



Nord Stream 2

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Environmental Monitoring of Nord Stream 2 Construction in Russia

Nord Stream 2 AG | Apr-21





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1. General Information

Environmental monitoring during construction in Russia shows only localised and minor impacts

Nord Stream 2 AG, the developer of the twin pipeline to supply Russian natural gas to the EU market through the Baltic Sea, **has completed construction** in the Russian offshore and onshore sections.

The Russian section of the Nord Stream 2 pipeline passes through the **Kurgalsky Nature Reserve**, requiring measures to protect its unique character and conserve biodiversity. [An innovative open-cut trench box construction method](#) helped reduce the width of the onshore construction corridor by half, **minimising impact on the protected area**. In the nearshore section, the installation of the **cofferdam** successfully **prevented increase of turbidity and general impacts on water quality**.

Biological reinstatement has been completed in forest and relict dune areas crossed by the right-of-way. In the Kader Swamp area, northern outskirts of which are traversed by the pipeline route, temporary access road has been removed and amelioration network has been reinstated.

Fully aware of its responsibility to protect valuable Kurgalsky habitats and ensure full compliance with the Russian legislation and international standards, the company deployed **a broad range of mitigation and compensation measures**, some of which go beyond the requirements set forth by the positive conclusion of the state environmental expert review.

Before the construction activities commenced, the company launched **the multi-faceted and comprehensive environmental monitoring programme** so as to compare environmental impacts with those described in the Environmental Impact Assessment (EIA) report. Monitoring reports are regularly (quarterly and annually) submitted to the relevant authorities, which also carry out on-site inspections.

Three years of monitoring confirm that impacts from construction activities are **localised, minor** and do not exceed admissible levels, as estimated in the EIA report. External watchdogs, overseeing compliance with high environmental standards during construction in the Kurgalsky Nature Reserve commend the company's responsible approach towards project implementation.

The following paper outlines the environmental monitoring programme implemented as part of Nord Stream 2 construction in Russia in more detail and offers the results of the three-year observations.



2. Comprehensive Environmental Monitoring Programme

A comprehensive programme of environmental monitoring has been implemented since the beginning of preparatory works through specialised contractors

The comprehensive environmental monitoring programme was approved by the Main State Expert Review as part of the project documentation. It allows for the comparison of environmental impacts with those described in the EIA report.

The monitoring was carried out from the beginning of preparatory works in 2018 to December 2020 by a number of specialised contractors and independent consultants, including several scientific institutions such as the Russian Federal Research Institute of Fisheries & Oceanography, JSC *ECOPROJECT*, Geo-ecology Centre *Research. Projects. Monitoring*, the State Hydrological Institute, the Vavilov Research Institute of Plant Industry, the Mendeleev All-Russian Research Institute of Metrology, the Arctic and Antarctic Research Institute and others.

While the performed programme is multi-faceted and comprehensive in nature, the key aspects are as follows:

- > Monitoring of impacts on the Kurgalsky Nature Reserve's habitats crossed by the pipeline route;
- > Monitoring of hydrology;
- > Monitoring of the relocated protected plants species;
- > Monitoring of nesting and migratory avifauna and valuable fish species;
- > Turbidity monitoring during dredging activities.

The onshore section was under continuous observation until the completion of construction works in 2020. For the offshore section, over 200 days (or more than 27,000 man-hours) of monitoring survey work were carried out in 2018-2020.

- > Offshore, around 35 stations were organised, with a variable set of monitored parameters.
 - The number of monitoring stations was higher in the sensitive nearshore area, where potentials impacts could have been the most significant. As such, the total area covered by monitoring exceeded 40km².
 - Areas adjacent to the construction corridor were monitored constantly throughout the construction period. Sediment control measures were deployed to ensure that the impact of turbid water on the natural habitat remains within the project assessment limits.



- A suite of geochemical and hydrobiological surveys were conducted along the offshore pipeline route.
- Monitoring of fish communities was conducted through regular catches near the seabed route in accordance with the environmental monitoring programme.
- On top of regular surveys, fish spawning, seabird and salmon migration were monitored seasonally.
 - Both nesting and migratory seabirds were monitored in the Gulf of Finland, using methods of offshore and coastal observations, as well as aerial observations during the migration period.
- > Onshore, over 20 integrated monitoring stations were established, supplemented by flora transect surveys and more than 20 locations to monitor the relocated protected plants:
 - The scope of works included surveys of local and migratory avifauna, as well as of rare and indicator species for the three main biotopes along the pipeline route: Ringed Plover (*Charadrius hiaticula*) for the coastal line, Black Woodpecker (*Dryocopus martius*) for the forest and Common Crane (*Grus grus*) for the swampy area.
 - Regular route observations were used to monitor animals. Photo traps were installed along migration routes in each key biotope in order to evaluate whether a special passage organised for animals was effective in helping them to cross the construction corridor during the pipelay works and return to normal migration after its completion.
- > Upon the recommendation of independent watchdogs and given the Kurgalsky Nature Reserve's status as an internationally recognised wetland, the company has also launched multiannual hydrological monitoring in partnership with the State Hydrological Institute – a leading specialised institution in the field.
 - Network of observatory wells was installed within the reserve to monitor groundwater level.
 - The monitoring will continue throughout the operations phase to observe the impacts on the groundwater levels beyond the natural hydrological dynamics via retrospective analysis.

3. Localised and Minor Impacts

Three years of monitoring confirm that the impacts were minimal

Over three years of environmental monitoring, as of the end of Q4 2020, confirm that construction works in the Kurgalsky Nature Reserve had only localised and minor impacts that did not exceed admissible levels, as estimated in the EIA report. The following conclusions can be drawn:



- > Environmental impacts of **offshore construction** are comparable to natural fluctuations and seasonal changes. Marine biotic environment, water quality and seabed sediment quality, as well as plankton communities have not changed as compared to the 2019 monitoring prior to construction and 2015-2016 survey data.
 - Seafloor topography in shallow nearshore waters, coastline and beach morphology remained unchanged.
 - Impacts of the nearshore seabed preparatory activities were short-term and temporary. Once the works had been completed, indicators returned back to their natural level.
 - In terms of turbidity, the peak concentration of suspended sediments as a result of construction did not exceed the levels associated with seasonal factors.
 - As of Q4 2020, there has been no negative impact on the ichthyofauna.
 - Monitoring results show that there were no transboundary impacts, and that construction activities did not have impacts on the herring and goby spawning grounds located in about 4km to the north of the construction site:
 - Scope of work included continuous turbidity monitoring with remote stations located close to the Estonian border and near the spawning grounds, as well as a monthly control of water quality, sediments and ichthyoplankton.
 - 4 km from the construction site, no turbidity fluctuations have been identified as directly associated with offshore activities.
 - During sea-bed trench backfilling, impacts were in line with those modelled in the EIA report.
 - Turbidity levels neither exceeded the control level nor reached the threshold as outlined in Russian legislation.
 - In the Luga Bay, at the permanent soil storage area, the level of turbidity deviated slightly from background levels, nonetheless remaining in line with the EIA model. Ten days after works had been completed, the water quality and sediments returned to their natural level.
 - Those activities did not have impact on phyto- and zooplankton development. Measurements taken in June 2019 confirmed that those quantitative indicators were within the range observed due to seasonal factors. Aquatic organisms were also not impacted.
- > Monitoring **the Gulf of Finland water protection zone** demonstrated no impacts as a result of construction.
- > **No significant impacts on birds have been identified** as a result of construction, including the migratory and indicator species. The impact on some species has been assessed as acceptable, namely:



- There has been no disruption to the migration of key bird groups as a result of construction. While it was noted that some geese and seaducks changed their preferred stopover sites during spring migration, ornithologists believe that this impact cannot be decidedly associated with construction and is acceptable.
- There has been no impact on the local crane population or breeding grounds which is an indicator species for the swampy habitat.
- There has been no impact on the black woodpecker (an indicator species for the forest area) in the south of the Kurgalsky peninsula.
- There has been no impact on the ringed plover population (an indicator species for the coastline).
- During the winter (non-breeding) period, a small group of non-migratory bird species temporarily spread across the area away from the construction corridor. No impact on forage areas or overall living conditions of the species have been identified. Upon completion of the cofferdam construction (which caused some noise pollution) and the start of vegetative season in April 2019, no such behaviour was any longer observed.
- A foreseen reduction in bird population is observed in the construction corridor. This impact is in line with the project assessments and does not affect overall populations.
- Monitoring on the islands of the Gulf of Finland, initiated in spring 2020, showed no significant behavioural changes for birds or in fauna composition.
- > No negative impacts on the Kurgalsky habitats crossed by the pipeline route were identified. The hydrological regime of the Kader swamp area was not impacted by the construction activities and no hazardous exogenous processes were detected.
 - The impact on vegetation was as predicted in project assessments, with a marginal effect in the growing conditions of species contained within a few metres from the construction corridor.
 - No impact on trees was observed at the control plots in the Kurgalsky reserve.
 - The protected plant species relocated in 2018 are in a stable condition. This includes individual specimens, plant populations, as well as protected moss *Aulacomnium androgynum*.
 - The majority of protected plant species growing near the construction corridor are in good condition.
 - Several rarest protected species were discovered in the immediate vicinity of the landfall: the hemp-agrimony (*Eupatorium cannabinum*), a protected plant listed in the Red Data Book of the Leningrad Region, was discovered in the valley of the Rosson River; and the green shield moss (*Buxbaumia viridis*), a



rare species not seen in the Leningrad region since the 19th century, was found within the Kurgalsky reserve.

- Perennial grasses have covered over the reclaimed areas and are showing steady growth.

4. Monitoring of further reinstatement

Monitoring of further reinstatement offshore and onshore during the operational phase

At the offshore section, annual hydrochemical surveys and seasonal surveys of all biotic components (three cycles per year), including aerial observation of sea mammals, nesting and migratory birds monitoring on the Gulf of Finland islands, and net catches nearshore, are planned to be conducted seasonally in the first two years of operations, after which they will be continued at less regular intervals.

The three-year monitoring in the Kurgalsky Nature Reserve will focus on: vegetation within the corridor; peat restoration; exogenous processes in the dunes; the structure and condition of plant communities in areas adjacent to the pipeline route; the recovery of rare and protected flora species, biotic fauna, nesting sites of rare and protected species; and animal migration routes.

5. External Watchdogs Ensuring Compliance

External watchdogs recognise the company's responsible approach towards project implementation

Going beyond the requirements of the Russian legislation, as a responsible project developer, Nord Stream 2 retained three leading Russian and international firms as independent watchdogs. The auditors performed an external oversight of company's compliance with commitments and high environmental standards when working in the Kurgalsky Nature Reserve.

All project activities within the protected area were audited by VNII Ecology, a prominent Russian research institute with special expertise on the management of protected areas. In one report, the auditor noted: *"During the on-site inspection, no environmental restrictions have been identified as a result of construction. As such, in terms of environmental requirements construction work may continue, no risk factors for the environment have been found, the defined estimates are in line with the Russian law."*

To ensure compliance with international standards, the company partnered with Royal Haskoning DHV, a leading international engineering and environmental consultancy. The report, issued after the field visit in summer 2019, outlined the following: *"It is the opinion of the independent environmental and technical advisor that the project is well managed and follows good environmental management practices."*



In addition, ERM, a global provider of environmental, health, safety, risk, and social consulting services, regularly audited the key contractors' performance against environmental protection requirements established for the Russian landfall construction site.

None of the watchdogs or auditors identified critical deviations from project documentation, Russian law, or international standards construction. No violations were observed as part of construction activities in the Kurgalsky reserve. All comments and recommendations from auditors were aimed at further improving environmental performance and were taken on board by the company.

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About Nord Stream 2 AG

Nord Stream 2 is a planned pipeline through the Baltic Sea, which will transport natural gas over 1,200 km from the world's largest gas reserves in Russia via the most efficient route to consumers in Europe. Nord Stream 2 will largely follow the route and design of the successful Nord Stream pipeline. With Europe's domestic gas production projected to halve in the next 20 years, Nord Stream 2's twin pipeline system will help Europe to meet its future gas import needs, with the capacity to transport 55 billion cubic meters of gas per year, enough to supply 26 million European households. This secure supply of natural gas with its low CO₂ emissions will also contribute to Europe's objective to have a more climate-friendly energy mix with gas substituting for coal in power generation and providing back-up for intermittent renewable sources of energy such as wind and solar power.

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