PLAYBOOK

Recommended practice for coexistence between fisheries and offshore wind

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FISKEBÅT

OFFSHORE NORGE

Fornybar Norge

Norges Fiskarlag

Nord Fiskarlag

Sør-Norges Fiskarlag

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Ver.1	13 April 2023	
Ver.2	29 April 2025	Export cable with infrastructure, definition of terms (2.3) and updates in relation to a new two-part structure in the document that separates the wind farm area (3.2) and export cable (3.3)

1 Summary

The purpose of this playbook/guideline is to show how to facilitate the best possible coexistence between fisheries and offshore wind in the development of offshore wind projects, within the sea areas already opened for offshore wind development by the authorities. The playbook is intended to be a practical handbook and reference book. It explains when and how the industries should engage in dialogue, involve each other, discuss, and collaborate during the development of offshore wind projects.

The four organisations Norges Fiskarlag (the Norwegian Fishermen's Association), Fiskebåt, Offshore Norge, and Sør-Norges Fiskarlag started work on the playbook in May 2022. The first version of the playbook was completed in May 2023 and revised in November 2023. This second version was prepared through dialogue and exchange of knowledge in 2024-2025. The playbook is a living document. It will develop and be adjusted as offshore wind continues to develop in Norway. There are also plans in place to continuously update the playbook, which will ultimately function as a guideline.

The playbook contains proposed activities relevant to initiate after sea areas have been opened for offshore wind development by the authorities. Specifically, it covers the period from when the authorities open the area, the announcement of competition for an opened area, until projects are under development and in operation, all the way through end of lifetime. The playbook is also relevant for projects awarded without competition, see the exemption provision in Section 2-3 of the Offshore Energy Act.

Installation of cables and other infrastructure that the offshore wind developer is responsible for (within opened wind power areas and up to the connection point) are also included in the playbook.

2 Introduction

In March 2022, the Norwegian Fishermen's Association, Fiskebåt and Offshore Norge appointed a working group to propose joint principles and practices for good coexistence between fisheries and offshore wind. In 2024, the group was expanded with members from Nord Fiskarlag, Sør-Norges Fiskarlag and Fornybar Norge (Renewables Norway). The working group's mandate is the following:

The working group shall prepare a playbook, uncover knowledge gaps, maintain an open dialogue across organisations and help create a meeting place for coexistence work.

The working group has been composed of representatives from the administration and representatives from the mentioned fishing organisations, as well as interest groups for offshore wind developers, Offshore Norge and Renewables Norway, as well as offshore wind developers: Deep Wind Offshore, Vårgrønn, Equinor and Mainstream Renewable Power. The Norwegian Transmission System Operator, Statnett, also participates in the group as an observer.

The preparation of this playbook has been an important part of the working group's efforts. Principal and overarching practices for good coexistence, which the industries agree should serve as the foundation, are described in a dedicated principles document. These apply to all plans and activities but are particularly important to consider in the first phase, where the authorities decide which areas to open for offshore wind development (Figure 1).

2.1 About the playbook

The purpose of this playbook is to facilitate the best possible coexistence between fisheries and offshore wind development, within the sea areas already opened for offshore wind by the authorities. The playbook is intended to be a practical handbook and reference for when and how the industries should engage in a dialogue, involve each other, discuss and collaborate in connection with the development of offshore wind projects. The industries must work together to identify, reduce and adjust plans and activities. This cooperation is essential to achieve the best possible coexistence. To ensure the recommendations are followed to the greatest extent possible, both industries are encouraged to share the contents of this playbook with their members, owners and subcontractors.

When making the playbook, the working group established an overview of relevant activities in different phases of the development of an offshore wind project, as well as the need for information sharing and cooperation between the offshore wind industry and the fishing industry. The playbook suggests when and how the industries should work together to prevent or reduce conflicts. It also explains how to support the best possible coexistence in areas open for offshore wind development.

The playbook is first and foremost a tool for offshore wind and fishing industry players. The contents may also be relevant for the authorities and others who wish to gain insight into how to best facilitate coexistence between fisheries and offshore wind.

The playbook builds upon the experience we have in Norway with cooperation and dialogue between the fishing industry and the oil and gas industry. To ensure the best possible coexistence between offshore wind, fisheries and nature, it is crucial to draw on the extensive and valuable knowledge that fishers have about the ocean, including important spawning and nursing grounds, as well as fishery activities.

The playbook is a living document that can be developed and adapted as offshore wind is developed in Norwegian waters. The first edition was completed in May 2023, and the second edition was completed in April 2025. The playbook is revised as needed.

2.2 Scope

The playbook contains proposed activities that can be initiated after relevant sea areas have been opened for wind power development by the authorities. Specifically, it covers the period from when the authorities open the area, the announcement of competition for an opened area, until projects are under development and in operation, all the way through decommissioning. The playbook is also relevant for projects awarded without competition, see the exemption provision in Section 2-3 of the Offshore Energy Act.

Offshore wind farms are expected to remain operational for 20-30 years. Activities related to lifetime extension, decommissioning and restoration will become relevant towards the end of the lifetime. As these activities still lie sometime in the future for the Norwegian projects, this version of the playbook does not cover this phase in detail.

Installation of radial connections (export cables) that the offshore wind developer[1] is responsible for (within open offshore wind areas and up to the connection point) is also covered in the playbook. This is discussed in Chapter 3.3. Planning, installation and operation of the offshore wind farm is described with measures in Chapter 3.2. If special infrastructure related to export cables is required, a dialogue concerning this should be clarified on a case-by-case basis, as the playbook is more oriented to the big picture.

1 If the grid solution is classified as a transmission grid, such as a potential hybrid, Statnett is responsible for the grid solution, and not the offshore wind developer.

2.3 Definition of terms

This section contains a list of terms used in the playbook. In addition to definitions, the following page contains good explanations and illustrations of components and processes relating to offshore wind: Guide to an offshore wind farm | An informative resource for offshore wind

Cable crossing

Cable crossing refers to points where a cable crosses another cable, pipeline or other seabed infrastructure. These points require special technical solutions to prevent damage and to minimise obstacles for fishing activities.

Cable installation

Cable installation involves placing the cable on/below the seabed, as well as cable protection.

Caution areas

Identified areas surrounding offshore wind installations where particular caution should be taken when conducting activities such as fishing and navigation, to reduce the potential risk of undesirable events. Caution is important to prevent collisions, as well as to prevent fishing gear from getting caught in the installations' foundations, anchoring or cable systems. These areas are established to maintain safety for operating personnel, fishers and other sea users.

Coexistence

Coexistence entails that the fishery industry, other commercial interests and offshore wind developers cooperate and adjust their activities to minimise any conflicts in relation to use of the sea areas.

Concession application

A concession application is a formal application submitted to the authorities for permission to develop and operate an offshore wind farm. This application includes information on project plans, environmental impacts and measures for coexistence with other interests, such as fisheries.

Converter station

A converter with associated equipment, such as a rectifier, converts the power from alternating current (AC) from the wind turbines, transforms and converts to direct current (DC) for transmission from the wind farm via the export cable to the power grid on shore. At the grid connection point, a converter station needs to transform the power back to alternating current. In the event of long distances between the wind farm and shore, it is more suitable to use direct current for power transmission.

Decommissioning

Decommissioning refers to the dismantling and removal of installations at the end of their lifetime.

Environmental monitoring

Environmental monitoring entails systematic observation and evaluation of environmental conditions in the vicinity of the offshore wind turbines. This can include surveys of marine ecosystems, fish populations and other environmental conditions.

Export cable

The export cable transmits electricity from the wind farm to shore, where it is connected to the rest of the power grid. The export cable includes power cable cores for power transmission and fibre cables and umbilicals for communication.

Fishery interests

This includes consideration for important spawning and nursing grounds, fish populations and fishing activities. Plans for good coexistence aim to safeguard the needs of the fishery industry and to reduce negative consequences from offshore wind developments.

Fishing activities

Fishing activities refers to all activities related to the catching of fish and other marine species. This includes commercial fishing, recreational fishing and fishing for research purposes, as well as the use of various tools such as trawls, nets, lines and traps. The fishing activity varies between different fisheries/populations, allowable quotas, zone access, tool selection, season/year and geographical area.

Infrastructure

In addition to the cable itself, cable infrastructure includes components such as junction boxes, cable protection systems and excavation for cable installation. These elements ensure safe and efficient transmission of power while simultaneously reducing the risk of any damage to cables.

Lifetime extension

Lifetime extension refers to measures that extend the operating lifetime for an offshore wind farm.

Marking

Offshore wind turbines and foundations shall be marked with light signals, lights, colours and similar to ensure they are always highly visible to mariners to maintain safety at sea or the safety of the facility, see Regulations relating to the marking and establishment of safety zones in connection with offshore renewable energy installations.

Measure

A measure is a planned action or process that is implemented to achieve a specific purpose, such as to reduce conflicts between offshore wind and fisheries, protect the environment or improve safety. Measures can include technical solutions, collaboration processes and activity schedules.

Notification

A notification is an early notice for authorities and affected parties that an offshore wind project is being planned. It provides an overview of planned activities and lays the foundation for a continued dialogue and consultations. Notifications for offshore wind projects are submitted to the Norwegian Water Resources and Energy Directorate (NVE) by the developer of the offshore wind project and are then submitted for consultation by NVE. The notification, along with a proposed impact assessment programme, shall be submitted to NVE six weeks following the award of area through either application or auction.

Offshore wind	Offshore wind refers to the generation of electricity using wind turbines installed at sea. This differs from traditional wind power, which is generated on land. Offshore wind projects benefit from stronger and more stable wind conditions at sea.
Opened area	An opened area is a sea area that the authorities have determined can be used for offshore wind development. This decision entails that the area has been assessed and defined as suitable for such activities based on various considerations, including the environment, fisheries and other users of the sea.
Overtrawlable cable	A cable that is protected and installed so that fishing can safely take place over it, without risk of damaging the cable or fishing gear. This is usually achieved by burying the cable or by using cable protection systems.
Project-specific impact assessment	A project-specific impact assessment is a comprehensive evaluation of how a planned project, such as an offshore wind farm, will impact the environment, natural resources, society and the economy. Impact assessments are required under the Offshore Energy Act and Offshore Energy Regulations. The assessment shall identify both positive and negative effects and propose measures to reduce any considerable negative consequences. The developer that is awarded areas has the exclusive right, for a limited time, to conduct the assessment and apply for a concession. The impact assessment accompanies the concession application that must be submitted two years after the project-specific impact assessment programme has been approved.
Radial connection	With a radial grid connection, the offshore wind farm is connected to one single area. All power generated in the wind farm is transmitted to this area.
Restoration	Restoration means restoring the area back to a condition as close as possible to the original state.

Safety zone

Safety zones are defined areas surrounding offshore installations in which there are restrictions on activities, such as fishing and shipping. To maintain marine safety or the safety of a renewable power plant, the Norwegian Coastal Administration can establish a safety zone for the offshore wind farm by issuing regulations.

Strategic impact assessment

A strategic impact assessment (SIA) is a wider assessment of environmental and societal conditions, including effects on other commercial interests, see Section 2-2 of the Offshore Energy Act. The SIA is conducted at an early stage. The goal of strategic impact assessments is to obtain a sufficient basis for making decisions to determine whether it is acceptable to establish offshore wind in the relevant areas based on environmental or other area and industrial interests.

Transformer station

A transformer station and associated equipment change the electrical voltage. The power generated in the wind turbine generators often needs to be transformed to a higher voltage for transmission from the offshore wind farm via the export cable to the onshore power grid.

Wind turbine

A wind turbine generally uses a rotor with three blades on a horizontal axis to convert kinetic energy from wind into rotational energy. The shaft transmits the rotational energy to a generator that converts rotational energy into electricity. The energy is transmitted to the wind farm's internal cables via a transformer. The turbine also contains control and monitoring systems. The turbine is located at the top of a tower that, for offshore wind, is attached to bottom-fixed or floating foundations, depending on water depth and technological solutions.

3 Playbook

3.1 Activities and measures for coexistence between fisheries and offshore wind

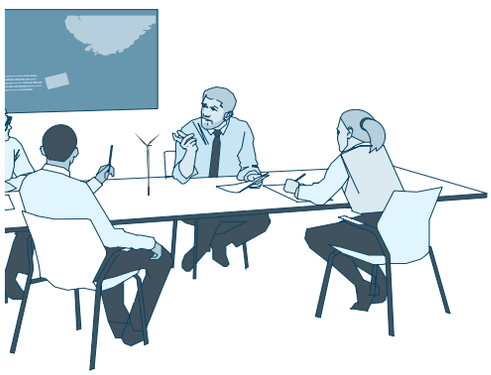
Key activities in the development of an offshore wind project have been summarised in phases. This includes the following[2]:

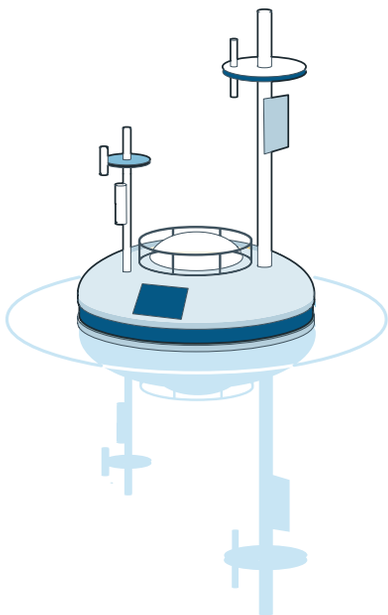
Phase 1: **Opening of areas for offshore wind development**
Phase 2: **Project development before the award of areas to offshore wind companies**
Phase 3: **Project development after the award of areas to offshore wind companies**
Phase 4: **Development and installation**
Phase 5: **Operation and maintenance**
Phase 6: **Lifetime extension, decommissioning and clean-up following end of lifetime**

The playbook does not cover *Phase 1 – opening of areas for offshore wind development*, as this process is governed by the authorities. However, the different organisations that prepared this playbook have prepared the Principles for coexistence for Phase 1, and it is recommended that this is used as a foundation for the processes relating to selection and announcement/opening of areas for offshore wind development in Norway.

Furthermore, the playbook contains activities and measures that are divided into what takes place in the actual offshore wind farm area (3.2) and what will take place along the export cable (3.3).

2 See this website for a more detailed description and illustrations of the different phases of offshore wind development: etoganoffshorewindfarm.com





1

Opening of areas for offshore wind development

The authorities decide which areas to open for offshore wind production.

2

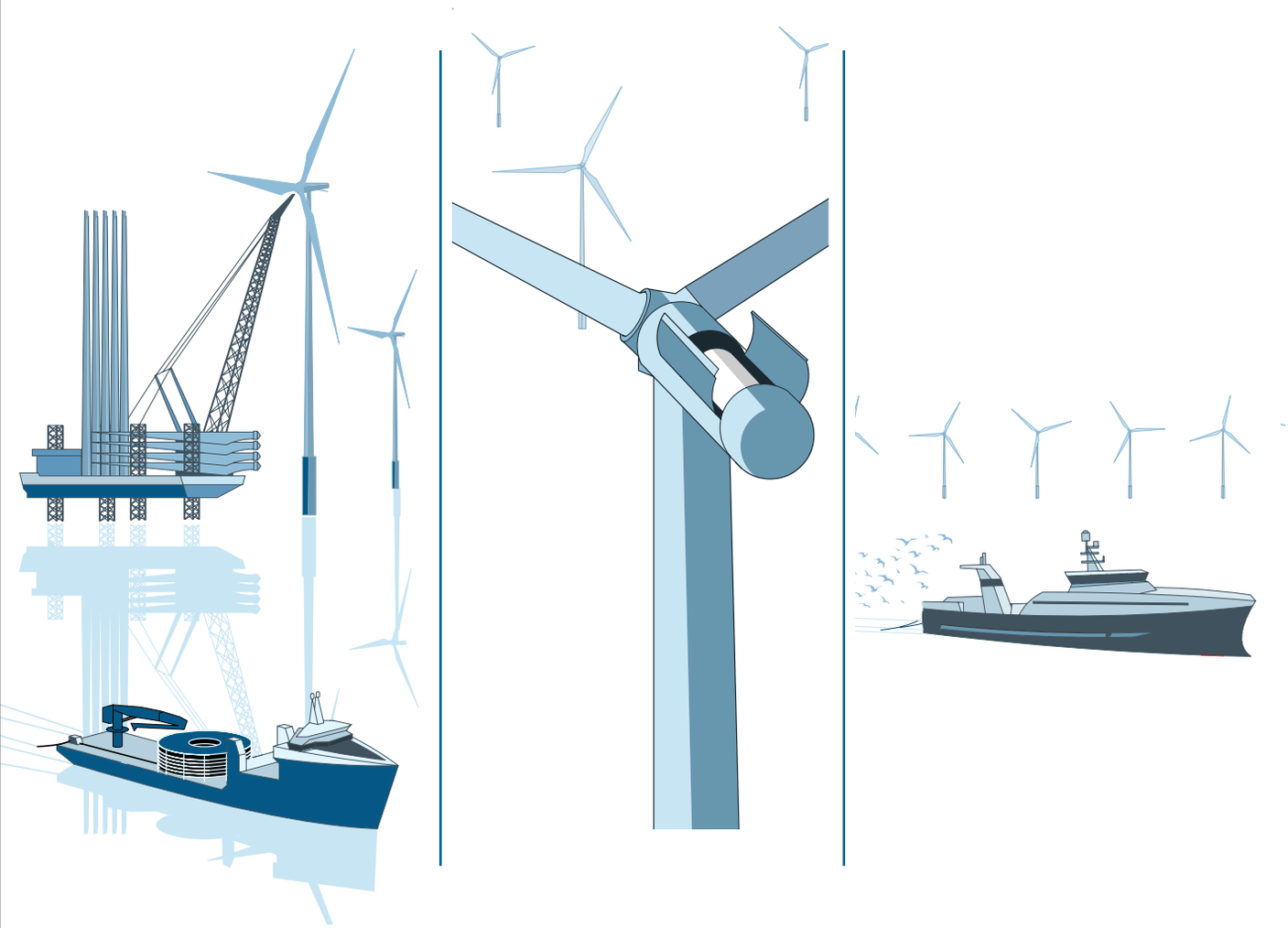
Project development - *before* the award of areas

Mature projects and develop preliminary coexistence plans.

3

Project development - *after* the award of areas

Preparation of project-specific impact assessment, including public consultation. Implementation of surveys.



4

Development and installation

Installation of cables, foundations, turbines, anchoring system (floating) and offshore transformer station, as well as export cable to shore.

5

Operation and maintenance

Operation and maintenance activities in the offshore wind farm. Implement routines for safety, preparedness and accident management.

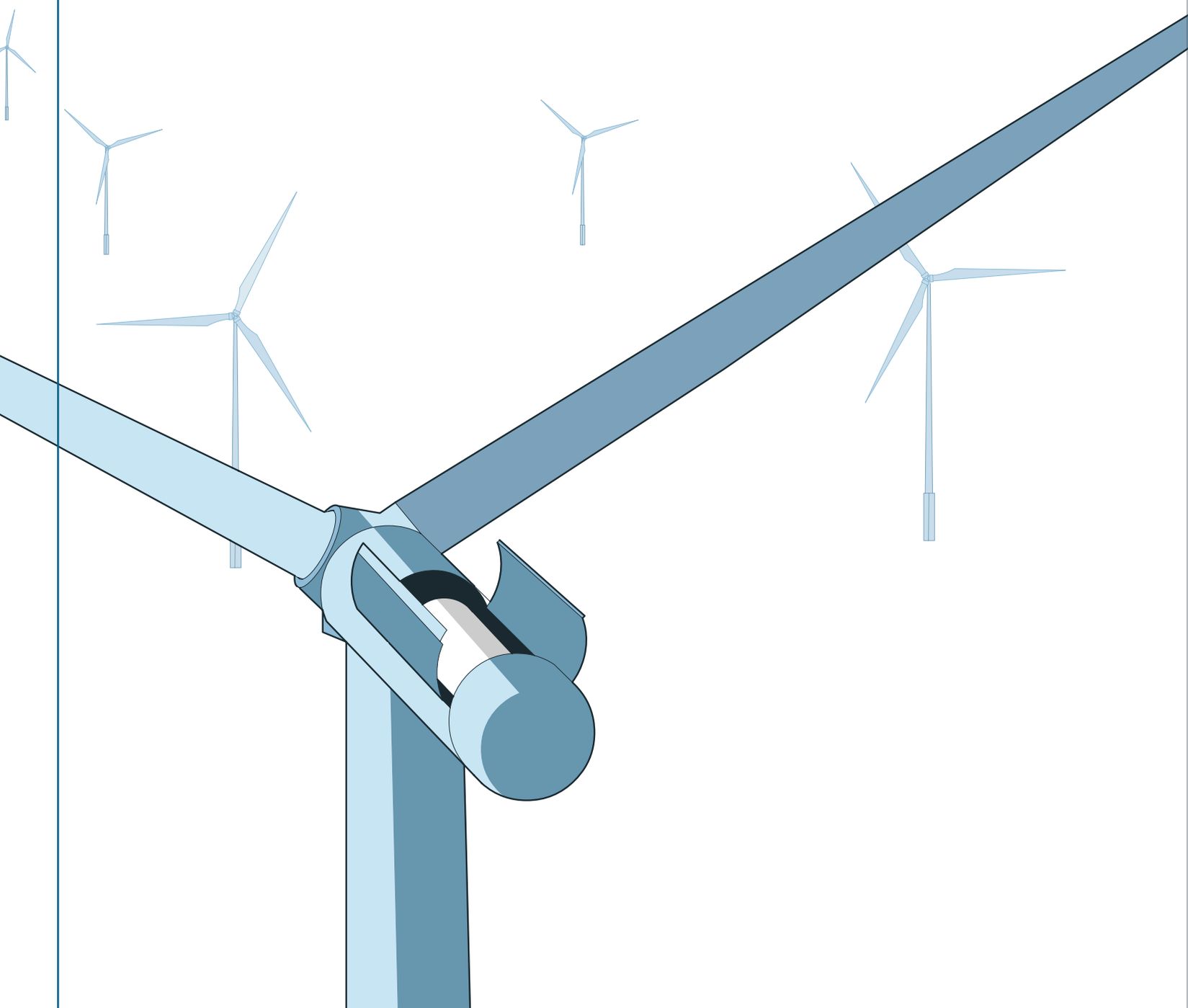
6

Lifetime extension, decommissioning and restoration following end of lifetime

Apply for lifetime extension. Implementation of plan for removal and measures for restoration.

3.2 Recommended measures for coexistence in and near the offshore wind farm

This section provides recommendations for measures that can contribute to good coexistence between fisheries and offshore wind in areas opened for development. The measures include recommendations on purpose, content, which players should be involved, timing and frequency, in addition to a description of important considerations and some tips and advice.



Measure:	**Dialogue and information sharing between offshore wind developers and the fishing industry on project plans, fishery activities and coexistence plans.**
Purpose:	Identify and delineate parts of areas where special consideration must be taken (for example important spawning and nursing grounds and fishing areas).
Content:	▪ Establish an overview of potential fishery activities and interests within the opened areas ▪ Map knowledge about spawning and nursing grounds and migration routes within the opened areas ▪ Presentation of preliminary plans from offshore wind developers, for both offshore wind farm and associated infrastructure ▪ Dialogue about plans for coexistence ▪ Utilise relevant platforms for information and data sharing.
Who:	Offshore wind developers contact the Norwegian Fishermen's Association (centrally), Fiskebåt, Sør-Norges Fiskarlag, Nord Fiskarlag and other potential fishery organisations. Where relevant, contact with local fishers should be coordinated with the central organisations.
Timing and frequency:	Early in the process, and then as needed.
Important considerations:	To the degree (coastal) areas for assembly and interim storage of offshore wind components have been identified, this should be included as a topic related to project plans. These areas must be clarified through municipal coastal zone planning processes.
Other advice:	▪ The possibility of joint information meetings following the opening of a sea area for offshore wind production should be considered (with participation from the Norwegian Water Resources and Energy Directorate (NVE), the Institute of Marine Research, Directorate of Fisheries, industry associations, affected fishers, etc.). ▪ Data from publicly available data sources should be used. Examples of such sources include the Directorate of Fisheries (Yggdrasil), Barentswatch / Fisk Info, Mareano or other sources, e.g. about foreign fishery activity in Norwegian waters. ▪ Contact persons for questions relating to coexistence between offshore wind and the fishing industry should be identified on respective websites or in another manner. ▪ For activities near the coast, the players must familiarise themselves with coastal zone plans and regulations in the area. ▪ Plans for coexistence may e.g. contain information related to area efficiency (installed capacity per area), anchoring, cable routes, preparedness, HSE/safety, environmental monitoring, knowledge acquisition, facilitation for clean-up and restoration after operation ends and potential R&D cooperation.

Measure:	Input to Notification – Concession application – Detailed plan
Purpose:	▪ Information sharing and dialogue to ensure that the Notification and subsequent Concession application include the necessary collection of knowledge about the area. ▪ Information sharing and dialogue to obtain input for the Concession application. ▪ Information sharing and dialogue to ensure the detailed plan delivers on the terms and conditions in the concession application.
Content:	▪ Present and obtain input for plans for designing offshore wind farms. ▪ Update knowledge about fishery interests in the area, e.g. relevant spawning and nursing areas, which species, potentially when fishing is conducted, etc., as well as sensitive periods for fish and fishery activity. ▪ Present and obtain input for coexistence plans, as well as follow up measures in the plan.
Who:	Offshore wind developers contact the Norwegian Fishermen's Association (centrally), Fiskebåt, Sør-Norges Fiskarlag, Nord Fiskarlag and other potential fishery organisations. Where relevant, contact with local fishers should be coordinated with the central organisations.
Timing and frequency:	Input for the Notification must be provided before the Notification is submitted (six weeks after award of project area). Input for applications should be ongoing and continue until submission of the concession application and detailed plan.
Important considerations:	Best available knowledge basis and surveys shall for the foundations for the project.
Other advice:	▪ It is appropriate that the Announcement indicate which notification system shall be used. ▪ Plan for coordinated surveys and infrastructure, to reduce impact. ▪ The Directorate of Fisheries and the Institute of Marine Research should also be included in the discussion concerning sensitive periods and subareas for marine species.

Measure:	Planning and conducting maritime activities
Purpose:	Share information about coastal and offshore activities in connection with surveys, construction and operation of offshore wind farms and associated infrastructure, plan to adjust these activities to ensure the best possible coexistence.
Content:	▪ Dialogue and information sharing about concrete plans for when, where and how long the activity will take place. This can include: o Surveys (nature, environment, geology and wind). o Installation of foundations and turbines, anchors (for floating turbines) and transformer or converter stations. o Operation and maintenance (wind turbines, cables and transformer/converter station). o Research and monitoring program. ▪ Update knowledge about spawning, nursing areas and migration routes within the relevant areas and obtain input about vulnerable periods for fish and fishery activity. ▪ Make use of relevant communication platforms/tools for information-sharing.
Who:	Offshore wind developers contact the Norwegian Fishermen's Association (centrally), Fiskebåt, Sør-Norges Fiskarlag, Nord Fiskarlag and other potential fishery organisations. Where relevant, contact with local fishers should be coordinated with the central organisations.
Timing and frequency:	Well in advance of conducting activity. Status updates should also be provided, for example in connection with changes in planned activities.
Important considerations:	Offshore wind developers are encouraged to share information on an ongoing basis with regards to activities that may be of significance for fishery activities in or near the wind farm.
Other advice:	▪ Foga.dk and Notice to Mariners in the UK are examples of how information about offshore wind activities is shared with fishers in other countries. Similar systems should be established in Norway. ▪ Data from publicly available data sources should be used. Examples of such data including the Directorate of Fisheries (Yggdrasil), Barentswatch / Fisk Info, Mareano or other sources, e.g. about foreign fishery activity in Norwegian waters.

Measure:	HSE and incident preparedness and response
Purpose:	Share information and cooperate on safety and preventing offshore incidents for personnel who conduct work associated with offshore wind farms, and transits through the area and/or fishing near the installations.
Content:	Early dialogue regarding best practice and safety and preparedness systems, as well as systems to prevent potential incidents.
Who:	Offshore wind developers contact the Norwegian Fishermen's Association (centrally), Fiskebåt, Sør-Norges Fiskarlag, Nord Fiskarlag and other potential fishery organisations. Where relevant, contact with local fishers should be coordinated with the central organisations.
Timing and frequency:	Continuously.
Important considerations:	▪ Developers must stay up-to-date with and follow applicable HSE regulations, regulations for marking facilities (Regulations relating to marking of renewable energy production facilities): https://lovdata.no/dokument/SF/forskrift/2016-09-15-1066/), including any safety zones and relevant standards for exchanging real-time information about offshore logistics, operations, maintenance, etc. ▪ Where best practices have been established, e.g. for marking facilities, such practices should be applied. ▪ Contacts for notification and rescue in the event of incidents in connection with the respective offshore wind farm shall be clarified, potentially also for necessary emergency shutdown of turbines.
Other advice:	BarentsWatch / FiskInfo may be relevant information platforms between the industries.

Measure:	Fishery activities in and around offshore wind farms
Purpose:	Clarify whether it may be possible to fish near or close to offshore wind installations.
Content:	▪ Dialogue and information about when and where the offshore wind turbines will be placed, including cables, anchoring systems, foundations, transformer/converter stations, etc, and assessment of possibilities for fishing in the areas. ▪ Dialogue about potential surveys and R&D activities related to fishery, the natural environment and/or oceanography in and around the wind farm.
Who:	In the project development phase, it is natural to maintain dialogue between the fishery organisations and the offshore wind developers regarding potential fishery activities in and close to offshore wind farms. During the operations phase, dialogue between the offshore wind developer and individual fishers who wish to fish in or around the offshore wind farm may be more relevant.
Timing and frequency:	Early stage of the project, well in advance of any potential fishing activities.
Important considerations:	▪ Very good safety practices are needed in the installation phase and in connection with major maintenance operations. In such cases, particular consideration shall be given to fishery activity in the area. ▪ Transit is generally accepted provided safety zones are avoided. ▪ Potential safety zones must be identified and marked/clearly communicated. Fishery activities can then normally take place at the outer edges of the offshore wind farm area.
Other advice:	

3.3 Recommended measures for coexistence along the export cable

This section lays out recommended measures that will contribute to good coexistence between fishery activity and offshore wind along cable routes linked to areas opened for development, from Phase 2 to Phase 5, as shown in Figure 1: Phases and activities in an offshore wind project. In the same manner as in Section 3.2, the measures include recommendations regarding purpose, content, which players should be involved, timing and frequency, in addition to a description of important considerations and some other relevant advice.

The measures build on what is described both in the Playbook and the Principles for coexistence but are not divided into measures according to phase or specific activity and therefore apply for all phases and activities in offshore wind development related to the export cable.

Measure:	Cooperation on route selection, installation, burying and protection of export cable
Purpose:	Ensure that the activities are carried out in a manner that safeguards both the export cable, fishery interests and the environment.
Content:	Cooperation and dialogue ▪ Early dialogue on route selection, including mapping and route surveys at a sufficiently detailed level. ▪ Early dialogue about the need for burying or covering export cables to ensure overtrawlability in areas with demersal fishery activity. ▪ In connection with planning, installation, burying and potential maintenance or repair of cables, it is important that developers establish dialogue with the fishery industry to attempt to avoid important fishing and spawning areas, and to avoid periods with a high level of fishery activity. ▪ Obtain up-to-date knowledge about spawning and nursing areas and migration routes within the specific areas and seek input regarding vulnerable periods for fish and fisheries. This shall form the basis for selecting the route and timing of the installation. ▪ Developers are responsible for ensuring that relevant information about activities such as cable installation, pilot surveys and maintenance are shared with affected parties. This should preferably be shared using existing map solutions and other relevant information channels commonly used in the fishery industry. Consideration during installation of cables ▪ Installation activities must be planned outside of important fishing periods. If this cannot be avoided, it is important to ensure the shortest possible construction period. ▪ Consider adapting installation and protection of cables according to the needs of the

	fisheries. Cables shall not be installed in such a way that they significantly obstruct fishery activity and must be made overtrawlable in areas with demersal fishery activity. ▪ Developers must strive to ensure that fishing can take place over the cable as soon as possible after installation. Route selection and coordination ▪ Consider whether new export cable installations can be coordinated with existing cables, pipelines and other infrastructure on the seabed. ▪ When crossing existing pipelines and cables, it is particularly important to ensure that the crossing points do not pose a significant obstacle for fishery activity and ensure crossing build-ups do not create significant trawl obstacles given local gear and vessel sizes. This must be assessed based on location, seabed conditions and, not least, relevant fishing gear and the size of vessels operating in the area. This must be specified, addressed and taken into consideration by the developer when selecting routes and ordering cable installation. ▪ If possible, the recommendation is to locate crossings of existing infrastructure outside active fishery areas and fishing routes. Environmental considerations and technical assessments ▪ Offshore wind developers are asked to include considerations for concentrated spawning areas in times of spawning for important populations when planning for installation of cables. In this context, it is also important to avoid undue disturbance to sensitive life stages (e.g., spawning and nursery periods). ▪ To ensure that the cables are buried deep enough, consideration must also be given to the type of cable (thickness, weight, copper/aluminium conductor, etc.). Such burying/protection of the export cables from wind farms to shore is also important to safeguard preparedness and security in the power grid.
Who:	Offshore wind developers contact the Norwegian Fishermen's Association (centrally), Fiskebåt, Sør-Norges Fiskarlag, Nord Fiskarlag and other potential fishery organisations. Where relevant, contact with local fishers should be coordinated with the aforementioned organisations.
Timing and frequency:	▪ Project development – prior to award of areas (Phase 2 in Figure 1). ▪ Updates in connection with changes in route or installation plans.
Important considerations:	▪ Spawning areas. ▪ Fishing areas. ▪ Overtrawlable cables. ▪ Strive to avoid cable crossings in important fishery areas. Minimise disadvantages for fishery activity where cables must cross other existing infrastructure on the seabed.
Other advice:	▪ Use spawning maps from the Institute of Marine Research apart from 30 nm safety zone for seismic surveys, and the Directorate of Fisheries' database of coastal fishery data. ▪ Where established best practices exist, for example for installation and protection of cables, such practices should be applied. ▪ Look to the established practices for installation of subsea cables and pipelines on the Norwegian continental shelf.

3.4 Detailed overview of phases and activities in an offshore wind project

The table below includes descriptions of common activities within various project phases in offshore wind projects. The descriptions are intended to provide more information regarding the phases as shown in Figure 1.

Project phase	Vanlige aktiviteter
Opening of new areas for offshore wind development	Strategic impact assessment including obtaining a foundation of technical data. The authorities decide which areas will be opened for offshore wind generation.
Project development – *before* award of area This phase includes processes after areas are opened and up to award of sub-areas after auction/ application, or through direct award. In this phase, there are often multiple players that are competing for one or more offshore wind areas.	▪ Developers start maturing projects prepare for prequalification and competition for area (application or auction). ▪ Develop preliminary plans for coexistence, in accordance with criteria stated by the authorities. ▪ Collect and analyse status of knowledge and available data about the area. ▪ Develop plans for coexistence in accordance with the authorities' requirements, including assessing the possibilities for fishery activity within the offshore wind farm area, in cooperation with the fishery organisations.
Project development – *after* award of area This phase includes maturing projects and work on project-specific impact assessment, concession application and detailed development plan. In this phase, a player has been awarded exclusive right to apply for a concession for a specific area.	▪ Developers prepare survey programs for project-specific impact assessments and submit notifications, which are then sent out for public consultation. ▪ Applications and implementation of relevant surveys (environment, wind resources, oceanography, geological and hydrographic seabed surveys including shallow seismic and surveys with autonomous vessels). ▪ Preparation of project-specific impact assessment, including public consultation. ▪ Planning of installation- and construction phase. ▪ Area planning and coordination between players with projects in the immediate vicinity (e.g. power to shore, coordination of studies, etc.).

Development and installation	▪ Fabrication and assembly at yard. ▪ Interim storage in ports and at sea (near the coast). ▪ Harbour activities and coastal and offshore logistics. ▪ Assembly at coastal- or offshore location (turbines and potential offshore transformer/converter station). ▪ Installation of anchoring system, cables, foundations, turbines and offshore transformer/converter station, as well as export cable to land. ▪ Marking of installations (e.g. lights, buoys, AIS etc.) in accordance with regulations. ▪ Start environmental monitoring in accordance with regulatory requirements and monitoring program. ▪ Plan operations and maintenance phase.
Operations and maintenance phase	▪ Implement operations and maintenance plans. ▪ Implement routines for safety, preparedness and management of potential accidents, in accordance with applicable regulations. ▪ Carry out relevant environmental monitoring and potential R&D activity. ▪ Major offshore maintenance with potential disconnection and tow-to-shore for floating turbines. ▪ Offshore logistics.
Lifetime extension, decommissioning and restoration after end of lifetime	▪ Application for lifetime extension, if relevant. ▪ Implement any necessary studies for application for lifetime extension. ▪ Decommissioning and clean-up. ▪ Restoration measures.

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