DELIVERABLE 5.4

EVALUATION OF SOCIETAL AND STAKE-HOLDER ENGAGEMENT/ACCEPTANCE OF MUCL

Work Package 5

Societal Interactions and Engagement

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Abstract	This deliverable reports on the monitoring and evaluation of pilot projects stakeholder interactions to assess societal awareness and acceptance levels. Evaluation criteria were developed, and a stakeholder methodology applied across the project to determine societal acceptance across the five pilots in the UNITED project. The findings and results of stakeholder interactions within these pilots are summarized here, providing insights into the effectiveness of stakeholder engagement in 5 developed and deployed pilot sites.
Keywords	Stakeholder Engagement; Assessment; Social Acceptance

Revision Tracker **Resubmission 1 -**	Introduction of additional descriptions of the survey and limitations therein having only been done in English and reaching a limited group of local actors. Similarities in 9.3 have been aligned between the two deliverables. Project officer name has been removed. Discussion of the questionnaire and limitation in the results thereof have been introduced.

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2. EXECUTIVE SUMMARY

This executive summary outlines the importance of stakeholder involvement in the design of multi-use platforms and highlights the objectives of Task 5.1 in the development process. The task aims to monitor and evaluate pilot projects, focusing on legitimacy, credibility, and salience criteria. These criteria will be used to assess societal awareness and acceptance levels. To achieve this, evaluation criteria were developed and a stakeholder methodology applied across the project in order to determine changes in the societal acceptance across the various 5 pilots in the UNITED project. The findings and results of these pilots interactions with stakeholder groups are summarised here in this and provides insights into the effectiveness of stakeholder engagement in shaping multi-use platform designs.

3. INTRODUCTION

The development of an ocean multi-use system relies heavily on the involvement of diverse stakeholders, ranging from maritime authorities and research institutes to businesses, insurance, and classification companies, as well as local communities. Therefore, the success of the UNITED project and its pilot initiatives, particularly in light of general acceptance and understand of the wide range of stakeholder of the concepts and implementation potential, relies of the various stakeholder groups involved. These stakeholders posses a wide array of interests and perspectives regarding multi-use activities, which are expressed across different scales and levels of intensity. A thorough comprehension of stakeholder dynamics is key for establishing mechanisms to solicit stakeholder input into the UNITED project, effectively integrating project outputs into relevant policy, research, and business processes, and providing recommendations to enhance social acceptance for UNITED pilots. Active engagement of influential stakeholders throughout the project is key to ensuring acceptance, as seen through the use of a stakeholder advisory board and communities of practice, fostering a sense of ownership, and facilitating the implementation of final project recommendations, such as the UNITED Commercialisation Roadmap.

Through the societal pillar interaction undertaken in Work Package 5, general guidelines and an overall framework to be applied for the societal and social engagement of UNITED has been developed and guidance as well as trainings given to the pilots and project members in order to effectively undertake the societal and stakeholder interactions. The basis of this is described in detail under. The methodology utilized in this process is detailed in various project deliverables, providing a succinct overview of the approach and groundwork laid out prior to engaging with stakeholder groups during the implementation of the UNITED project. Stakeholder engagement is a central strategic objective for UNITED, achieved through a transparent and accountable approach. The UNITED Stakeholder Engagement Framework details the objectives and the manner through which such engagement would be achieved, drawing inspiration from the International Association for Public Participation (IAP2) spectrum, a globally recognized framework that assists organizations in determining the appropriate level of stakeholder involvement for achieving various objectives. In shaping a collaborative and mutually beneficial stakeholder ecosystem, the UNITED project considers the full spectrum of this approach, implementing different elements through various activities. For instance, information packets, policy briefs, and deliverables are tailored to inform interested parties, while the development and execution of communities of practice and practitioner workshops embody consultation, involvement, and collaboration elements within this framework.

3.1. Extended Framework

The methodology utilized in this process is detailed in various project deliverables, aiming to provide a succinct overview of the approach and groundwork laid before engaging with stakeholder groups during the implementation of the UNITED project. Additionally, the aspirations and desired outcomes of developing the stakeholder ecosystem are extensively elaborated, with specific focus on key groups identified throughout Deliverables 5.1, 9.1, 9.2, 9.3, and the current deliverable. Stakeholder engagement serves as a strategic objective for the UNITED project, achieved through a transparent and accountable approach. The UNITED Stakeholder Engagement Framework, developed and outlined through Work Package 5 activities, details this processes and the various need, drawing inspiration from the International Association for Public Participation (IAP2) spectrum, which offers a structured approach to stakeholder involvement. This globally recognized framework assists organizations in determining the appropriate level of stakeholder involvement necessary to achieve the objectives of various stakeholder activities. The UNITED project takes a holistic approach in developing a collaborative and mutually beneficial engagement with stakeholders. This is done in a number of different ways and through different medium, for instance, information packets, policy briefs, and deliverables are designed to inform interested parties, while the development and execution of communities of practice and practitioner workshops embody the consultation, involvement, and collaboration elements within this framework. An extensive analysis and description of this framework used to underpin the engagement and stakeholder activation in this project can be read in depth in Deliverable 5.1 but we summarize the key working aspects and functions here.

The developed Framework for UNITED, using the IAP2 spectrum aims to interact on 5 levels of engagement, namely informing, consulting, involving, collaborating, and empowering. The first seeks to inform, providing the public with balanced and objective information regarding the sectors involved in UNITED and the topic of Multi-use overall. This is to aid the audience in understanding the problems being addressed, potential solutions and alternatives, opportunities for collaboration or resolving the issues identified and forms the basis of outgoing

information from the project to multiple stakeholder groups and a diverse audience base. This first level of public participation does not entail active engagement or solicitation of input from the public, but instead focuses on providing various informational packets addressed to target groups or the public in general on the developments within the project and generalised information on multi-use and the sectors and project enhancements involved. When implementing the "inform" level of public participation, the objective is not to influence public opinion but rather acting as an open conveyance of new knowledge and information gained within the workings of UNITED. Moving deeper into the engagement spectrum, the 2nd level of interaction within the UNITED engagement framework is consultations. In such activities, stakeholder groups and the public are queried in order to obtain feedbacks or analysis of what is being presented and developed within the project. This allows for an external evaluation of the developments realised in the project and allows for a moment of reflection in regard to what external actors, be they the public, stakeholder groups, or other members of the involved sectors perceptions are in the context of proposed or implemented solutions and problem statements within the project. Here UNITED uses engagement moments such as webinars and workshops to gauge the attendees opinions and reactions to presented information. As the degree of interaction between the stakeholders and the project is at a minimal level, there is not concrete collaboration developed here, but a one way transmission of information with the opportunity to receive feedback from stakeholder groups.

Moving beyond simple consultation, is the direct involvement of the public or stakeholders. This is a key element to fully understand what concerns and aspirations are held by the public and stakeholder groups in reference to the challenges that the UNITED is facing, namely, the development and deployment of scaled solutions to multi-use in the marine environment. While a degree of input can be obtained from surveys and consultations, working with targeted groups iteratively, rather than in a one-off manner, allows the development of confidence and relationships between project partners and the external public and stakeholder groups. This is achieved within UNITED through a series of directed workshops, where stakeholder groups are invited back multiple times to continually engage as well as the development of local communities of practice through which annual or bi-annual topical meetings are held in order to build a continuity in the relationships with stakeholder groups and establish a continuity in the discussions and positions of these groups in relation to multi-use and the various solutions surrounding tourism, aquaculture, nature restoration, and renewable energy at sea. Through the continual involvement of key groups and the development of localised communities of practice, the potential to reach the next stage in engagement in the IAP2 framework used as our foundation can be achieved; namely collaborations. At the levels of collaboration, a key stage of development with cross-sectorial stakeholders as well as policy and governance actors, the partnering and integration of these project externals' ideas and opinions on solutions and alternatives to the identified challenges being faced by the project is undertaken. In this dynamic, a sharing of power on decisions and trajectories is had as the stakeholders participating with project partners have a degree of influence and engage in collaborative efforts in the design, operation, and deployment of the multi-use solutions within UNITED. In this way, the final decision making and practical implementation of project solutions and actions still remains with the UNITED project partners, however, the promise and onboarding of external advice and recommendations, from experts and the public, is achieved. Although complete empowerment is not practically achieved within the project, empowerment is pursued through engaging, collaborating, and informing the public and stakeholders at multiple levels. Final recommendations and identified needs for advancing multi-use concepts, adoption, and deployment are provided to external actors, enabling them to continue the progress initiated by the project once it concludes.

These four identified and realised engagement methods serve as a guiding tool for stakeholder engagement and communication within the project. They ensures that stakeholder engagement activities are coordinated and integrated, thereby enhancing the effectiveness of UNITED's engagement efforts. The coordination of such activities are done at multiple levels, through direct stakeholder registrars at a pilot level to coordinate their local activities, and at aggregate project wide levels to ensure stakeholder fatigue is not achieved and provide regional registrars of key groups for themed activities and workshops. The activation of these stakeholders and their involvement in the UNITED project primarily encompassed:

- Providing an overall perspective on UNITED's performance
- Identifying areas of strength
- Identifying opportunities for improvement

- Offering feedback on policies and procedures
- Assessing the relevance and usability of multi-use activities
- Expressing preferences regarding engagement methods
- Utilizing stakeholder input in developing the Framework ensures that UNITED meets stakeholder needs and expectations while achieving the project's main objectives

The manner in which the four key staps of the IAP2 Spectrum model are integrated with the above key activities and ambitions are by activating and engaging the stakeholder groups through answering the following four questions, which are central to why and how these groups are engaged with:

Step 1: What is the purpose of the engagement with this group?

Step 2: What group of stakeholders do we need engagement from?

Step 3: What process do we need to choose in order to engage?

Step 4: How do we evaluate the process?

These questions are addressed below in Table 1, a cross-reference from UNITED deliverable 5.1 which summarises the methods of engagement and provides examples of how each of the phases of stakeholder interaction are addressed to stakeholders along with examples of the methods and interventions utilised within the project to engage with groups to achieve the various levels of engagement.

Table 1 - IAP2 Levels of Stakeholder Engagement Adapted to UNITED Activities

	Inform	Consult	Involve	Collaborate	Empower
Stakeholder participation goal	To provide stakeholders with balanced and objective information to help them understand the process, proposed solutions and outcomes.	To obtain stakeholder input on analysis, proposed solutions and outcomes.	To work directly with stakeholders throughout the process to ensure public issues and concerns are consistently understood and considered.	To partner with stakeholders in the process, including the development of alternatives and the identification of the performed solution.	To place final decision making in the hands of the public.
Our promise to stakeholders	We will keep you informed.	We will keep you informed, listen to and acknowledge concerns and provide feedback on how stakeholder input influenced the decision.	We will work with you so that your concerns and issues can be directly reflected in the alternatives developed and provide feedback on how stakeholder input influenced the decision.	We will look to you for direct advice and innovation in formulating solutions and incorporate your advice and recommendations into the decisions to the maximum extent possible.	We will implement what you decide.
Example of engagement tools	• Factsheets • Email bulletins • Media releases	• Public analysis and advice • Focus groups	• Workshops • Consultative committees (e.g. SAB)	• Consensus building	• Delegated decisions

	• Dedicated project web pages on the UNITED website • Written reports	• Surveys • Public meetings • Meetings with selected stakeholders • Webinars and other online forums		• Participatory decision making • Partnerships	

In the realm of stakeholder management and mobilization, there is a preference for a broader interpretation of the term "stakeholder," extending beyond the consideration of internal stakeholders directly impacted by Pilots, such as subcontractors, project partners, shareholders, and owners. UNITED's overarching objective is to demonstrate the feasibility of offshore multi-use for advancing the sector further. Bourne et al. (2005) stressed the importance for project managers to not only interact with supportive "tame" stakeholders but also those who may hold opposing views to the project's goals and visions. Given the potential for shifting power dynamics, maintaining active communication systems is crucial (Bourne et al., 2005). Establishing a credible understanding of stakeholders' influence can help mitigate the risk of adversarial parties disrupting the project. Furthermore, stakeholders' influence can serve as a subtle yet positive driver for project success. Therefore, the challenge of stakeholder engagement and mobilization is addressed through a stakeholder participation and communication matrix. It's important to note that stakeholder engagement isn't solely pursued for the sake of achieving project success at any cost but also strives to adhere to ethical standards based on the triple bottom line (3BL) principles (Bourne et al., 2005). For the UNITED project, we have adapted the Stakeholder management and monitoring hermeneutic circle approach proposed by Ellmann & Weilander (2019) as seen in Figure 1 below. This deliverable summarises the result of the monitoring process to determine the extent to which stakeholders were engaged with and to what degree perceptions have shifted in terms of acceptability and the overall multi-use concept.

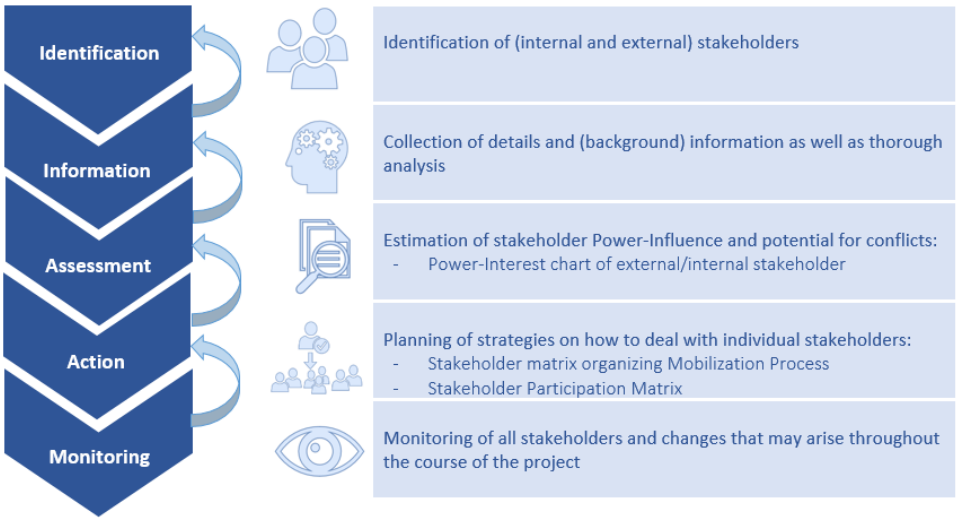


Figure 1 - Stakeholder monitoring and management within UNITED based on hermeneutic circle approach adapted from Ellmann & Weilaner (2019).

3.2. Social Acceptance

3.2.1. Objective of acceptance

The objective of achieving social acceptance in a stakeholder engagement process, particularly for multi-use projects, is to foster widespread understanding, support, and approval from the communities and stakeholders affected by or involved in the project. Social acceptance ensures that the project is welcomed and embraced by the affected communities and stakeholders, thereby reducing resistance, conflicts, and barriers to implementation. It also facilitates collaboration, cooperation, and constructive participation among stakeholders, promoting the project's success and sustainability in the long term. Additionally, achieving social acceptance enhances the project's credibility, legitimacy, and reputation, leading to greater trust and confidence among stakeholders and the broader public. Ultimately, social acceptance is essential for ensuring the viability, effectiveness, and positive impact of multi-use projects on both socio-economic and environmental levels. In the context of how this was applied within the UNITED Project, credibility, legitimacy, and reputation are essential components that integrate into the stakeholder acceptance processes in various ways. When a project, its outputs, or the degree of interactions and relationships with stakeholder groups is evaluated to be credible, stakeholders are more likely to accept a project when they perceive the information provided by the project team or proponents as valid and truthful. Credibility is built through transparent communication, accurate information sharing, and consistent behaviour. When stakeholders trust the project team and believe in the accuracy and reliability of the information provided, they are more likely to accept the project. This is reliant on clear and open sharing of information and data as well as positive and recurrent interactions with stakeholder groups and communities involved in the work or affected by the outcomes and activities. Legitimacy refers to the perception that the project and its processes are fair, just, and appropriate. Stakeholders are more likely to accept a project when they believe that the decision-making processes are transparent, inclusive, and align with societal norms and values. Within UNITED, legitimacy was fostered through local stakeholder engagement, where stakeholders were engaged with and asked to collaborate in the definition of barriers, benefits, and targets for proposed solutions to the multi-use applications developed within the five pilot sites. Through continual sharing of information and the invitation to collaborative working sessions, with the sharing of concrete outcomes from said workshops and interactions, the projects aim was to have the stakeholder groups feel their concerns and perspectives are acknowledged and considered in the design, implementation, and resulting project outcomes. Finally, the reputation of the project team or organization can significantly influence stakeholder acceptance. A positive reputation built on past performance, integrity, and ethical conduct can enhance stakeholder trust and confidence in the project. Conversely, a negative reputation can undermine stakeholder acceptance and lead to scepticism or resistance. Maintaining a positive reputation requires proactive communication, ethical conduct, and delivering on commitments.

In the context of the 5 pilots within UNITED, implementing various multi-use applications, to achieve credibility, legitimacy, and reputation in the stakeholder engagement processes involved several strategies addressed in the overall stakeholder engagement planning. Firstly, ensuring that communication channels are open and transparent; providing stakeholders with accurate and timely information about the project's objectives, progress, and potential impacts. Engagement via communities of practice through regular updates, newsletters, and online platforms maintained various interest and informed groups following the development of the UNITED project. Secondly, the various workshops and stakeholder meetings to actively involved communities and stakeholders by seeking their input and feedback on project plans, designs, and implementation strategies. This encouraged participation from diverse stakeholder groups to ensured that multiple perspectives are considered ranging from local communities to policy and decision maker or other industry partners. Furthermore, a number of public events and large scale communication activities across scientific, industry and general public domains showcased the project team's expertise and knowledge in multi-use at sea projects through presentations, information packets, and deliverables. Highlighting the successful case studies, best practices, and lessons learned from similar projects in the course of the work helped to demonstrate credibility and build confidence in the project's objectives and outcomes. Such efforts fostered collaboration and cooperation among stakeholders by facilitating networking opportunities, knowledge-sharing sessions, and collaborative workshops.

3.2.2. Actors

Prior to deploying and customising the engagement plan for the regions and specific pilots in the UNITED project, the identification of key stakeholders and the use of stakeholder registrars was needed prior to beginning engagement process. Identifying key stakeholders allowed the project team to understand the diverse range of

individuals, organizations, and communities that may be impacted by or have an interest in the project. By understanding the interests, concerns, and influence of key stakeholders, the project was able to direct engagement strategies to effectively address specific needs and perspectives; making better use of the often limited time and access to key stakeholder groups. This was done through the use of stakeholder mapping and stakeholder registrars; these helped in systematically documenting and organizing stakeholders, including their contact details, roles, interests, and relationships with the project. This enabled the project team to maintain clear records of stakeholder engagements, track communication and interactions, and ensure that all relevant stakeholders are included in the engagement process. Furthermore, the identification of key stakeholders and the use of stakeholder registrars facilitated proactive stakeholder management and communication throughout the project lifecycle. By maintaining updated records of stakeholders, the project team was able to anticipate potential challenges, conflicts, or opportunities and develop appropriate strategies to address them. The identification of key stakeholders was critical preparatory steps that enable effective stakeholder engagement, executed in the onset of Work Package 5 and documented in Deliverable 5.1; this enhanced project understanding and acceptance, and ultimately contributed to the successful development of offshore multi-use scenarios in the marine environment. Figure 2 below outlines the key groups identified across all 5 pilots to be engaged with through the project.

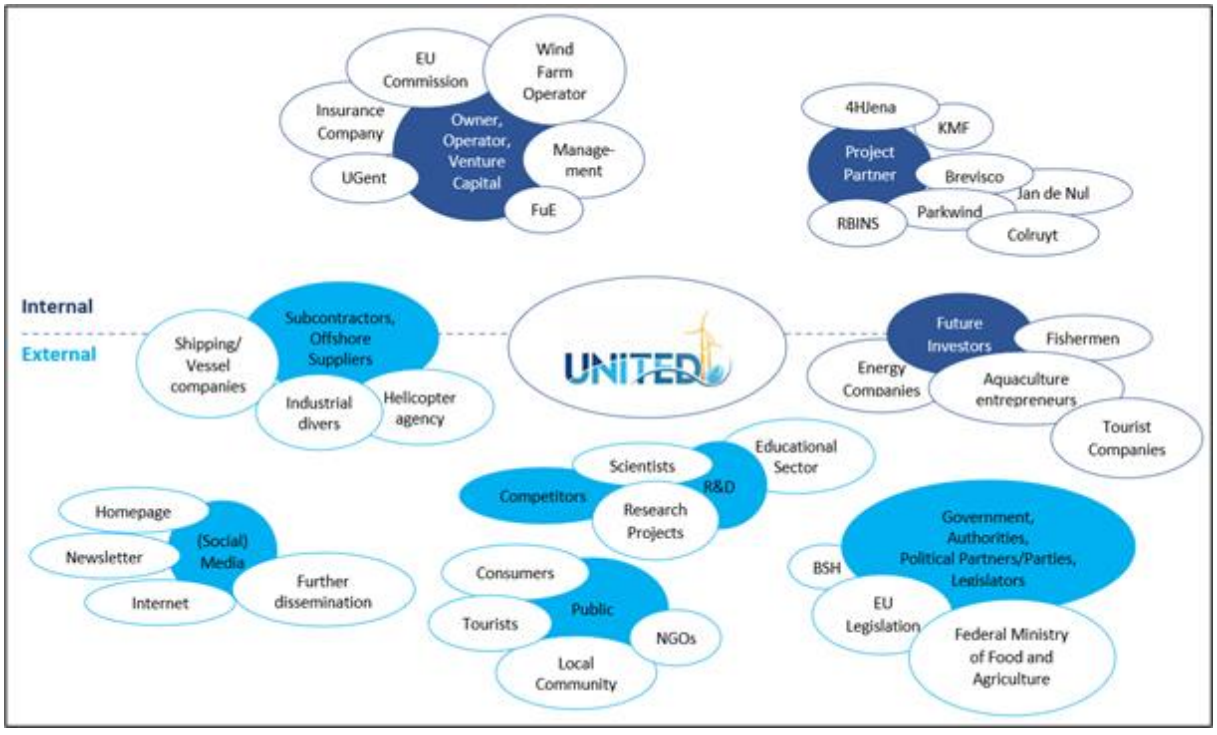


Figure 2 - Identification of stakeholder Groups of relevance for the UNITED project (Deliverable 5.1 UNITED)

While each of the 5 pilots varied in their needs, particularly in the scope of work carried out under the UNTIED project, the mapping exercise proved beneficial and generally applicable to all of the sites. Based on these generalised groups, each pilot was tasked with generated a case specific inventory of the stakeholders in their region falling under these classifications. Once developed, the registrar of stakeholders was further classified regarding their interests and potential impact. Again, a project wide generalisation of these groups in relation to their power and interest was generated in order to prioritise the selection of stakeholders with whom to engage with in order to raise the level of acceptance for multi-use solutions. The selection of key stakeholders was not prescribed only by the degree of power or perceived power executed by said stakeholder group, but also complemented by the ambitions and needs of each of the pilots. These charts were used in order to aid the selection and identification processes with each of the pilot core partner groups in alignment with their overall objectives.

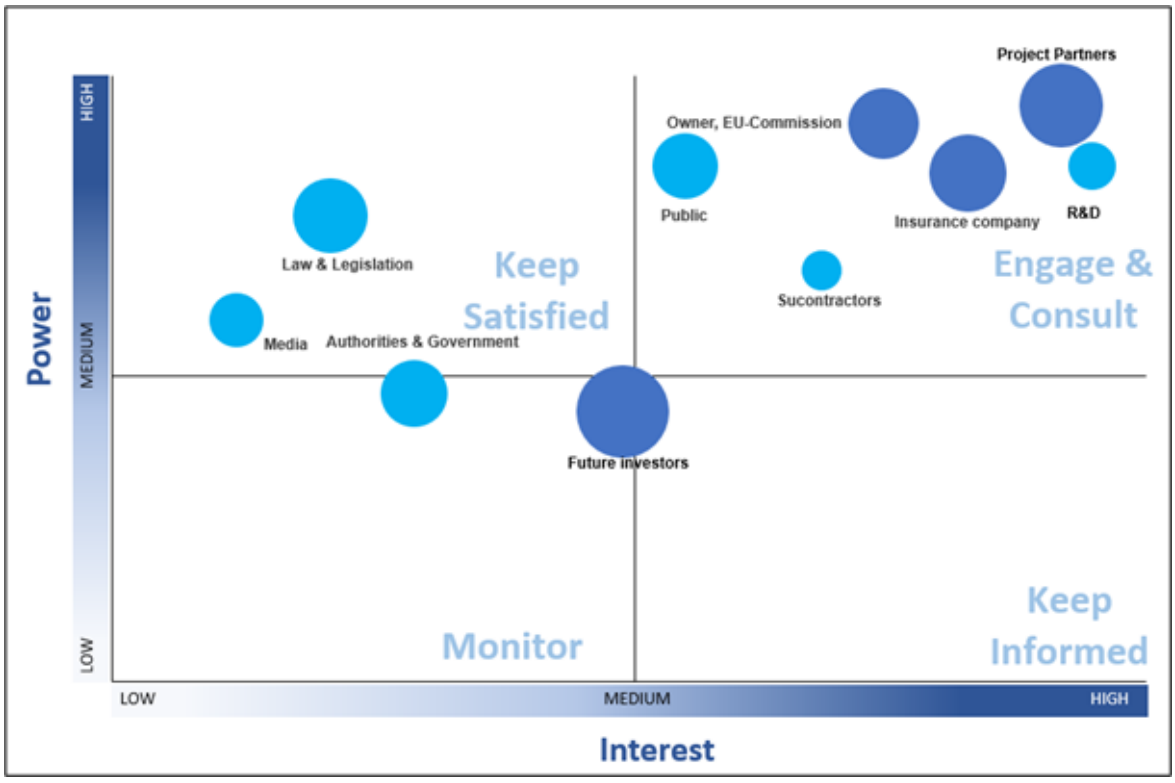


Figure 3 - Power-Interest chart of external (light blue) and internal (dark blue) stakeholder groups.

Aside from those identified in the above matrices, The emergence of ocean multi-use, particularly integrating offshore wind and aquaculture as realised in 3 of the UNITED pilots, is in its early stages, primarily at the pilot level. However, as this sector evolves, several influential actors have been identified to be in potential steering roles of the landscape. International Organizations (IOs) like the United Nations (UN) can set global standards and facilitate international cooperation. Global NGOs such as WWF and Oceana play vital roles in shaping environmental policies, albeit with limited global perspective adoption. Transnational Corporations, exemplified by companies like Vattenfall, have the potential to drive development, particularly in aquaculture within offshore wind farms, through knowledge transfer and streamlined processes. International Partnerships, like the Belmont Forum, foster innovative solutions for sustainable ocean governance. Science Organizations/Institutions, including ICES, provide critical scientific advice and data for informed management decisions. While Civil Society influences policy and corporate practices through public awareness and advocacy for sustainable ocean use.

4. SALIENCE, LEGITIMACY, CREDIBILITY

4.1. Concept

While we have described three key elements in the objective of acceptance as credibility, legitimacy, and reputation, furtherance of these three components of acceptance can be found in salience legitimacy and credibility, factors identified as critical in the evaluation of the outreach and stakeholder engagement strategy of the project. Successful interactions between research and policy necessitate more than just the recognition of the three key criteria: salience, credibility, and legitimacy; achieving successful participatory design requires a delicate balance between them[1],[2],[3]. The concept of trade-offs between these criteria and the identification of thresholds that may trigger the rejection of information or resistance to participation. In essence, while each criterion holds significance independently, their interplay and alignment are crucial for fostering effective research-policy interactions and facilitating meaningful participatory design processes. Salience, refers to the relevance or significance of information, issues, or perspectives to the stakeholders involved. It encompasses the degree to which certain

aspects of the project are perceived as important, impactful, or pertinent by stakeholders. In the context of multi-use at sea projects, salience may vary among different stakeholders depending on their interests, concerns, and roles in the project. For example, stakeholders directly involved in the project, such as offshore wind developers or aquaculture operators, may prioritize economic viability and technological feasibility as salient factors. On the other hand, environmental organizations or local communities may prioritize ecological sustainability and social impacts. Understanding and addressing the salience of various aspects of the multi-use project are essential for effective stakeholder engagement and decision-making. It involves identifying and prioritizing stakeholders' interests and concerns, ensuring that relevant information is communicated transparently, and incorporating stakeholders' perspectives into project planning and implementation processes. This is the key processes discussed in Section 4.2 of this deliverable and the rational behind the mapping and identification of topics of relevance and ranking of importance to the various stakeholder groups, generally for the project as a whole, and more importantly for the specific pilot level stakeholder registrars. By recognizing and addressing salient issues, project teams can foster greater stakeholder buy-in, support, and ultimately, the success of the multi-use demonstration pilots at sea.

While Salience relies on a stakeholder or groups prioritisation of issues or marked benefits of particular multi-use solution, legitimacy focuses predominantly on evaluation of actions, decisions, and processes associated with the project; the degree to which they are fair, just, and appropriate. It involves ensuring that the project is conducted in accordance with accepted norms, standards, and values, and that stakeholders have confidence in the project's governance structures and decision-making processes as well as the acceptability, within that stakeholder group and at large societally of the innovations and solutions to implementing multi-use in a given setting. This can vary between regions and locales as it can be very subjective to regional or local perceptions and value structures, making it an often difficult criteria to evaluate and satisfy. It additionally makes the generalisations across of the pilots in this regard not possible, as regional and locale variability in value structures and confidence intervals affecting legitimacy may be incompatible. However, legitimacy is crucial for building trust, credibility, and support among stakeholders, as it provides assurance that their interests and concerns are being considered and addressed fairly. In the context of the UNITED multi-use pilots, legitimacy was influenced by various factors, including compliance with regulations and legal requirements. This required that the pilots complied with relevant laws, regulations, and permits including obtaining necessary permits, conducting environmental assessments, and adhering to best practices for marine resource management. Additionally, open and transparent communication about pilot goals, plans, and potential impacts was essential. UNITEDs mechanisms for accountability, such as monitoring and reporting procedures, were made public via the projects deliverables and were disclosed to stakeholder participants to help maintain legitimacy by ensuring that UNITED'S activities are conducted responsibly. Furthermore, the projects aim to engaging with a diverse range of stakeholders, including local communities, government agencies, and environmental organizations, was critical for ensuring legitimacy. Inclusive stakeholder engagement processes allow for diverse perspectives to be heard and considered in project decision-making, enhancing the project's credibility and acceptance.

Once assuring the inclusion of diverse stakeholder groups and establishing a foundation of legitimacy for the stakeholder engagement processes as well as the design, operation, maintenance, and decommissioning plans for the UNITED pilot projects, ensuring the credibility of the engagements and solutions was also required, as well as the monitoring thereof. This element refers to the perception or belief among stakeholders that the information, actions, and commitments associated with the project are trustworthy, reliable, and credible. It involves establishing and maintaining confidence in the project team, its expertise, and the information provided, as well as the project's ability to deliver on its promises and objectives. Credibility was essential for building trust and fostering positive relationships with stakeholders, as it ensures that stakeholders have confidence in the project's integrity and reliability. This was achieved through the exemplification of the project's team in having suitable and demonstrable expertise and competence. The projects' partnership composition and inclusion of externals in elements such as a stakeholder advisory board and the participation of notable experts within the consortium partnership in relevant areas, such as marine science, engineering, and project management helped to build trust in the information and decisions provided by said experts who have demonstrated knowledge and experience in the field. Again, the open and transparent communication about project goals, plans, risks, and uncertainties was crucial for maintaining credibility, allowing stakeholders to be provided with accurate and timely information, even if it may be unfavourable or challenging. This was realised through the dissemination and publication of failures in design due to extreme weather conditions, and across a number of technical challenges that the project partners experienced

in deploying novel solutions in the challenging and harsh off-shore marine environment. Additionally, the cataloguing of legal, policy, and insurance obstacles encountered by partners and documented in policy and other applications reiterated dedication to transparency and sharing both the successes and troubles realised in the UNITED project. Having measures in place to allow for accountability for project actions and decisions allowed stakeholder concerns and feedback to be addressed by the project, most importantly by the pilot level stakeholder interlocutors which was critical for maintaining credibility; by prioritizing credibility in stakeholder interactions and project development processes, UNITED was able to enhance collaboration, and increase stakeholder acceptance and support.

4.2. Venues of Engagement

A wide variety of engagement methods and tools have been employed in the outreach of stakeholders and raising of acceptance in UNITED, a subset of which have been identified in Table 1 under section 4.1 of this report according to the IAP2 schema. Additionally, in the final communication and dissemination plan under the WP deliverable, a full listing of all outreach and engagement activities, ranging from conferences, to scientific publication, congresses, workshops, television segment, documentary contributions, and more have all been itemised and listed according to pilot or general cross thematic project pillar. Not all pilots nor core project thematic pillars have used the same strategies and engagement, informing, or collaboration methods. The core cross-project pillars of technology, economics, environmental, and societal have relied primarily on policy briefs, deliverables, conferences, and publications to disseminate the higher level abstractions that aggregate all of the pilots or tackle over-arching thematic issues for multi-use in general. These abstractions and me through directed efforts to collaborate through the venues of stakeholder engagement lead by the UNITED project's 5 pilots, the interactions with the internal project stakeholders for each as well as the interactions and stakeholder engagement and collaboration efforts undertaken by the project partners to include and engage with externals as identified and prioritised in their stakeholder mapping. The pilots, have held a number of workshops, stakeholder sessions, local and thematic communities of practise, as well as participating in the policy briefs, publications, scientific conferences, and all other outreach and engagement opportunities. The specifics of these coordinated workshops and communities of practice development can be found in the related WP5 and WP9 deliverables with extensive details outlining the planning, rationale, and execution of each.

5. MONITORING

5.1. Monitoring Plan

5.1.1. Method of implementation

An online questionnaire was created for the purpose of monitoring stakeholder engagement of UNITED, specifically in relation to pilots and more generally in relation to the broader engagement of the project. The questionnaire is structured in a way that capture the three pillars for successful stakeholder engagement: salience, legitimacy and credibility. The questionnaire is anonymous and is accessible via a hyper link or a QR code and was made available to all of the pilot stakeholder interlocutors with the objective of having stakeholder interactions conducted, particularly those done at smaller scales and in a collaborative manner with external stakeholders to the project complete the questionnaire at the end of each interaction. This online form was also shared at the end of the project wide targeted workshops, online webinars, and larger interaction and engagement moments. Beyond the assessment via a questionnaire, the pilot interlocutors and core partner teams for each pilot formulated a qualitative assessment on the engagement success based on a combination of the survey outcomes, engagement activities completed, and achievement of the short- and medium-term goals outlined and discussed in section 8 of this report. This survey and the primary method of monitoring has been conducted only in English as it was standardised across the project and there was insufficient capacity to translate the survey and conduct the analysis in all of the local languages present in the pilot sites. It is understood and valued that this in turn limited the scope and spectra of the candidates whom would be able to respond to the survey and interact with the group conversations and stakeholder engagement sessions.

5.1.2. Timeline

A monitoring plan was developed with intermediate evaluations and feedback moments, so that pilots and the broader project can adapt the engagement with stakeholders according to their needs. The timeline consists of a pilot baseline at beginning of project, where the key objectives, targets, and ambitions of each of the pilots are

developed and a sub-selection of stakeholders and groupings are identified. The potential synergies and targets for societal acceptance, interactions, and synergies are described. This is followed by the execution of the survey in two phases an interim phases and a closing evaluation, as well as a final qualitative assessment of the pilots on their capacity to reach their goals and achieve the project wide short and medium term goals. The main timeline elements are therefore as follows:

- Pilot baselines
- Interim reporting 1st phase (September 2021- February 2022)
- Closing evaluation (December 2022 – December 2023)

6. PILOT PRIORITISES AND STAKEHOLDER TARGETS

Key to understanding the need of stakeholder engagement and societal acceptance is the clear identification of the target ambition of the pilot projects and the sectors and actors they had identified as critical to their outreach and engagement strategies. As each of the 5 UNITED pilot address different sectors, key actors, and multi-use solutions, we provide here a brief synopsis of the targets and achievements of the pilots as well as the identified stakeholders groups and sectors of relevance and proposed societal acceptance and synergies to be developed. This serves as the pilot baseline and basis for operating throughout the UNITED project. While some of the stakeholder in-person meetings were held in the local languages and the results translated from these smaller and limited participant meetings, the survey and wider capture of results from all of the pilot across the project was conducted in English. It is understood and accepted that this in turn limited the number of potential respondents and the breadth of which they may have been able to express their values, rankings, and allows for errors in the interpretation and presentation of outcomes. This should be considered when characterising and interpreting the results form these efforts.

6.1.1. German Pilot

The North Sea offshore research platform FINO3, currently operated by FuE-Zentrum, shares fundamental characteristics with the offshore wind farm turbines in the area, built upon windmill monopile construction and serves as the location of the UNITED German pilot. Its operation as a reference platform and tower (standing at 120 meters without a turbine) and the outcomes of numerous scientific research projects conducted on and around it have significantly contributed to the planning, construction, and future operation of offshore wind farms. This positioning makes FINO3 well-suited to undertake an offshore wind and aquaculture demonstration project, facilitating the transition from pilot scale to potential commercial application. The objectives of the pilot demonstration project at FINO3 were twofold. Firstly, to mitigate technological, financial, health and safety, and environmental risks associated with far offshore aquaculture in the severely harsh North Sea environment and share these developments with a multi-stakeholder group to expedite the acceptance of multi-use concepts by North Sea industries. Addressing these risks entailed developing a robust data management system, enhancing automation in data collection and transmission, and investigating interactions between target aquaculture species and the offshore environment as well as improving the information base. This was all identified as crucial for future regulatory and permitting processes, enabling greater investor, banker, and insurer engagement. Secondly, the pilot demonstration aimed to demonstrate societal acceptance of such developments and their benefits. This involved developing potential business models, exploring local cooperative ownership opportunities, and fostering positive public sentiment, particularly since offshore facilities rely heavily on support from land-based stations. Additionally, joint multi-stakeholder activities can yield cost-sharing benefits, enhance the social and environmental image of involved businesses, and increase financial returns for investors. The project also presents opportunities for eco-labeling and small spatial footprint certification, both for marketing aquaculture products and renewable energy derived from the multi-use site. With these diverse ambitions, the German pilot's key partner group were tasked with consolidating an expansive list of potential collaboration and stakeholder group interactions to a directed core list to achieve their prioritised objectives.

The primary stakeholder groups whom have been engaged with through the work completed in the UNITED project German pilot include those listed below. These actors have been brought into contact with the pilot either through workshops, through permitting and legal requirements, or discussions and collaboration on joint deigns and operation of activities.

- Offshore wind sector
- Aquaculture suppliers
- Commercial aquaculture producer
- Insurance companies

As the German FINO3 demonstrator pilot aimed to achieve significant milestones in advancing the integration of mussel and algae aquaculture within the offshore windfarm environment, with key outputs in terms of design, functionality, and success or troubles with their employment earmarked to be shared and communicated to relevant authorities and interested parties. Their overall stakeholder engagement plan and ambition to enhance societal and public acceptance of their proposed solutions relied on the development of close working relations with regulatory and permitting authorities, being one of the first case studies to deploy aquaculture in a wind turbine farm in harsh offshore settings within the German EEZ. The pilot, initially starting with individual components at TRL 9, successfully transitioned to an integrated system evaluated at TRL 5, signifying advanced technology development validated in near-real-world conditions. By its conclusion, the pilot aimed to achieve TRL 7, and showcasing of the production potential and success of design, deployment, and operation in such hostile and difficult conditions being key elements to raise awareness of the potential of such operations, the safety of equipment as well as environmental considerations of the activities, and benefits such deployments could have for society, coastal communities, and beyond.

The initial phase of the German pilot project in the UNITED project involved collaborative stakeholder engagement to categorize social impacts. This engagement occurred during an online socioeconomic workshop in November 2022, with representatives from various sectors including offshore wind energy, regional agriculture, and the European Commission's DG for Maritime Affairs and Fisheries. Experts from diverse disciplines, such as marine ecology and engineering, also participated. Subsequently, at the consortium's General Assembly in February 2023, partners further refined and assessed these impacts in person. Through these efforts, significant social impacts were identified, notably employment, training, and re-skilling initiatives affecting the local population within a 20-kilometer radius of the landing port. Heightened concern was also expressed regarding increased risks of offshore accidents due to concurrent operations. Other impacts included the establishment of new processing facilities, expansion of training and education facilities, automation of offshore shipping operations, potential exclusion of other uses within wind farm areas, and provision of alternative income sources for fishers transitioning out of the industry. These findings underscore the importance of stakeholder engagement and activation in assessing and addressing social impacts within the German pilot project.

6.1.2. Dutch Pilot

The North Sea Innovation Lab, operated by North Sea Farmers, serves as an independent test site for research, pilots, and the scaling up of innovations in seaweed cultivation, floating solar, and other renewable energy solutions, alongside the co-use of wind farms. Within the UNITED project, two parcels within this test site have been utilized for deploying seaweed cultivation lines by The Seaweed Company and floating solar panel arrays by Oceans of Energy. These pilot deployments emulate conditions akin to offshore wind farms in the same region, serving as proof of concept for future integration of these activities within offshore wind installations. Situated 12 kilometers off the coast of The Hague – Scheveningen, the North Sea Farmers Offshore Test Site spans 600 hectares (6 km^2) with a water depth of approximately 18-20 meters. It is officially marked and demarcated for testing purposes. The Dutch pilot entails four main demonstration objectives to showcase the synergistic functionality of offshore wind developments, floating solar energy production, and seaweed farming in various configurations. While not situated within an offshore wind-farm installation, the data and insights gleaned from multi-year deployments of seaweed and floating solar panels in this exposed North Sea testing ground validate future integration proposals and underscore the potential benefits of combining all three activities within a single operational site. The testing of floating solar panel arrays aims to establish the economic viability and mitigate technical risks of integrating floating solar with offshore wind farms, develop legal frameworks, safely plan aquaculture rollout, investigate wave dampening effects, and determine optimal configurations for wave dampening. Meanwhile the deployment of monitoring buoys and seaweed grow-out systems aims to demonstrate the economic feasibility of integrating aquaculture within offshore wind farms, including developing safe operational plans and establishing legal

frameworks. Through the co-location of floating solar and seaweed aquaculture aims to explore technical and operational feasibility, including energy and communication connections between systems and the impact on aquaculture business cases.

The core participants in the Dutch pilot activities and considerations included the project members participating in the project listed below

- Stichting Noordzeeboerderij/North Sea Farm Foundation: non-profit organization aimed at realizing seaweed industry in The Netherlands
- The Seaweed Company (TSC): commercial seaweed company cultivating certified seaweed
- Oceans of Energy BV (OOE): first company to design, develop and build floating solar systems that can withstand robust, offshore conditions
- TNO: supports with research on floating solar energy offshore and provides modelling outputs
- Ventolines BV: service provider of onshore wind and solar and offshore wind projects
- Vattenfall: Wind farm operator that is interested in impacts of logistics, governance and insurance in multi-use activities in offshore wind farms.
- Governmental permitting and planning agencies related to offshore energy and aquaculture
- Search & rescue, Commercial shipping, Fishing

The Dutch pilot in the UNITED project initiated an assessment of its societal impacts during a face-to-face working group session. The primary outreach and interaction fulcrum on this pilot was the North Sea Community of Practice, a standing organisation and meeting of various stakeholders through topic meetings held at regular intervals which was initiated and brought to life through Dutch governmental ministry actions The initial findings unveiled several significant potential impacts of relevance for society and which could raise social acceptance of the proposed multi-use solutions in the Dutch Case, including job creation across various levels and within the supply chain, presenting promising economic prospects for the fisheries sector and the local community. Additionally, the integration of solar energy with wind energy serve as a potential enhancement to energy security and a more balanced energy production system, bolstering the region's green energy portfolio. Furthermore, the multi-use approach led to increased food security, reduced carbon footprint, and enhanced land use efficiency, thereby avoiding the utilization of nature-sensitive areas. The project's multi-use approach also was poised to contributed to political stability by bolstering local energy and food production security, reducing dependency on other countries and alleviating political pressures. Moreover, leveraging the same electricity grid for both solar and wind energy maximized capacity utilization, translating into cost savings and enhancing the acceptability of the multi-use option compared to single-use wind farms. The project also aimed to promote education and awareness about offshore environments and the sea, fostering a more informed and engaged community. However, the presence of the wind farm restricted navigation for fishers and sailors, foretold a potential for reduced acceptance among these stakeholders. Overall, the preliminary assessment of social impacts highlighted the project's potential to generate positive economic, environmental, and educational outcomes, while also identifying challenges related to navigation restrictions within the wind farm area.

6.1.3. Belgian Pilot

The activities undertaken in the Belgian pilot of the UNITED project were centered on the deployment of Low-Trophic Aquaculture within operational offshore wind farms and the restoration of native flat oyster reefs, along with their cultivation for human consumption. The pilot utilized two distinct locations: the primary site was within the Belwind offshore wind farm, operated by Parkwind, situated 46 km from the coast with an average depth of 25-30 meters. Activities were conducted within this active wind park. Additionally, a nearshore site called Westdiep, located 5 km off the coast in front of Nieuwpoort, Belgium, with an average depth of 15 meters, served as a testing ground for systems and techniques prior to offshore implementation. The work undertaken within the UNITED project built upon a previous offshore mussel aquaculture pilot project, EDULIS, which ran from September 2016 to 2019, providing the Belwind wind farm with prior experience in offshore longline systems and bivalve aquaculture. The primary objective of the pilot is to assess the suitability of wind farms for restoring native flat oyster reefs and cultivating flat oysters for human consumption. This overarching goal encompasses several specific sub-objectives, including identifying suitable areas for oyster reef restoration within wind farms, demonstrating the feasibility of developing scour protection conducive to the formation of small oyster reefs, validating longline designs for flat oyster production, identifying appropriate seed collectors and grow-out systems, implementing remote monitoring for tracking oyster growth, optimizing communication and

scheduling between activities, and exploring the synergies between oyster reef restoration, aquaculture, and wind energy production. A secondary objective of the pilot is to evaluate the growth of seaweed cultivated offshore and nearshore, comparing growth potential and suitability for different varieties. Seeded ropes attached to the longlines used for oyster restoration and aquaculture are utilized to grow various seaweed species, with a focus on understanding how environmental dynamics influence their morphological and nutritional characteristics, potentially offering opportunities for specific seaweed cultivation purposes.

For the purpose of the stakeholder engagement and interactions with external partnerships, an initial stakeholder inventory was completed. Those of highest interested and targeted by the core Belgian partner group included:

- 4SEA consisting of 4 environmental NGOs: WWF, Natuurpunt, Greenpeace, Bond Beter Leefmilieu
- Fishery Industry Sector - including fishing and auctioneers
- Regional and local authorities, including permitting and licensing
- Port authorities
- Local recreational companies, e.g. sailing clubs
- Wind farm operators

To explore and assess the societal implications of scaling and deploying integrated systems in Belgian waters, the Belgian Pilot conducted a one-day workshop dedicated to discussing the socioeconomics of multi-use at De Cierk Ostende (Belgium). The workshop convened 23 participants representing diverse sectors and institutions, including research institutes, aquaculture and fisheries sectors, food industries, various commercial actors spanning the blue economy, wind energy, aquaculture, and engineering sectors, public organizations, and tourism entities. During the workshop, four scenarios were deliberated upon, each involving the combination of wind farms with different activities: seaweed culture, oyster aquaculture, oyster restoration, and a combination of all three within wind farms. Stakeholders engaged in discussions regarding the relevance and potential impacts of these scenarios. For instance, in the wind farm and seaweed culture scenario, several significant social impacts were identified and evaluated for their importance. These included impacts related to research and knowledge advancement, job creation, sustainable food production, concerns regarding competition dynamics, optimization of offshore wind farms, and the introduction of new culinary experiences. Additionally, considerations such as maintenance costs and job-related risks were also discussed, albeit with medium importance. Conversely, impacts on nature and biodiversity restoration were deemed to have low importance within this scenario. In the scenario involving wind farms and oyster culture, stakeholders identified and assessed various social impacts. High importance was attributed to factors such as the luxury status of local oysters, potential negative perceptions of wind parks due to increased offshore activities, and associated cost escalations for both wind farm and aquaculture operations. Medium importance impacts included the value placed on sourcing food locally, potential cultural heritage attractions for tourism, and concerns about the effects of aquaculture on small-scale fisheries. Other impacts, such as the revival of traditional activities, increased visibility of offshore activities, and potential negative public perceptions of aquaculture, were regarded as having low importance within this scenario. In the third scenario involving wind farms and oyster reef restoration, various impacts were identified and evaluated based on their significance. Notably, impacts of high importance included the potential enhancement of social acceptance toward wind parks by virtue of their association with nature restoration endeavors. Additionally, the restoration of oyster reefs was seen as a means to bolster resilience against climate change. Concerns regarding the introduction of harmful materials into the environment, arising from structural aspects, maintenance, decommissioning, and uncertainties regarding cost allocation (whether through public or private funding), were also deemed of high importance. In the comprehensive scenario that integrates all activities, as envisioned by the project, impacts of utmost importance included the mitigation of usage conflicts, particularly concerning the availability of sailing areas in wind farm zones with concurrent aquaculture activities. Furthermore, the integration of activities was seen as a means to generate valuable knowledge with potential international implications. This aspect was identified as of the highest importance, with impacts from the previously discussed dual-use scenarios being considered but unable to rival the significance and benefits associated with increased utilization of marine zones and the collaborative ownership of sea-based applications. Based on the initial assessment of societal and stakeholder priorities and viewpoints on the exemplar demonstrations to be undertaken at the Belgian site, engagement and communication strategies had been developed to best showcase the best options identified by the working group of 23 stakeholders.

6.1.4. Danish Pilot

The Danish pilot within the UNITED project focuses on exploring the multi-use potential of combining tourism activities with Offshore Wind Farms (OWF) within shared sea spaces and shared infrastructure, both onshore and offshore. Examples include sightseeing boat tours to OWFs and shared facilities like OWF information centers and museums located onshore. An illustration of this multi-use concept is the cooperative-owned OWF Middelgrunden Wind near Copenhagen's harbor, which occasionally hosts visits from international students, companies, and other interested parties. The cooperative also organizes biennial open-house events for its shareholders, featuring boat trips and turbine climbing experiences. The primary objectives of the Danish pilot were to expand and enhance existing multi-use tourism activities related to OWFs, primarily in Copenhagen and the surrounding region. Two key objectives were identified for this purpose. Firstly, the pilot aimed to elevate the Technology Readiness Level (TRL) of the multi-use solution to Level 7 or higher, while also broadening OWF-related tourism offerings to become integral parts of the overall tourism landscape. Secondly, the pilot sought to serve as a demonstrator for improved multi-use information technology, such as a boat scheduling system, and physical technology enhancements, like facilities for divers on OWF platforms. Additionally, it aimed to provide insights into Health and Safety (H&S) practices, regulatory safety measures, and demonstrate the operability and profitability of the multi-use solution.

Throughout the UNITED project, efforts have been made to further develop and validate synergies between OWFs and tourism activities at the site. These efforts have resulted in expanded or validated potential for various activities, including sightseeing boat tours combined with angling and the diversification of activities within the region. Additionally, the exploration of special platform designs around the turbines to accommodate divers, local artisanal fishers, and offshore restaurants has been undertaken. Several benefits beyond the tourism industry have also been identified and realized, including engagement of boat tour operators in OWF-related monitoring activities, onshore visits to OWF information centres and museums, and the installation of telescopes for enhanced OWF observation. Moreover, the Danish pilot has supported the development of viable business models and capacity building for local tourism operators, mainstreamed multi-use solutions in local development policies, and explored the transferability of such solutions to other regions and Member States within the EU. Specifically, it aims to develop general business models to support the financial viability of future multi-use developments in other areas, offering guidance for cost-benefit analysis and supporting broader project development guidance for OWF developers, especially concerning consultation and mitigation processes. The prioritised selection of relevant stakeholder for the Danish pilot partners and demonstration activities included:

- Engagement of local intermediaries and clusters such as tourist boards and local councils will be crucial as these can have a strong role in initiating and supporting the long-term functioning of this multi-use, mainly by identifying opportunities, facilitating cooperation and promoting MUCL concepts.
- Boat and diving tour operators - one of the aims of this pilot is to empower the sector by gathering relevant tourism stakeholders and maintaining a network of local tour operators.
- Angling and diving associations.
- Local museums, exhibition and information centers.
- Other intermediaries incl. State of Green.
- Organizing visits for professionals.
- All the visitors participating in the guided tours

The project partners and key stakeholders identified five social impacts, all of which are considered to be of high importance. Firstly, there is a significant emphasis on job creation for guides and boat operators, particularly at the local level, although its national significance is relatively low. Secondly, there is a recognized potential to enhance public awareness about wind energy, both locally for residents and regionally and nationally for a wider audience. Prior to the UNITED project, tourism activities at the Danish site included educational tours for school and business groups from outside Denmark interested in learning more about offshore facilities. By incorporating an educational program and online tours and guides through the work of UNITED, engagement, education, and acceptance potential can be further expanded across diverse communities, serving as examples for other wind developments to implement in their respective areas. It's important to note that visiting the turbines entails an implicit decrease in energy production, as each group of 18 people requires the turbine to be stopped for one

hour. Despite this, the societal benefits of increased engagement and awareness are seen as outweighing this temporary reduction in energy production.

6.1.5. Greek Pilot

Within the Greek pilot, the focused combination of activities was again integration of tourism with existing commercial applications at sea. Here, the target was exploring the integration potential between commercial scuba diving tours, ie the tourism sector, with established and operating fin fish aquaculture activities. KASTELORIZO AQUACULTURE SA operates a fish-farming unit situated on floating facilities near the islet "Patroklos," approximately 850 meters away from the coast with an annual production of marine Mediterranean fish in this area amounts to 230 tonnes. The region garners significant tourist interest, with many visitors exploring the coasts of Patroklos islet, primarily via private boats during the summer months. The seabed holds substantial touristic value, featuring attractions such as an underwater "cemetery" of stolen cars near the mainland coast, as well as numerous shipwrecks and ancient artifacts, making it a popular destination for scuba-diving enthusiasts. The objectives of the Greek pilot site are aligned with the existing activities in both the aquaculture and tourism sectors within the shared marine space. These objectives include implementing advanced technologies to enhance aquaculture production efficiency by monitoring parameters such as salinity, water quality, and fish behavior. Additionally, management technologies will be employed to coordinate the various operations of touristic diving boats and recreational activities with the aquaculture site's operations. Furthermore, the pilot aimed to support management and planning decisions regarding new developments, such as the expansion of the aquaculture unit, without disrupting existing touristic activities. The integration of business development strategies seeks to minimize costs by synergizing activities from both sectors. Proposed scenarios include organizing diving expeditions to the aquaculture units as a new recreational attraction for divers and utilizing specialized equipment (ROVs) from diving centers to aid aquaculture activities in emergencies or during risky procedures. Efforts focused on time management through the shared use of infrastructure, such as existing platforms for aquaculture, diving, or third-party vessels. Continuous monitoring of parameters like water quality would enable the timely detection of any pollution threats to the marine area. Overall, the pilot sought to foster the touristic growth of the area while promoting social acceptance of the aquaculture activities already underway, thereby ensuring the successful coexistence of both sectors. In their ambition to do so, the Greek pilot had identified the following core group of stakeholders with whom they would interact and engage with to raise awareness and acceptance of their solutions:

- Kastelorizo SA Aquaculture.
- Planet Blue diving center.
- Local ministry office.
- Local community.
- Tourists – scuba-divers.
- Local chamber of commerce or offices of tourism.

Through engagement with local stakeholders via discussions and workshops, the Greek Pilot had identified six pertinent social impacts, which can be categorized into three tiers based on their significance. Among impacts of high importance are enhancements to the diving experience (impacting divers and clients of diving companies) and the production of aquaculture fish (affecting Greek consumers). Medium-importance impacts include the potential for increased revenues for the local population, heightened education and awareness of environmental protection (influencing tourists), and greater transparency regarding fish farming conditions (affecting divers, tourists, and the local population). Although the boost in local tourism holds potential for increased revenues and employment opportunities, it was not deemed a top priority among local stakeholders. This is partly attributed to the existing level of tourism and related opportunities in the region. As the UNITED project explores the integration of tourism with existing aquaculture activities and the adaptation of both to accommodate this integration, particularly with the assumption of a standard format for fin-fish aquaculture, these impacts primarily relate to tourism integration, specifically diving. With this in mind and serving as a basis for the prioritisation of impacts and highlighted benefits and interests of the key stakeholder groups, results informing on and interactions based around these elements were used in the stakeholder engagement, raising of awareness, and acceptance promotion targets of the Greek pilot.

7. INTERIM REPORTING OF FIRST PHASE

7.1.1. Occasions of dissemination

The full list of moments where the survey developed to monitor the progression of societal acceptance can be found in the Work Package 9 Deliverable 9.2 and full disclosure list of all engagement activities. The exhaustive list is referenced via these deliverables, however the content is summarised here. It should be noted that the extent to which interaction moments were able to be had during this first interim reporting phase was limited due to the Outbreak and running of the CCOVID-19 Pandemic. The number of opportunities to engage with audiences, and the ability to organise workshops and stakeholder engagements was limited due to the state of affairs at this time.

7.1.2. Summary of questionnaire results

Profile and characteristics of respondents

For the first round of questionnaires, there was a low total response primarily due to Covid-19; online engagement posed difficulties in getting a large pool of respondents and the degree of interactions and mass outreach during this first period was limited due to restrictions on travel, gathering, and difficulties in organising workshops online with the state of affairs and priorities of stakeholder groups and actors laying outside of interaction with projects such as UNITED. Therefore, results should be interpreted with care and possible biases will be pointed out. With 19% and 15% respondents are affiliated with a university and a research institute respectively. All, aquaculture SME, off-shore contractor, governmental institute and student represent 7% for each category of the respondents. A remaining 4% was a wind park owner. The majority (33%) of respondents indicated not to fall in these categories. These indicated either NGO, consultancy or Blue Economy Cluster. The majority of responses came through webinars and workshops, and some through pilot meetings of which most were associated with the German pilot (8 out of 10). Most respondents (52%) have not been engagement before in UNITED, 30% was engaged 1-3 times and the remaining 28%, 4 times or more.

Salience, Legitimacy and Credibility

All 27 respondents were approached for the first time with the questionnaire. Respondents indicate that there is a 'quite a bit' to 'very much' of awareness about multi-use in general and similar, but slightly less for the UNITED project. Respondents are optimistic with regard to multi-use and UNITED contributing to sustainable European Seas with responses varying from 'quite a bit' to 'very much'. We can conclude that amongst this pool of respondents there is a relatively good awareness of multi-use and UNITED. To see if we provided respondents with relevant information, we asked about their industry and their interests. Most respondents are researchers, operators or advisors. Most interest is taken in information regarding aquaculture practices (76%) followed by policy and law (66%) and data/modelling and observations (48%). This could be explained by the large share of aquaculture in the UNITED pilots, the lack of European uniform legislation and the large travel distances offshore. This inclination of respondents is further underlined by a preference to be more informed about the legal and environmental pillars in UNITED. The website and webinar are the primary resources of information for this pool of respondents, with respectively 59% and 56%. The preferred medium of receiving information is webinars with 81%, followed by the newsletter (67%), the website (62%) and workshops (52%). A relatively low interest for blog post (7%) and pilot meeting (19%) was measured.

It is noticeable that a small share, 7% of the respondents, feels that they have not been given enough voice in the UNITED project and 11% feels that expectations have not been met during engagement events. However, the larger share 45% and 52% agrees or totally agrees that they have been given enough voice and that expectations have been met. One respondent noted that there was little time for questions during a webinar. Another respondent commented that nature protection aspects were underrepresented in the webinar, when asked for additional suggestions.

Overall the expertise involved in UNITED is deemed as relevant to demonstrate multi-use in an operational environment and largely estimated as technically adequate and scientifically plausible . Most participants indicated that the information was sufficiently quantified and supported by enough data and that the results were the outcome of diverse expertise. 4% of the respondents indicated that they disagreed with these statements. A couple of suggestions were given to measure the opinion of the scenario's outside of the scope of UNITED for the sake of diversity. One respondent suggested the seaweed aquaculture sector was not strong enough represented.

The 27 external stakeholders reached during the first phase of the survey are globally satisfied after their interaction with the UNITED project:

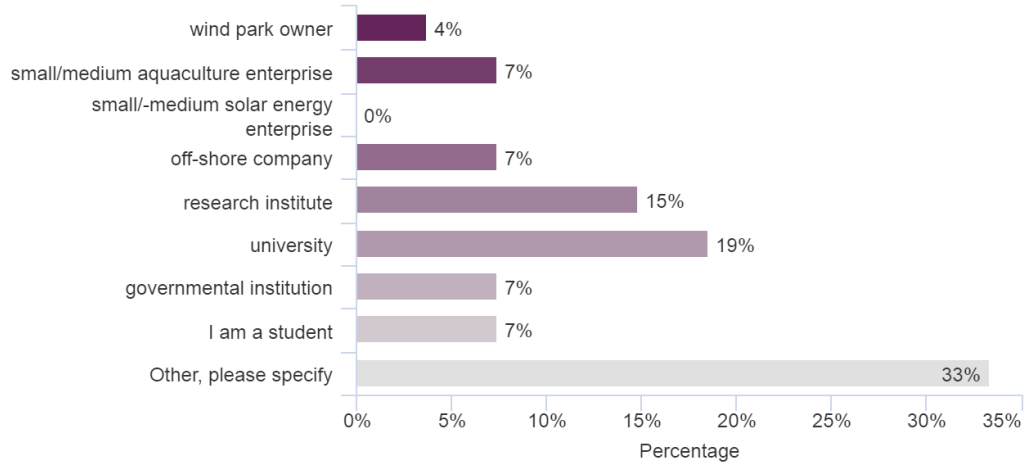
- On the content: they give to UNITED a good technical and scientific credibility
- On the form: the majority of them felt heard and is satisfied with their participation.

Most of the respondents of this first period are already acquainted with the concept of Multi-use and do not need much persuasion to find it relevant for sustainability. The challenge of the next 2 surveying phases will be to make sure other stakeholders (especially decision makers and single-use experts and operators) are reached as well, bringing valuable feedback for further stakeholder activities in UNITED and ensuring a larger knowledge transfer of the results of the ongoing work. Local stakeholders from the pilots were represented in this first-term survey, with a certain imbalance (the German pilot is particularly well represented). This aspect will be looked into during the final, in coordination with the work led by T5.2 (support to stakeholder engagement in the pilots), to ensure a good multi-level stakeholder participation and balanced local feedback from the pilots.

7.1.3. Questionnaire results

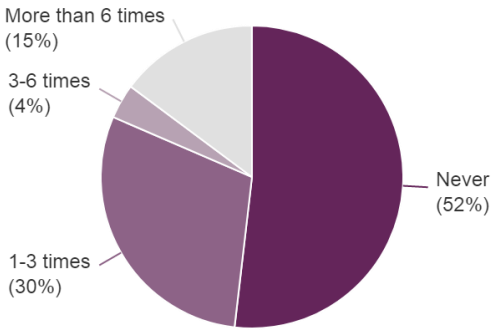
This section of questions is meant to identify the stakeholder groups. The total sample size *N* is 29. A brief summary of the interim engagement and response from those whom were engaged with via the survey, which was used and advocated for in the preliminary prioritisation workshops and engagement moments across the Project first period are summarise below.

Profile of respondents



The majority (33%) of respondents indicated not to fall in these categories. These indicated either NGO, consultancy or Blue Economy Cluster Secondly, university and research institutes are amongst the highest number of respondents. This is believed to not be completely reflective of the groups whom were engaged with as the composition of the initial workshops as well as the early stage workshops had broader compositions as defined in section 7. As the majority of responses (19) came from webinars and workshops and were not particularly related to a pilot, the main group of respondents resulted from the webinar interactions and outreach activities that were held by the project as whole. This indicated that the willingness or ability to capture the participants of in person or digital workshops in such a survey query after the execution of said workshop was limited and therefore the qualitative assessment of the results of such workshops and direct stakeholder engagement is critical to the overall evaluation of the outcome of social acceptance and stakeholder interactions and engagement through the project. This was predominantly accredited to taxation on participants, namely, after a multiple hour long meeting and direct interaction, the participants were very unlikely to further engage with surveys after having provided detailed responses and direct engagement with the project through these workshops and stakeholder events. Most of the responses that are related to pilots came from German stakeholders, which indicates a bias towards stakeholders from the German pilot. This might indicate that we received more responses from stakeholders from the German pilot.

Frequency of engagement

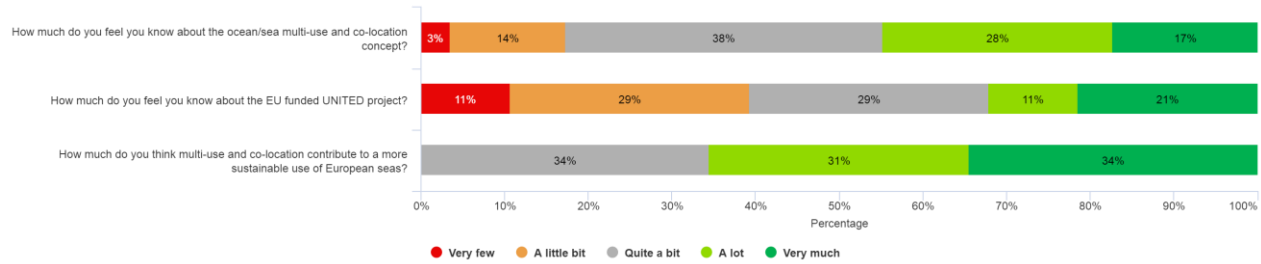


The outcome here was in line with expectation as the wider audience being reached through webinars and general broad capture stakeholder engagement would be having their first engagement with the project in the first reporting period. This is also in line with the engagement and dissemination plans as the majority of webinars and outreach activities resulted in the latter part of the project, when the abundance of information and results to be communicated were present. This is underpinned by the fact that those with whom the pilot interlocutors and core partners engaged with on a personal and direct level through workshops and co-design or co-creation moments were heavily underrepresented in the data acquired through the surveys. Most stakeholders had their first engagement with the project and some of them have been in regular contact with pilots. This can be explained by the variety in the development of the pilots. Some of them are almost fully operational at this time, while others encountered delays in the deployment of their pilot.

7.1.4. Salience, Legitimacy and Credibility

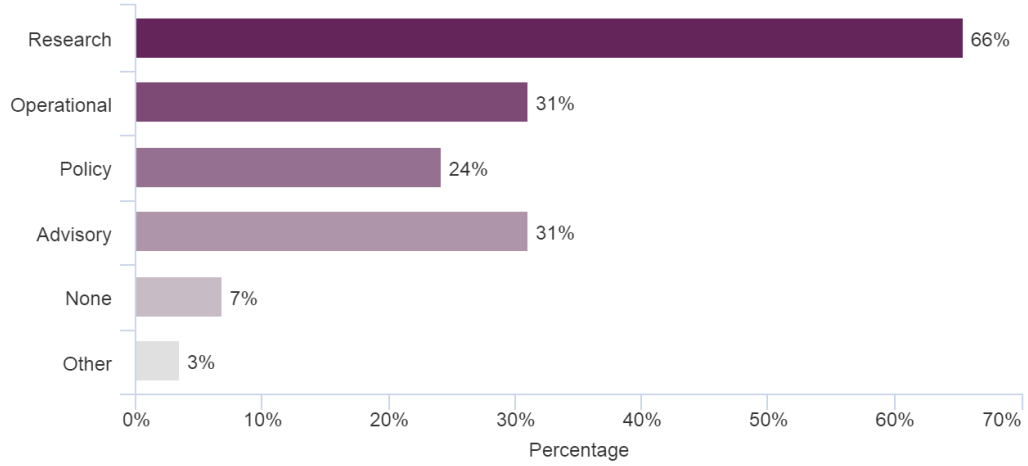
This section evaluates to what extent we have provided stakeholders with relevant information. Questions relate firstly to the *awareness* of multi-use and co-location and specifically UNITED. Secondly, the thematic *interest* of stakeholders and thirdly, the preferred way of communication and outlet channels.

Awareness of multi-use and UNITED



In the initial round of data collection, all 29 respondents completed the questionnaire for the first time, highlighting the novelty of this survey initiative. The findings reveal that while the majority of stakeholders profess to possess a considerable to extensive understanding of multi-use concepts, there is a slight disparity when it comes to awareness specifically about the UNITED project. Approximately 11% of respondents indicated having very limited knowledge about UNITED, with an additional 29% expressing only a modest level of familiarity. Nevertheless, across the board, stakeholders unanimously recognize the potential of multi-use and co-location initiatives to significantly contribute to fostering sustainability in European Seas, with responses ranging from moderate to considerable levels of agreement. This evaluation underscores the importance of ongoing efforts to enhance awareness and comprehension of the UNITED project among stakeholders. It also emphasizes the need to tailor communication strategies to effectively reach and engage diverse stakeholder groups. As we proceed with our stakeholder engagement initiatives, these insights will inform our approach in delivering relevant and accessible information, thereby fostering broader understanding and support for multi-use applications within the maritime domain.

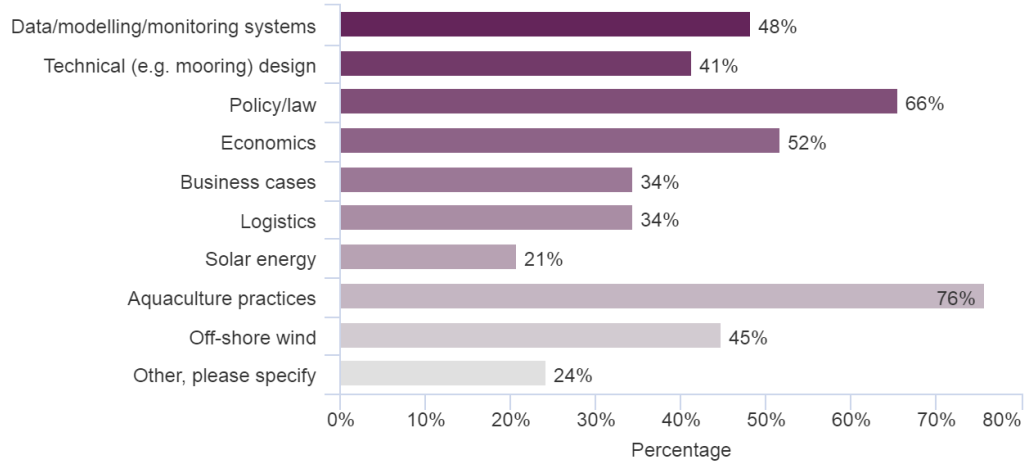
What kind of experience do you have with the multi-use concept?



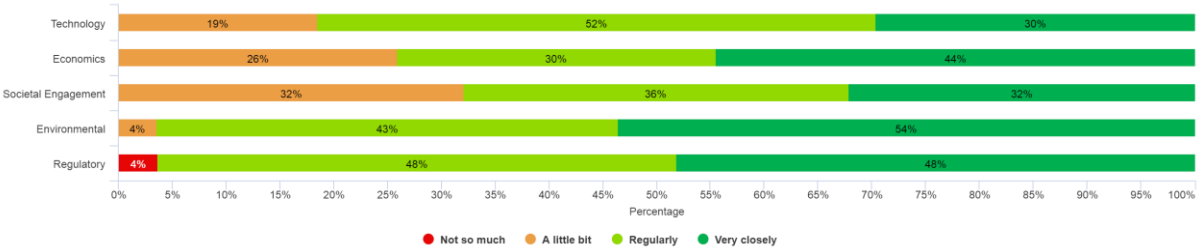
One significant outcome from our assessment is the realization that the delineated categories were not entirely independent. It emerged that a considerable number of stakeholders possess multifaceted experiences across various elements of multi-use, spanning from research to operational endeavours, and extending into policy and advisory roles. This nuanced understanding unveils both opportunities and challenges in our stakeholder engagement approach, that many of the stakeholder engaged with could not be directly categorised into one of the defined groupings. Additionally this also indicated that in order to operate within the context of multi-use a multi-faceted experience profile was required, and often those familiar with the concept and working within the multi-use domain required knowledge and experience in many different element. This is reflective of the project experience where in order to design, develop, and operate such pilots, the breadth of experience required was quite broad and knowledge of multiple sectors was required.

On one hand, this intricate insight into stakeholders' diverse backgrounds allows us to tailor our communication efforts more effectively, ensuring that we deliver pertinent and tailored information to each stakeholder group. By discerning the specific expertise and interests of stakeholders, we can refine our messaging and outreach strategies to address their unique needs and preferences, thereby fostering deeper engagement and buy-in. Conversely, the acknowledgment of overlapping experiences also highlights the potential to broaden our engagement efforts to encompass a wider spectrum of stakeholders. While certain groups may already possess a robust understanding of multi-use concepts, there exist untapped segments of stakeholders whose involvement could enrich our initiatives. By expanding our outreach to include these underrepresented groups, we can cultivate a more inclusive and comprehensive dialogue surrounding multi-use activities, leveraging diverse perspectives and expertise to drive innovation and progress in this domain. In essence, this finding underscores the dynamic nature of stakeholder engagement and the importance of continuously adapting our strategies to accommodate the evolving landscape of multi-use at sea. By leveraging the insights from the limited initial survey assessment, combined with the information obtained in the directed stakeholder engagement to develop a baseline of needs, the UNITED project could optimize efforts to inform, educate, and collaborate with stakeholders across the spectrum, ultimately advancing our shared goals of sustainability and progress in the maritime sector.

How much would you like to be informed about the progress in the following pillars of UNITED?

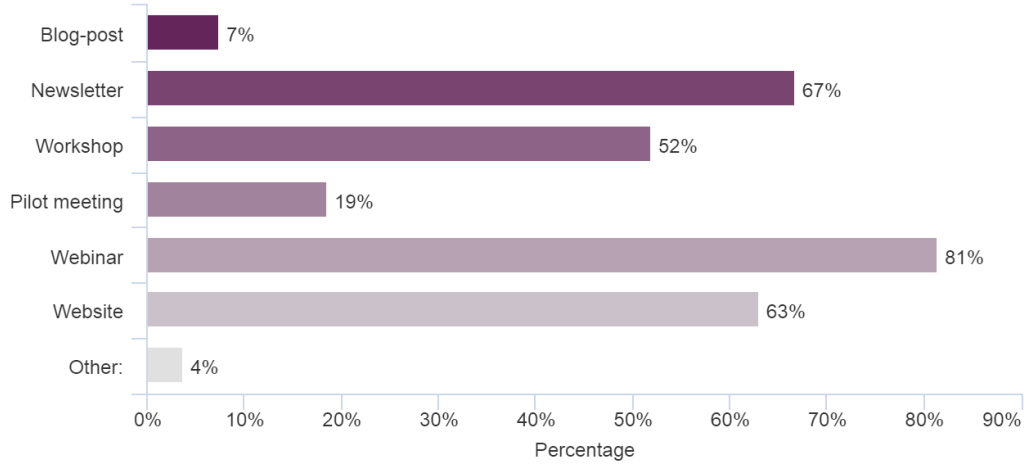


How much would you like to be informed about the progress in the following pillars of UNITED?

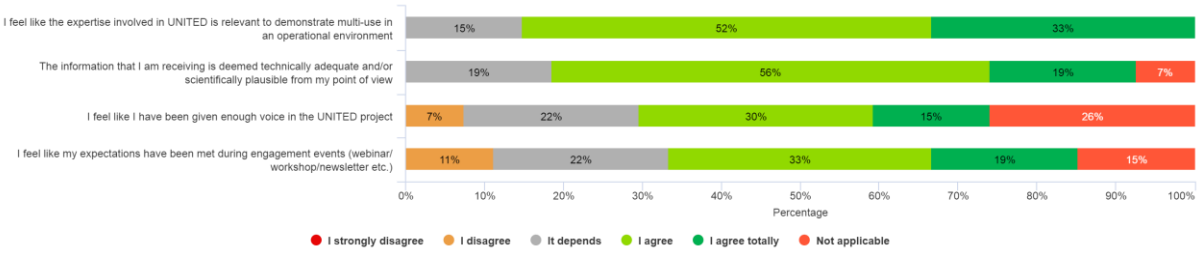


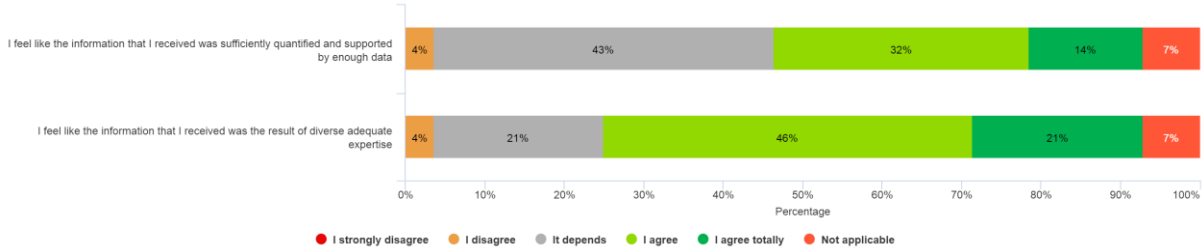
The findings from the survey shed light on the thematic interests of stakeholders involved in the multi-use initiatives under the UNITED project, offering valuable insights into their priorities and preferences. Firstly, it's notable that aquaculture practices emerged as the most captivating theme among stakeholders, garnering the highest level of interest. This keen focus on aquaculture practices is particularly significant considering that these activities are directly relevant to three out of the five pilot projects. This correlation suggests that stakeholders are naturally drawn to topics that align closely with the ongoing initiatives in which they are involved, indicating a strong inclination towards themes that have tangible implications for their respective projects. In contrast, certain themes such as off-shore wind, technical design, business cases, logistics, and solar energy elicited relatively lower levels of interest, with less than 50% of respondents indicating enthusiasm for these topics. This divergence in interest could potentially be attributed to the varying degrees of relevance that these themes hold for different stakeholders or the perceived complexity and technical nature of these subjects. Moreover, the survey revealed a discernible trend towards increased interest in environmental and regulatory themes, followed closely by technology, economics, and societal engagement. This shift towards environmental and regulatory considerations underscores a growing recognition among stakeholders of the paramount importance of sustainability and compliance in multi-use initiatives. It also reflects a broader societal emphasis on environmental stewardship and responsible resource management. Conversely, while technology and economics remain significant areas of interest, the elevated attention towards environmental and regulatory aspects suggests a heightened awareness of the broader socio-environmental implications of multi-use activities. This nuanced prioritization underscores the need for comprehensive and integrated approaches that not only address technological and economic considerations but also prioritize environmental sustainability and regulatory compliance. The survey findings highlight the diverse thematic interests of stakeholders involved in the UNITED project, offering valuable insights into their priorities and preferences. By aligning communication and engagement strategies with these thematic interests, project organizers can enhance stakeholder engagement and foster meaningful collaboration towards the shared objectives of sustainability and innovation in multi-use initiatives.

How would you like to receive information about UNITED?



The survey results provide valuable insights into the preferred communication mediums among stakeholders engaged in the UNITED project, shedding light on their communication preferences and areas for improvement. The findings reveal that webinars and newsletters emerge as the most popular communication channels, with a significant majority of respondents (81% and 67% respectively) expressing interest in these platforms. This high level of engagement with webinars and newsletters underscores the effectiveness of these mediums in disseminating information and updates about the project to stakeholders. It also suggests that stakeholders value the interactive nature of webinars and the concise, informative format of newsletters as effective means of staying informed about project developments. Following closely behind, the project website garnered substantial interest, with 63% of respondents indicating that they find this platform useful for accessing project-related information. The popularity of the website highlights the importance of maintaining an informative and user-friendly online presence to cater to the diverse needs of stakeholders seeking detailed project updates and resources. Conversely, the survey identified blog posts as the least preferred communication medium, with only 7% of respondents expressing interest in this format. This suggests that stakeholders may prioritize more interactive and dynamic forms of communication over static written content when engaging with project updates and information. Moreover, stakeholder feedback provided valuable insights into areas for improvement in communication strategies. Comments highlighted the importance of incorporating environmental considerations into project presentations and discussions, emphasizing the need for a holistic approach that integrates nature restoration and enhancement alongside other interventions in the marine environment. Additionally, stakeholders expressed a desire for more opportunities for interactive engagement, such as Q&A sessions and discussions, to facilitate deeper understanding and dialogue around project topics. Furthermore, stakeholders expressed interest in specific topics and areas of focus, including interactions with fisheries, best practices for selecting users for multi-use platforms, and leveraging social media platforms like Instagram for communication and outreach. The survey results underscore the importance of adopting a multi-faceted communication approach that caters to the diverse preferences and interests of stakeholders. By prioritizing interactive mediums such as webinars and newsletters, while also addressing stakeholder feedback and incorporating relevant environmental considerations, project organizers can enhance communication effectiveness and foster meaningful engagement with stakeholders throughout the UNITED project. Additionally, as the participation of those whom were directly involved in the direct workshops and small group settings is not reflected in this initial survey, the importance and value of such meetings is better discussed and referenced in the development of the baselines and core objectives of the pilots





The survey outcomes discussed above shed light on the stakeholders' perspectives within the UNITED project, reflecting their engagement levels, satisfaction with communication channels, and perceptions of the project's expertise and information quality. These findings provide valuable insights into the effectiveness of stakeholder engagement strategies and the overall success of the project's communication efforts. Firstly, stakeholders generally perceive the expertise within the UNITED project as relevant and valuable, especially concerning the demonstration of multi-use in operational environments. This sentiment aligns with the project's objectives and highlights the importance of involving stakeholders in various activities to leverage their expertise and ensure the project's success. However, a small percentage of respondents expressed dissatisfaction with their level of involvement, indicating the need for further efforts to ensure that all stakeholders feel adequately heard and engaged. Regarding communication channels, the survey reveals that webinars and newsletters are the most popular mediums among stakeholders, followed closely by the project website. These findings underscore the importance of utilizing diverse communication channels to reach stakeholders effectively. Additionally, stakeholders provided valuable feedback on the content and format of webinars, expressing the need for more focus on certain topics, such as nature protection, and requesting additional opportunities for interaction and discussion. This feedback emphasizes the importance of tailoring communication efforts to meet stakeholders' specific interests and preferences. Furthermore, the survey indicates that most respondents are satisfied with the quality of information provided by the UNITED project, acknowledging its quantification and support by data, as well as the diverse expertise involved in its development. However, some stakeholders expressed concerns about the representation of certain topics, such as seaweed aquaculture, and the need to incorporate a broader range of stakeholder opinions, particularly regarding alternative uses. These insights highlight the importance of continuously evaluating and refining project outputs to ensure that they address stakeholders' diverse needs and perspectives effectively. Overall, the survey outcomes underscore the significance of stakeholder engagement and effective communication in driving the success of multi-use projects like UNITED. By actively involving stakeholders, tailoring communication strategies to their preferences, and addressing their feedback and concerns, the project can maximize its impact and achieve its objectives more effectively.

7.2. Closing Evaluations

7.2.1. German Pilot

The evaluation of social impacts by the German pilot and its stakeholder group involved assessing the degree of acceptability associated with each impact identified in the initial phase. Among the impacts deemed highly acceptable, indicating positive outcomes and desired results, are the provision of alternative income sources for fishers transitioning out of the industry, the establishment of new processing facilities leading to job creation, the expansion of employment opportunities through training and reskilling initiatives, the enhancement of training and educational facilities, and the implementation of automated shipping operations offshore. Conversely, among the impacts categorized as having undesirable outcomes, the exclusion of other uses within the wind farm area, potentially hindered by aquaculture activities, was identified. Additionally, the heightened risk of offshore accidents resulting from the concurrent operations of multiple teams was highlighted as a negative impact. These findings underscore the importance of carefully considering the potential consequences of each identified impact and implementing mitigation strategies where necessary to ensure the overall success and acceptability of the project.

The outreach endeavors undertaken by the German Pilot team have yielded noteworthy social synergy effects, with far-reaching implications for future multi-use projects and fostering acceptance and interest among the broader public. Online workshops, particularly those addressing Safety & Logistics and Technology Transfer,

emerged as pivotal forums for engaging both participants and external experts alike. These sessions not only succeeded in raising awareness about the project but also facilitated the gathering of valuable insights from external specialists, thereby enriching the knowledge base of the German Pilot and advancing the overarching goals of the UNITED project. Moreover, the diverse array of tasks undertaken within the German Pilot has captured the attention of educational institutions, notably in the realm of school projects. A notable collaboration was forged between the German Pilot team and a local Club of Rome school, resulting in mutually beneficial outcomes. Students were afforded opportunities to actively participate in practical scientific exercises centered on the pertinent and dynamic domain of multi-use in the marine sector. Concurrently, the FuE team gained fresh perspectives and novel insights into potential refinements for algae cultivation at the nearshore site, encompassing aspects such as grow-out substrates, seeding methodologies, and yield enhancement strategies.

Furthermore, engagements with policymakers and key stakeholders have unveiled additional social synergies. Dialogues with policymakers have laid the groundwork for pivotal outcomes, including the prospect of job creation within the aquaculture sector, to be realized within German maritime territories. Additionally, ongoing efforts aim to reconfigure the maritime spatial planning framework to elevate the prominence of multi-use, reflecting a steadfast commitment to optimizing resource allocation and fostering sustainable practices in aquatic environments. While the achievements attained cannot be solely attributed to the activities of the German Pilot, the progress demonstrated, data generated, and comprehensive body of evidence produced through the implementation of the pilot's initiatives have generated heightened interest from collaborating authorities. This has further catalyzed multi-use initiatives in Germany, addressing a pressing need for proof-of-concept applications and substantiating the benefits and feasibility of such actions. A comprehensive overview of the stakeholder workshops, communication and dissemination initiatives, and outreach activities conducted by the pilot is detailed in Deliverables 9.2, 5.1, and 9.3.

By proactively engaging with stakeholders and broader society at an early stage, the potential to cultivate future stakeholders is underscored. The pilot pursued a multifaceted approach to representation, participating in prominent conferences such as Aquaculture Europe and the Wind Energy Conference and additionally, talks and presentations were delivered to other project consortia, while efforts were made to disseminate information to the general public by welcoming reporters and filmmakers from regional and national television stations and newspapers into the daily operations. Notably, the reach extended beyond national boundaries, with a broadcasting team from Swiss national television covering the outcomes of the German pilot. To deepen engagement with diverse stakeholders, workshops were organized at both national and international levels. These sessions delved into various aspects not only of the German pilot but also of the broader United Project. Furthermore, the pilot's implementation facilitated the establishment of numerous connections with governmental and permitting agencies, thereby paving the path for future projects and potential commercial utilization. These connections encompassed key stakeholders in offshore suppliers, shipping companies, and the wind energy sector, fostering robust collaborations and laying the groundwork for future upscaling and broadening of applications in the German North Sea and beyond.

7.2.2. Dutch Pilot

The Dutch pilot conducted a comprehensive assessment of the social acceptance and overall engagement with external parties through dedicated working group comprising project partners. The findings reveal a predominantly high level of acceptability across the majority of the identified impacts. This indicates that these impacts are anticipated to yield positive and desirable outcomes for various stakeholders involved. Noteworthy among these outcomes are the creation of new job opportunities, bolstered energy and food security measures, the promotion of healthy food production, efficient utilization of space, and the alleviation of political tensions stemming from enhanced energy and food security provisions. Additionally, the integration of solar and wind energy on the same electricity grid stands out as a significant efficiency enhancement, contributing to the sustainability objectives of the project. Despite the overwhelmingly positive outlook, it's important to acknowledge a negative impact concerning the navigation restrictions imposed on fishers and sailors within the windfarm. This limitation has led to decreased acceptance among these specific stakeholders. However, it's worth noting that this challenge presents an opportunity for proactive intervention through refined design strategies for the pilot. By addressing navigational concerns and incorporating feedback from fishers and sailors into the design process, potential negative impacts can be mitigated, thus fostering greater acceptance and cooperation among stakeholders. Such targeted

interventions underscore the project's commitment to optimizing social acceptability and ensuring the successful integration of multi-use activities within the offshore environment.

Through interactions with identified stakeholder and most notable recurrent and thematic working group meetings facilitated via the Dutch north Sea Community or Practice, a number of synergies and benefits to cooperation between stakeholder groups arose, namely, the efficient utilization of space emerged as a cornerstone principle. Through meticulous planning and integration, the project minimized the spatial footprint of individual activities, thereby preserving a larger expanse of the North Sea for other stakeholders and uses. This strategic allocation of space not only promoted equitable access but also facilitated greater harmony among diverse interests within the marine environment. Moreover, the collaborative integration of activities within the multi-use framework held significant promise for enhancing social acceptance and awareness. By demonstrating the feasibility of coexistence and highlighting the benefits of sustainable practices, the project garnered increased support and appreciation from stakeholders and the wider public. This positive perception was further bolstered by collective outreach and communication efforts, emphasizing the importance of unified messaging and community engagement. Through collaborative initiatives, the pilot projects amplified their impact and effectively conveyed the benefits of multi-use practices to a broader audience. These social synergies underscored the project's commitment to resource optimization, environmental sustainability, and community involvement. By prioritizing collective vision and ownership in design processes, the project fostered a culture of collaboration and cooperation, ensuring that the benefits of multi-use practices were maximized for all stakeholders involved. Ultimately, these synergies not only optimized resource utilization but also highlighted the integral role of community engagement and awareness-building in driving the successful implementation of multi-use initiatives within the North Sea.

The advancement and collaborative efforts within the UNITED project have yielded significant benefits for the North Sea Community of Practice (CoP), marking a notable milestone in the project's progression. These achievements underscore the transformative power of such an organized and cohesive entity, prompting the recognition of its value and the imperative to replicate its success in other regions. As evidenced by the subsequent project, ULTFARMS, there is a concerted effort to replicate this approach by fostering the development of additional CoPs in future activities and applications. This strategic expansion aims to cultivate interconnected ecosystems of stakeholders, facilitating collaboration and knowledge exchange across various sectors. Moreover, Steins et al. (2021) highlight that while technological innovation is crucial for multi-use initiatives, the true challenge lies in effectively engaging and addressing the diverse needs of a broad spectrum of stakeholders. Establishing integrated stakeholder ecosystems within a Community of Practice offers a promising solution to this challenge. By providing a non-political platform for learning and collaboration, these CoPs create opportunities for different sectors to engage, learn, and collaborate on developing synergistic and action-oriented plans for co-use and co-development. This collaborative approach is essential for overcoming the complexities inherent in multi-use projects and fostering sustainable development in marine environments.

7.2.3. Belgian Pilot

In the Belgian pilot's stakeholder engagement and assessment of social acceptability, various impacts were evaluated. Positive impacts such as increased visibility of offshore activities, enhanced harbor activities, and promoting local food production were generally acceptable. However, several impacts were deemed undesirable, including potential negative public perception of aquaculture, adverse effects on small fisheries, and increased boat traffic within wind parks. Additionally, the transformation of local oysters into luxury products had ambiguous acceptability due to conflicting perspectives on its implications. In a fully integrated multi-use scenario, most impacts were highly acceptable, including attracting new tourism, creating employment opportunities, and developing knowledge from combined activities. However, concerns were raised regarding negative outcomes such as privatizing parts of the sea and selling products at high prices. These findings underscore the importance of considering both positive and negative impacts in multi-use initiatives to ensure their social acceptability and sustainability.

Of particular significance in the Belgian stakeholder engagements is the evaluation of a fully integrated multi-use scenario encompassing all three activities within the wind farm. While many impacts were deemed highly acceptable, such as increased employment opportunities and the creation of new tourism prospects, there were concerns regarding negative outcomes like the privatization of sea areas and elevated product pricing. The value of organizing such workshops and fostering interactions among diverse stakeholders cannot be overstated. These interactions serve as vital platforms for information exchange, collaborative development, and co-management of Belgium's limited Exclusive Economic Zone (EEZ). Given the constrained space available and the diverse demands

placed on these waters by various stakeholders, close collaboration and ongoing multi-use development initiatives are imperative. Exploring the requirements and expectations for stakeholder engagement and coordination in scenarios involving upscaling and commercialization reveals numerous promising prospects. Integrating aquaculture activities within wind farms unlocks substantial space in the Belgian sector of the North Sea for alternative uses, ranging from professional fishing to leisure navigation. This reallocation of space can mitigate conflicts over usage and benefit local communities and fishermen. Additionally, expanding multi-use activities necessitates the recruitment of additional personnel, such as technicians and marine experts, for maintenance and monitoring tasks. The emergence of locally-sourced products presents opportunities to boost tourism and align with regional sustainability goals, fostering community identity around sustainable seafood production. Furthermore, effective communication and enhanced visibility of the Belgian coast and North Sea can stimulate job opportunities, attract a dynamic population, and promote economic growth. This emphasis on sustainability can instill pride within the community and foster a shared commitment to environmentally responsible practices. The stakeholder engagement process in the Belgian case revealed a prevailing sense of optimism and hopefulness regarding multi-use initiatives. There is a recognized need to establish a more structured and adept ecosystem for stakeholder engagement, potentially through the establishment of a dedicated Community of Practice, akin to those observed in other pilot cases, such as the Dutch model.

7.2.4. Danish Pilot

In Denmark, offshore wind farms enjoy widespread societal acceptance, with generally high levels of support for such developments. As a result, offshore wind developers and operators in Denmark are not typically driven by concerns about societal acceptability. However, the potential commercialization of the multi-use concept on a large scale could introduce complexities for offshore wind developers. Possible interference with ongoing operations and maintenance activities raises safety and operational concerns, presenting challenges that may outweigh the advantages for offshore wind developers. Among the positive impacts viewed with high acceptability were two specific outcomes. Firstly, there was the promise of job creation, particularly for guides and boat operators, holding significant potential at the local level. Additionally, the objectives aimed to raise awareness about wind energy, targeting diverse audiences including foreign tourists, professionals, and students. This heightened awareness was considered a valuable outcome of the project.

On the other hand, three impacts were perceived less positively, categorized as negative impacts with undesirable outcomes despite their high level of importance. The third impact centered around a decrease in energy production resulting from the temporary halting of turbines for one hour to accommodate each group of 18 visitors. This reduction in energy output directly affected the wind park's operations. Additionally, there were heightened risk factors, particularly for boat company operators navigating in close proximity to the turbines. These increased risks had implications for boat drivers and crew members, potentially leading to negative shifts in social opinion regarding both activities. Although such incidents are not expected to be frequent, any injuries resulting from operations, especially in unique scenarios like offshore wind turbine tourism, are likely to draw attention and may impact public perception. Moreover, the absence of emergency medical care facilities on board the boats and within the turbine structures further complicates matters, potentially exacerbating negative reactions and safety concerns for visitors and boat operators alike.

The project consortium and key stakeholders have identified five significant social impacts, each holding considerable importance. Foremost among these is the generation of employment opportunities for guides and boat operators, particularly valued at the local level, although less so on a national scale. Additionally, there exists substantial potential to augment public awareness about wind energy, offering benefits to local communities as well as broader regional and national audiences. Prior to the initiation of the UNITED project, tourism activities at the Danish site included educational tours catering to school and business groups from beyond Denmark's borders, showcasing a preexisting interest in offshore facilities. UNITED's integration of an educational program and online tours seeks to expand engagement, education, and acceptance across diverse communities while providing a replicable model for similar wind developments.

Notably, there had been a discernible rise in the number of visitors opting for boat tours and turbine-climbing experiences, attributed to increased project visibility and strategic partnerships with local museums and blue growth initiatives. These collaborations have broadened the project's outreach, attracting a diverse audience including businesses, educational institutions, schools, and general tourists. Wind turbine operators have welcomed this diversity as a positive development. The heightened interest in tours and educational resources offered by

the project benefits both the tourism and wind energy sectors. Developer groups have also scheduled tours for their employees and stakeholders, recognizing the value of firsthand exposure to offshore wind operations. Moreover, the virtual tours and media content created as part of the project have received explicit endorsement for offshore wind energy, offering participants insights into its significance and benefits, thereby contributing to the broader discourse on sustainable energy solutions. The project's comprehensive approach to outreach and education has not only sparked enthusiasm among visitors but has also bolstered the positive perception of offshore wind energy as a viable and impactful renewable energy source.

7.2.5. Greek Pilot

The Greek pilot and its collaborating partners conducted an assessment to gauge the level of acceptability for each social impact identified in Step 1. Notably, impacts with a high degree of acceptability include the generation of higher revenues for the local population. The presence of aquaculture attracts dolphins, subsequently drawing visitors to the area. This influx of visitors catalyzes the development of diving activities, restaurants, hotels, and other amenities, thereby generating increased revenue for the local community and enhancing the quality of life without the adverse effects associated with mass tourism activities. It's worth noting that to maintain sustainability, a maximum of 16 visitors per day is permitted at the aquaculture site. Furthermore, positive outcomes stemming from the project include heightened education and awareness regarding environmental protection in the area, facilitated by various means such as videos and testimonies, as well as an improved diving experience. Conversely, among the impacts with undesirable outcomes, the production of aquaculture fish faces challenges due to the negative attitude of Greek consumers towards aquaculture products. There exists a prevailing preference for wild-caught fish over those cultivated through aquaculture methods. Additionally, the increase in local tourism is not universally appreciated by the local population, reflecting concerns over potential disruptions to the existing social fabric and cultural dynamics of the community.

Through the stakeholder engagement initiatives within the UNITED project, various stakeholder groups, including those traditionally challenging to reach, were effectively engaged. Within the scope of our multi-use activities, tourists exploring the area encounter numerous significant advantages. Firstly, they acquire heightened awareness regarding ongoing environmental conservation efforts in the region, gaining valuable insights into the importance of preserving the marine ecosystem. Additionally, tourists are provided with the opportunity to acquaint themselves with the intricacies of fish farming operations. This engagement serves as an educational platform, dispelling misconceptions and clarifying misunderstandings regarding the potential negative impacts of aquaculture. It enables visitors to appreciate the role of responsible aquaculture in addressing concerns related to overfishing. Lastly, tourists derive enjoyment from participating in scuba diving expeditions within our diverse marine environment. This not only provides them with an immersive experience but also fosters a deeper connection with the rich aquatic life flourishing in the area. These benefits were mutually acknowledged and appreciated by local authorities, SMEs, and educational programs with whom the pilot collaborated.

8. SHORT AND MEDIUM TERM METRICS

A number of short and medium term metrics were proposed in the onset of the project and defined in Deliverable 5.1 of the UNITED project. Here we revisit these metrics to ascertain whether they have been achieved and to what degree the objects have been successful. This is done in an itemised approach, using the monitoring and evaluation criteria present in Deliverable 5.1 as a guiding line and providing discussion below each target with achievements and implications.

Short Term Evaluation Metrics	How to achieve	Targets & Indicators
Improve health and safety in multi-use platforms or co-location of activities.	A risk governance analysis founded on the experiences of the individual pilots, contributing to an inclusive roadmap for future implementations and up scaling.	**Indicator:** Number of risks identified through stakeholder and expert workshops **Target:** Provide an analysis of 100% of risks identified

Through the implementation of workshops and directed interactions with the internal project stakeholders and partnerships as well as the expanded external networks activated by the pilot interlocutors and core pilot partners, a risk analysis has been executed and elements of concern in terms of legal, policy, insurance, and health and safety have been documented and address. This is reflected in the UNITED policy brief covering legal, governance, and insurance elements, which is presented as a policy brief but has also been explored and presented to stakeholder through a target workshops. Additionally the hosting and execution of a health and safety workshop for practitioners and the publication of guidelines and best practices through the project achieves this target.

Short Term Evaluation Metrics	How to achieve	Targets & Indicators
Raise societal awareness, involve local communities and secure acceptance of these new developments by society-at-large.	Utilize a 3-pointed stakeholder engagement process: 1) a stakeholder analysis in which relevant stakeholders will be identified, (2) inclusion of stakeholder in the pertinent steps in the pilot development process and (3) utilizing stakeholders needs to propel the design of MUCL activities	**Indicator:** Percentage of stakeholder group activation **Target:** 75% or higher stakeholder inclusion in all engagement processes across all pilots
	Carrying out training and capacity building of personnel to reduce risks and increase social acceptance and awareness. Demonstration sessions will also take place online via webinars to ensure wider transfer and uptake.	**Indicator:** Number of workshops, trainings, and capacity building activities. **Target:** 3 or more instances of webinars and workshops / trainings during the project
	Ecosystem building and stakeholder empowerment through continuous dialogue with authorities, administrative bodies and local outreach activities will be organised with links established amongst relevant intermediaries on the local level, including networks, boards, chambers, associations, forums, etc.	**Indicator:** Number of stakeholder workshops and empowerment sessions **Target:** 3 or more instances over the life of the project
	Staged roll out of products and services resulting from pilot work and the project as a whole, linking with implementation roadmap, life cycle assessments, new products and added value services. This rollout is accompanied by a strong marketing campaign to generate interest of potential consumers and society-at-large.	**Indicator:** Visitors to website. Followers on social media platforms. Number of commercial contacts for support. Number of marketing events. **Target:** 2 or more marketing events to attract commercial interest. 5 or more commercial contact seeking support to utilize outputs.

In the ambitions to raise societal awareness, involve local communities and secure acceptance of these new developments by society-at-large, the UNITED project employed various methods to raise societal awareness, involve local communities, and secure acceptance of new developments. Firstly, a stakeholder engagement process was implemented, which involved identifying relevant stakeholders through a comprehensive analysis. These

stakeholders were then included in all pertinent steps of pilot development to ensure their input and involvement. Their needs were carefully considered to inform and guide the design of multi-use activities. Additionally, training and capacity building programs were conducted for personnel to reduce risks and increase social acceptance and awareness. These initiatives included online webinars to ensure broader dissemination and uptake of knowledge. Furthermore, the project focused on ecosystem building and stakeholder empowerment by fostering continuous dialogue with authorities, administrative bodies, and local communities. Local outreach activities were organized to empower stakeholders and establish links with relevant intermediaries such as networks, boards, chambers, and associations. Moreover, a staged rollout of products and services resulting from pilot work and project initiatives was implemented. This rollout was linked with the project's implementation roadmap, life cycle assessments, new products, and added value services. Accompanying this rollout was a robust marketing campaign to generate interest among potential consumers and society-at-large. All of the indicators and targets were achieved through the stakeholder outreach and activation programme and framework applied within the project.

Medium Term Evaluation Metrics	Activities to Deliver	Targets & Indicators
Improve the professional skills and competences of those working and being trained to work within the blue economy.	Hosting training workshops for stakeholder processes in each pilot (for partners and pilot coordination) about principles and process, adaptation to each pilot, including innovative forms of facilitation using participatory methods to engage participants. Demonstration sessions will also take place online via webinars as to ensure wider transfer and take-up.	**Indicator:** Number of workshops, trainings, and capacity building activities. Number of Webinars **Target:** 3 or more instances of both webinars and workshops/trainings over the life of the project
	In 'young' sectors (aquaculture, solar power), the main aim will be to increase soft skills related to commercialisation, budgeting and acquisition of funds, insurance, permitting, etc. Such collaborations and demonstrations throughout the project should establish the base for a long-term technical assistance with such stakeholders within these young sectors.	**Indicator:** Number of collaborations **Target:** 2 or more collaborations before the end of the project lifecycle.

The UNITED project employed diverse strategies to enhance the professional expertise and capabilities of individuals engaged or undergoing training within the blue economy realm hosting over 3 workshops and webinars indicated as targets and instigating a number of collaborations with young sectors. This involved conducting training workshops tailored to stakeholder processes in each pilot, focusing on foundational principles and process adaptation specific to each context. Innovative facilitation techniques, utilizing participatory methods, were integrated to actively engage participants in these workshops. Furthermore, online webinars were organized to facilitate broader dissemination and uptake of knowledge and skills acquired during these sessions. In emerging sectors like aquaculture and solar power, emphasis was placed on bolstering soft skills essential for commercialization, budget management, fundraising, insurance handling, permitting procedures, among others. Collaborative efforts and practical demonstrations throughout the project aimed to establish a solid foundation for long-term technical support to stakeholders within these burgeoning sectors. The development and deployment of key policy briefs relating to regulations, policy, insurances, business plan development, and market potentials all geared toward supporting these burgeoning sectors with concrete advice and support via these information products.

Medium Term Evaluation Metrics	Activities to Deliver	Targets & Indicators
Contribute to policymaking in research, innovation and technology.	The assessments and validations of activities across the socio-economic, technological, and environmental spectra of the pilots will inform the acceptability and efficiency of the MUCL designs implemented. This includes developing best practices (recommendations) on approaches to secure and shape participation of stakeholders in the design of future multi-use combination platforms, targeted with all groups of stakeholders. Plans for action that address the case specific legal, insurance, risk and governance aspects of multi-use will be generated and disseminated. Experiences will be brought together and will be used to draw more generic conclusions how multi-use initiatives can be facilitated including a risk governance analysis founded on the experiences of the individual pilots and cases.	**Indicator:** Number of policy, legal, insurance, and risk briefs. Number of stakeholders involved per pilot. Depth of market penetration with marketing and networking capabilities. **Target:** 5 briefs throughout the project lifetime. 75% or higher stakeholder capture across all pilots.

The UNITED project devised a multifaceted approach to achieve its medium-term objectives of contributing to policymaking in research, innovation, and technology within the realm of multi-use activities. Through comprehensive assessments and validations spanning socio-economic, technological, and environmental dimensions across the pilots, valuable insights into the acceptability and efficacy of implemented multi-use combination designs were garnered. These insights served as the basis for developing best practices and recommendations aimed at ensuring meaningful stakeholder participation in shaping future multi-use platforms. Tailored plans of action addressing the specific legal, insurance, risk, and governance aspects inherent in multi-use scenarios were formulated and widely disseminated. Furthermore, the project sought to consolidate experiences from diverse pilots to derive more generalized conclusions on facilitating multi-use initiatives. A thorough analysis of risk governance, grounded in the practical experiences of individual pilots and cases, was conducted to inform future efforts in this domain. Key performance indicators, including the number of policy, legal, insurance, and risk briefs produced, as well as the depth of stakeholder engagement across all pilots, gauged the project's progress toward its targets. Specifically, the project aimed to generate five briefs over its lifetime and achieve a stakeholder capture rate of 75% or higher across all pilot initiatives which was achieved through the diligent efforts of the partners in the consortium and the concerted efforts of the pilot interlocutors.

The comprehensive stakeholder engagement and ecosystem-building initiatives carried out within Work Package 5 and executed across all five of the UNITED project's pilots were evaluated as successful. While the extent of engagement varied among different stakeholder groups, overarching benefits and recommendations emerged from these activities. The integration of diverse activities within a multi-use framework showed great potential for generating significant economic advantages while effectively managing societal costs. This integrated approach not only enhanced overall economic efficiency but also often led to reduced financial expenditures. From a business perspective, multi-use environments offered greater financial rewards compared to single-use scenarios situated in separate marine areas. Moreover, multi-use arrangements enabled activities that would have been economically unfeasible in single-use contexts, such as certain touristic ambitions that thrived within multi-use settings.

Various actors involved in the multi-use projects perceived and realized benefits to varying extents, spanning environmental, social, societal, and economic dimensions. Across the pilots, stakeholders unanimously acknowledged the benefits of integrating multiple activities at sea. In the decision-making process, policymakers and stakeholders had to consider the economic impacts when evaluating the societal value of various multi-use options. To ensure a comprehensive assessment of all relevant impacts, a structured and sequential approach was developed and implemented in collaboration with pilot leads and other consortium partners directly involved in the pilot projects. Multi-use scenarios, when compared with single-use approaches, had the potential to yield net societal benefits across various dimensions, including cultural enrichment, social equity, and community empowerment. Rooted deeply in sustainable development principles, multi-use concepts held promise in empowering coastal communities, fostering interdisciplinary collaboration and innovation, and accommodating traditional or cultural practices related to the sea. However, assessing the extent to which multi-use arrangements outperformed or provided additional benefits compared to singular-use activities was not always straightforward, particularly in offshore settings where societal benefits materialized on land within regional municipalities, while tangible differences in co-location versus single use were evident at sea. A crucial determinant in this assessment lay in the potential to augment overall activities within a given domain, thereby increasing the overall concentration of activities in a regions EEZ, allowing for either increased overall activities, or allotting for the protection and safeguarding of additional areas as marine protected areas or regions for nature conservancy.. The interactions with various stakeholder groups demonstrated resilience and adaptability in addressing social benefits and considerations at both pilot and scaled levels. Drawing inputs from stakeholder workshops and broader consultations, consensus on scaled multi-use features was reached, with a focus not only on pilot scales but also on future developments and deployments.

9. GENERAL CONSLUSIONS

There are inherent limitations to the results gathered through the execution of this body of work. While a number of smaller group sessions were held with local stakeholders in their local language, serving as key inputs for this deliverable and the overall evaluation, this was often the only efforts conducted in the local language. The project wide activities utilised English as the primary language of information output in terms of flyers, videos, information packets, etc. and from the project and data collection in terms of surveys and interactions, these were also conducted in English This is understood to have limited the overall response and potential engagement with the different communicates and actors at each of the pilot sites and to return a biased result to those whom are able and confident enough to engage with English written surveys, media, and information. The project did not foresee nor have the capacity to conduct the efforts in a localised manner including translation of surveys and results and this is a shortcoming of the efforts and the results which are returned through the project work. However, despite these limitations there are overall generalisable outcomes realised from the engagement that did result form the project.

Overall, the various sectors, when brought together in a discussion and responding in surveys, found various benefits to the potential of implementing multi-use across the various activities realised at the pilot. Overall attitudes were positive to the implementation of multi-use, combing activities within limited space, and working to realise synergies and benefits for all persons involved, from the local communities to the business and enterprises involved with such activities, and including potential benefits for nature, restoration, or minimising environmental impacts. Different sectors have highlighted various potential conflicts of interest which, as seen through the summary of the closing evaluations, would sometimes conflicts with the benefits perceived by others. No clear cut solution can be generalised from the desires and potential conflicts highlighted in the closing summaries. Continued discussions and resolution through dialog is the traditional solution which has shown to have the greatest positive impact on having as many conflicts resolved as possible. Given the overall positive outlook and the potential for synergies, profit sharing, and overall increased marine space use, these are believe to be surmountable. While the project was unable to achieve the higher response rate hope for through the analysis, the smaller panel interview sessions and generalised outcomes form the survey show an overall positive and improved outlook on multi-use the more information and varied examples that the participants and stakeholders have been provided. While it was also highlighted that multi-use is a solution, and is not always the best or optimal solution for every case, this sentiment gives a positive light and hope for the concept moving forward as a way to better manage and facilitate the use of our seas and oceans.

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