount of environmental and financial damage.

Action plans for emergency prevention and response shall be agreed with the head of local administration on whose territory the Company or a Russian business unit operates, as well as with the heads of professional emergency rescue teams engaged for servicing the facilities. The plans are updated on an annual basis and fully revised once every five years. We also conduct regular training sessions with the personnel and emergency rescue services to practice actions in accordance with the plans.

**Emergency preparedness and response system for tailing dumps**



All tailing dumps of the Company and Russian business units of extremely high and high hazard class have local warning systems in place for emergency notification of employees and the public. To keep such systems ready for use, daily technical checks are carried out and at least once a year comprehensive checks are conducted with alarms activated.

**There have been no emergencies at tailing dumps of the Company or Russian business units over the past five years.**

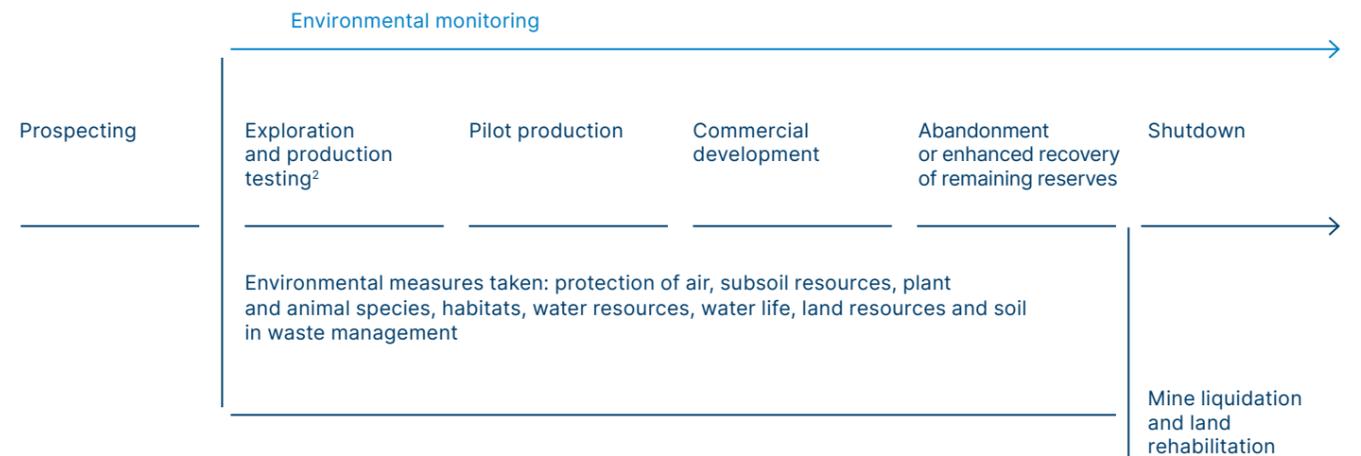
# SOIL PROTECTION AND RESPONSIBLE MINING

As a result of field development in the Trans-Baikal Territory, Taimyr and Kola peninsulas<sup>1</sup>, waste disposal, construction and other works, Nor Nickel produces a negative impact on land resources, which is mitigated by consistent efforts to rehabilitate affected soils.

In accordance with the Russian law, design documents for the development, construction and operation of fields include an environmental impact assessment, a list of measures to prevent and/or reduce possible environmental impacts and ensure the rational use of natural resources throughout the life cycle of the facility.

The Company complies with all applicable regulations for land rehabilitation and other environmental protection initiatives associated with field development and other operations. Upon completion of field development, the Company commits to restore land plots, liquidate mine workings and rehabilitate lands.

**Environmental protection measures taken during the field life cycle**



**Environmental Impact Assessment (EIA):**

- review of layout options and technology;
- environment analysis and environmental impact assessment;
- mitigants;
- monitoring programmes;
- public discussions with local community.

<sup>1</sup> For the full list of fields, please see [the Norilsk Nickel Group Profile](#) section.

<sup>2</sup> State and public environmental review

**Disturbed and rehabilitated land area in 2023, ha**

GRI 304-3

Indicator	Total	Including:			
		during mining	during construction	during disposal of solid domestic and industrial waste	during other activities
Total disturbed area, beginning of period	16,905.7	14,169.5	1,192.7	827.6	716.0
Total rehabilitated area <sup>1</sup>	14.5	12.3	2.2	–	0.0
Total disturbed area in the reporting period	297.0	118.0	132.6	46.3	0.0
Total disturbed area, end of period	17,188.2	14,275.2	1,323.1	873.9	716.0

**Completion of the restoration efforts at CHP-3**

In June 2023, we conducted on-site inspection of the land plots contaminated by the fuel spill in 2020 and disturbed during clean-up activities.

The high quality of the rehabilitation efforts was confirmed by laboratory tests and independent inspections<sup>2</sup>. The main chemical and physical indicators of soil condition meet quality standards and requirements of the Russian laws. The Company's activities have a positive impact on the processes of self-regeneration of vegetation and soil.

NTEC provided a warranty certificate for the work performed and an acceptance certificate for the rehabilitated land setting out improvement requirements (elimination of defects (if identified) during the warranty period and re-inspection in the absence of snow cover).

In July 2023, an acceptance certificate was drawn up for the remaining 27.44 ha of rehabilitated land. By resolution of the Norilsk Municipal Administration, it was established that the rehabilitation of all land plots contaminated by the diesel fuel spill and disturbed during the clean-up activities on an area of 74.96 ha was completed.

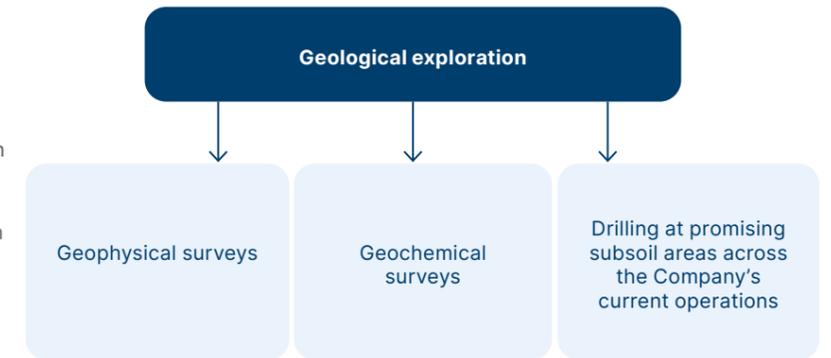


**Responsible exploration**

To replenish its resource base, Norinickel focuses closely on exploration, including geophysical and geochemical surveys.

Norinickel sees a significant potential for the discovery of new deposits and plans to continue exploration both within and beyond its footprint to unlock it.

In 2023, the Company implemented eleven exploration projects, including seven projects involving field geological exploration with environmental impact (two projects in the Norilsk Industrial District, four projects in the Trans-Baikal Territory, and one project in the Murmansk Region).



**Exploration areas of Norilsk Nickel Group in 2023**

<sup>1</sup> The table does not include data on disturbed and rehabilitated land near CHP-3. In 2023, rehabilitation was confined to the Krasnoyarsk Territory.

<sup>2</sup> Trofimuk Institute of Petroleum Geology and Geophysics of the Siberian Branch of the Russian Academy of Sciences and Institute of Soil Science and Agrochemistry of the Siberian Branch of the Russian Academy of Sciences.

<sup>3</sup> Licence to use subsoil for the exploration and production of mineral resources was received in 2023 by Polar Lithium, a joint venture of MMC Norilsk Nickel and a partner.

<sup>4</sup> Field geological exploration under the project is completed, with only desktop studies of the obtained data carried out in 2023.

The Group's exploration activities are subject to:

- various regulations of the Russian Federation covering subsoil use, environmental protection, occupational health, industrial and fire safety;
- internal assessments of environmental protection obligations based on the requirements of applicable laws in various jurisdictions, terms of licence agreements and internal engineering estimates as interpreted by the Company's management.

### Environmental monitoring

Each project assesses the environmental setting at the time of starting and completing the exploration. The purpose of the environmental setting assessment is to obtain and record reliable indicators characterising the natural background of the environment prior to the commencement of geological exploration. Such assessment includes analysis of available geological, geochemical, hydrogeological, hydro-meteorological and environmental information, identification of disturbed lands by means of analysing aerospace images and ground routes, sampling of environmental components (soil, surface water, bottom deposits, vegetation cover, background radiation), creating sites to monitor dangerous exogenous geological processes.

**As Norinickel seeks to keep ecosystem intact, it avoids exploration at protected natural areas and world heritage sites, and ensures no negative impact on the traditional industries, cultural heritage, interests and traditional lifestyles of indigenous peoples.**

The results of the above studies serve as the jump-off point for assessing the environmental impact of geological exploration. Geological exploration is accompanied by annual environmental monitoring, including monitoring of the pollution of surface water, snow cover, environmental components and development of dangerous exogenous geological processes. Based on the monitoring, we make a conclusion on the extent of environmental impact of geological exploration (if any).

In addition, Norinickel monitors environmental quality during geological exploration, which helps make informed management decisions to preserve habitats and ensure environmental safety of traditional trades.

Alongside the monitoring, we implement a set of measures to protect subsurface, soil, vegetation, and water bodies. Upon completion of drilling operations, disturbed land is subject to rehabilitation, including:

- liquidation of drilling sites;
- neutralisation of soil contaminated with fuel and lubricants;
- land levelling;
- bringing sites to a condition suitable for further use according to their intended purpose.

### Environmental impact of exploration activities

Activity	Preparatory works: • drilling site layout; • equipment transportation and storage; • construction of storage facilities for chemicals, fuel and lubricants.	Well drilling	Well abandonment and mothballing
Source of impact	<ul style="list-style-type: none"> <li>• Road transport</li> <li>• Exhaust gases of motor vehicles, construction and road machinery</li> <li>• Excavated soil</li> <li>• Materials for site construction and preparation of drilling mud and cement slurries</li> </ul>	<ul style="list-style-type: none"> <li>• Mud mixing unit</li> <li>• Drilling waste circulating system</li> <li>• Chemicals used for drilling and plugging</li> <li>• Waste products (mud spills, slime)</li> <li>• Domestic wastewater</li> <li>• Solid domestic waste</li> <li>• Crossflows inside the annulus and damaged casing string</li> </ul>	<ul style="list-style-type: none"> <li>• Leaks in casing, casing pipes, wellhead equipment</li> <li>• Mineralised water</li> </ul>
Types of impact	<ul style="list-style-type: none"> <li>• Physical disturbance of the fertile soil layer, natural landscapes, thermal abuse, degradation of topsoil layers.</li> <li>• Biotic disturbance, changes in the flora and fauna habitats</li> </ul>	<ul style="list-style-type: none"> <li>• Ecosystem disturbance and changes in habitats of certain plant and animal species</li> <li>• Machinery-generated noise</li> </ul>	Ecosystem disturbance and changes in habitats of certain plant and animal species
Object of impact	<ul style="list-style-type: none"> <li>• Fertile soil layer on drilling equipment sites, routes of linear facilities</li> <li>• Flora and fauna, atmospheric air, soil, ground, surface water, landscape</li> </ul>	<ul style="list-style-type: none"> <li>• Flora and fauna, soils, subsoil, surface and underground water, air</li> <li>• Animal and human habitats</li> </ul>	Flora and fauna, soils, surface and underground water, air, animal and human habitats
Environmental activities	<ul style="list-style-type: none"> <li>• Compliance with land allotment standards</li> <li>• Land rehabilitation</li> <li>• Construction of trays and platforms at machinery parking lots</li> <li>• Soil protection measures</li> <li>• Fire safety measures</li> </ul>	<ul style="list-style-type: none"> <li>• Compliance with the requirements for the completeness of the study and use of subsoil</li> <li>• Planning protective measures based on the results of hydrological, geotechnical and environmental monitoring</li> <li>• Well plugging</li> </ul>	<ul style="list-style-type: none"> <li>• Plug and abandonment operations</li> <li>• Rehabilitation</li> </ul>

Adverse environmental impact of exploration activities in the course of the above projects was found to be insignificant according to the observations made, which testifies to the effectiveness of our environmental protection measures.

# BIODIVERSITY

## Biodiversity impact management

SASB EM-MM-160a.1

Zero net losses of biodiversity as a result of production activities is one of the targets set out in Nornickel's Environmental and Climate Change Strategy. We made a commitment to preserve biodiversity, and our efforts in this area are guided by a number of principles presented in the respective position statement<sup>1</sup>.



### Our biodiversity conservation commitments

Comply with national legislation and biodiversity-related requirements of international standards and associations, to which the Company has publicly announced to adhere	Prohibit exploration and mining activities at World Heritage sites and UNESCO biosphere reserves, as well as in protected areas designated by the national legislation and in accordance with IUCN management categories I-IV	Identify and assess risks to and potential adverse impacts on biodiversity
Develop and follow the mitigation hierarchy (avoid-mitigate-restore-offset) to manage risks to and impacts on biodiversity		Make efforts to protect ecosystems from the introduction of invasive alien species
Monitor the state of biodiversity	Consult stakeholders, particularly indigenous peoples in the Company's operating regions, to enable the efficient assessment and management of impacts on biodiversity	Ensure that any new activities or changes to current operations comply with commitments to protected areas

Our biodiversity impact management system covers all stages of the project life cycle.

### Impact on biodiversity in terms of value chain and life cycle stages

The Company classifies its value chain components as follows:

- mining facilities, including mines and open pits operated by the Group's mining enterprises;
- processing facilities, including mills and factories;

- logistics facilities, including marine and river transport companies;
- energy facilities, including fuel and energy enterprises.

Nornickel's mining, processing and energy facilities are grouped into production clusters that are located in the shared areas and have both an individual and cumulative impact on ecosystems. Due to their technological connection and geographical proximity, it is not

practical to break down enterprises along the value chain into categories when it comes to biodiversity monitoring. Biodiversity impact management relies on the geographical criterion (location of the Group's industrial sites).

Biodiversity conservation issues are also included in the supplier management system as part of the relevant section in the Supplier Code of Conduct, which the contractors are required to follow.

<sup>1</sup> MMC Norilsk Nickel's Position Statement on Biodiversity is publicly available at [https://nornickel.com/upload/iblock/988/PJSC\\_MMC\\_NORILSK\\_NICKEL\\_s\\_Position\\_Statement\\_on\\_Biodiversity.pdf](https://nornickel.com/upload/iblock/988/PJSC_MMC_NORILSK_NICKEL_s_Position_Statement_on_Biodiversity.pdf)

# Assessment of Nornickel’s impact on biodiversity

GRI 304-1

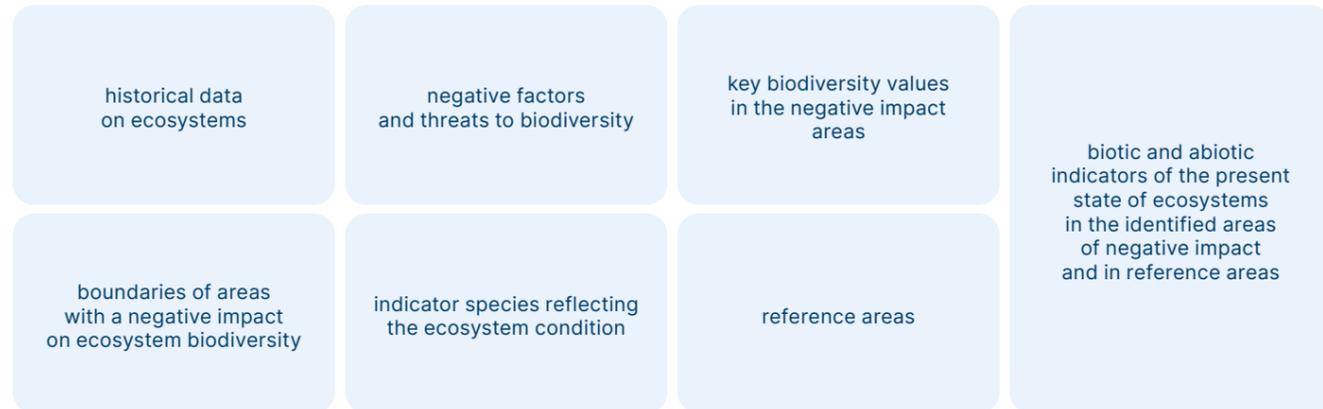
## Big Scientific Expedition

Most of Nornickel's mining, production and energy assets have an impact on biodiversity. To honour our respective obligations, we need to obtain scientific evidence on the boundaries, degree, and factors of such impact. To this effect, the Company and the Siberian Branch of the Russian Academy of Sciences

launched a large-scale programme called “Big Scientific Expedition” in 2022. As part of the expedition, we identify the Company’s impact areas, assess the current state of ecosystems within such areas, and measure the degree of impact produced on biodiversity by our operations. Nornickel leverages expedition outcomes to strengthen its biodiversity impact management.

The 2023 Big Scientific Expedition brought together representatives from over 100 research institutes, universities and nature reserves who explored the Taimyr and Kola peninsulas and the Trans-Siberian Territory.

During the first stage in 2022, they studied ecosystems in the areas where the Group companies operate and collected the following information:



In 2023, the second stage of the Big Scientific Expedition started at the Group's operating mining, production, and energy assets<sup>1</sup>. Using advanced research methodology (molecular genetics and phytochemical techniques<sup>2</sup>), scientists revealed the following in the explored area:

- 1,371 species of key groups of organisms (1,039 and 332 terrestrial and aquatic species, respectively) in the Trans-Baikal Territory, 1,524 species of key groups of organisms in the Norilsk Industrial District;

- protected plant and animal species in the Krasnoyarsk Territory, Murmansk Region, and the Trans-Baikal Territory (for more details, please see the [GRI Quantitative Indicators Disclosure](#) appendix).

The 2023 research helped refine the method to calculate an integral indicator of ecosystem health, which serves as a basis for the Company's target biodiversity KPI<sup>3</sup>.

Biodiversity input collection is ongoing. The studies will take time due to the lack of historical data on ecosystems at facilities operated by the Company for a long time. Nornickel plans to record changes in ecosystems, using deviations of indicators in impacted areas as opposed to reference (undisturbed) areas to assess the effectiveness of initiatives.

The 2023 Big Scientific Expedition discovered two new species. The first is a Synapion beetle called Putoranchik by Norilsk residents and Nornickel employees. From now on, the global science will have a species whose name reminds of the Putoranà Plateau, the pearl of Taimyr. The second discovery is a new species of Physarum myxogastria.

## Boundaries of impact areas

In 2023, the Company reassessed previously established boundaries of impact made by its operations. The assessment involved volunteering students and experts from specially protected natural areas cooperating with the Company on an ongoing basis.

### Boundaries of impact areas (Big Scientific Expedition)

Divisions	Area and degree of impact, km <sup>2</sup>				Maximum	
	Ecosystems	Significant	Medium	Insignificant		
Trans-Baikal	terrestrial	158.2	247.2	545.8	951.2	
	aquatic	196	179.5	233.9	609.4	
Norilsk	terrestrial	394	475	847	1,716	
	aquatic	608.4	591.4	1,613	2,813.2	
Kola	terrestrial	163.7	470.6	1,180.0	1,814.3	
	• Nickel and Zapolyarny sites	aquatic	272.8	368.4	916.8	1,558
	• Monchegorsk site	terrestrial	44.9	201.6	539.1	785.6
	aquatic	142.3	260.4	1,160.0	1,562.7	

As determined by the 2022–2023 Big Scientific Expedition, the most significant changes manifested in the reduction of most of the recorded biodiversity parameters are observed in the area of significant impact of the Company and have clearly delineated boundaries marked as sanitary protection areas.

The boundary between medium and low impact areas is conventional as the differences in biodiversity parameters between these areas are generally insignificant, and a comparative analysis reveals almost no statistically significant differences.

<sup>1</sup> Norilsk, Energy, Kola and Trans-Baikal divisions.  
<sup>2</sup> For more details, please see the [Appendix](#).  
<sup>3</sup> For more details, please see the [Appendix](#).

## Negative impact on biodiversity

GRI 304-2

Along with new boundaries and an integral indicator of ecosystem health, the scientists identified factors having a negative impact on the surrounding ecosystems. The key factors are classified as follows:



### Impact on terrestrial ecosystems

- Alienation and the resulting fragmentation of territories<sup>1</sup>;
- emissions;
- fires;
- legacy pollution with residual waste material;
- fuel spills;
- dust and noise (for certain groups of living organisms);

### Impact on aquatic ecosystems

- Industrial or other effluents with a high organic content or temperature;
- toxic, acidic and organic pollutants coming from the catchment area;
- legacy negative effects of long mining in the form of high turbidity;
- fuel spills;
- one-off heavy floods during spring and summer snowmelt in the mountains, lasting heavy summer precipitation followed, among other things, by chemicals and soil organic matter actively washed away from the containment area.

## Key biodiversity values identified in the impact areas of Nornickel's operations<sup>2</sup>

GRI 304-1

Key biodiversity values in the area affected by Nornickel's operations include protected species, critical habitats, and key biotopes<sup>3</sup>. For more details

on protected species found in the impact areas of the facilities, please see the [GRI Quantitative Indicators Disclosure](#) appendix.

<sup>1</sup> Division of the habitat into several isolated land plots.

<sup>2</sup> For more details on species of biodiversity value and their habitats, please see the [GRI Quantitative Indicators Disclosure](#) appendix and the presentation on the Big Scientific Expedition at [Nornickel's website](#).

<sup>3</sup> Habitats of rare and endangered plants, fungi, or animal species, or large populations of rare and endangered species; areas of special significance for vertebrate animals' life cycles (reproduction, rearing of young, fattening, rest, migration, etc.).

## Norilsk Division

The 2023 in-depth research revealed a Northern spikemoss (*Seleginella selaginoides*), a species listed in some regional Red Data Books, at two sites, and confirmed the existence of habitats similar to steppe-tundra and a high level of plant biodiversity in larch forests and alder thickets with an extensive grass cover.

According to the 2022–2023 research results, steppe-tundra communities previously identified at a single site are typical of the Taimyr zone. It makes no sense to identify critical habitats within the division.

## Kola Division

In 2023, no critical habitats were identified within the impact area of Kola Division. There are two state nature reserves whose territories are partly located within the impact areas of Kola Division: the Pasvik and Lapland nature reserves.

The Lapland Nature Reserve was established to protect the western population of the alpine-tundra form of wild reindeer and some ecosystems unique to the Kola Peninsula, while Pasvik seeks to preserve northern pine forests, extensive wetlands of global importance, and water birds.

In accordance with paragraph 16 of the International Finance Corporation's Performance Standard 6 dated 1 January 2012, these territories meet two of the five criteria for critical habitats: 2 (habitat of significant importance to endemic and/or restricted-range species) and 4 (highly threatened and/or unique ecosystems).

## Trans-Baikal Division

In 2023, no critical habitats were identified within the impact area of Trans-Baikal Division. Adjacent specially protected natural areas can play an important role in conserving and restoring biodiversity in the impact area:

- the Uryumkan Nature Reserve – the studies did not identify a significant impact of the Company's operations on the biodiversity of the nature reserve or its conventional (potential) buffer zone;
- the Borzinsky Faunal Reserve is adjacent to the southern border of Bystrinsky GOK's sanitary protection zone, with part of it constituting a potential impact area. It is impossible to conduct additional studies of biodiversity in this area to assess the degree of impact as the reserve's northern section is very hard to reach due to high swampiness.



# Biodiversity conservation efforts

Nornickel is developing initiatives to reduce the pressure on ecosystems taking into account the mitigation hierarchy, i.e. the avoid – reduce – restore – compensate principle.



Nornickel’s Environmental and Climate Change Strategy groups the above measures into categories depending on natural environments (elements) targeted by mitigating measures.

These measures help reduce indirect impact on biodiversity by reducing an environmental footprint.

The Company goes beyond reducing an indirect impact on biodiversity, implementing additional corrective measures.

## Biodiversity-related initiatives in 2023

<p><b>Bystrinsky GOK</b></p> <ul style="list-style-type: none"> <li>• A reforestation programme with a subsequent three-year care (planting over 224,000 pines on a 112.2 ha plot in the Trans-Baikal Territory in the reporting year);</li> <li>• a programme for the artificial reproduction of aquatic biological resources;</li> <li>• a Golden Fox photo contest among employees to raise awareness about biodiversity in the Trans-Baikal Territory</li> </ul>	<p><b>Norilsk Industrial District facilities</b></p> <ul style="list-style-type: none"> <li>• Release of aquatic biological resources (young fish);</li> <li>• volunteering initiatives to remove waste from ecosystems and improve the environmental culture in communities (<a href="#">cleaning of Yenisey banks and waterside lake area in the Putoransky Nature Reserve, setting up and maintaining eco-trails, and organising environmental classes, lectures and events for school students</a>)</li> </ul>	<p><b>Kola MMC</b></p> <ul style="list-style-type: none"> <li>• Joint research with the Pasvik Nature Reserve on six watercourses of the Paz River basin to describe the state of freshwater pearl mussel and salmon species;</li> <li>• cooperation with the Pasvik and Lapland reserves;</li> <li>• consistent efforts to preserve the populations of red-listed species endemic to the Kola Peninsula</li> </ul>
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### Restoring the ecosystem at Lake Pyasino

To rehabilitate the ecosystem at Lake Pyasino, which traditionally served as a fishing spot for indigenous residents, the Company launched a project to increase fish reproduction capacity using an eco-friendly **guanotrophication technology**<sup>1</sup>. This is an innovative biomanipulation technique based on natural processes to restore the ecosystem to the state it was in prior to eutrophication<sup>2</sup>. It takes time to see the effects from technologies building on natural cycles, especially in the Arctic, where nature recovers slower due to specific climate conditions that shorten the growing season. Use of eco-technologies to repair ecosystems helps avoid the effects of anthropogenic interference in natural biological processes. It will take around seven years of ongoing work to see project outcomes. The second year of 2023 showed an improvement in microbiological parameters of water in Lake Pyasino.



<sup>1</sup> A method to restore the ecosystems of Arctic lakes using guano as a fertilizer.  
<sup>2</sup> Loading water bodies with biogenic elements, which results in higher biological productivity.

## Cooperation with specially protected natural areas

Cooperation with specially protected natural areas represents one of the ways for Norinickel to help conserve and restore biodiversity.

As part of collaboration with the Joint Directorate of Taimyr Nature Reserves, Polar Division took a number of steps to protect the Putorana snow sheep. In 2023, the division organised research, including:

- aerial surveys in the western and central parts of the habitat spanning 30,700 km<sup>2</sup>;
- counting the number of snow sheep, study of their territorial distribution in summer and autumn;
- laboratory chemical testing of soil samples and forage plants, laboratory coprological study;
- review of meteorological data from stations in close proximity to the habitat of the snow sheep for the last 50 years, assessment of the impact climate change had on animals and their habitat;

- interpretation of available satellite images from reference sites covering 114 km<sup>2</sup>, aerial survey of a 11 km<sup>2</sup> plot with landscape and geobotanical mapping of this reference site, categorisation of snow sheep habitats on this site;
- sample collection (bones, teeth and soft tissues of dead animals) to perform mitochondrial DNA tests.

The Putorana snow sheep is on Russia's Red Data Book and the IUCN Red List.

In 2023, as part of its biodiversity conservation efforts, Kola MMC prioritised cooperation with the Pasvik and Lapland nature reserves. In addition to taking part in the Big Scientific Expedition, experts from these nature reserves monitor biodiversity across impact areas of Kola MMC.

On top of that, Kola MMC supports combined monitoring of wild reindeer and helps grow their population in the Lapland Nature Reserve. The efforts include monitoring and environmental assessment both in the nature reserve

and in the facilities' impact areas, forecasting changes, and substantiating an optimal number of species listed in the Red Data Book to further regulate the population size. 2023 monitoring data revealed no significant deviations in the state of the environment in impact areas and the nature reserve.

The Pasvik Nature Reserve monitors natural ecosystems in the reserve and impact areas of Kola MMC to measure pollutant concentrations in natural habitats and bodies of animals and birds, perform a correlation analysis of mobile heavy metal transfers between ecosystem components, and study biological organisms.

In 2023, the study organised by Kola MMC in the watercourses of the Paz River identified the need to create a specially protected natural area in the Nautsiyoki River to protect a freshwater mollusc species on the brink of extinction due to pearl and nacre hunting. Documents were drafted to create a Freshwater Pearl Mussel Reintroduction Centre.

## Red Data Book species found in the Pasvik and Lapland nature reserves<sup>1</sup>

### GRI 304-4

Indicator	Pasvik	Lapland
<b>On the IUCN Red List, of which</b>	5	100
• Critically Endangered (CR)	0	0
• Endangered (EN)	1	1
• Vulnerable (VU)	2	11
• Near Threatened (NT)	2	6
• Least Concern (LC)	0	82
<b>On Russia's Red Data Book, of which</b>	23	30
• Critically Endangered (CR)	0	1
• Endangered (EN)	2	11
• Vulnerable (VU)	8	15
• Near Threatened (NT)	10	2
• Least Concern (LC)	3	1
<b>On the Murmansk Region's Red Data Books</b>	118	166

In addition to joint work with nature reserves and as part of its efforts to protect certain species, Norinickel's Head Office signed an agreement to preserve the Far Eastern gyrfalcon whose numbers are shrinking due to poachers using these birds as effective hunters.

Together with the Siberian Branch of the Russian Academy of Sciences, we do complex research and introduce

scientific methods of biodiversity conservation to promote global green growth and sustainable development.

Our Head Office supports relevant efforts made by divisions across our regions of operation and integrates best global practices aimed at supporting the attainment of goals under the Kunming-Montreal Global Biodiversity Framework into its day-to-day activities to monitor and conserve biodiversity.

To make its efforts to conserve biodiversity and natural ecosystems more transparent to all stakeholders, we launched a dedicated website at life.nornickel.ru, on which we will annually share the results of relevant initiatives.

<sup>1</sup> The nature reserves are located in a relative proximity to the Kola MMC operations.