

Offshore wind: for the birds?

A recently published study on the ecological impact of a Dutch offshore windfarm found it was positively beneficial, but even its authors concede that much more research is needed to confirm its findings. Siân Crampsie reports

A RECENT study by Dutch scientists into the impact on the local ecology of an offshore windfarm has found that it was positively beneficial to the marine environment. However, the report's authors conceded that one swallow does not make a spring, and that the results may be very site-specific. They called for much more research to be done on other projects.

The two-year study of the Egmond aan Zee offshore windfarm in the Dutch North Sea indicated that the presence and operation of the 108MW project had few negative effects on local fauna, and helped to increase biodiversity and provide shelter for certain fish species.

However, the researchers said these ecological benefits could be the result of its favourable location. Relatively low numbers of birds fly through the area, and its proximity to the busy Dutch coastal zone makes the 36-turbine facility an "oasis of calm", according to NoordzeeWind, the Nuon-Shell joint venture that owns the windfarm and funded the study.

Limitations

The research was carried out by the Institute for Marine Resources and Ecosystem Studies (IMARES) at Wageningen University and Research Centre, Bureau Waardenburg and Royal Netherlands Institute for Sea Research. Conservation groups say it is a useful contribution to the debate on offshore wind but it has limitations.

"We are keen to see studies such as this undertaken because they make a welcome contribution to the evidence base," says Rowena Langston of the Royal Society for the Protection of Birds (RSPB), a UK-based conservation organisation. However, she says the study is not enough on its own and more data is needed from other windfarms to get a better understanding of the effects on birds, marine mammals, fish and other organisms.

"Our experience from onshore windfarms is that problems are species and site-specific," says Langston. "This study is of a windfarm that is close to shore and it could only cover some species [local to the area]."



Seaworthy? Scientists say the speed at which offshore projects are being deployed outstrips research

In addition, the researchers did not count bird strikes – when birds are killed by rotating turbine blades – although Langston concedes that this is a "tricky area" to study.

Professor Han Lindeboom, leader of the study from IMARES, says that proposed techniques for counting bird strikes at Egmond aan Zee did not work and so the researchers combined observations of bird paths with models of bird strikes developed for land-based windfarms. He estimates that bird strikes at sea are half or one-third of the level of those on land, and suggests this may be because some species can avoid turbines at sea better than they can on land.

Lindeboom says his research indicates that large-scale monitoring programmes are required to determine the true effects of offshore windfarms on birds, a point echoed by Langston. "For future understanding, we need to know if [bird strike models] are good or not by obtaining data from operating windfarms," says Langston. She also says there is not enough understanding of the displacement of bird populations on migration and breeding.

Other areas that need more research are the effects on marine species of vibrations and sound from the windfarm. "Our observations were that fish and sea mammals stayed around the windfarm, although more data is needed on seals," says Lindeboom. "We did measurements that showed that

Wide-scale development of offshore windfarms could affect sensitive bird areas in the North Sea

the sound produced by the windfarm is low, but this is a busy shipping area and the marine life may have been attracted by the relative silence of the windfarm's surroundings."

Rapid deployment

Conservationists' overriding concerns about offshore windfarms are their long-term impact on ecology and the rapid, widespread pace of construction in Europe.

According to the European Wind Energy Association, there are 1,247 offshore wind turbines in the European Union with a combined capacity of 3,294MW. About 150GW of offshore wind projects are in various stages of planning. EU national renewable energy action plans indi-

cate that installed offshore wind energy capacity will reach 43GW by 2020.

"This is a priority concern," says the RSPB's Langston, who feels there is a major gap between the pace of offshore windfarm development and the evidence base of their environmental impact. "We very much feel that determining the cumulative impacts of multiple windfarms is important," she says.

Lindeboom also expresses concern: "I agree that [windfarm development] is too fast. I experienced delays in getting my results published ... I urge scientists to publish as soon as they have data," he says.

Lindeboom believes that wide-scale development of offshore windfarms could affect sensitive bird areas in the North Sea, and that large windfarms could create barricades to migratory birds as well as marine mammals. His research team has continued monitoring Egmond aan Zee to try to obtain more data and get a better understanding of the longer-term effects, but the research will come to an end next year.

"I suggest that the research should be repeated every five years in order to track the long-term impacts," he concludes.