



Combining offshore wind farms and the environment

New Danish surveys confirm that it's possible to construct offshore wind farms in an environmentally sustainable manner that does not lead to significant damage to nature if proper planning is applied.

From 2007 to 2012 the follow up of the environmental monitoring programme for Danish large-scale offshore wind farms has been conducted. The programme is concluded with a publication 'Key environmental issues - A follow up' by the Environmental Group (lead by the Danish Energy Agency, and further consisting of the Danish Nature Agency, and operators of the Horns Rev 1 and Nysted Offshore Wind Farms: Dong Energy and Vattenfall).

As in the first research programme from 2006, this follow-up programme presents the results and conclusions of a series of studies aiming to reveal the impacts of offshore wind farms, with a focus on fish, harbour porpoises, birds and cumulative effects. Common for all the surveys is that they give unique knowledge about the effects of wind farms on the natural environment. In general, none of the presented results predict adverse effects of the offshore wind farms on neither harbour porpoises nor birds, but rather that the effects were very small. However, planning is important for the siting of the wind farms.

Positive refuge effects for fish

One study suggest that offshore wind farms may have a positive impact on fish populations, as a number of fish species was found to show attraction towards the wind turbine foundations at Horn Rev. This situation resulted in a higher number of species inside the wind farm area compared to areas outside the wind farm, and it is suggested that foundations can serve as refuge areas where fish can forage.

The effect of noise and seal scarers

A study investigated the effect of a deterrent device on harbour porpoises and found that the sound-emitting device indeed has a deterrent effect, thus

protecting harbour porpoises against injury from piling noise. Further a model was developed surveying the effect of anthropogenic noise in the sea, such as noise from ships and wind farms, on a harbour porpoise population in the inner Danish waters.

Impact on birds have been surveyed

For red-throated divers, a study was conducted to model the cumulative disturbance effects of large-scale wind-farm development in Danish waters. Results indicate that even a very ambitious deployment may not harm the population of divers. A habitat suitability model was developed for the two main prey species for the common scoters at Horns Rev. Results show that common scoters largely distribute themselves according to the distribution of their prey.

The book 'Key environmental issues - a follow up' can be ordered or downloaded [here](#). All background reports presenting research results can also be found here.

As another final product of the programme, the Energy Agency has developed a guide on how to carry out an environmental Impact assessment of offshore wind farms to the extent it relates to nature. This guide is currently in public hearing and will be published on the Danish Energy Agency's homepage in February 2013.

Offshore Wind Farms and the environment



[The book 'Key environmental issues - a follow up'](#)

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