

Geological Survey of Denmark and Greenland (GEUS)

Decision support systems (DSS) for offshore windfarm siting

In Denmark, a DSS has not been developed for application in relation to offshore windfarm siting. However, Göke et al. (2018) applied the DSS MARXAN in the western Baltic Sea for offshore windfarm siting.

DSTs applied are GIS and a wind distribution model (UMPL). The outputs from MARXAN are suitability maps. In other windfarm projects, background information would be geological maps on seabed lithology, geomorphology and the shallow subsurface composition, strength and structures. Additionally, screenings for marine archaeological hot spots are performed focusing on the development of the distribution of land and sea (paleo-landscapes) after the last deglaciation (Jensen et al., 2025). Another tool to be mentioned is the EMODnet Central Portal.

Input parameters mentioned in the figure may comprise multiple sub-parameters. For more information on the input parameters see Larsen et al. (2025; Table 3, p 27).

Further reading

Göke, C., Dahl, K., & Mohn, C. (2018). Maritime spatial planning supported by systematic site selection: Applying Marxan for offshore wind power in the western Baltic Sea. PLoS ONE, 13(3), e0194362. <https://doi.org/10.1371/journal.pone.0194362>

Jensen, J. B., Bennike, O., Christensen, N., Vangkilde-Pedersen, T. (2025). Screening of seabed geological conditions for the offshore wind farm area Kattegat II and the adjacent cable corridor area: Desk study for Energinet. GEUS. Danmarks og Grønlands Geologiske Undersøgelse Rapport Vol. 2023 No. 33 <https://doi.org/10.22008/gpub/34700>

Larsen, I. R., Ernsten, V. B., Maspataud, A., Dakin, N., van Heteren, S., Koutroulli, A., Poyiadji, E. & the GSEU T5.4 Consortium (2025). EGDl multifunctional 2D/3D decision-support module v1. GSEU Report on Deliverable 5.7, 165 pp.

