AQUAWIND

Innovative multi-use prototype combining offshore renewable energy and aquaculture in the Atlantic Basin

D5.4 – RECOMMENDATIONS AND POLICY BRIEF FOR POLICY MAKERS ON MULTI-USE

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[1] PU= Public, SEN=Sensitive

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Executive summary

Multi-Use Platforms at Sea (MUPS) represent a bold, necessary step toward achieving Europe's green and blue economy goals. By combining offshore wind energy production with aquaculture, these platforms offer a high-efficiency solution to spatial competition at sea, support low-carbon food systems, and open new economic opportunities—especially for remote coastal and outermost regions.

The AquaWind project, a flagship demonstrator based in the Canary Islands, provides a real-world testbed for this concept. Through its successive deliverables, AquaWind has shed light on both the technical feasibility and the regulatory, institutional, and legal obstacles that must be addressed to scale MUPS across Europe.

This briefing synthesizes key findings from AquaWind's demonstration, highlighting not only the complexity of obtaining permits and ensuring safety across multiple sectors, but also the promise of a wind-powered aquaculture infrastructure and the critical role of local communities in shaping future deployment.

Introduction

The successful implementation of MUPS, in the first place, relies on high-quality technical work. As AquaWind demonstrated, the engineering challenges for MUPS implementation can be solved with dedicated skills and through the use of right tools and existing systems – e.g., in the from floating wind platforms and aquaculture cages to solar-battery microgrids and digital sensor arrays. Moving beyond the technical aspects, the primary bottlenecks for MUPS establishment are rather legal and governance related.

1. Current legislative framework

Understanding how European legislation regulates MUPs requires examining a multi-layered governance landscape involving both European Union directives and national-level licensing regimes.

At the core of the EU's legislative approach to marine planning is the Maritime Spatial Planning Directive (2014/89/EU)(MSPD). This directive mandates all coastal EU Member States to develop maritime spatial plans to manage the use of marine space in a coordinated, sustainable manner. The directive encourages cross-sector planning and provides a foundation for integrating multiple offshore activities in a shared marine area. The Maritime Spatial Planning Directive (2014/89/EU) does not explicitly require

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or define "multi-use" zones or platforms, but it enables and encourages such developments introducing enabling conditions for such integrated use through:

- Article 5(1): MSP must aim to "optimize the use of marine space" and promote synergies between different sectors.
- Article 8: Member States are allowed to “designate zones for different uses” of the marine space or to combine compatible uses in a single zone.

Despite fostering multi-use initiatives, MSPD does not prescribe nor indicate how different sectors—like energy and aquaculture—should collaborate legally, leaving that responsibility largely to the discretion of Member States.

Environmental oversight is governed through a combination of directives, notably the **Marine Strategy Framework Directive (MSFD)** and requirements for **Environmental Impact Assessments (EIAs) and Strategic Environmental Assessments (SEAs)**. These tools ensure that offshore activities, whether single-use or multi-use, are evaluated for their ecological impact and that mitigation or compensation strategies are considered. Meanwhile, regional conventions such as OSPAR, covering the North-East Atlantic, reinforce environmental safeguards and influence licensing standards for offshore construction, CO_2 storage, and marine habitat protection.

While the EU provides the structural backbone for maritime governance, the actual implementation and licensing of MUPs fall largely within national legal systems. This has led to significant complexity and inconsistency across Member States. Each sector—offshore wind, aquaculture, tourism, and others—typically operates under its own licensing regime, with different authorities, timelines, and procedures.

In some countries progress has been made in aligning marine spatial planning with cross-sectoral coordination. In the Netherlands, legislation related to multi-use platforms is evolving, particularly in the context of offshore wind farms and the North Sea. Key frameworks include the Dutch North Sea Strategy 2030 and the Environment and Planning Act. Germany and Denmark (through overlapping priority zones in their MSP 2021) also provide successful examples of how a coordinated governance can foster the establishment of this type of initiatives and reduce administrative barriers.

Despite evolution, even in the most advanced countries legal frameworks still lack mechanisms to facilitate fully integrated offshore platforms. The result is a fragmented legal environment in which MUP developers must navigate multiple, sometimes conflicting, regulatory pathways.

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The central challenge for MUP development in Europe is that current laws were not designed for co-located, multi-sector use. Existing legal instruments were drafted with single purpose uses in mind, such as energy extraction or fisheries management, and do not account for the complexities of shared platform governance. This results in overlapping jurisdictions, conflicting safety standards, and regulatory uncertainty.

Further, the lack of a unified legal framework for MUPs often deters private investment. Investors and developers face unclear liability regimes, uncertain revenue-sharing models between sectors, and potential legal disputes over shared infrastructure.

1.1 Regulatory fragmentation and institutional silos

Permitting processes across Europe remain deeply sectoral. In AquaWind, a single pilot installation required seven distinct permits—from coastal use modifications to aeronautical safety and aquaculture research authorization. Each of these was managed by a separate authority, with timelines spanning over a year and unclear interdependencies between approvals.

This situation is common in other Member States as well such as Denmark where a developer wishing to establish an offshore wind farm must apply for three different permits: one for site investigation, one for construction, and another for operation. Permits are managed by different agencies: energy regulators, fisheries departments, port authorities, and safety inspectorates work in parallel, with limited mechanisms for joint assessment or decision-making. This lack of coordination leads to duplication, delays, and uncertainty for developers. Adding aquaculture or seaweed farming to the would require additional permits from different regulatory bodies, responsible for environmental and health assessments. This siloed approach to permitting hinders the seamless integration of multi-use concepts and increases project costs and lead times.

1.2 Legal uncertainty and fragmentation

As highlighted previously, there is no legal status for multi-use platforms under EU or national law. MSPD does not directly foresee “multi-use platforms” as a legal category and it gives countries the discretion to promote them allowing overlapping uses in the same area and removing rigid sector-by-sector zoning in favor of co-located activities where compatible. The directive creates thus a legal basis to accommodate MUPs (multi-use offshore platforms), but Member States must operationalize this in their national maritime spatial plans. The actual implementation of multi-use depends on how countries interpret “compatibility, how national permitting systems handle

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overlapping activities and whether spatial planners proactively identify and zone for multi-use opportunities.

This general legal void creates ambiguity around ownership, liability, insurance, and operational control—particularly when different companies or public agencies operate distinct parts of the same structure.

2. Technological and operational obstacles

2.1 Engineering and logistics complexity

Designing platforms that can support multiple, sometimes conflicting uses (e.g., wind turbines and aquaculture cages) is highly complex. Requirements for anchoring, stability, corrosion resistance, safety, and maintenance differ by sector and interoperability between systems needs further development.

Offshore operations require robust infrastructure for access, maintenance, and support vessels and might be importantly affected by weather conditions

2.2 Operational safety complexity

AquaWind's Health and Safety Plan revealed that traditional single-operator models are insufficient. Instead, a project-wide ISO 45001-compliant safety management system had to be developed, covering all consortium partners and contractors. This was essential for coordinating emergency response, defining shared responsibilities, and ensuring competence across different types of marine work. Although it may not be a barrier, it is nonetheless a requirement that must be addressed and managed appropriately.

3. Environmental and social impact

Beyond legal barriers and technical and economic hurdles, MUP also faces significant environmental and social challenges that complicate their implementation. From an ecological standpoint, the combined impact of multiple activities at sea — such as energy production, aquaculture, and maritime transport — needs to be further monitored. Traditional environmental monitoring frameworks must be adapted to assess such integrated operations, and the absence of standardized indicators for multi-use scenarios only adds to the uncertainty. As a result, environmental licensing becomes more complex and precautionary, potentially stalling innovative deployments.

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In parallel, social acceptance of multi-use platforms must be fostered. Local communities and existing ocean users, such as small-scale fishers, may view these developments with skepticism or outright opposition. Concerns often stem from perceived environmental risks, or the fear that industrialized structures will encroach on traditional livelihoods and culturally significant seascapes. In many cases, these perceptions can be positively addressed through participatory approaches as in the case of AquaWind. Moreover, within the maritime sectors themselves, cultural resistance can emerge. Industries that have historically operated in isolation, like fisheries and offshore energy, often lack experience collaborating with one another, and this institutional inertia can hinder efforts to co-design or jointly manage shared platforms.

4. What AquaWind teaches us

The AquaWind demonstrator is much more than a technology validation exercise, it is a window into the future of how Europe must manage its oceans.

Deliverable D1.1 showed the real administrative burden associated with co-located uses. The permitting path was long, fragmented, and uncertain, particularly for the aquaculture component, which was still awaiting approval over a year into the process. This is incompatible with the EU's ambitious timelines for offshore energy and food transition.

Deliverable D1.2 introduced a blueprint for safety governance in multi-actor marine environments. It demonstrated that with the right policy frameworks, shared health and safety systems can function effectively even when responsibilities span multiple partners and sectors.

Deliverable D1.10 brought in the societal lens, revealing the high expectations and strong support from local communities. In the Canary Islands, where over 70% of seafood is imported, the potential to generate local, sustainable protein using clean energy was seen as both an economic and cultural opportunity.

Moreover, the technical work packages WP2, WP3 and WP4, the different deliverables provided, and the demonstration activities developed during their implementation, teach us that the integration of activities is possible and beneficial for the main industries involved, energy and aquaculture when suitable technologies, methods and procedures are used.

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5. What other EU funded projects teach us

This paragraph outlines actionable recommendations for policy makers to support the development and deployment of Multi-Use Ocean Platforms (MUOPs), based on findings from key European and international projects.

Priority Area	Actionable Recommendation	Rationale & Evidence
Coherent legal & governance framework	Create a single, MU-specific permit that merges concession, EIA and safety checks, administered through a "one-stop-shop" authority.	Fragmented, sector-by-sector rules slow projects. UNITED's legal policy brief shows that aligning or merging permits and EIAs would "lower the administrative burden" and cut insurance costs for developers.
Stable, blended financing & risk-sharing	Use public seed funding, loan guarantees and tax incentives to attract private capital for first-of-a-kind platforms.	Space@Sea project concludes that modular islands are "costly, yet beneficial," and recommends government co-financing to unlock private investment.
	Allow cost-sharing across co-located sectors (e.g., aquaculture + wind) through joint-venture frameworks.	UNITED project pilots show that sharing infrastructure reduces OPEX and helps reach bankable pay-back periods.
Participatory design & social license	Require early, iterative stakeholder engagement (local fishers, tourism, NGOs) in platform design.	Comparative research from MERMAID & TROPOS finds that participatory design increases social acceptance and surfaces site-specific constraints before permitting.
	Use "living labs" or pilot zones to test MU concepts with communities before full commercial deployment.	Lessons from Gran Canaria and Taiwan pilots highlight the value of small-scale trials for addressing environmental and socio-economic concerns.

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Innovation support & knowledge sharing	Fund large-scale demonstration projects and an open-access database of engineering, environmental and socio-economic data.	UNITED's Ocean Multi-Use Commercialisation Roadmap calls for open data and cross-sector learning to accelerate replication.
Environmental safeguards & monitoring	Standardize MU-specific environmental monitoring protocols (benthic, avifauna, noise) and integrate them into adaptive MSP cycles.	MUSES identifies environmental uncertainty as a key barrier and recommends clear monitoring duties linked to MSP review cycles.
Insurance & risk management	Develop MU insurance guidelines recognizing synergies rather than stacking premiums for each use.	UNITED shows that overlapping policies inflate costs; guidance on combined coverage and mutual waivers can cut premiums.
Capacity-building & skills	Create EU Blue Skills programmes focused on multi-use operations, combining offshore energy, aquaculture, logistics and tourism modules.	Stakeholder-engagement studies (MERMAID/TROPOS) emphasize workforce readiness as a condition for successful MU adoption.

6. Implications for EU policy

The findings from AquaWind and other EU funded projects offer three clear policy implications:

1. **Europe needs a clear legal framework for the establishment and operations for multi-use platforms.** Without this, ambiguity around regulation, liability, and financing will persist. A clear definition should be embedded in maritime spatial planning and offshore renewable policies.
2. Streamlining regulatory processes and permitting systems is critical to providing legal certainty and fostering multi-use project development. AquaWind shows that multiple uses should be considered under a single application. One-stop shops for MUPS or a single application template would reduce duplication and provide greater transparency.

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3. **Investment and capacity-building are needed at regional levels.** Maritime regions have the most to gain, but they also face the biggest hurdles. EU funding and training programs must target local authorities, port operators, and SMEs to enable replication.

Based on this, AquaWind recommends the following priority actions:

- EU updates the **Maritime Spatial Planning Directive** to explicitly support multi-use scenarios and establish an **EU-wide legal definition** of Multi-Use Platforms at Sea, recognizing joint operations and integrated ownership models.
- EU and Member States create **legal designations in marine Spatial plans for 'Multiple use of space zones'** for mixed use wind and aquaculture, and other activities.
- EU and Member States streamline the permitting processes for development of MUP by proposing a simplified EU "single-application" template that removes duplications of permits. The template might include also a proposal for MUP insurance prototypes.
- EU and Member States support the creation of **regulatory sandboxes**[2] in to fast-track multi-use applications in a controlled regulatory environment. A sandbox allows developers and regulators to explore **hybrid governance arrangements** in a real-world but controlled environment, identifying where regulations overlap, conflict, or need adaptation.
- The EU allocates targeted funding through **EMFAF, Horizon Europe, and the Connecting Europe Facility** to support off-grid electrification, ICT monitoring systems, and replication in outermost regions.

[2] A regulatory sandbox is a controlled environment where innovators can test new technologies, business models, or services under relaxed regulatory constraints, with oversight from competent authorities. The aim is to explore emerging innovations in the real world while minimizing legal uncertainty and assessing regulatory gaps. These sandboxes are time limited, scoped, and focus on regulatory learning—not permanent legislative exemptions.

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Conclusions

AquaWind has demonstrated that while the technical path is relatively feasible with the right tools and dedicated expertise, regulatory and administrative barriers remain complex and challenging. These hurdles are particularly significant due to the uncertainty they create for developers and the inefficiency of current procedures, which are often time-consuming and fragmented. Other EU-funded projects have echoed these findings, reinforcing AquaWind's conclusions.

If Europe is truly committed to a sustainable and integrated Blue Economy, it must break free from rigid sectoral silos and support innovative multi-use solutions. This begins with the establishment of a coherent and streamlined regulatory framework, based on the explicit inclusion of multi-use zones in the Maritime Spatial Planning Directive and developed in close alignment with national policymakers. In the absence of such a framework, the creation of regulatory sandboxes should be prioritized at both EU and national levels to accelerate the testing and deployment of multi-use ocean platforms.

Transforming its policy landscape is essential for Europe to lead globally in marine co-location and to pioneer new models of ocean stewardship for the 21st century.

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