

# 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

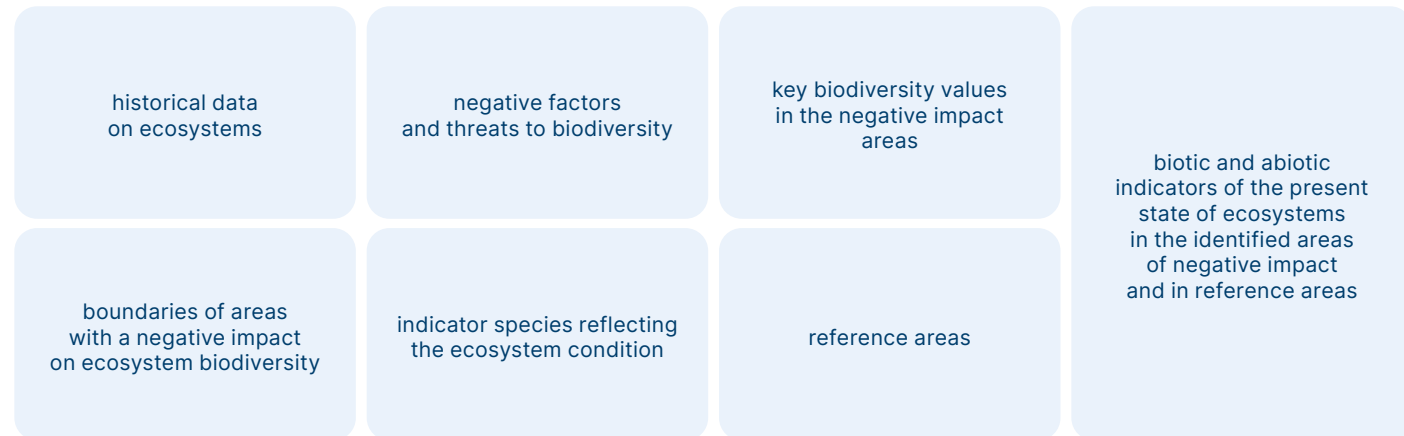
## Big Scientific Expedition

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 Norinickel's operations<sup>2</sup>

GRI 304-1

Key biodiversity values in the area affected by Norinickel'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 [Norinickel'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

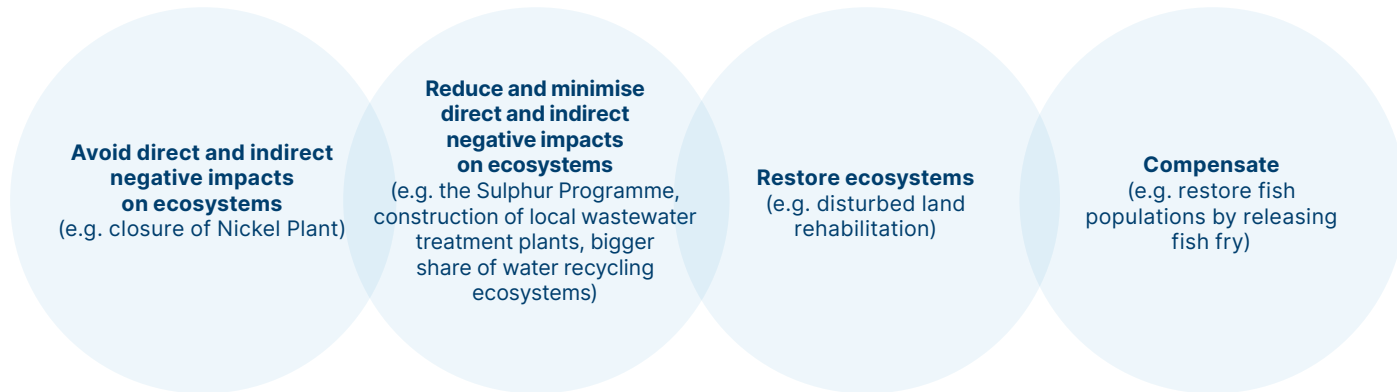
In 2023, no critical habitats were identified within the impact area of Trans-Baikal Division. Adjacent specially protected natural areas can play an important role in conserving and restoring biodiversity in the impact area:

- 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.