

Geologian Tutkimuskeskus (GTK)

Decision support systems (DSS) for offshore windfarm siting

GTK does not utilise DSSs for offshore windfarm siting. Work is primarily done within the frameworks of MSP, environmental impact assessments (EIA), and strategic planning initiatives. Zonation Software is widely applied in Finland for prioritising areas for conservation or development. This tool helps identify suitable sites for offshore wind farms by balancing ecological sensitivity and development goals (Virtanen et al. 2022). GIS is also used.

GTK provides geological information on seabed surface and subsurface composition and structures for offshore windfarm planning companies and geological data at different scales for e.g. background information and offshore windfarm siting studies. A Geodiversity index was developed which helps to inform planners and decision-makers about the dynamics of the seabed, abiotic conservation values, and potential areas with high biodiversity (Kaskela & Kotilainen, 2017).

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

Kaskela, A. M., & Kotilainen, A. T. (2017). Seabed geodiversity in a glaciated shelf area, the Baltic Sea. *Geomorphology*, 295, 419-435. <https://doi.org/10.1016/j.geomorph.2017.07.014>

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.

Virtanen, E. A., Lappalainen, J., Nurmi, M., Viitasalo, M., Tikanmäki, M., Heinonen, J., Atlaskin, E., Kallasvuori, M., Tikkanen, H., & Moilanen, A. (2022). Balancing profitability of energy production, societal impacts and biodiversity in offshore wind farm design. *Renewable and Sustainable Energy Reviews*, 158, 112087. <https://doi.org/10.1016/j.rser.2022.112087>

