Bridging the gap between policy and knowledge on biodiversity in Europe

Press release

29th October 2025

New Eklipse evidence report released: "Impacts of offshore wind farm expansion: what are the consequences for achieving Good Environmental Status across European marine waters?"[1]

A new Eklipse evidence report, commissioned by the Directorate-General for Environment (DG Environment) and submitted to the Science Service for Biodiversity (SSBD, BioAgora) via the EC Knowledge Centre for Biodiversity (KCBD) ticketing system, has been released. Funded by the EU Horizon Europe project BioAgora, this report contributes to the

[1] This publication needs to be cited as follow:
Cervantes, A., Pace, F., Gallaou, E., Kadiri, M., Velázquez, J., Fernandes, M., Langridge, J., Scott, A., Sieber, I.M., Bhatia, S., Limache de la Fuente, D., Maureaud, A.A., Dajka, J (2025). State of knowledge regarding the impacts of offshore wind farm expansion: what are the consequences for achieving Good Environmental Status across European marine waters? Report prepared by an Eklipse Expert Working Group

scientific understanding of how Offshore Wind Farm (OWF) developments cumulatively affect marine ecosystems across Europe while identifying significant knowledge gaps.

Prepared by an Eklipse Expert Group—comprising marine ecologists, oceanographers, environmental policy specialists, fisheries experts, and social scientists—the report screened over 4,000 scientific articles, of which 228 were retained for assessing the relationship between fixed offshore wind farm foundations and the 11 descriptors of the Marine Strategy Framework Directive (MSFD). The Eklipse team produced short scientific summaries (SSS) for each of the 11 MSFD descriptors, providing a comprehensive synthesis of how offshore wind farms may affect the achievement of Good Environmental Status (GES) under the MSFD, and with it the health and functioning of European seas.

Europe's rapid expansion of offshore wind energy is crucial to achieving its climate and renewable energy goals. A scoping review conducted during the study, along with an online participatory expert workshop, highlighted that while individual impacts of OWFs on marine biological diversity, seabed integrity, hydrographical conditions, and noise are generally known, most existing studies focus on a narrow range of taxa—mainly seabirds, commercial fish, and harbour porpoises. The findings reveal that, while knowledge of individual impacts and mitigation measures (such as noise reduction measures during construction) is growing, evidence on cumulative impacts—arising from multiple wind farms, interactions with other marine activities, and cascading ecosystem effects—remains limited and unevenly distributed across regions, ecosystems and species.

Key findings of the report include:

- Critical knowledge gaps: Current research focuses mainly on exploration, construction and operation phases of offshore wind farms. Information does not adequately cover the decommissioning phase of offshore wind farms or areas beyond the Greater North Sea, while cumulative impact assessments require integrating impacts across all relevant geographic areas and the full lifecycle of offshore wind farms. In addition, species and habitats included in the MSFD are not all adequately represented in the existing literature or covered by the MSFD (e.g. bats), with key gaps on pelagic habitats, marine mammals, and cephalopods.

- Not all descriptors allowed to capture evidence of impacts: non-indigenous species (D2), contaminants (D8), contaminants in seafood (D9), and marine litter (D10) are not well covered in the current scientific peer-reviewed literature on offshore wind farm impacts, yet are topics of importance.

- Policy integration: Scientific evidence on offshore wind farm impacts rarely discusses links to the MSFD or its descriptors, relevant assessment criteria for GES, or the recently negotiated thresholds. Still, the MSFD represents one of the pillars

for monitoring and assessment of environmental impacts from anthropogenic activities in European marine ecosystems. This requires better integration.

- **Cumulative impacts arising from multiple offshore wind farms and anthropogenic activities leading to cascading effects are overall poorly understood**. Evidence of **population-level effects** and **cross-boundary ecological changes** from multiple wind farms and related activities typically focuses on a single species or area at a time, limiting understanding of ecosystem-level impacts, including connectivity.
- **Need for standardised monitoring:** The lack of comparable data and consistent methodologies limits the ability to assess and manage cumulative impacts across EU waters. The report calls for EU-level guidelines or standards for monitoring and analysis.
- **Importance of long-term data:** Continuous and coordinated monitoring programmes are essential. This includes the collection of baseline data, coverage of key taxa and habitats targeted by the EU environmental regulations, as well as International and regional red/annexe listings to improve predictive accuracy and ecosystem-level assessments.

A coordinated path forward

In conclusion, the report calls for a **comprehensive, integrated, and adaptive framework** for assessing offshore wind farm impacts, including cumulative impacts in alignment with the MSFD. This framework should support MSFD objectives for the monitoring, assessment, avoidance, and mitigation of pressures that could hinder the achievement of **Good Environmental Status** in EU marine waters. Addressing the identified gaps through investment in monitoring, standardisation, and collaborative research will be crucial to support the EU's renewable energy goals while safeguarding marine biodiversity.

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About Eklipse: Eklipse is a knowledge brokering mechanism created in 2016 to support governments, institutions, businesses, and NGOs in making better-informed decisions. Eklipse is recognised by the EU Commission as a key actor in developing the Science Service for Biodiversity as the scientific pillar of the Knowledge Centre for Biodiversity (EC-KCBD). Since 2022, Eklipse has been managed by the non-profit organisation Alternet.

About Bioagora: BioAgora is a Horizon Europe project that supports the development of the Science Service for Biodiversity to the EU KCBD. The project brings together researchers, policymakers, and stakeholders to strengthen the science-policy interface and ensure that biodiversity knowledge is effectively translated into policy and action. By fostering collaboration across disciplines and sectors, BioAgora contributes to the implementation of the EU Biodiversity Strategy for 2030.

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Access the full report: Link.