

Science for Environment Policy

Finding space for wind power in the North Sea

A new tool for minimising offshore wind energy's impacts on other activities in the North Sea has been developed. The tool identifies space for wind farms based on their priority compared to other marine activities, such as sand extraction or fishing.

The [EU Renewable Energy Directive](#)¹ sets a target for Member States to meet 20% of their [energy](#) needs using renewable sources by 2020. To achieve this, many countries are planning to invest in offshore wind energy.

The North Sea is home to a wide range of [wildlife](#) and is one of the busiest seas in the world, encompassing fishing, shipping, military and offshore gas and oil activities. Now [wind farms](#) has been added to this list. As such, there is a need to balance priorities between different uses of [marine areas](#). However, there is no single management policy for the North Sea, and the lack of international coordination could lead to fragmented, ineffective planning.

For this study, funded by the EU project [WINDSPEED](#)², researchers developed a 'decision support system' (DSS) for offshore wind planning in the North Sea. A DSS provides a computerised system that compiles and analyses large amounts of data and presents it in such a way that users can evaluate alternative courses of action and make decisions more easily. This system was based on analysis of the spatial distribution and relative importance or value (economic and ecological) of other activities in the North Sea. The system uses rules developed from this analysis to identify areas for offshore wind which minimise negative effects on other uses.

The researchers used the system to estimate how two different scenarios of wind-farm development, given either high or low priority, would affect other activities from 2000 to 2030. 'Low priority' placed many other uses above wind farms based on their economic or natural value. 'High priority' limited the importance of other uses compared to increased wind development.

The results showed that if wind farms are given low priority, only a small amount of space would be set aside for them. This was estimated to result in only limited consequences for other uses of the marine area. Fisheries and wildlife were considered to be the most affected.

Under the high-priority scenario the increased area reserved for wind farms had 'severe' effects on activities including sand extraction, military use, wildlife and fisheries.

Some activities, such as sand and gravel extraction, could potentially be relocated to other areas, reducing negative effects. Carefully planned combined use of areas could also reduce negative effects. For example, not all types of fishing need be excluded from wind development areas; smaller vessels, using static fishing gear such as lobster pots, may be acceptable. A range of measures could be taken to lessen effects on marine wildlife. For example, avoiding construction during important breeding, nursery or feeding periods and through noise mitigation measures during construction, the authors say.

This decision support system may prove a useful tool for policymakers to help identify consequences and compromises that need to be addressed under different development plans. However, the researchers note that the system is sensitive to assumptions about the relative importance of different marine activities and uses. Setting such values will require careful consultation and discussion with all stakeholders.



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1. http://ec.europa.eu/energy/renewables/targets_en.htm

2. Spatial Deployment of offshore WIND Energy in Europe (WINDSPEED) project was supported by the European Commission. See http://www.eaci-projects.eu/lee/page/Page.jsp?p=project_detail&pid=1821