# Denmark’s offshore wind farms planning and policy approach - DK

## 1. Policy Objective & Theme

- SUSTAINABLE USE OF RESOURCES: Sound use of resources and promotion of less resource intensive processes/products
- SUSTAINABLE ECONOMIC GROWTH: Improving competitiveness

## 2. Key Approaches

- Integration
- Participation
- Ecosystems based approach

## 3. Experiences that can be exchanged

The procedure used in Denmark for granting permits for offshore wind installations and their  experiences in environmental monitoring of offshore wind parks.

## 4. Overview of the case

Offshore wind farms may only be installed on the basis of a detailed Environmental Impact Assessment (EIA) and after the general public, the authorities and organisations concerned have had an opportunity to express their opinions. Once the EIA procedure has been completed, and the deadline for appeal has expired, the Danish Energy Agency grants the final license to establish the wind park on a number of specified conditions. Also the operator needs an electricity production permit and this can only be granted when a detailed project plan has been submitted that shows that the conditions required in the license to establish the project can be fulfilled.

## 5. Context and Objectives

### a) Context

Denmark established the world's first offshore wind farm at Vindeby, in 1991. It currently has nine offshore wind farms operating in the North and Baltic Seas with a combined electrical capacity of 633 MW. In 2007, 19.7% of Danish electricity production was based on wind power. With 3 large-scale offshore wind farms in the pipeline, this percentage could increase by ca. 8% in total. In 2009,  the tender was published for the 400 MW Anholt Offshore Wind Farm in Kattegat which will be the biggest offshore wind farm in Denmark and connected to the Danish electrical grid by 2012. The offshore wind farms are part of a 2008 Energy Policy Agreement between the Danish Government and all but one of the parliamentary parties.

### b) Objectives

The current policy is to promote the long-term reliability of energy and a continued diversification of the supply to several sources and to promote the continued development of wind power technology. It is also to strengthen the use of market-based instruments to increase competition in the energy sector and encourage cost-efficiency for renewables.

# 6. Implementation of the ICZM Approach (i.e. management, tools, resources)

### a) Management

Offshore wind power facilities are consented to, and approved, by the Danish Energy Agency which falls under the Ministry of Climate and Energy. It should be noted that Denmark does not have a spacial ICZM approach to wind power planning and licensing but a common approach to offshore wind power regardless of the proximity to the coast.

### b) ICZM tools

The procedure for establishing offshore wind farms has been gradually developed as experience has been gained during almost two decades of Danish offshore wind power projects. The conditions for offshore farms are laid down in the law for promotion of renewable energy (2008). The Danish Energy Agency therefore functions as a one stop shop in relationship to the many, often opposing, interests connected to the establishment of offshore wind power projects.

After the screening of potential sites the Danish Energy Agency calls for tenders. The successful tenderer must adhere to the same planning process as applies to all offshore wind power projects, including Environmental Impact Assessment (EIA) procedures. The rules governing EIA reports are described in Executive Order no. 815 of 28 August 2000 on the assessment of the environmental impact of offshore electricity producing installations and it is the responsibility of the Danish Energy Agency to take the decision. Any party applying to establish an offshore wind farm must prepare an EIA report in order to ensure; that the environmental and other relevant conditions within the defined installation are described, that impact and reference areas are studied and described, that all known environmental impacts in connection with the establishment and operation of the wind turbine installation have been previously considered and assessed, and that the authorities and the general public have a basis for assessing and making a decision regarding the project. The EIA report must provide an exhaustive assessment of the project's environmental consequences and it must include a description of workable alternatives The description of the environmental consequences must assess fauna and flora, seabed, water and air, climatic conditions, any archaeological remains, impact on the landscape and coastal safety. The applicant must also demonstrate how any damaging environmental impacts can be reduced or neutralised. The Danish Energy Agency prepares the final authorisation for the establishment of the offshore wind farm in question. This is done according to detailed conditions that reflect both the conclusions of the EIA report and consultation responses from the general public and the authorities concerned. Public consultation of the EIA report is an open and flexible process that makes it possible for the Danish Energy Agency to clarify and prioritise the various and often opposing interests associated with the establishment of an offshore wind farm. Any party with a justified and individual interest in the decision has the right to register a complaint, with a deadline of at least four weeks, after the authorisation has been published.

In 2004, the Government introduced a more market-oriented pricing system for wind power. The obligation to purchase wind power has been replaced with financial support in order to ensure an unchanged price subsidy for the owners of wind turbines. Development and implementation of wind energy have been included in all Danish energy strategies. Policy instruments such as, production subsidies, local ownership, regulation on grid connection and spatial planning procedures as well as a technology push policy such as R & D programmes, test station for wind turbines and approval and certification schemes have all been tools in the strategies. As a follow-up to the Energy Strategy 2025, the Government has decided that the Action Plan on Offshore Wind Power from 1997 is to be updated. The objective is to carry out an assessment of where future expansions of offshore wind power can take place. Thus, a committee will also consider possibilities for grid connection of even larger offshore wind farms and new technological possibilities for establishing wind turbines in deeper water. The possible introduction of offshore wind turbines in relation to other interests such as environmental protection, navigation, military, fisheries and visual consequences etc, are to be assessed.

# 7. Cost and resources

The most important incentive to promote wind turbines at sea is fixed feed-in tariff available for wind parks established via a governmental tender process, where the required tariff is a part of the bidding from the various operators. This system gives the investor full security in the investment and is an effective way to promote wind power and kick-start the production.

For projects outside tenders (open door projects) a feed-in premium system, which is given the producer on top of the market price (+ a small premium), is the financial incentive. New wind turbines at sea (and on land) receives a price premium of 25

øre/kWh for 22,000 full load hours, plus additional 2,3 øre/kWh in the entire lifetime of the turbine to compensate for the cost of balancing etc.

## 8. Effectiveness (i.e. were the foreseen goals/objectives of the work reached?)

Denmark has smoothly run, and expanded, its offshore wind energy programme for nearly 20 years.

## 9. Success and Fail factors

The Energy Agency acting as a one-stop-shop for the operators is ensuring a smooth licensing procedure, where the interests of other authorities is managed internally, thus minimizing the administrative work of the operators.

Also the previous investment in the extensive environmental monitoring programme has increased the level of knowledge and consequently minimised uncertainties for the operators on a number of issues. To further develop this knowledge base a smaller follow up programme has now been initiated.

Experience gained during the first EIA procedures have shown that the authorities concerned, interest organisations and citizens all use the public consultation of EIA reports to present comments that contribute to the final definition of the wind farm projects.

## 10. Unforeseen outcomes

One of the challenges that has to be faced in the future is an assessment of the cumulative impacts from multiple offshore wind farms. This is among other initiatives faced via the initiation of new environmental monitoring projects regarding cumulative effects on divers and harbour porpoises, where also impacts from other activities at sea are included.

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## 13. Sources


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- Danish Offshore Wind Energy - Key Environmental Issues (6.87 MB)
- Electricity supply act (2.25 MB)
- Energy strateg 2025 (272.87 KB)
- Offshore wind power - experiences and solutions (1.34 MB)
- Promotion of Renewable Energy Act (1.23 MB)
- future offshore wind power sites (2.47 MB)
- visionary energy policy (1.3 MB)