



DELIVERABLE 5.5

RECOMMENDATIONS FOR SUCCESSFUL STAKEHOLDER INVOLVEMENT IN MULTI-USE PLATFORMS

Work Package 5

Societal Interactions and Engagement

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Author(s)	Van Gerven A., Lukic I., Bolman B., Leahy A., Cornacchia L., Ziemba A., Berge M.
Editor	Declerq A.; Ziemba A.
Approved by	El Serafy G.
Abstract	<p>The presented reports provide recommendations and guidelines for stakeholder engagement in ocean multi-use projects. They were made based on the experiences of the UNITED pilots and from a literature review about stakeholder engagement in other multi-use projects.</p> <p>Three sets of recommendations were identified:</p>



	<ul style="list-style-type: none">- The recommendations of the pilot leads of UNITED, collected through one-on-one interviews in the last months of the project.- The recommendations from four multi-use research projects gathered through a screening of their reports and compiled into a comparative table.- The recommendations from published papers about stakeholder engagement in a multi-use context, gathered through literature reviews. <p>These three sets of recommendations were subsequently combined to create written guidelines, which were further expanded upon in an infographic, with the aim of facilitating consultations and promoting widespread dissemination. The guideline infographic will feed into the Ocean Multi-Use Toolkit produced in collaboration with the MULTI-FRAME project.</p>
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ACRONYMS

CCT	Coordination Committee Team
CSET	Core Services Exploitation Team
CT	Consortium Coordination Team
EC	European Commission
IPR	Intellectual Property Right
LTA	Low-Trophic Aquaculture
MSP	Maritime Spatial Planning
MU	Multi Use
ORE	Offshore Renewable Energy
OWF	Offshore Wind Farm
PA	Partner Assembly
PM	Project Management
SAB	Stakeholder Advisory Board
WP	Work package

EXECUTIVE SUMMARY

The presented reports provide recommendations and guidelines for stakeholder engagement in ocean multi-use projects. They were made based on the experiences of the UNITED pilots and from a literature review about stakeholder engagement in other multi-use projects.

Three sets of recommendations were identified:

- The recommendations of the pilot leads of UNITED, collected through one-on-one interviews in the last months of the project.
- The recommendations from four multi-use research projects gathered through a screening of their reports and compiled into a comparative table.
- The recommendations from published papers about stakeholder engagement in a multi-use context, gathered through literature reviews.

These three sets of recommendations were subsequently combined to create written guidelines, which were further expanded upon in an infographic, with the aim of facilitating consultations and promoting widespread dissemination. The guideline infographic will feed into the Ocean Multi-Use Toolkit produced in collaboration with the MULTI-FRAME project.

1. INTRODUCTION

1.1. Ocean multi-use

Multi-use (MU), as defined in the Ocean Multi-Use Action Plan 2018 (Schupp et al., 2019) is an intentional joint use of resources in close geographic proximity. It represents a radical change from the concept of exclusive resource rights to the inclusive sharing of resources by one or more uses. This practice aims to optimize the benefits of ocean resources while minimizing environmental impacts and conflicts. Some examples of multi-use cases are the combination of marine wind and wave energy generation, offshore wind farms and aquaculture installations, or fisheries and tourism.

Due to the development of the maritime economy and its further expected growth in the future, ocean space is becoming increasingly crowded, therefore MU offers a potential solution to limit conflicts and gain mutual benefits. These benefits can be socio-economic, such as sharing personnel, logistics, license costs, or promoting new job opportunities, as well as environmental, in terms of contributing to climate change mitigation and reducing negative impacts. However, a successful implementation of MU requires knowledge on how to integrate multiple uses and functions in the same area, while also being aware of potential cumulative effects on the environment.

Despite the increasing amount of research on ocean multi-use in the last few decades, examples of practical implementation remain scarce. The UNITED project aims to address this gap by providing evidence of the viability of multi-use through the development of large-scale pilots that translate technical, legal, economic, social and environmental solutions from the design phase to demonstration in an operational environment.

1.2. UNITED

The UNITED project aims to encourage multi-use of marine areas and provide evidence that the co-location of different activities in the marine and ocean space is a viable approach. The concept of UNITED is to provide practical designs, technological proposals, and models for combining activities in terms of economic potential, legal and societal acceptability, and environmental impact along with their practical applications. This is achieved through five pilot demonstrations across European regional seas that combine renewable energy, aquaculture, nature restoration and tourism. The project focuses on offering solutions in five main pillars supporting an effective implementation plan: technology, economy, environment, society, and legal/policy/governance.

This report has been developed in the framework of Work package 5 of UNITED ‘Societal Interactions and Engagement’, is specifically dedicated to stakeholder engagement and participation. The first task, ‘Development of a framework and practical guidelines for stakeholder engagement process in pilots’, set the strategy for stakeholder engagement in the beginning of the project. The second task ‘Support of stakeholder engagement process in the pilots’ assisted the pilots in the implementation of the strategy and led to a report on the activities that had been undertaken by the pilots so far. The third task ‘Organization of training workshops for stakeholder engagement’ was about webinars and knowledge exchange with experts on technical topics identified by the pilots’ experiences, and led to a report as well. The fourth task, ‘Monitoring and Evaluation’ evaluates and reports on the application of the stakeholder engagement strategy in the pilots of UNITED at the end of the project. The fifth and present task ‘Synthesis and recommendations for future development of multi-use platforms’ builds on the experience and lessons learned of the pilots to provide a set of advice for marine spatial planners and future multi-use projects regarding stakeholder engagement.

1.3. Stakeholder engagement

The development of an ocean multi-use system relies on the involvement of numerous stakeholders, including maritime authorities, research institutions, businesses, insurance and classification companies, and local communities. The UNITED project and its pilots aimed for a comprehensive understanding of these diverse stakeholder groups. Various interests and viewpoints related to multi-use are present at different levels of significance and intensity.

To effectively incorporate stakeholder input in multi-use projects, influence relevant policies, research, and business processes, and gain social acceptance, it is essential to comprehend these stakeholder groups. Active

engagement of influential stakeholders throughout the project is crucial to ensure acceptance, a sense of ownership, and the successful implementation of the project's final recommendations.

To determine which stakeholders should be engaged at various stages of the project, stakeholders can be categorized based on the following criteria (Drigkopoulou et al., 2020):

- The **type of organization** they are associated with or represent, which could include public administration or authority, businesses, non-governmental organizations (NGOs), and education and research institutions.
- Their **level of involvement**, whether it is local, regional, national, European, or international.
- Their **specific sector or domain of activity**, such as aquaculture, tourism, wind farms, transportation, or involvement in protected areas.
- Any other pertinent criteria that are relevant to the specific context of the project.

This categorization helps in tailoring stakeholder engagement strategies to the unique characteristics and roles of different stakeholders in the project.

Based on the pilots of UNITED, the following categories of stakeholders were identified for ocean multi-use projects (Drigkopoulou et al., 2020):

- Commercial business
- Business support – consultancies
- Research organizations
- Communities of practice
- Regulators
- Policy makers
- Classification societies
- Insurance companies
- Funding bodies
- NGOs and other intermediaries representing society
- Consumers and society

The level of engagement of each stakeholder may be chosen from the following scale (Arnstein, 1969), further detailed in Figure 1. :

- **Information:** give information to stakeholders without expecting feedback
- **Consultation:** ask for a feedback from stakeholders on some results, plan or project
- **Concertation/co building:** make a group of stakeholder work together to build some collective proposition for a project
- **Co-decision/partnership:** make a decision with stakeholders who have a legal responsibility on the subject

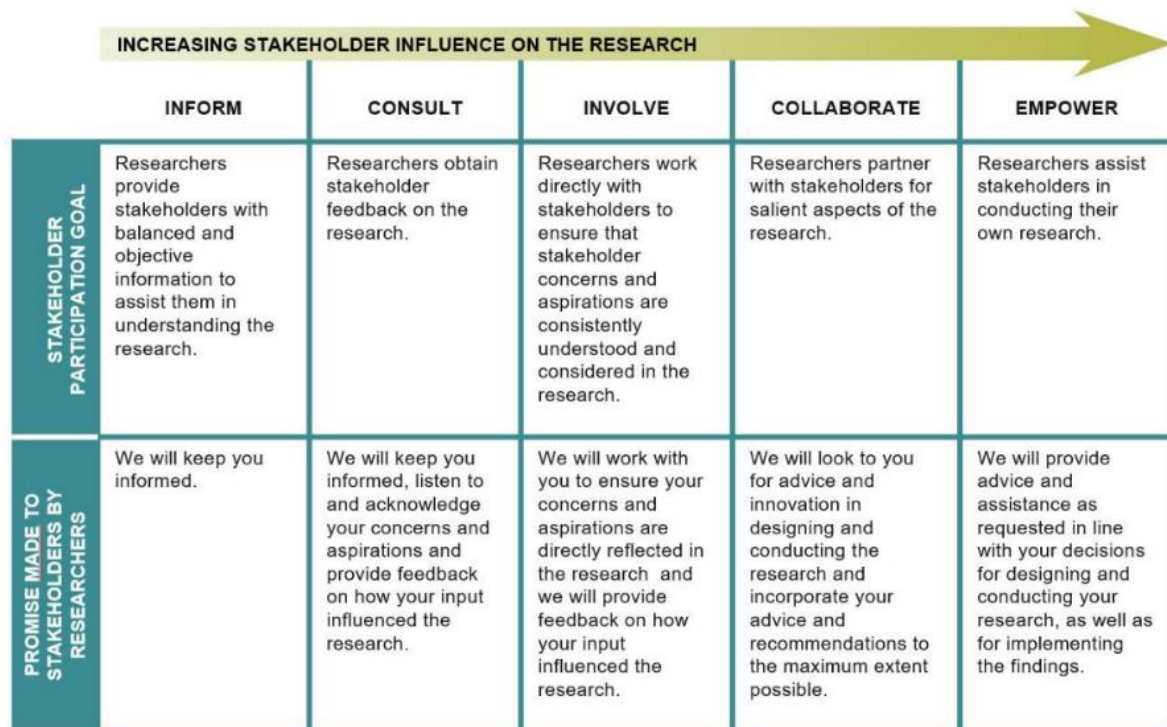


Figure 1. Spectrum of Public Participation, developed by the International Association of Public Participation (IAP2).

For additional information, please refer to Deliverable 5.1 of UNITED (Drigkopoulou et al., 2020).

2. OVERVIEW OF STAKEHOLDER ENGAGEMENT IN UNITED AND OTHER MULTI-USE PROJECTS

Deliverable 5.4 of the UNITED project discusses the concept of social acceptance, saliency, legitimacy, credibility, and the overall framework applied within the UNITED project to monitor and evaluate the degree to which the solutions and applications have achieved such metrics. This deliverable extends on the framework presented in D5.1 of the project, which addresses the general framework and guidelines for stakeholder involvement, and describes the outcomes of interactions, interviews, expert panels, and the general monitoring campaign of the project as a whole.

2.1. UNITED pilots

2.1.1. Summary of UNITED pilots' activities

The locations and combined activities of the pilots are:

- Germany: offshore wind energy, mussel and seaweed aquaculture;
- Netherlands: floating solar, offshore wind energy and seaweed aquaculture;
- Belgium: offshore wind energy, seaweed cultivation, oyster aquaculture and restoration;
- Denmark: tourism activities and offshore wind energy;
- Greece: tourism activities and fish aquaculture.

List of stakeholder engagement activities per pilots

Danish pilot

Over the last four years the Danish Pilot has organized over three Open House events where the general public had an opportunity to get informed about the pilot at the outside open-air stand and by taking the boat tour. For example, on 19th of June 2022, Open House Day of Middelgrunden Wind Farm demonstrated the UNITED pilot to over 200 attendees.

Moreover, several tours and independent stakeholder meetings took place in person over the course of 2020 – 2023. The pilot has also organized a workshop focusing on the socio-economic aspects of the pilot. The pilot has also been presented at several international in-person events, such as the 18th of May 2022 EMD & Final Blue Deal Conference in Ravenna, Italy, and the 30th of Nov., 2022. Community of Practice – energy to feed into the eMSP, in the Netherlands, The Hague.

German pilot

The German Pilot has organized several educational and awareness raising events at the local schools, students had an opportunity to get informed about the concept of offshore aquaculture, multi-use and UNITED pilot. Many of the students and professors participated in the organized tour to the farm close to shore and demonstration activities. Moreover, several independent stakeholder meetings took place in person over the course of 2020 – 2023. In late 2022, the pilot has also organized a workshop focusing on the socio-economic aspects of the pilot. The German Pilot has also been extensively presented at several international in-person events, such as the Wind Energy conference 2021 in Copenhagen and Aquaculture Europe 2020, 2021, 2022.

Belgian pilot

The Belgian pilot has organized a series of workshops and outreach events to collect insights into the pilot design, and validate the findings. Moreover, several outreach actions took place in order to share the key findings and raise the awareness of local and regional actors about the topic of multi-use piloted in Belgium. Several EU wide events allowed for the knowledge exchange with other similar projects.

In December 2022, the pilot has organized a workshop focusing on the socio-economic aspects of the pilot. This workshop (organized under T5.3), allowed to get feedback from the participants on the intermediate results of the business case of the pilot, and discussion about commercialization. The afternoon was dedicated to a co-

creation session for imagining the different social impacts of an upscaled pilot (4 scenarios with different multi-use combinations were explored), considering its potential positive and negative implication and possible mitigation measures of the negative impacts. This participative session showed which impacts are the most salient for local stakeholders, and which ones should be mitigated (in case of negative impact) or optimized (in case of positive impact).

Twenty external participants attended the event, along with the pilot partners, with representatives from research, business, policy and regulating as well as the key sector representatives such as fisheries, tourism, and the broad audience.

The workshop has been facilitated by the pilot partners using the in-person co-creation techniques (post-it rounds, ranking exercise).

During their close-to-shore testing activities, the Belgian pilot partners kept their coastal activities open to the public where the general public, particularly the local inhabitants, had an opportunity to get informed about the concept of offshore aquaculture, multi-use and UNITED pilot. Many of the locals got to witness the pilot demonstration activities. Moreover, the pilot was represented at the Oostende for Anker 2023¹ event, that attracted over 200 000 visitors, providing opportunity for the general public to get information about ocean multi-use. In addition, several independent stakeholder meetings took place in person over the course of 2020 – 2023.

The Belgian pilot was also presented at over 20 events and in December 2022, the Belgian Pilot was presented at the Blue Innovation Award event in Antwerp (Belgium) and won the Blue Innovation Swell Award 2022, which is the Blue Cluster award for collaboration.

Dutch pilot

The Dutch pilot of the UNITED mainly relied on the exiting engagement structure present in the Netherlands, so called Dutch Community of Practice North Sea (COPNS)². As an active member of the COPNS the Dutch pilot lead, the North Sea Farmers, has exchanged with the members of the COPNS on several occasions for the last 4 years in order to present and validate the progress and findings of the Dutch pilot. Moreover, the Dutch Multi-Use Procedure is one of the concrete outputs of this work developed in the framework of the COPNS under the leadership of the Dutch pilot lead. This has encouraged other countries in the region to follow the suit. More recently the similar process has been established for Belgium which has resulted in the multi-use procedure for that jurisdiction following the blueprint of the Dutch example³.

Greek pilot

During the summer, the UNITED project held an outreach campaign at the Greek pilot site to raise awareness about the project and invite local members of the public and tourists to participate in diving tours. The campaign included a variety of marketing efforts, such as the "QR code underwater hunt," in which participants could win a dinner for two at a local restaurant. The goal of the campaign was to engage as many people as possible in the diving activity and showcase the link between marine life and human activities. As part of the campaign, information was also provided to improve public perception of fish aquaculture. However, the timing of the demonstrations was disrupted by adverse weather conditions. The Greek pilot site experienced unusually strong and persistent north winds of 5-6 Beaufort, which made boat diving impossible.

As a result, the diving center, Planet Blue, worked with the aquaculture farm to find a suitable alternative location for shore-based diving. From August to October 31st, 87 divers (34 unique and 53 repeat) participated in the tours, with 11 of them being foreigners and the rest being Greeks. None of the divers had previously dived at a fish farm. In November and the first 10 days of December, when temperatures were unusually high (18-22 °C), an additional

¹ <https://www.oostendevooranker.be/nl>

² <https://www.noordzeeloket.nl/beleid/interdepartementaal-directeuren-overleg-noordzee/idon-nieuws-brief/nr-29/community-practice-multi-use-noordzee-2030/>

³ <https://www.northseafarmers.org/sector-support/multi-use-procedure>

17 unique Greek divers participated in the tours, bringing the total number of divers to 104 (51 unique and 53 repeat).

During the tours, the divers were surveyed about their knowledge of fish farms, shown videos about multi-use, and asked for their opinions on the issue both before and after the tour. The majority of local divers initially held negative views about the healthiness of fish from fish farms, citing factors such as a preference for wild fish, a belief that fish from fish farms contain a lot of antibiotics, and concerns about the healthiness of the methods used. However, after learning more about the aquaculture farm and the negative impacts of unregulated free fishing, all of the divers reported that their opinions improved. The pilot project gained valuable insights that can be shared with other diving centers in Greece that are located near fisheries. Planet Blue plans to provide guidance to these clubs on how to potentially offer specialized diving tours, work with fish farm operators, design optimal dive paths, and educate divers on the issue.

A procedural step by step script for the demo and information session campaign was used:

- 1) Ask attendees about their knowledge on fish farms, and/or let them fill out the first questionnaire available via the QR code,
- 2) Explain the multi-use in Greece and elsewhere, and the activities of the pilot site,
- 3) Show the available videos of the multi-use and other communication materials
- 4) Discuss their "new" opinions on the issue and/or let them fill out the second questionnaire available via the QR code.

As a results of the demo and information session the local attendees express strong concerns about the healthiness of the fish in the fish farm. We attribute that to the following factors which the divers discussed:

(a) locals are closer to the idea of wild (which we call fresh) fish being healthier to eat (we use the term fresh to specify fish that comes from free fishing as opposed to fish originating from fish farms). Considering the geography of the land, fresh fish is easy to reach every corner of the mainland, not to mention the numerous islands where fresh fish is easily available and not very expensive,

(b) locals can discern the taste difference between the two types of fish and express a preference to spend up to twice the amount in Euros, albeit less frequently, in order to enjoy the aroma and the benefits of the fresh fish. Fish originating from fish farms are blamed to contain large amounts of antibiotics,

(c) locals are not convinced that the methods used are healthy - please note that this is the same story that also follows the red meat. You can see in all the local butcheries, signs promoting the local (Greek) meat, as if it is certain that it is superior to the imported one, meaning that the imported red meat is filled with antibiotics, and the animals were never living in the free to benefit from growing up in an open-air land,

(d) however, all of them mentioned that they had a much worse impression before getting to know what exactly goes on in the aquaculture farm and that they were positively surprised (but not fully convinced),

(e) the positive regard was further increased when we explained the perils of free fishing which in more than a few cases, disrespect the rules, overfish and cause serious trouble to the environment.

2.1.2. Interviews with UNITED pilot leads

Interviews with pilot leads were conducted to gather their feedback on their stakeholder engagement strategy and events they held.

Method

Four interviews were conducted with the following pilots: Greek, German, Belgian and Danish. Before the interview, the list of activities for stakeholder engagement was reviewed and updated by them. The interview guide can be found hereafter.

Interview guide

Part 1 – Evaluation of stakeholder engagement events and activities conducted

Ask what the most important stakeholder engagement activities were in their opinion. For each of them, ask:

1. What was the goal of the activity?
2. What type of stakeholders was targeted/invited?
3. What type of stakeholders participated?
4. Did the activity help you reach the goal you were pursuing?
 - a. *Underling question: was the activity appropriate for your goal?*
5. Did you have good collaboration/participation?
6. Did the invited stakeholders feel fit to achieve what you had planned?
 - a. *Underlying question: were the right stakeholders invited/present?*
7. Do you consider the activity a success or a miss?
 - a. What do you believe were the reasons for success/failure?
 - b. Would you have done something differently? If so, what?
 - c. What would you want to do in the future (if the project was taken further)?

Part 2 – Feedback on stakeholder engagement in the context of ocean multi-use

1. What do you believe makes stakeholder engagement special in the context of multi-use when compared to single-use?
2. Overall, how would you evaluate the stakeholder engagement process of your pilot?
 - a. What were the successes?
 - b. What were the failures?
 - c. What would you have done differently, with the knowledge you have today?
 - d. What would you like to do in the future if the project was longer?
3. How could you have received better support from the other partners and work packages of the project?
4. Do you have something to add that was not discussed in this interview?
5. What would be your key message from your experience in stakeholder engagement in your UNITED pilot?

Synthesis of interviews report

German pilot

Engaging stakeholders was slow in the beginning because the concept of multi-use and low-trophic aquaculture were not well known in the pilot's area. The making of a documentary about the pilot's activities streamed on TV changed the situation, raising awareness and interest in the topic. From there, they started organizing webinars to exchange knowledge and expertise on specific topics and started being invited to similar events of other projects. Besides these webinars, presentations were held at academic and industrial gatherings and dinners, as well as in universities, and tours of the low-trophic aquaculture farm infrastructures were offered for tourists seeking engaged in 'learning holidays'.

A major challenge the German pilot had to face was to engage the local population. While they exchanged with German stakeholders, getting in touch with stakeholders from Kiel was difficult. Two major reasons were identified for this: the local population is not active offshore, and low-trophic aquaculture is a misunderstood concept. Offshore activities in the area are typically carried out by vessels manned by an imported workforce, the local population does exploit marine resources (e.g. fishing) but they stay closer to shore. In addition, aquaculture is understood as fish aquaculture carried on in ponds inland, hence does not stimulate interest of local fishermen. Taking the social and cultural context into account is essential, especially for areas, like Northern Germany, that are slow to change. A long-term, consistent dialogue with the local population and blue economy sectors is recommended by the pilot leads.

When planning an event, in-person set up is to be favored, although webinars work well to have experts exchange and collaborate. Invitations should be targeting specific people, or companies, that have been identified as appropriate. Last-minute changes and rescheduling may make you lose many attendants and should be avoided as much as possible. Public representatives were more interested in in-person events than online ones.

A socio-economic workshop was held, but it was not as successful as expected. That is partly because of technical issues that led for last-minutes changes and shifting from a physical event to a digital one. As a result, many originally targeted stakeholders could not attend, and the ones present were mostly experts, there were ‘too many brains in the room’ for the purpose of the workshop.

Looking back on their experience, the German pilot recommends being specific in the outreach to stakeholders. In the beginning, many people are contacted, consulted, invited, etc. While this first step is often necessary, the list of relevant stakeholders with whom to interact on the long term should be refined after this first stage, to prioritize the most relevant ones. This group of people should then be involved in a consistent manner for the duration of the project.

Challenges identified as specific to the multi-use context are the potential lack of interest from the sectors that are combined, to collaborate with each other. There may be a lack of obvious benefits from the multi-use, or a too long-term perspective for these benefits to be reached. Additionally, working with different sets of expertise, perspectives and interest can prove difficult, with some sectors historically at odds with each other.

Belgian pilot

The Belgian pilot identified two stakeholder engagement events as their two key actions on this aspect of the project. The first was the socio-economic workshop. It was a full-day in-person event gathering a variety of stakeholders from the public, touristic, industrial and research sectors. They were given explanations about the purpose of the multi-use project, then given tasks and exercise to conduct in small group in a workshop fashion. The purpose of the event was to raise awareness and to gain insight from these stakeholders on their perception of the socio-economic impacts of a commercial-scale combination of low-trophic aquaculture, nature restoration and offshore wind energy production.

The event was made attractive with clear visuals and materials, an informal dynamic and pleasant atmosphere, an offered lunch and a pleasant location. The participants indicated that more time to conduct the tasks would have been good although the pilot lead believes that spontaneity was more important than thorough thinking for the purpose of this workshop. It was also suggested that holding the event in the evening or on a weekend day would have increased the participation of non-expert people.

The pilot lead recommends not to have this type of event too early in the project, since having results and experience to share makes it more powerful when giving information and answering questions. However, invitations were sent too late (too close to the event’s date) which prevented people with busy agenda attending it.

The second identified key event was the holding of a stand during a marine-themed public event held at the Belgian coast, which attracted over 200,000 people. People were free to come to the stand, learn about the project and pilot, and ask questions. A short questionnaire was given to anyone interested, to gather some knowledge from a broad non-expert audience. A small reward, a cracker made of seaweed, was offered upon completion of the survey. One aspect did not work as planned: when answering the survey, the respondent was asked to register into the platform, which discouraged many of them. The pilot lead recommends using the method but in a simplified format, without registration, to maximize the amount of answered questionnaires.

Visuals and a dynamic dedicated team were big assets in the success of the event, but this type of format is very weather dependent, at least when held in open air. They were lucky to have nice weather that day, if it had been rainy, the number of people attending might have been different.

The webinars organized at the project level were assessed as useful by the pilot lead, when targeting expert people. While in-person might also prove efficient with experts, it does put a location limit: people from other countries might not travel for a couple of hours for presentations and exchanges on technical topics.

Challenges identified as specific to multi-use by the Belgian pilot lead are the different goals that different sectors may have, that requires talks and arrangements when these sectors are to combine their activities. As lead of a multi-use project, it is up to them to align the concerned stakeholders to reach solutions that suit both sides.

The key message of the Belgian pilot is to hold in-person full day events, well prepared and starting ahead of time to maximize its participation and success.

Greek pilot

The Greek pilot identified its key stakeholder engagement strategy as the giving of the diving tours around the fish aquaculture farm, with the included educational presentation given before the tour itself. By explaining to divers the purpose and benefits of small-scale finfish aquaculture, they raise awareness and advocate for better consumption of products of the sea.

The first year of the Greek pilot was rough because of the COVID outbreak, and the complete interruption of any diving activity, and the second year was slow to rise due to not optimal weather conditions. In the last year, however, interest has risen a lot, and they receive frequent requests from divers to undertake that specific tour visiting the farm. The tour is different than another diving tour because there is an educational presentation before. They explain what fish aquaculture is, what its impact is, how it compares with other fishing practices, including industrial fisheries. The purpose is to deconstruct the perception that the Greek population has about fish from aquaculture: that it is somewhat unnatural, unhealthy and less tasty than wild caught fish.

Based on the experience of the Greek pilot it is recommended to have a solid scientific knowledge of aquaculture, fisheries and marine ecology because people have specific and complex questions. Coming unprepared will not leave a good impression and may undermine the objective of the multi-use project. Therefore, the diving operator should have someone with a solid background and/or prepare a Q&R answering the most frequently asked questions.

To attract customers/stakeholders and interest for ocean multi-use, they suggest adding attractive and interactive activities, such as winning a meal at a local restaurant that serves fish from the farm, but also include a boat that can stop at the farm where an operator takes some fish live and have an outdoor barbecue for the visitors at the site, or have a tombola in farmed packed fish sold at the supermarket and if you get the price-ticket you receive a free diving/bout tour.

Danish pilot

In the Danish pilot, the main stakeholder engagement events are the boat tours and interactions with service providers (boat operators) and potential future customers (e.g. universities and offshore wind developers). The boat tours visiting the wind farm, sometimes including the climbing of a turbine have an educational purpose. Their audience is mainly composed of professionals and experts in the sector, because the tours are quite expensive and technical for a broad tourist audience. During the outings, explanations are provided regarding the functioning and purpose of an offshore wind farm, but also regarding the way this specific wind farm was implemented.

The story of this wind farm is quite unique. The wind farm consists of 20 turbines which are equally shared (i.e. 10 each) by its developers "Københavns Energi" (today HOFOR utility) and "Middelgrundens Vindmøllelaug" (Middelgrunden Cooperative), a private cooperative partnership with 8000 owners. The utility had the financing and engineering expertise in place, while the cooperative gathered positive local citizens, who turned to be advocates and ambassadors of the project to their relatives and friends.

The physical tour to the offshore wind farm is organised by representatives of the Middelgrunden cooperative, who also contracts the boat operators. This took place a few years after the commissioning of the wind farm. The other owner of the windfarm has no intention to establish a visiting program. Two boat operators are used for the tour, which is scheduled in advance depending on boat and guide availability and weather conditions. One of the boats is also used for leisure fishing, thus providing the boat company with an alternative source of income. The

other boat operator is conducting leisure tours with fast Zodiacs vessels and a visit to the wind farm is just one option out of many.

The local engagement in planning and layout of the farm ended up being the pre-condition for the acceptance and rollout of the multi-use. The fact that 10 of the turbines are owned by the cooperative makes it easier to have access to the turbine and develop additional related add-ons such as tours and educational programs. In Denmark there has been since the 1980-ies a tradition to have an annual opportunity for the turbine owners to climb their wind turbine. This event has slowly been developing to tourism allowing all people to visit wind turbines and learn about wind energy.

The tentative of the Danish pilot to hold a socio-economic workshop regarding the multi-use project did not raise any interest. The suggested explanation is the small size of the activity, therefore its impact on the other sector is negligible.

2.2. Review of four EU projects deliverables

This subaction offers a comprehensive comparative analysis of four EU projects, through their published deliverables: MUSES, Space@Sea, COEXIST, and MERMAID. These projects were chosen due to their strong emphasis on multi-use applications and the availability of online information for reference. The framework for this comparative analysis was collaboratively made through the input of experts associated with UNITED. Each of the four projects underwent an evaluation based on the following criteria:

1. Engagement/integration of stakeholders
2. Contributions of stakeholders to the MU guideline
3. Key elements of the MU guideline
4. Key lessons learned with respect to stakeholders guidelines

The outcomes of this analysis are presented in Table 1 below.

Table 1. Comparative analysis of four EU projects on MU, from the perspective of stakeholder engagement and involvement

Topic	MUSES	Space@Sea	COEXIST	MERMAID
Engagement /integration of stakeholders	<p>In the document “Stakeholder identification and engagement process in case studies (Bocci et al., 2017)”, the following methods are described:</p> <ul style="list-style-type: none"> - Stakeholder interviews to assess MU potential, by identifying and ranking the drivers/barriers, added values and negative impacts. - Expert panel (5-10 members) to validate MU scenarios, identify opportunities, and propose policy recommendations. - Local workshops (15-25 attendees) in each of the case study sites for conflict resolution, identification of synergies, and local stakeholder recommendations regarding MU scenarios. - Consensus conferences (10-30 participants) to engage the wider community, disseminate information, and validate the final recommendations. 	<p>In the “Report on How to Increase Social Acceptance” (Lüthje, 2017), the following methods are described:</p> <ul style="list-style-type: none"> - The project team held workshops and meetings with stakeholders to discuss the project's progress and to gather input on the project's guideline. - 27 semi-structured expert interviews were conducted, focusing on spatial challenges, development plans, and floating projects in (port) cities. - A survey was used to identify problem-solving strategies of (port) cities 	<p>In the COEXIST project, stakeholders were engaged as follows (European Commission, 2014):</p> <ul style="list-style-type: none"> - Stakeholders were engaged through stakeholders' workshops and synthesis workshops, which allowed for a two-way exchange of knowledge and ensured that the final results met their needs. - Knowledge transfer activities were carried out during the second part of the project, facilitating interaction and knowledge exchange with stakeholders. - These activities were included in deliverables D6.9. - The project aimed to achieve sustainable integration of aquaculture and fisheries, indicating a focus on stakeholder involvement and collaboration. 	<p>The following items are relevant with respect to the engagement of stakeholders in the project (European Commission, 2016):</p> <ul style="list-style-type: none"> - Interviews with all stakeholders and round table sessions were conducted to gather input and opinions from stakeholders. - The project faced challenges in reaching the right representatives of stakeholders in some cases, as they had to start the network from scratch. - The Atlantic Sea site workshop had participation from all types of stakeholders. - In the Baltic case study, a more focused stakeholder group was selected, and all participants had the resources to participate. - Stakeholders were involved in the early project phases to accept and take stock of differing views. - A small group of relevant experts was involved in the technical scoping phase. - Stakeholders were asked to pronounce themselves about few and well-defined design options in later project phases. - Close collaboration with stakeholders already involved in the initiative was emphasized, as seen in the positive examples of the Baltic and North Sea case studies. - Transparency in communication with stakeholders was maintained, with regular reporting back to them at each stage of the project.

Topic	MUSES	Space@Sea	COEXIST	MERMAID
Contributions of stakeholders to guidelines	<ul style="list-style-type: none"> - The MUSES project has written an Action Plan (Schultz-Zehden et., 2018), identifying the key actions for each of the analyzed multi-use combinations, addressing concrete actors timelines and giving examples from practice for the wider uptake of multi-use solutions in European seas. - See the cell above for more information on how stakeholders were engaged. 	<p>The project produced a guideline (Jak et al., 2019) for Health, Safety and Environment with respect to floating modular islands. However, no evidence could be found that stakeholders were not involved in the process.</p>	<p>Stakeholders contributions in the COEXIST project:</p> <ul style="list-style-type: none"> - Stakeholders were engaged through stakeholders' workshops and synthesis workshops, which allowed for a two-way exchange of knowledge and ensured that the final results met their needs. - The workshops were carried out in the local language, facilitating effective communication of information to the stakeholders. - The aim of these workshops was to transfer the final COEXIST outputs to the relevant local stakeholders in each case study area, customizing the transfer of results to their specific needs. - These workshops provided an opportunity for stakeholders to provide feedback and contribute to the project's outcomes. 	<ul style="list-style-type: none"> - Stakeholders were involved in the entire design process, providing input, feedback, and consultation. - Their perspectives were acknowledged, enabling the project to overcome potential obstacles and make timely adjustments. - Stakeholders discussed technical aspects of the design, such as maintenance, monitoring, anchoring, transport, and associated risks. - Their input was crucial in conducting a technical risk assessment of the offshore multi-use platform, leading to the development of guidelines and rules to minimize risks and ensure safety. - The project emphasized the importance of stakeholder engagement and communication transparency, ensuring that stakeholders were informed about the project's progress and how their input was incorporated at each stage. - Stakeholders' opinions were sought in later project phases to pronounce themselves about few and well-defined design options of the offshore multi-use platform.

Topic	MUSES	Space@Sea	COEXIST	MERMAID
Key elements of guidelines	<p>The key elements are:</p> <ul style="list-style-type: none"> - The Action Plan entails actions and recommendations for multi-use combinations, both on a sectoral level and on a cross-cutting level. - Actions and recommendations were formulated for the following combinations: Tourism, Fisheries & Environmental Protection, Tourism & Aquaculture, Tourism, Underwater Cultural Heritage & Environmental Protection, Offshore Wind Farm & Tourism, Offshore Wind Farm & Aquaculture, Offshore Wind Farm & Fisheries, Oil & Gas Decommissioning – Repurposing, Offshore Wind & Marine Renewable Energy Generation, Wave Energy & Aquaculture 	<p>The key elements of the HSE guideline are:</p> <ul style="list-style-type: none"> - Hazard identification and classification according to a Risk Assessment-Hazard Catalogue (BG RCI A017e) - Evaluation of hazards for their risk potential - Discussion of prevention and mitigation measures for identified hazards. - Implementation of preventive measures in the design of floating modules and their applications - Training of people for special working and living conditions, including planned evacuations - Use of personal safety equipment to reduce the impact of incidents. - Compliance with applicable standards for biological, chemical, and physical hazards - Consideration of environmental impacts on the marine ecosystem and structures - Compilation of environmental preconditions for aquaculture species relevant to the project - Strategies for periodic inspection and maintenance of floating structures to minimize impacts. - Consideration of the impact of fouling organisms on the structure. 	<p>The key elements of the COEXIST guidelines are:</p> <ul style="list-style-type: none"> - The guidelines provide practical examples and tools for better integration of aquaculture, fisheries, and other activities in the coastal zone. - The guidelines aim to address the interrelationships between stakeholders and between stakeholders and the issues. - They identify and clarify the relevant stakeholders and their engagement in the decision-making process. - The guidelines emphasize the need for stakeholder engagement and collaboration to achieve sustainable integration. - They provide guidance on how to effectively integrate aquaculture and fisheries activities in the coastal zone, considering the needs and perspectives of stakeholders. - The guidelines are summarized in an attractive, easy-to-read, and easily accessible booklet, which is one of the key outputs of the COEXIST project. 	<p>The key elements of MERMAID’s guidelines for multi-use projects (European Commission, 2016) are:</p> <ul style="list-style-type: none"> - The guidelines include technical and legal feasibility assessments for the offshore multi-use platform, considering identified legal and technical constraints. - Assessment of site conditions and stakeholder requirements is an important element in the guidelines. - The guidelines emphasize the evaluation of multi-use offshore platforms designs, including environmental impact assessment, economic evaluation, and benchmarking against single-use solutions. - Selection of the preferred design based on a multi-criteria analysis to ensure sustainable development of the area is a key element in the guidelines. - Stakeholder engagement and consultation throughout the design process is emphasized, with stakeholders providing input, feedback, and consultation. - The guidelines also focus on transparency in communication with stakeholders, regular reporting back to them, and incorporating their input at each stage of the project.

Topic	MUSES	Space@Sea	COEXIST	MERMAID
<p>Key lessons learned with respect to stakeholders guidelines</p>	<p>The key lessons with respect to stakeholder guidelines are:</p> <ul style="list-style-type: none"> - It is essential to engage with a wide range of stakeholders in the development of the Action Plan. This allowed the project team to gather stakeholders' views on multi-use ocean planning, as well as their needs and priorities. - It is essential for stakeholders to share data and information to develop a comprehensive understanding of the marine environment and its uses. This information is essential for the development of effective multi-use plans. - Spatial planning is an essential tool for bringing stakeholders together to identify appropriate areas for different uses. Ongoing engagement processes that go beyond one time consultation can help to reduce conflicts between different users of the marine environment and promote synergies between users. It is important to have mechanisms in place to resolve conflicts between different users of the marine environment. This is essential for ensuring that multi-use plans are implemented effectively. 	<p>Key lessons learned with respect to social acceptance of floating modular islands by stakeholders include:</p> <ul style="list-style-type: none"> - Participatory research and development can improve social acceptance of new technologies. - Involving stakeholders in the development process can minimize the distance between developers and future users, leading to better acceptance of the project. - Stakeholders can provide valuable knowledge and introduce new perspectives to the developers, enhancing the design and development process. - Constant communication with stakeholders during the development process fosters their acceptance of the project and helps detect and correct undesirable developments early on. - Assessments of the project may vary among different locations and stakeholder groups. - Workshops and public relations actions can be effective in informing stakeholders about the project's progress and keeping them interested. - Familiarizing citizens with the concept of living on the water is important for acceptance of floating development. 	<p>The key lessons learned include:</p> <ul style="list-style-type: none"> - Stakeholder consultation is crucial for gaining a sound understanding of the stakeholder landscape and obtaining valuable insights from those living and working in the system. - Stakeholders' observations and insider knowledge are often not accessible to managers or scientists, making a trustworthy relationship between managers and stakeholders essential for gaining the necessary knowledge. - Stakeholder consultation should be flexible and designed to fit the purpose, allowing for the identification of conflicts and synergies in the coastal zone. - The input of stakeholders is critical for determining the value and capacity of the system, as their observations inform and improve science, leading to better management. - It is important to consider the possibility of biased information given by stakeholders to achieve certain goals, highlighting the need for careful consideration and verification of information provided. 	<p>The key lessons learned include:</p> <ul style="list-style-type: none"> - Involving a small group of relevant experts in the technical scoping phase is effective. - Stakeholder representativeness can be challenging, and efforts should be made to reach the right representatives. - Transparent communication with stakeholders is crucial, including reporting back to them at each stage of the project. - Conducting an initial assessment of the context and identifying stakeholders and their roles is important. - Limiting the number of interactions with stakeholders to avoid overcharging them is recommended. - The selection of a focused stakeholder group with the necessary resources can facilitate effective stakeholder involvement. - Stakeholders' input and feedback should be considered in the decision-making process, particularly in later project phases.

Table 1 above illustrates that stakeholder engagement and involvement in MU projects requires a multifaceted approach. Key elements of this approach encompass procedural development, regulatory adherence, developer and investor attraction, early stakeholder input, expert involvement, design option feedback, stakeholder collaboration, and transparent communication. These eight elements are further processed into a set of recommendations in section 3.2.

2.3. Review of published academic papers

In addition to deliverables of EU projects, a search of peer-reviewed academic literature was performed. Key words searched included combinations of: “multi-use,” “stakeholder engagement,” “co-location,” and “social acceptance.” Special attention was paid to papers that addressed the specific needs of MU projects as opposed to general environmental or sector-specific stakeholder engagement. There was also an emphasis placed on project-based learnings and recommendations as opposed to theoretical studies. Papers that focused on co-existence of industries were excluded from the review in favor of keeping only literature that addressed intentional co-location of activities.

3. RECOMMENDATIONS FOR STAKEHOLDER ENGAGEMENT IN FUTURE MULTI-USE PROJECTS

3.1. Recommendations based on UNITED pilots' experience

1. **Build an attractive and consistent narrative based on a strong knowledge base** around which to gather your stakeholders when starting your stakeholder engagement strategy.
 - Having your own data and experience to share is preferable.
 - Make the purpose of their involvement clear from the beginning.
2. **Be specific in your outreach.** While you may reach out to a broad audience in the beginning, in the process of getting familiar with the specific context of the project, build upon your first experiences and contacts to identify your key stakeholders: those that are interested in your project and interesting for your project.
3. **Be thorough in explaining the purpose and value of your multi-use project.** Ocean multi-use is a complex and badly known concept, it must be well explained to stimulate interest. Use appropriate and popular means to advertise it: documentary videos, social media publications, presentations, etc. Adapt the format and shape of your message to your audience.
4. **Make it visible and tangible.** Organize tours and visits of your installations to show the technical challenges and opportunities in their actual settings.
5. **Work with the local culture.** Your project may bring a completely new sector, activity or market to the area and the benefits may not be obvious or immediate. Solid information must be provided to your stakeholders to see the purpose of your project and embark on it.
6. **Hold at least one in-person event with the local stakeholders.** This event should include all sectors potentially affected by and interested in the MU project, as well as public representatives and non-expert local people.
 - Favor an in-person event, make it interactive, ask them for their opinion, make them play around with scenarios and predictions for the future.
 - Make it attractive: choose a well-connected and enjoyable location, offer food, have informal moments so that everyone feels well enough to speak their mind. This event will get your project known, raise awareness about the stakes, get people onboard and provide you with different perspectives and ideas.
 - Organize with care: foresee enough budget and time (half days, full days), send invitations early (public representatives have busy agendas!), provide a clear explanation and agenda of your event, choose your moment: professionals may come during the day, public will come during the evening and weekends.
 - Have solid knowledge about your topic and have already some results to show for your project. Holding such an event too early in the development stage may undermine your credibility if you are unable to answer questions or if you don't have the results to answer them.
7. **Multi-use comes with specific challenges, prepare to address them.** Making different sectors collaborate involves that they may have (1) different knowledge, expertise, limits and processes; (2) different interests.
 - You may face very complex technical challenges to solve, which will require expertise, money and time to resolve. You may face very forbidding legal/insurances/administrative processes that cannot be avoided, again this may cost time, work and money.
 - You may have to align sectors that are pursuing very different interests: economic gain might be the priority for one, while nature restoration may be the priority of another. And these interests may or may not compete, so compromises might be necessary.
 - You may have a strongly unbalanced dynamic: one sector/activity/stakeholder may hold most resources (space, financial means, permits, ready-to-use technology, e.g., OWF) and get the least

benefits, while the other may have very few resources, have many challenges to face and benefit the most from the MU situation. Strong narrative, call to innovation, predictions of synergies and mutual benefits in the future may help your case.

- You may have to align sectors and stakeholders that have a history of conflictual relationship. Slow, long-term dialogue, highlighting mutual benefits are recommended.

3.2. Recommendations from other EU projects on multi-use

In the search for establishing a more enhanced framework for stakeholder engagement and involvement in MU projects, several key elements come into play. These elements, when integrated seamlessly, contribute to a robust and comprehensive approach to engaging with stakeholders and ensuring their active participation. Based on the comparative analysis of four EU projects on MU in section 2.2, a total of eight key elements have been identified. These include:

1. Procedures for stakeholder involvement
2. Addressing legislation through EU guidelines
3. Guidelines for developers and attraction of investors
4. Early stakeholder views
5. Expert involvement in technical scoping
6. Stakeholder input on design options
7. Collaborating with existing stakeholders
8. Transparent communication and reporting

In the following section, a more detailed exploration of these key elements is provided, each representing a specific recommendation.

Recommendation 1: Develop tailored procedures for stakeholder involvement

Develop specific procedures dedicated to stakeholder involvement in MU projects. These procedures will serve as the foundation for a structured approach to engaging stakeholders. Start the stakeholder engagement journey with well-defined processes. These tailored procedures can include steps such as identifying key stakeholders, understanding their interests and expectations, determining the appropriate communication channels, and establishing clear roles and responsibilities for both the project team and the stakeholders themselves.

Recommendation 2: Utilize guidelines

When dealing with the complexity of legislative and policy variations in MU projects, especially from the perspective of permit procedures, rely on international (e.g. EU) and national⁴ guidelines. These guidelines will help ensure a unified approach that aligns with regional regulations.

Recommendation 3: Create and disseminate clear project development guidelines

To attract both developers and investors in MU projects, establish and communicate clear guidelines for project development. These guidelines act as a roadmap, making the project's benefits and opportunities more evident to stakeholders.

Recommendation 4: Acknowledge diverse stakeholder perspectives early on

In the initial phases of an MU project, recognize and consider the diverse perspectives of stakeholders. Embracing these varied viewpoints can significantly contribute to the success of the initiative. Early stakeholder input is vital for inclusivity. It is equally crucial to provide stakeholders with regular updates, such as detailing the actions taken based on their input (see recommendation 8).

⁴ An example of a national guideline for the permitting procedure in the Netherlands can be found here: <https://www.noordzeeloket.nl/beheer/afwegingskader/5-toetsen/>

Recommendation 5: Involve domain experts in technical scoping

During the technical scoping phase of an MU project, engage a smaller group of experts with specific domain knowledge. Their insights will ensure the project maintains a technically sound trajectory, enhancing stakeholder confidence and involvement.

Recommendation 6: Seek stakeholder input on design options

As the MU project advances, actively seek stakeholder input on specific design options for the multi-use solution. This empowers stakeholders to shape the project's direction, fostering a sense of ownership and participation.

Recommendation 7: Foster close collaboration with engaged stakeholders

Strengthen the framework by maintaining close and continuous collaboration with stakeholders already involved in the MU projects. Building strong relationships with these stakeholders leads to better understanding and more effective decision-making.

Recommendation 8: Prioritize transparent communication and reporting

Maintain transparency throughout the MU project's lifecycle by consistently communicating with stakeholders and providing detailed reports. Keeping stakeholders informed about actions taken based on their input demonstrates respect for their voices and concerns.

3.3. Recommendations from peer-reviewed academic papers

Familiar considerations for stakeholder engagement in single-use coastal and maritime spaces also apply to stakeholder engagement process for multi-use, making the sector specific literature a useful starting point. However, MU specific knowledge is needed to better understand how the interactions of these industries and stakeholders affect the acceptance and efficacy of MU projects. Review of peer-reviewed academic papers on multi-use projects, including from other EU projects like those above, highlights the need for context-specific stakeholder engagement tools and processes. These include temporal, geographical, sectoral, and scalar considerations for each multi-use project.

Recommendation 1: Consider local context

Emerging most consistently across reviewed literature was the importance of recognizing site-specific context, including cultural, historic, and socioeconomic factors for understanding stakeholder acceptance and perception of MU projects. EU H2020 Blue Growth Farm project collaborators recommended understanding community history with each industry before proposing an MU combination (Billing et al., 2021). For example, in some projects, there was a contested history with aquaculture that had created a negative perception of all aquaculture, which would then affect any MU combination involving the sector. However, in other areas this would not necessarily be the case, so each project should understand those considerations (Stuiver et al., 2021). In analysis of the Blue Growth Farm project, Billing et al. (2021) suggest that MU projects should “fit” within the context of the area and contribute to “culture, sense of identity, and the local market” (Billing et al., 2021). Furthermore, conclusions from the MERMAID and TROPOS projects recommend investing resources in understanding MU localities at the beginning of projects in order to better identify the relevant stakeholders, but also understand why their roles, objectives, and initial attitudes or perceptions may be what they are, which can help to legitimize the project and implement it more efficiently (Stuiver et al., 2021). Van den Burg et al. (2016) came to similar conclusions in an analysis of the participatory design processes in the MERMAID project, recommending that the process be tailored to the needs of the project locale and objectives in recognition that the processes and tools to use will differ as well as the outcomes (Van den Burg et al., 2016).

Recommendation 2: Include a wide range of stakeholders

Another key consideration emerging from the literature was the need to consider a wide range of stakeholder groups for each different MU combination, as some groups may play a larger role in certain MU combinations than others. Considering a diverse group of stakeholders was found to be key for the most productive dialogue and cooperation and allowed for knowledge sharing and capacity building to reach all the necessary groups (Bocci et al., 2019; Calado et al., 2022; Onyango et al., 2020). Van den Burg et al. (2016) found that in the MUSES project,

different MU types gained knowledge from different stakeholders, with single-use stakeholders providing more information in OW and aquaculture combinations while environmental protection and UCH combinations were dominated by mostly cross-sector stakeholders. Based on the region, these groups may play a larger or smaller role as well (Van den Burg et al., 2016). In the TROPOS project, engaging a range of stakeholders was crucial to understanding the differing perspectives of users, visitors, nearby communities and other interested groups (Stuiver et al., 2021). Schupp et al. (2021a) found that the most frequently mentioned recommendation from stakeholders was to strengthen dialogue opportunities between stakeholders beyond the ad hoc opportunities that are currently most prevalent. This would help address concerns, further demonstrate added value, and extend to cross-border discussions to streamline approaches based on commonalities (Schupp et al., 2021a). Similarly, Depellegrin et al. (2019) recommended facilitating cross-sectoral platforms that include all of these stakeholder groups to promote knowledge exchange and ensure engagement at multiple levels and sectors.

Recommendation 3: Consider each constituent sector both separately and combined

In these engagement processes, researchers recommended a multi-faceted approach that addressed the individual sectors separately, as well as together, to better understand what information has shaped stakeholder acceptance, drivers, barriers, and attitudes. Particularly in the offshore renewable energy and aquaculture sectors, the importance of social and personal context rather than just technical and scientific arguments has been well documented, but when the industries are combined, these contexts may interact in a new way (Abhinav et al., 2020; Schupp et al., 2021b). As part of the EU H2020 project “The Blue Growth Farm,” researchers identified multi-scalar and multi-sectorial considerations for social license to operate (SLO) and project acceptance by communities for MU and recommended asking questions related to the separate industries as well as about the combined activities, as MU is not widely known and it was important to understand if hesitation about a project was due to their knowledge of just the separate industries or the idea of combining them (Billing et al., 2021). Onyango et al. (2020) found that even when stakeholders were generally accepting of MU, they required sector specific data to shape their final opinions, so it was important to understanding the thought processes behind stakeholder opinions.

Recommendation 4: Recognize the level of prior knowledge of involved stakeholders and communities

Recognition that MU is still not yet widely known or understood by the public as well as users of marine space was frequently mentioned as a key consideration for guiding stakeholder engagement. This meant that education and knowledge sharing were a key part of recommendations for stakeholder engagement, but also salient for a more efficient and effective process was understanding the level of prior knowledge of a stakeholder group before a workshop, survey, or other stakeholder engagement activity. The stakeholder process is different based on how much people already are aware of multi-use in general and the projects (Stancheva et al., 2022; Stuiver et al., 2021). The level of familiarity with both the individual industries as well as the specifics of MU significantly changed the type and content of feedback received, as well as the acceptance levels in some cases (Schupp et al., 2021b; Stuiver et al., 2021; Van den Burg et al., 2016). Additionally, filling in knowledge gaps for specific groups with targeted information facilitated a more complete debate on the feasibility of a project (Schupp et al., 2021a). Furthermore, many stakeholder concerns center around environmental issues, which highlights the importance of understanding their perception of what those issues are, again from each separate industry as well as the combinations, to be able to give more informed, and thus valuable, input (Billing et al., 2021; Schupp et al., 2021a; Schupp et al., 2021b). It was also found to be important to explain the concept and definition of MU to build knowledge on the concept in the longer term. In addition to the specific project to understand general MU concerns vs. project-specific concerns (Stancheva et al., 2022; Van den Burg et al., 2016).

Recommendation 5: Adjust engagement processes and tools throughout project phases

Researchers emphasized the need to adjust stakeholder engagement tools and processes at each stage of the planning and installation process. Clarity on how and where the feedback would be used at each project stage was an essential component to making stakeholders feel their feedback was valued, thus reducing stakeholder fatigue and maximizing added value to the process. All projects highlighted the importance of early stakeholder engagement, but also noted the need to involve certain groups at different times (Bocci et al., 2019; Calado et al., 2019). For example, Stuiver et al. (2021), recommend a broader range of stakeholders in the early exploratory phases,

but a smaller, more technical group of experts in the scoping phase (Stuiver et al., 2021). To adapt stakeholder engagement at the different phases, it was also very important to be clear about the goals of a workshop or other tool. Van Den Burg et al. (2016) highlight specifically the different needs of “brainstorming/getting to know each other vs. coming to agreement” activities and how those types of activities must be planned differently and those differences communicated clearly. For example, in the MERMAID project, at the Baltic Sea site, participants discussed a specific site for a MU platform, while the Atlantic and Mediterranean sites were looking at the more general potential in these regions (Stuiver et al., 2021). These discussions must be structured to provide individualized feedback and maximize the utility of stakeholder resources.

3.4. Guidelines for SH engagement

National planning and policy enabling effective engagement

A sustained dialogue on the national (or sub-national depending on the planning structure) level is instrumental in bringing together diverse stakeholders to drive the development of multi-use projects. The government's role in facilitating these dialogues and providing guidance on user representation is vital for creating an environment where the interests of various sectors are balanced and multi-use can be developed. Such dialogue can facilitate the collective exchange of knowledge and best practices among various stakeholders, including government bodies, industry representatives, research institutions, and environmental organizations to accelerate the development of multi-use projects. In turn this can help in shaping and adapting relevant policy and regulations to accommodate the evolving needs of multi-use initiatives.

Key recommendations for governments:

- o **Encourage sustained dialogue:** Encourage continuous dialogue on ORE (Offshore Renewable Energy) use combinations, spanning both strategic and operational phases of ORE development. Establish a dedicated national stakeholder platform in collaboration with relevant authorities and working groups to facilitate the exchange of knowledge.
- o **Foster active industry involvement:** Foster active industry engagement in collaborative efforts to identify suitable pilot projects that assess the impacts of ORE use combinations on the marine environment and nature conservation. Industry involvement in sharing data from other projects and EIA can also help in building the knowledge base for future rounds of planning.
- o **Establish user representation guidance (esp. for the offshore wind farm projects):** Government involvement is essential in guiding and facilitating the establishment of user representation structures within multi-use projects. This ensures that the voices and interests of different stakeholders, such as fishing communities, energy companies, and environmental groups, are heard and considered during project planning and decision-making.

EXAMPLE from the Dutch Pilot: Dutch Community of Practice North Sea (COPNS) for Offshore Multi-Use

The Dutch pilot of the UNITED mainly relied on the existing engagement structure present in the Netherlands, so called Dutch Community of Practice North Sea (COPNS). The COPNS was initiated by the Ministry of Agriculture, Nature, and Food Quality (MinANFQ) and the Ministry of Infrastructure and Water Management, in response to the increasing importance of discussions on ORE multi-use in the Netherlands, to reconcile different national priorities. Recognizing the need for coordination and the exchange of experiences to advance multi-use, the Netherlands Enterprise Agency (RVO) was tasked with establishing COPNS. This community serves as an incubator for blue economy innovations, supporting initiatives related to floating solarPV, aquaculture, ocean energy, and multi-use. Key functions of COPNS include bringing together various stakeholders in the North Sea region for discussions and collaborations, where new initiatives are formed and solutions are developed. This platform ensures that entrepreneurs take responsibility for their business cases, risks, and investment decisions, while the Dutch Government facilitates licensing, creates regulatory frameworks, and conducts strategic environmental impact assessments. The COPNS meetings witness active participation from around 50 to 70 stakeholders, representing government bodies, offshore energy companies, research institutes, the fishing industry, water sports, and the financial sector. Topics discussed in these meetings span ORE use combinations, nature conservation, food production, policy and regulations, research and innovation funding, and shellfish bed restoration, among others.

Multi-Use project level stakeholder engagement

Making different sectors collaborate involves that they may have (1) different knowledge, expertise, limits and processes; (2) different interests.

- You may face very complex technical challenges to solve, which will require expertise, money and time to resolve. You may face very forbidding legal/insurances/administrative processes that cannot be avoided, again this may cost time, work and money.
- You may have to align sectors that are pursuing very different interests: economic gain might be the priority for one, while nature restoration may be the priority of another. These interests may or may not compete, so compromises might be necessary.
- You may have a strongly unbalanced dynamic: one sector/activity/stakeholder may hold most resources (space, financial means, permits, ready-to-use technology, e.g., OWF) and get the least benefits, while the other may have very few resources, have many challenges to face and benefit the most from the MU situation. Strong narrative, call to innovation, predictions of synergies and mutual benefits in the future may help your case.
- You may have to align sectors and stakeholders that have a history of conflictual relationship. Slow, long-term dialogue, highlighting mutual benefits are recommended.
- Research the local history and experience with each component industry of the project: are there existing conflicts or tensions between certain stakeholder groups; what groups will need to be educated on which aspects of the project. This is likely to differ by location.

Planning/ design stage of multi-use

In the process of planning and creating a multi-use project, it is crucial to develop and implement a stakeholder strategy. This strategy serves as a guide, clarifying the advantages and opportunities of the multi-use project for stakeholders. During the early stages of an MU project, it is imperative to acknowledge and take into account the diverse viewpoints of stakeholders. Embracing these varied perspectives can greatly enhance the project's chances of success. Incorporating input from stakeholders at an early stage is essential for fostering inclusivity.

As with any stakeholder engagement process, it is recommended to start by mapping all stakeholders that might be impacted by or have an impact on your project, including their interests and expectations. In the case of ocean multi-use, these will likely be the other sectors and industries using the sea, as well as coastal communities, public authorities, environmental NGOs and land industries that may have a stake in the activities you plan on conducting.

1. *A strong core team*

Based on the experience of the pilots of UNITED, the most important stakeholders to engage from the planning stage of the project are the two (or more) sectors whose activities are to be combined. Establish a dialogue from the start and make sure to have them exchange on the content of their activities: they should share expertise, knowledge, provide thorough explanations of their specific core business to each other, etc. Take the time to understand what the stakeholders' level of prior knowledge about each industry being combined is, as well as about the concept of multi-use in general. Working with different expertise may bring lexical issues, therefore a shared glossary may be envisaged where technical terms and concepts are described so that both industries feel comfortable working with each other.

During the first encounters, each side should identify what benefits and synergies are expected from the multi-use, and they should be made to start working with each other in solving identified barriers and challenges in the way of reaching their objectives. Suggestions on the formats of these first events are: workshops, webinars and presentations, one-to-one or small group informal meetings, etc. When working with industries and people that do not know each other well, specific activities such as infrastructure visits or team-building activities may help in creating a confident group dynamic.

During the planning and design stage, major challenges are likely to be identified. A suggestion to address them is to have dedicated smaller work teams including experts from each involved sector, with a 'neutral' mitigator

person that might be specifically hired for this purpose. The challenges may be technical ones such as technical scoping, requiring the design of specific structures, infrastructures, processes, etc. But they may also be legal ones, or lack of funds, lack of existing insurances, foreseen resistance from another stakeholder, conflicting interests, etc. Appropriate expertise should be identified within the existing team and/or hired if found lacking. Seeking stakeholder input during technical scoping and developing design options empowers stakeholders to shape the project's direction, fostering a sense of ownership and participation.

From these first stakeholder engagement steps the multi-use partners should build a strong and consistent narrative based on strong knowledge based, to advocate for their project, as well as identify and map the stakeholders to be engaged for the future of their project.

Stakeholder engagement is also relevant with respect to the complexity of legislative and policy variations in MU projects. This applies specifically to permit procedures. Where available, international and national guidelines should be followed here, helping to ensure a unified stakeholder engagement approach that aligns with regional regulations.

After following the above-mentioned stakeholder engagement steps, the development of appropriate stakeholder communication channels is essential. This includes, among others, establishing and describing clear roles and responsibilities for both the project team and the stakeholders themselves. It also includes maintaining transparency throughout the MU project's lifecycle by consistently communicating with stakeholders and providing detailed reports. Keeping stakeholders informed about actions taken based on their input demonstrates respect for their voices and concerns.

Thus, building and maintaining close and continuous collaboration with stakeholders already involved in the MU projects is essential. Building and maintaining strong relationships with stakeholders leads to better understanding and more effective decision-making. Not only during the design and planning phase but also during the implementation/building phase and the operational phase.

Implementation/building stage of multi-use

2. Getting people on board

A multi-use project is more likely to be successful with the support of the other marine industries, the local population and policymakers.

When reaching out to your identified stakeholders, make sure to work with the local culture. Your project may bring a completely new sector, activity or market to the area and the benefits may not be obvious or immediate. Solid information must be provided to your stakeholders to see the purpose of your project and embark on it. Even if the sector or activity is not completely new, there may be a contested history or version that is more unknown (example: different types of aquaculture)- ask questions about perceived benefits and costs so that pertinent information can be shared and misunderstandings can be cleared up)

Because multi-use is a still poorly known and understood concept, having a broadly streamed and easily digested advertisement tool, such as video-documentaries and social media content, may be very helpful in raising awareness about your project.

A socio-economic workshop may be a good way to get the project known and to engage all these actors. While the implementation and building stage is appropriate for such an event, it should be done with solid knowledge about the topic, with some results and predictions ready to be shown and discussed. Holding such an event too early in the development stage may undermine your credibility if you are unable to answer questions or if you don't have the results to answer them.

The workshop should be an in-person event, in an attractive location, that has people think about the project, to identify the social and economic impact they believe would be generated by it. Such an event should include all sectors potentially affected by and interested in the MU project, as well as public representatives and non-expert local people. An informal and interactive organization is recommended: prepare scenarios and have your guests predict future impact for them, have them classify impact by importance and relevance, etc. Make sure to prepare

in advance and to send invitations early, so that people with busy agendas, such as public representative, can attend.

In the beginning of a stakeholder engagement strategy, it is advised to reach out to a broad audience. Yet, after the first stages, the key stakeholders should be identified. These key people are the ones that show interest in the project and that have something to bring to it. Once these are known, be specific and consistent in reaching out to them: issue invitations to specific people, highlight the value of their contribution (the expertise they bring) and how they may benefit from engaging in the project.

Specific stakeholders can provide value at different stages in the process. Once a broad network of stakeholders is established, subsets of this network can be invited to workshops addressing more specific issues or steps. In this way, you gain the most valuable information while limited stakeholder fatigue. Address specific technical challenges with webinars for expert people: gather experts in the topic you want to discuss, explain your challenge, how it was addressed, what were your successes and failures, and discuss it with them. Make sure that knowledge exchange goes both ways by being transparent with the people whose expertise you seek. Webinars may be digital, as most professionals will be familiar with that format and because it will allow for people from other countries and regions to participate as well.

During all stakeholder engagement events, state clearly from the beginning how their feedback will be used and how their perspective enriches your project.

Operation/ running stage of multi-use

3. Keep feeding your support

A running project is a great opportunity to make multi-use visible and tangible, by organizing tours and visits of your installations, for professionals and the broad public if that is possible. If tours are too difficult or too risky to implement, share videos, pictures, reportages, etc. about how your project is running, what your results are and what objectives were achieved.

3.5. Main Take-aways From UNITED Pilots

A detailed description and breakdown of the engagement metrics and interventions of each of the UNITED pilots can be found in detail within Deliverable 5.4, however, we summarize the key findings and take away of each of the pilots below with some generalized outcomes. The specifications and limitations of the engagement can be found in detail within D5.1 and D5.4.

German Pilot

The German pilot engaged a diverse range of stakeholders, including ministries, commercial actors, local and regional authorities, educational institutes, and smaller regional schools. These outreach efforts created significant social synergy effects, expanding the understanding of multi-use benefits and drawbacks, fostering public interest, and enhancing acceptance of such activities. One of the key lessons learnt is the importance of involving a wide spectrum of stakeholders. For instance, collaborations with educational institutions like the Club of Rome school allowed students to gain practical scientific experience in marine multi-use, inspiring potential future mariculturists and scientists. This not only provided educational benefits but also generated new insights into algae cultivation. The use of online workshops emerged as an effective method for engaging participants and external experts. These workshops enhanced the knowledge base and advanced the UNITED project goals. They proved to be a long-term method for sharing practical experiences, as they were recorded and made accessible to a wider community, allowing end-users to engage at their leisure. Engagement with policymakers and key stakeholders led to significant outcomes, including potential job creation in the aquaculture sector and efforts to reconfigure maritime spatial planning to prioritize multi-use practices. This broadened the understanding of key personnel regarding the potential of such activities, heightening interest among authorities and catalyzing further multi-use initiatives in Germany. The progress and data generated by the German pilot provided proof-of-concept applications, substantiating the feasibility and benefits of these initiatives. Proactive media engagement and participation in prominent conferences were crucial in disseminating information to the public and facilitating connections with governmental and permitting agencies, offshore suppliers, shipping companies, and the wind energy sector. These

activities laid a strong foundation for future projects and commercial utilization in the German North Sea and beyond.

Dutch Pilot

The Dutch pilot's stakeholder engagement included engagement with external parties which revealed a predominantly high level of acceptability across most impacts within the respondents and participants. This indicates that stakeholders anticipate positive and desirable outcomes, such as job creation, improved energy and food security, healthy food production, efficient space utilization, and reduced political tensions from the implementation of multi-use at sea. Interactions with various stakeholders, including ministries, commercial actors, local authorities, and educational institutions, led to significant social synergies. The efficient utilization of space emerged as a cornerstone principle, minimizing the spatial footprint of individual activities and preserving larger areas of the North Sea for other uses. This strategic allocation promoted equitable access and facilitated harmony among diverse interests within the marine environment. Collective outreach from the multiple actors and sectors involved in the development of multi-use space (energy, food, etc.) and communication efforts emphasized the importance of unified messaging and community engagement. These initiatives amplified the project's impact, effectively conveying the benefits of multi-use practices to a broader audience. By prioritizing collective vision and ownership in the 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.

Belgian Pilot

The Belgian pilot's assessment of stakeholder engagement and social acceptability, revealing a nuanced landscape of impacts. Positive outcomes such as increased visibility of offshore activities, enhanced harbor operations, and the promotion of local food production were generally well-received. However, concerns emerged over potential negative public perceptions of aquaculture, adverse effects on small fisheries, and increased boat traffic within wind parks. The transformation of local products into luxury items or restricting the availability to local communities, while important for higher economic viability, was adverse to local and regional desires as such actions limit the accessible to products or locales. The Belgian stakeholder engagements emphasized the critical importance of organizing workshops and fostering interactions among diverse stakeholders. These sessions provided essential platforms for information exchange, collaborative development, and co-management of Belgium's limited Exclusive Economic Zone (EEZ). Given the constrained space and diverse demands on these waters, ongoing collaboration and multi-use development initiatives are imperative. The stakeholder engagement process in the Belgian pilot revealed a prevailing sense of optimism regarding multi-use initiatives. There is a recognized need to establish a more structured ecosystem for stakeholder engagement, potentially through a dedicated Community of Practice, similar to the successful models observed in other pilots, such as the Dutch example.

Danish Pilot

In Denmark, offshore wind farms generally enjoy high societal acceptance, minimizing concerns about public support for these developments. However, scaling up the multi-use concept introduces complexities that could challenge offshore wind developers, primarily due to potential interference with ongoing operations and maintenance. Despite these challenges, the project revealed several highly acceptable positive impacts, including job creation for guides and boat operators, and increased awareness about wind energy among diverse audiences, such as tourists, professionals, and students. These benefits are seen as valuable, especially at the local level. Five significant social impacts were identified by the project consortium and key stakeholders; foremost is the creation of local employment opportunities for guides and boat operators, which, while less significant nationally, hold considerable local value. The potential to raise public awareness about wind energy is substantial, benefiting local and broader audiences. The Danish site had already been hosting educational tours for international school and business groups, indicating a preexisting interest in offshore facilities. The integration of educational programs and online tours under the UNITED project aims to broaden engagement and acceptance across various communities, offering a replicable model for similar developments. The project's visibility and strategic partnerships with local museums and blue growth initiatives have significantly increased visitor numbers for boat tours and turbine-climbing experiences. These collaborations have broadened outreach, attracting businesses, educational institutions, and tourists. This heightened interest benefits both the tourism and wind energy sectors. Developer groups have also recognized the value of firsthand exposure to offshore wind operations, scheduling tours for their employees

and stakeholders. The project's comprehensive approach to outreach and education has sparked enthusiasm among visitors and bolstered positive perceptions of offshore wind energy as a viable renewable source. Establishing a structured stakeholder engagement ecosystem, potentially through a Community of Practice, could further enhance collaboration and sustainable development in marine environments.

Greek Pilot

The Greek pilot within the UNITED project embarked on a comprehensive assessment to measure the social acceptability of various impacts resulting from their initiatives. Among the most positively received outcomes was the significant increase in local revenues, driven by the attraction of dolphins to the aquaculture site, which in turn drew visitors. This influx sparked the development of diving activities, restaurants, hotels, and other amenities, enhancing the local economy and quality of life without the downsides of mass tourism. To ensure sustainability, the site limits visitors to 16 per day.

Positive educational impacts were also notable, with increased awareness and education on environmental protection facilitated through videos and testimonials, alongside an enriched diving experience. However, challenges included Greek consumers' preference for wild-caught fish over aquaculture products, and some locals' concerns over the rise in tourism potentially disrupting the community's social fabric and cultural dynamics.

The project's stakeholder engagement efforts successfully reached various groups, including traditionally hard-to-reach stakeholders. Tourists gained valuable insights into environmental conservation and the complexities of fish farming, which helped dispel myths about aquaculture's negative impacts and underscored its role in mitigating overfishing. The immersive scuba diving experiences fostered a deeper connection with the marine ecosystem, appreciated by local authorities, SMEs, and educational programs collaborating with the pilot.

Lessons learned from the Greek pilot highlight the importance of balancing economic development with social and cultural considerations. The pilot demonstrated that targeted visitor limits and educational outreach can enhance local acceptance and support for multi-use initiatives. Future recommendations include continuing to educate consumers on the benefits of aquaculture and engaging local communities in tourism planning to mitigate potential disruptions, ensuring sustainable and inclusive growth. This approach not only optimizes resource utilization but also strengthens community ties and fosters a collective commitment to environmental stewardship.

Generalisations

The UNITED project's diverse case studies reveal several commonalities in stakeholder engagement and social acceptability that can inform future multi-use maritime initiatives. Across all pilots, inclusive and strategic stakeholder interactions proved essential for fostering the success of these projects. Engaging a broad spectrum of stakeholders, including educational institutions, ministries, commercial actors, local authorities, and the public, significantly expanded the understanding of multi-use benefits and drawbacks. Collaborative efforts with educational institutions provided hands-on experiences in marine activities, generating educational benefits and new insights, while online workshops effectively shared practical experiences and advanced project goals by making them accessible to a wider audience. Efficient space utilization emerged as a critical principle, promoting equitable access and harmony among diverse interests within marine environments. Collective outreach and communication efforts were crucial in conveying the benefits of multi-use practices to a broader audience, fostering a culture of collaboration and cooperation. The importance of structured stakeholder engagement ecosystems, such as Communities of Practice, was highlighted across the pilots. These ecosystems provided platforms for information exchange, collaborative development, and co-management of maritime zones, which are essential given the constrained space and diverse demands on these waters. The pilots also underscored the need for balancing economic development with social and cultural considerations. While positive impacts such as job creation, increased tourism, and enhanced awareness of environmental conservation were commonly noted, challenges like public perceptions of aquaculture and the impacts of increased tourism on local communities necessitated proactive design adjustments and continuous community engagement. The true challenge of multi-use initiatives lies in effectively engaging and addressing the diverse needs of a broad spectrum of stakeholders. Establishing integrated stakeholder ecosystems within a Community of Practice provides a promising solution. By offering a non-political platform for learning and collaboration, these CoPs create opportunities for different sectors to develop synergistic



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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.

Booklet/infographic for SH engagement



These recommendations were developed in 2023 under the H2020 EU UNITED project. Scan the QR-code for full report.

4. REFERENCES

- Abhinav, K. A., Collu, M., Benjamins, S., Cai, H., Hughes, A., Jiang, B., Jude, S., Leithead, W., Lin, C., Liu, H., Recalde-Camacho, L., Serpetti, N., Sun, K., Wilson, B., Yue, H., & Zhou, B.-Z. (2020). Offshore multi-purpose platforms for a Blue Growth: A technological, environmental and socio-economic review. *Science of The Total Environment*, 734, 138256. <https://doi.org/10.1016/j.scitotenv.2020.138256>
- Arnstein, S.R., (1969) A Ladder Of Citizen Participation. *Journal of the American Institute of Planners*, 35:4, 216-224, DOI: 10.1080/01944366908977225
- Billing, S.-L., Charalambides, G., Tett, P., Giordano, M., Ruzzo, C., Arena, F., Santoro, A., Lagasco, F., Brizzi, G., & Collu, M. (2022). Combining wind power and farmed fish: Coastal community perceptions of multi-use offshore renewable energy installations in Europe. *Energy Research & Social Science*, 85, 102421. <https://doi.org/10.1016/j.erss.2021.102421>
- Bocci M., Ramieri E., Lukic I., Buchanan B., Buck B.H., Kafas A., Lewis Carlson H., Onyango V., Schupp M.F., Sarretta A., Vassilopoulou V.C., Vergilio M.H.S. (2017). Stakeholder identification and engagement process in case studies. *European Union's Horizon 2020 MUSES project, Deliverable 3.2*. <https://muses-project.com/muses/wp-content/uploads/sites/70/2017/07/D3.2-WP3-Stakeholder-Engagement.pdf>
- Bocci, M., Sangiuliano, S. J., Sarretta, A., Ansong, J. O., Buchanan, B., Kafas, A., Caña-Varona, M., Onyango, V., Papaioannou, E., Ramieri, E., Schultz-Zehden, A., Schupp, M. F., Vassilopoulou, V., & Vergilio, M. (2019). Multi-use of the sea: A wide array of opportunities from site-specific cases across Europe. *PLOS ONE*, 14(4), e0215010. <https://doi.org/10.1371/journal.pone.0215010>
- Calado, H., Papaioannou, E. A., Caña-Varona, M., Onyango, V., Zaucha, J., Przedzymirska, J., Roberts, T., Sangiuliano, S. J., & Vergilio, M. (2019). Multi-uses in the Eastern Atlantic: Building bridges in maritime space. *Ocean & Coastal Management*, 174, 131–143. <https://doi.org/10.1016/j.ocecoaman.2019.03.004>
- Depellegrin, D., Venier, C., Kyriazi, Z., Vassilopoulou, V., Castellani, C., Ramieri, E., Bocci, M., Fernandez, J., & Barbanti, A. (2019). Exploring Multi-Use potentials in the Euro-Mediterranean sea space. *Science of The Total Environment*, 653, 612–629. <https://doi.org/10.1016/j.scitotenv.2018.10.308>
- Drigkopoulou, I., Vlachas, P., Bourgos, P., Tzifa, E., Laskaridis, V., Ntroukou, M., Demesticha, A., Jaeger, M., Strothotte, E., Mashkina, O., Berge, M., Lukic, I., Ziemba, A., Santjer, R., de Korte, E., Thoctaridis, K., Callitsis, K., Iatrou, S., Stavrou, A. (2020). Framework and Practical Guidelines for Stakeholder Engagement. European Union's Horizon 2020 UNITED project, Deliverable 5.1. https://www.h2020united.eu/images/PDF_Reports/D51_Framework_and_practical_guidelines_for_stakeholder_engagement_revision_dec2021_220207.pdf
- European Commission. (2014). Final Report Summary – COEXIST (Interaction in coastal waters: A roadmap to sustainable integration of aquaculture and fisheries). *European Commission. CORDIS EU research results, online*. <https://cordis.europa.eu/project/id/245178/reporting>
- European Commission. (2016). Final Report Summary – MERMAID (Innovative Multi-purpose off-shore platforms: planning, Design and operation). *European Commission. CORDIS EU research results, online*. <https://cordis.europa.eu/project/id/288710/reporting>
- Jak, R.G., Sterenborg, J., Jonbloed, R.H., Tamis, J.E. (2019). HSE Guidelines. European Union's Horizon 2020 Space@Sea project. <https://spaceatsea-project.eu/images/d2.2.pdf>
- Lüthje, C. (2017). Report on How to Increase Social Acceptance. *European Union's Horizon 2020 Space@Sea project, Deliverable 7.4*. <https://spaceatsea-project.eu/images/d7.4.pdf>
- Onyango, V., Papaioannou, E., Schupp, M. F., Zaucha, J., Przedzymirska, J., Lukic, I., Varona, M. C., Schultz-Zehden, A., Giannelos, I., Läkamp, R., & van de Velde, I. (2020). Is Demonstrating the Concept of Multi-Use Too Soon for the North Sea? Barriers and Opportunities from a Stakeholder Perspective. *Coastal Management*, 48(2), 77–95. <https://doi.org/10.1080/08920753.2020.1728206>
- Schultz-Zehden, A., Lukic, I., Onwona Ansong, J., Altvater, S., Bamlett, R., Barbanti, A., Bocci, M., Buck, B.H., Calado, H., Caña Varona, M., Castellani, C., Depellegrin, D., Schupp, M.F., Giannelos, I., Kafas, A., Kovacheva, A., Krause, G.,

-
- Kyriazi, Z., Läkamp, R., Lazić, M., Mourmouris, A., Onyango, V., Papaioannou, E., Przedzimirska, J., Ramieri, E., Sangiuliano, S., van de Velde, I., Vassilopoulou, V., Venier, C., Vergílio, M., Zaucha, J., Buchanan, B. (2018). Ocean Multi-Use Action Plan. *European Union's Horizon 2020 MUSES project*. Edinburgh. <https://muses-project.com/wp-content/uploads/sites/70/2018/10/MUSES-Multi-Use-Action-Plan.pdf>
- Schupp, M. F., Bocci, M., Depellegrin, D., Kafas, A., Kyriazi, Z., Lukic, I., Schultz-Zehden, A., Krause, G., Onyango, V., & Buck, B. H. (2019). Toward a Common Understanding of Ocean Multi-Use. *Frontiers in Marine Science*, 6, 165. <https://doi.org/10.3389/fmars.2019.00165>
- Schupp, M. F., Kafas, A., Buck, B. H., Krause, G., Onyango, V., Stelzenmüller, V., Davies, I., & Scott, B. E. (2021). Fishing within offshore wind farms in the North Sea: Stakeholder perspectives for multi-use from Scotland and Germany. *Journal of Environmental Management*, 279, 111762. <https://doi.org/10.1016/j.jenvman.2020.111762>
- Schupp, M. F., Krause, G., Onyango, V., & Buck, B. H. (2021). Dissecting the offshore wind and mariculture multi-use discourse: A new approach using targeted SWOT analysis. *Maritime Studies*, 20(2), 127–140. <https://doi.org/10.1007/s40152-021-00218-1>
- Stancheva, M., Stanchev, H., Zaucha, J., Ramieri, E., & Roberts, T. (2022). Supporting multi-use of the sea with maritime spatial planning. The case of a multi-use opportunity development—Bulgaria, Black Sea. *Marine Policy*, 136, 104927. <https://doi.org/10.1016/j.marpol.2021.104927>
- Stuiver, M., van den Burg, S., Chen, W., Hagggett, C., Rudolph, D., & Koundouri, P. (2021). Stakeholder Involvement in Technological Design: Lessons Learned from the MERMAID and TROPOS Projects. In P. Koundouri (Ed.), *The Ocean of Tomorrow: The Transition to Sustainability – Volume 2* (pp. 25–37). Springer International Publishing. https://doi.org/10.1007/978-3-030-56847-4_2
- Van den Burg, S., Stuiver, M., Norrman, J., Garção, R., Söderqvist, T., Röckmann, C., Schouten, J.-J., Petersen, O., García, R. G., Diaz-Simal, P., De Bel, M., Meneses Aja, L., Zagonari, F., Zanuttigh, B., Sarmiento, J., Giannouli, A., & Koundouri, P. (2016). Participatory Design of Multi-Use Platforms at Sea. *Sustainability*, 8(2), Article 2. <https://doi.org/10.3390/su8020127>
- van den Burg, S. W. K., Schupp, M. F., Depellegrin, D., Barbanti, A., & Kerr, S. (2020). Development of multi-use platforms at sea: Barriers to realising Blue Growth. *Ocean Engineering*, 217, 107983. <https://doi.org/10.1016/j.oceaneng.2020.107983>

5. ANNEXES

ANNEX 1 – Detailed list of stakeholder engagement activities provided by 4 UNITED pilots

German pilot

The German Pilot has organised several educational and awareness raising events the local schools, students had an opportunity to get informed about the concept of offshore aquaculture, multi-use and UNITED pilot. Many of the students and professors participated in the organised tour to the farm close to shore and demonstration activities. Moreover, several independent stakeholder meetings took place in person over the course of 2020 – 2023. In late 2022, the pilot has also organised a workshop focusing on the socio-economic aspects of the pilot. The German Pilot has also been extensively presented at several international in-person events, for example:

- Presentation and poster at Wind Energy conference 2021 in Copenhagen
- Presentation at Aquaculture Europe 2020, 2021, 2022
- Presentations at the 5 UNITED Workshops
- Presentation at Wind Energy association in Germany
- Enlit Europe Conference in Frankfurt, Germany November 2022

Belgian pilot

In December 2022, the pilot has organised a workshop focusing on the social and economic aspects of the pilot. This workshop (organized under T5.3), allowed to get feedback from the participants on the intermediate results of the business case of the pilot, and discussion about commercialization. The afternoon was dedicated to a co-creation session for imagining the different social impacts of an upscaled pilot (4 scenarios with different multi-use combinations were explored), considering its potential positive and negative implication and possible mitigation measures of the negative impacts. This participative session showed which impacts are the most salient for local stakeholders, and which ones should be mitigated (in case of negative impact) or optimised (in case of positive impact).

Twenty external participants attended, along with the pilot partners, with representatives from the following target groups of stakeholders:

- **Research:** Flemish Marine institute, Flanders Research Institute for Agriculture, Fisheries and Food.
- **Business:** Antwerp Science Park, Ostend Science Park, BLUeBridge/Blue Cluster (Flemish spearhead cluster for blue economy), DEME (infrastructure engineering), Otary (wind farm operator), IMDC (environmental consultant).
- **Public organization at different levels:** Ostend Municipality, Federal Public Service for Health, Food chain safety and Environment.
- **Fisheries:** Visaktua (local trade magazine), OVIS (funding organization for innovative fishery)
- **Tourism:** Nieuwpoort leisure sailing port, Ostend Tourism Office, MeetInOostende (local event planner), Festival Ostend at Anchor (largest maritime festival at the North Sea, taking place in June).

The workshop has been facilitated with in-person co-creation techniques (post-it rounds, ranking exercise). The workshop was facilitated by the pilot partners themselves, after they attended a training session delivered by the WP5 partner ACTeon.

The Belgian pilot partners kept their coastal activities open to the public where the general public, particularly the local inhabitants, had an opportunity to get informed about the concept of offshore aquaculture, multi-use and UNITED pilot. Many of the locals got to witness the pilot demonstration activities. Moreover, several independent stakeholder meetings took place in person over the course of 2020 – 2023.

The Belgian pilot was also presented at over 10 events (listed in Table 2 below) and in December 2022, the Belgian Pilot was presented at the Blue Innovation Award event in Antwerp (Belgium) and won the Blue Cluster Blue Innovation Swell Award 2022 for collaboration.

Table 2: List of events the Belgian pilot has organized or has been presented to

2023, poster	<p>NORA 2023. Disease-free European Flat Oyster (<i>Ostrea edulis</i>) in the Belgian part of the North Sea: opportunities for restoration and sustainable aquaculture.</p> <p>Tofael Ahmed Sumon, Molly Hughes (presenting author), Isabelle Arzul, Thomas R.H. Kerkhove, Francis Kerckhof, Annelies M. Declercq</p>
2023, presentation	<p>European Aquaculture Society (EAS) 2023. Recording diseases and biodiversity of European flat oyster (<i>Ostrea edulis</i>) in the BPNS: opportunities and challenges for restoration and sustainable aquaculture.</p> <p>Sumon T.A., Kerkhove T.R.H., Kerckhof F., Arzul I., Annelies M. Declercq (presenting author)</p>
2023, poster	<p>European Association of Fish Pathologists (EAFP) 2023. Disease-free European Flat Oyster (<i>Ostrea edulis</i>) in the Belgian part of the North Sea: opportunities for restoration and sustainable aquaculture. Sumon T.A., Kerkhove T.R.H., Kerckhof F., Arzul I., Annelies M. Declercq (presenting author)</p>
2023, 1-4 June, stand	<p>Oostende voor Anker 2023. The UGent team manned the stand to present the Belgian pilot of UNITED to the broad audience. A UNITED poster was presented, an aquarium with some representative species, and seaweed biscuits were offered to the audience to try. In total, over 200'000 people visited the event.</p>
2022, presentation	<p>Blue Innovation Award, winner of the Blue Innovation Swell 2022 (15 Dec 2022), Havenhuis, Antwerp, Belgium.</p> <p>Nathalie Van Caster (JDN Group). Belgische demonstratieproject H2020 UNITED.</p>
2022, Workshop Belgian pilot	<p>Belgian pilot social and economic workshop. Target audience: all (broad audience, science, government, NGO's, industry).</p>
2022, presentation	<p>EAS conference. Rimini, Italy (27 – 30 September 2022).</p> <p>Annelies M. Declercq, Jessica Knoop T.R.H. Kerkhove, A.B.K. Pribadi, A. Norro, A. Soete, B. Groenendaal, B. Stechele, D. Delbare, D. Vuylsteke, D. Vandercammen, E. Lataire, E. Pinto da Silva, F. Kerckhof, F. Maes, F. Leroy, J. Vanaverbeke, K. Allewerelt, L. Pilgrim, N. Nevejan, N. Van Caster, N. Van Oostende, P. Bossier, S. Debels, S. Degraer, S. Devriese, S. Petit, W. Versluys, O. De Clerck Flat oyster and seaweed aquaculture and offshore oyster restoration in the Belgian pilot of the H2020 UNITED project.</p>
2022, two posters and Lab stand	<p>Blue Opportunity Day (3i University Network) @Ostend Science Park, Ostend, Belgium (6 July 2022)</p> <p>Network event. Annelies Declercq built up and manned the stand of the Lab of Aquaculture and Artemia Reference Center, and presented the brand new Lab poster and the UNITED project. Collaboration with the UGent Phycology Group and BLUEGent. Please see this link.</p>
2022, presentation	<p>UN Ocean Conference, Lisbon (30 June 2022).</p> <p>Annelies Declercq and Thomas Kerkhove. Nature restoration as an integral part of ocean multi-use: the case of native flat oysters in Belgian offshore wind farms (project UNITED). Marine Protected Areas, Source-to-sea Concepts and Multi-use of Marine Space Ecologic Institute</p>
2022, presentation	<p>Blue sessions, The Blue Cluster, Ghent, Belgium (3 June 2022)</p>

	<p>Nathalie Van Caster, Thomas Kerkhove, Simon Petit, Annelies Declercq. Belgian Pilot: Off-shore wind, oyster restoration and seaweed cultivation in the Belgian part of the North Sea https://www.blauwecluster.be/sites/default/files/3._united_belgian_pilot.pdf</p>
2022, presentation	<p>European Maritime Day (19-20 May 2022) Jessica Knoop, Annelies Declercq. Belgian Pilot: Offshore wind, oyster restoration and seaweed cultivation in the Belgian part of the North Sea. https://prod5.assets-cdn.io/event/7979/assets/8346681747-d42ecb86f0.pdf Third UNITED webinar (17 May 2022)</p>
2022, presentation	<p>Annelies M. Declercq & Jessica Knoop. Belgian Pilot: Offshore wind, oyster restoration and seaweed cultivation in the Belgian part of the North Sea</p>
2021, presentation	<p>EATiP online conference (24 November 2021) Nevejan N. and Declercq A. The multi-use concept within UNITED – Case report piloting off-shore wind and aquaculture multi-use in the North Sea. https://eatip.eu/wp-content/uploads/2021/10/6-UNITED-PRESENTATION_EATIP_final-sans-video.pdf</p>
2021, poster	<p>NORA4 online conference (23-25 November 2021) A.M. Declercq, T.R.H. Kerkhove, B. Stechele, A.B.K. Pribadi, B. Groenendaal, D. Vandercammen, E. Pinto da Silva, E. Lataire, E. Lemey, F. Maes, G.V. Fernandez, J. Vanaverbeke, J. Knoop, L. Pilgrim, O. De Clerck, S. Delerue-Ricard, S. Petit, S. Devriese, S.M. Dambalasa, S. Debels, S. Degraer, W. Voorend, W. Versluys, P. Bossier and N. Nevejan. H2020 UNITED: Is scour protection suitable for flat oyster restoration in Belgium? Abstract book p.48. NORA 4 Online - Reconnecting across Europe - ABSTRACTS (noraeurope.eu)</p>
2021, presentation	<p>Second UNITED webinar (27 October 2021) A.M. Declercq, Jessica Knoop and Nancy Nevejan, Belgian pilot: wind energy – flat oyster aquaculture & restoration – seaweed cultivation. https://www.h2020united.eu/images/10-21-Registration-A4-agenda-v2.pdf</p>
2021, presentation	<p>Aquaculture Europe (14 April 2021) Strothotte E, Jaeger M, Lukiç I, Drigkopoulou I, Hoekstra R, Lago M, Mashkina O, van Hoof L, Degraer S, Brouwers E, Nevejan N, Sørensen H, Ziemba A, de Korte E, Santjer R, El Serafy G, Declercq AM. Multi-use platforms in marine space – a viable approach for the European maritime industry and local ecosystems?</p>
2020, presentation	<p>NORA3 online conference (4 November 2020) Declercq A.M., B. Stechele, A.B.K. Pribadi, B. Groenendaal, D. Delbare, D. Vandercammen, E. Lataire, E. Lemey, F. Maes, G. V. Fernandez; J. Vanaverbeke, J. Knoop, L. Pilgrim, O. De Clerck, S. Delerue-Ricard, S. Petit, S. M. Dambalasa, S. Debels, S. Degraer, T.R.H. Kerkhove, W. Voorend, W. Versluys, P. Bossier and N. Nevejan. UNITED Project – The Flat Oyster Restoration Envisaged in the Belgian Pilot.</p>
2020, organising committee	<p>First Belgian Flat Oyster Day, webinar (24 November 2020 – 71 participants)</p>
2020, presentation	<p>Vlaams Aquacultuur Symposium, webinar 2020 (30 October 2020) A.M. Declercq, N. Nevejan, B. Stechele (2020) UNITED – De Belgische piloot : windenergie, aquacultuur en restauratie van platte oesters en zeevierkweek in België</p>
2020, presentation	<p>First UNITED webinar (3 June 2020)</p>

A.M. Declercq* and Brecht Stechele* Belgian pilot: Offshore wind, flat oyster aquaculture & restoration and seaweed cultivation. The UNITED Project has received funding from the European Union's Horizon 2020 Research and Innovation Programme under Grant Agreement no 862915. * presenting authors

Greek pilot

During the summer, the UNITED project held an outreach campaign at the Greek pilot site to raise awareness about the project and invite local members of the public and tourists to participate in diving tours. The campaign included a variety of marketing efforts, such as the "QR code underwater hunt," in which participants could win a dinner for two at a local restaurant. The goal of the campaign was to engage as many people as possible in the diving activity and showcase the link between marine life and human activities. As part of the campaign, information was also provided to improve public perception of fish aquaculture. However, the timing of the demonstrations was disrupted by adverse weather conditions. The Greek pilot site experienced unusually strong and persistent north winds of 5-6 Beaufort, which made boat diving impossible.

As a result, the diving centre, Planet Blue, worked with the aquaculture farm to find a suitable alternative location for shore-based diving. From August to October 31st, 87 divers (34 unique and 53 repeat) participated in the tours, with 11 of them being foreigners and the rest being Greeks. None of the divers had previously dived at a fish farm. In November and the first 10 days of December, when temperatures were unusually high (18-22 C), an additional 17 unique Greek divers participated in the tours, bringing the total number of divers to 104 (51 unique and 53 repeat).

During the tours, the divers were surveyed about their knowledge of fish farms, shown videos about multi-use, and asked for their opinions on the issue both before and after the tour. The majority of local divers initially held negative views about the healthiness of fish from fish farms, citing factors such as a preference for wild fish, a belief that fish from fish farms contain a lot of antibiotics, and concerns about the healthiness of the methods used. However, after learning more about the aquaculture farm and the negative impacts of unregulated free fishing, all of the divers reported that their opinions improved. The pilot project gained valuable insights that can be shared with other diving centres in Greece that are located near fisheries. Planet Blue plans to provide guidance to these clubs on how to potentially offer specialized diving tours, work with fish farm operators, design optimal dive paths, and educate divers on the issue.

A procedural step by step script for the demo and information session campaign was used:

- 1) Ask attendees about their knowledge on fish farms, and/or let them fill out the first questionnaire available via the QR code,
- 2) Explain the multi-use in Greece and elsewhere, and the activities of the pilot site,
- 3) Show the available videos of the multi-use and other communication material
- 4) Discuss their "new" opinions on the issue and/or let them fill out the second questionnaire available via the QR code.

As a result of the demo and information session the local attendees express strong concerns about the healthiness of the fish in the fish farm. We attribute that to the following factors which the divers discussed:

(a) locals are closer to the idea of wild (which we call fresh) fish being healthier to eat (we use the term fresh to specify fish that comes from free fishing as opposed to fish originating from fish farms). Considering the geography of the land, fresh fish is easy to reach every corner of the mainland, not to mention the numerous islands where fresh fish is easily available and not very expensive,

(b) locals can distinguish the taste between the two kinds of fish and prefer to spend even double €, but less frequently, in order to enjoy the aroma and the benefits of the fresh fish - fish originating in f/f are blamed to contain large amounts of antibiotics,

(c) locals are not convinced that the methods used are healthy - please note that this is the same story that also follows the red meat. You can see in all the local butchereries, signs promoting the local (Greek) meat, as if it is

certain that it is superior to the imported one, meaning that the imported red meat is filled with antibiotics, and the animals were never living in the free to benefit from growing up in an open-air land,

(d) however, all of them mentioned that they had a much worse impression before getting to know what exactly goes on in the aquaculture farm and that they were positively surprised (but not fully convinced),

(e) the positive regard was further increased when we explained the perils of free fishing which in more than a few cases, disrespect the rules, overfish and cause serious trouble to the environment.

Danish pilot

The Danish Pilot has organised 3 Open House events where the general public had an opportunity to get informed about the pilot at the outside open-air stand and by taking the boat tour. Moreover, several tours and independent stakeholder meetings took place in person over the course of 2020 – 2023. The pilot has also organised a workshop focusing on the socio-economic aspects of the pilot. The pilot has also been presented at several international in-person events, for example:

- 18th May 2022. Final Blue Deal Conference. Ravenna, Italy
- 19th June 2022. Open House Day of Middelgrunden Wind Farm demonstrating the UNITED pilot to over 200 attendees, Copenhagen, Denmark.
- 30th Nov., 2022. Community of Practice – energy to feed into the eMSP, the Netherlands, The Hague.

ANNEX 2 – Report of the pilots’ interviews

German pilot

- A documentary-video raised awareness about OWF-LTA multi-use, which led them to be invited to conferences, workshops, requests to participate and/or consult on scientific projects and publications, etc. and made stakeholders more responsive overall. Before the documentary, there had been little interest in the project. The terms ‘multi-use’, ‘offshore’, and ‘(low-trophic) aquaculture’ did not ring a bell. The video format made it all very tangible for the public and the experts.
- Webinars were then organized, that attracted both scientists and private companies. The pilot leads were also invited to take part in other webinars.
- Pilot leads were invited to attend a workshop/conference event about OWF grid connection in the Baltic Sea, to elaborate on how MU could be a part of it. The biggest interest is in seaweed (for carbon sequestration), mussels raise less interest. The event gave them visibility and got them in touch with environmental NGOs.
- Touristic tours take place every year to visit the aquaculture farm. During this tour, they explain what low-trophic aquaculture is, why they do it, and how it can work in a MU context.
- Presentations were given to an industrials and academic gathering and dinner, to spread the word in the expert community. Nice touch: serve the food from the aquaculture (or the same type of food that is being reared), ex: mussels, seaweed, etc. Dinner presentations have a nice informal side to them: there can be an official presentation, then people talk, come and ask questions, contacts are exchanged, etc.
- Presentations at universities were also quite successful/dynamic
- Problem: reaching out to the local community. There was no proper channel to reach them and interest was lacking. General public, scientists and industrials were contacted, but they were not local (German yes, but not specifically from the close area). The local population of Keel is not familiar with aquaculture and is not familiar with offshore activities. There are fishermen but close-to-shore fishermen. Aquaculture is seen as something that happens in ponds inland. The taskforce that works offshore in Germany is imported. They had some nice exchange with the close by University of Applied science (*education sector // Denmark*), but this is not representative of the local population. Overall, the local population was not super interested in the project and reaching them proved to be a challenge.
- In-person events (personal contact) were more successful overall, although webinars were useful to get experts to interact on a subject, and to raise awareness about the big discoveries in the project.
- When inviting people to webinar, specific and personal invitations met the most success. Target a person or a company and highlight exactly why you believe they should attend and/or present something. Identify their needs and expertise and make it clear what the event can bring.
- The socio-economic workshop (event where local stakeholders are invited to identify potential social and economic impacts of the project in their region) was done online in Germany, because of practical issues (the presenter got covid). They had an in-person event planned, then had to re-arrange everything. Overall, they do not recommend the digital format, because exchange is not as interesting, and also the public representative did not come to the digital version whereas some had manifested interest in the in-person version. Workshops, opinion exchanges, playing around scenarios, etc. are much better conducted in-person (// BE pilot).
 - o Also, another issue what that they had to re-contact them several times (1st invitation, cancellation, finding another moment, new invitation, etc.) and that likely had a negative impact on the stakeholders’ interest (stakeholder fatigue).
 - o Also, they had ‘too many brains in the room’, too many experts, it lacked the spontaneity of the public and the more practical considerations that the public representative might have brought. The digital format probably played a role in this (causing more scientists to participate, and less public and representatives).
 - o + the focus was put on the region in which the pilot is located but that region works little offshore, and if they do it is with imported task force, and there is no marine at sea aquaculture. So, they were not so at ease with the concept – what was it? Why would we do that? Etc.
 - Recommendations: prepare a solid but simple presentation of your MU project + invite people from the concerned field but from other regions to interact - if possible, people

- from a similar environment but that does already do something similar to the presented project (could be MU, could be just one of the considered activities)
- Germany can be slow to change, especially Northern Germany. Take it into account. Take the culture and social context into account. The local context requires constant dialogue and exchanges over long term
 - o So, they can understand the project, envisage the consequences, accept the change, slowly adopt it as something that could happen in their region and future, and that could bring new opportunities. Younger fishermen are more interested than older ones.
 - Recommendations: Create a strong narrative (but simple, straightforward) that fits their interest (as in fishermen are interested in fishing, restaurant and retail are interested in food production, touristic companies want more tourists, public not working with the sea directly want more jobs and want to increase the area's attractiveness, etc.). Take the time, reach people on time, be consistent and persistent, create events and channels of communication, report on news (opportunities and challenges).
 - Be specific in your outreach: at first many different stakeholders are targeted (that's normal), but then you will recognize who is truly interested (and interesting) and who isn't. Then don't spend too much time on the second and focus on regular high-quality exchanges with the first group.

What is specific to MU?

1. Depending on the activities you combine, some of them may have absolutely no interest in joining with another sector. That is the case with OWF. They gain little and they risk more. Over time, they change a little (also they must change, so that helps): they see positive environmental impacts and that works well, they see a potential for better public acceptance. But that is definitely something difficult to deal with, because there may be a big imbalance between sectors. Example: OWF already installed, makes lots of money, has lots of money, needs no one; LTA: not implemented, nor even proved to work well offshore, has no space, no money, no boat, little market, no certainty to ever make big revenues, completely depends on having the umbrella of OWF (space, protection from other activities, maybe even sharing boats/maintenance/monitoring).
2. Different sector/industries = different expertise, knowledge, perspectives and interests. You may even have sectors that are historically in conflict. Conservation may not be on good terms with OWF and/or LTA. Yet if they want to collaborate, this must be overcome.

Key message: share knowledge and expertise.

Belgian pilot

- Biggest event: the social and economic workshop.
 - o Variety of stakeholders were present, including scientists, industrials, tourist sector, fishermen (or represent of), public represent and even 2 people from public. These were the targeted people, and they were well suited to conduct the proposed task and achieve the goal of the event (map potential socio-economic impacts of the MU project).
 - o The morning was more technical, with the economic analysis, while the afternoon was about gathering their predictions of social impact. About 40 people, local people, were targeted, very engaged and communicative.
 - o They were offered food, and more specifically oysters and seaweed products to stay in the theme. The informal atmosphere ensured that people felt comfortable sharing their opinions regardless of their knowledge and expertise on the topic.
 - o They were divided into groups, had scenarios and exercises to do. They were creative about their predictions and solutions, some of them had unique expertise to share, and proposed things that the pilot team had not thought of, so it was a very valuable input. With more time and money, their propositions would have been tested.
 - o This event was a success, the right people came, the format was great, it was engaging, interesting and dynamic.
 - o One feedback was that they would have liked more time, but the pilot lead believes that spontaneity is better than hard thinking when mapping potential socio-economic impact (I agree).

- It was suggested that holding this event at the weekend and/or evening would have attracted more people (the format would have to be adapted). But then, would they have come? One option proposed by the pilot lead would be to hold a workshop during the day, with then the people that can justify attending it as part of their job, then have a sort of interactive presentation of the results in the evening with a broader audience.
- The timing of the workshop regarding the length of the project was right but the preparation and invite should have been sent sooner – to ensure the presence of some key but very busy persons (public representatives, NGOs, fishermen associations, food sector, etc.). But if many more people had attended, the format would have had to be different.
- Another good event was the holding of a stand during a marine-themed public event held at the coast. People could come and ask about the project. They were also offered seaweed crackers to answer some questions – so that is also a good and fun way to get some input from a very broad audience.
 - Suggestion: don't have a 'registration' process with it, many people did not answer questions because they had to register into a system. Simply have a QR code to scan leading directly to a questionnaire, ask basic demographic information, then ask your target questions. Keep it simple, short and easy + keep the reward (seaweed crackers).
 - Works well for a broad audience, relies on good weather or good building and well-connected place. More informative format (+ optional consultation with a short questionnaire) than participative format.
 - Use visuals (posters, videos, models, etc.)
- The webinars were good SH engagement events but targeting expert people. Digital format is ok, in-person is always nicer, but it depends on who you want present. People from other countries will not travel for a few hours' workshop/presentation. Hybrid may be envisaged. The format should be chosen depending on your needs and target audience. Interactive platforms can be nice (shared whiteboard, trellos, etc.) but then again, it depends on your audience, some people just want to watch and listen.

What is specific to Multi-use?

Different sectors = different goals. Lack of communication between the different SH/sectors is often the biggest problem. Often, they could find common grounds and have goals that work together (or even some goals in common), but they don't have the space/time/will/reason to communicate and co-create solutions. Aligning these different stakeholders is specific to multi-use.

Costs are always a problem.

Recommendations to MU projects?

Do the workshop. The timing, at 2/3 of the project, is very good because by then you already have some results to share, and you know what you are talking about. You don't want to hold these events then end up not being able to provide enough or valuable information.

Also do the bigger/broader audience events, there is interest in the public and their support is always important.

Prepare on time, give them food, choose your location well (nice place, views, well connected, etc.), make it nice/fun/interesting/interactive.

Key message: Start on time and give it time (whole day event, etc., and for the broad audience, the tourism sector advised to plan events at night or in the weekend)

Greek pilot

The main stakeholder engagement event in the Greek pilot are the diving tours in themselves, and the educational presentation that is given beforehand. The first year of the pilot's running was not great, because of COVID and bad weather (rough sea conditions). But this summer has been very successful. They get requests specifically to have the tour that visit the fish farm. The tour is different than another diving tour because there is an educational presentation before. They explain what fish aquaculture is, what its impact is, how it compares fish fishing practices, industrial fisheries. The purpose is truly to deconstruct the perception that the Greek population has about fish from aquaculture: that it is somewhat unnatural, unhealthy and less tasty than wild caught fish.

- They recommend having a solid scientific knowledge of aquaculture/fisheries/ecology/biology because people have specific questions. Coming unprepared will not leave a good impression and may undermine the objective of the multi-use project. So have someone with solid background and/or prepare a Q&R to answer all questions.
- Activity is advertised with flyers and social media. Advertising was a bit slowed down because of COVID (there was bigger news). There is also a lot of here say.

They recommend attractive activities so that people want to engage in the tour: winning a meal at a local restaurant that serves fish from the farm (that was done), but also in the future maybe have a boat tour that can stop at the farm where an operator takes some fish live and have an outdoor barbecue for the visitors at the site (more impressive and less expensive, although the infrastructure and training must be set in place), maybe also have a tombola in farmed packed fish sold at the supermarket and if you get the price-ticket you receive a free diving/boat tour.

Danish pilot

In the Danish pilot, the main SH engagement are also the tours. The boat tours in the turbines have an educational/professional purpose. They are too expensive for random tourists to book it, it is either universities or technical groups (experts, people working in the OWF sector, public representatives, etc.) that take the tour.

- Also recommend having an expert (engineer) to hand. People have technical questions; they must be answered.
- If tours were to evolve to target a broader audience, there would be no more climbing the turbines, only having a look at them and providing explanation about their implementation.

Lessons learned

- o When planning a stakeholder engagement strategy, first create an attractive and consistent narrative based on strong knowledge. If possible, have your own evidence and experiences to share. Make the purpose of your event clear from the beginning.
- o Be specific: know who you want to reach, involve and talk to. Invite specific people or company. Learn from your first experiences to make your next move: who is to be kept in a close loop, who is to only inform occasionally, who is not interested/interesting?
- o MU remains a poorly known and complex concept, use appropriate means to have your project known and understood: documentary videos, social media publications, presentations in schools, universities, industrial meetings, festivals/events, etc. Adapt content and format to your target audience.
- o Make it real: organize visits to your projects, show the technical challenges and the successes already achieved, raise awareness and educate stakeholders and the public as well (if possible, technically speaking).
- o If your MU project brings a new activity to the local area, build a long-term constructive dialogue with your local stakeholders. It may take some time for them to come around. Work with the local and sectoral culture and use appropriate means. Benefits from your MU may not be obvious nor immediate, therefore solid information/knowledge/predictions must be provided for your stakeholders to see the purpose of the project and embark on it. Whenever possible, co-create with the most relevant stakeholders.
- o Hold an in-person event with a local audience, including all sectors that may be affected and interested in the project, public representative and non-expert local people. Favor an in-person event, make it interactive, ask them for their opinion, make them play around with scenarios and predictions for the future. Make it attractive: choose a well-connected and enjoyable location, offer food, have informal moments so that everyone feels well enough to speak their mind. This event will get your project known, raise awareness about the stakes, get people onboard and provide you with different perspectives and ideas.

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- Organize with care: foresee enough budget, foresee enough time (half days, full days), start on time and send invitations on time (public representatives have busy agendas!), provide a clear explanation and agenda of your event, choose your moment: professionals may come during the day, public will come during the evening and weekends.
 - Have solid knowledge about your topic and have already some results to show for your project. Holding such an event too early in the development stage may undermine your credibility if you are unable to answer questions or if you don't have the results to answer them.

Big challenge of SH engagement in MU context:

- You deal with different sectors, so they have (1) different knowledge, expertise, limits and processes; (2) different interests.
 - You may face very complex technical challenges to solve, which will require expertise, money and time to resolve. You may face very forbidding legal/insurances/administrative processes that cannot be avoided, again this may cost time, work and money. You may have to align sectors that are pursuing very different interests: economic gain might be the priority for one, while nature restoration may be the priority of another. And these interests may or may not compete, so compromises might be necessary.
 - You may have a strongly unbalanced dynamic: one sector/activity/stakeholder may hold most resources (space, financial means, permits, ready-to-use technology, e.g., OWF) and get the least benefits, while the other may have very few resources, have many challenges to face and benefit the most from the MU situation. Strong narrative, call to innovation, predictions of synergies and mutual benefits in the future may help your case.
 - You may have to align sectors and SH that are historically at odds. Slow, long-term dialogue, highlighting mutual benefits would help in that situation.