



Policy coherence between offshore wind energy and biodiversity: Are we on the right track in the North Sea region?

The European Union faces a challenge in reconciling its ambitious offshore wind energy goals with the imperative to protect marine biodiversity. As the EU races to combat climate change, the rapid expansion of offshore wind farms has emerged as a key strategy. However, this surge in renewable energy development raises critical questions about its impact on fragile marine ecosystems.

The European Green Deal sets forth a vision of sustainable growth, aiming to achieve climate neutrality while preserving and restoring biodiversity. Yet, as offshore wind capacity targets soar—with plans to increase from the current 12 GW to over 300 GW by 2050 in the North Sea—concerns mount over the potential ecological consequences and impact on biodiversity targets.

This tension between renewable energy expansion and marine biodiversity conservation highlights a fundamental question: How can we ensure policy coherence between these crucial objectives? The EU's progress in climate mitigation action, exemplified by the Climate Law and Renewable Energy Directive III (REDIII), has outpaced measures to safeguard marine biodiversity, anchored in the non-binding EU Biodiversity Strategy 2030 and the considerably watered-down Nature Restoration Law. This imbalance underscores the need for a more integrated approach and stronger alignment between renewable energy policies and marine protection policies.

We need a critical examination of the EU's current trajectory in balancing offshore wind development with biodiversity protection. Are we indeed on the right track, and what steps may be necessary to achieve policy coherence in this vital arena?

At the 3rd Blue Mission BANOS Arena in Amsterdam in November 2024, the CrossGov team hosted a workshop on the topic, taking a closer look at how three North Sea countries are balancing offshore wind energy expansion and biodiversity protection.

A Deep Dive into Norway, the Netherlands, and Germany's Offshore Wind Strategies

Germany, the Netherlands, and Norway are pursuing ambitious offshore wind energy goals while striving to also protect marine biodiversity. Each country is at a different stage in its offshore wind journey, employing various strategies to reconcile renewable energy expansion with ecological conservation.

Germany: A Mature Market with Comprehensive Planning

Germany aims for 30 GW of offshore wind capacity by 2030, 40 GW by 2035, and 70 GW by 2045. The country's approach is characterized by:

1. Utilizing Marine Spatial Planning and the 2021 Maritime Spatial Plan
2. Conducting SEAs to evaluate environmental impacts, including cumulative and transboundary effects
3. Implementing the Site Development Plan as a cornerstone of the planning and allocation process
4. Integrating EU directives such as the Habitats and Birds Directives and the Marine Strategy Framework Directive into national law
5. Acceleration Package and Acceleration Areas, seeking to fast-track expansion by making conditions easier and incentivize industry, possibly by reducing environmental assessments

Germany's mature offshore wind sector and comprehensive planning approach provide valuable lessons for countries at earlier stages of development. However, the rapid expansion also presents challenges in managing cumulative environmental impacts.

The Netherlands: A Multi-faceted Approach

The Netherlands has established ambitious offshore wind energy generation targets: 21 GW by 2030, 50 GW by 2040, and 70 GW by 2050. To achieve these goals, the Dutch government has designed a comprehensive and integrated strategy that strives to balance energy production with environmental protection:

1. Under the North Sea Programme 2022-2027, Marine Spatial Planning (MSP) was employed to designate specific wind farm zones while minimizing overlap with ecologically sensitive areas. The MSP further integrates nature restoration measures alongside wind farm development, aiming to enhance marine ecosystems concurrently with the growth of offshore wind energy. This includes specific initiatives to strengthen marine biodiversity within and outside wind farms, such as habitat restoration for species affected by fishing and other marine activities.
2. Employing SEAs, Appropriate Assessments, and the Framework for Assessing Ecological and Cumulative Effects (KEC), to evaluate the potential environmental impacts of wind farms and ensure that development proceeds responsibly. Continuous research under programs like Wind op Zee Ecologisch Programma (Wozep) and testing by consortia complements the knowledge collected through these assessments and drives innovation in biodiversity impact mitigation and nature restoration.

3. Encouraging nature-inclusive design practices that support marine life (such as using specific dimensions of scour protection to attract species like cod). Additionally, multi-use strategies combine wind farms with activities like aquaculture or passive fisheries, promoting their sustainable co-existence. At the same time, recent tender procedures include ecological criteria, rewarding developers who exceed biodiversity requirements, encouraging innovation, and setting new environmental standards.

4. A hallmark of the Dutch approach is its emphasis on stakeholder engagement. By bringing together government agencies, environmental organizations, and industry players (for instance in the context of the North Sea Consultations and Community of Practice North Sea), the Netherlands fosters synergies between offshore wind development and marine ecosystem enhancement.

The Dutch approach is notable for its emphasis on bringing various stakeholders together and creating synergies between offshore wind and marine ecosystem enhancement. This integrated strategy could serve as a model for other countries seeking to balance energy production with biodiversity protection.

Norway: A Newcomer with Potential

Norway, a relative newcomer to offshore wind, awarded its first 1.5 GW capacity area in March 2024, with plans for 30 GW by 2040. The country's approach is still evolving, focusing on:

1. Selecting areas with optimal wind conditions, technical suitability, minimal environmental conflicts, and minimal conflicts in fisheries
2. Utilizing mandatory Strategic Environmental Assessments (SEAs) to evaluate general and site-specific environmental impacts
3. Developing new legislation to protect areas beyond territorial waters

Norway's vast maritime areas and strong offshore expertise from its oil and gas industry position it well for future offshore wind development. However, the country faces challenges in balancing this new industry with its traditional fishing sector and pristine marine environments.

Comparative Analysis and Challenges

While all three countries are making efforts to protect biodiversity alongside offshore wind development, several challenges and differences emerge in their approaches. Norway, being in the early stages of strategy development, is currently creating new legislation for offshore protection. In contrast, the Netherlands and Germany have more established legal frameworks, having already integrated EU directives into their national laws.

The countries also differ in their spatial planning approaches. The Netherlands emphasizes multi-use strategies, striving to combine wind farms with other activities such as aquaculture or nature restoration to achieve optimal utilization of the limited marine space. Germany, on the other hand, focuses on comprehensive marine spatial planning. Norway's approach is primarily based on careful site selection to minimize conflicts with existing marine activities and environmental concerns.

In terms of assessment tools, each country has its own focus. The Netherlands employs specifically designed instruments like the Framework for Assessing Ecological and Cumulative Effects (KEC) to evaluate the cumulative biodiversity impacts of offshore wind parks, considering upcoming developments in the context of SEAs and EIAs. Germany is working on expanding its assessment capabilities to better understand cumulative effects. Norway, at this stage, relies primarily on Strategic Environmental Assessments (SEAs) for evaluating potential environmental impacts.

Nature-inclusive design is another area where approaches differ. The Netherlands has taken a strong lead in integrating nature-inclusive designs in wind farms, actively incorporating measures to enhance marine ecosystems within offshore wind projects. This feature is less prominent in the German and Norwegian approaches, although both countries are increasingly considering such measures.

These differences reflect the varying stages of offshore wind development and environmental policy integration among the three countries, with each adapting its strategy to its specific context, regulatory environment, and ecological challenges.

Biodiversity Protection: Sufficiently Safeguarded?

The rapid expansion of offshore wind energy, particularly in Germany and the Netherlands, raises significant concerns about cumulative effects on marine ecosystems. While efforts are underway to protect biodiversity, several critical issues remain unresolved.

One major concern is the long-term impact of multiple wind farms on marine ecosystems, which is not yet fully understood. The expansion into deeper waters could alter local and regional hydrodynamics, affecting prey availability for various marine species.

Additionally, the effects on migratory species, including birds and marine mammals, necessitate transboundary cooperation and assessment. For instance, underwater noise from construction activities poses risks to marine mammals, while migratory birds may face collision hazards.

Seabed habitats also require attention. While offshore structures can create artificial reefs that enhance local biodiversity, they may simultaneously disrupt soft sediment habitats. The ecological implications of these changes need further investigation.

Balancing wind farm development with sustainable fisheries poses another challenge. While the exclusion of trawling activities near wind farms can boost local biological productivity, it raises questions about the displacement of fishing efforts and its broader ecological impacts.

Finally, effective long-term monitoring programs and adaptive management strategies are crucial but still in development. Future research should focus on understanding how offshore wind farms influence primary production and interact with climate change and fisheries dynamics.

While all three countries are making efforts to protect biodiversity alongside offshore wind development, several challenges remain. Norway's approach is still in its early stages, with biodiversity protection legislation in progress. The Netherlands has implemented a developed strategy, but cumulative effects on seabirds and marine mammals remain a concern. Germany has an established framework, but the rapid expansion of offshore wind raises questions about the effectiveness of marine protected areas. The rapid expansion of offshore wind, particularly in Germany and the Netherlands, raises concerns about cumulative effects on marine ecosystems.

Conclusion and Future Outlook

While Norway, the Netherlands, and Germany are making strides in balancing offshore wind development with biodiversity protection, biodiversity protection continues to lag behind and is a secondary goal. The rapid pace of offshore wind expansion necessitates continued research, monitoring, and adaptive management.

Moving forward, increased collaboration between these countries and others in the North Sea region will be crucial. Sharing best practices, coordinating spatial planning, and conducting joint research on cumulative impacts could lead to more effective strategies for protecting marine biodiversity while meeting renewable energy goals. As the offshore wind sector continues to grow, these countries' experiences will provide valuable insights for other nations seeking to develop their offshore wind resources sustainably. The challenge lies in maintaining the momentum of renewable energy expansion while ensuring the long-term health and resilience of marine ecosystems.

Reference:

Froukje Maria Platjouw, Maaïke Knol-Kauffman, Ben Boteler, Nikolaos Giannopoulos, *Policy coherence between offshore wind energy and biodiversity: Are we on the right track in the North Sea region?*, CrossGov Blog Post December 2024

Contact: crossgov@niva.no



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