European Commission

Clean energy for EU islands Fejø: Environmental and Spatial Framework for Renewable Energy Projects

Clean energy for EU islands

Fejø: Environmental and Spatial Framework for Renewable Energy Projects

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Summary

In this report, the secretariat provides and overview of the legal framework for spatial and environmental planning in Denmark and explores the opportunities to develop wind turbines in selected sites in Fejø.

Spatial and environmental barriers

As a small island, most potential projects will be located in the coastal zone (§5a and §5b Planning Act and §15 Nature Protection Act) and in close proximity to protected land and marine areas, including Natura 2000. The island is mainly occupied by cultivated fields, with only two agglomerations of small size and a relatively flat terrain. The potential sites to develop wind turbines are primarily in Skalø and north-east of Østerby.

Municipal and local plans of Lolland Municipality that have been adopted on the island of Fejø can pose environmental and spatial obstacles to develop a wind turbine. Per plan we give an indication of the potential overlap with the possible sites for developing a wind turbine. The darker shades indicate a certain obstacle between the selected site and the plans. The lighter shades indicate a potential overlap which would need to be checked (i.e. by measuring the distance from the site). The actual risk and impact of this overlap would need to be calculated in an environmental impact assessment.

SITE (FIGURE 1)	NATURA 2000	COASTAL PROXIMITY AND DIKES	PROTECTED AREAS	RESIDENTIAL AND BUSINESS AREAS, SUMMER HOMES AND RECREATIONAL SITES	CHURCH

A	In the area	In the area		~2km	
B		In the area		~500m	
C		On the border	~1.3km	<500m	~1.3km
D				<500m	~2km
E				~500m	
F				~800m	

Based on these findings, site **C** has the most overlap with environmental and spatial obstacles. For this site the most local stakeholder engagement and discourse would be required in order to find an agreement including appropriate mitigation and compensation measures.

Sites **D, E** and **F** have the least overlap with environmental and spatial barriers but are the closest to local stakeholders who would need to be convinced. These neighbouring sites would need to agree on the construction of a wind turbine and may require compensations.

Sites **A** and **B** have the least overlap with environmental and spatial barriers. They are however the sites with most overlap with natural habitats. For this reason, the risks of building in these sites would need to accurately be measured in an environmental impact assessment, and proportional mitigation and compensation measures may need to be proposed. The database analysing bird migrations in the area (dofbasen.dk) can be used to measure the *actual* impact on birds and their habitats on the site where the wind turbine would be installed. A first analysis by the Island Transition Team shows that the impact on bird migration routes and nesting areas should be minimal. In this manner, a dispensation for building windmill in natural habitats may be requested. Whereas on paper these sites are protected, the Island Transition Team is familiar with how the habitats are managed in practice. For instance, despite the overlap with the coastal boundary and dike constructions, there is already existing farmland in these areas. For this obstacle, it is possible to request a dispensation to build within these boundaries if certain conditions are met.

Three elements in the municipal plan of Lolland Municipality do have an effect on the potential installation of wind turbines on the selected sites in Fejø:[1]

- The sites have not been included as designated wind turbine areas within the municipality.
  - This means that a separate permitting procedure needs to be initiated in order be able to start the project of developing new wind turbines in Fejø.
- Existing wind turbines may also not be replaced in accordance with section 11.8.15 of the municipal plan: "*Wind turbines outside the designated wind turbine areas for large wind turbines, cf. guideline 11.8.1, cannot be replaced. The municipal planning framework and the local plans for small wind turbines are repealed when the turbines are taken down*."
  - This means that the wind turbine in Skalø may not be replaced in accordance with the municipal plan. For this reason, additional permits and dispensations will need to be requested to build a wind turbine on the same site.
- The island of Fejø does not have a designated noise consequence zone.[2]
  - This implies that this element should not be a direct concern in obtaining permissions for installing wind turbines on the island.

[1] https://lolland.viewer.dkplan.niras.dk/plan/35#/6114
[2] https://lolland.viewer.dkplan.niras.dk/plan/35#/6107

Furthermore, the following points are of note concerning the development of new wind turbines under the Lolland Municipal Plan:[3]

- For larger windmills between 125 and 150 metres, Lolland Municipality has decided to increase the impact zone to 6 times the total height of the turbines instead of the legal requirement of a minimum of 4 times the total height of the turbines.
    - For the proposed wind turbines on Fejø this should not have an impact because the selected turbines are smaller than 125 metres.
- All wind turbine projects must comply with the applicable requirements for noise pollution, etc. at any given time.
    - Wind turbines must respect noise limits in accordance with the Statutory Order. The limits are:[4]
        - For dwellings, summer homes, etc.: 39 dB (wind speeds of 8 m/s) and 37 dB (wind speeds of 6 m/s)
        - For dwellings in open country: 44 dB (wind speeds of 8 m/s) and 42 dB (wind speeds of 6 m/s)
        - For both categories the limit for low frequency noise is 20 dB. The limit for low frequency noise applies to the calculated indoor noise level at both 6 and 8 m/s wind speed
- When planning for wind turbines closer to 28 times the total height of existing or planned wind turbines, the statement of the planning proposal must explain the impact of the facilities on the landscape, including explaining why the impact is considered insignificant.
- The EIA report for the new areas must clarify which existing wind turbines must immediately be taken down to create space for a new wind turbine project. The assessment must explain which existing wind turbines will possibly be able to remain standing for a shorter or longer transition phase.

Possibilities for mitigation and compensation measures

The environmental impact assessment procedure requires the preparation of an account of the construction project's expected significant impacts on the environment. This is an opportunity to measure the actual impact of a project in relation to protected areas. In addition to clarifying the environmental consequences of a project, the EIA process may also involve examining alternatives or changes to the project. It will depend on a specific assessment in the individual case to what extent conditions should be imposed for compensation measures.

One option for compensation is to propose **replacement nature** for the site on which the project is to be developed. The classification of replacement nature is considered a remedial measure that can help to maintain the ecological functionality. It is a requirement under the Habitats Directive that the replacement nature is established before the existing nature is destroyed, and there must be a high degree of certainty that the replacement nature works to a sufficient extent not to affect the population of the species in question.

[3] https://lolland.viewer.dkplan.niras.dk/plan/35#/6114
[4] https://eng.mst.dk/industry/noise/wind-turbines#regulationsonnoisefromwindturbines

Specifically with regards to spatial planning, the Renewable Energy Act offers **schemes for compensating local citizen** affected by renewable energy projects:

- Loss of value and sale option: the installer must pay for loss of value on a residential property, equal to the amount of the loss of value as a result of the construction of the renewable energy installation (§6 Renewable Energy Act).
- Renewable energy bonus scheme: the installers must pay an annual bonus to neighbours of the renewable energy installation within 200 metres of the project (§13 Renewable Energy Act).
- Green pool: the installer must pay a lumpsum per MW to the municipality where the plant is built, and the compensation is used for municipal activities and local projects (§14 Renewable Energy Act).

Other compensation measures have also been outlined outside of legislation. For instance, with regards to **local community engagement** in the green transition.

Examples of proposed and implemented mitigation and compensation measures in Denmark where wind turbine were developed in or near natural habitats areas include.

- **Reforestation**: plant new forests at ratios of 1:2 for the site itself and 1:1 nearby to restore ecological balance and provide new habitats for species.
- **Noise mitigation** for marine mammals: during construction, hydro sound dampers such as bubble curtains and other noise-reduction technologies used to limit underwater noise, which can disturb harbour porpoises and other marine life.
- **Buffer zones** for bird nesting areas: protected buffer zones of 3 kilometres were established around sensitive seabird nesting to minimise disturbance, particularly during the breeding season.
- **Bird detection systems**: to tackle bird collision risk a proposed mitigation factor for the risk of collision was the use of detection systems during the well-defined periods of bird migration using on radars and cameras/observers that inform birds are approaching.
- **Support for local conservation projects**: financial contributions were made to conservation initiatives aimed at restoring bird habitats in other parts of Denmark as compensation for potential impacts on migratory bird routes.
- **Operational and geographical restrictions**: restrictions in the flight path and during peak migration periods were introduced to minimise the risk of bird collisions.
- **Alternative habitat creation**: alternative feeding areas for birds have been maintained or enhanced nearby to reduce bird activity in close proximity to the wind farm.
- **Compensation measures for local residents**: neighbours will have the opportunity to apply for compensation for loss of value. This includes, among other things, a visit by a valuation authority, where the conditions in and around the property are thoroughly reviewed.
- **Plant maintenance**: maintenance of the care of new and existing planting takes place continuously, and especially in the first three to five years, until the plants have taken hold. The areas between and below the solar plant will be mowed with smaller lawnmowers once or twice a year, if these are not grazed by sheep as an alternative.

Introduction

In the third phase of the Clean energy for EU islands initiative, the secretariat provides technical support to 30 islands or groups of islands as part of their ambition to achieve 100% renewable energy by 2030.

As part of the technical assistance for the island of Fejø, the secretariat assessed the long-term energy production of wind farm projects on the island.[5] The results of this study were shared with the island transition team in June 2024. One of the conclusions of this report was the need for an environmental impact study. In this report, the secretariat provides and overview of the legal framework for spatial and environmental planning in Denmark and explores the opportunities to develop wind turbines in selected sites in Fejø.

This report is structured as follows:

- Section 1 explores the local context in Fejø and the opportunities to develop renewable energy projects.
- Section 2 provides an overview of the European legal framework for spatial and environmental planning.
- Section 3 provides an overview of the national framework for spatial and environmental planning including possible compensation measures, and renewable energy policies.
- Section 4 gives an overview of possible funding opportunities for the Island Transition Team.

[5] CE4EUI, 5 June 2024, "Long-term yield assessment Fejø Wind Farm, Fejø Island, Denmark"

1. Local context Fejø

The island transition team in Fejø wants to advance their energy transition towards becoming a CO_2-neutral island. The team aims to harness renewable energy such as wind, solar and geothermal energy, and to establish the necessary energy infrastructure and storage. More precisely, Fejø wants to develop two wind turbines on the island. However, the small island encounters several potential complications for the deployment of renewable energy infrastructure, among others, in the following acts:

- The EIA Act and its Executive Order: the project is subject to an environmental impact assessment.
- Natura 2000: designation of Natura 2000 areas on the island of Fejø limit the selection of sites to install wind turbines.
- The Nature Protection Act: the coastal protection lines on the island leave little land area to build on the island.
- The Planning Act: a rural zone permit will be required on grounds of §35 and permits will need to be requested to erect wind turbines on grounds of §11.
- Executive Order on technical certification and servicing of wind turbines: the selected wind turbines will need to fulfil the certification requirements on this Executive Order ensuring safety and health of persons and livestock, as well as the security of property on which the wind turbine will be installed.[6]

As a small island, most potential projects will be located in the coastal zone (§5a and §5b Planning Act and §15 Nature Protection Act) and in close proximity to protected land and marine areas, including Natura 2000. The island is mainly occupied by cultivated fields, with only two agglomerations of small size and a relatively flat terrain. There are a few roads that ensure that most of the dwellings on site can be accessed. Two existing wind turbines are located on the island:

- 1 wind turbine, located at the North of Østerby and consisting in 1 Wind World W2700 150 kW wind turbine with 30 m hub height,
- 1 wind turbine, located on Skalø island and consisting in 1 Vestas V15 55 kW wind turbine with 18 m hub height.

The potential sites to develop wind turbines are primarily in Skalø and north-east of Østerby. The possible sites indicated in Figure 1 below.

[6] In the secretariat's report from June 2024, it is also advised that once the island transition team identifies the preferred configuration of the wind turbine, the grid connection should be analysed together with the wind turbine manufacturer/provider.

Figure 1: Proposed sites for wind turbines in Fejø

6 wind farm configurations are being considered, for a total installed capacity of 2 to 3 MW:[7]

- Layout 0 (i): 1 Vestas V80 2 MW wind turbine with 80 m rotor diameter and 80 m hub height in Østerby.
- Layout 0 (ii): 1 Vestas V80 2 MW wind turbine with 80 m rotor diameter and 60 m hub height in Østerby.
- Layout 0 (iii): 1 Enercon E82 EP3 E4 3 MW wind turbine with 82 m rotor diameter and 78 m hub height in Østerby.
- Layout 0 (iv): 1 Enercon E82 EP3 E4 3 MW wind turbine with 82 m rotor diameter and 69 m hub height in Østerby.
- Layout 0 (v): Leitwind LWT80 1.8 MW turbine with 80.3 m rotor diameter and 65 m hub height in Østerby.
- Layout 1: 3 Vestas V52 0.85 MW wind turbines with 52 m rotor diameter and 55 m hub height in a first layout scenario, in Østerby and Vesterby.
- Layout 2: 3 Vestas V52 0.85 MW wind turbines with 52 m rotor diameter and 55 m hub height in a second layout scenario, in Østerby.
- Layout 3: 1 Vestas V80 2 MW wind turbine with 80 m rotor diameter and 60 m hub height, in Skalø.
- Layout 4: 3 Vestas V52 0.85 MW wind turbines with 52 m rotor diameter and 55 m hub height, in Skalø and Østerby.

[7] This overview is taken from the secretariat's report from June 2024.

1.1. Local and Municipal Plans

In this section we give an overview of the relevant municipal and local plans of Lolland Municipality that have been adopted on the island of Fejø. Per plan we give an indication of the potential overlap with the possible sites for developing a wind turbine.

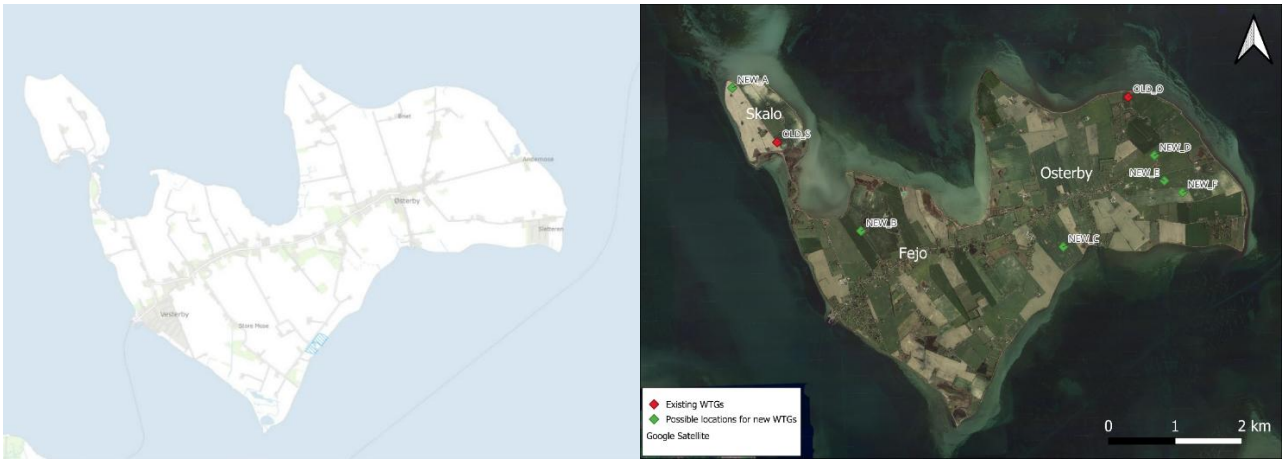

Figure 2: Protected areas[8]

Protected areas in Fejø are designated in the south of the island and do not overlap with the chosen sites to develop wind turbines. Based on an approximate measurement using Google Maps, site **C** is closest to this plan, and is approximately **1.3 km** away from the site, which is outside the noise and shadow restrictions. This would have to be measured precisely in an environmental impact assessment.

Figure 3: Residential and business areas, summer homes and recreational sites[9]

The municipal plans govern mixed residential and business areas as well as areas for public purposes, summer homes, and a recreational area. Based on an approximate measurement using Google Maps, site **A** is approximately more than 2 km away from these sites and does not fall within the noise and shadow boundaries. Sites **C** and **D** are less than 500 metres from the nearest neighbouring area. Sites **B**, **E**, and **F** are around 500 metres away from the nearest boundary of the residential, business, summer homes, and recreational areas. This means that for all these sites that are less than 1

[8] https://kort.lolland.dk/spatialmap
[9] https://kort.lolland.dk/spatialmap

kilometre away a constructive dialogue and agreement must be reached with those neighbouring areas. An exact measurement of the distance, the associated risks, and the agreements with the neighbours would need to be included in an environmental impact assessment. Additionally, dispensation and compensation measures may need to be proposed as part of the environmental impact assessment. In Skalø close to site **A** there is an existing summer home. For this residence the owner may need to give permission and be compensated.[10]

Figure 4: Natura 2000[11]

The two Natura 2000 sites: protecting birds and habitats, overlap for the island of Fejø. Skalø is entirely in the protected areas whereas the sites in Østerby are in the proximity of Natura 2000 areas. Site **A** is completely within this area. The other sites are nearby, but not on the border. An exact measurement of the proximity to this area, and its risks would need to be measured in an environmental impact assessment. For site **A** the risk and impact of building in the area would need to be assessed. Accordingly, proportional compensation measures may need to be proposed in order to install wind turbines in that area. For the other sites, an environmental impact assessment would need to conclude that there is no risk in installing wind turbines nearby.

[10] For more details on compensations measures please see section 1.4 of this report.
[11] https://danmarksarealinformation.miljoeportal.dk/

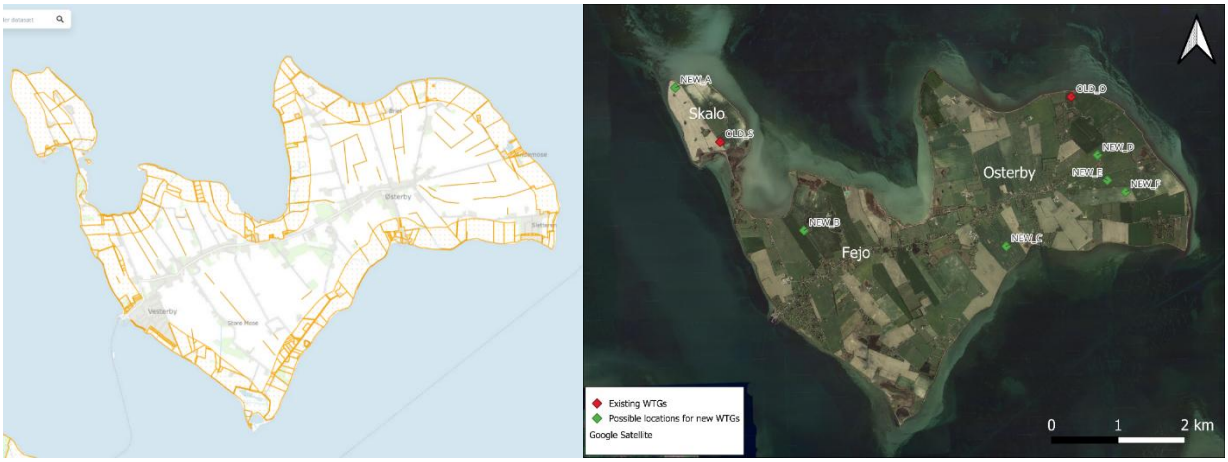

Figure 5: Coastal protection lines and dikes[12]

The coastal protection zone of 300 metres from the shore is visualised in the map above. Preferably wind turbines should be established outside of these zones. In selecting the site, the existing stone and dike constructions should also be considered albeit as a practical obstacle more than legal. Site **A** falls well within this zone. When measuring the distance of the sites with these boundaries using Google Maps, site **C** also falls within the coastal boundaries and site **B** is located on the border of this boundary. The distance of these sites from the boundary would need to be precisely measured in an environmental impact assessment. It is nevertheless possible to obtain a dispensation to build within these boundaries if certain conditions are met.[13]

Figure 6: Church boundaries[14]

No constructions can be built within the church boundaries as designated by the circle in the map above. Only site **C** and **D** appear to be in the proximity of this site. Based on an approximate measurement using Google Maps, the church boundary appears to be roughly **1.3 km** away from site **C** and **2 km** from site **D**.

[12] https://danmarksarealinformation.miljoeportal.dk/
[13] For more details on compensations measures please see section 1.4 of this report.
[14] https://danmarksarealinformation.miljoeportal.dk/

1.1.1. Summary

We summarise the potential obstacles per possible site in the table below. The darker shades indicate a certain obstacle between the selected site and the plans. The lighter shades indicate a potential overlap which would need to be checked (i.e. by measuring the distance from the site).

SITE (FIGURE 1)	NATURA 2000	COASTAL PROXIMITY AND DIKES	PROTECTED AREAS	RESIDENTIAL AND BUSINESS AREAS, SUMMER HOMES AND RECREATIONAL SITES	CHURCH
A	In the area	In the area		~2km	
B		In the area		~500m	
C		On the border	~1.3km	<500m	~1.3km
D				<500m	~2km
E				~500m	
F				~800m	

Based on these findings, site **C** has the most overlap with environmental and spatial obstacles. For this site the most local stakeholder engagement and discourse would be required in order to find an agreement including appropriate compensation measures.

Sites **D, E** and **F** have the least overlap with environmental and spatial barriers but are the closest to local stakeholders who would need to be convinced. These neighbouring sites would need to agree on the construction of a wind turbine, and may require compensations among others, conform the Renewable Energy Act.[15]

Sites **A** and **B** have the least overlap with environmental and spatial barriers. They are however the sites with most overlap with natural habitats. For this reason, the risks of building in these sites would need to accurately be measured in an environmental impact assessment, and proportional compensation may need to be proposed. The database analysing bird migrations in the area (dofbasen.dk) can be used to measure the *actual* impact on birds and their habitats on the site where the wind turbine would be installed. A first analysis by the Island Transition Team shows that the impact on bird migration routes and nesting areas should be minimal. In this manner, a dispensation for building windmill in natural habitats may be requested. Whereas on paper these sites are protected, the Island Transition Team is familiar with how the habitats are managed in practice. For instance, despite the overlap with the coastal boundary and dike constructions, there is already existing farmland in these areas.

1.2. More details on the plans

Other local plans from Lolland Municipality do not appear to be in conflict with the selected sites for the wind turbines:[16]

- Sport hall established in 1994

[15] For more information on this please see section 1.4 of the report.
[16] https://kort.plandata.dk/searchlist/#/search/0360/20/V

- Harbour Vesterby established in, 2001
- Ferry harbour at Landbolyst established in1987

All three plans have been adopted and are not located within the noise, shadow or natural areas vicinities from the proposed sites for the development of the wind turbines. Proposed local plans that have not (yet) been adopted in Lolland Municipality are not located on the island of Fejø.

Municipal plans must contain guidelines for the location of consequential areas around technical facilities, wind turbines, and noisy leisure facilities etc. in the land zone, which must be kept clear of new noise-sensitive use (§11a. sub. 1, no.29 Planning Act). Three elements in the municipal plan of Lolland Municipality do have an effect on the potential installation of wind turbines on the selected sites in Fejø:[17]

- The sites have not been included as designated wind turbine areas within the municipality.
  - This means that a separate permitting procedure needs to be initiated in order be able to start the project of developing new wind turbines in Fejø.
- Existing wind turbines may also not be replaced in accordance with section 11.8.15 of the municipal plan: "*Wind turbines outside the designated wind turbine areas for large wind turbines, cf. guideline 11.8.1, cannot be replaced. The municipal planning framework and the local plans for small wind turbines are repealed when the turbines are taken down*."
  - This means that the wind turbine in Skalø may not be replaced in accordance with the municipal plan. For this reason, additional permits and dispensations will need to be requested to build a wind turbine on the same site.
- The island of Fejø does not have a designated noise consequence zone.[18]
  - This implies that this element should not be a direct concern in obtaining permissions for installing wind turbines on the island.

Furthermore, the following points are of note concerning the development of new wind turbines under the Lolland Municipal Plan:[19]

- For larger windmills between 125 and 150 metres, Lolland Municipality has decided to increase the impact zone to 6 times the total height of the turbines instead of the legal requirement of a minimum of 4 times the total height of the turbines.
  - For the proposed wind turbines on Fejø this should not have an impact because the selected turbines are smaller than 125 metres.
- All wind turbine projects must comply with the applicable requirements for noise pollution, etc. at any given time.
  - Wind turbines must respect noise limits in accordance with the Statutory Order. The limits are:[20]
    - For dwellings, summer homes, etc.: 39 dB (wind speeds of 8 m/s) and 37 dB (wind speeds of 6 m/s)
    - For dwellings in open country: 44 dB (wind speeds of 8 m/s) and 42 dB (wind speeds of 6 m/s)

[17] https://lolland.viewer.dkplan.niras.dk/plan/35#/6114
[18] https://lolland.viewer.dkplan.niras.dk/plan/35#/6107
[19] https://lolland.viewer.dkplan.niras.dk/plan/35#/6114
[20] https://eng.mst.dk/industry/noise/wind-turbines#regulationsonnoisefromwindturbines

        - For both categories the limit for low frequency noise is 20 dB. The limit for low frequency noise applies to the calculated indoor noise level at both 6 and 8 m/s wind speed
    - When planning for wind turbines closer to 28 times the total height of existing or planned wind turbines, the statement of the planning proposal must explain the impact of the facilities on the landscape, including explaining why the impact is considered insignificant.
    - The EIA report for the new areas must clarify which existing wind turbines must immediately be taken down to create space for a new wind turbine project. The assessment must explain which existing wind turbines will possibly be able to remain standing for a shorter or longer transition phase.

1.3. Spatial and environmental restrictions

In this section we explore which spatial and environmental restrictions are specifically relevant for installing wind turbines in Fejø. Based on the overview of the municipal and local plans and relevant passages in national legislation, the specific spatial and environmental restrictions for installing wind turbines in Fejø are:

- The island is partly part of a Natura 2000 designated area.
- It is forbidden to place any turbines closer than 300 metres from the beach protection areas.
- It is forbidden to place a turbine closer than 4 times the total height of the turbine to dwellings.
- Noise regulations require that the chosen turbine to have several noise modes available, in case further acoustic impact studies require the wind turbine to be curtailed.

The restrictions concerning the Natura 2000 areas and the coastal protections zone are described in more detail below.

1.3.1. Natura 2000

The goal behind the Natura 2000 objectives is to stop the decline of nature in Denmark. The Natura 2000 plan is binding and serves as a basis for local authorities in their land management, nature management or when exercising their powers in accordance with the legislation. The Natura 2000 plan does not override other legislation, and the efforts undertaken to ensure the implementation of the plan must have the necessary permits, exemptions, and dispensations, on the basis of impact assessments, etc.

In Lolland Municipality, and specifically around Fejø, the Natura 2000 area consists of a good portion of the Småland waterway to the north, which via Guldborgsund is connected to the waters down to the sand ridges Rødsand and Hyllekrog to the south. The larger islands of Fejø and Femø in the Småland waters, however, are only included with the coastal stretches.[21]

Looking at the assessments in the three Natura 2000 planning cycles for the region of Smålandsfarvandet north of Lolland, Guldborgsund, Bøtø Nor, and Hyllekrog-Rødsand, salt marshes (*strandeng*) are the most important protected site. Salt marshes with their salt-tolerant plant species are typically found as elongated bands along the coastline. Several of the salt meadow plants only occur in Southeast Denmark. As depicted in the table below, the other habitat sites and species do

[21] https://mst.dk/media/lf3pwyht/173plan.pdf

not cover as significat a portion of the square metres in the Natura 2000 area. This is relevant to consider when looking at the impact building near or in a Natura 2000 area.

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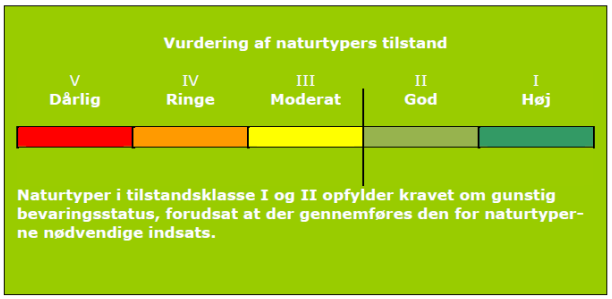
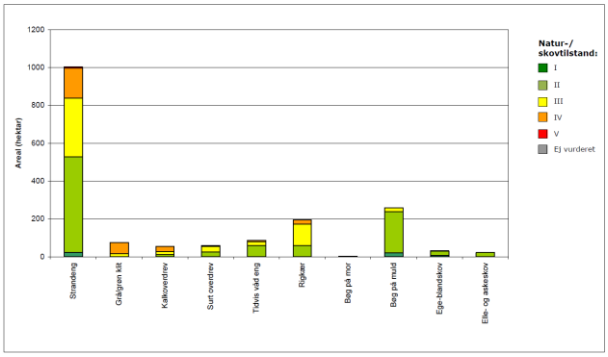
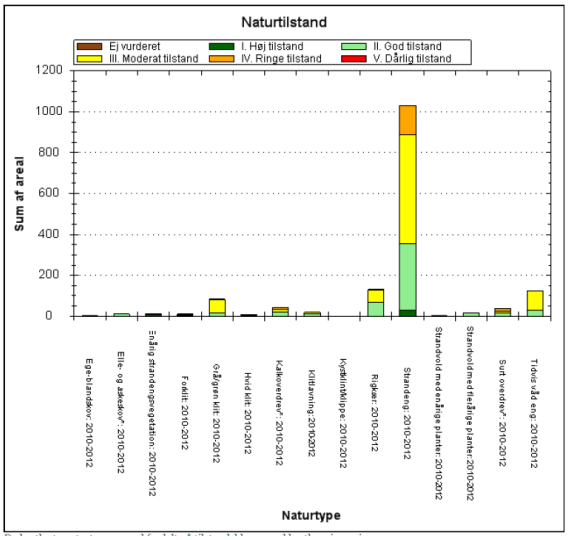


Natura 2000 Plan 2010-2015:



Natura 2000 Plan 2016-2021



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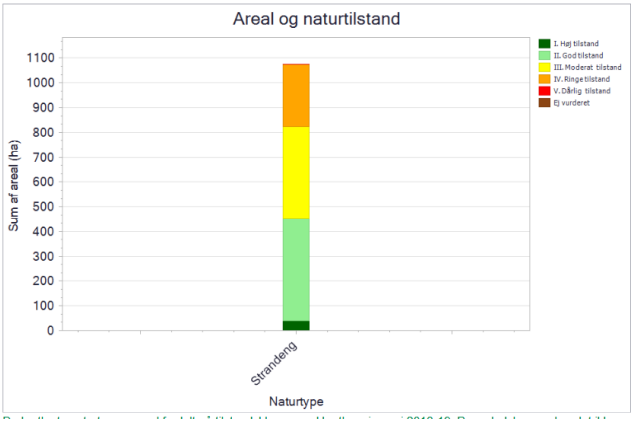
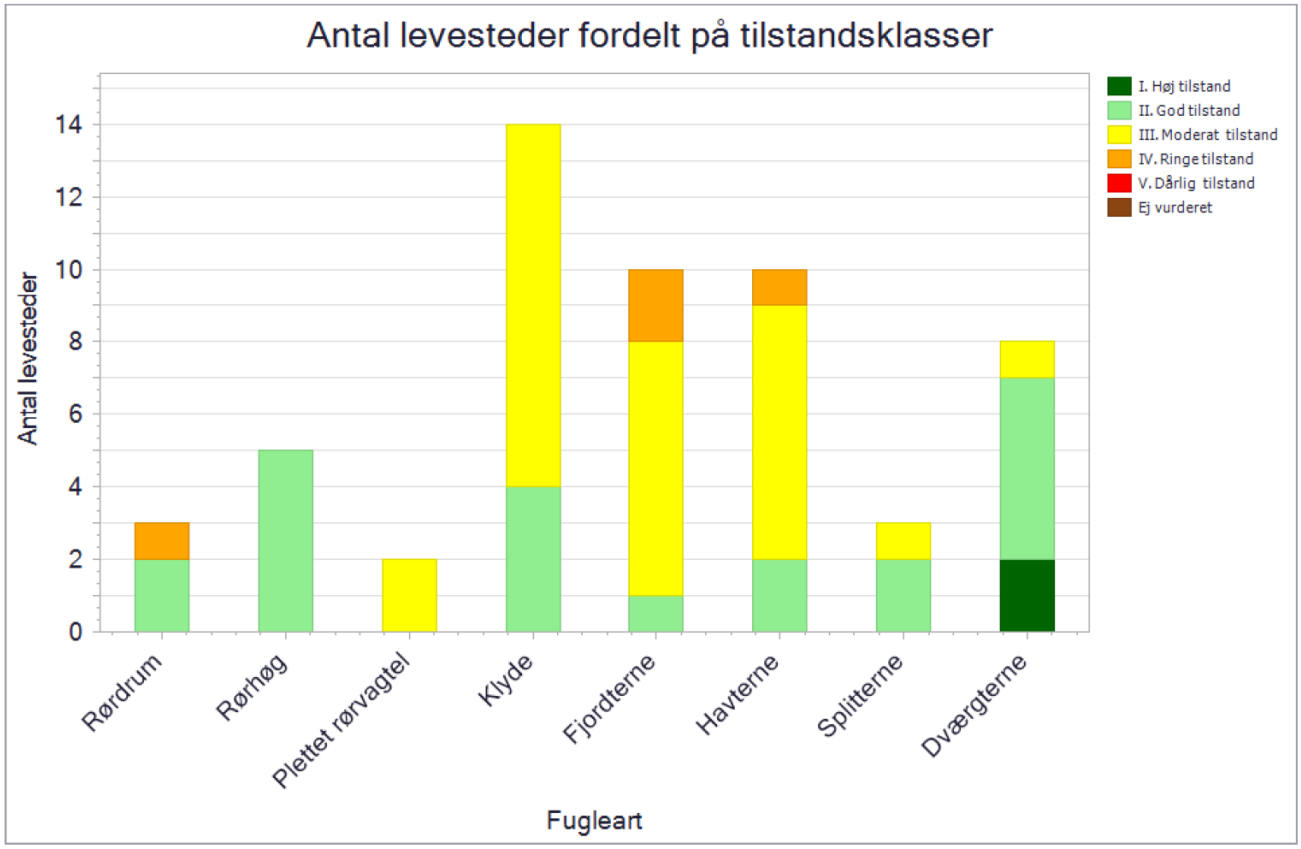


With regards to species, bird populations that use the islands as stopovers during migration seasons, are protected in the designated Natura 2000 areas:[22]

[22] https://edit.mst.dk/media/lmtb5dga/n173-natura-2000-plan-2022-27-smaalandsfarvandet-nord-for-lolland-guldborg-sund-boetoe-nor-og-hyllekrog-roedsand.pdf



- Water Clyde (*Klyde*): have moderate risks because locations are not isolated from terrestrial predators, which is why the risk of predation is considered to be the only current threat to the species' local breeding habitat.
- Common Tern (*Fjordterne*) and Arctic Tern (*Havterne*): there are especially problems with overgrowth, as terns build their nests in low grass some distance from the coastline.
- Little Tern (*Dværgterne*) and Splinters (*Splitterne*): need habitats to be unvegetated or with low vegetation and without disturbance.
- Marsh terrier (*Rørhøg*): requires high grass and forest areas to nest in safety from potential predators.
- Bittern (*Rørdrum*): requires large, continuous patches of reed beds, where the water level ensures that the nesting birds are very safe from any predators.
- Spotted Reed Tail (*Plettet rørvagtel*): require smaller areas with relatively high vegetation and moderate disturbance.

As a result of these designated areas, in particular the northwestern zone of the island, including Skalø, it can be challenging to get a permit for installing a wind turbine on those sites. This obstacle is made more difficult in light of the fact that there is no designated area for wind development in the region under the municipal plan, and due to the fact that the currently existing wind turbine

cannot be replaced at the same location. This also impacts the selection of the wind turbine that would be appropriate for such a site.[23]

The risks of installing a wind turbine in such a Natura 2000 area relate to bird populations that use the islands as stopovers during migration, and salt marshes. An environmental impact assessment would have to calculate the actual impact on the bird populations and the salt marshes. EIA reports for similar sites in Denmark have focused on mitigating any adverse impacts on birdlife by adjusting turbine locations and operation schedules to limit disturbance.[24]

1.3.1. Coastal restriction

The provision on the beach protection line was introduced in the Nature Conservation Act in 1937. Beach protection meant a ban on construction between the water's edge and 100 metres inland. Dune conservation aims to combat sand migration, since 1867. In 1992, this provision also became part of the Nature Protection Act and thus got the equivalent of the beach protection line, which also aims to secure natural and landscape values.

The coastal protection line was most recently extended by decision in 1999 from 100 metres to 300 metres. In order to provide more space for outdoor activities and tourism along the coasts, in 2017 the Danish Parliament adopted a relaxation of the Nature Protection Act. In summerhouse areas the coastal restriction line remains 100 metres.[25]

1.4. Opportunities to develop renewable energy installation

A site being marked as Natura 2000 does not automatically mean that renewable energy projects cannot be developed in these areas. In this section we give an overview of the possible mitigation and compensation measures for developing projects in nature sites in Denmark.

1.4.1. Exemption of the coastal restriction zones

It is possible to apply for an exemption from the coastal protection line at the Coastal Directorate of the Ministry for the Environment. Dispensations can only be granted for setting up wind turbines within dune protection and the beach protection line in special cases. Access roads, engineering buildings, wing projections etc. also require exemption. On grounds of §65b(2) Nature Protection Act, exceptions when it is necessary to realise a local or municipal plan for the development of wind turbines. The Board's decisions can be appealed to the Environment and Food Complaints Board.

In practice the exemption appears to be very restrictive. For example, in August 2024 the Board refused an application to build a wind turbine on the border of the coastal line where the blades would exceed the beach protection line.[26]

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[23] The secretariat's report from June 2024 concludes that, both V80 and V52 are not manufactured anymore, but are available as refurbished from Vestas itself (Refurbished Wind Turbines | Vestas). We cannot state on the suitability of the V110, which also has a 30-m longer (+38%) rotor diameter, with significantly higher visual impact and transport-related issues.

[24] For examples of mitigating measures, please see section 1.6 of this report.

[25] https://kyst.dk/kystzonen/strandbeskyttelse/ansoeg-om-dispensation

[26] https://kyst.dk/media/122larqa/23-04788-afslag-til-etablering-af-vingeoverslag-fra-vindmoelle.pdf

Nevertheless, exemptions do happen. In 2019 the Board approved the construction of wind turbines with blades over the beach protection line on the property in Lyngs in Struer Municipality. The reasons for approval include: [27]

- Building the wind turbine in this location was necessary to realise the municipality's local plan cf. §65b(2) Nature Protection Act.
- The environmental report assessed that the application did not have a significant impact on the Natura 2000 area.
- The environmental report assessed that the application did not have a significant impact on plant species or breeding and resting areas for the animal species listed in Annex IV of the Habitats Directive.
- Based on the analyses in the environmental report, the Danish Coastal Authority reached the same assessment.

1.4.2. Replacement Nature

Under the Danish Nature Package Agreement, it was established that natural areas can pose an obstacle for project development by businesses and public authorities. Room was created to look at possible compensation measures when developing projects in or near natural areas. Subsequently, in September 2018, a report from DCE, Aarhus University, was published highlighting the possibilities for creating replacement nature in relation to habitats and species.[28]

The report states that the establishment and location of the replacement nature can be done in collaboration between the landowner and the authorities, so that the establishment of new nature is targeted at areas where more coherent nature is desired.

Rules regarding replacement nature must be designed so that new nature is created that is larger/better in scope and quality than the area where the protection is lifted. It does not necessarily have to be the case that it is exactly the same habitat type that is established as the one for which the protection is lifted.

Aarhus University states that it is often also difficult to establish replacement nature of similar quality within a 30 to 50-year time horizon. This applies to grasslands, natural meadows, rich fens and heaths, salt marshes and dune habitats. There are additionally very large differences in how quickly species respond to the development of new suitable habitats and whether species are introduced once the habitats have been established. As such, Aarhus University recommends that replacement nature should be established well in advance of the original habitat being abandoned, so that animals and plants can spread to the new habitat and the replacement nature can meet the species' requirements as a habitat.

The report also summaries the relevant phases during a project for establishing replacement nature:

[27] https://kyst.dk/media/tpapdcvu/19-01866-dispensation-til-at-opfoere-to-vindmoeller-med-vingeoverslag-over-strandbeskyttelseslinjen_.pdf
[28] https://mst.dk/erhverv/rig-natur/naturbeskyttelse/3-beskyttede-naturtyper/etablering-af-erstatningsnatur

- **Preliminary study:** of the area that is to be closed down with a view to mapping which natural values exist and whether there are plant and animal species that should be sought to be moved.
- **Screening of suitable areas** to establish a replacement nature: it will typically be necessary to carry out screenings of suitable areas, mapping and preliminary investigations of the area, as well as obtaining the necessary permits from the authorities.
- **Dialogue and agreements with landowners**: any purchase price, compensation availability or land distribution can be a significant expense item.
- **Mapping initial costs**: for planning, preparation and construction, as well as possible relocation of species.
- **Long-term planning:** ensure observation and maintenance of nature conservation for a number of years.

1.4.3. Compensation schemes under the Renewable Energy Act

At the intersection of nature conservation and renewable energy projects, the Renewable Energy Act offers schemes for compensating local citizen affected by renewable energy projects:[29]

- Loss of value and sale option: the installer must pay for loss of value on a residential property, equal to the amount of the loss of value as a result of the construction of the renewable energy installation (§6 Renewable Energy Act). Alternatively, landowners can sell their property to the renewable energy plant owner if there is an estimated value loss of more than 1 per cent.
- Renewable energy bonus scheme: the installers must pay an annual bonus to neighbours of the renewable energy installation within 200 metres of the project (§13 Renewable Energy Act).
- Green pool: the installer must pay a lumpsum per MW to the municipality where the plant is built, and the compensation is used for municipal activities and local projects (§14 Renewable Energy Act).

1.4.4. Local stakeholder engagement

Other compensation measures have also been outlined outside of legislation. For instance, the Landdistrikters Fællesråd, a non-profit representing rural districts, recently published a guide on local community engagement in the green transition. The organisation proposes compensation measures that focus on engaging the local stakeholders.[30] Renewable energy project developers can offer:

- Annual compensation to the local community: instead of contributing to a green pool to the local authority, the sum can also be donated to a relevant local association closer to the ground.
- Cheaper electricity or local discount to local stakeholders of the energy generated from the renewable energy installation.

[29] More information on these schemes can also be found on the website of the Danish Energy Agency: https://ens.dk/ansvarsomraader/stoette-til-vedvarende-energi/fremme-af-udbygning-med-vindmoeller
[30] https://www.landdistrikterne.dk/wp-content/uploads/sites/5/2024/10/YIMBY-ONLINE-VERSION_FINAL_WEB.pdf

    - This solution has potential, but currently does not fit in the legal framework – there is mid- to long-term potential if legislation follows suit. Possibilities can be created for instance through sandbox regulation mechanisms.
- A higher compensation than that calculated by the municipality on the basis of the Renewable Energy Act
    - This provides a higher and faster compensation to neighbouring
- A local share (co-ownership) of the installation to local stakeholders providing and incentive in the project.

1.5. Examples of compensation measures

In this section we give examples of sites in Denmark where compensatory measures were implemented or proposed for wind turbine developments in or near Natura 2000 areas.

1.5.1. Østerild National Test Centre

In Thy, North Jutland, large wind turbines are being tested near Natura 2000 sites covering forests, coastal habitats, and the Veljerne bird sanctuary. Compensation measures for the testing site include:[31]

- **Reforestation**: the test site was instructed to plant new forests at ratios of 1:2 for the test site itself and 1:1 nearby to restore ecological balance and provide new habitats for species.
- **Wildlife and birds**: due to the distance from the nearby Natura 2000 sites, the risks for collisions with birds and wildlife were deemed minimal, as such no mitigation measures were necessary.

1.5.2. Kriegers Flak and Kattegat Offshore Wind Farm

Kiregers Flak is an offshore wind farm in the Baltic Sea, near Natura 2000 marine sites designated for harbour porpoises and seabirds. The project impacts bird migration routes and marine mammals, particularly due to underwater noise and the risk of habitat disruption. In the environmental impact assessment for this wind farm, several compensation measures are proposed:

- **Noise mitigation** for marine mammals: during construction, hydro sound dampers such as bubble curtains and other noise-reduction technologies should be used to limit underwater noise, which can disturb harbour porpoises and other marine life. [32]
- **Buffer zones** for bird nesting areas: protected buffer zones of 3 kilometres were established around sensitive seabird nesting to minimise disturbance, particularly during the breeding season.[33]
- **Bird detection systems**: to tackle bird collision risk a proposed mitigation factor for the risk of collision was the use of detection systems during the well-defined periods of bird migration using on radars and cameras/observers that inform birds are approaching.

[31] https://ens.dk/sites/ens.dk/files/Globalcooperation/report_on_oesterild_test_centre_-_lessons_learned.pdf
[32] https://ens.dk/sites/ens.dk/files/Vindmoller_hav/miljoerapport_kattegat-kriegers_flak_ii_-_bilag_1_n2000_vaesentlighedsvurdering.pdf
[33] https://ens.dk/sites/ens.dk/files/Vindenergi/kriegers_flak_offshore_wind_farm_eia_birds_and_bats_technical_report.pdf

- **Support for local conservation projects**: financial contributions were made to conservation initiatives aimed at restoring bird habitats in other parts of Denmark as compensation for potential impacts on migratory bird routes.

1.5.3. Nørrekær Enge Wind Farm

The windfarm is established near Nørrekær Enge, North Jutland, close to the Natura 2000-protected Limfjorden area, which is a significant habitat for migratory and breeding birds. Compensation measures include:[34]

- **Operational and geographical restrictions**: restrictions in the flight path and during peak migration periods were introduced to minimise the risk of bird collisions.
- **Alternative habitat creation**: alternative feeding areas for birds have been maintained or enhanced nearby to reduce bird activity in close proximity to the wind farm.

1.5.4. Dalsgaard Solar park

Solar panels are being installed at Dalsgaard near Natura 2000 sites protecting lakes and the following animals: marsh snail, sea lamprey, brook lamprey, river lamprey, stick herring, large newt, porpoise, otter, spotted seal and mosquito flower. Compensation measures from the environmental impact assessment include:

- **Compensation measures for local residents**: neighbours will have the opportunity to apply for compensation for loss of value. This includes, among other things, a visit by a valuation authority, where the conditions in and around the property are thoroughly reviewed.
- **Plant maintenance**: maintenance of the care of new and existing planting takes place continuously, and especially in the first three to five years, until the plants have taken hold. The areas between and below the solar plant will be mowed with smaller lawnmowers once or twice a year, if these are not grazed by sheep as an alternative.

1.6. Proposed next steps

Of the possible sites the sites with the least obstacles and with the most potential for compensation measures will need to be selected by the island transition team. All wind turbine projects (except single turbines less than 25 metre high and placed in the rural zone) must undergo an EIA screening. Solar PV installations must be screened if they are considered to be industrial facilities producing electricity (§16 SEA and EIA Act). In the application it may be useful to already speak to relevant local stakeholders.

1.6.1. Environmental impact assessment

The assessment of the environmental effects of a renewable energy project should normally be prepared in the form of an environmental report. The environmental report will contain both an EIA report (assessment of the effects on the environment of the project itself) and an environmental assessment of the planning basis (local plans and municipal plan supplements) for the wind turbine

[34] http://apps.aalborgkommune.dk/images/teknisk/PLANBYG/miljoevurdering/10/Kp10-007_Lp10-7-101_Miljoerapport08-side165-185.pdf

project. The assessment of the project's impact on Natura 2000 sites must be sufficiently documented and clearly show that the project will not damage Natura 2000 areas.

The municipality is responsible for conducting the EIA process and preparing an EIA study. After at least eight weeks public consultation on the study and the plan proposal(s), the municipal council decides whether and on which conditions an EIA permission can be granted. The granted permission must be used within three years (§§ 17, 35 and 39 SEA and EIA Act).

1.6.2. Who to talk to

At a recent conference with ESIN we spoke to Kirsten Sydendal who mentioned that there is a new head of the Technical and Environmental department (*Teknik og Miljømyndighed*) at the municipality of Lolland.[35] He has experience in real estate development and strategic lighthouse projects in the municipality.[36] This may be a good person to speak to and may be potentially open to discussing the wind turbine projects in Fejø.

Additionally, the island of Venø will also require dispensation. Venø is also one of the 30 for 2030 islands. It may be beneficial to combine efforts in the environmental impact assessment, but also in increasing political focus on need for softening rules and regulation at national level. The secretariat can also support this via Søren Hermansen and the Samsø Energieakademie.

[35] https://www.lolland.dk/om-kommunen/organisation/teknik-og-miljoemyndighed
[36] https://via.ritzau.dk/pressemeddelelse/14061603/ny-sektorchef-til-teknik-og-miljo-i-lolland-kommune?publisherId=3984657&lang=da

2. Legal framework: Europe

The European Union's framework for environmental and spatial planning integrates environmental protection and sustainable development through several regulations and directives. The objective is to balance economic development with the need for sustainable land and resource use, aligning with EU-wide goals, such as those outlined in the European Green Deal.

The multi-layered approach enables the EU to integrate environmental considerations into its spatial planning efforts while pursuing its overarching goals for sustainability and green growth.

The EU's environmental policy is grounded in **Articles 191-193** of the **Treaty on the Functioning of the European Union** (TFEU). These articles establish the EU's responsibility to preserve, protect, and improve the quality of the environment, ensure sustainable development, and promote international action on environmental challenges.

Key principles in EU environmental law include:

- **Precautionary principle**: Preventing environmental harm when scientific uncertainty exists.
- **Polluter-pays principle**: Those who pollute should bear the costs of environmental damage.
- **Sustainability**: Ensuring that economic growth does not come at the expense of environmental degradation.

While many of these frameworks establish obligations, enforcement largely remains a national responsibility. However, EU law mandates effective enforcement mechanisms, with judicial oversight and public access to environmental information facilitated by the **European Environment Agency (EEA).**

2.1. Overview relevant directives and policies

Spatial planning works as a critical mechanism that integrates land use, environmental protection, and sustainable development. This system allows EU Member States (MS) to coordinate efforts to preserve natural landscapes, protect biodiversity, manage urban growth, and mitigate climate change impacts.

Spatial planning frameworks vary across countries but are increasingly guided by **EU legislation** and regulations to ensure consistency and environmental safeguarding across the Union. Directives such as the SEA, EIA, and the Habitats Directive ensure that planning processes are environmentally sustainable and that land use decisions do not compromise biodiversity or ecosystem services.

Spatial planning in the EU falls under national competence but is heavily influenced by several EU directives and environmental policies. These legislative tools aim to harmonise Member States' planning efforts, especially in terms of cross-border environmental impacts.

2.1.1. European Spatial Development Perspective (ESDP)

The **ESDP** (1999) is a key non-binding policy document that introduced the concept of balanced and sustainable spatial development across the EU. Although not legally enforceable, it encourages MS

to consider territorial cohesion, sustainable development, and environmental protection when planning. The ESDP aims to:

- Reduce territorial imbalances between urban and rural areas.
- Promote environmentally sustainable urban development.
- Encourage efficient resource use.

2.1.2. Territorial Agenda 2030

The **Territorial Agenda 2030**, adopted in December 2020, is an updated framework that builds on the ESDP. It highlights territorial cohesion and sustainable development, emphasising the importance of spatial planning in achieving the **European Green Deal** objectives. The document focuses on:

- Climate action through sustainable spatial development.
- Resilient and inclusive regional planning.
- Protecting ecosystems and biodiversity in land use decisions.

2.1.3. Strategic Environmental Assessment (SEA) Directive

The **SEA Directive** (Directive 2001/42/EC) requires environmental assessments for certain public plans and programmes, particularly in sectors like transport, energy, and agriculture. The assessments help integrate environmental considerations early in planning and decision-making processes. The directive ensures that environmental consequences are considered in the early stages of planning. It applies to public plans and programmes that may impact the environment, requiring assessments for sectors such as agriculture, forestry, fisheries, energy, transport, and urban development. The SEA process aims to:

- Integrate environmental objectives into spatial planning.
- Evaluate the cumulative environmental effects of large-scale land use changes.
- Ensure public participation and transparency in planning.

By doing so, the SEA Directive helps protect ecosystems from large-scale infrastructure projects or urban sprawl that could disrupt natural habitats.

2.1.4. Environmental Impact Assessment (EIA) Directive

The **EIA Directive** (Directive 2011/92/EU, as amended by 2014/52/EU) mandates assessments for projects likely to have significant environmental impacts before they receive approval. Examples include infrastructure projects like airports, highways, and energy facilities. Any project that may significantly affect the environment due to its size, nature, or location requires an EIA. The directive mandates:

- Rigorous assessment of environmental effects, including on biodiversity, air quality, land use
- Stakeholder and public consultation
- Consideration of alternatives to reduce environmental impact

This ensures that significant developments, such as industrial sites or transportation infrastructure, do not proceed without comprehensive environmental assessments.

2.1.5. Habitats and Birds Directives

Spatial planning must also comply with the **Habitats Directive (92/43/EEC)** and the **Birds Directive (2009/147/EC)**, which form the cornerstone of the **Natura 2000** network. This network of protected areas spans across the EU and aims to safeguard habitats and species. Any spatial plans affecting Natura 2000 sites require strict environmental assessment and mitigation measures to ensure that:

- Biodiversity is preserved.
- Development does not compromise the ecological integrity of these sites.
- Appropriate land-use practices are implemented in and around protected areas.

These directives ensure that spatial planning does not lead to the degradation of Europe's most valuable and vulnerable ecosystems.

2.1.6. Waste Management and Circular Economy

The **Waste Framework Directive** (Directive 2008/98/EC, as amended) establishes a waste hierarchy that prioritizes waste prevention, reuse, recycling, and recovery before disposal. This framework is crucial for promoting the EU's circular economy goals, focusing on resource efficiency and waste reduction. Additional sector-specific regulations like the **Waste from Electrical and Electronic Equipment (WEEE)** and the **End-of-Life Vehicles Directive** also shape waste management strategies in the EU. Notably, revisions to the **Waste Framework Directive** are advancing to address pressing issues like textile and food waste.

2.1.7. Maritime and Marine Spatial Planning

Spatial planning in the EU is closely linked to environmental objectives. The **Maritime Spatial Planning (MSP) Directive** (Directive 2014/89/EU) provides a framework for coordinated maritime space use, supporting sustainable maritime growth while ensuring environmental protection. It ensures that human activities at sea, such as shipping, fishing, and renewable energy development, are coordinated to reduce conflicts and protect marine ecosystems. This is aligned with other environmental frameworks such as the **Marine Strategy Framework Directive (MSFD)**, which promotes the sustainable use of marine resources.

2.1.8. Water and Air Quality Directives

The **Water Framework Directive** (Directive 2000/60/EC) sets out goals for achieving "good" status for all water bodies, addressing water quality and ecological health. Similarly, air quality is managed under the **Ambient Air Quality Directive** (Directive 2008/50/EC), which sets pollutant limits to protect public health and the environment. The **Industrial Emissions Directive** continues to regulate emissions from large industrial facilities, reinforcing sustainable industrial practices.

2.1.9. Urban Planning

EU spatial policies promote compact urban development to avoid urban sprawl, which can lead to habitat fragmentation and increased carbon emissions. The **Urban Agenda for the EU** supports green infrastructure, nature-based solutions, and sustainable urban mobility. Cities are encouraged to develop green belts, maintain urban biodiversity, and reduce their environmental footprint.

2.1.10. Flood Risk Management and Spatial Planning

The **Floods Directive (2007/60/EC)** requires Member states to assess and manage flood risks, particularly in areas vulnerable to climate change. Spatial planning plays a role in flood risk management by regulating land use in flood-prone areas, promoting natural flood management solutions like restoring wetlands and avoiding construction in high-risk zones.

2.1.11. Cross-Border Cooperation in Spatial Planning

Spatial planning is not limited to national boundaries. The EU promotes cross-border cooperation, especially in regions where environmental issues transcend national borders. Instruments like the **Interreg Europe Programme** support joint planning initiatives between EU MS, focusing on:

- Cross-border environmental conservation
- Coordinated spatial planning in transnational regions, such as river basins
- Sharing best practices for sustainable land use and environmental protection

2.1.12. Climate Change and Spatial Planning

With climate change becoming a central concern, spatial planning must address climate resilience and adaptation. The EU **Climate Adaptation Strategy (2021)** stresses the importance of incorporating climate risks into spatial planning. This includes:

- Resilience to extreme weather events such as floods and droughts.
- Protecting coastal zones from sea-level rise.
- Ensuring urban and rural planning that reduces greenhouse gas emissions and enhances carbon sinks, like forests and wetlands.

The **European Green Deal** (EGD) is the EU's flagship policy aimed at making Europe the first **climate-neutral continent by 2050**. It lays out a comprehensive strategy to address climate change, biodiversity loss, and environmental degradation while fostering economic growth. The EGD includes a strong emphasis on conserving biodiversity, halting ecosystem degradation, and restoring natural areas. For the context of **spatial planning and environmental protection**, the EGD ultimately shapes land use, infrastructure development, urban planning, and nature conservation across MS.

2.2. Natura 2000

Natura 2000 is the largest coordinated network of protected areas in the world, extending both on land and at sea across all 27 EU Member States. It plays a central role in the European Union's spatial planning framework, particularly where environmental protection is concerned. The network aims to safeguard Europe's most valuable and threatened species and habitats, contributing significantly to biodiversity preservation and sustainable land use.

Natura 2000 covers nearly 18% of the EU's terrestrial area and over 9% of its marine area. It consists of two types of protected sites:

- **Special Areas of Conservation (SACs)**: Established under the **Habitats Directive (92/43/EEC)**, SACs protect various habitat types and species considered of European importance.
- **Special Protection Areas (SPAs)**: Created under the **Birds Directive (2009/147/EC)**, SPAs focus on the conservation of endangered and migratory bird species.

Natura 2000 is not a strict nature reserve system where all human activities are excluded. Instead, the approach is integrated with the **sustainable management** of land and resources, balancing conservation needs with human activities such as agriculture, forestry, and tourism.

In this context, any spatial plan, programme, or project that may have an impact on a Natura 2000 site must undergo rigorous environmental assessment procedures. These assessments ensure that:

- Any negative impacts on habitats and species are identified early.
- Alternatives are explored, and mitigations or compensations are proposed.
- Public participation and consultations with relevant stakeholders (local communities, environmental NGOs, etc.) are integrated into the planning process.

For example, urban development projects near Natura 2000 sites must demonstrate that they will not disrupt species' migration corridors or fragment key habitats. If significant negative impacts are identified, projects must be modified or abandoned. Although this **rule can be waived** for reasons of imperative societal considerations, the waiver requires an impact assessment of the project's impact on the area, to have no alternatives, implementing compensatory measures, and that the European Commission is informed and accepts the intervention.

The **Habitats Directive** lays out specific obligations for protecting Natura 2000 sites within spatial planning:

- **Article 6(3)** requires that any plan or project within or near Natura 2000 sites and/or likely to have a significant effect on a Natura 2000 site undergoes an **Appropriate Assessment (AA)** to evaluate its implications for the conservation objectives of the site.
- **Article 6(4)** allows for exceptions only if there are no alternative solutions, if the project is deemed necessary for "imperative reasons of overriding public interest", and if compensatory measures are provided to ensure the overall coherence of the network.

The **Strategic Environmental Assessment (SEA) Directive (2001/42/EC)** also mandates that public plans or programmes likely to impact Natura 2000 sites include environmental assessments.

The planning of **energy infrastructure development** is also significantly impacted by Natura 2000 barriers. Wind farms, transport networks, and other energy infrastructures are subject to strict environmental scrutiny if they affect Natura 2000 sites. For instance, wind farms must be located away from bird migration paths to avoid collisions and must take into account the impact on both birds and other protected species at risk, such as bats or amphibians.

2.3. The EU Biodiversity Strategy for 2030

The **EU Biodiversity Strategy for 2030** is a key component of the **European Green Deal**, aiming to halt biodiversity loss and ensure the protection and restoration of ecosystems. This ambitious strategy, published by the European Commission in May 2020, sets clear goals to expand the **Natura 2000 network** and improve the effectiveness of its conservation efforts.

One of the key objectives of the **EU Biodiversity Strategy for 2030** is to **expand the Natura 2000 network** and other protected areas. The EU aims to protect at least **30% of its land and 30% of its marine areas** by 2030, with one-third of these areas being under **strict protection**.

- **Strictly protected areas** include ecosystems such as old-growth forests, peatlands, wetlands, and seagrass beds, which are crucial for biodiversity and carbon storage.
- The expansion emphasises not only designating new sites but also **connecting** them to form **a more cohesive ecological network**, enhancing species' ability to migrate and adapt to environmental changes such as climate change.

A significant component of the Biodiversity Strategy for 2030 is ensuring the **effective management** of Natura 2000 sites. The strategy acknowledges that while the Natura 2000 network covers a large area, not all sites are managed effectively to meet conservation goals.

- The **European Commission** will work with Member states to ensure that each site within the Natura 2000 network has detailed **management plans** that include specific conservation objectives and measures.
- **Monitoring and enforcement** will be enhanced to ensure compliance with environmental legislation. This includes regular assessment of the conservation status of species and habitats and the use of EU funds to improve site management.

3. Legal Framework: Denmark

Denmark's spatial planning and environmental legislation are closely aligned with EU frameworks, including the **Green Deal**, **Natura 2000**, and the **Biodiversity Strategy for 2030**. The country's highly decentralised governance structure allows municipalities to play a critical role in implementing national and EU policies at the local level, while the central government sets overall guidelines.

Denmark has transposed part of the EU directives in national laws and policies that support sustainable development, nature conservation, and biodiversity protection. Denmark has been actively aligning its policies with the objectives laid out in the EU Biodiversity Strategy for 2030 by expanding its protected areas and implementing stricter conservation measures. The strategy focuses on restoring ecosystems, improving biodiversity governance, and promoting nature-based solutions in urban planning. This is embedded into Denmark's spatial planning framework, where local governments must consider biodiversity conservation when developing **municipal and local plans**. Denmark has fully implemented the EIA Directive (2011/92/EU) and SEA Directive (2001/42/EC), both integral components of the EU Green Deal.

3.1. Spatial Planning and Environment

Denmark's spatial planning system is governed by a hierarchy of laws, with the Planning Act (Planloven) being the cornerstone. The European directives concerning spatial and environmental planning have been transposed in the following acts:

- Environmental Assessment Act (Miljøvurderingsloven)
- Climate Act (Klimaloven)
- Nature Conservation Act (Naturbeskyttelsesloven)
- Hunting and Wildlife Management Act (Jagt- og vildtforvaltningsloven)
- Environmental Protection Act (Miljøbeskyttelsesloven)

In this section each act is described in more detail and includes the possibilities to compensate for nature in spatial planning.

3.1.1. Natura 2000

The Natura 2000 network is a significant component of Denmark's environmental strategy. The Danish government has designated a total of 250 Natura 2000 sites, spanning over a considerable portion of land and marine areas (approximately 8% of land and over 16% of marine territory), for being worthy of protection for their endangered species or habitats. These areas are regulated under the Danish Environmental Protection Agency (*Miljøstyrelsen*), which enforces conservation measures and works on habitat restoration and species protection in line with EU regulations.

At the national level, Denmark's Ministry of Environment (*Miljøministeriet*) also oversees the implementation of environmental regulations, including Natura 2000 protections.

Municipalities, responsible for developing their municipal plans and local plans, must ensure that new projects consider biodiversity, climate resilience, and EU environmental directives.

- Protected species' and birds' habitats as well as breeding and resting areas are listed in Annex IV of the Habitats Directive. Prohibition against deliberate disturbance of, as well as damage and destruction of, species' breeding areas or resting places is set out in section 3

the Nature Conservation Act (*Naturbeskyttelsesloven*) and in the Hunting and Wildlife Management Act (*Jagt- og vildtforvaltningsloven*).

- As part of the Natura 2000 network, Denmark also includes the so-called Ramsar areas. Ramsar sites are wetlands with so many waterfowl that they are of international importance and must be protected. All the Danish Ramsar sites are part of the bird protection areas and are therefore also part of the Natura 2000 network.

Denmark has set up Natura 2000 committees in various regions, involving stakeholders from municipalities, landowners, environmental groups, and other interested parties. These committees provide input on how Natura 2000 sites are managed and help ensure local buy-in for the protection measures.

Denmark's Natura 2000 Action Plans involve detailed management of these protected areas, with a focus on mitigating environmental pressures, such as pollution, invasive species, and urbanisation. Denmark integrates these plans into its municipal planning system, requiring local governments to align their spatial planning with Natura 2000 objectives to safeguard biodiversity.

Possibilities for compensation measures

Under the Danish Nature Package Agreement, it was established that natural areas can pose an obstacle for project development by businesses and public authorities. Room was created to look at possible compensation measures when developing projects in or near natural areas.[37] Subsequently, in September 2018, a report from DCE, Aarhus University, was published highlighting the possibilities for creating replacement nature in relation to habitats and species.

The main conclusions of the report with regards to Natura 2000 are as follows:

- Under the Habitats Directive, there are certain possibilities to derogate from the protection of Natura 2000 sites. This presupposes that there must be imperative reasons of overriding public interest and that there are no alternative solutions. Necessary compensatory measures must be taken to ensure that the coherence of the Natura 2000 network is preserved (Art.4(4) Habitats Directive).
- Protective measures for developing projects in Natura 2000 areas have been clarified by the European Court of Justice. Replacement nature, intended to compensate for negative impacts on the Natura 2000 area, can only be included if it is made as part of a derogation from the Habitats Directive. If all the conditions are met to be able to derogate from the protection of the Natura 2000 sites, then replacement nature is possible as a compensatory measure.[38]
- The protection of Annex IV species and birds does not in itself prevent work on establishing replacement nature. However, it is a prerequisite that areas that are to be used for other purposes are examined for the presence of Annex IV species, and that an assessment is made of whether the ecological functionality of occurrences of Annex IV species can be maintained. The classification of replacement nature is considered a

[37] https://mst.dk/erhverv/rig-natur/naturbeskyttelse/3-beskyttede-naturtyper/etablering-af-erstatningsnatur
[38] Case C-521/12 TC Briels and Others

remedial measure that can help to maintain the ecological functionality. It is a requirement under the Habitats Directive that the replacement nature is established before the existing nature is destroyed, and there must be a high degree of certainty that the replacement nature works to a sufficient extent not to affect the population of the species in question.[39]

3.1.2. The Planning Act (Planloven)

The Danish Planning Act, enacted in 1992 and subsequently revised, governs spatial planning across Denmark. This law establishes a framework for municipal, regional, and national planning, guiding sustainable land use while safeguarding the environment. It divides the country into three zones: urban, rural, and summer home areas. It establishes clear zoning boundaries to protect rural and natural areas from urban sprawl.

With the Planning Act a local government reform reinforced municipal responsibility for spatial planning. The central government retained oversight on national priorities and frameworks. In consequence, Denmark's regions and municipalities play an even more crucial role in implementing EU legislation.

Plans are developed at three levels:

- National plans: the Minister for Cities and Rural Districts (*Ministeren for byer og landdistrikter*) provides the national framework for planning in Denmark.
- Municipal plans: local authorities provide priorities and guidelines for regional and municipal land-use and development for a period of 12 years (Chapter 4 Planning Act).
- Local plans: local authorities provide concrete plans for land-use in their municipality (Chapter 5 Planning Act).

When developing a project the planned initiatve should fit within the framework of the municipal and the local plans of the municipality. An important distinction between a municipal plan and a local plan is that a local plan is binding, whereas a municipal plan is not. Citizens cannot always count on the municipal plan to be implemented, and it is at ones own risk to invest in accordance with the municipal plan.

The Planning Act mandates local authorities to include in their municipal plans certain guidelines ensuring the protection of natural areas with special nature protection interests (including Natura 2000 land and other protected areas), as well as guidelines accordingly regulating the location of impact areas around technical facilities, wind turbines, etc. (§11a Planning Act).

In April 2023, the Planning Act was amended to enable planning for wind turbines and solar installations in maritime and industrial landscapes, ensuring a clear and streamlined framework for renewable energy projects at the national level (§11b, paragraph 5, Planning Act).

3.1.3. Environmental Assessment Act (Miljøvurderingsloven)

The Planning Act emphasises the importance of environmental impact assessments and coastal protection. The Environmental Assessment Act regulates this matter further. The purpose of this act

[39] https://mst.dk/media/d1ljilet/resume-af-faglig-udredning-om-erstatningsnatur.pdf

is to ensure a high level of protection and to contribute to the integration of environmental considerations during the preparation and adoption of plans and programmes and when permitting projects.

The Environmental Assessment Act (EIA Act) implements the EIA Directive into Danish law. Projects listed in Appendix 1 and Appendix 2 of the EIA Act are subject to an environmental impact assessment and a written permission by the EIA authority to start the project (§15 EIA Act). Projects under Appendix 2 of the EIA Act may only be initiated if the EIA authority has assessed that the project does not have a significant impact on the environment on the basis of a screening (§16 EIA Act). The EIA authority is the municipality for projects on land and the Minister of the Environment for projects in the marine area (§17 EIA Act).

Mitigation measures in the EIA report

The EIA procedure requires the preparation of an account of the construction project's expected, significant impacts on the environment. The report is mandatory and is subject to public consultation before the developer can be granted permission to start the project. In addition to clarifying the environmental consequences of a project, the EIA process may also involve examining alternatives or changes to the client's project. It will depend on a specific assessment in the individual case to what extent conditions should be imposed for compensation measures. In **1.5** of this report, we provide examples of compensation measures for wind turbine parks and solar parks in Denmark.

3.1.4. Nature Conservation Act (Naturbeskyttelsesloven)

The Nature Conservation Act works in tandem with EU directives to ensure the legal protection of natural habitats. The Nature Conservation Act also governs building permits and environmental reviews, ensuring any new development complies with sustainability goals. Local authorities play a critical role in enforcing these protections through spatial planning and issuing permits that must consider impacts on Natura 2000 sites.

Section 3 of the Nature Conservation Act stipulates which nature types are protected, including lakes over 100 m2, designated watercourses, as well as heaths, bogs, salt marshes, fresh meadows and biological grasslands. The protected areas are indicatively registered in the Danish Environmental Portal (*Danmarks Miljøportal*). Around 10% of Denmark's area consists of natural areas covered by section 3 of the Nature Protection Act. A large proportion of the protected natural areas (51%) are located within other designated and protected areas, including Natura 2000 areas, in protected areas, on state-owned areas (the Danish Nature Agency and the Danish Armed Forces), in national parks or in nature and wildlife reserves.[40] The protection of the habitat types means that no changes may be made to the condition of the protected areas, e.g. in the form of interventions such as planting, cultivation, excavation, etc.

[40] https://mst.dk/media/d1ljilet/resume-af-faglig-udredning-om-erstatningsnatur.pdf

No buildings, planting or changes to the terrain may be made to protected dune areas (§8 Nature Conservation Act). Additionally, no changes may be made on the shoreline and coastal protected areas (§15 Nature Conservation Act). The dune protected areas spans 300 m from the coast and in urban areas typically 100 m or less from the coast.[41] The coastal protection line spans 300 metres from the water's edge, and 100 metres in summer house areas.[42]

The Nature Conservation Act has several habitat protection schemes with different responsible authorities. For instance, the nature management schemes (§55), the general nature type protection (§3), or the general protection of habitats of EU-protected species (§29a).

Possibilities for compensation measures

The municipalities are the authorities for their natural areas. In special cases municipalities may grant exemptions from the protection provisions. Decisions on this can be appealed to the Environment and Food Complaints Board (*Miljø- og Fødevareklagenævnets afgørelse*) (§44 Nature Conservation Act).

The main conclusions in the report from DCE, Aarhus University on the possibilities for creating replacement nature with regards to the Nature Conservation Act are as follows:

- In the explanatory notes to the Nature Conservation Act, it is stated that in certain cases it may be well-founded to require the establishment of a replacement nature as a condition for exemptions where there is a prior application. Restraint should be exercised in this regard, as from a nature conservation point of view it would normally be far preferable that the original natural areas with their distinctive characteristics and associated animal and plant life are retained to the greatest extent possible. The establishment of a compensation nature is not in itself considered to be a special case that alone can justify an exemption. According to the rules, an exemption that includes the construction of a replacement nature must always be based on a specific assessment of the natural conditions and the consequences of the applied intervention for the state of nature, etc.
- If, due to important social considerations, e.g. in connection with the construction of infrastructure or institutional buildings, it is necessary to grant exemptions for significant interventions in protected natural areas, it is normally a prerequisite that conditions are laid down for the establishment of replacement nature and subsequent nature conservation. Likewise, conditions regarding replacement nature are often included if a natural area has been wrongfully abandoned. In practice, the replacement area is registered on the property in question because it will take a number of years before the area develops a condition corresponding to a protected natural area.

[41] https://kyst.dk/kystzonen/klitfredning
[42] https://kyst.dk/kystzonen/strandbeskyttelse/strandbeskyttelseslinjen

3.1.5. Coastal Protection Act (Kystbeskyttelsesloven)

The Coastal Protection Act regulates coastal protection and other types of terrain changes along the coast. Municipalities must ensure that the measures in the act are adhered to, and landowners are responsible for protecting their own property.

3.1.6. Hunting and Wildlife Management Act (Jagt- og vildtforvaltningsloven)

The Hunting and Wildlife Management Act regulates hunting, wildlife conservation, and management of wild species in Denmark. The primary objectives of this law are to protect biodiversity, ensure sustainable wildlife populations, and regulate hunting activities to align with ecological balance and conservation goals.

With regards to wildlife conservation and biodiversity, the act ensures that wildlife populations are maintained at sustainable levels, promoting balanced ecosystems. Certain species may be given special protection under the law to prevent them from becoming endangered or extinct (§1 and §12 Hunting and Wildlife Management Act).

The Minister of the Environment and Food (*Miljø- og fødevareministeren*) is responsible for monitoring wildlife populations and habitats, as well as the implementation of conservation measures (§9a Hunting and Wildlife Management Act).

Possibilities for compensation measures

The Species Conservation Order[43] contains protection of species from the Birds Directive and the Habitats Directive as well as the protection of species that are nationally rare and endangered, including species covered by the Bern Convention. The protection of protected species does not in itself prevent work on establishing replacement nature. In the case of more frequently occurring species and individuals that, according to the Danish Environmental Protection Agency's assessment, could be moved to a nearby natural area, the Danish Environmental Protection Agency may grant exemptions from the prohibitions in the Species Conservation Order on conditions such as relocation of the individuals before the destruction of the habitat.

3.1.7. Environmental Protection Act (Miljøbeskyttelsesloven)

The Environmental Protection Act aims to protect the environment, human health, and promote sustainable development. It provides a legal framework for preventing and controlling pollution, managing waste, and safeguarding natural resources.

The act includes measures and competence of the Minister for the Environment (*Miljøministeren*) to protect ecosystems and natural resources, such as water bodies, soil, and wildlife habitats, ensuring they are used sustainably (§7 Environmental Protection Act).

[43] Executive Order no. 867 of 27 June 2016 on the conservation of certain animal and plant species and the care of injured game has been issued pursuant to both the Nature Conservation Act and the Hunting and Wildlife Management Act.

3.1.8. Marine Protected Areas

Denmark's **marine Natura 2000 sites** form a critical part of the country's conservation efforts, particularly for marine species like the harbour porpoise and seals. The **Marine Strategy Framework Directive (2008/56/EC)** is implemented through Denmark's **Marine Action Plan**, which establishes conservation measures for these areas and restricts certain activities, such as fishing, to minimise human impact on marine ecosystems.

3.2. Energy Transition

In June 2024, Denmark finalised its **National Energy and Climate Plan (NECP) for 2021-2030**. Denmark aims to quadruple its production of renewable energy on land by 2030, from approx. 12 to 50 billion kilowatt-hours annually. This increment will require up to 1.3% of Denmark's land area, compared to the 0.5% occupied today.[44]

Central to this effort are the **2022 Climate Agreement on Green Power and Heat** and the **2023 Climate Agreement on Greener Energy from Sun and Wind on Land**. These agreements were designed to balance Denmark's ambitious green transition with economic growth and emphasise that Denmark's green power expansion beyond its domestic needs should be free of subsidies. The 2022 Agreement helped to define the **active role of the State** in planning large-scale energy parks, focusing on removing planning barriers and providing complementary support to municipal projects. Then, the Agreement on Greener Energy further strengthened the State's involvement in planning large energy parks and raised local community compensation through the Renewable Energy Sources (RES) bonus and Green Pool schemes, to build acceptance of these projects.

For offshore wind, Denmark aims to offer 4 GW of capacity by 2030, with a total potential reaching 19 GW if market interest supports it, including the **Bornholm energy island** and other projects. Denmark is also working toward establishing an **energy island in the North Sea**, with a long-term goal of 10 GW of offshore wind capacity. These projects will support domestic use, European exports, and **Power-to-X** technologies to produce sustainable fuels transportation.

A **Supplementary Agreement (2023)** outlined procurement frameworks for 6 GW of offshore wind, introduced state co-ownership of wind farms, and set new sustainability and social responsibility requirements. This agreement also established a **Marine Nature Fund** to mitigate the environmental impacts of offshore projects and support marine biodiversity restoration.

Lastly, other initiatives have been introduced to **strengthen local engagement** and expedite the deployment of onshore RE. This includes the establishment of a renewable energy task force to share best practices with municipalities, as well as increased funding for compensating local communities affected by nearby wind turbines and solar installations. Denmark also established the **National Energy Crisis Loss (NEKST) initiative** to accelerate the green transition. NEKST is aimed at addressing key challenges and expediting the deployment of solar and wind energy. Working Groups also tackle local support, speeding up administrative processes, improving coordination between authorities, and optimizing land use for renewable energy installations.

[44] https://ens.dk/sites/ens.dk/files/EnergiKlimapolitik/udkast_til_ajourfoering_af_danmarks_nationale_energi-_og_klimaplan.pdf

3.2.1. Renewable Energy Policies

The 2022 Climate Agreement on Green Power and Heat and the 2023 Climate Agreement on Greener Energy from Sun and Wind on Land have been key to advancing the deployment of renewable energy. Importantly, these agreements give **more favourable conditions for energy parks** in larger contiguous areas where solar and wind can be built. As a result, additional greenfield sites are obtaining authorisations to site new energy parks.

This recent scheme finds its justification in the **difficult and extensive permitting process** currently applicable to new energy project deployment. To this end, certain land protection considerations are relaxed, in exchange for an easier and faster permitting process, albeit limited to proposals from municipalities and companies.

The greenfield in question consists mainly of forest construction line areas, and coastal zones to a lesser extent. The former bans the construction of buildings on land spanning from the edge of a forest up to 300 m inland, while the latter also mandates what can be built from the water's edge and 3 km inland. Nevertheless, areas containing **vulnerable and unique nature are not subject** to this exception, as well as highly valuable nature as defined by Section 3 of the Nature Protection Act.

This laxer framework **cannot be applied in a general manner**. In fact, only selected projects can rely upon it. The selection process commences with Danish municipalities and companies submitting proposals for areas deemed suitable for the parks. Following municipal dialogues and environmental suitability assessments, a small number of project areas is designated.

After the designation of an area for an energy park, the local actors (i.e., municipalities, renewable energy installers and landowners) are responsible for utilising the framework to develop concrete projects. As of this moment, two calls have already been launched, with a total of 17 prospective onshore energy parks. This process is foreseen to reoccur in 2024 and 2025.

3.2.2. Renewable Energy Act (Lov om fremme af vedvarende energi)

The Renewable Energy Act aims to promote the production of energy using renewable energy sources in accordance with climate and environmental as well as socio-economic considerations with a view to reducing dependence on fossil fuels, ensuring security of supply and reducing the emission of CO_2 and other greenhouse gases.

Possibilities for compensation measures

Specifically with regards to spatial planning, the Renewable Energy Act offers schemes for compensating local citizen affected by renewable energy projects:

- Loss of value and sale option: the installer must pay for loss of value on a residential property, equal to the amount of the loss of value as a result of the construction of the renewable energy installation (§6 Renewable Energy Act).
- Renewable energy bonus scheme: the installers must pay an annual bonus to neighbours of the renewable energy installation within 200 metres of the project (§13 Renewable Energy Act).

- Green pool: the installer must pay a lumpsum per MW to the municipality where the plant is built, and the compensation is used for municipal activities and local projects (§14 Renewable Energy Act).

3.2.3. Climate Act (Klimaloven)

The Danish **Climate Act (2020)** laid a basis for the expansion of renewables, focusing on large-scale renewable energy production. The country has subsequently worked on plans for significant expansions in offshore wind capacity, including a political agreement that establishes a framework for the largest expansion of marine wind power in Denmark.

4. Support Schemes

According to Denmark's NECP for 2021-2030, State funding for green research and development is available through several schemes, including the Danish Innovation Fund and the Danish Free Research Fund, in addition to 3 development and demonstration programmes:

- Energy Technology Enlargement and Demonstration Programme (EUDP)
- Environmental Technology Development and Demonstration Programme (MUDP)
- Green Enlargement and Demonstration Programme (GUDP).

Green bonds issued and managed by Danmarks Nationalbank form part of the overall funding of the Kingdom of Denmark green funding schemes, including subsidies for renewable energy.

4.1. Renewable energy

Invest in Lolland-Falster offers free, confidential support for the establishment and expansion of businesses including renewable energy projects. There is no specific application form, but they can be contacted for an orientation meeting.[45]

The Danish Energy Agency provides and overview of support available for renewable energy projects. Support in the form of tenders or auctions for new onshore wind capacity and the technology is no longer being offered. However, investment aid schemes are still available for experimental wind turbines.

In addition to the abovementioned compensation schemes under the Renewable Energy Act,[46] the Guarantee Fund provides a guarantee to local communities for the financing of feasibility studies etc. in relation to the installation of wind turbines or solar PV.

Installers of renewable energy plants can also get the necessary costs compensated in connection with grid connection of the generation plants via the Compensation Scheme of the Danish Energy Agency.

Via the Danish Energy Agency, it is also possible to obtain a reimbursement, approved at a fixed transfer price, for surplus production sold on the electricity market.

4.2. Environmental impact assessment

To assist authorities and supporters with the environmental assessment process, the EA Hub and EA Tools have been developed. EA Hub offers an interactive selection of Danish environmental impact reports, where search tools and GIStools can be (jointly) used on the material. EA-Tools compile and systematise environmental data from more than 300 different databases in parameters relevant to the assessment.

[45] https://investinlf.com/about-us/
[46] See also section 1.4 of this report.

Further specific support is something made available in the form of grants by the Danish Nature Agency. Although, there currently are not specific grants available, it is worth keeping an eye out on their website.

In the next steps of this trajectory, the Clean energy for EU islands secretariat will help the Island Transition Team to find financial support for further advisory services and reporting on environmental impacts assessments.