ULTFARMS Deliverable 9.3

Governance bottlenecks to multi-use

ULTFARMS

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Abstract	This deliverable reports findings of Task 9.3 in which governance barriers to multi-use were identified. Five solutions to these are proposed.
Keywords	Multi-use, governance, multi-level governance, bottlenecks, standardisation, certification

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List of abbreviations

CMEMS	Copernicus Marine Environment Monitoring Service
CoP	Community of Practice
D	Deliverable
EEZ	Exclusive Economic Zone
EU	European Union
LTA	Low-Trophic Aquaculture
LTAP	Low-Trophic Aquaculture Pilots
MSP	Marine Spatial Planning
MU	Multi-use
NGO	Non-Governmental Organisation
OECD	Organisation for Economic Co-operation and Development
OWF	Offshore Wind Farm
PPE	Personal Protective Equipment
T	Task
ULTFARMS	circUlar Low Trophic oFfshore Aquaculture in wind farms and Restoration of Marine Space
WP	Work Package

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Executive summary

The ULTFARMS project aims to improve Low-Trophic Aquaculture (LTA) systems in Offshore Wind Farms (OWFs). The commercial development of such multi-use project is hampered by – among others - governance barriers.

Work Package 9 (WP9) addresses these challenges by developing a governance framework, identifying bottlenecks, and exploring better governance structures. This deliverable presents the findings of Task 9.3. It identifies bottlenecks in governance that hamper the upscaling and commercialisation of multi-use activities, resulting in the production of products such as mussels, seaweed and oysters. The in-depth analysis of commercialisation of the products is done under Task 9.4. This deliverable aims to address priority bottlenecks, supporting the pilots in further development of multi-use. Data collection methods include a review of relevant literature, semi-structured interviews with pilot leads, and an online survey. The data gathered is analysed qualitatively and quantitatively, with barriers grouped according to themes such as legal and procedural issues, economic viability, risks, and stakeholder engagement.

Most governance barriers identified during the pilot interviews are linked to legal and procedural issues (33%), followed by economic viability (18%). These barriers are classified according to the four governance dimensions, with hierarchical governance being the most prevalent, followed by market governance. Key barriers include complicated licensing procedures, lack of clear regulations, high decommissioning costs, and reluctance from stakeholders due to high risks and costs. Future and commercial upscaling barriers also reflect these themes, with legal and procedural issues (25%) and economic viability (20%) being the main concerns. Additional barriers include unbalanced competition between sectors, high costs of the upscaling of commercial activities, and lack of skilled personnel and technical expertise. Most commercial upscaling barriers are linked to the societal level, highlighting the need for comprehensive governance strategies to address these challenges.

The findings from this analysis were validated and discussed during a workshop with 25 experts from academia, industry, NGOs, and governmental agencies. Five solutions to overcome barriers were discussed:

1. Establish a one-stop shop: create a single government contact point to streamline licensing and improve regulatory processes. This simplifies administration and enhances user experience.

2. Include multi-use in tenders: make multi-use a non-price criterion in offshore wind farm tenders to encourage additional activities.

3. Invest in stakeholder participation: effective engagement involves mapping stakeholders, developing communication plans, and involving local stakeholders

from the start. Continuous engagement of end-users reduces conflicts and fosters collaboration.

4. Develop blue skills: invest in vocational training, higher education, and lifelong learning to support the blue economy. Interdisciplinary programs and initiatives like "Blue Careers in Europe" help bridge the skills gap and build a resilient workforce.

5. Develop safety and insurance protocols: ensure worker safety in multi-use OWFs with comprehensive safety protocols, regular inspections, and robust insurance policies. Tailored safety training and practical regulations are essential.

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1. Introduction

1.1 A brief overview of ULTFARMS

ULTFARMS (circUlar Low Trophic oFfshore Aquaculture in wind farms and Restoration of Marine Space) aims to move beyond the current application of Low-Trophic Aquaculture (LTA) systems with novel engineering, technical, ecological and biological processes to optimise production in harsh offshore conditions, low salinities, and their integration within Offshore Wind Farms (OWFs). ULTFARMS will be covering the whole value chain expertise for LTA production in OWFs. Co-development and co-management by research and industry realise novel designs and operations unique to offshore in six Low-Trophic Aquaculture Pilots (LTAPs) in as many OWF locations across the North and Baltic Seas (Table 1):

Table 1: Overview of the six pilot projects of ULTFARMS

Member state	Name of OWF	LTA production
Belgium	Belwind	Seaweed-Mussels-Oysters
The Netherlands	Borssele	Mussels
Germany	FINO2	Seaweed
Germany	FINO3	Seaweed-Mussels-Oysters
Denmark	Anholt	Seaweed-Mussels
Denmark	Samsø	Seaweed-Mussels

ULTFARMS involves stakeholders from across the value chains of OWF and LTA to ensure environmentally sound, low-carbon, and safe LTA products from design to commercialisation. New cultivation structures, grow-out systems, and both nature restoration and eco-friendly design measures are advanced.

1.2 Background and problem statement

The multi-use of space inside OWFs, including activities like low-trophic aquaculture (LTA), presents a multifaceted challenge for a variety of stakeholders. These challenges may be clustered in biological, technical, economic and social/policy aspects (Buck et al., 2008). These complexities arise from uncertain systemic risks that necessitate adaptive, flexible, and inclusive risk governance (Van den Burg et al., 2020a). Additionally, the integration of offshore wind farms with aquaculture involves diverse stakeholder perspectives, requiring a careful balance between societal and economic considerations (Schupp et al., 2021). Logistical challenges and high operation and maintenance costs further complicate the implementation of multi-use activities. Ultimately, successful multi-use strategies must address the need to balance various stakeholder interests while fostering synergies between socio-technical and ecological uses (Lacroix & Pioch, 2011).

Scholars such as Ciravegna et al. (2024), Van den Burg et al. (2020a) and Stuiver et al. (2016) have identified multiple governance barriers regarding the development of multiple activities within shared marine spaces. Multi-use involves significant regulatory complexity and managerial uncertainties, which can impede the development of multi-use projects. The necessity for additional licenses and insurance can lead to increased transaction costs, further challenging project viability. Moreover, the absence of clear regulations and effective governance models for multi-use at sea presents barriers to achieving a sustainable blue economy. High levels of risk and uncertainty associated with these projects necessitate robust risk management strategies to facilitate scaling up. A lack of social acceptance and inadequate stakeholder engagement may cause delays and increased costs, highlighting the critical need for community involvement in the planning and implementation of multi-use initiatives.

Despite the recognition of the above-mentioned governance barriers in multi-use projects, concrete solutions to these challenges remain largely absent from the literature. This gap hinders the effective utilisation of successful pilot practices, limiting the development of actionable insights and broader strategies necessary for overcoming regulatory complexities and uncertainties. The lack of clear governance models and stakeholder engagement further complicates the difficulties in realizing multi-use at sea in practice.

1.3 Objectives of WP9

Work Package (WP) 9 covers the development of the governance framework for multi-use in the context of European policies relevant to multi-use concepts and food production. The WP maps the governance landscape at the pilot, basin, and broader societal levels. It contributes to the identification and resolution of bottlenecks and explores the potential of opportunities regarding governance structure and decision-making. The WP addresses regulations, standards and ecolabelling by screening current applicable regulations and drafting ways for project results to comply with European regulations when entering the market.

Deliverable 9.1 provided a holistic governance framework for multi-use and food production (see section 2.2). Deliverable 9.2 mapped the governance landscape at pilot level, basin level and beyond.

The current deliverable 9.3 reports on the findings of Task 9.3. It identifies bottlenecks in governance that hamper the commercialisation of multi-use products. It aims to address priority bottlenecks, supporting the pilots in further development of multi-use. The task brings together the parties in focus groups to define pathways for bottleneck resolution. Data is collected through a desk study of documents on governance bottlenecks, interaction with pilot participants (discussions, interviews), expert interviews, focus groups (together with task 9.2) and an online survey. The WP proposes mechanisms for good governance, helping to ensure accountability, transparency, and integrity, and support the alignment of interests and the resolution of conflicts (D9.3).

D9.4 focuses on regulation, labelling (certifications) and standards in multi-use and low-trophic aquaculture. Regulation aspects will be addressed by screening

current applicable regulations and drafting ways for project results to comply with European regulations when entering the market. Ecolabelling and other certification will also be addressed, in collaboration with WP7 and WP5. Regarding standardisation, the main objective will be to check national and international current standards and, if a gap is detected, contact national and international standardisation bodies to provide inputs for further standards development.

1.4 Reading guide

Chapter 1 consists of an introduction that provides a brief overview of ULTFARMS, provides the background and problem statement, outlines the objectives of WP9, and gives an overview of the tasks and their objectives. Chapter 2 consists of the methodology and details definitions and dimensions of governance, presents a governance framework and explains the approaches used to collect and analyse data. Chapter 3 presents the findings of the study, focussing on the identified governance barriers and possible solutions to overcome them. The report ends with chapter 4 by elaborating the discussion and conclusions.

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2. Methodology

2.1 Definition and dimensions of governance

The development of policies and regulations for multi-use at sea is embedded in an ongoing societal shift from hierarchical government to public-private cooperation. National governments are no longer the sole locus of power, and collective action cannot rely solely on state authority. This shift addresses challenges that cross traditional and organisational boundaries, necessitating innovation and collaboration among public and private stakeholders. The concept 'governance' encompasses all processes of governing, whether by government, market actors, or networks, and involves laws, norms, power, and language. Knowledge is crucial in managing resources, climate change, biodiversity, and land use, which are also relevant for multi-use at sea.

The ULTFARMS project exemplifies this approach, focusing on co-creation among researchers, practitioners, and policymakers to understand various factors in multi-use at sea. Four dimensions of governance are identified: hierarchical, market, network, and knowledge governance. Hierarchical governance is top-down, market governance relies on economic principles, network governance involves interdependent actors, and knowledge governance focuses on information flows and learning. These governance modes coexist and influence each other in practice[1].

2.2 Multi-use governance framework

ULTFARMS addresses the governance of multi-use at sea with an approach that connects actors, institutions and factors of importance at multiple organizational levels. We use the notion of multi-level and multi-actor governance to analyse different dimensions of governance; i.e. hierarchical, market, network and knowledge governance. The holistic character of the governance approach will emerge from a combination of literature study, stakeholder interaction and expert assessments, based on an integrated analysis of the important factors involved, i.e. technical, legal, ethical, social, economic, and ecological factors.

[1] This text is a summary of Van den Burg et al., 2023 (D9.1).

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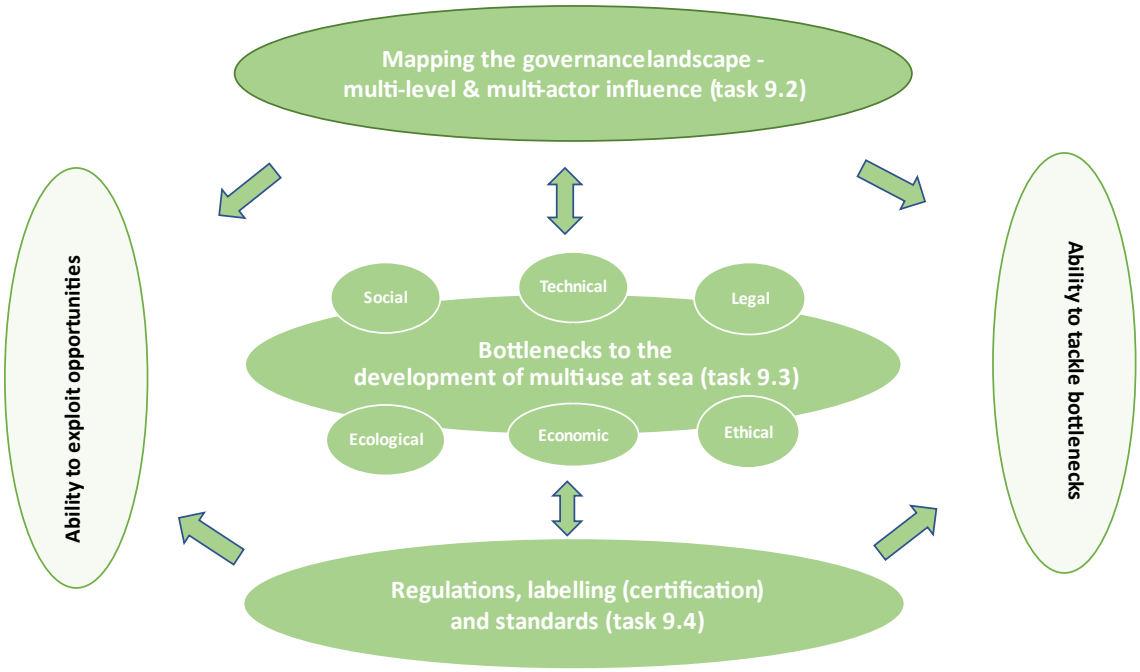

Figure 1: Overview of the governance approach to multi-use at sea (Van den Burg et al., 2023).

2.3 Data collection and analysis

Data collection started with a concise review of the available literature, starting from earlier projects that studied multi-use at sea, such as MERMAID[2], MUSES[3] and MARIBE[4]. Of particular interest was the UNITED[5] project, due to the overlap in pilots with ULTFARMS. Furthermore, collaboration with ULTFARMS' sister project OLAMUR[6] was sought (and achieved) to exchange ideas and findings. Next, four semi-structured interviews were conducted with the pilot leads of ULTFARMS. Each interview was designed to provide detailed information about the governance obstacles encountered and the potential solutions applicable to their pilot projects. The guiding questions for each interview are given below (Table 2).

[2] https://www.vliz.be/projects/mermaidproject/
[3] https://muses-project.com/
[4] https://cordis.europa.eu/project/id/652629
[5] https://www.h2020united.eu/
[6] https://olamur.eu/

Table 2: Interview questions for each ULTFARMS pilot

No.	Question
1	Which barriers (social, legal, technical, economic, ecological) for multi-use are you facing, or have you faced in the past 5 years, in the pilot? *(Keep in mind that we focus on governance issues, so only things that are somehow related to or result in governance barriers)*
2	Which future barriers for offshore multi-use do you foresee in your pilot or country? Which stakeholders will play a role here?
3	Are there any other barriers specifically for upscaling?
4	How would you prioritise the barriers mentioned? What was or is the most urgent problem?
5	Have you overcome some of the barriers already and how did you solve this?
6	What was something that went well, a 'good practice', where others can learn from?

The data gathered from these interviews were systematically compiled into a spreadsheet, facilitating qualitative and quantitative analysis. Barriers were grouped according to themes (Table 3) and characterised on level (pilot, sea basin, society) and governance dimension (hierarchical, market, network, knowledge).

Hierarchical governance is about top-down steering, assuming that it is possible to realise coordination based on power relations. Market governance is based on the economic principles of demand and supply, coordinated by the price-based system of exchange between self-interested actors. Network governance refers to the interdependence of (many) actors involved in planning and governing issues in modern society. It assumes that policy is developed and implemented in networks of organisations. Knowledge governance involves new ways of governing through knowledge, recognizing that transformative changes in governance institutions can occur due to the emergence of new information and insights. These four governance dimensions are discussed to a broader extent in D9.1.

Table 3: Definitions of themes that were used to group identified barriers and good practices.

Theme	Definition
Legal and Procedural	Barriers which are related to law or policy (guidelines, regulations, procedures) and can only be removed or amended by a legal process or by involvement of a governmental institution. For example, related to the MSP Directive or licensing processes.
Economic Viability	Barriers related to the difficulty of being economically viable: when the project benefits (profit) can reasonably be expected to be high

	enough to justify the project costs (investment).
Risks, Liability & Insurance	Barriers related to operational risks of being held legally responsible for something (e.g. damage to the MU structure) and to finding insurance for any risk associated with offshore MU.
Safety Regulations	Barriers related to mandatory requirements for offshore operations that aim to prevent or reduce risk of injury, loss and danger to persons, property, or the environment.
Public Awareness & Social Acceptance	Barriers related to the extent of common knowledge on MU, efforts to build public recognition and the extent to which MU (products) are socially accepted.
Stakeholder Engagement/Communication	Barriers related to the process of informing, listening to and/or collaborating with stakeholders – people and groups that are impacted by, have an influence on, or an interest in a certain MU project.
Vessel Availability and Costs	Barriers related to the number of available vessels (e.g. for monitoring and sampling) that comply with the requirements for offshore work in a wind park and the associated costs of such a vessel.
Data Sensitivity	Barriers related to sharing data with others outside the own group of researchers, organisation, or project due to the data being sensitive: confidential information that must be protected against unauthorized disclosure.
Time Constraints	Barriers related to limitations on the amount of time available to complete a time or project. For example, due to small weather windows to go offshore.
Technical Aspects	Barriers related to technical challenges, which can be addressed with existing expertise, protocols, and operations.
Expertise and Personnel	Barriers related to the knowledge and skills required to successfully complete job-specific tasks in offshore MU setting and to the amount of people available (on the right place) with this knowledge and skills.
Biological constraints	Barriers related to limitations for low-trophic aquaculture species to survive, grow, and/or reproduce in a certain location or set-up.

Effective Planning	Good practices related to using time, energy and resources efficiently and effectively to help achieve project goals within the proposed timelines.
One-Stop-Shop	Good practices related to a government office where multiple services are offered, allowing users to access these services in a centralized location rather than in different places and saving them considerable time and effort.
Knowledge Sharing	Good practices related to the process of exchanging ideas, information, insights, experiences and expertise between people, teams, or organisations (within an organization as well as with external stakeholders).

The findings from this analysis were presented, validated and discussed during an online 2-hour workshop held on 23 January 2025. In this, 25 experts participated in this workshop, coming from academia/research, industry, NGO, and governmental agencies (Appendix A – Workshop report). Five solutions were identified to discuss during the workshop, reflecting the solutions and good practices that came back often during the interviews. These five solutions are: one-stop-shop, tenders, stakeholder participation, blue skills, and safety & insurance.

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3. Results

3.1 Governance barriers

Overall, most governance barriers identified during the pilot interviews were linked to the theme 'Legal and Procedural' (33%), followed by 'Economic Viability' (18%) (Figure 2). Next to these two bigger themes, the barriers could be categorised by a range of different smaller themes.

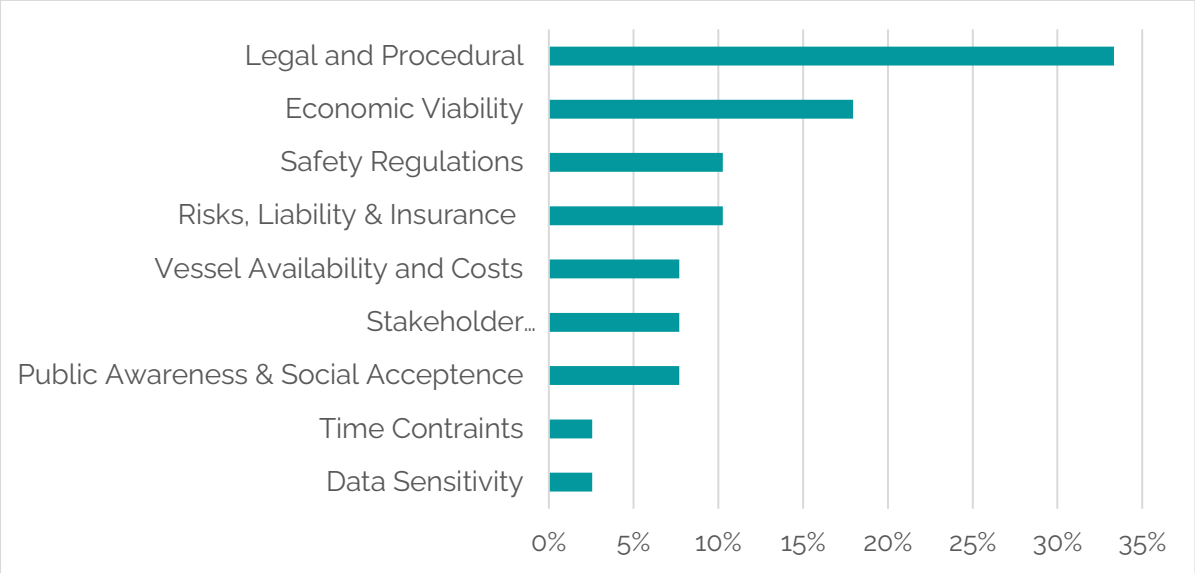

Figure 2: Relative distribution of governance barrier themes for offshore multi-use, as identified during the pilot interviews.

The barriers were classified according to the four governance dimensions hierarchical governance, market governance, network governance and knowledge governance. Most barriers linked to hierarchical governance, followed by market governance (Figure 3). To illustrate this, key barriers that were mentioned most often are provided in Table 4 with their governance dimension.

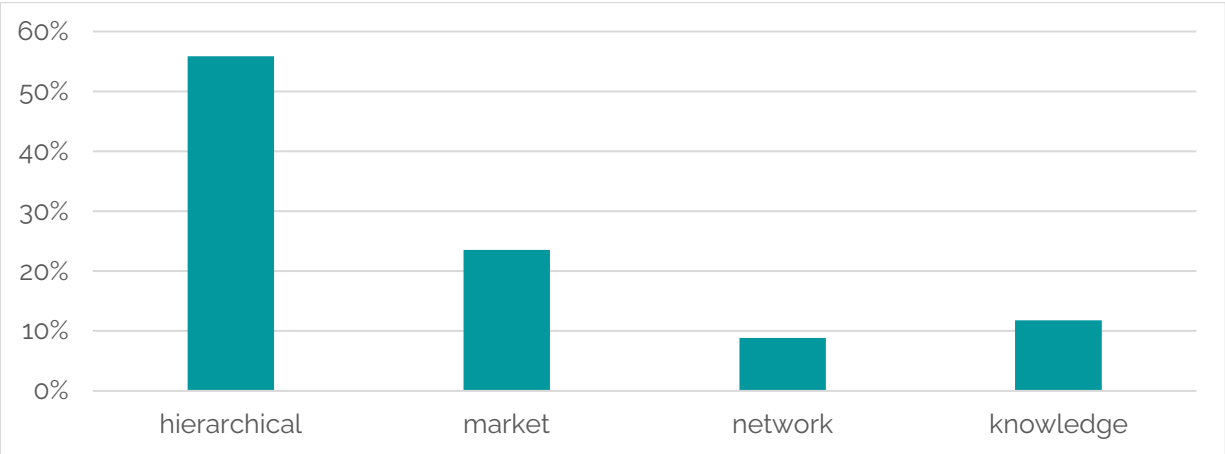

Figure 3: Relative distribution of governance dimensions of barriers for offshore multi-use, as identified during the pilot interviews.

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Table 4: Key governance barriers, as mentioned most often during the pilot interviews.

Barrier theme	Description	Governance dimension
Legal and procedural	Complicated and timely licensing procedures to many different authorities, slowing down project timeline.	Hierarchical
Legal and procedural	No clear regulation and not one singular policy for MU.	Hierarchical
Legal and procedural	MU not possible with current MSP Directive: aquaculture not mentioned as activity or only in separate designated areas.	Hierarchical
Legal and procedural	Legal challenges related to introducing new species.	Hierarchical
Legal and procedural	(Proactive) nature enhancement not supported by current regulations.	Hierarchical
Economic Viability	High deposit needed for decommissioning, hard to bring up for small companies.	Hierarchical
Economic Viability	Reluctance of fishers and mussel sector to participate in MU due to high costs and risks (need different ship, go further offshore).	Network
Economic Viability	High transport costs for offshore operations (vessels, monitoring tools).	Market
Economic Viability	High volumes or higher values needed because mussels and seaweed are low-value products, and upscaling is expensive.	Market
Safety Regulations	Varying (restrictive) regulations from offshore energy companies about vessel access and safety.	Hierarchical
Safety Regulations	Strict (safety) rules, also for pilot projects – no exceptions possible.	Hierarchical
Risks, Liability & Insurance	Difficult finding an insurer that wants to insure a small and risky project.	Market
Risks, Liability & Insurance	Main user is responsible for all risks of a MU site, causing possible deter of collaboration.	Hierarchical

The countries differ regarding the difference in the relative number of barriers brought forward during the interviews (Figure 4). For the Netherlands, most barriers are linked to the theme of Legal & Procedural (23%) and Economic Viability

(23%). The lack of a specific and single governmental contact point for MU and no clear regulations were mentioned as barriers for the Bosele pilot, for example. It was also mentioned that offshore MU is not viable for the mussel sector in the Netherlands. There are high ship and transportation costs and high risks involved. The third most important theme for the Netherlands is Stakeholder Engagement/Communication (15%). According to the interviewees there is little collaboration with the mussel farmers. Consequently, the ULTFARMS project and its results are little known to the farmers. The mussel sector is reluctant to join because of the high risks and costs involved of farming offshore. This also results in a discrepancy in future visions: the government sees MU as the future, but the mussel sector itself does not see much future in MU.

For Belgium (pilot Belwind), the barriers mentioned were linked to the theme of Legal & Procedural (33%) as well. Also, Safety Regulations (22%) and Vessel Availability and Costs (22%) were topics that were often mentioned. They are dealing with strict safety procedures from the wind park operator. For example, no diving is allowed in the wind park which makes monitoring more challenging. There is little availability of vessels in Belgium and a lack of coordination between the pilot and vessels operators..

For Germany, 50% of the barriers mentioned in the interview about Fino2 and Fino3 are linked to the Legal & Procedural theme. A major barrier mentioned is the very hierarchical system in Germany. A respondent formulated this as follows: " if something is not explicitly permitted, it will not be done". This hierarchical mode of governance has caused much delay in licensing processes. Besides, aquaculture is not mentioned as a separate activity in the German MSP Directive, nor is it mentioned as an activity that is possible within a MU set-up. As a result, the inclusion of seaweed or mussel farming at a later stage is a problematic process.

Denmark (pilots Samsø and Anholt) has a slightly different distribution of the most important barriers as well. Here, next to Legal & Procedural (29%), 'Public Awareness & Social Acceptance' plays an important role as a governance barrier (29%). The pilot lead observed a lack of social acceptance of mussel farming due to the perceived pollution of ocean water. However, this was mostly for coastal areas. Another aspect under this theme (as mentioned by the German pilot) are public concerns of environmental impact of wind farms, such as bird collisions. Lastly, MU is not seen as a priority in Nature-inclusive Designs by offshore energy companies.

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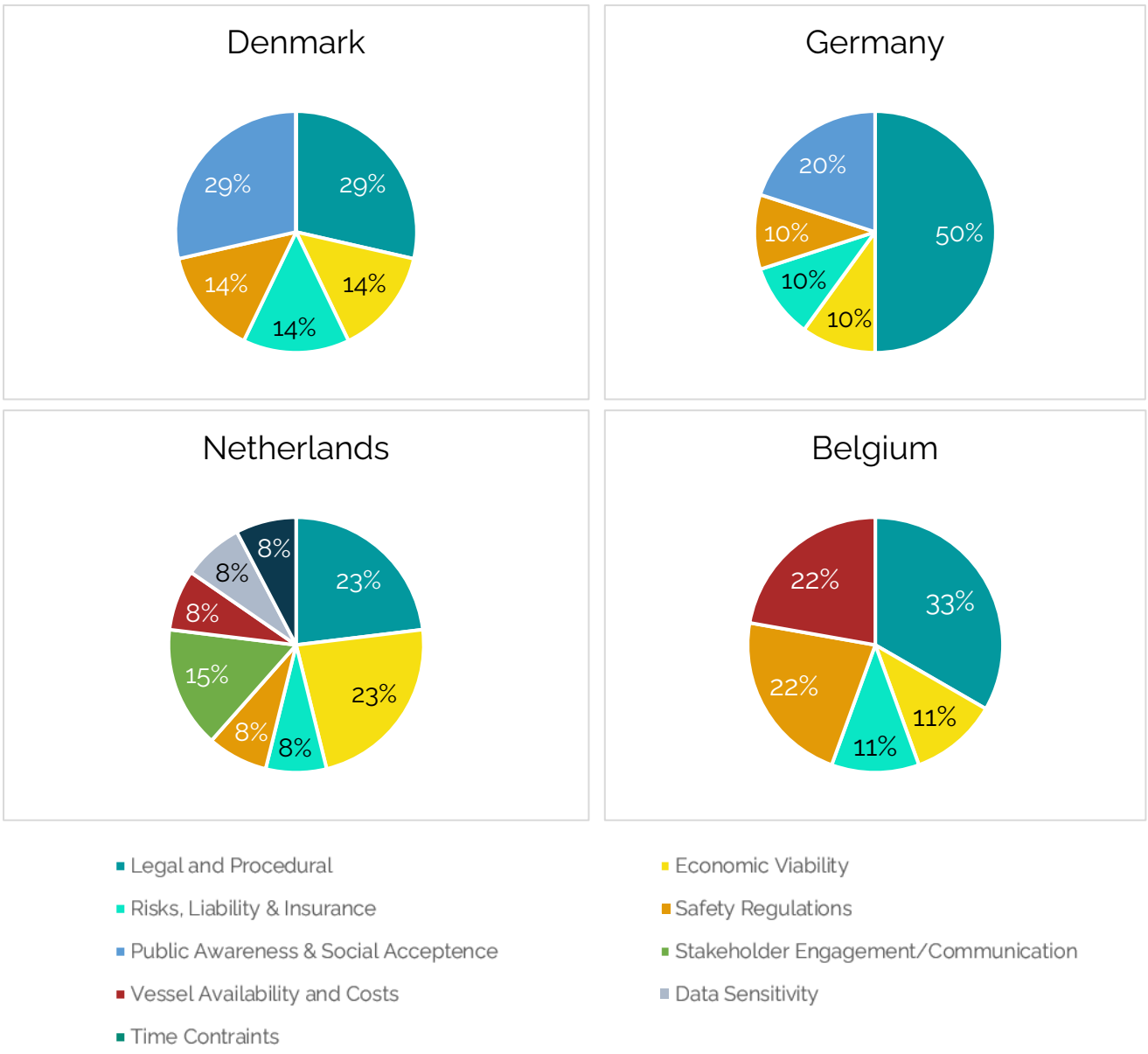

Figure 4: Relative distribution of governance barrier themes for offshore multi-use per country, as identified during the pilot interviews.

3.2 Future and upscaling barriers

Analysis from the interview answers to the questions 'Which future barriers do you foresee?' and 'Are there any other barriers specifically for upscaling?' shows that the themes from the overall governance barriers are also relevant when discussing future and upscaling barriers (Figure 5). Again, barriers linked to 'Legal and Procedural' (25%) and 'Economic Viability' (20%) form the main themes. Two pilots mentioned the unbalanced competition that will happen between the energy and aquaculture sector if MU concepts are not integrated from the beginning in future regulations (e.g. MU criteria in tenders). This would leave out opportunities for new seaweed and/or mussel farming locations.

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In terms of economic viability, it was recognised across all pilots that costs and benefits are currently not sufficiently balanced and that it will be difficult to become economically viable in the near future. On the one hand, upscaling commercial activities is still too expensive due to the high costs of installation as well as decommissioning. On the other hand, low-trophic aquaculture products are low-value products which currently cannot compete with non-sustainable food products due to price differences and lack of governmental financial support (e.g. subsidies, nudging policies, taxes on non-sustainable products).

'Risks, Liability and Insurance' is seen as an important theme (15%) for future upscaling of commercial offshore MU projects. A new theme that came up was 'Expertise and Personnel' (10%). It was mentioned several times that there is too little availability of skilled personnel and technical expertise and that this will remain a barrier in the future. The absence of nautical knowledge within governmental institutions makes it hard for public officials to understand the practical situation and 'speak the same language'.

Most of the upscaling barriers are linked to the level of 'society' (55%) (Figure 6), implying they cannot be addressed by pilots, nor by sea-basin level strategies.

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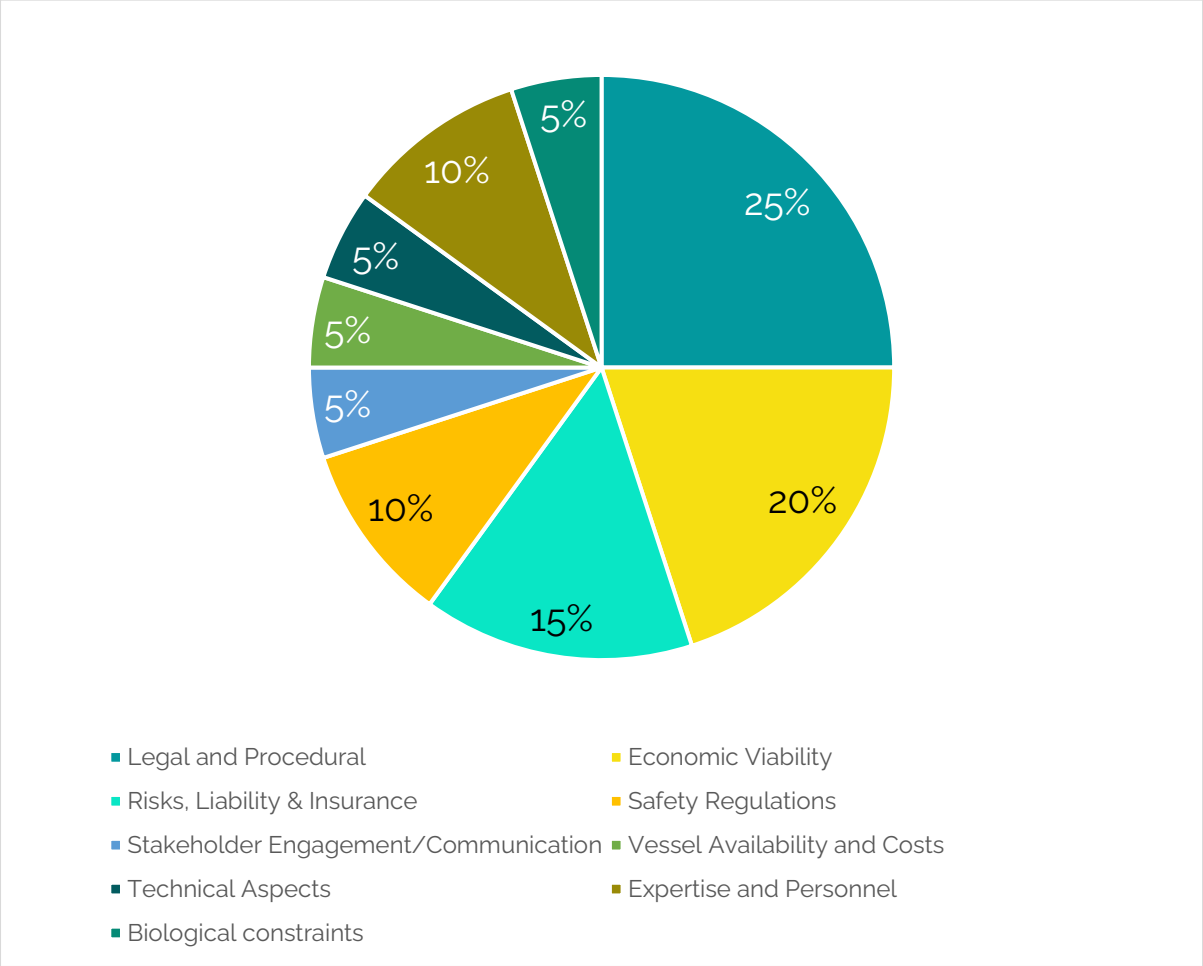

Figure 5 Relative distribution of themes of future and upscaling barriers for offshore multi-use, as identified during the pilot interviews.

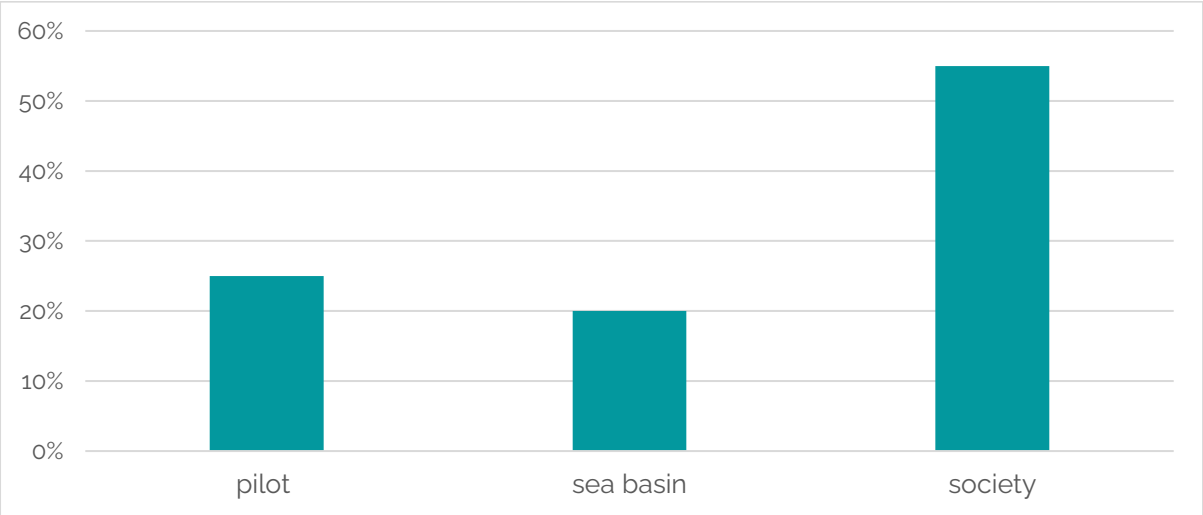

Figure 6: Classification of the future upscaling barriers according to the levels pilot, sea basin, society

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3.3 Good practices from interviews

In the interviews, different good practices were mentioned by the pilot leads (Figure 7). Half of these good practices (5/10) are linked to stakeholder engagement and communication. Maintaining an open and continuous dialogue with stakeholders and partners (in Belwind for example with Parkwind and Jan de Nul) and permitting agencies has improved collaboration and sped up processes. For the German pilots it was also mentioned that there are efforts to involve fishermen in monitoring activities and future training programs, which aim to create additional income streams and foster collaboration.

In three of the four interviews, the concept of a one-stop shop came back. In Denmark, this concept of a one-stop shop is already in place for seaweed farming. Looking at this example, pilots foresee the benefits of MU projects. A streamlined process for licensing would make the implementation of MU faster and more efficient, according to the pilots. The Dutch pilot mentioned that 'one central information point or a handbook would be practical to reduce the time for getting all permits'.

Third, effective planning is seen as a good practice. Detailed planning and risk assessments helped mitigate unforeseen issues for the Belgian pilot. Time constraint issues were mentioned multiple times as a barrier and better planning, building upon accumulated experiences , can help resolve this barrier (set aside situations out of your own control, e.g. suitable weather windows to go offshore).

Fourth, sharing (technical) knowledge was mentioned by the Dutch pilot as a good practice for MU. Publicly sharing good results so that others can learn from it was seen as important to go forward as a sector. Remote sensors were provided as an example of technology knowledge exchange that would support the development of MU.

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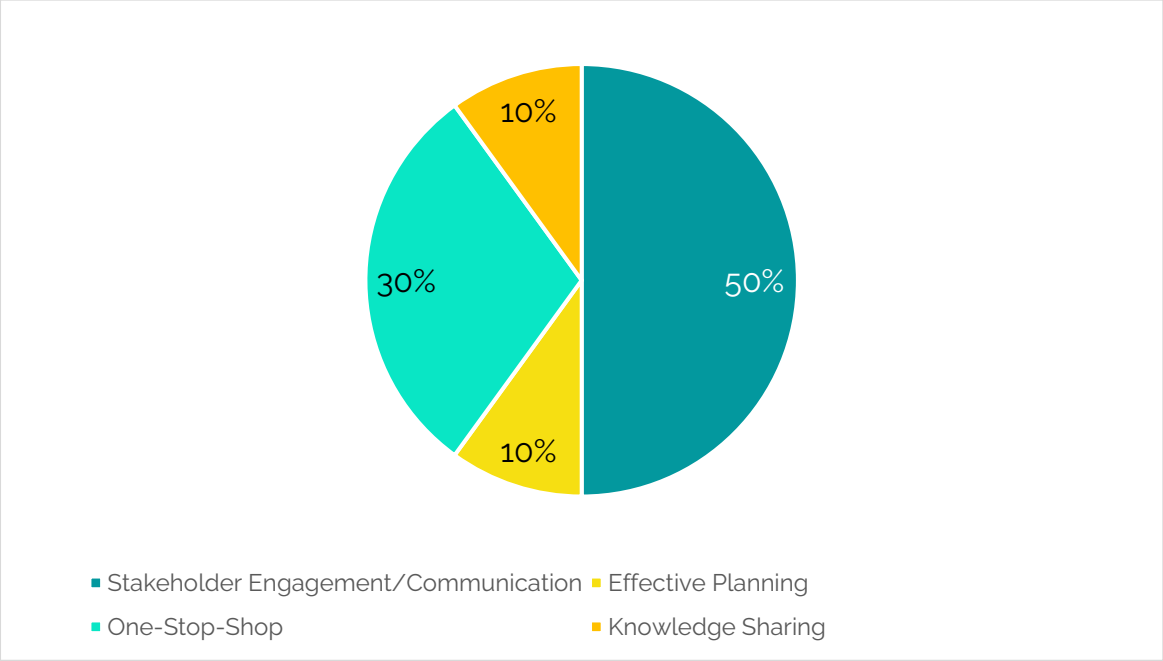

Figure 7: Good practices as mentioned by the pilots during the interviews. In total, 10 good practices were noted.

3.4 Solutions to overcome governance barriers

In the interviews, 5 solutions to overcome governance barriers recurred. These solutions were further analysed through literature analysis and the discussion in the workshop.

3.4.1 Establish a one-stop shop

The one-stop-shop refers to one place or contact within the government for businesses and citizens (OECD, 2020). It is an emerging way for governments to provide better services and improve regulatory delivery. The notion of a one-stop-shop is built on two overarching principles:

- It forms a part of a broader administrative simplification strategy;
- It is meant to be user-centred and based on life events

In essence, the OECD identifies four reasons for a one-stop-shop:

1. Enhanced co-ordination across and within levels of government
2. Holistic user-friendly, and user-orientated service
3. Integrated multi-policy service delivery
4. As a possible mechanism for joined-up government services

It is in principle meant to be a win-win situation: governmental organisations get better input – and businesses/citizens get better output. For MU it could be an opportunity to speed up the licensing procedure.

During the workshop, a Wooclap poll was shared for each of the discussion themes to ask the opinion of the workshop participants. Figure 8 presents the results of the Wooclap poll regarding the statement 'In every country, we should

invest in a One-stop Shop to improve the interaction with the government regarding MU'. All participants agreed with this statement, albeit in different degrees.

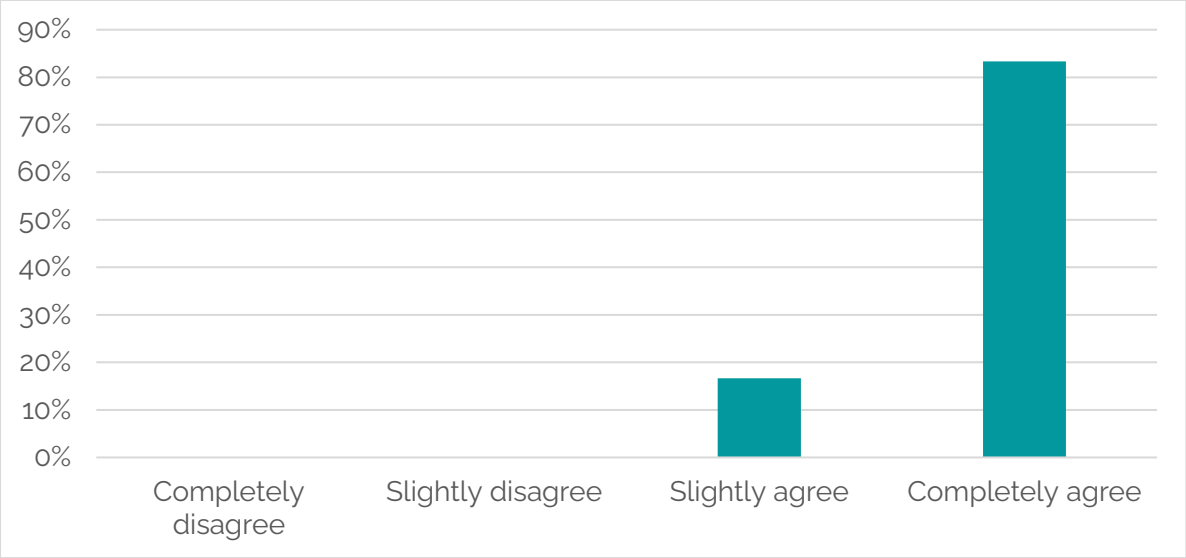

Figure 8: Answers of workshop participants regarding the statement on a one-stop-shop (18 answers received).

The discussion began with a participant sharing the experience with coordination of MU application processes in Denmark. This was seen as a smooth process with all issues being addressed in one go. Denmark was cited as an example where such coordination works effectively.

Another participant discussed the challenges of obtaining permits for mussel farming, noting that while it is nearly impossible for the industry, it could work for scientific purposes. An example from Germany was shared where it took six years and involved 26 people from five different permitting agencies to get all the necessary permits. This was the first instance in the Baltic, contrasting with the North Sea where permits were obtained right after the war. The process involves different agencies at various levels, especially in the Exclusive Economic Zone (EEZ), where there is no dedicated area in the Maritime Spatial Plan (MSP) and no exclusive zone for such activities. Permitting agencies emphasised the need for mitigation measures to address potential negative effects, such as sedimentation from mussel farming, and noted that fishing is not allowed in OWFs. Nearshore activities also need to consider visual impacts.

A participant from Belgium mentioned the existence of one commercial farm in Belgium, operating in a small space with many activities, and the introduction of a new MSP. They pointed out that there is no one-stop shop for permits, with different departments and ministries involved, and no habit of collaboration. This lack of coordination means adding another layer of coordination would be necessary. Despite this, they felt the system is well-organised, with administrations capable of delivering permits, but there is no incentive to improve coordination.

They suggested that if designated zones for MU were identified, the permitting process can take less time.

The discussion also touched upon the experience of obtaining permission for research projects, which has been relatively straightforward, akin to a one-stop shop. However, for commercial purposes, the process is much more complex, involving numerous meetings with various stakeholders. The governance structure was described as not very inviting for multiple uses, although there was a desire for it to be so.

3.4.2 Include multi-use as non-price criterion in tenders

Offshore wind farms are usually tendered, a process in which the various bids are ranked on predetermined criteria. Price and quality of the technical offer are common criteria. The inclusion of multi-use as a non-price criterion in the tendering procedure could benefit the development of multi-use; it would mean that bidders can propose to include other activities and that this would be rewarded in the procedure. The inclusion of non-price criteria was discussed before in among others the GROW[7] initiative: a "governmental action commonly identified is an integrated vision which should result in tender requirements for multi-use". It is also discussed in UNITED deliverable 6.1, which concludes that 'Lack of focus on MU in tendering regulations' is a barrier.

In various countries non-price criteria are currently used, e.g. France, Belgium and the Netherlands. A recent example if the tendering procedure for the Dutch offshore wind farm "IJmuiden ver alpha". In this procedure, non-price criteria for *ecology* and the *contribution to the energy system* were included, motivating bidders to do more than minimally required.

In 2024 the European Commission published Commission Recommendation C(20224) 2650 final on auction design for renewable energy. It is stated therein that "Non-price criteria in auctions are a tool to pursue additional objectives next to the sourcing of electricity at the lowest costs. Non-price criteria can be implemented as pre-qualification criteria or as award criteria, or both. They should be designed and evaluated in a non-discriminatory, objective and transparent manner".

Commission Recommendation C(20224) does not refer to multi-use at sea or co-location of activities at sea but it does provide insight into the challenges of non-price criteria. The Commission Recommendation formulates guidelines for the use of non-price criteria, including:

- Member States should avoid negative impacts on the competitiveness of the bidding process, in particular for smaller renewable projects;
- Define and evaluate the criteria in an objective, transparent, non-discriminatory manner and not lead to a disproportionate increase in costs;
- Non-price award criteria which are too general or too broad should be avoided;

[7] https://grow-offshorewind.nl/files/downloads/Road2SIDbrochure14.pdf

- The inclusion of non-price criteria should result in a net contribution to the policy objective relative to what is already required under existing legislation;
- Member States should define a transparent, objective and non-discriminatory methodology to assess bids against the selected non-price criteria

Wind Europe suggests rewarding projects enhancing co-existence between species and with other economic sectors.[8]

To start the discussion, the Wooclap poll was about the following statement: 'It is not possible to stimulate the complex development of MU through clear and transparent non-price criteria'. Figure 9 presents the results of the Wooclap poll regarding the statement. Most participants disagreed with this statement, although there are also participants who slightly agreed.

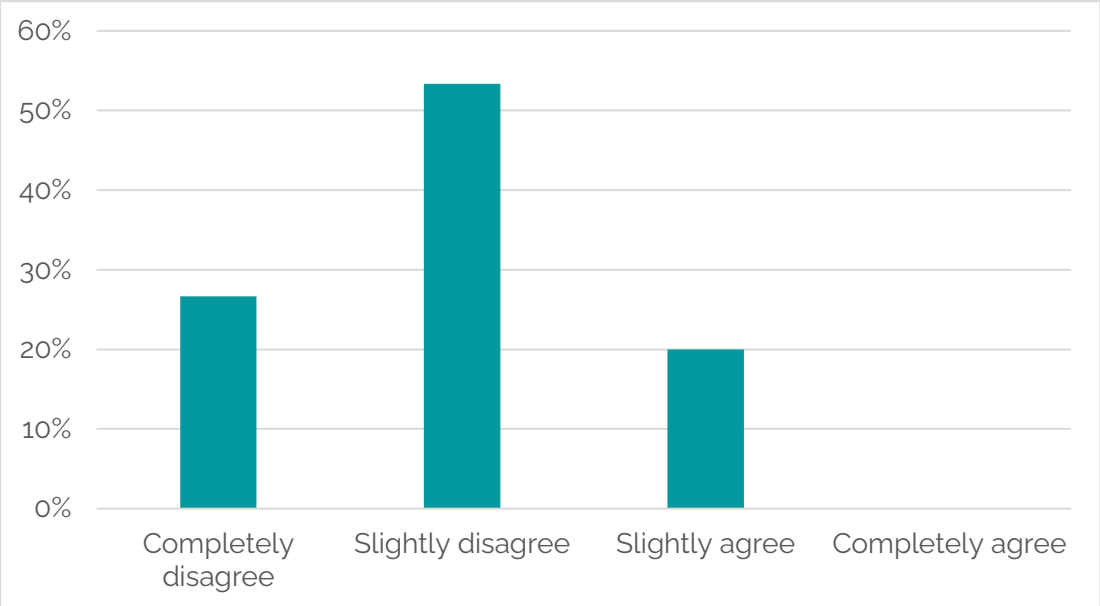

Figure 9: Answers of workshop participants regarding the statement on non-price criteria in tendering (15 answers received).

The discussion began with a participant highlighting that a company in Denmark is eager to include non-price criteria in tenders. From a developer's perspective, another participant emphasised the importance of integrating such topics into business plans early in the design phase. They argued that incorporating multi-use elements is more challenging once an OWF is already established, suggesting that starting with small-scale pilots would be more effective.

[8] https://windeurope.org/wp-content/uploads/files/policy/position-papers/20240301-WindEurope-response-design-elements-of-renewable-energy-auctions.pdf

Another participant mentioned the potential for joint use of infrastructure during the project development's design phase, although there is currently no incentive to pursue this. The conversation also touched on the planning and layout of cables and crew vessels, noting that including these considerations early on could save resources. However, they stressed that financial incentives are necessary to motivate such efforts.

The discussion concluded with a consensus on the importance of early talks to incorporate these elements into business plans, despite the lack of current incentives. Practical planning aspects were also highlighted, with a call for incentives to encourage going the extra mile in tenders.

3.4.3 Invest in stakeholder participation

MU inevitably means multiple stakeholders will be active and/or physically present inside a wind park or other large areas available for offshore MU. As identified by Van Hoof et al. (2019) the stakeholders involved in the processes of MU range from the actual operators of the MU activities to actors involved in the production and market chain. Next to that, there are government parties, financiers, risk assessors and insurers, other users of the marine environment like fishers and shipping companies, NGOs and the wider public. With all these different stakeholders involved, and an emerging wind sector in the North Sea, the risk of conflict amongst marine stakeholders is high (Pettersen et al., 2023). Therefore, mitigation of stakeholder conflicts is important.

It has long been acknowledged that the involvement of stakeholders is a key factor for a successful management regime in the marine environment (Pomeroy & Douvere, 2008), In general, stakeholder mapping takes place in the initial phase of stakeholder engagement (Stancheva et al., 2022). Literature reflects that this step is also crucial for offshore wind (Keegan, 2021) and multi-use at sea settings (Van Hoof et al., 2019). After mapping the relevant stakeholders, a stakeholder engagement and communication plan would be beneficial in order to keep stakeholders involved in relevant steps of the process. It is essential for local stakeholders to be engaged from the beginning of the design and impact assessments of a MU project, but also that the relevant set of stakeholders is only involved for specific decisions (Van den Burg et al., 2016). For example: identify different views of all stakeholders in early exploratory phases, but only involve a small group of relevant experts in a technical scoping phase.

In 2018, the MUSES project already concluded that setting up cross-sectoral platforms at the national level could guide the development of MU, involving continuous stakeholder engagement. Also, the participatory design process in MERMAID showed to be a valuable contribution for the development of the MU design (Van den Burg et al., 2016). Such a process can be different across sites, but is beneficial in generating new and shared knowledge and will increase understanding among different stakeholders (Van den Burg et al., 2016).

However, Onyango et al. (2020) observed so far mainly a reactive approach to conflict-avoidance and mitigation, while synergy and efficiency among stakeholders is still lacking. What could facilitate collaboration according to Onyango et al. (2020) is capacity building and awareness raising about MU across all stakeholders. This includes better communication about the definition of MU and the different approaches per country. For example, in our ULTFARMS pilot interviews for D9.3, it became evident that Dutch mussel farmers are currently not in favour of offshore farming in a MU setting, due to perceived barriers described above.

It is clear from literature and pilot projects that early and continuous (local) stakeholder engagement is crucial to raise awareness and to foster actions towards the implementation of MU projects (Ciravegna et al., 2024; Van den Burg, 2020b). However, since the topic of stakeholder participation also emerged from the interviews in our study, it seems that the level of stakeholder participation can still improve. Cross-sector blue economy stakeholder dialogue structures need to be strengthened to reduce siloed approaches, as reflected in the recently published "Roadmap 2030: steps for effective deployment of the Mission Ocean and Waters"[9].

The Roadmap mentions that good 'Communities of Practice (CoP)' examples in the region should be built upon. An example of this is the CoP North Sea in the Netherlands, a network of entrepreneurs, research institutions, social organisations and governments & top sectors. It is a platform for stakeholders to meet and collaborate by sharing practical knowledge and experience, and participation in projects. The GROW initiative[10] explored the perspectives on symbiosis from stakeholders themselves and found that stakeholders see a large responsibility for themselves, namely to advance innovation, technology and their business cases, but also in advancing stakeholder engagement and awareness (GROW, 2023).

To foster the discussion on stakeholder participation during the workshop of D9.3, the Wooclap poll was about the following statement: 'Broad and early stakeholder participation processes will not speed up the implementation of MU'. Participants had varying opinions regarding this statement (Figure 10).

[9] https://bluemissionbanos.eu/wp-content/uploads/2024/12/Mission-Arena-3-Roadmap-1.pdf
[10] https://grow-offshorewind.nl/files/downloads/Road2SID2023.pdf

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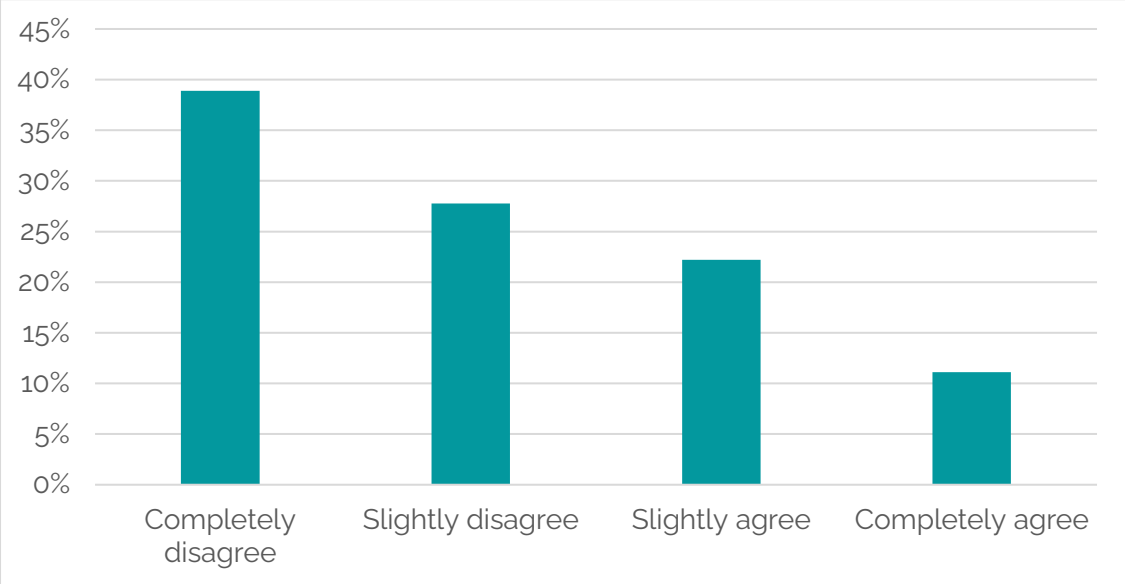

Figure 10: Answers of workshop participants regarding the statement on stakeholder participation (18 answers received).

The discussion began with a participant questioning the concept of speeding up processes, noting that while involving more stakeholders might take more time, it leads to genuine multi-use. They observed that OWF operators often still perceive the OWF as their exclusive domain, despite societal interest in multi-use and food production.

Another participant pointed out that the term "stakeholder" has become a buzzword, emphasising the importance of defining it clearly to facilitate meaningful discussions. They noted that while the term sounds appealing, effective engagement depends on its definition.

A third participant stressed the importance of early engagement, arguing that discussing potential synergies and conflicts early on is preferable to addressing them later. They shared that stakeholders feel more proud and satisfied when they are considered in decision-making processes. Early involvement helps stakeholders understand the potential of multi-use better. This aligns with what was found in the literature (see above).

The conversation also touched on the challenges of involving stakeholders, with one participant noting that while it can be difficult to discuss conflicts and stress, early engagement is ultimately more beneficial. Stakeholders are often proud to be involved and appreciate knowing that their input is used in decision-making. This approach was highlighted as particularly effective in Maritime Spatial Planning (MSP), where stakeholders were happy to be brought together in one room.

3.4.4 Develop blue skills for multi-use

"Blue skills" refer to the competencies and knowledge required to support the sustainable development of the blue economy. These skills encompass a range of disciplines, including marine science, engineering, and digital technology, and are essential for addressing the multi-faceted challenges associated with ocean and coastal resource management (European Commission, 2024).

Investments in vocational training, higher education, and lifelong learning are crucial for developing the blue economy, especially in the context of multi-use offshore wind parks. Vocational training provides individuals with practical skills necessary for immediate employment, while higher education enables critical thinking and advanced knowledge. Lifelong learning ensures that the workforce remains adaptable to evolving demands from stakeholders such as industries and governmental organisations. Interdisciplinary degree programs that merge ocean sustainability with digital skills are increasingly important. These programs prepare students to address complex environmental challenges using modern technology, which is essential for the effective management of multi-use offshore wind parks. For instance, Stanford University's Oceans Department offers interdisciplinary courses that integrate biological, physical, and social sciences with technology to advance ocean research and sustainability (Stanford University, 2025). Joint degree programs that combine water resource management with digital technology, including internships, provide hands-on experience and foster collaboration between academia and industry.

Developing a competency framework involves mapping and evaluating existing education and training opportunities to ensure they meet industry needs, particularly in the context of multi-use offshore wind parks. The "BlueComp" framework is an example of such an initiative, designed to address sector-specific and cross-cutting skills requirements in the blue economy. This framework integrates digital, green, and interdisciplinary competencies essential for sustainable growth (European Commission, 2024). Competency-based training programs help employees acquire and refine the skills needed to perform their roles effectively. These programs focus on practical applications and real-world scenarios, ensuring that the workforce is well-prepared to meet industry demands. According to a literature review by Andalgavkarkulkarni and Baheti (2021), competency-based training aims to improve employees' knowledge, abilities, and skills, thereby enhancing organisational performance. This approach is widely adopted in both the private and public sectors due to its effectiveness in aligning training with job-specific competencies (Andalgavkarkulkarni & Baheti, 2021). By aligning educational programs with industry requirements, competency frameworks like BlueComp help bridge the skills gap and promote a more resilient and capable workforce, which is vital for the successful implementation of multi-use offshore wind parks.

The European Union has launched several initiatives to close the skills gap and promote blue careers among students and young professionals, with a focus on multi-use offshore wind parks. The "Blue Careers in Europe" program, for instance, aims to develop the next generation of blue skills and provide opportunities for

sustainable maritime careers (European Commission, 2024). This initiative supports innovative cooperation projects between the blue economy sector and educational institutions, promoting blue and digital skills. The European Year of Skills 2023 focused on lifelong learning and upskilling to support the blue and digital transitions (European Commission, 2023). Additionally, Youth Innovation Events encourage young people to engage with the blue economy, fostering innovation and entrepreneurship. These EU-funded initiatives play a vital role in addressing skills shortages, enhancing career opportunities, and ensuring the sustainable development of the blue economy, particularly in the context of multi-use offshore wind parks, which require a diverse set of skills and interdisciplinary knowledge.

To start the discussion on the development of blue skills for multi-use during the workshop of D9.3, the Wooclap poll was about the following statement: 'MU must be part of dedicated education to ensure the new generation knows offshore MU'. Participants had varying opinions regarding this statement (Figure 11).

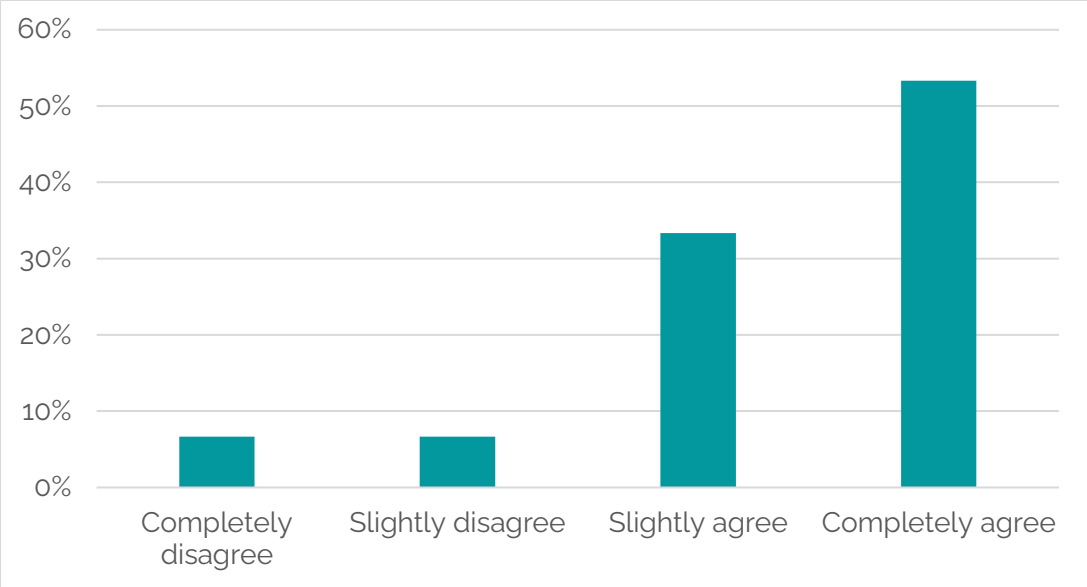

Figure 11: Answers of workshop participants regarding the statement on blue skills (15 answers received).

The discussion began with a suggestion that joint degrees would be enriched by incorporating Marine Conservation as part of the Green Deal and the upcoming Ocean Pact. However, there was some scepticism about the necessity of such specialised education, with concerns that it might be overdone and questioning its practical benefits, particularly in terms of offshore knowledge and safety.

One participant shared their experience working with high school students on projects involving algae cultivation, which had a significant local impact and even attracted media attention. They emphasised the importance of engaging students early, suggesting that incorporating such projects into the curriculum would ensure their continuity.

Another participant described their university's approach, where the faculty of marine science includes elements of MU in their training, though not as a specific course. They proposed that an interdisciplinary course connecting natural sciences with governance and politics could be beneficial, particularly for developing specialists in multi-use.

The conversation highlighted differing opinions on the need for dedicated education in multi-use. While some saw it as potentially overdone, others believed in the value of early engagement and interdisciplinary approaches. The discussion underscored the importance of practical skills and the potential benefits of integrating business aspects into marine science education.

3.4.5 Develop safety and insurance protocols

Ensuring the safety of workers in the multi-use of OWFs is of key importance. The harsh marine environment, combined with the complexity of integrating different activities, requires comprehensive safety protocols. Workers must be equipped with appropriate personal protective equipment (PPE) to protect against the specific hazards of both wind farm operations and additional activities such as aquaculture. This includes life jackets, helmets, and specialised clothing to guard against harsh weather conditions (Adekanmbi et al., 2024).

Regular inspections and maintenance of equipment are crucial to prevent accidents. This includes checking the structural integrity of wind turbines, aquaculture cages, and other installations. Continuous health monitoring of workers can help in the early detection of any work-related illnesses. This is particularly important in offshore environments where medical facilities are not readily accessible. Providing comprehensive education and training programmes for workers is essential. These programmes should cover emergency response procedures, safe handling of equipment, and awareness of the specific risks associated with multi-use operations (Adekanmbi et al., 2024).

Insurance plays a critical role in managing the risks associated with multi-use offshore wind farms. It provides financial protection and support for workers in case of accidents or illnesses. Insurance policies should ensure that workers receive adequate compensation for any injuries or illnesses sustained while working. This compensation is vital for the well-being and recovery of workers, allowing them to focus on their rehabilitation without financial stress (Makri et al., 2023).

Comprehensive insurance coverage should include financial support for medical expenses and rehabilitation. This ensures that workers have access to the necessary medical care and support services to recover fully. The presence of robust insurance policies directly impacts the well-being of workers. Knowing that they are financially protected in case of an accident or illness can reduce stress and improve overall job satisfaction (Makri et al., 2023).

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To start the discussion on the development of safety and insurance protocols for multi-use during the workshop of D9.3, the Wooclap poll was about the following statement: 'The development of dedicated MU safety protocols will be a game-changer for the implementation of MU'. Participants had varying opinions regarding this statement (Figure 12).

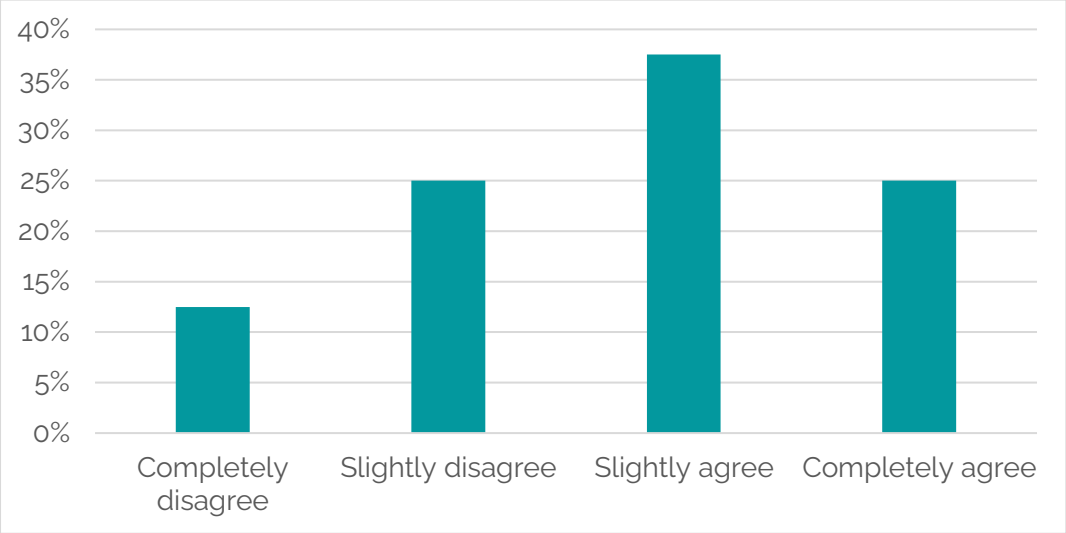

Figure 12: Answers of workshop participants regarding the statement on safety and insurance (16 answers received).

The discussion focused on the need for more fine-tuned safety training for those operating near wind turbines, rather than within them. It was suggested that a comprehensive 5000-course program is unnecessary; instead, a basic course covering ship safety, survival at sea, and first aid would suffice, with additional training tailored to specific needs.

There was agreement that people from vessels are well-versed in safety instructions, but project personnel often lack awareness of safety measures at OWFs, which can complicate activity planning. It was emphasised that safety regulations should be fine-tuned to fit the purpose, avoiding unnecessary requirements, such as helicopter training for aquaculture personnel.

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4. Discussion & conclusions

The wish to stimulate multi-use at sea through an effective governance framework is not unique to the ULTFARMS consortium. Earlier projects and policy initiatives have discussed this topic as well.

The barriers identified in this deliverable resemble barriers identified in e.g. UNITED (see deliverable 6.1 for an inventory of legal and regulatory barriers)[11], Van den Burg et al. (2020b) and Neitzel et al. (2024). The contribution of this deliverable to this debate lies in the closer evaluation of five solutions that are experimented with and/or suggested by the experts active in the pilots (Table 5).

These suggested solutions are frequently discussed within multi-use context. They are for example mirrored in the recently published "Roadmap 2030: steps for effective deployment of the Mission Ocean and Waters"[12]

Table 5: An overview of proposed solutions to address governance barriers

Solutions discussed in ULTFARMS	Mission Ocean Roadmap 2030
Establish a one-stop shop	Simplify regulatory frameworks with a clear licensing roadmap. Ideally, establish one-stop-shops.
Include multi-use as a non-price criterion in tenders	New tenders for blue economy activities can no longer use a single-use approach but should integrate multiple activities guided by national targets and ambitions.
Invest in stakeholder participation	Strengthen cross-sector blue economy stakeholder dialogue structures to reduce siloed approaches. Build on the already good 'Communities of Practice' examples in the region.
Develop blue skills for multi-use	Invest in vocational training, higher education, and lifelong learning to support the blue economy. Interdisciplinary programs and initiatives like "Blue Careers in Europe" help bridge the skills gap and build a resilient workforce.
Develop safety and insurance protocols	Ensure worker safety in multi-use OWFs with comprehensive safety protocols, regular inspections, and robust insurance policies. Tailored safety training and practical regulations are essential.

[11] https://www.h2020united.eu/images/PDF_Reports/D61_Inventory_of_legal_and_insurance_aspects_risks_and_risk_management_options_220207.pdf

[12] https://bluemissionbanos.eu/wp-content/uploads/2024/12/Mission-Arena-3-Roadmap-1.pdf

The solutions One-stop shop and strengthening the stakeholder participation are both solutions that are brought forward as important. These two solutions are also related to each other for two reasons, and both call for further deliberations on how to bring the solutions further. First of all, the One-shop stop is by the OECD (2020) regarded to be a rather demanding task. The setup requires willingness and readiness of public agencies to actually engage in realistic design and implementation plans. It is also a demanding practice, with a need for different types of expertise, and integrated (holistic) assessments. In this process, it is reasonable to expect pressure and possibly changing demands from the government and the business community. The danger of underestimating the complexities and costs then calls for an ongoing dialogue with stakeholders.

One-stop-shop and stakeholder participation could also be vital parts of a strategy to improve the aim of good governance. They could add value to the aligning of interests and the resolution of conflict. At the same time the One-stop-shop could serve to enhance transparency and by that contribute to a just/fair decision-making process. Transparency is also key to providing the process with integrity. Thus, despite the demanding effort of setting up and implementing a one-stop-shop and a stakeholder dialogue, it might be worth the investment. We do note that the solutions will benefit from a tailor-made design, suitable for the country in question.

The limitations of this study lie in the number of stakeholders consulted and the potential bias of those stakeholders. We distinguish between internal and external validity here. Internal validity measures how well a study is conducted (its structure) and how accurately its results reflect the studied group. External validity relates to how applicable the findings are in other context. The internal validity of the results is high, benefitting from close collaboration with the pilot and good attendance at the workshop. The external validity is lower. The ULTFARMS pilots are located in North-Western Europe and this inevitable means that results are most applicable to the countries in that region. In this region, offshore wind as developed rapidly in the last decade and can generally trust on strong policy support. Countries in this region all have maritime spatial plans in place, and most have yearlong experience with marine spatial planning.

Good governance for multi-use at sea ensures transparency, accountability, participation, rule of law, efficiency, inclusivity, and sustainability in managing marine resources. It balances economic, environmental, and social interests, promotes fair resource sharing, conflict resolution, and stakeholder collaboration, and supports adaptive management for responsible, long-term, and equitable ocean use. Five key terms are further defined and adapted below, based on among other Lockwood et al 2010):

Accountability: The responsibility of decision-makers to justify their actions, policies, and management of marine resources. It ensures that stakeholders, including governments, industries, and communities, are answerable for their impact on the ocean and adhere to legal and ethical standards.

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Transparency: The open sharing of information, decisions, and processes related to MU at sea. It enables stakeholders to access data on ocean use, policies, and regulations, fostering trust and preventing corruption or mismanagement (adapted, based on Guggisberg et al (2022)).

Integrity: The commitment to ethical, fair, and unbiased decision-making in marine governance. It ensures that policies prioritize sustainability, stakeholder rights, and the long-term health of marine ecosystems over personal or political interests.

Support alignment of interests refers to the process of facilitating cooperation and balancing the diverse objectives of stakeholders in multi-use maritime governance. It ensures that economic, environmental, and social interests—such as those of fisheries, renewable energy, tourism, and conservation—are harmonized to promote sustainable, equitable, and conflict-free ocean use.

Conflict resolution in multi-use at sea refers to the process of addressing and managing disputes between stakeholders—such as fisheries, renewable energy developers, conservationists, and maritime industries—through dialogue, negotiation, and legal frameworks. It aims to find fair, sustainable, and mutually beneficial solutions while minimizing environmental and economic disruptions.

The five solutions proposed here can contribute to achieving good governance for MU at sea (Table 6).

Table 6: Linking the five solution to the principles of good governance

	Establish a one-stop shop	MU as non-price criterion	Invest in stakeholder participation	Develop blue skills for MU	Safety and insurance protocols
Transparency	X	X	X		X
Accountability	X		X		
Integrity	X	X		X	
Support alignment of interests			X		X
Resolution of conflicts	X	X	X	X	X

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Looking into the future, the following recommendations are provided, per stakeholder category:

Policy-makers:

- Institutionalise multi-use through instruments such as one-stop shop;
- Exchange knowledge and experiences across borders;
- Use the transformative power of non-price criteria in tenders, ensuring that tendering procedures comply with regulations in place.

Mult-use developers:

- Keep talking: dialogue and interaction are key to mobilise stakeholders and reduce resistance. Engage local communities, environmental NGOs, and industries early in the project planning phases. This can be done through public consultations, workshops, and continuous feedback loops to ensure their concerns and suggestions are integrated into the project development;
- Keep in mind that stakeholder participation is not a quick-win but needed to ensure long-term commitment.

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Appendix A – Workshop report

Workshop

Governance in offshore multi-use: barriers and solutions

Online
January 23rd, 2025

This project has received funding from the European Union's Horizon Europe research and innovation programme under Grant Agreement No 101093888. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union. Neither the European Union nor the granting authority can be held repsonsible for them.

List of participants

Number	Organisation	Stakeholder type
1,2	Aarhus University	Research/academia
3	AZTI	Research/academia
4	Belgian Agency for Agriculture and Fisheries	Government Agency
5, 6	De Blauwe Cluster	Private / industry
7	DTU	Research/academia
8, 9	EATIP	Private / industry
10	Entrepreneur Seaweed Farming	Private / industry
11	FuE-Zentrum FH Kiel GmbH	Research/academia
12	Global Climate Forum	Non-Governmental Organization
13	OOS International	Private / industry
14, 15	ParkWind	Private / industry
16	RVO	Government Agency
17	uGent	Research/academia
18, 19, 20	University of Copenhagen	Research/academia
21	University of Las Palmas de Gran Canaria	Research/academia
22	Vattenfall	Private / industry
23	VLIZ	Research/academia
24, 25	Wageningen Marine Research	Research/academia

List of facilitators

First Name	Last Name	Organization	Stakeholder type
Sander	van den Burg	Wageningen Social & Economic Research	Research/academia
Josien	Hendricksen	Wageningen Social & Economic Research	Research/academia
Trond	Selnes	Wageningen Social & Economic Research	Research/academia
Bas	Bolman	Deltares	Research/academia

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Agenda

1. Round of introductions
2. Objectives of the workshop (see separate pdf document)
3. Introduction ULTFARMS pilots (see separate pdf document)
4. Results governance barriers (see separate pdf document)
5. Questions and reflections
6. Discussing solutions
    a. One-stop-shop
    b. Tenders
    c. Stakeholder participation
    d. Blue Skills
    e. Safety & insurance
7. Wrapping up
8. Next steps

Questions and reflections

During the workshop, concerns were raised about the availability of boats in Germany. While this issue is not immediate, stringent regulations driven by a fear of legal repercussions might be excessive. It was noted that boat availability will be an issue for Germany as well (next to Belgium and the Netherlands as shown in the presentation), but they are not there yet.

Another point of discussion was Germany's apprehension about the lack of mention of aquaculture as a separate activity in the Maritime Spatial Planning (MSP) Directive. One participant was surprised to see Germany more concerned about aquaculture being mentioned in the MSP, given that aquaculture is already happening in coastal areas. The question arose whether a specific mention is necessary for licensing multi-use activities. It was pointed out that the absence of this mention is indeed problematic. Multi-use (MU) permitting processes are slowly beginning, but the lack of sufficient mention in the MSP remains a critical missing link.

Discussing solutions

One stop shop

The discussion began with a participant sharing their experience with coordination of MU application processes in Denmark, highlighting a smooth process with input from others being addressed in one go. Denmark was cited as an example where such coordination works effectively.

Another participant discussed the challenges of obtaining permits for mussel farming, noting that while it is nearly impossible for the industry, it could work for scientific purposes. An example was shared where it took six years and involved 26 people from five different permitting agencies to get all the necessary permits.

This was the first instance in the Baltic, contrasting with the North Sea where permits were obtained right after the war. The process involves different agencies at various levels, especially in the Exclusive Economic Zone (EEZ), where there is no dedicated area in the Maritime Spatial Plan (MSP) and no exclusive zone for such activities. They emphasised the need for mitigation measures to address potential negative effects, such as sedimentation from mussel farming, and noted that fishing is not allowed in Offshore Wind Farms (OWFs). Nearshore activities also need to consider visual impacts.

Another participant mentioned the existence of one commercial farm in Belgium, operating in a small space with many activities, and the introduction of a new MSP. They pointed out that there is no one-stop shop for permits, with different departments and ministries involved, and no habit of collaboration. This lack of coordination means adding another layer of coordination would be necessary. Despite this, they felt the system is well-organised, with administrations capable of delivering permits, but there is no incentive to improve coordination. They suggested that while it could take less than ten years, it requires designated zones for MU.

The discussion also touched upon the experience of obtaining permission for research projects, which has been relatively straightforward, akin to a one-stop shop. However, for commercial purposes, the process is much more complex, involving numerous meetings with various stakeholders. The governance structure was described as not very inviting for multiple uses, although there was a desire for it to be so.

For each of the discussion themes, a Wooclap poll was shared to ask the opinion of the workshop participants. Figure 1 presents the results of the Wooclap poll regarding the statement 'In every country, we should invest in a One-stop Shop to improve the interaction with the government regarding MU'. All participants agreed with this statement, albeit in different degrees.

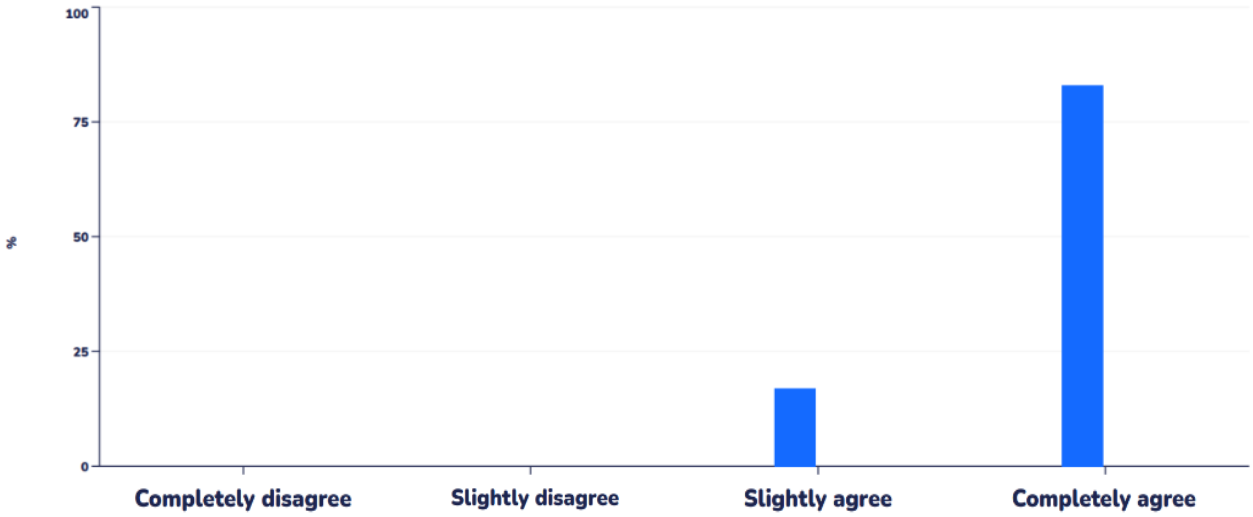

Figure 1: Answers of the participants regarding the one-stop-shop

The participants made the following comments in Wooclap:

- 'The first coordinated and comprehensive national aquaculture legislation is essential for integrating aquaculture into Marine Use (MU) within the Exclusive Economic Zone (EEZ).'
- 'The specifics of the one-stop-shop will vary significantly depending on the context and the country.'

Tenders

The discussion began with a participant highlighting that a company in Denmark is eager to include non-price criteria in tenders. From a developer's perspective, another participant emphasised the importance of integrating such topics into business plans early in the design phase. They argued that incorporating multi-use elements is more challenging once an OWF is already established, suggesting that starting with small-scale pilots would be more effective.

Another participant mentioned the potential for joint use of infrastructure during the project development's design phase, although there is currently no incentive to pursue this. The conversation also touched on the planning and layout of cables and crew vessels, noting that including these considerations early on could save resources. However, they stressed that financial incentives are necessary to motivate such efforts.

The discussion concluded with a consensus on the importance of early talks to incorporate these elements into business plans, despite the lack of current incentives. Practical planning aspects were also highlighted, with a call for incentives to encourage going the extra mile in tenders.

Figure 2 presents the results of the Wooclap poll regarding the statement 'It is not possible to stimulate the complex development of MU through clear and transparent non-price criteria'. Most participants disagreed with this statement, although there are also participants who slightly agreed.

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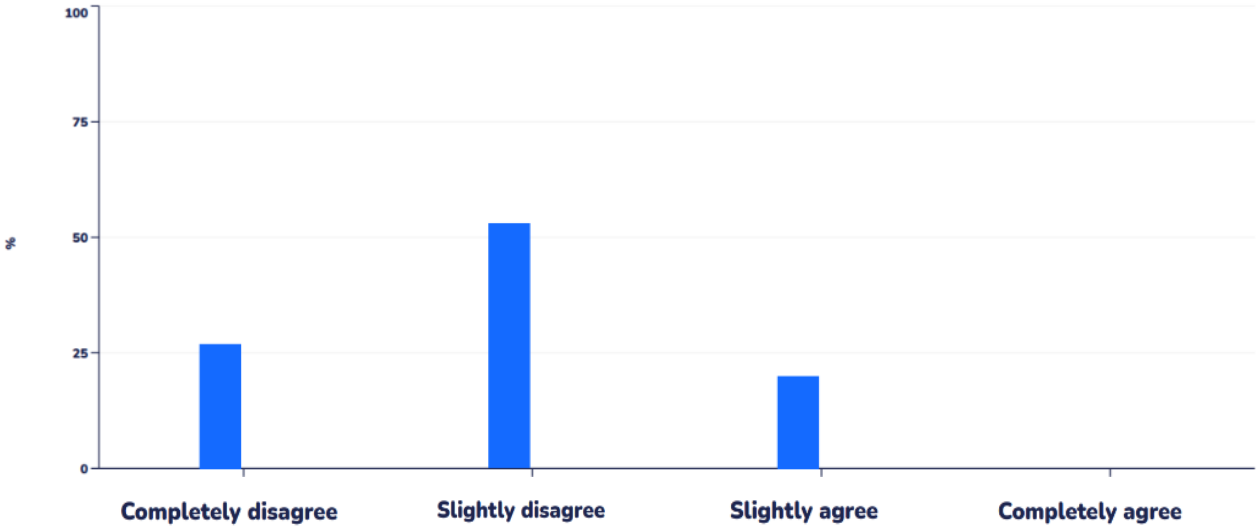

Figure 2: Answers of the participants regarding tenders

The participants made the following comments in Wooclap:

- 'An OWF developer at a Danish conference mentioned that they want non-price criteria to be included in the tender processes.'
- 'It depends on the stakeholder or who you're trying to reach.'
- 'The most valuable companies for society have to be rewarded. Price criteria decrease the competition.'

Stakeholder participation

The discussion began with a participant questioning the concept of speeding up processes, noting that while involving more stakeholders might take more time, it leads to genuine multi-use. They observed that OWF operators often still perceive the OWF as their exclusive domain, despite societal interest in multi-use and food production.

Another participant pointed out that the term "stakeholder" has become a buzzword, emphasizing the importance of defining it clearly to facilitate meaningful discussions. They noted that while the term sounds appealing, effective engagement depends on its definition.

A third participant stressed the importance of early engagement, arguing that discussing potential synergies and conflicts early on is preferable to addressing them later. They shared that stakeholders feel more proud and satisfied when they are considered in decision-making processes. Early involvement helps stakeholders understand the potential of multi-use better.

The conversation also touched on the challenges of involving stakeholders, with one participant noting that while it can be difficult to discuss conflicts and stress, early engagement is ultimately more beneficial. Stakeholders are often proud to

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be involved and appreciate knowing that their input is used in decision-making. This approach was highlighted as particularly effective in Maritime Spatial Planning (MSP), where stakeholders were happy to be brought together in one room.

Figure 3 presents the results of the Wooclap poll regarding the statement 'Broad and early stakeholder participation processes will not speed up the implementation of MU'. Participants had varying opinions regarding this statement.

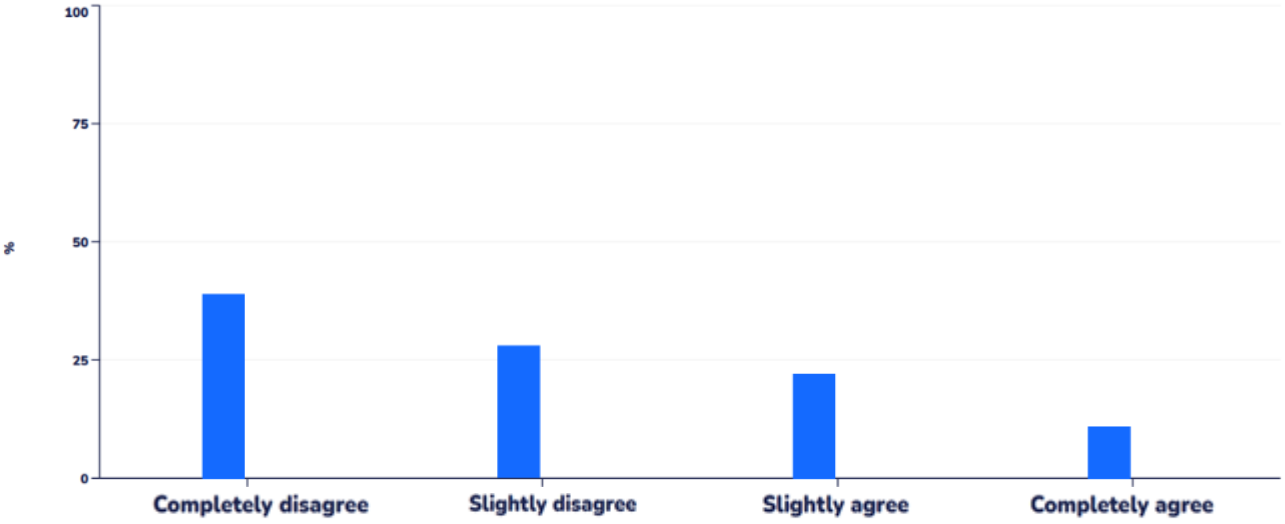

Figure 3: Answers of the participants regarding stakeholder participation

The participants made the following comments in Wooclap:

- 'The concept of "stakeholder" in this process needs to be defined, Additionally, it needs to be clarified what is meant by "speeding up"? It is very hard to answer without these definitions.'
- 'Early engagement of stakeholders may facilitate MU in specific areas.'
- 'We need to involve the government to demonstrate the value of investing in seaweed farms for the country. We should transform annual subsidies into long-term investments.'

Blue skills

The discussion began with a suggestion that joint degrees would be enriched by incorporating Marine Conservation as part of the Green Deal and the upcoming Ocean Pact. However, there was some scepticism about the necessity of such specialised education, with concerns that it might be overdone and questioning its practical benefits, particularly in terms of offshore knowledge and safety.

One participant shared their experience working with high school students on projects involving algae cultivation, which had a significant local impact and even attracted media attention. They emphasised the importance of engaging students

early, suggesting that incorporating such projects into the curriculum would ensure their continuity.

Another participant described their university's approach, where the faculty of marine science includes elements of MU in their training, though not as a specific course. They proposed that an interdisciplinary course connecting natural sciences with governance and politics could be beneficial, particularly for developing specialists in multi-use.

The conversation highlighted differing opinions on the need for dedicated education in multi-use. While some saw it as potentially overdone, others believed in the value of early engagement and interdisciplinary approaches. The discussion underscored the importance of practical skills and the potential benefits of integrating business aspects into marine science education.

Figure 4 presents the results of the Wooclap poll regarding the statement 'MU must be part of dedicated education to ensure the new generation has knowledge of offshore MU'. Most participants agreed with the statement, while a few disagreed.

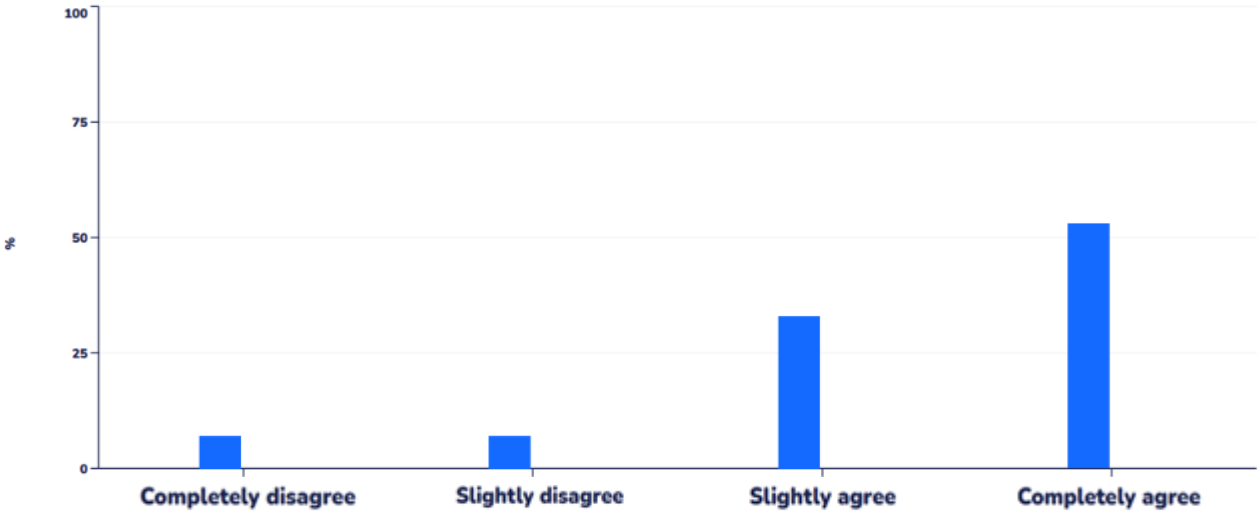

Figure 4: Answers of the participants regarding blue skills

The participants made the following comment in Wooclap:

- 'When we are too old or have passed away, it will be up to the younger generation to carry the torch.'

Safety & insurance

The discussion focused on the need for more fine-tuned safety training for those operating near wind turbines, rather than within them. It was suggested that a comprehensive 5000-course program is unnecessary; instead, a basic course

covering ship safety, survival at sea, and first aid would suffice, with additional training tailored to specific needs.

There was agreement that people from vessels are well-versed in safety instructions, but project personnel often lack awareness of safety measures at OWFs, which can complicate activity planning. It was emphasised that safety regulations should be fine-tuned to fit the purpose, avoiding unnecessary requirements, such as helicopter training for aquaculture personnel.

Figure 5 presents the results of the Wooclap poll regarding the statement 'The development of dedicated MU safety protocols will be a game-changer for the implementation of MU'. Participants had varying opinions regarding this statement.

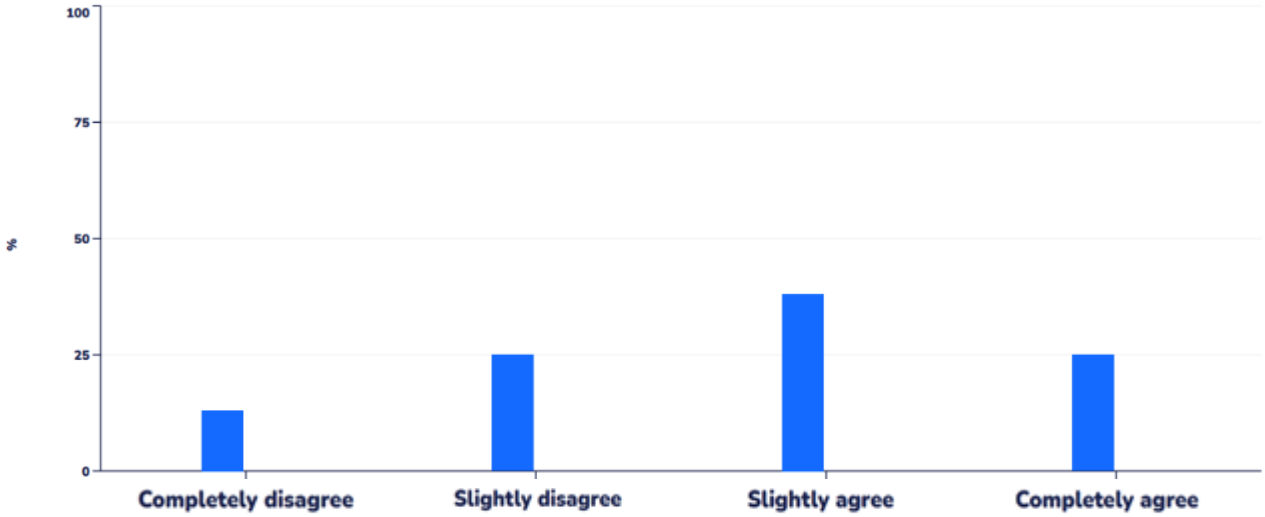

Figure 5: Answers of the participants regarding safety and insurance

The participants made the following comment in Wooclap:

- 'Safety protocols are already in place for working in wind farms.'
- 'This is common practice at sea; it is not a game-changer.'

Conclusions

In conclusion, the workshop highlighted the importance of clarity and tailored safety measures, noting that current practices rely heavily on vessel crews' knowledge, which may not be sufficient for all project participants. The need for more specific and practical safety training was underscored to ensure everyone involved is adequately prepared.

The discussion highlighted the varying preferences between countries and the need for better coordination, although there is currently no incentive to establish a one-stop shop. Participants were generally positive about tenders, noting that they could help bring discussions on potential solutions to an earlier stage. However, it was suggested that this should be tested in pilot projects before being implemented on a larger scale.

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There was agreement on the usefulness of stakeholder participation, though it was noted that the term "stakeholder" is often seen as a buzzword. Participants emphasised the need to specify what is meant by stakeholder participation and to clarify its importance.

Regarding blue skills, there were mixed responses, with some participants sharing examples of working with students. The conversation also touched on safety and insurance, with a consensus that current guidelines for entering wind farms are very strict and should be more fine-tuned to better fit specific needs.