Suomen ympäristökeskus
Finlands miljöcentral
Finnish Environment Institute

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Finland's response to the notification in accordance with Article 3 of the Convention on Environmental Impact Assessment in a Transboundary Context (Espoo Convention) of the planned offshore wind farm Delta North in Sweden

The Finnish Environment Institute acknowledges that Finland has received the notification from Sweden on 3 March 2026, in accordance with Article 3 of the Convention on Environmental Impact Assessment in a Transboundary Context (Espoo Convention) of the offshore wind farm Delta North. The original deadline for the submission of Finland's response was on 7 April 2026, however, at the request of the Finnish Environment Institute, additional time was given for submitting the response by 14 April 2026.

Information on the planned project

The responsible project developer, Zephyr Offshore Wind AB, a company within the Zephyr Group, intends to apply for a permit for an offshore wind farm planned in Sweden's exclusive economic zone. The project would consist of up to 105 wind turbines and associated infrastructure. The turbines are planned to be installed on foundations fixed to the seabed. The planned capacity of the turbines is 20–30 megawatts (MW), with a maximum height of 330 metres. The total capacity of the wind farm is estimated at 2,100–2,460 MW, with an annual production of approximately 8.3–9.7 terawatt hours (TWh). The project area is in the northern part of the Baltic Sea and covers approximately 377 square kilometres (km²).

Consultation in Finland

In accordance with Section 30, Subsection 1 of the Finnish Act on Environmental Impact Assessment (252/2017), the Finnish Environment Institute is the competent authority and responsible for tasks under the Espoo Convention.

In the notification, the Swedish Environmental Protection Agency requested an indication whether Finland intends to participate in the EIA procedure of the planned project, provide comments concerning the scope for the assessment of the environmental impacts of the project affecting Finland and submit comments from the public and the authorities in Finland.

The public and the authorities were given an opportunity to comment on the consultation documents from 6 March to 9 April 2026, which were available on the website of Finland's environmental administration and platform by Ministry of Justice in Finland for requesting and submitting statements electronically (lausuntopalvelu.fi). Statements were also asked from relevant stakeholders.

Remarks received during the consultation

The Finnish Environment Institute has prepared an English summary of the 10 statements received in Finland. The full original statements in Finnish or Swedish, which are enclosed to this letter, include important and detailed remarks which need to be considered and taken into consideration in their entirety in the EIA procedure.

The Finnish Supervisory Agency

The Finnish Supervisory Agency considers Finland's participation in the EIA procedure for the project to be necessary. The project is located in international waters, in close proximity to Finland's territorial waters, and adjacent to Finland's exclusive economic zone. Participation is considered necessary in view of the potential impacts on water bodies, nature conservation and the use of marine areas.

Given the overall number of wind power projects planned in the Baltic Sea region, it is also important for Finland to take part in the EIA procedure to identify potential cumulative impacts.

Content of the consultation documents

The consultation document is highly general in nature. The information provided is insufficient to allow even a preliminary assessment of the necessary studies, their scope, or their required level of detail. The areas of Finland (including the Åland Islands) and the sensitive sites located therein are inadequately presented in the consultation document, and the material submitted does not allow for a reliable assessment of the project's potential impacts on Finland.

In the assessment report, map figures must be presented in a manner that clearly identifies Finland's coastline, territorial waters, and exclusive economic zone whenever the content or scale of the figure concerns Finland. At a minimum, the maps must allow the identification of Finland's borders and sensitive sites on the Finnish side, such as reefs and Natura 2000 areas, where such features exist in Finland in relation to the subject of the map.

The Finnish Supervisory Agency notes that the proposed research method relies primarily on a literature review (skrivbordstudie). Determining the hydrological conditions and biota within the impact area will likely require field investigations.

The Finnish Supervisory Agency further notes that the monitoring proposal required under point (h) of Annex II to the Espoo Convention is entirely missing. The environmental impact assessment report must include proposals for environmental impact monitoring.

Impacts on the use of Finnish marine areas

The Finnish Supervisory Authority notes that several turbines are planned near the boundary of Finland's exclusive economic zone. This may result in physical changes and potential restrictions extending into the Finnish EEZ. Turbulence caused by turbine foundations may alter local hydrodynamic conditions over distances of several kilometres, and wake effects have been observed at distances of 30–100 km. These impacts may restrict Finland's ability to sustainably use marine

areas. Permanent, direct physical impacts and their consequences for Finnish territorial waters and the exclusive economic zone should therefore be assessed.

The project may also affect other offshore wind projects and their feasibility within the Finnish EEZ and territorial waters. Both direct and indirect impacts, as well as cumulative effects with other planned projects, should be evaluated. The impacts of the project may extend to the Finnish coastline and wider marine areas.

Under prevailing westerly winds, potential oil spills resulting from an accident or sabotage would likely drift towards Finland. The accident potential and associated risks should therefore be assessed. In addition, the project area may cause displacement of vessel traffic and shifts in shipping routes. Potential route changes and their environmental impacts should also be evaluated.

Impacts on nature

The project may affect nature in Finland, including birds wintering and resting in the area as well as migratory birds passing through the area, marine mammals, and potentially migratory bat species. In particular, the project may have cumulative effects together with other developments on the above-mentioned nature values. Impact mechanisms vary depending on the receptor, but underwater noise, operational disturbance within the wind farm area, and barrier effects on migratory species are likely to be among the most significant impacts from Finland's perspective.

Construction-related underwater noise (e.g. piling and blasting) may alter the behaviour of fish and marine mammals over distances of tens of kilometres and may affect spawning success, migration routes of fish and porpoises, and fishing. The project area is deeper than the current technical lower limit (approximately 40 m) for the most common noise mitigation method, bubble curtains. Noise impacts should therefore be modelled and assessed without assuming noise attenuation measures.

Reef effects

The consultation material presents reef effects as a positive impact. The Finnish Supervisory Authority considers that positive aquatic impacts from artificial reef effects are highly unlikely in the northern Baltic Sea, and results from other marine areas cannot generally be applied to the project area. Any claimed positive effects should be supported by studies conducted in the northern Baltic Sea.

The assessment should instead focus on potential adverse reef-related impacts, such as effects on threatened species and the spread of non-indigenous species. Construction vessels and seabed-mounted foundations may act as vectors for non-native species, and possible thermal and saline discharges could facilitate their establishment. The environmental impact may therefore be significant. Due to its location between Finland and Sweden, the project could also function as a stepping stone for the spread of non-indigenous species.

Impacts on the water body

The Finnish Supervisory Authority considers that impacts on water quality and the marine environment may be significant in Finland or within Finland's exclusive economic zone. Both construction-phase and operational impacts should be assessed and, where necessary, supported by dedicated studies.

Water turbidity and sedimentation

The Finnish Supervisory Authority notes that dredging, cable installation and dumping activities during construction may cause turbidity and sedimentation, affecting benthic communities, fish, water quality and nutrient cycling. Increased turbidity may temporarily spread over distances of tens of kilometres. The dispersion of turbidity and sedimentation should therefore be modelled. Particular

attention should be paid to dumping operations and locations. Modelling should also consider natural background turbidity in the area and define threshold values accordingly (e.g. growing season P95).

Hydrographic impacts

The Finnish Supervisory Authority considers that, in addition to construction-phase impacts, the project may also cause permanent effects. The project is likely to result in hydrographic impacts arising from turbine foundations. The project is located south of the Åland Sea, through which most of the water exchange of the Bothnian Sea occurs. The Authority emphasises that, in the Baltic Sea, a key hydrographic impact mechanism is the change in wind speed and direction caused by wind turbines. The project may reduce wind energy, increase surface turbulence, and alter local wind directions. In theory, this may affect water exchange, salinity and nutrient transport between the Bothnian Sea and the Baltic Proper.

These issues should be investigated using modelling that covers both the Baltic Proper and the Bothnian Sea. The modelling should be based on observational data covering at least ten years. Potential heat and salinity discharges from the project (e.g. from hydrogen production or transformers) should also be quantified.

Other general remarks

The Finnish Supervisory Authority recommends that alternative layouts with differing hydrological impacts be assessed. In particular, turbine height may influence the magnitude of hydrological and aerodynamic effects.

The Government of Åland

Åland wishes to participate in the environmental impact assessment procedure. The distance to Åland's territorial waters is very short, with a high likelihood that environmental impacts may arise for Åland.

Finnish Transport and Communications Agency Traficom

Offshore wind farms located near shipping routes may significantly affect maritime traffic from both safety and navigational efficiency perspectives.

The planned project area is situated near the boundary of the Swedish and Finnish exclusive economic zones and in front of the "Åland Sea TSS" routing system. The location is challenging from a navigation perspective, as a large share of traffic between Sweden and Finland and traffic to and from the Gulf of Bothnia passes through this routing area, limiting the possibilities to significantly reroute traffic around the Delta North offshore wind farm area.

If implemented as planned, north–south traffic to and from the Gulf of Bothnia would pass in close proximity to the western boundary of the Delta North wind farm area. This may increase risks to maritime traffic, including vessel collisions with wind turbine structures and interference with radar, radio and positioning systems, particularly in situations with dense traffic and when vessels operate near wind turbine structures.

The EIA should assess potential changes to maritime safety, including collision and grounding risks within the wind farm area, risks related to vessel blackout situations, and the effects of wind turbines on emergency response operations. Environmental risks should also be evaluated, including potential oil spills resulting from collisions in areas located near shipping routes.

In addition, the siting of the wind farm and individual turbine structures should consider the use of radar as a primary navigation and collision avoidance tool. Wind turbines may create radar clutter

as well as shadowing and reflection effects, which in the worst case may impair the interpretation of radar signals.

Wind turbines may also affect satellite-based positioning of vessels (GNSS), as signals may be reflected by turbine structures, potentially resulting in positioning errors. In addition, maritime and coastal communications rely on radio systems, and wind turbines may affect the performance of radio links that require unobstructed line-of-sight between transmitters and receivers. Even small changes in turbine siting may therefore influence the functioning of radio systems in the area.

The reliable operation of radar, positioning and radio systems is essential for maritime safety and overall public safety. Potential impacts on these systems should therefore be carefully assessed to ensure that their operational performance is not compromised.

During the EIA procedure and further project planning, it is important to consider the views of rescue authorities regarding the siting of wind turbine structures and their impacts on maritime safety, emergency response operations, oil spill response and authorities' communication networks.

According to Traficom, Finland has justified grounds to participate in the EIA procedure for the planned project, as the location of the project area may also affect maritime traffic to and from Finland.

Finnish Meteorological Institute

Regarding physical oceanographic research and the weather radar network, the Finnish Meteorological Institute states in its opinion that there is no need for Finland to participate in the EIA procedure for the Delta North offshore wind farm. However, the Institute notes that the project may affect measurements that are essential for monitoring the state of the Baltic Sea and that are regularly carried out by Finnish and Swedish authorities in the vicinity of the project area.

The Finnish Meteorological Institute considers that, if the project proceeds, the project developer should coordinate with relevant authorities (e.g. SMHI, the Finnish Meteorological Institute, the Finnish Environment Institute, HELCOM) to ensure the continuity of Baltic Sea monitoring measurements. In addition, the possibility of establishing a new observation station within or near the project area should be discussed in order to replace or complement the existing monitoring network.

The Federation of Finnish Fisheries Associations

Several offshore wind projects are planned across the Baltic Sea. Individual projects may restrict fishing opportunities in specific areas and affect local fish stocks. In addition, the cumulative impacts of multiple projects on fish stocks, spawning areas, and migratory routes may be significant.

Finnish fishing activity in the proposed area is limited. However, the project may affect trawling opportunities for Baltic herring and sprat. Threatened species such as cod and eel, as well as migratory species such as salmon, may be affected. These aspects are briefly addressed in the consultation material.

The Federation of Finnish Fisheries Associations is concerned about the combined and cumulative impacts of offshore wind developments on fish stocks and fishing activities. The Federation of Finnish Fisheries Associations considers that further coordination and analysis of the cumulative impacts of offshore wind projects in the Baltic Sea are needed before permits are granted for individual projects. While the impacts of a single project may be limited, the combined effects of multiple developments may result in significant and potentially irreversible impacts on fish stocks, fishing industry, and the marine environment in general.

Ålands Natur och Miljö r.f.

The association takes a positive view of the development of renewable energy sources. The development of renewable energy is necessary for the green transition, while renewable sources also contribute to the decentralisation of energy supply, thereby reducing vulnerability in electricity supply.

However, when expanding renewable energy, all environmental aspects must always be considered. Based on independent research, it must be demonstrated that the development will not lead to a deterioration of nature and the environment, both locally and globally. Wind power should be developed in a way that minimises negative impacts on the environment and nature throughout all phases of the project.

It is important that plans for the construction of a facility can be suspended or modified if initial investigations indicate that the project would result in adverse impacts on the environment and nature.

Ålands Natur och Miljö proposes that Finland should participate in the EIA procedure.

Offshore wind farms must not be constructed in locations that pose a risk to the already threatened seabird populations of the Baltic Sea, migratory birds, or other bird species. It must also be ensured that the siting of offshore wind farms does not disturb or threaten the low stocks of Baltic herring, migratory Atlantic salmon, or other fish species and aquatic organisms in the Baltic Sea.

Åland is located approximately 100 km from the planned wind farm. From a nature conservation perspective, the project could affect Åland, particularly regarding migratory animals, especially birds but potentially also bats.

“A well-known and extensive migration route for birds runs along the entire Baltic Sea coast in a north–south direction during spring and autumn. However, there are significant knowledge gaps, and details concerning migration routes, the extent of different species, flight altitudes, behaviour under varying weather conditions, etc., are often insufficient or entirely lacking” (Swedish Environmental Protection Agency, 2017).

Further studies are needed regarding migratory bats. There are also migratory insects, about which even less is known than about bats. Bats are protected under EU legislation. Marine mammals may be affected by noise during construction, and sound can travel long distances underwater. The situation at a distance of approximately 100 km is uncertain; however, it is known that noise does not stop at national borders.

It is also important that the environmental impact assessment examine more thoroughly how different fish species in the area may be affected.

Due to the need for further studies on several species, as outlined above, Ålands Natur och Miljö considers that Finland should reserve the opportunity to examine the environmental impact assessment more closely.

The Finnish Safety and Chemicals Agency (Tukes), **Helsinki-Uusimaa Regional Council**, **Economic Development Centre of Southwest Finland,** and **Economic Development Centre of Southwest Finland – Fisheries Authority** responded to the statement request but not provided comments on the matter.

Participation in the transboundary EIA procedure

Based on the statements received and its own deliberations, the Finnish Environment Institute states in accordance with Article 3, Paragraph 3 of the Espoo Convention that Finland intends to participate in the EIA procedure of the offshore wind farm project Delta North.

Conclusions

From a climate perspective, offshore wind farms are generally considered beneficial, as they reduce greenhouse gas emissions and support energy transition objectives. Studies indicate that lifecycle emissions from offshore wind power are significantly lower than those of conventional energy production. However, when biodiversity, marine ecosystems, migratory species and cumulative regional pressures are considered, potential transboundary impacts may arise. These ecological linkages extend across national borders, necessitating further assessment of cumulative impacts from multiple offshore wind projects, as well as effects on migratory birds, including migration routes, resting and feeding areas, and sensitive species. Impacts on marine habitats and benthic fauna, as well as on bats, seals and other marine mammals, should be evaluated, along with potential impacts associated with cable routing areas. The provided documentation contains translation errors (e.g. the names of bird species) that should be corrected in future documentation.

The potential impacts of underwater noise on Baltic Sea ecosystems, including Finnish marine areas, must be assessed. Particular attention should be given to fish spawning grounds, commercially important species and habitat loss caused by turbine foundations. It should also be examined whether the wind farm, if implemented, could facilitate the occurrence and northward spread of non-indigenous species (stepping-stone effect) (Espoo_FIN_Delta North 20260216.pdf p. 39). Furthermore, impacts related to infrastructure and cross-border grid connections require assessment. A transboundary environmental impact assessment (TEIA) is recommended from the perspective of biodiversity, ecosystem protection and other relevant uses of the marine environment.

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This document has been electronically signed. The electronic signatures can be verified from the register office of the Finnish Environment Institute.

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