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LISBOA
FUNDAÇÃO
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APREN

Technical studies for offshore energy potential

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Cargo do convidado

Environmental baseline study – Terms of Reference

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Aims

- Produce reference information to define the scope of future environmental impact studies
- Contribute to the development of offshore wind farm projects while preserving biodiversity and enhancing fisheries sustainability

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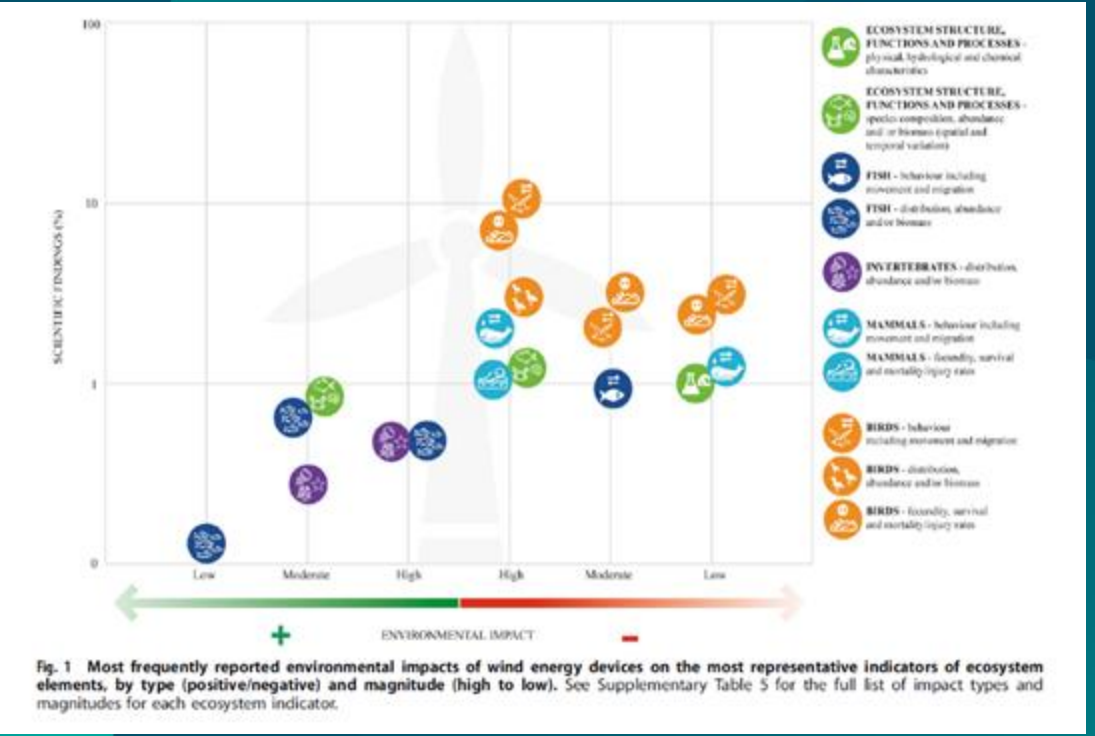

Fig. 1 Most frequently reported environmental impacts of wind energy devices on the most representative indicators of ecosystem elements, by type (positive/negative) and magnitude (high to low). See Supplementary Table 5 for the full list of impact types and magnitudes for each ecosystem indicator.

Galparsoro et al. 2022.

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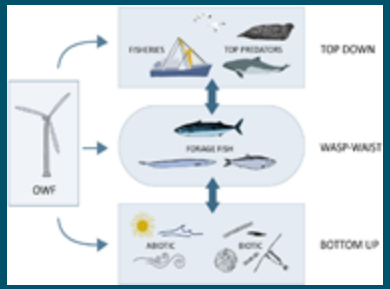

List of Terms of Reference

1. Contaminants in the water column
2. Circulation and upwelling patterns
3. Productivity in the water column, characterization of plankton and non-indigenous species
4. Plankton dispersal patterns
5. Structure and sediment contamination
6. Chemical contaminants in fish and other products
7. Benthic fauna communities (incl. non-indigenous species)
8. Vulnerable Marine Ecosystems –VMEs
9. Communities of demersal, pelagic, pelagic migratory organisms
10. Seabirds, marine mammals and reptiles
11. Trophic webs
12. Fishing activity
13. Storage, data management and information mapping system (‘somosatlântico’)

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Methods

Analysis of historical data and information from the literature

Collection of new data:

- IPMA monitoring surveys (PNAB-DCMAP) - intensification and/or expansion
- Geotechnical surveys - physical-chemical parameters, abiotic samples (water and sediment) and benthic organisms

Evaluate the compatibility of geological surveys with other type of samples (plankton, seabirds and marine mammals)

Reference situation in a wide area: continental shelf and upper slope, west coast

Seek experts on topics outside IPMA areas (SPEA), collaborate with Research Centres/Labs

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Key studies

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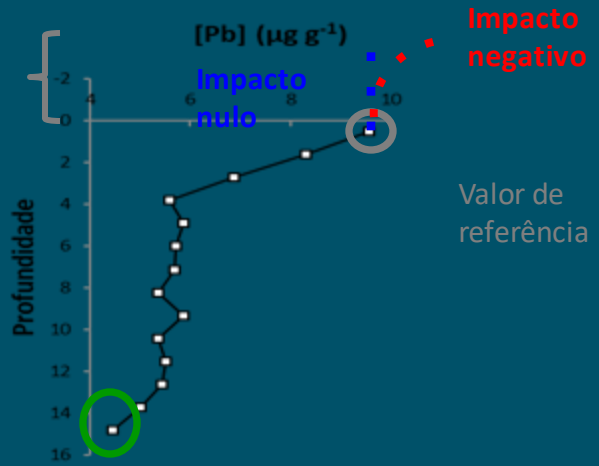
Structure and sediment contamination

Evaluate potential transfer of contaminants from structures (marine litter due to coating flaking, POPs from paints) and galvanic protection anodes (metals)

Establish the contamination reference by:

- Metals
- Persistent Organic Pollutants
- Marine Trash
- Microplastics

FUTURO (5 anos)



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Circulation and upwelling patterns

POTENTIAL IMPACTS

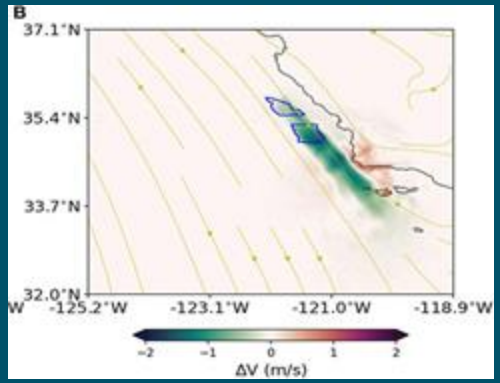
- Shadow effect: change in upwelling patterns due to localized reduction in wind
- Appearance of upwelling/downwelling cells in regions adjacent to wind farms
- Changes in the positions of filaments, vortices and coastal jets, which in turn affect the dispersal of eggs and larvae of marine organisms

Study

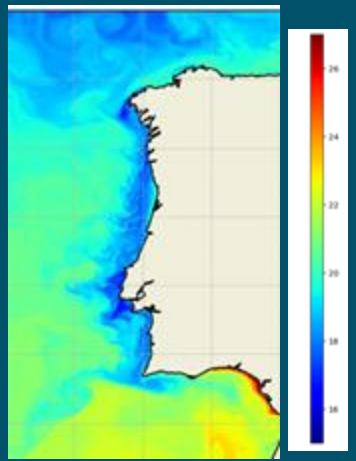
Characterization of the mean circulation and dispersal patterns of eggs and larvae using modelling tools

May be repeated in the future in the presence of wind farms to assess the possible impacts

Decrease in the N-S wind speed component; coast of California (Raghukumar et al.



Example of ocean model output. Surface temperature, 1/8/2006. Upwelling front with several visible filaments.



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Characterization of benthic fauna communities associated with sedimentary and rocky bottoms

POTENTIAL IMPACTS

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- Changes in the positions of filaments, vortices and coastal jets, which in turn affect the dispersal of eggs and larvae of marine organisms

Study

Community composition

Detection of non-indigenous species

Diversity indices, multimetric indices for assessing the state of ecological quality

Identification and assessment of the conservation status of Vulnerable Marine Ecosystems (VMEs)

Imagem: Laboratório de Estudos Bentónicos, campanha CMT2022

Laboratory of Benthic Studies, survey CMT2022

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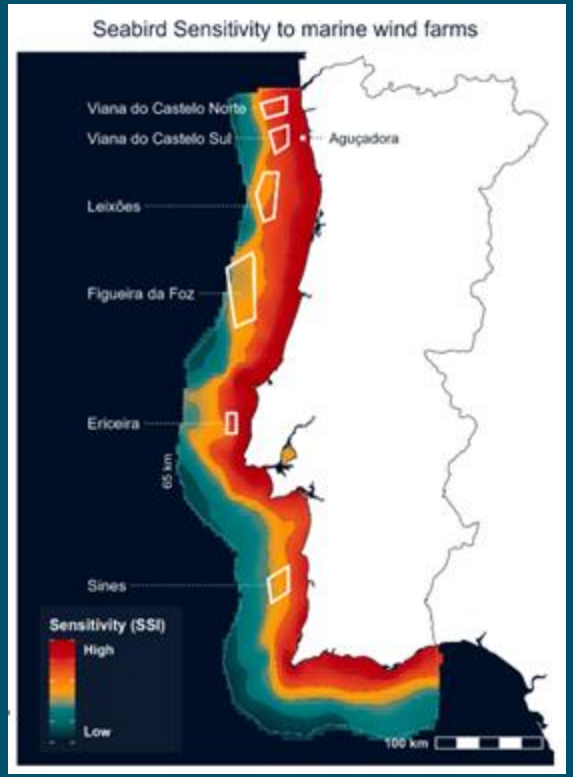
Abundance, distribution, migratory flow and biodiversity of seabirds

- Characterization of communities
- Abundance assessment
- Spatial distribution
- Migratory flows of the main species



Guilherme et al. 2023

(flight altitude, flight manoeuvrability, percentage of time in flight activity, night flight activity, susceptibility to disturbance, flexibility in habitat use, biogeographic population, adult survival rate, threat and conservation status)

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Obrigada!
Thank you!