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Multi-Frame. Ocean Multi-Use Assessment Approach (MUAA)

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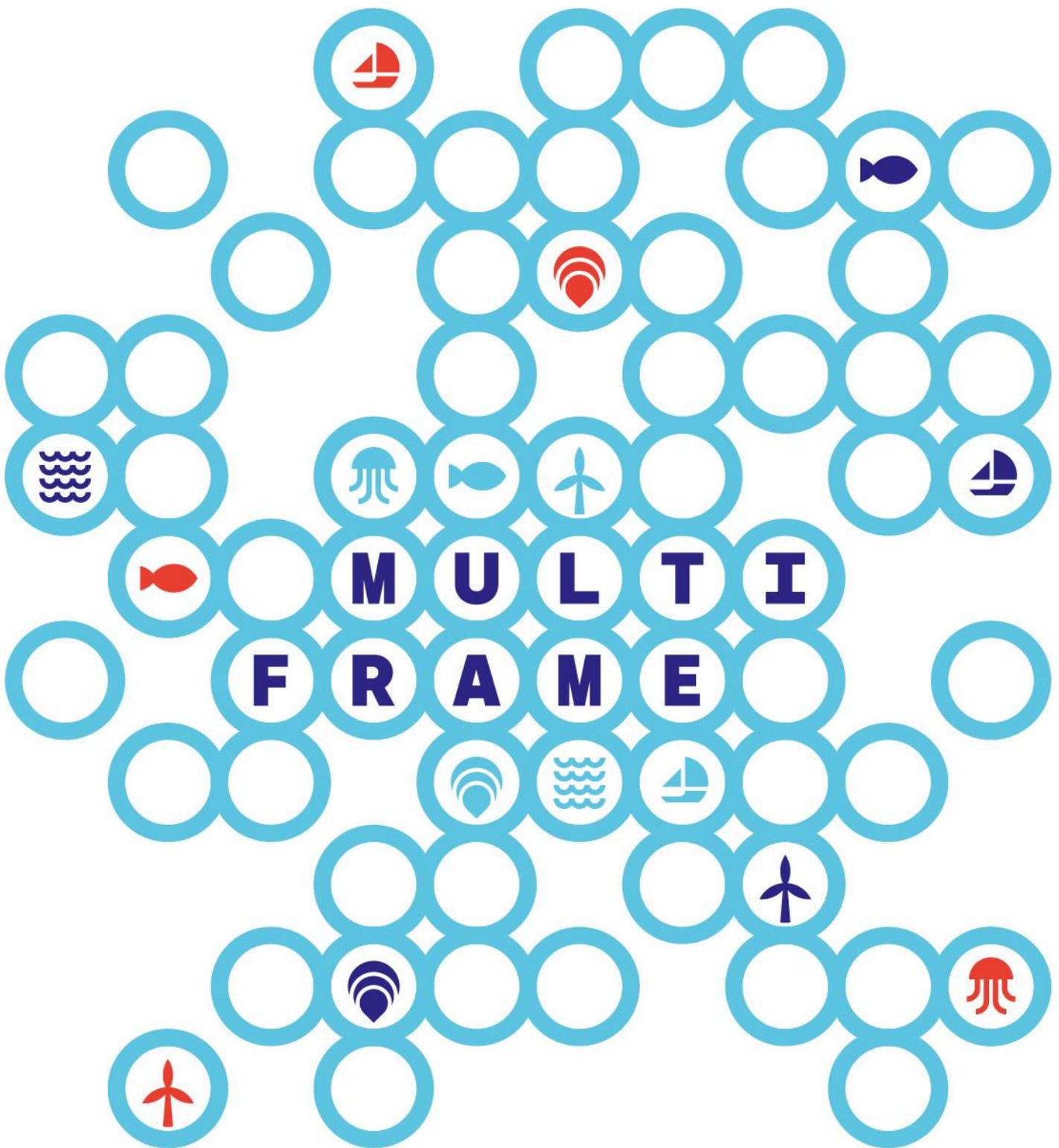
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Multi-Use Assessment Approach

(MUAA)



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Purpose of this report

Sustainable and efficient use of ocean space can be achieved through a combination of different ocean uses both in close proximity, through joint operations, or on the same platform. Known as ocean multi-use (MU), this novel approach can reduce demand for space and potentially offer significant socio-economic and environmental benefits.

However, the actual development of MU systems has been limited due in part to a lack of knowledge about their potential impacts on the economy and the marine environment and existing regulatory systems. The Ocean Multi-Use Assessment Framework (MUAA) was developed by the MULTIFRAME project to increase the knowledge base and capacity of public and private actors for assessing ocean MU systems. By providing a comprehensive assessment framework, the project seeks to facilitate the sustainable and efficient use of ocean space. The Framework serves as an open source tool and provides assessment results and best practice examples from its application in five case study sites across the globe.

As part of the project, the MUAA has been implemented and finetuned in five multi-use case study areas, selected to cover a range of use combinations and marine environments, with consideration for existing marine space contests:

- Sweden,
- The United States,
- France,
- Norway,
- Brazil.

Moreover, common challenges and potential solutions in each of the case study sites have been explored and presented in the MULTIFRAME Transferability Report, A Comparison of Paired Multi Use Cases to ensure credible, insightful outputs with broad utility.

WHO IS THIS REPORT WRITTEN FOR?

This report is intended to inform relevant actors, such as marine planners, permitting authorities, and other stakeholders, about the benefits and potential impacts of ocean multi-use. It aims to encourage these actors to systematically consider the concept in their marine planning practices, development projects, and relevant ocean policies.

HOW WAS THE MUAA DEVELOPED?

The MUAA was developed by the MULTIFRAME project, building on recent and innovative ocean MU initiatives, such as HORIZON 2020, Horizon Europe, and FP7 research projects, national marine spatial planning processes, and commercial projects. The MUAA builds upon the Governance Baseline Framework for integrated coastal resources management (Olsen, et al., 2011). The



development process involved a comprehensive review of existing assessment methods, impact assessment tools, and engagement processes relevant to ocean multi-use. Moreover, the co-development approach of the MUAA involved a wide range of public, private, research, and community actors.

APPLICABILITY OF THE MUAA

The MUAA has been implemented and finetuned in five case study areas across the globe, including Sweden, the United States, Mozambique, France, Norway, and Brazil. The case study locations were selected to cover a range of use combinations and marine environments, with consideration for existing marine space contests. The examples and lessons learned from the implementation in each of the case study sites showcased how local specificities can be taken into consideration during the assessment.

Therefore, the applicability of the MUAA is deemed to be wide and general. The framework can be used by various actors to assess the potential impacts of ocean multi-use in different marine environments, with consideration for local specificities.



Executive Summary

MULTI-USE ASSESSMENT APPROACH (MUAA)

Purpose of the MUAA

The purpose of the Multi-Use Assessment Approach (MUAA) is to provide you (practitioners and coastal community members) with a guide or approach to assess the potential of applying ocean multi-use (MU) as a tool to respond to some of the ocean planning issues, specifically challenges around balancing the use of the ocean by different resource users. MU is defined as the intentional joint use of resources in close geographic proximity. MU can cover a multitude of combinations between marine uses, from the association of wind and wave energy technologies to the reconversion of decommissioned oil and gas platforms into renewable energy platforms, right through to fishing-based tourism, aquaculture, or fishing within offshore wind farms. MU is recognized as a more integrated and efficient approach to marine spatial management aimed at creating synergies between marine uses and achieving economies of scale to unlock Blue Growth, encouraging new forms of collaborations between marine users to reduce conflicts over space and resources, and freeing up space from human pressures to contribute to biodiversity and sustainability.

Through this 3-phase process – Setting the Stage; Detailed Evaluation; and Final Assessment and Recommendations - you and your team and partners will walk through 10-steps to identify strategies and obstacles you will need to work on together to accomplish a successful MU process. While this approach encourages you to consider MU, it may also lead you to recognize that MU may not be the appropriate planning tool for your situation.

While some may decide to take a few hours to review the MUAA as an opportunity to theoretically consider using the MU ocean planning approach, others may decide to dedicate a significantly longer time with their partners to complete the Steps which can serve as a process to create clear MU goals, build a strong and sustainable commitment from different levels of government and resource users, and establish the capacity and the constituency to implement and advocate for environmental, economic, and social change.

This process is intentionally iterative in some places to help you thoroughly think through questions, specifically where your strengths are and what additional partners you may need to engage in this process. For each step, we have included examples of how other projects have approached responding to each step. Additionally, we have included an appendix of potential methods and resources that may help you proceed through this process.

MUAA Steps

Table 1. MUAA steps:

Name of the Phase	Phase I: Setting the Stage	Phase II: Detailed Evaluation	Phase III: Final Assessment and Recommendations
Purpose	<ul style="list-style-type: none"> a) Understand the capacity and commitment of your stakeholder group b) Develop a plan of action to implement the approach for your case study 	<ul style="list-style-type: none"> a) Clearly define the MU scenario b) Build a greater understanding and capacity to communicate about MU c) Identify challenges that could obstruct, and opportunities that could facilitate, MU 	<ul style="list-style-type: none"> a) Identify solutions to MU challenges b) Identify and prioritize action plan to respond to MU challenges c) Determine dedication to MU and COP d) Determine if MU is appropriate for your case study.
Steps	<ol style="list-style-type: none"> 1. Establish a Case Study Basis 2. Develop Governance Structure 3. Increase MU Knowledge 4. Describe the MU Scenario 	<ol style="list-style-type: none"> 5. Define the MU Level 6. Refine the MU Scenario 7. Identify risks, constraints & opportunities 	<ol style="list-style-type: none"> 8. Identify possible solutions to respond to challenges 9. Evaluate enabling conditions 10. Recommended Actions



Assessment Approach

PHASE I: SETTING THE STAGE

Step 1. Establish the Basis for Your Case Study Approach

Purpose of Step 1

The following questions will help you better understand the capacity, interest, and trust amongst your multi-use partners and/or collaborators. How you answer these questions will determine the appropriate pace and complexity of your multi-use assessment process. For example, if key collaborators already have experience with and/or knowledge of MU, then you may be able to streamline the education process (Step 3). On the other hand, if your key partners have not established a collaborative working relationship, you may want to spend time with this group building trust and an understanding of the priorities, concerns, and expectations.

Instructions

Project lead(s) briefly (1 – 3 sentences for each question) respond to the following questions to the best of your ability. Feel free to include a few maps/graphs to help illustrate your responses. You can also provide examples for some of these questions, but that is not necessary.

- What is the geographic scope of your study area? Include the political borders in description.
- What are the potential marine uses that are being considered for this MU assessment? Include if you can economic, environmental, and/or cultural value.
- Is there clarity within the regulatory realm of who and how MU should be regulated and if it is encouraged or even allowed.
- Who is most interested in implementing MU and why (use this table to respond)?

Name of the Stakeholder	Phase I: Setting the Stage
DEVELOPER: Pirajubaé Beauties Community Tourism Project	They conduct MU activities Interest in governance and social, economic and environmental aspects
TOURISM: Municipal Secretary of Tourism, Santa Catarina State Secretary of Tourism (SANTUR)	Responsible for establishing tourism related policies and initiatives. Can have a great impact on the community-based tourism

(Example, Brazil)

e) How much trust is there is between the players (e.g., have most of you worked well together in the past)? Fill out this matrix for the collaborators you identified in “d”.

	<i>Developer</i>	<i>Tourism</i>	<i>Fishing</i>	<i>St. Gov</i>	<i>Fed Gov</i>	<i>Inf. Org</i>
<i>Developer</i>		High	Low	Medium	Low	High
<i>Tourism</i>	High		High	High	High	High
<i>Fishing</i>	Low	High		Medium	Low	High
<i>St Gov</i>	Medium	High	Medium		High	High
<i>Fd Gov</i>	Low	High	Low	High		High
<i>Inf. Org</i>	High	High	High	High	High	

Low
Medium
High

(Example, Brazil)

- f) How much time and money do you have to invest in this process?
- g) Given this information, how confident are you in leading the implementation of this MUAA?
- h) What additional support and/or what other organizations could assist you to implement this MUAA?

Step 1 Methods Example: Brazil

The lead practitioner from the Federal University of Santa Catarina (Brazil) used both informal and formal methods to complete MUAA Step 1. In this situation, the community, located within the Pirajubaé Marine Extractive Reserve (PMER) in Florianopolis, Brazil, was considering the shared use of conservation, artisanal fishing and community-based tourism (CBT). Currently in this small community, fishers act as the tourism operators with training and support from the federal agency Chico Mendes Institute for Biodiversity Conservation (ICMBio). The lead practitioner initially collected existing information, such as printed maps, fishing ground data, and official documents. He then enriched the perspective of the case study situation using known interactions between users, benefits, trust, and legal aspects. He also visited the sites and participated in the CBT tour activities, having casual conversations with the MU Fishery Representative (FR) and ICMBio staff to gauge current knowledge of and interest in MU, fisher interaction with other players, and to establish a baseline of scope and challenges. On the tour, the FR pointed out and spoke about tourist locations along the typical routes, as well as traditional fishing locations and the challenges that inspired incorporating multi-use into their businesses. The Practitioner had a set of previously identified interview topics, but he did not formally interview the FR and ICMBio staff. Instead, he had informal conversations and continued to visit the fishing villages with his children over the course of completing the MUAA Steps. This personal touch led to the establishment of authentic relationships with the fishers, FR and staff which helped him to complete Steps 2-10. To note, at every visit, the Practitioner organized meetings based on fishing/tourism schedules, did not schedule anything else for the whole day to give him flexibility and practiced reciprocity, paying for the tourism services and providing gifts out of respect for time spent participating in the MUAA. This informal approach was very important to build trust between practitioners and FR, and to establish the basis of the MUAA process, which can/should be very dynamic and participative. Additionally, the Practitioner completed a literature review about the PMER and about the integration of tourism, conservation, and fishing. The systematized information contributed to a reduction of topics to be discussed with the fishers, focusing more on specific information and the validation of existing information.



Step 2. Develop the Governance Structure and Conduct Stakeholder Baseline

Purpose of Step 2

This Step has 2 purposes. Step 2.A. will help you determine who your primary and secondary partners are. Step 2.B will help you to evaluate the existing enabling conditions necessary for a strong governance structure that allows for establishing a framework towards accountability, a strong and diverse constituency, capacity and knowledge for informed decision-making, and authority to make decisions.

2.A: Complete the following Partner Template

INSTRUCTIONS

Based on your responses in Step 1, fill out the below table to identify who your Core Collaborators and Secondary Collaborators are. Describe why each partner is interested and what they can contribute to the effort.

Core Collaborators (CC) are individuals who represent organizations that will be directly impacted by MU development and implementation. This may include institutions that have the regulatory authority for the geographic area and/or use being considered for MU, resource users that represent the uses being considered for MU and/or may be impacted by this effort, private or civic organizations that may represent a resource user including wildlife, and possibly researchers. Your Core Collaborators – the basis of your governance structure – will be made up of these entities and will help you most to move through the MUAA to assess the potential of MU.

Secondary Collaborators (SC) are individuals who represent organizations that may experience an indirect impact from this process and/or could contribute expertise and resources. SC's are interested in engaging and/or could also help in the communication of MUAA and MU implementation, but may not have the interest or time to engage as a CC. SC's are important because they contribute to building a broader community understanding (important for the long-term) of what MU is and may contribute expertise as the process moves forward.

Table 2. Collaborators (Example, Norway)

Name	Stakeholder Type	Stakeholder Category	Primary Stakeholder (CC) or SC
County Council of Norland	Governance	livelihoods, profit, lifestyles, cultural values, administrative or legal responsibilities, social obligations	CC
Salmon Center	Industry- tourism	livelihoods, profit, cultural values, customary rights, ownership, administrative or legal responsibilities, intellectual rights, social obligations	CC

Step 2.A Methods Example: Norway

The project partner, Møreforsking AS, conducted a stakeholder analysis to complete Step 2.A of the Multi-Use Assessment Approach in Norway. Community member or collaborator analysis is a useful tool for managing stakeholders and identifying opportunities to mobilize collaborator support for implementing MU scenarios. However, various biases and uncertainties necessitate a cautious approach in using it and applying its results. The process of data collection and analysis needs to be iterative; the analyst needs to revise and deepen earlier levels of the analysis as new data are obtained. An analysis methodology consists of 4 steps: (1) identification of the collaborators, their roles, stakes and resources for the scenario; (2) categorization of collaborator power and interest and, (3) description of collaborator inter-relations using an actor-linkage matrix. In Norway, 39 collaborators or interested parties from various groups (industries, local, regional and national authorities, community and network organizations, research entities) in the sectors of aquaculture, tourism and energy (e.g. oil and gas, wind, wave, solar) were identified and analyzed using this method. The general public stake, power, interest and relation were also investigated. The relations between the parties or collaborators were estimated to be less than 2% as conflicting. Complementary or compatible interests were identified for 13.3% of the relationships while 85 % of the people involved were in one way or another already actively working together. During this first investigation of the collaborators, the social context and history of engagement was taken into account. Fifteen collaborators were identified to have high interest in MU and elevated power in its implementation and formed the core partners. The remaining 24 collaborators identified were classified as secondary partners. Representatives or employees of the core partner group were selected to be contacted in order to conduct the following tasks (2.B and step 3). Please view appendices for examples of power vs. interest assessment and actor-linkage matrix.

2.B: Develop Baseline

INSTRUCTIONS

Respond to the questions in Attachment A to determine the condition of your MU Enabling Conditions. Your responses to these questions will help you to focus your outreach, capacity, and strategic actions as you move forward. While not necessary, you may want to reach out to your CC and SC's to respond to these questions. Please note, you will return to Attachment A in Step 9.

Step 2.B Methods Example: United States

Completion of Attachment A to measure change in enabling conditions was led by the core project practitioners. In preparation for filling out this form, interviews were conducted with many of the CC and SC partners, and project practitioners attended meetings and read reports to gain partners' perspectives and understandings of multi-use, and to identify potential opportunities, needs, and efforts to be built upon. With this information, the project practitioners ranked each enabling condition and offered a brief justification for the rank. Because most of the responses were "0" for the first ranking period, the practitioners spent significant time implementing Step 3 – Increasing MU knowledge - and executing other actions that would result in bolstering capacity, commitment, and constituents while also fostering the development of MU goals. Given this was a multi-year initiative, the practitioners completed a justification description eight months after the first ranking; this enabled understanding regarding whether progress was being made towards stronger enabling conditions and assisted with adjusting the process to meet the needs of this effort.

Step 3. Increase MU Knowledge

Purpose of Step 3

The purpose of this step is to ensure the people within your governance structure – your partners – have a good understanding of MU and are able to discuss some of the associated opportunities and constraints.

INSTRUCTIONS

Develop a simple communication strategy that responds to the MU knowledge gaps identified in Steps 1 & 2. While you may not need a great deal of additional information about MU, this step may serve to begin some interactive discussions and learnings amongst your Partners. Please see attachment for links to videos, fact sheets and other resources that may help prompt the conversation.

Step 3 Methods Example: Norway

The project partner, Møreforsking AS, conducted a series of exercises to complete Step 3 of the Multi-Use Assessment in Norway. First, a PESTEL analysis on the data obtained in Steps 1 and 2 of the MUAA was conducted to understand the legal, regulatory, social, economic, technological and environmental aspects of MU in Norway. These results were merged in a MASTER PESTEL which provided support to understand the risk, constraints, opportunities and benefits at the global level. This first understanding of MU at both national and international levels also highlighted the gaps and remaining lack of knowledge. This supported the selection of the information or data that would still need to be collected to better understand what the specific outcomes of the MU scenarios could be and which scenario(s) can actually be implemented in each country. A semi-structured interview guide was then developed in collaboration with all the MULTI-FRAME project partners to be further used in the consultation of the core stakeholder group in each case study. In Norway, 15 representatives from eight governmental agencies, three companies, three community and network organizations and one research expert in multi-use were interviewed. The results of this consultation process were analyzed and helped to identify the possible MU scenarios to implement in Norway: Integrated Multi-trophic Aquaculture at the ecosystem level and Offshore Wind farms as sites for various types of use combination. However, to have successful implementation, both scenarios would need to be planned with all the combined activities at the start of the establishment of the MU sites with the participation of all the collaborators. The results also highlighted the importance of the location of the MU sites and how this will affect the objectives, ambitions, and spatial or partnership organizations. The main barriers identified for implementing MU in Norway were (1) lack of knowledge about the MU concept, and (2) no multi-sectorial platform for collaborators to share knowledge and understand the possible beneficial synergy across sectors of activities. The results obtained in Step 3 were used to focus the description of the MU scenarios to the Møre og Romsdal region (Step 4) and resulted in reorganizing the collaborator core group with partners from this region to conduct the next consultation process under Phase II.

Step 4. Describe the MU Scenario

Purpose of Step 4:

This step encourages your CC and in some cases the SC to focus on your specific MU area. You will describe in an ideal world, what the MU scenario would look like and identify specific MU outcomes.

INSTRUCTIONS:

In partnership with your CC, describe your ideal MU scenario. Included in this description is: 1) the spatial and temporal synergistic interactions between the identified the MU marine uses; 2) clearly developed environmental and economic goals that would be achieved through MU; 3) the ideal regulatory and management structure that would support MU; and 4) the vehicle that would allow for the authentic engagement of informed Collaborators in MU decision making.

Step 4 Methods Example: Brazil

In the Brazil case study, the scenario involves the synergies between tourism, conservation and fishing activities, and the scenario is linked to an overall perspective of creating value for the fishermen's activities. While community-based tourism contributes extra income, it is also an opportunity to give voice to fishermen and communicate their views, practices and knowledge. To analyze the synergies of this scenario, a set of methods were employed. The first step was the contact with the developers and regulators of multi-use activities. Through informal conversations and the participation in the activities, a first view of the scenario was built. After a preliminary analysis of the information gathered, a set of questions was compiled. These questions were developed in conjunction with the other case studies, using the PESTEL framework. To gather the information, participants were approached in an individual interview format. The interviews lasted on average 50 minutes. Within PESTEL framework, the interviewees were able to elaborate on the social, environmental and political aspects for which they had interest and knowledge. To optimize the interview process, each interviewee was allowed to speak freely, and from the points they raised, the practitioner team tried to explore the most relevant ones, such as interaction between users and how to deepen the synergies between the uses. This allowed the interviewees to feel free to communicate, as well as to better connect the aspects dealt with, while at the same time allowing them to deal in more detail with the key aspects of the analysis. For the interviewer, a key element was time control. Since the Brazil case study takes place within a Marine Protected Area, the regulatory structure was already established. Based on the MUAA framework, all the information gathered indicated a good governance structure, in which decision-making is established in a participative manner. MU activities were debated and developed by the PMER deliberative council, and involved different public organizations and local resource users. This was one of the aspects that promoted the success and continuity of the MU activities.

PHASE II: DETAILED EVALUATION

Step 5. Refine your MU Scenario

Purpose of Step 5

The purpose of Step 5 is to question your scenario and consider what other resources you may need to enhance your scenario.

INSTRUCTIONS

Based on your scenario write up (Step 4) ask yourself and your CP the following questions.

- a) Does your MU scenario focus on the marine uses you thought it would or do you need to change?
- b) Does your governance structure include the right people - do you need to add additional Collaborators?
- c) Has a certain level of trust been secured, or do you need to consider focusing on building more trust?
- d) Does your CC and SC need more information about certain MU aspect to effectively respond to the Step 4 questions?

Step 5 Methods Example: France

The France Case Study lead completed Step 5 based on information collected during discussions and interviews with engaged collaborators (marine user representatives, planners and regulators, public authorities, etc.). The level of multi-use was defined using a functional typology, criteria describing how activities are interacting, and marine policies background elements. Although it is not always explicit in the scientific and gray literature, multi-use distinguishes itself from related concepts by positive interactions and even synergies between activities combined. The case study leader, therefore, decided to use Schupp *et al.*'s typology (2019). It identifies four levels of multi-use, the two highest categories being combinations involving provisioning and functional relationships. The short-term scenario (fishing, aquaculture and tourism) corresponded to type 4 "multifunctional/multipurpose": not only are marine uses taking place at the same place and the same time, but they benefit from each other. The long-term scenario (fishing and aquaculture in wind farms) fell into type 2 "co-location/coexistence": there are, so far, no synergies between fishing and offshore wind and no prospects for integrating seafood production in wind farms. Even if this classification was helpful as a first step, contextualizing multi-use levels required going beyond functional approaches. On the one hand, it seemed important to emphasize that fishing and aquaculture-based tourism – which are generally called "pescatourism" by scholars and practitioners, including interviewed collaborators – represent a very specific form of multi-use. They involve a single user, which makes it easier to combine activities and reach synergies. But their potential seemed limited because they rely on local initiatives and are not as profitable as other ways of diversifying traditional marine uses through tourism. On the other hand, the absence of mutual benefits between offshore wind and fishing does not mean these sectors are not closely interrelated. In fact, public authorities implemented consultations and negotiations processes to maintain, as much as possible, fishing (including with active gears) within offshore wind farms. Communication channels established and agreements reached between these two conflicting marine uses were considered as an advanced form of multi-use from spatial and social point of views. The French planning approach – which is referred to as "co-activity" – now raises interest in countries where fishers were excluded *de jure* or *de facto* from wind farms. Completing step 5 showed the importance of broadening the usual definition of multi-use levels.

Step 6. Refine the MU details

Purpose of Step 6

This step helps you adjust your scenario based on the work that is being done up to Step 5. Some scenarios may require significant revisions, while others may only require tweaking. This step may be repeated throughout the MU assessment process.

INSTRUCTIONS

Based on the Step 5 results, revise the MU description developed in Step 4.

Step 6 Methods Example: France

The France Case Study lead completed Step 6 based on information collected during discussions and interviews with engaged stakeholders (marine user representatives, planners and regulators, public authorities, etc.). Refining the multi-use details was an opportunity to reflect upon the coherence, relevance and potential of imagined multi-use scenarios. The input of primary and tier two stakeholders evidenced the fact that multi-use drivers (i.e. tourism and offshore) were interacting very differently with the two traditional activities (i.e. fishing and aquaculture) they would be combined with. Although this major outcome challenges the coherence of multi-use scenarios, it was decided to continue with these initial combinations. Multi-use scenarios were refined based on the difference between fishing and aquaculture. It seemed important to highlight the fact that the short-term scenario (fishing, aquaculture and tourism) did not arouse much enthusiasm and has low potential. While fishing-based tourism has been declining over the last decade in France, aquaculture-based tourism is confined to specific territories and can't really be scaled up. Besides, engaged collaborators did not seem interested in being assisted in fishing and aquaculture-based tourism development. It was therefore decided to stop assessing this scenario to concentrate on the long-term one which focused collaborator attention. Multi-use opportunities and challenges depend on marines uses combined with offshore wind. Maintaining fishing activities within wind farms is about negotiations and trade-offs, but it is already taking place in France. In contrast, there are no existing projects combining aquaculture and offshore wind despite potential synergies between both sectors. Most engaged collaborators think producing seafood in wind farms is not realistic, at least in the short term, due to technical, economic and social challenges. Some collaborators mentioned potential synergies with marine uses not considered in the initial scenario such as tourism and environmental monitoring. Although these new combinations were not directly assessed, they were considered in panel groups discussions to complete the following steps.



Step 7. Identify Opportunities, Benefits, Risks, and Constraints:

Purpose of Step 7:

The purpose of this step is to “drill down” even further and get more detailed about the major opportunities, benefits, risks, and constraints of the MU scenario.

INSTRUCTIONS

With your team, identify major *opportunities* - a possible chance for advancement if action or energy *were to allow it* to take place; *benefits* - an advantage of aid that *is* taking place; *risks* - something that *may* happen; and *constraints* - something that *will or is* happening. Please view Attachment C for examples of Opportunities, Benefits, Risks and Constraints from the US Case Study.

Step 7 Methods Example: Sweden

Like much of the MUAA, the Sweden Case Study Leads approached Step 7 as an iterative process. They first hypothesized a set of Benefits, Risks, Constraints and Opportunities (BRCO) based on discussions with the collaborators, or the Primary and Secondary Stakeholders (PS, SS) identified in Step 1. Case Study leads used these BRCOs to conduct an initial PESTEL analysis (thematic analysis that grouped themes into the following categories: political, economic, social, technological, environmental and legal/regulatory) that formed the basis for more in-depth interviews and helped inform the design of a two-day workshop. This hybrid workshop hosted approximately 12-15 participants online and in-person for a collective eight- to 10-hour conversation aimed at setting the framework for possible multi-use implementation. Participants of the workshop included wind power industry members, government authorities (water, agriculture), regional government representatives, research institutes and representatives of the fishing and aquaculture industries. To complete Step 7, CS Leads split participants into two groups and led two sessions, one focusing on Opportunities and Benefits and the other focusing on Risks and Constraints, to validate and expand upon their hypotheses and the resulting PESTEL. During these sessions, participants worked in pairs and as groups to answer questions such as: *What opportunities will present themselves if I participate in the development of MU, and why is MU beneficial for my organization?* CS Leads then presented their groups with a blank PESTEL for uninfluenced input and facilitated collaborative conversation about identified multi-use BRCOs and where they fit within the PESTEL categories. After this point, the session activities deviated. One CS Lead internally compared the hypothesized PESTEL with session results, making note of, but not validating, the BRCOs that were not brought up in session conversation. The other CS Lead went through the hypothesized PESTEL with participants to confirm BRCOs that the group believed were important but did not mention in the earlier conversation. Both methods effectively validated and expanded upon identified Benefits, Risks, Constraints and Opportunities for the Swedish multi-use scenario.



PHASE III: MAKING THE FINAL ASSESSMENT

Step 8. Identify possible solutions to respond to challenges

Purpose of Step 8

The purpose of Step 8 is to identify actions to overcome constraints and risk and/or take advantage of benefits and opportunities collected in Step 7.

INSTRUCTIONS

With your Collaborators, consider the information developed during Step 7 and identify possible solutions and or next steps that need to be taken to: 1) overcome some of the risks and constraints; as well as 2) enhance or build upon some of the benefits and opportunities. Take into consideration how these actions will respond to achieving your MU goals and vision. If you are able, determine what Partner will commit to responding to the challenge and/or solution.

Step 8 Methods Example: Sweden

For the Sweden Case Study, Step 8 relied heavily on MUAA instructions and the results of Step 7 to identify key actions that stakeholders deemed most important to increase the knowledge base and capacity of public and private actors for ocean multi-use systems. Case Study Leads hosted a two-day hybrid workshop to identify and validate the PESTEL analysis (Step 7) and identify next steps (Step 8). Participants of the workshop included wind power industry members, government authorities (water, agriculture), regional government representatives, research institutes and representatives of the fishing and aquaculture industries. The results of Step 7 identified earlier in the workshop stimulated a closing session looking at potential next steps that could address Risks and Constraints and/or optimize Benefits and Opportunities. Case Study Leads utilized Padlet, an online creative workspace that uses digital sticky notes to collaborate and share ideas with others, to capture group conversation centered around strategic actions and to identify key themes or priorities that could help move multi-use forward in Sweden. Many of these conversations focused on the fact that Sweden does not have an effective offshore wind energy development process and therefore, it is difficult to move the MUAA process from a theoretical thought exercise to problem-solving and implementation. This step emphasized the need for high-level changes in the governance and regulatory structure of Sweden's ocean planning and indicated that, once this change happens, additional Multi-Use Assessment may be necessary to better hone in on potential synergies between offshore wind and other ocean users.



Step 9. Evaluate Enabling Conditions

Purpose of Step 9

The purpose of Step 9 is to evaluate change for the Enabling Conditions necessary for an effective MU process.

INSTRUCTIONS

Revisit Step 2 and complete the final rankings of *Template to Measure Change in Enabling Conditions*.

Step 9 Methods Example: United States

At this stage of the project, project leads completed the final ranking for the enabling conditions template. The team used this ranking tool to determine if this effort had the enabling conditions to advance MU or if another ocean planning approach needed to be considered. In addition, completing this evaluation form allowed the team to identify CC and SC information, structure, and capacity needs. With this final rank and justification description, core practitioners determined that the enabling conditions were strong enough to continue to advance MU as an effective ocean planning tool for this specific situation. Step 9 results guided the identification of future actions and focus (Step 10) as this effort is moving towards MU implementation.

Step 10. Recommendations for MU Implementation

Purpose of Step 10

The purpose of Step 10 is to identify actions or next steps you will take to move this process forward. A next step may be to build on the momentum created by completing the MUAA. It may also include a realization that MU is the not appropriate approach.

INSTRUCTIONS

With your CC's, identify strategic actions for moving forward based on Step 8 and 9 results. Specifically, determine how healthy your Enabling Conditions are. If most of your Enabling Conditions process "scores" are lower than a 2 or 3, consider changing the scope of the project, including possibly implementing more simple actions that may elevate these scores. If most of your Enabling Conditions are at or higher than a 2/3 score, review the actions identified in Step 8, possibly add others, and then prioritize these actions by validating the needs and considerations of your Partners. Ensure that priority recommendations identified in this Step focus on continuing to strengthen the Enabling Conditions.

Step 10 Methods Example: United States

For the USA Case Study, enabling conditions scores, completed in Step 9, ranked at or higher than 2, except for the Capacity question about having the legal authority to implement MU, where the ranking was a 1. The strategy to complete Step 10 was to build upon the enabling conditions where strength was exhibited, and to potentially gain progress in enhancing weaker ones, such as Capacity. With a diverse group of CC and SC members, the practitioners hosted a half-day, in-person event to build upon the two priority strategic actions identified in Step 8: *Developing strategies towards mitigating environmental impacts* and *Expanding business opportunities for the commercial fishing industry*. The practitioners then linked them with the two scenarios – offshore wind energy and recreational fishing (Scenario 1) and offshore wind energy and commercial fishing (Scenario 2). The in-person event validated synthesis of these two strategic actions and encouraged collaborative development of one main goal or outcome for each scenario. Once this goal was established, breakout groups then identified actions that would help practitioners implement or achieve the goals and outcomes. It was clear that diverse participants were listening to each other, and many were taking their own notes to hopefully bring these concepts and ideas back to their organizations for further work. While there is still no specific resolution for resolving the regulatory question (for which the ranking remains low), the action to better understand the regulatory system and identify possible solutions was identified as a priority. In addition, the practitioner team has identified a few other initiatives for integrating actions towards achieving identified goals.



Attachment A:

Template to Measure Change in Enabling Conditions To be used in Steps 2 and 9

Definitions

Core Collaborators (CC)

Individuals who represent organizations that will be directly impacted by MU development and implementation. This may include institutions that have the regulatory authority for the geographic area and/or use being considered for MU, resource users that represent the uses being considered for MU and/or may be impacted by this effort, private or civic organizations that may represent a resource user including wildlife, and possibly researchers who could significantly contribute to the discussion.

Secondary Collaborators (SC)

SC are individuals who represent organizations that may experience an indirect impact from this process and/or could contribute expertise and resources. SC are interested in engaging and/or could also help in the communication of MUAA and MU implementation, but may not have the interest or time to engage as a PS. SC may include environmental organizations, or entities who are interested in learning more about MU but do not want to commit a significant amount of time in the MUAA process.

Justification of ranking

At Steps 2 and 9, write a short paragraph that provides some context and justification for the rank chosen. Please state the people/person who is part of the assessment ranking.

Goals

Question	0	1	2	3	Step 2	Step 9
Do the MU goals define both desired societal and environmental conditions?	No goals defined	PS are beginning to discuss MU goals	Desired long-term goals address either societal or environmental outcomes	Long-term MU goals fully define both desired societal and environmental outcomes		

Justification of ranking:

Constituencies

Question	0	1	2	3	Step 2	Step 9
Do the SCs understand and support MU goals/vision and commit to engaging in MU implementation?	SCs have little awareness of the MU concept and some are hesitant about the MUAA	SCs are participating in the MUAA but the degree of support for MU varies	With a few important exceptions, SCs support MU goals/vision and are very interested in engaging in MU implementation	Most SCs support MU goals/vision and commit to participating in MU implementation		

Justification of ranking:

Commitment

Question	0	1	2	3	Step 2	Step 9
Have CC committed to implementing actions that respond to major risks/constraints/benefits/opportunities (RCBO) towards achieving MU?	CC have limited knowledge of MU RCBO	CC have identified RCBO	CC have identified actions towards overcoming/enhancing RCBO	CC have committed to implement actions that respond to major RCBO		

Justification of ranking:

Capacity

Question	0	1	2	3	Step 2	Step 9
Do the CC have the legal authority to implement MU?	CC have not identified the legal/regulatory process	The regulatory process has been identified and is clear how MU can be supported	Additional CC have been added to the MUAA so that all regulatory aspects are represented	CC have the legal authority to implement MU		

Justification of ranking:



Question	0	1	2	3	Step 2	Step 9
Have sufficient financial and human resources been committed to move towards MU implementation?	No financial or human resources have been committed	Human resources have been committed to engage in MUAA	Some CC are committing both human and financial resources towards MU implementation	Financial and human resources have been committed towards MU implementation		

Justification of ranking:

Resources

The following resources provide the practitioner with possible tools and techniques that could be applied to implement MUAA steps.

- Gekeler, M. 2018. A practical guide to design thinking. Friedrich-Ebert-Stiftung. 107 pgs.
- Goffetti, G., Montini, M., Volpe, F., Gigliotti, M., Pulselli, F. M., Sannino, G., & Marchettini, N. (2018). Disaggregating the SWOT analysis of marine renewable energies. *Frontiers in Energy Research*, 6, 138.
- Gregory, R., Failing, L., Harstone, M., Long, G., McDaniels, T., & Ohlson, D. (2012). Structured decision making: a practical guide to environmental management choices. John Wiley & Sons.
- Jin, D., Kite-Powell, H., & Hoagland, P. (2005). Risk assessment in open-ocean aquaculture: a firm-level investment-production model. *Aquaculture Economics & Management*, 9(3), 369-387.
- Kansongue N, Njuguna J and Vertigans S (2023) A PESTEL and SWOT impact analysis on renewable energy development in Togo. *Front. Sustain.* 3:990173. doi: 10.3389/frsus.2022.990173
- Olsen, S.B. (2003) Frameworks and indicators for assessing progress in integrated coastal management initiatives. *Ocean & Coastal Management* 46 (3-4): 347-361.
- Olsen, S. B, Olsen E and Schaefer N (2011) Governance baselines as a basis for adaptive marine spatial planning. *Journal of Coastal Conservation* 15:313–322
- PESTLE Analysis. (Feb 6, 2022). The PESTEL Framework Explained: 6 Important Factors PESTLE Analysis SWOT and Business Analysis Tools <https://pestleanalysis.com/pestel-framework/>
- Schoemaker, P.J. 1995. Scenario Planning: A Tool for a Creative Thinker. MIT Sloan Management Review; Winter 1995. 36 (2): 25-40.
- Smythe, T.C. and J. McCann. 2018. Lessons learned in marine governance: Case studies of marine spatial planning practice in the U.S. *Marine Policy*. 94:227-237.
- van Hoof, L., van den Burg., S.W.K., Banach, J.L., Rockmann, C., and M. Goossen. 2020. Can multi-use of the sea be safe? A framework for risk assessment of multi-use at sea. *Ocean and Coastal Management*, 184: 105030.
- Weig, B. (2017): BONUS BALTSPEACE internal project report: Spatial Economic Benefit Analysis.

Imprint MUAA

Title: Ocean Multi-Use Assessment Approach (MUAA)

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