



Proposal for the assessment programme for 18 identified areas

On the pages below, you will find proposals for the strategic environmental impact assessment of all identified areas, with the exception of Sørvest F and Vestavind F.

A separate [assessment programme for Sørvest F and Vestavind F](#) has been proposed to allow for the awarding of new areas in 2025.

The points in the programme should be viewed in the context of [the Common guidelines for the strategic environmental impact assessment](#).

Proposal for the strategic environmental impact assessments programme

Before an area can be approved for offshore wind farms, a strategic environmental impact assessment must be carried out. Below are the thematic assessment points for the strategic environmental impact assessment of the identified areas that will be awarded for offshore wind energy production up to 2040.

Energy production and life cycle costs

- ♦ Estimated energy production for each of the identified areas shall be described. More specific conditions on technology in the calculations. The calculations shall be based on relevant meteorological and oceanographic conditions.
- ♦ An estimate of the energy cost over the life cycle (LCOE) for each of the identified areas should be made.

Energy system and network interface

- ♦ The consequences for the energy system of establishing offshore wind energy in the identified areas shall be assessed. Furthermore, the order in which the approval and awarding of the identified areas should happen in from an energy system perspective shall be assessed. The assessment should emphasise:
 - Guaranteeing the security of supply in the short and long term.
 - Potential developments of the energy system in Norway, the Nordic region and Europe, including the need for network improvements.
- ♦ Assessment of the network interface, including current onshore connection points and potential connection solutions. Furthermore, an assessment of the relative differential costs for the network interface for the identified areas, and an assessment shall be made as to whether parts of the areas will have higher costs than others. For identifying the areas, an overall analysis has been carried out which shall be supplemented with any new knowledge.
- ♦ For the identified areas, the potential for a co-ordinated network interface with other maritime businesses shall be assessed.
- ♦ For all identified areas, an overall assessment of the needs for the onshore network facilities shall be made, as well as the extent of these. Environmental and area-related impacts and concrete roads and facility locations shall not be clarified in this review. The

consequences of this will be clarified in relation to any allocating process and the subsequent licencing discussions.

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

The following shall be clarified:

- ♦ 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.
- ♦ 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 relevant to the identified areas shall be collated and used to assess the impacts on habitats in deep and shallow waters. 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.

Birds

- ♦ In the work on identifying areas for offshore wind energy production, an offshore wind energy-specific sensitivity index for seabirds was developed. For the strategic environmental impact assessment, this index shall be used to rank the identified areas according to their sensitivity to offshore wind farms, both for the risk of collision and displacement.
- ♦ Existing knowledge on bird migrations through Norwegian coastal and marine areas shall be collated and used to assess the impact on migratory birds during the development of offshore wind farms in the identified areas.
- ♦ Bullet points 1 and 2 shall be collated and provide an overall ranking of the identified areas with regards to birds.
- ♦ Existing knowledge on seabirds relevant to the identified areas shall be collated and used to assess the impacts on seabirds.

Marine mammals

- ♦ Existing knowledge on marine mammals relevant to the identified areas shall be collated and used to assess the impacts on marine mammals use of the areas for reproduction, feeding and migrating.

Fish and crustaceans

- ♦ Existing knowledge on fish and crustaceans relevant to the identified areas shall be collated and used to assess the impacts on fish and crustacean species during all stages of life.

Vulnerable species – general

- Existing knowledge on vulnerable species relevant to the identified areas shall be collated and used to assess the impacts on these, both at the seabed, in water columns and above the surface.

If there is insufficient knowledge of the impacts on natural diversity, it shall be clarified how the gap in knowledge can be narrowed, for example through the proposal for the mapping and monitoring programme.

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.

Aquaculture

- It shall be clarified whether and how areas that are recommended for approval for offshore aquaculture can co-exist with overlapping areas that have been selected for offshore wind energy production.

Petroleum and carbon storage

- In the identified 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 identified 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 identified 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 identified 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 assessed. 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 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 an identified offshore wind energy area shall be described and shown using maps and images.

Cultural heritage

- ♦ Cultural heritage sites and environments protected by law, individual protection orders, and more recent sites up to 30 kilometres from the identified 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.

Outdoor recreation

- ◆ Known and charted outdoor recreational areas and sailing routes 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.

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 identified areas, and whether there are particular challenges related to some of these.
 - A distinction should be made between suitable ports for fixed and floating foundations.

Radar

- ◆ In the work on identifying new areas, the Meteorological Institute has considered the consequences for weather radars that may be affected by offshore wind energy production. For the strategic environmental impact assessment, this should be supplemented with any new knowledge.

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 identified areas shall be described.
- ◆ The need for airways in the identified 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.