MSP and the need to consider socio-ecological trade-offs



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Impact of offshore renewables (OR) on European fisheries



OR expansion is often regulated through MSP

Stelzenmüller et al. (submitted)



- Loss of fishing opportunities
- Economic losses
- Socio-cultural impacts on fishing communities
- Recovery of fisheries resources
- Fisheries benefits through restocking
- Availability of new resources
- Opportunities through synergies and/or co-location of sectors



European fishing activities overlapping with OR locations

Online

• Increasing conflict potential > 2025 across all European seas





European fishing activities overlapping with OR locations



Stelzenmüller et al. (2020) Study for PECH committee EU Parliament

https://bit.ly/33OC3nl

Metiers composition vary for planning scenarios

• Direct and indirect socio-economic impacts for fisheries



Role of MSP – Co-location to mitigate loss of fishing grounds ?



Stelzenmüller et al. (2021) Science of the Total Environment 776,145918

Supply and demand analysis of spill-over resources

Economic viability analysis of targeting spill-over resources

Analysing attraction of fishing effort to offshore windfarms

Experimental fisheries to assess local spill-over mechansims

- Artificial reef structures such as monopiles with a scour protection can lead significant local increases of benthic biomass (Krone et al. 2017; Dannheim et al. 2020)
- Marine mammals are increasingly attracted to offshore wind farms (Russel et. al 2014)
- Potential spillover of biomass of fish and decapods such a brown crab (*Cancer pagurus*) from offshore wind farms



Pilot study - Spillover of brown crab from offshore wind farms and fisheries benefits









Stelzenmüller et al. (2021) Science of the Total Environment 776,145918

4th Baltic MSP Forum • 1-2 June 2021 • Online

Pilot study - Spillover of brown crab from offshore wind farms and fisheries benefits



- Decrease in catches of brown crab with increasing distance to monopiles
- Small and large crabs seem to aggregate around monopiles -> function as nursery area
- Increase of fishing effort since 2015 at distances < 5 km to the nearest offshore wind farm (OWF)
- VMS data show some evidence for fisheries benefits in the proximity of OWFs
- Carrying capacity and reference points for a sustainable resource use are unknown



Stelzenmüller et al. (2021) Science of the Total Environment 776,145918

MSP with Fisheries and OR – lessons learned and good practice

UK and Denmark

- Examples for co-existence (two activities exist at the same time and/or in the same place)
- Fisheries and offshore wind farms

Belgium

- Example for co-location (at least two activities are actively managed together while sharing space at sea)
- Fisheries, aquaculture and offshore wind farms

Germany and the Netherlands

- Examples for co-operation (two sectors benefit from their relationship)
- Fisheries and offshore wind farms





Identified conflict mitigation measures:

- Early stakeholder consultation
- Independent third parties and the creation of guidelines can facilitate negotiation processes
- Compensation payments can reduce the impact potential
- Co-design approaches for the co-location of OR with other uses can reduce the impact potential on fisheries, strengthen the relationship of the sectors of concern and even enable beneficial cooperation between them
- **Promotion of co-operation examples** allows for **mutual learning** and informs Marine Spatial Planning regarding acceptable **mitigation measures**



MSP and the need to consider socio-ecological trade-offs

- MSP does not yet address socio-ecological complexities around resource use such as fisheries
- Role of MSP to promote co-operation between sectors and contribute to the long-term adaptive capacity of the fishing sectors
- Identifying important fishing grounds are not enough direct and indirect socio-economic effects
- MSP with OR could provide new opportunities and synergies through the availability of new resources
- BUT we know little about the ecological functions of OR
- MSP should put more emphasis on the assessment of co-location options and their trade-offs
- Co-location of human activities through MSP is still in its infancy best practice guidance to address conflicts with fisheries are needed



BALTIC 4th MSP

1-2 JUNE 2021, ONLINE

Delivering MSP Interactions and Capacities Across All Levels

THANK YOU !

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