Workshop "Umfang des Rückbaus von Offshore-Windparks - Auswirkungen auf die Meeresumwelt"

An operators perspective

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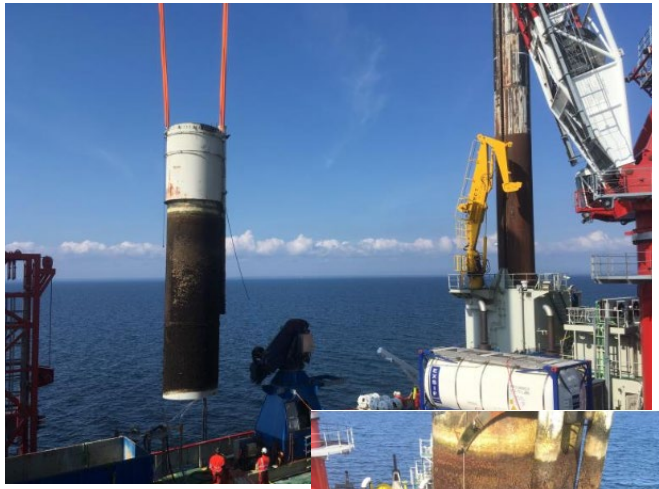
Status quo – Where are we:

Different regulations in different countries / projects in respect to removal requirements (scour, foundations, cables) and unclear rationale why components need or not need to be removed:

- Germany – remove scour protection & cables, foundations partly
- UK* – remove scour protection & cables, foundations partly
- NL – enhance scour protection for artificial reefs (Nature inclusive design) decommissioning under discussion, cables to be removed, foundations full or partly removal undefined
- DK – scour protection to be left in situ or remove, cables remove or buried safely, foundations partly



* 2019 Scotland/UK Guidance "*7.2.2 The standards for the removal of offshore installations should not fall below those set by the International Maritime Organisation (IMO) in 1989 (or successor standards). BEIS will consider exceptions from full removal in line with those standards, only on presentation of compelling evidence that removal would create unacceptable risks to personnel or to the marine environment, be technically unfeasible or involve extreme costs.*

Focus topic scour protection

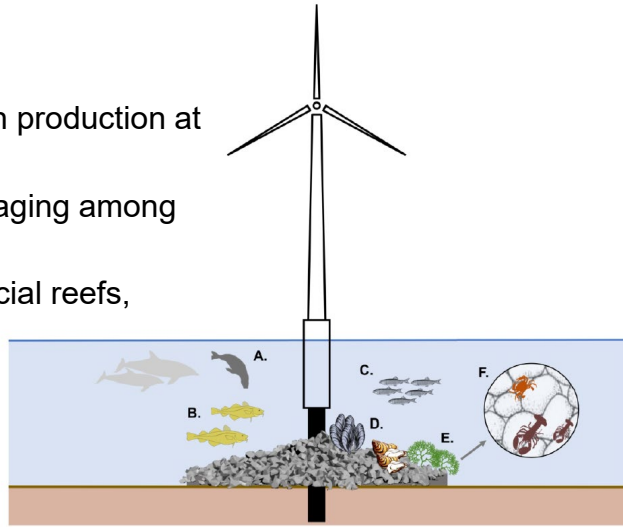
Current view

Offshore wind farms (OWFs) have been found to be associated with

- increased diversity of benthic organisms (e.g. Lindeboom *et al.* 2011)
- increased abundance of reef-dwelling fish species and potential increased fish production at local scale (e.g. Glarou *et al.* 2020) and
- even in some cases increased occurrence of marine mammals in OWF or foraging among the foundations. (e.g. Scheidat *et al.* 2011; Russel *et al.* 2014).

Scour protection of offshore wind farms can provide ecosystem services resembling artificial reefs, offering

- Shelter
- Nursery
- Reproduction and
- Feeding opportunities



Glarou *et al.* 2020

The combination of typical size of scour protection and distance between individual foundations in offshore wind farms is likely to increase per-capita food availability for fishes (Ogawa *et al.* 1977; Champion *et al.* 2015).

Loss of sub-bottom habitat from introduction of hard substrate in OWFs is generally considered insignificant.

At the same time scour protection could potentially facilitate introduction of invasive species by functioning as stepping stones or attract indigenous species not naturally residing in the area.

Focus topic scour protection

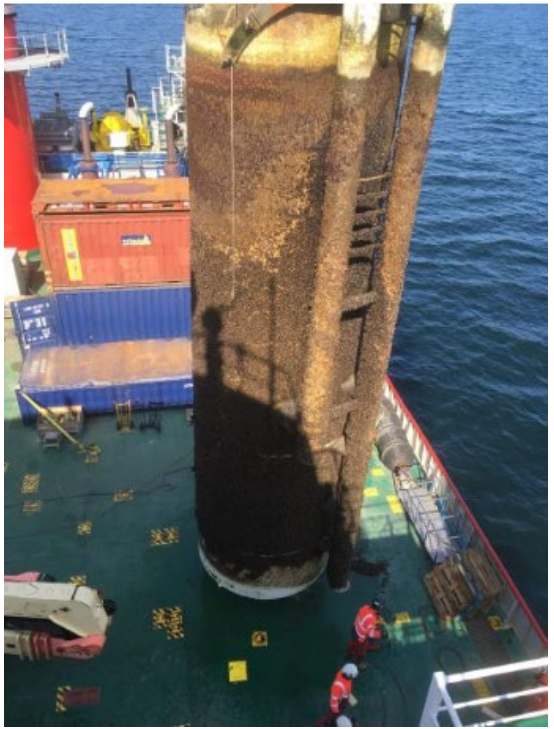
Decommissioning of scour protection

Scour protection acting as artificial reefs is expected to have reached climax succession state at OWF end of life.

Decommissioning of scour protection at end of life should be based on:

- the scour protection material (plastic bags vs. rocks),
- impacts of loss of ecosystem services the structures provide and the relative net environmental benefit from partial or complete removal (Fowler *et al.* 2018)
- Health & Safety risks due to the Offshore operation
- Environmental impact due to vessel activity & emissions
- Liabilities & risks due to remaining structures

Further question: what do to with the “waste”?



To summarize

Target – What we need:

- Clear baseline guidelines on decommissioning requirements and underlying rationale
- Clear process on updating requirements, application to existing sites and site specific exceptions / adjustments

How to get there:

- Create a solid evidence base for decision making based on risks & opportunities on environment, health & safety, technical feasibility & costs

What´s the benefit:

- Planning security in respect to costs & timelines for the operator
- Avoid significant impacts on the environment
- Acceptance of requirements by authorities, NGO, science, industry (incl. investors) & public based on solid evidence base

What should be done:

- Operator, decision bodies and science to work together to assess environmental & business impacts & feasibility – what we do in this workshop

Thank you