



Proposal for the strategic environmental impact assessments programme for allocation 2025

On the following pages, you will find the proposal for a programme for strategic environmental impact assessments of the identified areas Sørvest F and Vestavind F. A separate assessment programme has been proposed for these to facilitate the awarding of new areas in 2025. The items in the programme should be viewed in connection with the guidance described in a separate box.

Proposal for the strategic environmental impact assessments programme for allocation in 2025

The areas Sørvest F and Vestavind F cover the approved areas Sørlige Nordsjø II and Utsira Nord, which were approved based on the strategic environmental impact assessment from 2012. The zero alternative for this strategic environmental impact assessment is therefore the development of 1,500 MW in the first phase in Sørlige Nordsjø II, and the development of 1,500 MW in Utsira Nord.

A strategic environmental impact assessment of Vestavind F and Sørvest F must be made for those parts of the areas that are not covered by the strategic environmental impact assessment from 2012.

The proposed expansion in capacity of the two areas, [Sørlige Nordsjø II](#) and [Utsira Nord](#), changes the conditions for the assessment from 2012. Therefore, a strategic environmental impact assessment of the impacts of the expansion in capacity must be carried out.

Below are the thematic assessment points for the strategic environmental impact assessment of the two areas Sørvest F and Vestavind F.

Energy production, wind regime, and life cycle costs

- ♦ An estimate of the annual energy production for each of the proposed areas should be developed:
 - The conditions of turbine technology and capacity density (MW/km²) should be used as the basis.
 - To verify the capacity (MW) in the calculations, a suitable breakdown of the technical-economic analysis areas shall be proposed. Illustrations of turbine placements in these analysis areas shall be presented.
 - The calculations shall be based on relevant meteorological and oceanographic conditions.
 - Estimated energy production shall be stated as expected gross and net production. Loss conditions for calculations of net production shall be presented (loss factors such as wake loss, maintenance downtime, loss during transfer, etc.)
- ♦ An estimate of the levelised cost of energy (LCOE) for each of the separate analysis areas mentioned above should be made, both including and excluding network interface
 - Conditions for foundation technology, transfer systems, and connection points shall be presented.
 - The LCOE estimate shall be based on the cost estimate distributed across the following main points and relevant subcategories:
 - Total investment costs (CAPEX), including and excluding network interface.
 - Annual operating costs (OPEX), including and excluding network interface.
 - Decommissioning expenditure (DECEX).

Energy system and network interface

- ♦ Assessment of how much energy from Vestavind F and Sørvest F that can be transferred to land in Norway given potential developments in the energy system in Norway, the Nordic region and Europe, including planned network improvements.
- ♦ Assessment of network interface, including:
 - Current onshore connection points and potential connection solutions.
 - General assessment of whether it is appropriate to co-ordinate connection to the power grid with other maritime industries.
 - Illustrate the advantages and disadvantages of different connection solutions, including an assessment of the needs of the onshore system and the scope of this.
 - More specific conditions on capacity utilisation in offshore wind energy areas should be considered.
- ♦ The report shall examine ongoing and already completed assessments of energy system impacts and solutions for the network interface of Utsira Nord and Sørilige Nordsjø 2 phase 1.

The relationship to legislation, plans and protected areas

- ♦ The relationship to relevant legislation, including the Energy Act, the Nature Diversity Act, the Marine Resources Act, the Harbour and Fairways Act, the Petroleum Act, the Planning and Building Act, and the Cultural Heritage Act shall be assessed.
- ♦ The relationship to local, regional and national plans shall be accounted for.
- ♦ The relationship with any protected areas, proposed protected areas and marine management plans for Norwegian maritime zones shall be described.
- ♦ The impacts of international conventions and agreements Norway is a party to shall be clarified.

Natural diversity

Important areas and large-scale effects

- ♦ Impacts on nearby protected marine areas.
- ♦ Impacts on nearby and/or overlapping particularly valuable and vulnerable areas (SVO).
- ♦ Impacts of potential physical changes on ocean currents, and subsequent environmental impacts on the ecosystem level. Modelling is recommended as a basis for the assessments.
- ♦ The scope and harmful effects of increased sediment upheaval when building fixed installations near to vulnerable areas, such as Sandeel spawning areas, and sponge and coral areas shall be clarified.
- ♦ The risk of the introduction and spread of foreign species and any impacts on natural diversity
- ♦ Impacts on the ecosystem as a result of noise exposure (vibrations).

Habitats

- ♦ Existing knowledge on habitats in the proposed areas shall be collated and used to assess the impacts on habitats in deep and shallow waters during the construction of offshore wind farms in the proposed areas. If there is insufficient information, the assessment of the potential of encountering such habitats shall be clarified through current information on depth, seabed conditions, temperature, salinity and so on.
- ♦ As a result of Sørilige Nordsjø II and Utsira Nord being approved for offshore wind energy production, there are plans for sea bed investigations of the two areas led by the MAREANO programme. Parts of Utsira Nord have already been mapped, [including parts of the proposed additional area for Vestavind F](#). Further mapping of the approved areas is included [in the plan for 2023](#). These investigations will provide knowledge on habitats in these areas. Any new knowledge on the areas discovered by the MAREANO programme shall be included in the assessment basis.

Birds

- As a result of Sørlige Nordsjø II and Utsira Nord being approved for offshore wind energy production, surveys into the birds have begun for the two areas. These investigations are not a part of the strategic environmental impact assessment, but should also be used for the same purpose. During the work of identifying the new areas, a calculation of the vulnerability of seabirds in each individual area was carried out, based on a calculated sensitivity to offshore wind farms. The calculations carried out for Sørvest F and Vestavind F shall be updated with any new knowledge from the planned and already commenced bird surveys for the approved areas.
- The use of bird radars on Utsira Island to map bird migrations is a part of some of the planned and already commenced bird surveys for Utsira Nord. Any new knowledge on bird migrations that emerges from the radar monitoring within the timeframe of the report shall be used to assess the impact on bird migrations during the construction of offshore wind farms in Vestavind F.

Marine mammals

- Existing knowledge on marine mammals relevant to the proposed areas shall be collated and used to assess the impacts during the development of offshore wind farms in the proposed areas. No investigations for Sørlige Nordsjø II and Utsira Nord have been planned. If relevant investigations in or outside of the areas will be carried out during the timeframe of the report, the information uncovered shall be used in the strategic environmental impact assessment. Any new knowledge from the Institute for Marine Research shall also be included in the assessment basis.

Fish and crustaceans

- Existing knowledge on fish and crustaceans relevant to the proposed areas shall be collated and used to assess the impacts during the development of offshore wind farms in the proposed areas. No investigations for Sørlige Nordsjø II and Utsira Nord have been planned. If relevant investigations in or outside of the areas will be carried out during the timeframe of the report, the information uncovered shall be used in the strategic environmental impact assessment. Any new knowledge from the Institute for Marine Research shall also be included in the assessment basis.

If there is insufficient knowledge of the impacts on natural diversity, it shall be clarified how the gap in knowledge can be narrowed, and, where relevant, the proposal for the mapping and monitoring programme shall be presented alongside a timetable.

Fisheries

- The distances from wind turbines for fishing activities to take place should be clarified. Through this, it will be possible to examine the actual land take that should be considered. This is particularly relevant for offshore wind energy areas close to intensive fishing grounds with lots of active equipment such as pelagic and bottom trawl nets, as well as purse seines.
- Individual offshore wind energy areas may be so large that fishermen may find it challenging to reach fishing grounds in a timely and environmentally efficient manner. It shall be clarified how larger offshore wind energy areas can be adapted/ designed to allow fishing boats to go to and from fishing grounds through these areas in a safe and efficient manner.
- The scope of any compensation for fishermen during the construction of offshore wind farms in the identified areas, cf. Chapter 9 of the Offshore Energy Act, shall be clarified. The report shall review the compensation rules and associated practice. In areas with a large number of fishermen, an overall report of the basis for the requirements, including the opportunities the fishermen have to limit their loss of catch, shall be produced.
- It should be clarified whether it is possible for smaller vessels to catch fish using passive equipment within an offshore wind energy area, as well as the scope of such activities.

Petroleum and carbon storage

- In the proposed areas, an evaluation of the petroleum potential shall be made, as well as the opportunities for carbon storage, based on the best possible data.
- In the proposed areas where a petroleum field or carbon storage site has been identified, an assessment of the opportunities for mapping and monitoring using different geophysical methods should be carried out.

Shipping

- ♦ The impacts of offshore wind farms should be assessed in the proposed areas for shipping and navigation, including increased sailing distances, and the consequences of this.
- ♦ It should be investigated whether there is shipping traffic in the proposed areas that is not shown in AIS data, for example leisure vessels, smaller fishing vessels and foreign vessels.

The Armed Forces

- ♦ The impacts on the Armed Forces' artillery ranges, radars and operational use of the areas shall be clarified. In the work of identifying areas for offshore wind farms, the Norwegian Defence Estates Agency has mapped how the identified areas may come into conflict with the interests of the Armed Forces. For the strategic environmental impact assessment, this should be supplemented with any new knowledge.

Risk of adverse events

- ♦ An overall assessment of the risks and impacts of adverse events, acute pollution, etc. shall be carried out for the different areas.
- ♦ The contingencies in the event of various events (from wind energy or from other industries such as shipping or oil and gas) shall be assessed.

Pollution

- ♦ A general description shall be provided of the expected emissions from wear and tear of wind turbine blades, and an assessment shall be made of the potential impacts of this.
- ♦ A description of the expected use of chemicals and other substances that have a significant risk of emissions shall be provided, and an assessment shall be made of the potential impacts of this.

Visual impacts

- ♦ A theoretical visibility map illustrating the visibility of the offshore wind farm in Vestavind F from onshore areas up to 50 kilometres from the identified area shall be drawn up.
- ♦ The visual impacts of the initiative shall be assessed from relevant outlook points. The assessment
 - shall include: the level of visibility during different visual conditions.
 - impacts related to lights on turbines
- ♦ Photorealistic visualisations shall be developed providing a representative impression of the visual impacts of the initiative from relevant outlook points. The photo outlook points and direction of the photos shall be shown on an overview map.

Landscape

- ♦ The impact on important and visually impacted landscape values up to 30 kilometres from Vestavind F shall be described and shown using maps and images.

Outdoor recreation

- Known and charted sailing routes and outdoor recreational areas in the plan area and area of influence shall be described and shown on a map.
- The impacts of the initiative for sea and land-based outdoor recreational areas shall be assessed.

Cultural heritage

- Cultural heritage sites and environments protected by law, individual protection orders, and more recent sites 30 kilometres from the proposed areas shall be described and shown on a map.
- The value of cultural heritage sites and environments shall be assessed, and a value map shall be developed.
- The potential for the discovery of automatically protected cultural heritage sites in the identified areas shall be assessed.
- The direct and indirect impacts of the initiative on cultural heritage sites and environments shall be assessed.

Ports

- The report shall contain an overall assessment of which Norwegian ports and suitable onshore areas can be used to establish offshore wind farms in the vicinity of the proposed areas, and whether there are particular challenges related to some of these.

Radar

- The weather radar at Bømlo is 47 km from the identified area of Vestavind F and will be impacted by the development of wind farm. Mitigation measures for the radar at Bømlo shall be clarified. This should also include the construction of an additional radar, as well as the costs related to this.
- The assessments around the consequences of the development of an offshore wind farm made by the Meteorological Institute while identifying new areas shall be supplemented with any new knowledge in the strategic environmental impact assessment.

Electronic communications

- In the work of identifying new areas, the Norwegian Communications Authority considered radio lines that may be affected by offshore wind farms. For the strategic environmental impact assessment, this should be supplemented with any new knowledge.

Aviation

- Helicopter traffic in the proposed areas shall be described.
- The need for airways through the proposed areas shall be assessed.

Business and the travel industry

- Rough assessments shall be carried out as to how developing the identified areas may impact local and regional businesses, including the travel industry, employment and value creation.

Overall impacts

- The overall impacts of offshore wind energy production and other types of impacts shall be assessed for all topics in the assessment programme, both in the identified areas and other areas of influence. For natural diversity, an assessment shall be made as a part of this of the total burden, cf. section 10 of the Nature Diversity Act.