

Authority Services

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Finland's response to the consultation in accordance with Articles 4 and 5 of the Convention on Environmental Impact Assessment in a Transboundary Context (Espoo Convention) for the planned offshore wind farm Najaderna in Sweden

The Finnish Environment Institute acknowledges that Finland has received the consultation request from Sweden on 17 June 2025, on the basis of Articles 4 and 5 of the Espoo Convention to submit comments on the environmental impact assessment (EIA) report for the offshore wind farm Najaderna in Sweden. The consultation request included the environmental impact assessment (EIA) report, but the appendices of the assessment were not included.

Sweden notified Finland of the EIA programme for the offshore windfarm Najaderna in accordance with the Article 3 of the Espoo Convention on 24 August 2022. The Ministry of the Environment responded on 5 October 2022 in accordance with the Article 3 Paragraph 3 of the Espoo Convention that Finland intends to participate in the EIA procedure of the planned project.

The planned project

Project developer Najaderna Offshore AB is planning an offshore wind farm consisting of up to 67 wind turbines with a capacity of 20 megawatts (MW) and a maximum height of 365 metres in the Swedish Exclusive Economic Zone. The project area is located approximately 17 kilometres from Tierp in Uppsala County and approximately 80 kilometres from Åland. The total capacity of the wind farm will be 1,700 MW at most, with an expected annual production of 4-5 terawatt hours (TWh). The planned project area covers approximately 350 square kilometres. The depth of the project area varies between 30 and 70 metres.

Consultation in Finland

According to the Finnish Act on Environmental Impact Assessment (252/2017), the Finnish Environment Institute is the competent authority and responsible for information and consultation tasks under the Espoo Convention. The Swedish Environmental Protection Agency requested to provide comments concerning the assessment of the environmental impacts of the project affecting Finland and to submit comments from the public and the authorities in Finland.



The public and the authorities were given the opportunity to comment on the consultation documents from 23 June to 31 August 2025, which were available on the website of Finland's environmental administration (ymparisto.fi) and on a platform by Ministry of Justice in Finland for requesting and submitting statements electronically (lausuntopalvelu.fi). Statements were also requested from relevant stakeholders.

Remarks received during the consultation

The Finnish Environment Institute received ten (10) statements, and two (2) opinions from the public. The Finnish Environment Institute has prepared an English summary of these. The original statements and opinions in Finnish or Swedish, which are enclosed to this letter, include important and detailed remarks which need to be examined and taken into consideration in their entirety.

Centre for Economic Development, Transport and the Environment of Southwest Finland

The Centre for Economic Development, Transport and the Environment of Southwest Finland considers that the report does not sufficiently assess the potential transboundary environmental impacts or cumulative impacts with the offshore wind farm areas planned on the Finnish side.

The assessment report considers the Marine Strategy Framework Directive (MSFD) and assesses the impact of the offshore wind farm on achieving or maintaining good environmental status in the marine area in accordance with the Swedish Agency for Marine and Water Management's regulation on good environmental status indicators 1, 2, 4, 6, 7, 8 and 11 through the related indicators. For indicator 4 (food webs) and indicator 11 (underwater noise), table 30 states that there are no indicators for assessing the status of these indicators, which means that it is impossible to assess the impact of the planned offshore wind farm on achieving or maintaining good marine environmental status in relation to these indicators. The ELY Centre of Southwest Finland notes that, regarding underwater noise, HELCOM approved its own pre-core indicators for continuous and impulsive underwater noise in April 2023, which means that assessment criteria have been developed for the amount, intensity and extent of continuous and impulsive underwater noise, which can be used to determine the good status of the Baltic Sea in terms of underwater noise. Indicator species-specific decibel threshold values for continuous and impulsive underwater noise have been developed by the Baltic Marine Environment Protection Commission for marine mammals and fish. The species selected as noise-sensitive indicator species are the harbour porpoise (*Phocoena phocoena*), Baltic ringed seal (*Pusa hispida botnica*), grey seal (*Halichoerus grypus*) and harbour seal (*Phoca vitulina*) for mammals, and Atlantic cod (*Gadus morhua*) and Baltic herring (*Clupea harengus membras*) for fish. The state of food webs is assessed through trophic levels, which include primary producers, plankton feeders and top predators. Of the above-mentioned trophic levels, significant impacts may affect top predators such as seals, fish and birds, which may disrupt the balance between different trophic levels in the food web and weaken its condition.

The project's impact on the objectives of the Baltic Sea Action Plan is not assessed at all.

The assessment report states that the emergence of the reef effect can ultimately be considered positive for nature, even if it causes the disappearance of the habitat of soft-bottom species. It should be noted that it is not necessarily only positive that the balance of the nutrient-poor ecosystem in the open sea becomes more species-rich and nutrient-rich. A large-scale ecological assessment of the reef effect is a complex undertaking, and the emergence of the reef effect cannot therefore be considered solely positive.



As the project is located relatively close to Finnish territorial waters and/or the Exclusive Economic Zone, the impacts of noise on Finland are of key importance. However, when examining noise mitigation measures, it has been shown that if the Hydro Sound Damper (HSD) method is used in conjunction with a double bubble curtain, the effects of noise remain localised. It is therefore particularly important that noise mitigation measures are used in the piling work, both for fish and marine mammals. If noise mitigation measures are implemented, the effects on Finnish marine mammals and fish stocks are likely to remain moderate. The ELY Centre of Southwest Finland considers it extremely important to commit to noise mitigation measures, given the extent of the impacts presented.

As the majority of Finland's migratory bird populations follow the coastline or the Åland Sea area, the impacts are likely to be reasonably minor in terms of transboundary impacts. However, the migratory flocks of whooper swans (*Cygnus cygnus*) and taiga bean geese (*Anser fabalis*) pass centrally through the project area. Based on the assessment, the impacts are considered to be minor. The ELY Centre of Southwest Finland considers that, particularly in the case of the taiga bean goose, it would have been necessary to provide more detailed justification for the interpretation. As the project has committed to monitoring of bats during the operational period, it might be worth considering similar monitoring for the most critical migratory birds. Research data on the impacts of offshore wind power on migratory birds, especially in terms of cumulative impacts, is rather scarce. Practical monitoring of ongoing projects could meet this need for information. However, the ELY Centre of Southwest Finland considers that the impacts on Finnish migratory birds have been correctly assessed in general.

The commitment to monitoring bat migration during the project is considered positive. It would be important to produce public reports on the monitoring so that more comprehensive information on the impacts of offshore wind power on migrating bats could also be used in other decision-making.

Centre for Economic Development, Transport and the Environment of Southwest Finland – Fisheries Authority

From the perspective of fisheries, the most significant impacts of the project are:

1. Turbidity during construction, which, when sedimented in the Finngrunden area, may damage spawning Baltic herring (*Clupea harengus membras*) roe and hinder the development of fry
2. Noise during construction, which may damage, disturb and drive away fish, and may also disrupt migration to spawning grounds
3. Placing the wind turbines in such a way that will interrupt existing trawling routes, preventing commercial fishing in the area

Fish stocks

The information on fish stocks in the area provided in the assessment report is sufficient. The fish species have been studied as comprehensively as is possible in open sea conditions. However, the report's assessment of the project's impact on fish stocks and fishing is insufficient and, in some respects, also incorrect.

The assessment report highlights the formation of reefs as a positive impact. The Fisheries Authority notes that this does not benefit the fishing industry.



The reef effect on fishing is based on species that do not occur or are rare in the Bothnian Sea. Therefore, the applicant's interpretation of the positive impact of the project on fish stocks and fisheries is incorrect.

Turbidity

Turbidity during construction will be caused by drilling the foundations for the wind turbine units into the seabed. According to the assessment report, the units would have monopile foundations. The foundations will be constructed by piling, but if the quality of the seabed prevents this, the planting holes will have to be modified by drilling. In the worst-case scenario, the work will have to be done entirely by drilling, which will have the greatest environmental impact because it will generate large amounts of loose sediment. The diameter of the planting hole is approximately 15 metres. If the depth of the foundation is 35-70 metres, the amount of sediment loosened from the seabed by drilling and spread into the environment is 6,000-12,000 cubic metres per wind turbine unit, which cannot be considered a small amount.

The most worrying aspect is the potential impact of sediment movement on the Finngrundén area, which has three shoals that are the most important spawning grounds for Baltic herring in the open sea of the Bothnian Sea. There are also shoals to the south and south-west of the project area.

According to the project operator, the construction of the offshore wind farm will not affect herring reproduction in Finngrundén. The Fisheries Authority notes that if the project area is located at the closest 4 kilometres from the spawning grounds, damage cannot be avoided.

Sediment deposited on spawning grounds reduces the survival rate of roe; the roe may suffocate and die.

Construction work will weaken herring reproduction in the surrounding area. The problem will be intensified if construction work is carried out in the surrounding area for several years in a row, which could cause the stock to collapse. Based on this, the starting point for offshore wind farm projects must be that their location and construction are timed in accordance with the precautionary principle so that fish stocks are not endangered, and construction does not disrupt and/or prevent the natural reproduction cycle of fish.

Noise

Piling the wind turbine foundation into the seabed causes noise pollution, which is extremely harmful: it can injure or kill fish, both adult fish and eggs and fry.

According to the assessment report, the sound level of a single impact caused by the piling of a monopile foundation is 228 dB rel. 1 µPa_{2s} or 250 dB rel. 1µPa. Such a high noise level far exceeds the level that is dangerous to fish.

According to the assessment report, the noise level causing temporary hearing damage to herring is 186 dB. Mortality and/or internal organ damage occurs in fish species of different ages when the noise level rises to between 174 and 217 dB. This means that if the pile driving noise is not attenuated, fish may die or be injured within a radius of 10–12 kilometres around the pile driving site. Fish become stressed and their behaviour changes significantly in a much wider area.

Piling noise can be mitigated using various methods. According to the assessment report, at the frequencies at which piling noise is dominant (100–200 Hz), noise can be mitigated by 22–27



dB using a double bubble curtain (DBBC) and an HSD sound net. As a result, the noise level is still 182–206 dB, which is still harmful to fish. However, the calculations in the assessment report give a theoretical result according to which the noise zone causing fish deaths and tissue damage extends only 400 metres from the noise source with attenuation. This estimate does not seem credible. How can fish deaths and damage practically cease to exist when the noise level is still extremely high?

The attenuation of noise must be verified by in situ -measurements in the sea area. Measurements should be taken at different distances from the noise source to determine the actual propagation of noise. Attenuation methods may not work in deep areas in open sea conditions as optimally and without interference as the calculations modelled for theoretical situations indicate.

Even if the calculations concerning the size of the area causing fish mortality and injury are correct, the impact assessment completely ignores all other adverse effects caused by noise. Even if fish are not killed or injured, noise affects them, scaring them away, disrupting their migration behaviour and preventing them from gathering on the slopes of shoals near spawning grounds. Noise can harm fish migrating to spawning grounds, and spawning in shallow areas can also be disrupted by noise.

Normally, herring shoals follow the movements of their food source, zooplankton, and regularly stay in different depth zones at different times of the day. Continuous impulsive noise echoing in the habitat changes the behaviour of herring; fish frightened by the noise can no longer be found in their usual grounds, and perhaps not even in their old spawning grounds during the breeding season. The Fisheries Authority estimates that the noise affects fish behaviour tens of kilometres away, but at least within the 50G8 fishing grid area.

Commercial fishing

The impacts of the Najaderna offshore wind farm project primarily affect fish stocks and their well-being. The project also has impacts on commercial fishing, even though the project area is not the most important trawling area in the Bothnian Sea.

The Bothnian Sea is a large area, but there are only a limited number of routes suitable for trawling, known as trawling corridors. Trawls are pulled along established routes where fish stocks are located and where trawling is safe due to the bottom topography. The trawling corridors are often located in deep areas and at the edges of deep areas.

The north-western edge of the Najaderna project area is located on top of a trawling area. Figures 16 and 17 in the assessment report show that the area in question is 50-59 metres deep and has a fairly flat seabed, which is well suited to mid-water trawling. Mid-water trawling is often carried out as close to the seabed as possible but contact with the seabed is avoided.

The trawling corridor runs close to the edge of a deep area in the project area, which may contain large amounts of zooplankton and benthic fauna collected by currents and which therefore attracts shoals of herring. The project will cut the deep area out of the trawling area. Cutting off the trawling route may also affect fishing in a wider area, even stopping it in part or all of the route. The Fisheries Authority emphasises that offshore wind farms should always be located, and areas delimited in such a way that there are no conflicts with commercial fishing.

As already mentioned above, the construction of offshore wind farms also worsens fishing conditions due to the noise pollution it causes. Due to the noise-induced displacement of fish,



fishing may become unprofitable throughout the entire construction period in the entire fishing area and even further.

If other offshore wind farm projects are built at the same time, the effects may have a significant impact on offshore fishing. Some offshore fishing may cease for several years. Determining the actual effects of the project requires careful monitoring and documentation.

Natural Resources Institute Finland (Luke)

The project area and its immediate surroundings are, to some extent, an important fishing area specifically for Finnish Baltic herring (*Clupea harengus membras*) trawlers (see Lappalainen et al. 2023 and the attached open spatial data), but not so much for Swedish vessels. However, the activities and catches of Finnish commercial fishermen have not been considered in the consultation document. The Natural Resources Institute Finland considers that this shortcoming should be corrected. Finnish vessels often fish in the Bothnian Sea around the shallow areas of the Swedish open sea specifically for large herring, which is suitable for direct human consumption. Fishing by Finnish vessels in the project area would probably stop completely if wind power were to be built in the area.

The planned wind farm area would be located near the Fingrundet Västra Banken and Fingrundet Östra Banken Natura 2000 areas. These shallow areas are likely to be the most important wintering grounds for long-tailed ducks (*Clangula hyemalis*) in the Bothnian Sea, ice conditions permitting. At least in poor visibility conditions, there is a risk that flocks of long-tailed ducks circling low in the area could collide with the turbines located nearby. A total of three wind power areas is planned around Fingrundet Östra Banken. If several projects were to be implemented as planned, Fingrundet Östra Banken would be left in the middle of the wind farm areas, so that it could be accessed by flying from only a few directions. This could significantly reduce the area's importance, particularly as a wintering area for long-tailed ducks. This issue has been completely omitted from the assessment of potential cumulative impacts and should be added.

A large number of birds pass through the southern Bothnian Sea during their spring and autumn migrations between their breeding grounds in northern Fennoscandia and their wintering grounds in the south. There are plans for a large amount of offshore wind power in the Bothnian Sea. If a large proportion of these projects are implemented, they may have adverse cumulative impacts on birds migrating through the area. However, it is very difficult to predict cumulative impacts based on the available data. The potential impacts should be predicted and assessed through international cooperation, covering the entire living areas of the species if necessary. At the same time, the most significant gaps in knowledge should be identified and a determined effort made to collect the additional information needed to predict cumulative impacts.

Metsähallitus

The Najaderna offshore wind farm project area is located at a considerable distance from Finnish territorial waters and the coast, which is why Metsähallitus considers that the project will not have a significant impact on the areas administered by Metsähallitus in Finnish territorial waters. The Najaderna offshore wind farm project may have an impact on migratory birds in Finland when the combined effects of the planned offshore wind farm projects are considered. Several offshore wind power projects are being planned simultaneously in the Swedish side of the Bothnian Sea, and their impact on birds may be significant in combination with other offshore wind power projects.



Metsähallitus considers that the immediate adjacency of offshore wind power projects should be avoided. Instead, open sea areas should be left between projects to mitigate the impact on bird migration. It is also justified to increase knowledge of the characteristics of sea migration (e.g. whooper swan (*Cygnus cygnus*) and taiga bean goose (*Anser fabalis*) and the factors affecting it through cooperation between Finland and Sweden.

The information gathered could then be used in the planning of offshore wind power projects located in the Exclusive Economic Zones of both Finland and Sweden and in the assessment of measures to prevent and mitigate the impacts of the projects.

The assessment report draws attention to the possible impact of the wind power area on marine hydrography, i.e. temperature, salinity and stratification.

The impacts are estimated to be minor and are not expected to have any significant effects. Metsähallitus notes that the assessment is based solely on generalising information obtained from other sea areas to the conditions of the planning area, which results in considerable uncertainty in the impact assessment. To date, research based on measurements from the Baltic Sea has only been conducted in the southernmost part of the Baltic Sea, where conditions differ significantly from those in the southern Bothnian Sea. The report also fails to consider possible cumulative effects on hydrography in combination with other projects planned for the same sea area. Metsähallitus also points out that the assessment report does not discuss in detail the impact of the anticipated changes on the production of phytoplankton and zooplankton in open water, which continues to be a source of food for benthic fauna and the regionally important Baltic herring (*Clupea harengus membras*). For this reason, Metsähallitus considers that, due to the significant uncertainties described above, it cannot be ruled out that there will be larger than minor impacts on the physical and chemical conditions of the sea and, consequently, on the biotic communities. Transboundary impacts would be possible if the impacts were to affect, for example, herring stocks.

The assessment report states that there are no benthic species of significant value in the area, as the benthic species found there are common and widespread. These species are not classified as endangered in Sweden's national assessments of endangered species. Metsähallitus notes that the *Monoporeia affinis*, which is common on the deep sedimentary bottoms of the Bothnian Sea, has declined in some areas, and the *Monoporeia affinis*-rich communities in Finland have been classified as a highly endangered habitat type due to their decline. However, this is partly due to the strong increase in the abundance of the alien species *Marenzelleria spp.*, which has led to a change in the dominant species of the bottom community. Although *Monoporeia affinis* are common and abundant in some areas, changes in their numbers may be reflected in, for example, the nutrient cycle between the bottom and the open water. In addition, *Monoporeia affinis* are an important food source for herring.

The Regional Council of Satakunta

The consultation document states, as a summary of the impact assessment, that the project will have moderate landscape impacts on land and minor impacts on birdlife, benthic fauna (during the construction and demolition phases), fish and commercial fishing. The climate impact of the project is assessed to be positive, as it is estimated to reduce Sweden's greenhouse gas emissions by 2.7 million tonnes, which corresponds to six per cent of total emissions in 2022. The consultation document does not address the possible transboundary impacts of the project.



The planning of offshore wind power in the Gulf of Bothnia and the Bothnian Sea has increased significantly in recent years. In the update of Sweden's maritime spatial plan (<https://www.havochvatten.se/planering-forvaltning-och-samverkan/havsplanering/granskning-av-forslag-till-andrade-havsplaner/forslag-till-andrade-havsplaner.html>). Several new, extensive offshore wind power areas have been planned for the Bothnian Sea. Work has also begun on updating Finland's maritime spatial plan for 2030, with the aim of having the regional councils along the Finnish coast draw up a new maritime spatial plan by the end of 2026. The update is driven by many changes in the maritime operating environment since the first plan was drawn up, as well as numerous national and EU-level agreements and targets that pose new challenges for industries and the planning process. These include, among other things, the 30% marine area protection target set by the biodiversity strategy, the fisheries growth targets in line with the domestic fish promotion programme, offshore wind power development, overall safety issues and the changing needs of maritime transport.

Although Najaderna Offshore AB's project area is located far from Finland's Exclusive Economic Zone and coastline, it is still important that the EIA process and other planning for the offshore wind power project consider the cumulative effects with other projects and the possible impacts on Finland's marine areas.

Since offshore wind power has an impact on other uses of the sea and important livelihoods in the Bothnian Sea, such as shipping and fishing, as well as on the environment and natural ecosystems, there is a clear need to coordinate project planning throughout the Gulf of Bothnia. Energy transmission related to offshore wind power also has an impact on the environment, ecosystems and land use in mainland areas. To support controlled development and assess the overall impact, cooperation between countries must be further intensified. The Regional Council of Satakunta emphasises the importance of an open, interactive and sufficiently broad assessment process in large offshore wind power projects. The assessment of cumulative impacts plays a key role in the planning of projects in the Bothnian Sea.

The Government of Åland

The Government of Åland considers it positive that there are no Natura 2000 areas within the project area or in its immediate vicinity. The nearest Natura 2000 areas are the northern, western and eastern shoals of Finngrunden, approximately 4 kilometres north, northwest and northeast of the project area. According to the studies conducted on benthic fauna, fish and marine mammals, no impact is expected to occur in these Natura 2000 areas during any of the project phases (construction, operation, decommissioning). Overall, the Najaderna wind farm is not expected to impact the environment in the Natura 2000 areas, which the Government of Åland notes with appreciation.

The Government of Åland also notes that ringed seals (*Pusa hispida*) and grey seals (*Halichoerus grypus*) are present in the project area. The proposed noise reduction measures mean that the distance at which seals risk temporary or permanent hearing loss is relatively short, which is positive as it reduces the risk of harm to marine mammals.

Regarding mixing and hydrographic effects, the environmental impact assessment describes two counteracting processes: (1) increased local mixing behind the foundations (turbulent "wakes") and (2) reduced mixing in the turbines' shadow due to the sheltering effect and decreased wave height. Overall, the Najaderna wind farm is assessed to only have a minor impact on a regional scale, where the effects may partially cancel each other out. The assessment is that the oxygen content in the water mass will remain good. Wave changes are also expected to be limited, and no reduction in wave height is expected along the Åland coast.

The environmental impact assessment presents cumulative effects thematically (including bottom fauna, fish, marine mammals, birds and humans/health), but in practice limits these



analyses to nearby Swedish projects such as Eystrasalt, Sylen and Fyrskeppet. The Government of Åland wishes to emphasise the importance of assessing the cumulative effects in a transboundary manner, in accordance with the Espoo Convention. For birds, for example, common migration corridors and migration patterns should be assessed for both sides of the border.

Regarding marine processes, the Government of Åland would like to emphasise the need to analyse cumulative wind turbine effects and their potential impact on water mixing, waves and currents in the Bothnian Sea and the Sea of Åland. Although Najaderna is considered to have little regional impact, several parks in the same sector could collectively amplify effects over greater distances. Coordinated modelling and assessment of these processes is therefore recommended, although we appreciate the thorough investigation that has been carried out at regional level.

The Government of Åland generally considers positive the conclusions drawn in the environmental impact assessment, including hydrographic processes. However, we would like to emphasise the importance of assessing the cumulative effects from a transboundary perspective.

Transport and Communication Agency Traficom

Large offshore wind farms, and especially those located close to each other, may have a significant impact on shipping in the Gulf of Bothnia, both in terms of safety and smooth traffic flow. When offshore wind farms are located close to shipping lanes or maritime traffic areas, wind turbines may interfere with radar, radio and positioning systems, pose a risk to maritime safety and hinder maritime operations, especially during ice cover season.

Once implemented, offshore wind farms will reduce the traffic areas available for maritime transport. The planned Najaderna offshore wind farm and the planned offshore wind power projects located in its vicinity would concentrate shipping in the Bothnian Sea to narrower traffic areas than at present, which would increase the risks of collisions between vessels and oil spills, among other things. The above-mentioned risk factors could also have transboundary effects.

The project consultation documents provide only a brief and superficial overview of the impacts of the offshore wind farm on shipping. Traficom considers that it would have been justified to assess the impacts on shipping in a more comprehensive and analytical manner, both in the project area and more broadly, considering the planned offshore wind power projects in the Bothnian Sea, to obtain a more realistic overall picture of shipping traffic.

To coordinate different forms of land use in a sustainable manner across the entire Bothnian Sea, more comprehensive cross-border coordination between authorities would be required, as the impacts of offshore wind power projects extend beyond the individual project areas. The current permit and assessment practices for offshore wind power projects focus mainly on the estimated impacts of individual projects, which makes it challenging to coordinate different areas in a controlled manner and assess the overall impacts.

If a project progresses to the construction phase, it is important to identify and investigate the impacts of offshore wind power structures on maritime radar and radio equipment/systems and satellite positioning systems in cooperation with the authorities during the further planning and construction phases, so that any measures to mitigate and prevent adverse impacts can be implemented as quickly as possible. The impacts should not only be assessed for vessels operating in the traffic areas, but also in exceptional situations where vessels have drifted close to or into the offshore wind farm area.



In the final siting of power plants, it is important to consider the views of rescue authorities to ensure that adequate conditions for maritime rescue and environmental damage prevention can be maintained even after the offshore wind farm has been completed. For example, in the North Sea, wind turbines in new offshore wind farms are regularly arranged in a grid pattern to ensure the conditions for maritime rescue operations.

Finnish Meteorological Institute

The Finnish Meteorological Institute has no comments to make regarding the weather radar network, as the area is more than 20 kilometres away from the nearest weather radar.

Regarding marine research, the Finnish Meteorological Institute considers the environmental impact assessment report to be comprehensive. However, as with other project developers, the Finnish Meteorological Institute points out that infrastructure built at sea may complicate the monitoring of the Baltic Sea (e.g. measurements required by the EU Marine Strategy Framework Directive). In addition to measurements taken from ships, the Finnish Meteorological Institute uses Argo buoys that drift freely in the Bothnian Sea and may drift into the wind farm area. Due to these potential impacts, the Finnish Meteorological Institute wishes that, when constructing the wind farm, the project developer will cooperate with maritime operators such as the Finnish Meteorological Institute, SMHI and the Finnish Environment Institute to determine whether it is possible to establish a measuring station in the area to replace and supplement the maritime data obtained from the Bothnian Sea.

The Finnish Heritage Agency

According to the Finnish Heritage Agency, underwater cultural heritage sites are permanent physical sites within a specific limited area, and the mapping, protection and research activities carried out on them do not have any actual transboundary environmental impacts. The underwater cultural heritage sites associated with the construction project in the open sea are primarily shipwrecks and wreck parts that may have historical connections to different countries. The status of underwater cultural heritage in the project area must be investigated in connection with the preparation of hydraulic construction projects, if necessary, and any harmful effects must be mitigated. The Swedish cultural environment authorities are responsible for ensuring that this is done in Swedish territorial waters and the exclusive economic zone.

It is positive and important that the consultation document corresponding to the environmental impact assessment report for the Najaderna offshore wind farm considers underwater cultural heritage (marine archaeology) and that the Swedish cultural heritage authorities are involved in the EIA process for the project.

A preliminary marine archaeological study has been conducted. It is also important that the project manager has stated that a study will be conducted to locate underwater cultural heritage and that safety distances will be determined for the sites if necessary.

The Finnish Heritage Agency has no further comments on the environmental impact assessment report.

Finnish Safety and Chemicals Agency (Tukes) replied but did not have any comment on the matter.

Opinions of the public

Private person

I have nothing against wind power being built



Private person

I endorse all forms of solar or wind power development regardless of their physical location.

Conclusions

The Finnish Environment Institute recalls that the issues raised by the Ministry of the Environment of Finland during the previous consultation phase in 2022 are not fully considered in the EIA report. The most significant defect is that a separate chapter on the assessment of transboundary impacts, focusing on bird migration and food supply, maritime safety and shipping, fish stocks, marine fauna, and commercial fishing from Finland's perspective, which Finland requested in its letter dated 5 October 2022, is still missing. Additionally, the cumulative impacts from a transboundary perspective have not been assessed. The EIA report should be supplemented in these respects. Furthermore, the Finnish Environment Institute also notes that the EIA report is dated December 15, 2023, but is only now being submitted to Finland for consultation. Additionally, the consultation documents do not specify the date of the Swedish national consultation.

The Finnish Environment Institute points out that the appendices related to the EIA report were not made available to Finland. Consequently, the Finnish Environment Institute was unable to include the appendices in the consultation documentation in Finland. According to Article 2(6) of the Espoo Convention, the responsible party shall ensure that the opportunity provided to participate in environmental impact assessment to the public of the affected Party is equivalent to that provided to the public of the Party of origin. Thus, the participation rights of the Finnish public were not fully ensured in this hearing phase.

Based on the given statements and its own evaluation, the Finnish Environment Institute considers the EIA report of the offshore wind farm Najaderna, to be inadequate from the transboundary environmental assessment point of view. The Finnish Environment Institute considers it important to investigate and assess all the impacts mentioned in the statements of the Finnish authorities and other stakeholders on the EIA report and in the previous consultation phase in 2022. The impacts mentioned in the statements concern, among other things, migratory birds, the reproduction and spawning of Baltic herring, underwater noise, marine hydrography and changes in phytoplankton and zooplankton production, maritime safety and ships, and Finnish commercial fishing.

Regarding migrating birds, the migration routes of whooper swans (*Cygnus cygnus*) and taiga bean geese (*Anser fabalis*) pass centrally through the project area. Particularly in the case of taiga bean geese, it would have been necessary to provide more extensive justification for the interpretation that the impacts are minor on a broader scale. Offshore wind power projects should not be clustered, and free sea areas should be left between to mitigate their impact on bird migration. The project area is located close to the Finngrundet Östra Banken Natura 2000 site. Three offshore wind farms are planned in the area. If these plans are implemented, they may impact the long-tailed duck (*Clangula hyemalis*), which winters in the area.

According to the statements received in Finland, the EIA report's assessment that construction of the offshore wind farm would have no impact on the reproduction of Baltic herring (*Clupea harengus*) in the Finngrundet area seems to be inaccurate. The turbidity and sediment movement caused by construction work will affect herring spawning in the Finngrundet shallows. Furthermore, according to the Centre of Economic Development, Transport and Environment of Southwest Finland – Fisheries Authority's statement the assessments of the



impacts of underwater noise presented in the EIA report is unreliable. The statement indicates that despite mitigation measures, noise levels will remain harmful to fish.

Metsähallitus points out in its statement that the impact on marine hydrography is assessed as minor in the EIA report. The assessment is based solely on generalizing information obtained from other marine areas to the conditions in the planning area, which results in uncertainty in the impact assessment. Additionally, the assessment report does not discuss in detail the impact of the anticipated changes on phytoplankton and zooplankton production in open water, which is an important source of food for Baltic herring, for example.

Based on the statements received, the impacts on maritime safety and shipping are presented briefly and superficially in the EIA report. These impacts should be assessed more comprehensively and analytically, both in the project area and more broadly, taking into consideration the combined impacts of other offshore wind farm in the area in order to obtain an overall picture. If located near shipping lanes or areas of maritime traffic, the offshore wind farms can interfere with the radar, radio and positioning systems of ships, posing a risk to maritime safety and hindering operations, particularly during periods of ice cover.

As stated by the Centre of Economic Development, Transport and Environment of Southwest Finland – Fisheries Authority and Natural Resources Institute, the impact on Finnish commercial fishing has not been adequately assessed. Finnish vessels fish for herring in the shallow waters of the Swedish open sea, off the coast of Bothnian Bay. If wind power were to be built in the project area, fishing by Finnish vessels there would likely cease entirely.

Due to deficiencies in the EIA report and missing appendices, the Finnish Environment Institute wishes to continue the consultations under Article 5 of the Espoo Convention. Furthermore, the permitting process cannot be completed until the EIA report has been supplemented, and Finland's response has been analysed and responded to. Additionally, the consultations under the Espoo Convention must be concluded before the permit granting.

Head of Services

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 Point of Contact to the Espoo Convention

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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.

Appendices

Statements received in Finland

For information

Ministry for Foreign Affairs
 Ministry of the Environment
 Natural Resource Institute Finland
 The Regional Council of Satakunta



The Finnish Heritage Agency
The Finnish Safety and Chemicals Agency (Tukes)
Centre for Economic Development, Transport and the Environment of
Southwest Finland
Transport and Communications Agency Traficom
Metsähallitus
Finnish Meteorological Institute
The Government of Åland

