SOUTHAMPTON MARINE & MARITIME INSTITUTE

University of Southampton

UK Parliament | Science, Innovation and Technology Committee: Under the Microscope Inquiry

SMMI's Written contribution to the Committee's inquiry

24th March 2025

Q1. What area of science and technology do you think we should be looking at over the next Parliament? 1300 characters

In the next Parliament session, the Committee should examine the interplay between offshore wind (OW) development and seafloor biodiversity and functioning to ensure that the Government is taking a measured and balanced approach between renewable energy expansion and protection of vital marine ecosystems.

The UK's goal to reach net zero by 2050 relies on 50 GW of installed OW capacity by 2030, covering > 5% of UK waters. Planned changes in policy, including adjustments to eligibility and consenting criteria for OW projects, will accelerate this growth.

While OW farms play a role in reducing carbon emissions and enhancing energy security, their potential effects on marine biodiversity and seabed ecosystems are emerging and actively being explored. The seabed provides a multitude of benefits to society (ecosystem services), yet these are often overlooked despite their critical role in food provision, climate resilience and seafloor heritage.

The concern is, if marine planning and management are not appropriately informed, that rapid expansion of OW will fundamentally alter biodiversity and the provision of ecosystem functions. It is essential for the UK Government and Parliament to have a comprehensive understanding of the potential unintended consequences and trade-offs involved.

Q2. Why does it matter to you? 1300 characters

Coastal and marine waters play a crucial role in supporting productivity, sustaining rich biodiversity, and significantly contributing to the food web and ecosystem dynamics.

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However, they are also highly susceptible to various anthropogenic pressures and climate change. The landscape-scale change associated with OW development and the cumulative effect of multiple installations represents a fundamental knowledge gap.

This topic matters to us, a consortium of world-leading multidisciplinary researchers led by the University of Southampton, as we are actively working to address uncertainties associated with the expansion of OW. We urge the Committee to be aware of our ongoing research and emerging findings. We aim to facilitate sustainable marine practices by filling the critical knowledge gaps, as highlighted by DEFRA, associated with the ecological and socioeconomic impacts of OW and associated anthropogenic pressures. Preliminary findings are already available, with further insights expected by late 2025.

We are using this new knowledge to develop a novel integrated decision support system to inform policymakers and facilitate those tasked with achieving environmental net gain and net zero targets.

Q3. What do you think the Government should do about it? 1300 characters

Under the Environment Act, the UK Government has a duty to halt marine biodiversity decline while achieving net zero by 2050. These goals are interconnected, so OW policies must consider both ecological and socioeconomic benefits. Government policies need to carefully balance the trade-offs at stake by taking a long-term perspective.

An evidence-backed approach is essential to ensure informed decision-making. Government must engage with the research community and allow enough time to fully understand how ecosystem-wide impacts of OW development reverberate on the seafloor biodiversity and habitats. OW expansion should be integrated into wider marine management strategies across the UK, including the implementation of effective mitigation and compensation measures.

The ECOWind BOWIE project led by Prof. Martin Solan at the University of Southampton can provide Government with unambiguous evidence to help adapt policies and accelerate government decision-making. We hope Government will adopt the decision-support system developed by BOWIE, designed to guide policymaking in OW planning and approvals, whilst considering multiple options and scenarios across key policy areas such as net environmental gain, natural capital, ecosystem recovery, biodiversity, and net zero targets.

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