

Multi-use of offshore wind farms with bivalves

The increased need for sustainable food and energy production will lead to a higher spatial conflict in the ocean. A multi-use of offshore wind and low trophic aquaculture of mussels can provide a possible solution for this problem. This study followed a holistic approach to analyse the advantages and disadvantages in regards to people, planet and profit of the combination of mussel farming within offshore wind farms and its potential for Norway. The used method within this study was literature analysis.

It was found out that it can create new local jobs, a positive return of investment as well as increase the biodiversity in the marine area. But it also could increase conflicts with local fisheries and negatively impact the local ecosystem due to disturbances of spawning areas or introduction of invasive species. Furthermore, there are high development and installation costs. Until today there are no commercial mussel aquacultures in offshore wind farms but there have been multiple experiments conducted within the North Sea since the early 2000s. Though there are still many knowledge gaps present.

Norway has high ambitions to build 30 GW of offshore wind by 2040, which will provide large potential areas for this type of multi-use. Norwegian waters also have a good availability of environmental parameters such as nutrients (nitrogen and phosphorus), temperature and salinity needed for the cultivation of mussels. Additionally, the most suitable species such as Blue Mussels and Pacific and European Oyster are present in Norwegian waters. Thus there is a high potential for low-trophic aquaculture within offshore wind farms in Norway.

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