

Evaluation of German maritime space for offshore wind expansion compatible with conservation

– A study commissioned by NABU –

English Summary

Commissioner

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Implementation

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Introduction:

The legally established goal of 70 GW offshore wind capacity until 2045 translates into substantial changes for Marine Spatial Planning (MSP) within the German Exclusive Economic Zone (EEZ). To what extent the ecosystem-based approach mandated by the EU's MSP Directive is being applied, remains unclear. The present study therefore evaluates the suitability of the German EEZ, covering both the North and Baltic Seas, for offshore wind (OW) expansion in terms of nature conservation. This spatial evaluation is based on an analysis of a series of environmental parameters (including 14 seabird species, harbour porpoise and protected biotopes) and their associated ecological needs. Subsequently, the different areas of the EEZ are, following a traffic light scheme, classified as either

a) suitable for OW (green), b) suitable given certain restriction/regulation measures (yellow) or c) as not suitable from the perspective of nature conservation (red). It has to be noted that Environmental Impact Assessments will still be required for the green areas. This assessment only serves to illustrate that in terms of nature conservation these areas should be developed for OW as a matter of priority.

Methodology:

The methodology applied follows nine steps. Intermediate steps are transparently mapped and, except for the merged final map, results are displayed separately for construction and operational phase. Steps 1-3 consider species distribution, sensitivities to offshore wind and location of particular ecological functions, such as foraging grounds during the breeding season. Step 4 evaluates the EEZ areas based on the integrated information of steps 1-3. During this first evaluation step thresholds separate green vs. non-green areas. The subsequent methodological steps further classify non-green areas as yellow or red areas. Steps 5 and 6 identify and evaluate those OW effects that can or cannot be avoided or mitigated. In step 7 Marine Protected Areas (MPA) and other ecological priority areas are considered as areas of special conservation value. Step 8 adds effect radii to these particularly valuable areas in order to prevent adverse offshore wind effects reaching into the areas considered in step 7. The last step merges the maps of construction and operation of OW given that both need to be integrated in practice. In addition, the potential OW capacity within green and yellow areas is calculated, the habitat proportion of species affected by OW in green and yellow areas is provided and comprehensive fact sheets are prepared for each designated OW cluster.

Results:

Using a traffic light system, our study illustrates that designated OW clusters within the German EEZ partly overlap with critical areas for nature conservation. In the North Sea, the southwestern EEZ should be prioritised for OW, except for the MPA "Borkum Reef Ground" and its surrounding waters. In contrast, areas within the narrow „duckbill“ in the Northwest, as well as west of the MPA „Sylt Outer Reef – Eastern German Bight“ should be spared from OW development from an ecological viewpoint. In theory, the total of the non-red areas would provide adequate space to produce 70 GW of offshore wind power. However, this study did not account for capacity loss due to curtailment measures nor were other anthropogenic uses taken into consideration.

Discussion:

The results highlight that an offshore wind expansion of 70 GW capacity would require all stakeholders to make sizable concessions. In line with the Ecosystem-based Approach (EBA), the carrying capacity of the ecosystem should provide the foundation for MSP and OW planning. At the core of this study an ecological baseline for spatial allocation of offshore wind in the German EEZ is presented. This is designed to inform the debate on how MSP can comply with legally binding climate and biodiversity goals. Furthermore, this study emphasizes the urgent need for technical solutions for mitigating negative ecological impacts of OW, especially during the operational phase. In future, additional species groups such as bats and migratory birds should be included in the assessments associated with MSP to further improve the application of the EBA.