

Authority services

8 December 2023

SYKE/2023/2019

Swedish Environmental Protection Agency  
registrator@naturvardsverket.se

**Reference:** NV-06820-23

## Finland's response to the notification regarding the planned offshore wind farm project Sylen

The Finnish Environment Institute hereby acknowledges that Finland has received the notification, dated 31 October 2023, and the consultation documents from Sweden in accordance with Article 3(1) of the Convention on Environmental Impact Assessment in a Transboundary Context (Espoo Convention) regarding an environmental impact assessment (EIA) procedure of the planned offshore wind farm project Sylen in Sweden's exclusive economic zone (EEZ) in the Bothnian Sea.

Svea Vind Offshore AB intends to apply for a permit to construct and operate the project within Sweden's EEZ. A maximum of 347 wind turbines are planned with a maximum total height of 350 meters covering an area of approximately 524 square kilometres. The expected installed capacity is estimated to be 8 675 MW. The facility will consist of offshore wind turbines on fixed foundations, offshore transformer stations on fixed foundations, measurement masts and cables laid in water within the group station and transmission cables to land.

### Consultation in Finland

According to the Act on Environmental Impact Assessment Procedure (252/2017), the Finnish Environment Institute is the competent authority and responsible for consultation tasks under the Espoo Convention. The Swedish Environmental Protection Agency requested an indication whether Finland intends to participate in the EIA procedure and to provide comments on the scope for the assessment of the environmental impacts of the project on Finland, and to submit comments that might be received from the public in Finland. The public and authorities were given the opportunity to comment on the consultation documents from 3 November to 1 December 2023. The consultation documents were available, and statements were asked on the website of Finland's environmental administration and on the website of electronic public consultation. The Finnish Environment Institute received 12 statements.

### Participation in the EIA procedure

Based on the received statements and reflecting its own views, the Finnish Environment Institute states in accordance with Article 3(3) of the Espoo Convention that Finland intends to participate in the EIA procedure.



## Remarks received during the consultation

The Finnish Environment Institute notes that planning of offshore wind farms has increased in the Baltic Sea region. This has raised concerns about the need for an overall assessment. All contributing factors should be known, and their impacts assessed to ensure that the decision on the implementation of the project is based on firm knowledge of its impacts and on the best possible solution. It is considered important to examine and assess cumulative impacts as widely as possible. The EIA documentation should address transboundary impacts from Finland's perspective with a specific regard given to the remarks in the original statements.

The Finnish Environment Institute points out that it is relevant for the assessment of the project that there are razorbill and lesser black-backed gull colonies living in the northern parts of the Åland Islands. The Åland Islands are home to the world's largest colony of lesser black-backed gulls, whose foraging flights extend to the project area. Lesser black-backed gulls can be found on the entire Bothnian Sea. The majority of the breeding population of the lesser black-backed gull's nominotypical subspecies (*Larus fuscus fuscus*) nests in Finland and Sweden. The foraging flights of auks and lesser black-backed gulls must be taken into account in the EIA. Furthermore, the migratory paths of bean and pink-footed geese traverse the project area, which must also be taken into account in the EIA.

The Finnish Environment Institute has prepared a summary of the original statements. The original statements, which are enclosed to this letter, include important and detailed remarks which need to take into account in the EIA.

According to the **Government of Åland**, Finland ought to take part in the EIA procedure. The expansion of offshore wind power in the Baltic Sea should be coordinated. The Government of Åland highlighted the fact that the distance of the project from both the waters (approx. 75 km) and coast (approx. 90 km) of Åland is very small. Due to the geographical proximity, the project is likely to have an impact on the environment and landscape of Åland. Direct cumulative environmental impacts can be expected. In their statement, the Government of Åland points out that other offshore wind farms are also being planned in the vicinity of the sea area. In the view of the Government of Åland, joint planning around the offshore wind farm projects is necessary, as there are significant goals and plans to expand offshore wind power in the Baltic Sea.

**The Centre for Economic Development, Transport and the Environment (ELY Centre of Southwest Finland)** is in favour of Finland's participation in the assessment procedure of the planned project. In the view of the ELY Centre of Southwest Finland, the potential primary cross-border environmental impacts of the planned project could affect Finland through migratory birds or as a result of a possible accident. The consultation document highlights that the migratory paths of birds are not as well known in the project area as in the vicinity of the coast, and therefore the migration of water birds (including divers), gulls and waders in the Gulf of Bothnia should be examined beyond the literature review by means of e.g., satellite monitoring data, if available.

The ELY Centre of Southwest Finland considers that the impacts during construction and operation on e.g., sediment transmission, currents, wave formation, thermal stratification, and underwater noise, as well as the loss and disturbance of the seabed should be reliably assessed, and measures should be proposed to minimise these impacts. According to the consultation document, many of these impacts will be modelled, but no reference is made to the actual models or data to be used in the assessment of these impacts.

The ELY Centre for Southwest Finland points out that the assessments carried out through modelling must include a detailed account of the forecasting methods used and their underlying



presumptions as well as the relevant data concerning the environment, as well as a report on the deficiencies and uncertainties observed in the collection of the necessary data. In addition to the results of modelling, a description of the measures taken to minimise harmful environmental impacts, including their possible interactions, must be presented.

The EIA should also examine the littering of the marine environment (microplastics and macroplastics), which is a significant potential environmental hazard that ought to be prevented and minimised during both the construction and operation of the power stations. Oil and chemical spillage must also be prepared for, during both construction and operation. As a result of climate change, strong and sudden storm winds may cause the wind turbines to break down, causing the risk of oil, lubricants, or other substances harmful to the aquatic environment being spilled into the sea. In-service maintenance work may also cause discharge of harmful substances into the sea. It is mentioned in the consultation document that the effects on the magnetic field will depend on whether the cables will carry alternating current or direct current and on the way, they are placed on the seabed. The EIA should examine all these options and their environmental impacts and assess how these impacts can be minimised.

**The Fisheries Authority of the ELY Centre of Southwest Finland (Fisheries Authority)** states that Finnish fishing vessels have fishing rights in the project area and that in the project area can be found some fish species (e.g., salmon, herring and European sprat) that are important for Finnish fishing industry. Construction activities and operating wind park can have a significant impact on fishing, fish migration routes, reproductive success, survival, condition of fish and contaminants and hence will influence the Finnish fishing industry. The Fisheries Authority points out that all effects must also be evaluated in terms of joint effects.

The Fisheries Authority is also concerned about the fishing restrictions caused by the project. Fishing by Finnish vessels is small in the production area itself due to the shallowness of the area, but there are significant trawl areas immediately to the southeast, southwest and south of this area. Potential of these fishing areas is considered significant in terms of security of supply and the development of fisheries. There may be overlaps with trawling in the marginal areas of the production area and export cable corridors. The Fisheries Authority considers that trawl fishing must be made possible in these technically critical places, and requires that the effects, including indirect effects, should be carefully evaluated. The Fisheries Authority points out that the project involves potential hydrogen production, although it is not defined in more detail in the document. Offshore hydrogen production can multiply the environmental impact of this project.

In the consultation document, fishing within the project area and in its immediate vicinity is not taken into account, nor is the project area's spawning potential, nor migratory fish. The assessment of the effects on the fishery is partly unrealistic and the effects on fishing elsewhere are ignored. Effects on fish are mainly seen during construction. The magnetic field problem and the reef effect are treated incompletely or one-sidedly. Hydrological modelling is insufficient. Risks to the marine ecology and impacts extending beyond the project area, as well as the large scale of the project, are not sufficiently taken into account. The total amounts of various emissions are not estimated, and possible effects are not taken into account sufficiently or at all, no solutions have been presented to avoid them. From the point of view of fisheries, the content of the document is incomplete at this stage.

The Fisheries Authority considers that the following issues need to be thoroughly investigated: combined effects of planned sea wind farms in the region, migration routes of migratory fish (salmon, trout, whitefish) in the area and the effect of construction on the routes, the importance of the area as a spawning area for herring, permanent changes for fishing, the effect of sediment emissions during the construction phase, heat emissions from production, changes in flow conditions, toxic emissions, the threat potential of easily released solid pollutants, an



assessment based on research data about how wind farm structures and possible artificial reefs affect the structure of the ecosystem and fish stocks and lastly alien species strategy for the project should be taken into account. In addition, spawning zones should be researched during the spawning period.

In its statement, the **Finnish Association of Professional Fishermen (SAKL)** refers to several reports and studies according to which it is practically impossible to practice trawl fishing in areas where offshore wind farms are constructed, which is why the Association requires that the key trawl fishing areas be reserved exclusively for fishing. Any cables must be ploughed to the bottom of the sea. The impact of the planned area on fishery in the southern Bothnian Sea, and beyond, must be thoroughly investigated and the information obtained must be examined with criticism. The importance of the project area for commercial fishing in the longer term must be assessed. The status of herring stocks in the Baltic Sea has attracted a lot of attention recently. The impact of offshore wind farm construction on herring stocks (spawning, reproduction, and nursery areas) must be thoroughly investigated. It is particularly important that the combined cumulative effects of the project and the other planned areas are investigated. There are currently several offshore wind farms being planned without any coordination or overall assessment.

**Metsähallitus** considers it important that Finland participates in the EIA procedure to make sure that the combined effects of the projects located on the Finnish side are also included in the assessment. Metsähallitus highlights the importance of taking into account the cumulative effects of all the phases of the life cycle of offshore wind power on marine species at population and habitat levels as well as the impacts on ecosystem services. For example, the foraging areas of auks nesting in the archipelago north of Åland are not known, and it is possible that they look for food for their young from the open sea.

Metsähallitus draws attention to the fact that the description of the impacts of the wind power area does not highlight the impacts of the production areas on currents. Based on recent research data, offshore wind farms alter the currents and the hydrography of the surrounding area, causing changes to e.g., water stratification and mixing. These changes may have an impact on the phytoplankton community, which in turn may have an effect on the zooplankton communities and the fish stock, and thus also on the operational preconditions of fishing.

According to Metsähallitus, the hydrodynamic impacts of the project should be included in the assessment report and covered by monitoring. Changes in stratification may have significant impacts on an ecosystem such as the Baltic Sea, where stratification regulates several key processes in the open sea. Metsähallitus emphasises that in order to assess environmental impacts, the baseline of the area's natural state ought to be determined based on two years of uninterrupted monitoring. In order to assess the impacts, reference areas must be specified that show the development of the natural state without the impact of a wind farm. These reference areas could be shared between several offshore wind project developers. With regard to the cumulative effects of regionally and/or temporally overlapping offshore wind power projects, EIA studies ought to be carried out jointly (cluster study).

Metsähallitus wishes to highlight the following aspects related to EIA:

- 1) Methods that have been proven good in environmental administration should be used in the collection of environmental data, and the data should be presented in spatial data format.
- 2) Nature data should be accessible to everyone, as better knowledge as early as possible supports all operators and genuinely helps to reconcile the objectives of the various policy sectors.





- 3) The maps presented in the reports should also clearly indicate the locations of the planned project, turbines, and electricity transmission routes and the total area consumed by them.
- 4) The assessment report should, inter alia, present more detailed depth maps indicating the location of offshore wind farms in relation to the shallows of the sea area in order to assess the impacts on avifauna and the underwater nature in the sea area. The shallows in the sea area are of particular importance to birds and in terms of underwater nature values.
- 5) The impacts of the project on the nearby Natura 2000 sites, nature conservation areas, and areas of special importance for biodiversity shall be investigated.
- 6) With regard to marine Natura 2000 sites, it is worth remembering that underwater nature values may not have been taken into account during the establishment of the sites due to a lack of surveys and data available at the time.
- 7) In terms of underwater natural values, the results of e.g., the the Finnish Inventory Programme for Underwater Marine Diversity (VELMU) surveys conducted in Åland and the EMMA area boundaries should be used in the EIA.
- 8) A description of the ice conditions in the impact area is needed, for example as regards the duration and strength of the ice cover, in order to assess the impact of the ice conditions. 9) Bottoms of the deep sea, which will account for a significant portion of the impact area and which are typically inhabited by endangered communities dominated by the *Monoporeia affinis*, were identified in Chapter 5.10.
- 10) The modelled occurrence of species and habitat types always involves uncertainties, and the actual occurrences must always be verified through sampling or other observations.
- 11) In Chapter 5.6.3., one clarification on the acquisition of data ought to be the identification of migratory paths by radar.
- 12) The realisation of the reef effect in the northern Baltic Sea is poorly known.
- 13) The impacts on the underwater cultural environment, marine archaeology, and archaeological sites (Chapter 5.15) shall be assessed on the basis of existing data in the form of a cultural analysis. The document states that there is no statutory protection of ancient monuments in the exclusive economic zone. Metsähallitus inquires how the wrecks or other cultural values that may still be found in the impact area will be taken into account.
- 14) Salt water and heat will be discharged into the sea as a by-product of wind power and the related hydrogen production. It should be examined how far the impact of warm and salt water will extend and whether the discharge will increase the eutrophication of sea water and how the potential adverse effects could be mitigated.
- 15) It is the view of Metsähallitus that the length of the substations required for electricity transmission, the width of power line openings, and their total surface area, as well as their distances from valuable natural sites should be reported in the EIA programme, itemised by electricity transmission route options (in accordance with the terms of sustainable funding, a distance of 1.5 km is likely to be used).
- 16) According to chapter 4.3., the seabed often benefits from wind turbines, as bottom trawling and other activities that destroy bladder wrack growth cannot be allowed due to the cables of the wind turbines. The construction of wind turbines will cause long-term or permanent changes to the seabed, which cannot be considered an improvement. Wind turbines will cause physical



disturbance to or loss of the original state of the seabed, i.e., the change is a deviation from the natural state. Furthermore, bladder wrack grows in such shallow waters that it would most likely not be affected by trawling.

17) The document states that vegetation mapping was carried out in autumn 2023 (Chapter 5.11). As vegetation varies considerably depending on the season, both in terms of species composition and species dominance, the mapping conducted in September will only show late summer species. It would be important to get a broader picture of the vegetation by expanding the mapping.

**The Finnish Wildlife Agency** notes that with regard to birds, the project survey states that "Offshore wind power may carry a risk of affecting avifauna through chasing birds away from foraging areas and through rotor blades causing accidents, as well as through the so-called 'blocking effect' where birds decide to fly around the wind farm. Research has indicated that for those species that forage for food at sea, being chased away is the greatest risk. Rotor blades only rarely cause accidents to these birds, as the birds will either avoid flying near a wind turbine, fly over the water below the rotor blades, or are skilled in avoiding the rotor blades altogether. The blocking effect most often only has a marginal effect, as the extra flight distance caused by going around a wind farm twice a year during migration is most likely within the margins that birds have for their migration."

The Finnish Wildlife Agency considers that the planning of the project does not take into account the cumulative effects of the blocking effect. It is true that a single farm located on a main migratory path can probably be avoided without it having any significant adverse effects. However, the current scale of offshore wind power construction in the main migratory paths of bean and greylag geese in the Bothnian Sea, for example, is so extensive that if the planned farms were built, they would form a unified wind farm area whose blocking effects would potentially be of a completely different scale than that indicated in the survey concerning the project.

**The Natural Resources Institute Finland (Luke)** states that it is very likely that the project will cause environmental impacts on Finland. The risk of significant impacts is increased because of the cumulative impacts of planned offshore wind farms in the Bothnian Sea. Luke points out that the Bothnian Sea is very important fishing area for Baltic herring. It is particularly important for Finnish fishermen who have been responsible for 80 percent of Baltic herring catch in the area. Impacts on Finnish fishermen must be noticed. If most of planned sea wind farm projects will realize, cumulative impacts on migratory fish and birds could be harmful, unexpected, and hard to notice in an individual EIA procedure. It is known for example, that migratory routes of greylag goose (*Anser anser*) and taiga bean goose (*Anser f. fabalis*) goes through areas that are planned for sea wind farms. Demographic effects on migratory bird populations should be examined at the level of migration routes. Luke is disappointed in the assessment when it comes to section about impacts on fish, fishing, and on migratory birds. The quality of the assessment is poor in that section and do not pay enough attention to the Finnish fishing industry, migratory birds and fish.

**The Finnish Meteorological Institute (FMI)** indicates that Finland should be involved in the EIA procedure. FMI points out that it has observation activities in the Bothnian Sea related to monitoring of the Baltic Sea. Sea monitoring is carried out by automatic measurement methods and measurement from a vessel. The construction of the project will make it more complicated to use automatic measurement methods and will probably limit measurement made from a vessel in the project area.



**BirdLife Finland** states that based on the location of the area, it is obvious that birds breeding and migrating through Finland move through it. According to research, birds that migrate during the day with good visibility tend to avoid wind turbine areas, but at night and with poor visibility avoiding of them is not common. The location of migration routes in the area is not known. In addition, there are several other offshore wind power projects planned for the Gulf of Bothnia and the rest of the Baltic Sea along the same migration route, the cumulative effects can be significant for the bird populations.

BirdLife Finland notes that the document is very deficient when it comes to assessing the presence of birds and possible impacts on birds. According to the document, for example, the presence of migratory birds will only be determined by desk research. This is completely inadequate. For example, radar tracking of birds' flight paths and altitudes is needed. The presence of birds in the area and the risks to birds must be assessed in the same way as in other projects in the Baltic Sea. The assessment must cover the main migration periods of bird species potentially migrating through the area. Wind power projects must be comparable in terms of the coverage and quality of the reports everywhere in the Baltic Sea, and for example in the Gulf of Bothnia between Finland and Sweden. The assessment of the project's cumulative effects should include at least all projects planned for the Gulf of Bothnia. Regarding birds, it would be recommended that all projects planned for the east coast of Sweden would be also included.

In its statement, the **Finnish Transport Infrastructure Agency** views that there is good cause for Finland to participate in the EIA procedure. Due to the location of the project area, if implemented, the project would affect shipping to and from Finland, particularly during the icebreaking season. The Finnish Transport Infrastructure Agency pointed out that the area planned for the project is located in the Gulf of Bothnia, where several offshore wind farms are being planned. The project area is not located in a sea area with an annual ice cover, but sea ice may occur throughout the Gulf of Bothnia and particularly on the coastline, affecting navigation in the area. The planned area is located near an important North-South shipping area, and the numerous offshore wind farms planned will affect the organisation of icebreaking and winter navigation. The Finnish Transport Infrastructure Agency considers it important to consult the Swedish and Finnish authorities responsible for winter navigation, so that cooperation in icebreaking and the winter navigation routes deviating from the routes used during the open water season can be taken into account already in the project planning phase.

In the view of the **Ministry of Transport and Communications**, there is good cause for Finland to participate in the EIA procedure. Considering the location of the project area and other offshore wind farm projects planned for the vicinity, the project may also have an impact on shipping to and from Finland. The impacts may concern, for example, changes to traffic routes, fuel consumption, meteorological instrumentation, radar reflection effects, and winter navigation.

The project's impact on the ice conditions in the area also requires further examination, as spillover effects on maritime transport may extend significantly beyond the project area. When building in the area, the impact on maritime transport infrastructure must be taken into account. Smooth and safe shipping both on regular waterways and outside them throughout the year is important, as most of the transport of goods in Finland's foreign trade takes place by sea. It is important to pay attention to shipping in order to safeguard the operating conditions of Finnish commercial shipping and to ensure safe and smooth navigation.

The unobstructed use of waterways must be taken into account in the planning of offshore wind farms. Offshore wind farms can cause changes to traffic areas and routes, extend travel times, and increase emissions from vessels as fuel consumption increases. When determining the



areas for the planned offshore wind farm projects, it is important to take into account the routes used by shipping also outside the established routes and route-sharing systems in a manner that ensures that the operating prerequisites and safety concerns of shipping are taken into account in the planning. In addition, special consideration must be given to the routes used for winter traffic, which deviate from the routes used during open water season.

Furthermore, wind turbines have an impact on the field strength and signal quality of mobile networks. The functioning of radio links operating in the sea area also requires a completely clear area between the transmitter and receiver. Coastal and offshore electronic communication services are dependent on radio systems, and it is therefore important to ensure that mobile communications services as well as radar and radio links function free of interference also in offshore areas. Even small changes in the location of wind turbines can play a crucial role in the operation of radio systems in the area.

The **Finnish Transport and Communications Agency Traficom**, considers that Finland should participate in the EIA procedure. Taking into account the location of the project area as well as the other offshore wind farm projects planned for the vicinity of the project area, the projects may have an impact on shipping to and from Finland, particularly in icy conditions, when vessels seek the most easily navigable connections along the Swedish coast in situations where winds have caused ice to accumulate on the Finnish coast.

According to Traficom, when determining the areas for the planned offshore wind farm projects, it is important to take into account the routes used by shipping also outside the established routes and route-sharing systems in a manner that ensures that the operating prerequisites and safety concerns of shipping are taken into account in the planned areas. In addition, special consideration must be given to the routes used for winter traffic, which deviate from the routes used during open water season and which may not be clearly indicated in the traffic flow analyses carried out on the basis of AIS data covering the entire traffic flow in the area.

Other offshore wind farm projects are being planned for vicinity of the project on both the Finnish and the Swedish EEZs, which amplifies the possible impact that offshore wind farms may have on shipping. Therefore, the possible combined effects of offshore wind farms on shipping in the entire Bothnian Sea area should be comprehensively investigated during further planning. The impact on the ice conditions in the area also requires further clarification. Extensive wind farms in close proximity to each other may cause shipping routes to become increasingly concentrated to certain areas, and the hundreds of wind farm structures would cause breaks to the area's floating ice fields. This would cause increasing accumulation of ice in the area, which may affect, for example, the organisation of winter shipping, and spillover effects on maritime transport may extend beyond the project area.

The project is located in a sea area with icebreaking activity during average icy winters. Traficom considers it important that both Finnish and Swedish authorities responsible for icebreaking will be consulted to ensure that icebreaking cooperation and winter routes deviating from the open water routes can be taken into account already in the planning phase of the projects and that the overall picture of the maritime environment and any changes to it are brought to the attention of the authorities as early as possible.

Furthermore, the use of radar as the main navigation and collision prevention device for vessels and its key role in winter navigation and traffic control must be considered. Impact assessments should also take into account any out-of-the-ordinary use of ship radars in icy conditions. Wind turbines can cause shadow or reflection effects to radars, which at worst make it more difficult to interpret radar signals. Wind turbines may also affect a vessel's Global Navigation Satellite





System (GNSS) in such a way that the signals of the satellites are reflected off the wind turbines, causing incorrect positioning of the vessel using the system.

The location planning of the area designated for wind farms – and later the positioning of individual wind turbines – must also take into account the potential impact of wind turbines on the radio systems used in shipping and in coastal areas. The reliable operation of radar and radio systems is essential for general safety and the safety of navigation. The impact of wind turbines on radars, navigational radio equipment, and other radio equipment essential for navigation and traffic control should be taken into account to ensure that no serious disturbances occur in Finnish areas.

Furthermore, wind turbines have an impact on the field strength and signal quality of mobile networks. The functioning of radio links operating in the sea area also requires a completely clear area between the transmitter and receiver. Coastal and offshore electronic communications services are dependent on radio systems, and it is therefore important to ensure that mobile communications services as well as radar and radio links function free of interference also in offshore areas. Even small changes in the location of wind turbines can play a crucial role in the operation of radio systems in the area. Traficom considers it important that these issues are also taken into account.

Head of authority services

Jorma Jantunen

Senior officer,  
Point of Contact to the Espoo Convention  
and the Protocol on SEA

Laura Aitala-Martesuo

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



**Appendices** Received statements in Finland

**For information**

Ministry for the Foreign Affairs of Finland  
Ministry of the Environment  
Government of Åland  
ELY Centre for Southwest Finland  
Finnish Transport Infrastructure Agency  
Finnish Wildlife Agency  
Ministry of Transport and Communications  
Finnish Association of Professional Fishermen  
Finnish Transport and Communications Agency Traficom  
Metsähallitus  
BirdLife Finland  
Finnish Meteorological Institute  
Natural Resources Institute Finland

