Ecosystem impacts from offshore wind farms: Cross-border overview of lessons learnt from England and Belgium
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Introduction

• The EU has set a target that 20% of energy used within the EU should be generated from renewable sources by 2020[1].
• Marine offshore wind farms (OWF) are considered to be the most promising options for increasing energy security [2].
• England and Belgium have set targets of 20% and 13% respectively, to generate electricity supply from renewable sources [3,4].
• This work aims to showcase synergies and priorities assessed over 2 OWFs at England and Belgium.

Marine Renewable Energy (MRE)

• MRE is considered to be on the most promising strategy to reduce carbon footprint worldwide [5].

Trade-offs associated with OWF during different phases:
• Construction
• Operation
• Decommissioning

There are biological effects on marine life
There is a need to minimise impacts on ecological receptors: fish, birds, benthic communities and marine mammals

Study sites

<table>
<thead>
<tr>
<th>Study sites</th>
<th>Thanet OWF</th>
<th>Thornton Bank OWF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location</td>
<td>Located 11.3km offshore from Foreness Point</td>
<td>Located 27 km off the coast</td>
</tr>
<tr>
<td>Monopile turbines</td>
<td>Capacity = 300MW</td>
<td>Capacity = 325 MW</td>
</tr>
<tr>
<td>TOW</td>
<td>Thornton Bank (TB)</td>
<td></td>
</tr>
</tbody>
</table>

Table 1. Background of the study sites.

Key facts

• The Environmental Impact Assessment (EIA) process is broadly similar for both counties.
• A series of steps to gain consent prior to a OWF construction project were addressed.

Common Biological Issues

<table>
<thead>
<tr>
<th>Site</th>
<th>Area of the survey</th>
<th>Key concerns</th>
</tr>
</thead>
</table>
| Thanet OWF    | Monitoring monopile and adjacent sediments |• Assessing faunal colonisation of monopile and scour effects Assessment
|               | Monitoring reef and the effects of underwater noise |• Effects of noise during construction (piling)
|               | Marine mammals    |• Marine mammals monitored but not considered to be an issue in the area
|               | Seabirds          |• Attraction avoidance
| Thornton Bank OWF | Monitoring surrounding sediment around monopiles |• Colonisation effects on sediments
|               | Monitoring epifauna on artificial hard substrates |• Prohibition of non-indigenous species
|               | Underwater noise and marine mammals |• Changes in food availability for fish
|               | Seabirds          |• Attraction avoidance

Table 2: Site-specific biological surveys to tackle key issues during monitoring.

Conclusions and future work

• There will be new OWF projects
• New technology issues that the industry, regulators and scientists will have to overcome
• Other methodologies (CIE) will have to be implemented


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