

MONITORING THE IMPACT OF OFFSHORE WINDFARMS ON THE MARINE ENVIRONMENT: AN OBLIGATE MULTIDISCIPLINARY AND INTEGRATED PROGRAMME

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In 2004 the Belgian government assigned a zone for wind energy in the Belgian part of the North Sea. Since then two companies, C-Power and Belwind, were granted a permit to build and exploit a wind farm on the Thorntonbank and the Bligh Bank, respectively. The first wind turbines are up and running since 2009. A third company, Eldepasco, started the environmental permit procedure in 2009. The permit includes the obligation to assess the impact of the project on the marine environment. As such, the monitoring programme covers physical, biological and socio-economic aspects of the marine environment.

The Management Unit of the North Sea Mathematical Model (MUMM) coordinates the monitoring and cooperates with different institutions that have expertise in a specific domain: Research Institute for Nature and Forest (INBO; birds), Institute for Agricultural and Fisheries Research (ILVO; soft sediment epibenthos and fish), Ghent University's Marine Biology Section (soft sediment macrobenthos), Ghent University's Renard Centre of Marine Geology (underwater noise) and MUMM (sea mammals, hard substrate biofouling and fish, radar detection of seabirds, underwater noise, hydrodynamics and seascape).

In general, two parallel and complementary aspects can be distinguished within the monitoring programme. The baseline monitoring, generally following a Before/After-Control/Impact or BACI design, aims at the detection and quantification of the combined effect. The targeted monitoring aims at unraveling and hence understanding the underlying causes of a selected set of priority effects, such as bird collisions and altered (commercial) fish (re)productivity.

The multidisciplinary and integrative approach will lead to scientifically sound advices for possible mitigating measures for existing, but also future offshore wind mill farms in both Belgian waters and abroad.

Also see abstracts of related projects further in this publication:

Brabant *et al.*; Coates *et al.*; Di Marcantonio M.; Haelters J.; Kerckhof *et al.*; Reubens *et al.*; Vandendriessche *et al.*