



# A Gusty Wind or A Cool Breeze?

Interplay between OWFs, Fisheries, and  
Climate Change

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# This presentation is based on our OGEL article

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## Oil, Gas & Energy Law Intelligence

**Regulatory and Policy Frameworks for Offshore Wind Projects: Spatial and Temporal Considerations in Light of Fisheries Sustainability amid Climate Change**  
by **A.A. Arif and I. Herrera Anchustegui**

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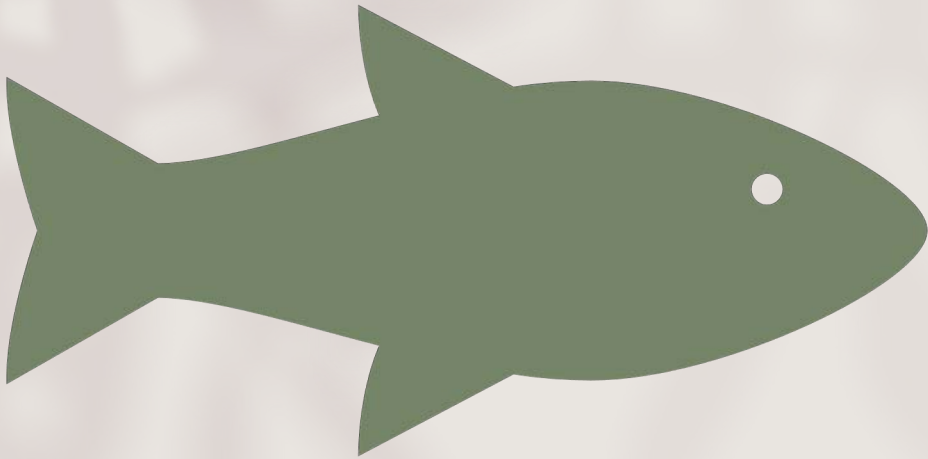
**Open to all to read and to contribute**

# Outline of the presentation

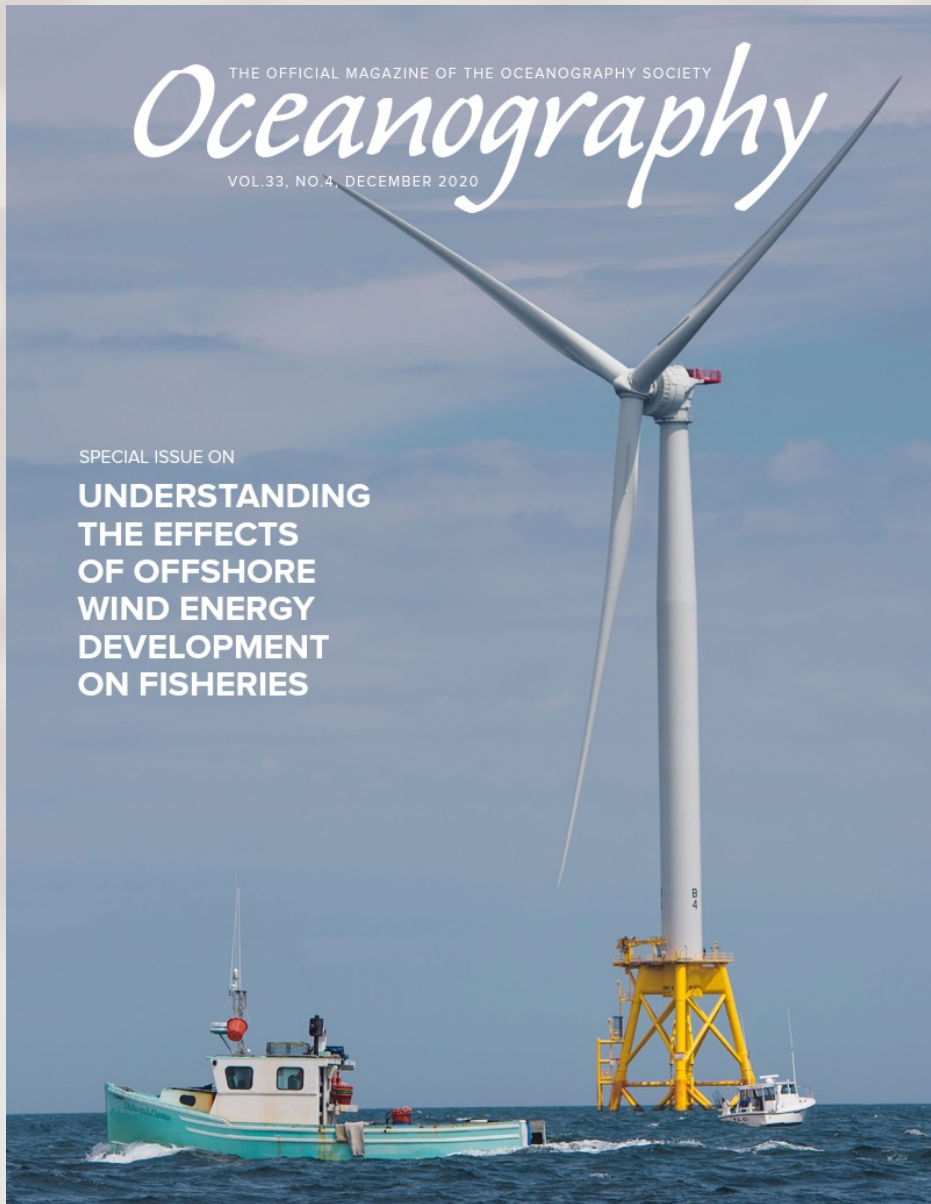


- Background & introduction
- OWFs, fisheries and climate change – tripartite interactions
- Impact of OWFs on fish and the marine environment
- Impact of OWF on fisheries
- Multi-use options: Co-existence and co-locations
- Regulating OWFs: Tools and approaches
  - Phases of an OWP
  - Shareholder consultations
  - Compensatory mechanisms
- Conclusions

# Background & Introduction



- Numerous studies have been conducted on the interplay between OWFs and marine environment, including fish
  - Short-term and long-term effects of OWF on fish species
  - Effects can be both positive and negative (we now know most of them)
- These studies are done by natural scientists (e.g., fish biologists)
- Few studies have been done on the regulatory aspects
- So, we asked ourselves, how regulation can help maximize the benefits of both by neutralizing the negative effects



# Effects of OWFs on the Marine environment, including fish

- 33(4) *Oceanography* 2020
- Special issue focused on OWF and fisheries
- Contributions dealt with a whole range of issues, covering the impact of OWF on fisheries
- Ecological, Human, and Fishery Management Dimensions of OWFs
- Conflict and Engagement between OWPs and Fisheries
- OWF and Artificial Reefs effects
- Offshore Wind Energy and Benthic Habitat Changes
- Effects of Wind Farm on Coastal Resources
- Acoustic Impacts of OWE on Fishery Resources
- The Interaction Between Fish species and Electromagnetic Fields created by OWFs
- Effects of OWFs on Hydrodynamics and Implications for Fishes

# Interplay between OWFs, Fisheries, and Climate Change

## To Have or Not To Have OWFs?

Climate change is the biggest threat facing the earth

Fish and other marine lives are facing existential threats due to climate change

Emission cut or decarbonization is the key to address climate change. OWFs can help us do so.

OWFs also have some negative effects on the marine environment. However, the gravity of these effects are far lesser than those of climate change

So, this one issue is settled:  
OWFs are here to stay

# Effects of OWFs on fish -> the marine environment -> Human



- Effects on fish affect human down the line, e.g., microplastics are ending up on our plates via seafood
- Ecosystem-based fisheries management (EBFM)
- Sustainability includes economic and social considerations along with environmental concerns
- Scientific studies are mostly focused on biological/behavioral aspects of fish species, not on their economic and social concerns (fisheries)
- This presentation will show how OWFs impact fisheries and how regulators can mitigate any conflicts between these two

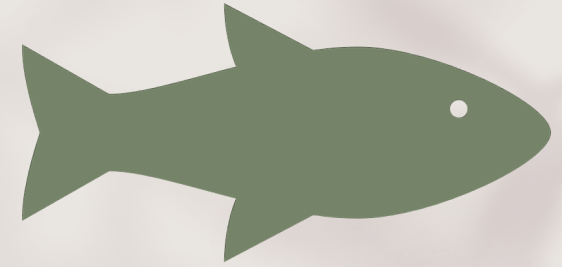
# The effects of OWFs on fisheries

OWFs require large ocean spaces, otherwise used for fishing or establishing MPAs.

Loss of fishing grounds (if the OWF site is a no-go zone)

May lead to overfishing in other areas

Loss of traditional fishing grounds may cause socio-cultural conflicts





# Spatial conflicts

- Living vs non-living
- Non-living vs non-living
- Conservation v utilization
- MSP should have the policy direction

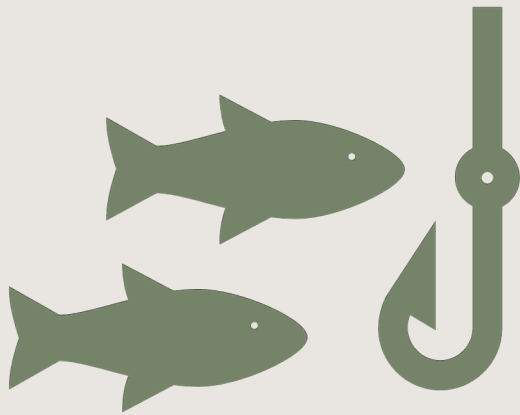
OWFs require vast ocean spaces, but how vast is that?

- New projects in the North Sea would require A further 5k KM<sup>2</sup> to 10k KM<sup>2</sup> by 2030
- Hornsea 2 (in the UK), would cover about 460 KM<sup>2</sup> (1.5 times of the size of Malta)

OWFs require more spaces (and perhaps more time) than that of other competing resources, e.g., extracting hydrocarbon, oil & gas, etc.

Conflicts with other sea uses, conservation projects, navigation, recreational sailing etc.

# OWFs vs Fisheries



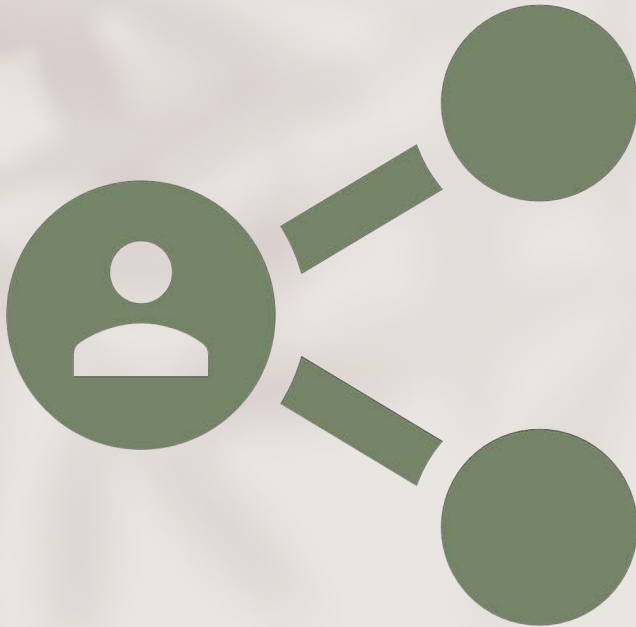
OWFs require strong wind currents and suitable seabed conditions that make fixed or floating technologies possible

Fishing grounds are generally determined by fishers based on the availability of fish and other conditions

Regulators need to find ways to maximize synergies and facilitate co-utilization of overlapping resources in the same space

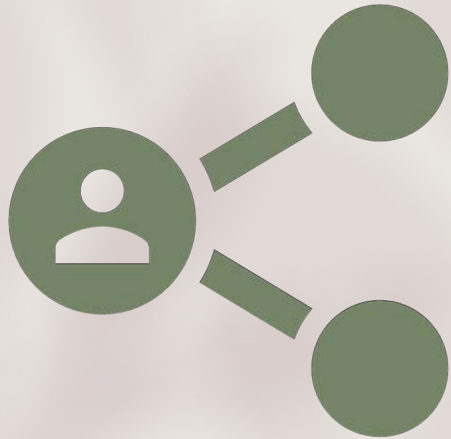


# Multi-use options: Co-existence and Co-location



- Fishing in OWFs, OWFs in MPA
- Co-location and co-existence are not the same
  - Co-location implies sharing the same space
  - Co-existence means operating in adjacent spaces
- Space sharing has traditionally been seen as impossible, but modern science says the opposite
- Ensuring the safety of the fishers and security of the installations is the biggest concern
- Passive gear fishing, aquaculture and recreational fishing are preferred
- OWFs can be in MPAs (to avoid occupying new fishing grounds)

# Drawbacks of and obstacles to multi-use

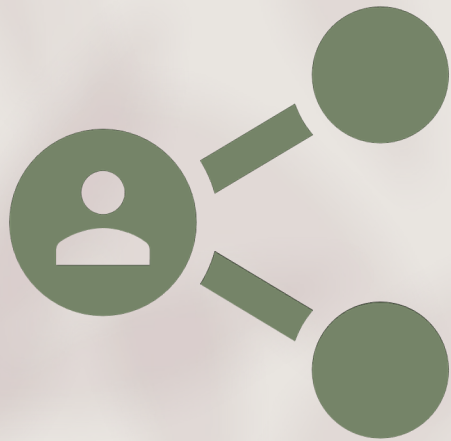


Accidents that cause damage to the OWF infrastructure/fishing vessels/fishing gear

Legal barriers: UNCLOS article 56 and 60

- Grants states the right to create safety zones regarding installations and structures in EEZ (up to 500 meters)
- To ensure the safety of both the installations and those in vessels on the sea
- All ships must respect safety zones by staying outside those designated areas
- In Europe, most vessels were banned from entering OWF sites to avoid accidental damage and collisions, due to the implementation of safety zones

# Multi-use options: wind of change



Multi-use options are getting traction as the regulators consider the latest scientific findings

Fishing is now treated differently from navigation within an OWF, allowing access to vessels of certain sizes

Belgium, Germany and the Netherlands does not allow fishing within up to 500 metres from each turbine. Denmark, reduces the distance to 200 metres

In the UK, fishing with passive gear is allowed within OWF after the construction phase is over

# Developing OWPs



Four major phases:

- Pre-construction site selection
- Construction
- Operation
- Decommissioning

Each of these phases has implications for fish and fisheries

Licensing conditions govern the above phases of OWPs

So, OWP Licence Agreements should be carefully drafted

# Regulating OWFs: Tools and approaches



MSP helps manage multiple uses, including fishing, shipping, tourism and offshore energy production, while preserving the marine environment

Offshore Wind Energy Act (Greece) or Offshore Energy Act (Norway)

A regulatory framework for OWFs includes license requirements

OWF developers are governed by the license terms, which must be carefully crafted

Environmental Impact Assessment (EIA) may be required at multiple phases

# Lifecycle Approach to OWPs



- Lifecycle approach considers the entire lifespan of an OWP
- It includes all stages of an OWP's life – from planning to construction to decommissioning
- Circular and sustainability considerations are integrated in the project
- Stakeholder consultation is a continuous process and runs along the lifecycle of an OWP
- Stakeholder consultation should begin early on



# Preconstruction Site-selection and Construction



Site selection has an important role to play in avoiding conflict

- Who does this and when? (Government/developer; before or after a license is issued)
- Sites to be avoided: Fish spawning and nursery grounds, fish migratory routes

Site selection does not have serious negative effects on marine lives unless the process involves seismic surveys, which generate acute underwater noise

Construction phase have the most severe impact on fish and fisheries. Fisheries activities within the OWF site are not allowed during this phase

Construction calendar should avoid fish spawning and migration seasons

# Operation

(Production and Management)



Information about long-term effects of OWFs post-construction phases is still incomplete

- How long is long-term? The oldest OWF was built about 30 years ago. Is that enough?
- Impacts of OWFs on fish and the marine environment during their operation phase are mainly positive (e.g., reef effect)
- Fishing activities are impacted but it depends on individual sites. OWF sites can be:
  - No go
  - Navigate only
  - Navigate and Fish / passing fishing only

Routine maintenance and occasional repair work may cause some temporary stress on the marine environment and living organisms

With proper consultation and training, fishers who fish within or near an OWF can do monitoring and reporting

# Decommissioning of OWPs



The average lifespan of an OWP is between 20 and 25 years

After that, the OWP infrastructure is dismantled, removed, recycled or abandoned

Not many OWPs have been decommissioned/dismantled, so its impact on fish is not fully known

Impact of dismantling would depend on, among others, OWP site, the size of the turbines and their foundations

# Decommissioning...



The removal of OWFs infrastructure may

- disturb the marine habitat
- have negative impact on fish and fisheries

Damages the reef effect, which was favourable for some marine species

Considering the potential impact of decommissioning of an OWP

- Some jurisdictions, e.g., countries bordering the North Sea, require EIA of decommissioning
- Notifying other stakeholders, e.g., fishers who fish within or near the OWF
- Spawning and fishing seasons should be avoided

Waste management and recycling of OWF infrastructure

# Stakeholder consultation and participation



Stakeholder consultation and participation in decision-making are key

Interaction between different parties with diverse interests might lead to conflicts

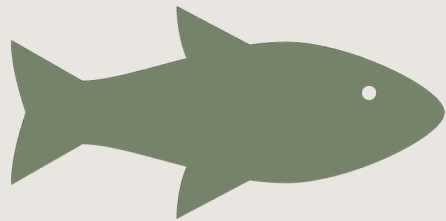
- The list of stakeholders is long: It includes energy regulators, fishers, OWP developers, citizens living in the vicinity of the wind farms, nature conservation groups, tourist associations, maritime transport providers, the navy
- Direct interaction (e.g., compensation claims for no-fishing OWFs, and indirect contact, e.g., environmental groups concerned about the impact of projects)

Regulatory regime must balance their interests, rights and duties to prevent and mitigate disputes between parties

Stakeholder consultation will help identify parties affected by others and balance burdens and benefits

Consultation should take place early on, and it is a continuous process that runs along the OWP

# Compensatory mechanisms and voluntary contributions to reduce conflict



Compensation are granted to fishers for the loss of income as a result of placing an OWF in fishing grounds. These happens when:

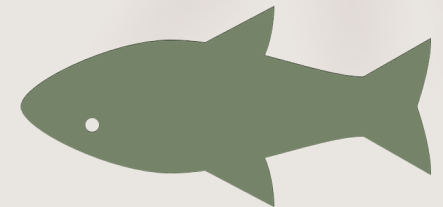
Belgium, Germany and the Netherlands do not have compensatory mechanisms, Denmark and Norway have them.

Voluntary (non-statutory) payments, are paid to fishers to generate project support or minimize opposition

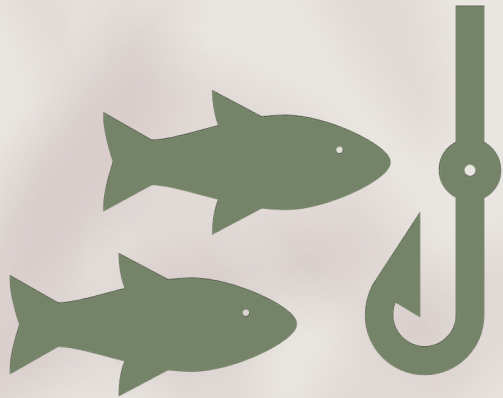
The OWF is a no-fishing zone

Fish move to a different place because of the impact of the turbines

Fishers need to navigate longer distances or alter their routes, which increase their costs, to catch fish



# Compensatory Mechanisms: Pros and Cons



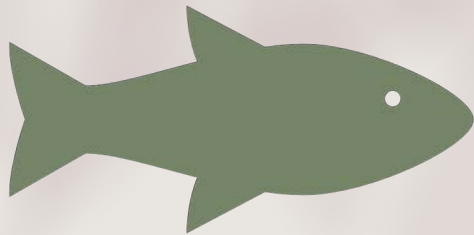
Effective in shorter term, but not so effective in longer-term

Norway provides compensation for fishers who would lose fishing grounds due to OWFs

However, Norwegian fishers are still worried. More OWFs = Loss of more fishing grounds (and livelihood)

Multi-use or co-location options would help solve the problem in the long-term

# Conclusions



Overall, OWFs are beneficial for the climate as they produce clean energy. So, we need more of them



OWFs have some negative effects on fish and conflict with fisheries, navigation and other uses of the sea



A well-developed regulatory regime can help minimize these negative effects, manage these conflicts, and maximise benefits



Regulators must consider the latest scientific findings and adopt appropriate approaches



Marine spatial planning, license conditions, and stakeholder consultations are key areas that regulators must focus



Thank you!

