



IMPROVED TRANSDISCIPLINARY SCIENCE  
FOR EFFECTIVE ECOSYSTEM-BASED  
MARITIME SPATIAL PLANNING AND  
CONSERVATION IN EUROPEAN SEAS

## Deliverable D1.2

A best practice guide for the implementation of  
ecosystem-based maritime spatial planning  
(EB-MSP) in European Seas



Funded by  
the European Union

This project has received funding from the European Union's Horizon Europe research and innovation programme HORIZON-CL6-2021-BIODIV-01-12 under grant agreement No 101059407 and by UK Research and Innovation (UKRI) under the UK government's Horizon Europe funding guarantee grant numbers 10038951 & 10050537. This output reflects the views only of the author(s), and the European Union cannot be held responsible for any use which may be made of the information contained therein.

## Document Information and Version Control

<b>Project Acronym</b>	MarinePlan
<b>Project Title</b>	Improved transdisciplinary science for effective ecosystem-based maritime spatial planning and conservation in European Seas
<b>Grant Agreement Number</b>	EU grant agreement No 101059407; UKRI grant numbers 10038951 & 10050537.
<b>Work Package</b>	WP1
<b>Related Task(s)</b>	T1.1, T1.2 and T1.3
<b>Deliverable Number</b>	D1.2
<b>Deliverable Name</b>	A best practice guide for the implementation of EB-MSP in European Seas
<b>Due Date</b>	30 May 2025
<b>Date Delivered</b>	24 July 2025
<b>Dissemination Level</b>	Public — fully open(automatically posted online on the Project Results platforms)

### Please cite this work as:

Galparsoro, I., N. Montero, S. Pouso, S. Katsanevakis, R. Runya, S. Frascchetti, B. McAteer, M. Papazekou, M. Bas, G. Mandiola, M. Coll, M. Ortega, E. Fabbrizzi, V. Stelzenmüller, A. Van Gerven, O. Lukyanova, S. Barnard, F. Colloca, W. Flannery, M. Elliott, T. Morato, G. Piet, R. Jongbloed and S. Neuenfeldt, 2025. A best practice guide for the implementation of ecosystem-based maritime spatial planning (EB-MSP) in European Seas. Deliverable D1.2. of MarinePlan project: “Improved transdisciplinary science for effective ecosystem-based maritime spatial planning and conservation in European Seas”. Horizon Europe grant agreement No 101059407; UKRI grant numbers 10038951 & 10050537. 138 pp. <https://doi.org/10.5281/zenodo.17104696>

## Version Control

Revision-N°	Date	Description	Prepared By	Reviewed By
1	9/06/2025	1 <sup>st</sup> Draft	IG and NM	All authors
2	24/07/2025	Final version	IG and NM	All authors

## MARINEPLAN PROJECT SUMMARY

---

The diversity of terrestrial and marine life is dramatically affected by human interventions including climate change. Compelling and growing evidence shows that biodiversity underpins ecosystem functions and services, and consequently, human benefits depend on them. Thus, the importance of ecosystems in a good state cannot be underestimated and calls for an effective management of marine activities and sustainable use of marine and coastal resources.

Maritime Spatial Planning (MSP) is the main governance process that ideally balances economic, ecological and socio-cultural goals through the regulation of human uses at sea. As a future-oriented process, MSP is well-placed to realise sustainable marine futures. With global and regional conservation, and green energy targets ahead, there is an urgent need to define pathways for a better alignment of MSP and systematic conservation planning, as part of the operationalisation of an Ecosystem-Based approach to MSP (EB-MSP).

The EU-funded MarinePlan project supports the implementation of EB-MSP through the development of a Decision Support System (DSS). It will offer guidance for an improved alignment of MSP, spatial conservation, and restoration interventions during the challenging times of ever-increasing pressures on marine ecosystems.

This main goal will be achieved through four specific objectives for the European seas:

- #1 Co-develop with stakeholders the conceptual elements of the DSS (guidelines and tools) and derive best practice guidance for EB-MSP implementation.
- #2 Develop quantitative metrics to operationalise Ecologically or Biologically Significant marine Area (EBSA) criteria and their application at various spatio-temporal scales.
- #3 Implement and apply the DSS based on objectives #1 and #2, its guidelines, metrics, and tools at Planning Sites representing the diversity of European marine areas.
- #4 Provide recommendations and improvements concerning the shortcomings, impediments to, and opportunities of prevailing governance processes to enhance the implementation of EB-MSP.

MarinePlan develops and implements the EB-MSP DSS across seven Work Packages and eight planning sites, including several cross-border areas, thereby encompassing 11 European countries and the Western Mediterranean. Planning Sites range from coastal ecosystems to open ocean and the deep sea, and from local to transboundary scales. Applying and validating the DSS incorporates realistic planning scenarios, key action points to achieve the EU Biodiversity Strategy, and policy recommendations on how to enhance EB-MSP implementation in European Seas. MarinePlan will communicate results to decision-makers at horizontal (between sectors) and vertical (from local to European) levels and enable the transfer of knowledge to areas in differing socio-ecological settings. The improved natural and social science base will ensure effective policymaking to support a greater coherence in implementing environmental policies as well as to enable streamlined planning for marine industries.

## EXECUTIVE SUMMARY

---

Currently, most European Union member states have established their maritime spatial plans as mandated by the Maritime Spatial Planning Directive (Directive 2014/89/EU). This directive establishes that an ecosystem-based approach (EBA) must be followed when developing national plans, yet it lacks practical guidance on its implementation. While various approaches to ecosystem-based marine spatial planning (EB-MSP) have been proposed in the scientific literature, a standardised framework for integrating EBA principles into MSP remains elusive, resulting in considerable variability among existing MSPs. Consequently, it is particularly pertinent at this time to evaluate current national plans for their adherence to ecosystem-based management principles, to identify the strengths and weaknesses of existing plans and to provide guidance for the effective implementation of EB-MSP in future revisions of plans within European Seas.

All work carried out in WP1 has focused on operationalising EB-MSP and developing a best practice guide for its implementation in European Seas. Framing and operationalising EB-MSP (T1.1) involved the development of the EB-MSP framework and its operationalisation as a decision support system (DSS), intended for testing and implementation by Planning Sites. The EB-MSP process template was conceptualised to be applicable across the European Seas and beyond, and therefore, it seeks to advise on the general linkages between environmental, economic and social attributes of a marine system in the light of climate change. Supported by WP4 and WP5, WP1 of MarinePlan liaised with key stakeholders to inform the underlying concepts and scientific knowledge base during the operationalisation of the EB-MSP framework (M1.1) and the definition of operational objectives for EB-MSP (M1.2). The requirements and recommendations from stakeholders were considered when developing a realistic and applicable EB-MSP process template.

The EB-MSP process template considers the relationship between humans and the marine ecosystem (T1.2), recognising humans as both beneficiaries of ecosystem services and contributors to negative effects on environmental and conservation status. Hence, the EB-MSP process template addresses cause-effect pathways (M1.3) and cumulative effects assessments (CEA), which are crucial for the spatial planning of marine activities while aiming to safeguard biodiversity. Upon the development of the EB-MSP process template (D1.1), a workshop was conducted with Planning Sites leaders to ensure a common understanding of concepts and to guide its implementation in a comparable way (M1.4).

The EB-MSP process template was operationalised into an EB-MSP assessment tool (<https://aztidata.es/EB-MSP/>), an open-access web application. This tool addresses the implementation challenges of ecosystem-based management principles in MSP processes. It considers specific actions that should be addressed throughout the planning process, providing a structured assessment method for practitioners and competent authorities to ensure coherent and transparent planning.

As the EB-MSP implementation process aims to be “product-oriented” with maximum utility for both scientists and managers (M1.5), standardised feedback on implementation experiences was collected to improve subsequent versions of the EB-MSP process template. The recommendations obtained informed the development of this best practice guidance (D1.2), which provides the means to effectively align marine conservation planning with MSP and offers a basis for monitoring and evaluating EB-MSP outcomes.

## TABLE OF CONTENTS

---

<b>MARINEPLAN PROJECT SUMMARY .....</b>	<b>3</b>
<b>EXECUTIVE SUMMARY.....</b>	<b>4</b>
<b>TABLE OF CONTENTS.....</b>	<b>5</b>
<b>1 AIM OF THE DELIVERABLE .....</b>	<b>6</b>
1.1 Contributors.....	6
<b>2 INTRODUCTION.....</b>	<b>7</b>
<b>3 ASSESSING THE PERFORMANCE OF THE EB-MSP TOOL IN MARINEPLAN PLANNING SITES .....</b>	<b>10</b>
<b>4 ASSESSING ALIGNMENT OF ECOSYSTEM-BASED MANAGEMENT PRINCIPLES INTO EU MARITIME SPATIAL PLANNING PROCESSES .....</b>	<b>15</b>
<b>5 BEST PRACTICES TOWARDS EB-MSP .....</b>	<b>25</b>
5.1 Marine Spatial Plans assessment process .....	25
5.2 Guidance and recommendations towards EB-MSP .....	28
<b>6 CONCLUSIONS .....</b>	<b>137</b>
<b>7 BIBLIOGRAPHY.....</b>	<b>138</b>

# 1 AIM OF THE DELIVERABLE

This report summarises the results of the assessment of the implementation of EBA principles into MSP processes within EU countries, by adopting a set of 12 planning units (PUs), encompassing 11 European countries and the Western Mediterranean, as case examples and providing a best practice guide for the implementation of EB-MSP in the European Seas.

## 1.1 CONTRIBUTORS

**Table 1.** Names and roles of contributors to this deliverable.

Name	Affiliation	WP Lead	Task Lead
Ibon Galparsoro	AZTI	X	X
Natalia Montero	AZTI		
Sarai Pouso	AZTI		
Stelios Katsanevakis	U AEGEAN		
Robert Runya	Marine Institute		
Simonetta Fraschetti	UNINA		
Ben McAteer	QUB		
Maria Papazekou	U AEGEAN		
Maria Bas	CSIC		
Gotzon Mandiola	AZTI		
Marta Coll	CSIC		
Miquel Ortega	CSIC		
Erika Fabbrizzi	UNINA		
Vanessa Stelzenmüller	TI-SF		
Annaïk Van Gerven	RBINS		
Olga Lukyanova	AZTI		
Steve Barnard	IECS		
Francesco Colloca	SZN		
Wesley Flannery	QUB		
Mike Elliott	IECS		
Telmo Morato	IMAR		
Gerjan Piet	WR		
Ruud Jongbloed	WR		
Stefan Neuenfeldt	DTU		

### Disclaimer:

Parts of the text in this report have been enhanced using generative artificial intelligence tools to improve clarity and readability. All content has been produced in the framework of the MarinePlan project and has been reviewed and validated by the authors to ensure scientific accuracy and integrity.

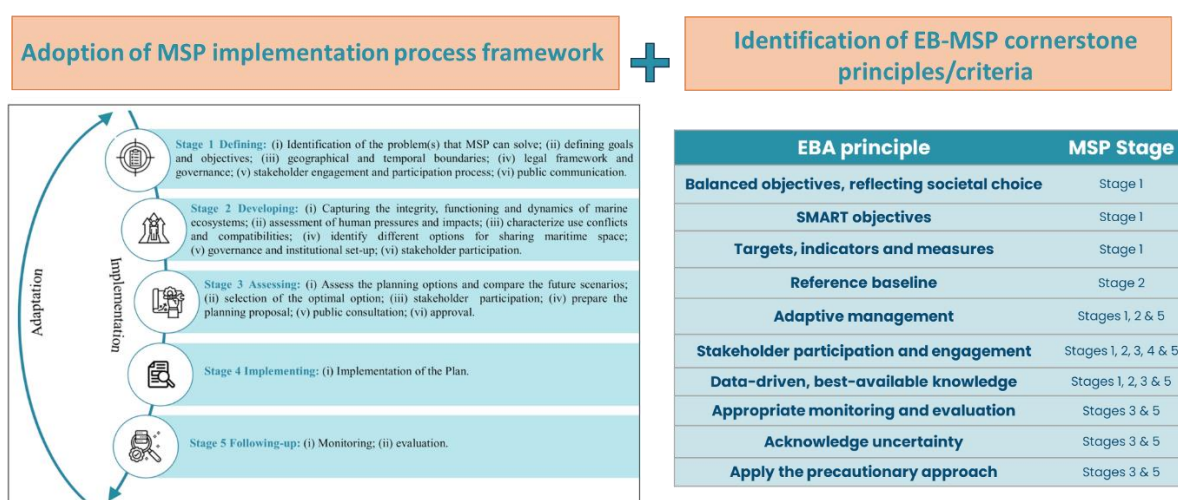
## 2 INTRODUCTION

Most European Union member states have diligently established their maritime spatial plans (European Commission, 2022), as mandated by the maritime spatial planning directive (MSPD; Directive 2014/89/EU). However, despite the MSPD's requirement for national plans to apply an ecosystem-based approach (EBA; Article 5(1)), there is a notable absence of clear guidance on how to effectively achieve this alignment. While the scientific community has proposed various approaches for integrating EBA principles into MSP, the degree to which these recommendations have been adopted by MSP practitioners during the planning phases remains uncertain. Therefore, it is particularly pertinent to evaluate current national plans in terms of their adherence to ecosystem-based management principles (UNEP/CBD/COP/4/Inf.9, 1998).

A detailed explanation of the comprehensive work carried out in MarinePlan WP1, which culminated in the development and publication of a freely accessible, user-friendly EB-MSP (ecosystem-based maritime spatial planning) tool that enables the assessment of the degree of alignment of plans with EBA principles, can be found in 'D1.1 Operational ecosystem-based maritime spatial planning (EB-MSP) framework and guidance for practical implementation' and in Galparsoro *et al.* (2025). Briefly, pertinent EBA principles were extracted from the literature (i.e., 45 cornerstone principles) and linked to the corresponding MSP stages (i.e., defining, developing, assessing, implementing and following-up) (Figure 1). Some principles are transversal and therefore needed to be reflected in more than one stage (e.g., stakeholder participation is relevant across all stages, but the specific actions/tasks differ depending on the stage of the process), thus, each principle was then reformulated into stage-specific tasks and actions. This resulted in an EB-MSP framework containing specific actions and tasks to be adopted during the planning process to ensure alignment with the identified EBA principles.

### Integrating Ecosystem-based approach principles into MSP process

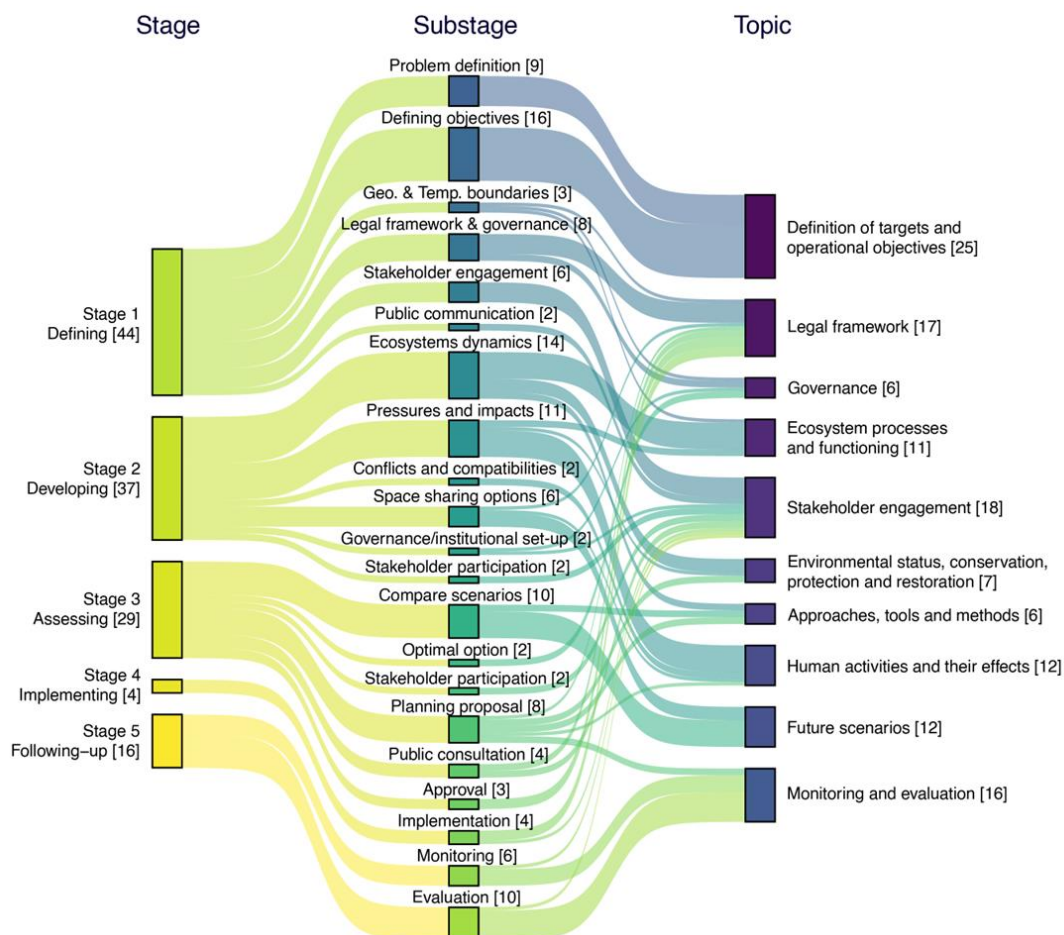
- Based on scientific publications and technical documents



**Figure 1.** A 5-stage framework representing a theoretical marine spatial planning (MSP) process (left), alongside an example of some identified EB-MSP cornerstone principles and the corresponding MSP-stages at which they should be integrated (right). Adapted from Galparsoro *et al.* (2025).



The developed EB-MSP framework comprises 130 tasks and actions to be addressed during the planning process (Figure 2). Specifically, 44 statements correspond to Stage 1 (defining), 37 to Stage 2 (developing), 29 to Stage 3 (assessing), 4 to Stage 4 (implementing), and 16 to Stage 5 (following-up). Moreover, each task/action was categorised according to 10 MSP-related cross-cutting topics: targets and objectives, legal framework, governance, ecosystem processes and functioning, stakeholder engagement, environmental status, human activities, future scenarios, monitoring and evaluation, and approaches, tools, and methods.



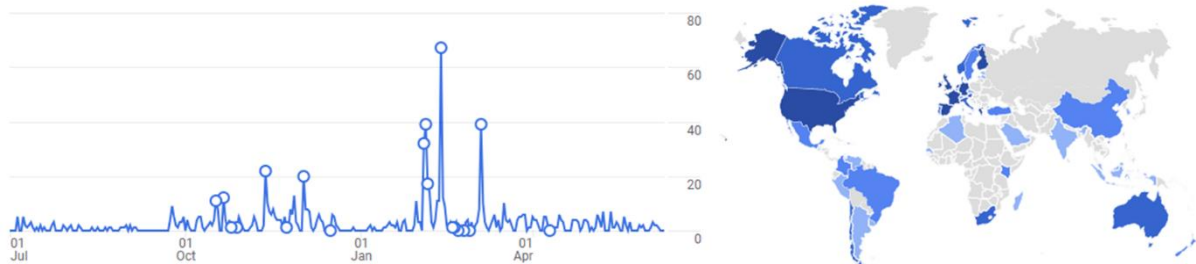
**Figure 2.** The developed Ecosystem-based Marine Spatial Planning (EB-MSP) framework consists of five stages and 21 sub-stages, representing the MSP implementation process. The numbers in square brackets represent the specific actions and tasks (130 in total) to be adopted during the planning process to ensure alignment with ecosystem-based approach (EBA) principles. Each action/task is linked to 10 major EB-MSP-related cross-cutting topics. From Galparsoro *et al.* (2025).

To operationalise the EB-MSP framework into a tool that enables the assessment of the alignment of MSP processes with EBA principles, six information fields were defined for each of the 130 actions/tasks. These information fields contain information regarding (1) the extent to which each task/action was addressed during the planning (implementation degree); (2) the relevance of each task/action at the specific planning unit; (3) the main knowledge source supporting the action/task; (4) respondent confidence in the provided response; (5) description of the approaches, methods and tools used; and (6) justification and additional comments. Semi-quantitative scores were given to the first four dimensions to facilitate standardised progress assessment and comparative analysis across



various plans. The descriptive fields (5 and 6) enabled planners and stakeholders to provide narrative justifications for their responses.

Following several contrasting and testing phases, involving MSP-specialised scientists, high-level European stakeholders and competent national MSP authorities, the EB-MSP framework was successfully operationalised into an EB-MSP assessment tool (<https://aztidata.es/EB-MSP/>), available as an open-access web application. The tool was launched on July 1<sup>st</sup>, 2024, and has since been accessed by 636 users from 56 countries (see Figure 3).



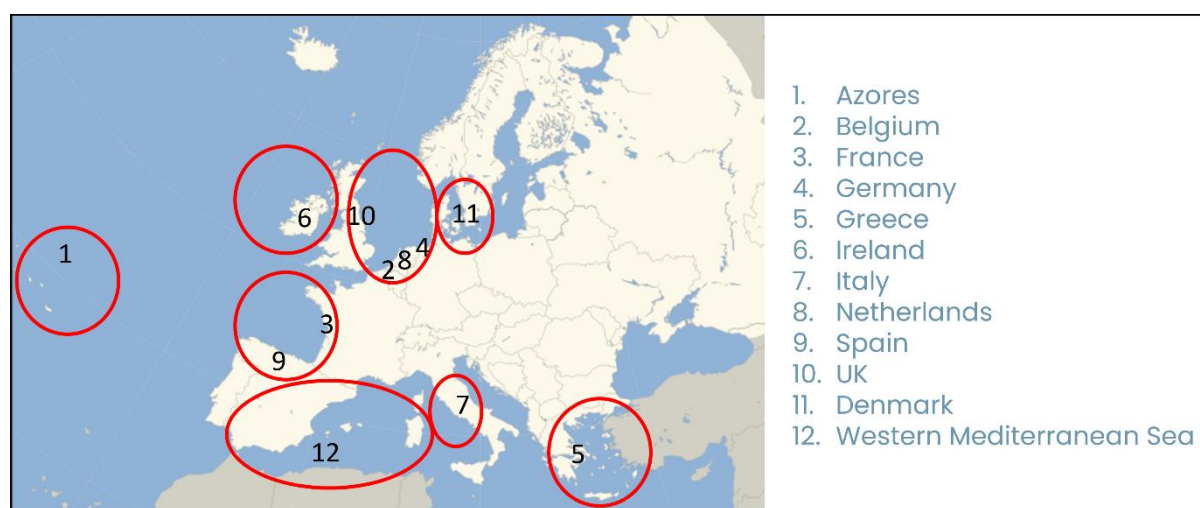
**Figure 3.** Graphic representation of user access to the EB-MSP tool from its launch on July 1, 2024, until June 9, 2025 (data extraction date). In total, 636 users from 56 countries accessed the application during that period (source Google Analytics).

The EB-MSP assessment tool features an intuitive interface designed to guide users step-by-step through the assessment process. Users are prompted to enter details about their plans, and upon completion of the assessment, they can view and download the resulting synthesis graphs and the table containing their responses. The tool also provides filtering and various visualisation options to enhance managers and stakeholders' understanding of the results and facilitate effective communication of planning aspects. The assessment outputs are available for download in multiple formats (i.e., stacked bar graphs and radar plots as images, provided responses as an Excel spreadsheet, and a final summary report as an HTML file).

This deliverable presents the results obtained after assessing the marine spatial planning process of the 8 MarinePlan planning sites (PS), which include several cross-border areas and cover 11 European countries and the Western Mediterranean (hereinafter referred to as planning units (PU)), using the EB-MSP tool. This assessment, consisting of examining the alignment of MSP processes with EBA principles in these European countries, aims to identify the strengths and weaknesses of existing plans, laying the foundation for the development of a best practice guide for the implementation of EB-MSP in European Seas.

### 3 ASSESSING THE PERFORMANCE OF THE EB-MSP TOOL IN MARINEPLAN PLANNING SITES

A total of 12 planning units (PUs), covering 11 European countries and the Western Mediterranean, were assessed, as illustrated in Figure 4. The PUs range from coastal ecosystems to open ocean and the deep sea, and from local to transboundary scales. Table 2 provides a detailed overview of each planning unit, including its name, implementation status, and respective adoption dates. The Western Mediterranean Sea serves as a unique planning unit, encompassing multiple countries, several of which have yet to adopt a comprehensive marine spatial plan.



**Figure 4.** Map showing the 12 Planning Units (PUs) for which the marine spatial planning process has been assessed using the EB-MSP tool. Red circles indicate the 8 MarinePlan planning sites.

**Table 2.** Marine spatial plans implementation status for the 12 planning units considered in MarinePlan.

Planning site name (region/country)	MSP implementation status	Implementation date
Azores (Portugal)	The "MSP Situation Plan" was approved on 16 <sup>th</sup> October 2024. The MPA expansion was approved on 24 <sup>th</sup> December 2024.	10/16/2024
Bay of Biscay (France)	Yes	5/6/2022
Bay of Biscay (Spain)	Yes	2/28/2023
Campania (Italy)	Yes	9/25/2024
Celtic Sea (Ireland)	Yes	3/23/2023
Greek Aegean/Ionian Seas (Greece)	No	-
Southern North Sea (Germany)	Yes	9/1/2021
Southern North Sea (Netherlands)	Yes	3/1/2022
Southern North Sea (Belgium)	Yes	1/1/2020
Southern North Sea (United Kingdom)	Yes	4/2/2014
Western Baltic Sea (Denmark)	Yes	31/03/2021
Western Mediterranean Sea	No	-

The assessments were conducted by MarinePlan consortium members. In four of the 12 planning units (PUs), assessments were performed exclusively by MarinePlan members (i.e., Denmark, Western Mediterranean, UK and Portugal). For the remaining eight PUs, MSP practitioners and representatives

from national competent authorities were consulted during the assessment, ensuring the incorporation of their invaluable first-hand experience and insights. This integration of diverse experts' perspectives not only enriched the assessments but also demonstrated the applicability of the developed framework across various contexts. In addition, this collaborative exercise fostered constructive dialogue with key stakeholders regarding the marine planning processes in their respective countries, ultimately promoting the potential integration of MarinePlan's recommendations for effective EB-MSP implementation into subsequent plan revisions.

The average completion time for the full assessment was 10 hours and 15 minutes, with a standard deviation of 7 hours and 37 minutes. This variability underscores both the thoroughness needed for conducting these assessments and the disparity in time expenditure across different cases. In certain instances, respondents possessed extensive knowledge of the planning process, enabling them to complete the assessments more efficiently. Conversely, others required additional time for consulting official documents or gathering relevant information to provide comprehensive and accurate responses. This disparity highlights the importance of both expertise and access to resources in ensuring the effectiveness of the assessment process.

Given the substantial time commitment needed to perform these assessments, they were frequently completed across multiple sessions. Only one assessment was completed in a single session, demonstrating exceptional efficiency; however, this was an anomaly, as most assessments involved several sessions. Specifically, five assessments required two sessions, while four assessments extended over three and four sessions (two in each case). Notably, two assessments needed up to five sessions, reflecting the challenges associated with gathering extensive data, consulting various stakeholders, and ensuring the accuracy and completeness of responses.

According to feedback from MarinePlan consortium members who conducted the assessments in their respective planning units, often in collaboration with their corresponding national MSP representatives (67%, in 8 of the 12 PUs), the developed EB-MSP framework, while highly comprehensive, presented certain complexities that could limit its widespread application. It was noted that the terminology employed in the assessment occasionally led to confusion, and that the process would benefit from additional explanations of tasks/actions to enhance understanding and ensure accurate responses. However, respondents also indicated that once they became familiar with the assessment process (e.g., evaluating all the tasks/actions within the same topic concurrently or identifying beforehand the most suitable experts to assess specific tasks/actions based on their experience or expertise), the assessment proceeded more smoothly and efficiently. It was highlighted that participation in the assessment process provided respondents valuable insights into the relevance of aligning MSP processes with EBA principles.

Another challenge involved the subjective nature of certain questions. Respondents frequently perceived that their answers could vary significantly based on individual interpretation, potentially leading to inconsistencies. Despite these challenges, the interviews revealed a high level of motivation among representatives, who expressed appreciation for the approach and its potential benefits. For many participants, the assessment served as a learning experience, particularly in cases where they were unfamiliar with specific regional MSP processes. This learning curve, while valuable, occasionally resulted in feelings of being overwhelmed by the extensive volume of documentation required to address the questions thoroughly. The necessity of consulting relevant documents, websites, and experts became an integral part of the process, underscoring the need for adequate resources and preparatory materials to support the responses.

A survey was conducted among members of the MarinePlan consortium who performed the assessments in their respective PUs. The objective was to ascertain their perception of the opinions held by the consulted MSP practitioners and/or national/regional/local MSP authorities regarding various aspects of the EB-MSP framework and tool (Figure 5). It should be noted that not all PUs engaged with national MSP representatives, which accounts for the relatively high percentage of “Don’t know/No response” results (DK/NR; ranging 25-33%). Regarding the concept of the tool and its scope of application, 67% of respondents (representing 8 out of 12 PUs) indicated that these aspects were partially or fully clear, suggesting that while the tool generally demonstrated efficacy, certain areas require enhanced clarity. One PU expressed specific concerns by partially disagreeing, thereby highlighting potential uncertainties or ambiguities in the tool's overall framing. Similar response patterns emerged when participants were asked about the clarity of the concepts and terminology employed (i.e., 67% reported partial to full agreement and 8% partial disagreement, representing 8 and 1 PUs, respectively). As previously mentioned, these findings underscore the necessity for additional guidance to foster a more consistent understanding of the tasks/actions involved. It was suggested that integrating pop-up windows containing explanatory information for particular questions, such as definitions of specialised terms like Ecologically or Biologically Significant Areas (EBSAs) or Ocean Accounting data, might streamline the process for users unfamiliar with the specific terminology. These diverse responses emphasise the need for iterative refinement and adaptability in the tool’s design and implementation to improve its usability across diverse contexts.

The interface of the tool, designed to be user-friendly and to facilitate ease of use for participants, was also evaluated through participant feedback. 25% of the PUs fully agreed that the interface met their expectations, noting its accessibility and clarity. Five PUs (42%) expressed partial agreement, suggesting minor areas for improvement but acknowledging its overall effectiveness (Figure 5). One respondent remained neutral, neither praising nor criticising the tool, while another expressed uncertainty. This range of feedback suggests that further refinement of the tool is warranted. A notable recommendation from respondents, which has since been implemented, was the addition of a progress bar to provide users with a clear visual indication of their advancement through the questionnaire.

Regarding the assessment results provided by the EB-MSP tool, seven out of the 12 PUs (58%) found them useful and two PUs (17%) partially agreed on their utility. As for the graphical representation of the results, eight out of the 12 PUs (67%) deemed them partially or fully adequate (Figure 5). However, a concern was raised that the graphical representation of the final figures might be challenging for individuals unfamiliar with the topic, and it was suggested that including summary metrics derived from simple multivariate analysis techniques could enhance comprehension. Moreover, while the tool provides a series of useful graphical 'snapshots' of the plan’s status/performance, it was indicated that guidance on comparing performance across different plans (i.e., to demonstrate improvement as plans are reviewed/revised/updated, or to compare plans of two different areas), maybe through a semi-quantitative assessment to readily flag up areas of difference, would be beneficial.

It was further highlighted that ancillary information, such as supporting evidence or background data, could be more effectively integrated into the outputs to facilitate interpretation. Additionally, several ideas were proposed to foster enhanced collaboration and transparency. One suggestion involved establishing a mechanism for harmonising assessments conducted independently by multiple individuals for the same country’s plan. This could involve tagging assessments for differentiation and merging responses to generate a unified analysis. Another proposal advocated for making final assessments publicly available, thereby inviting comments and feedback to refine the process. To further promote user interaction, it was suggested that a Frequently Asked Questions (FAQ) section

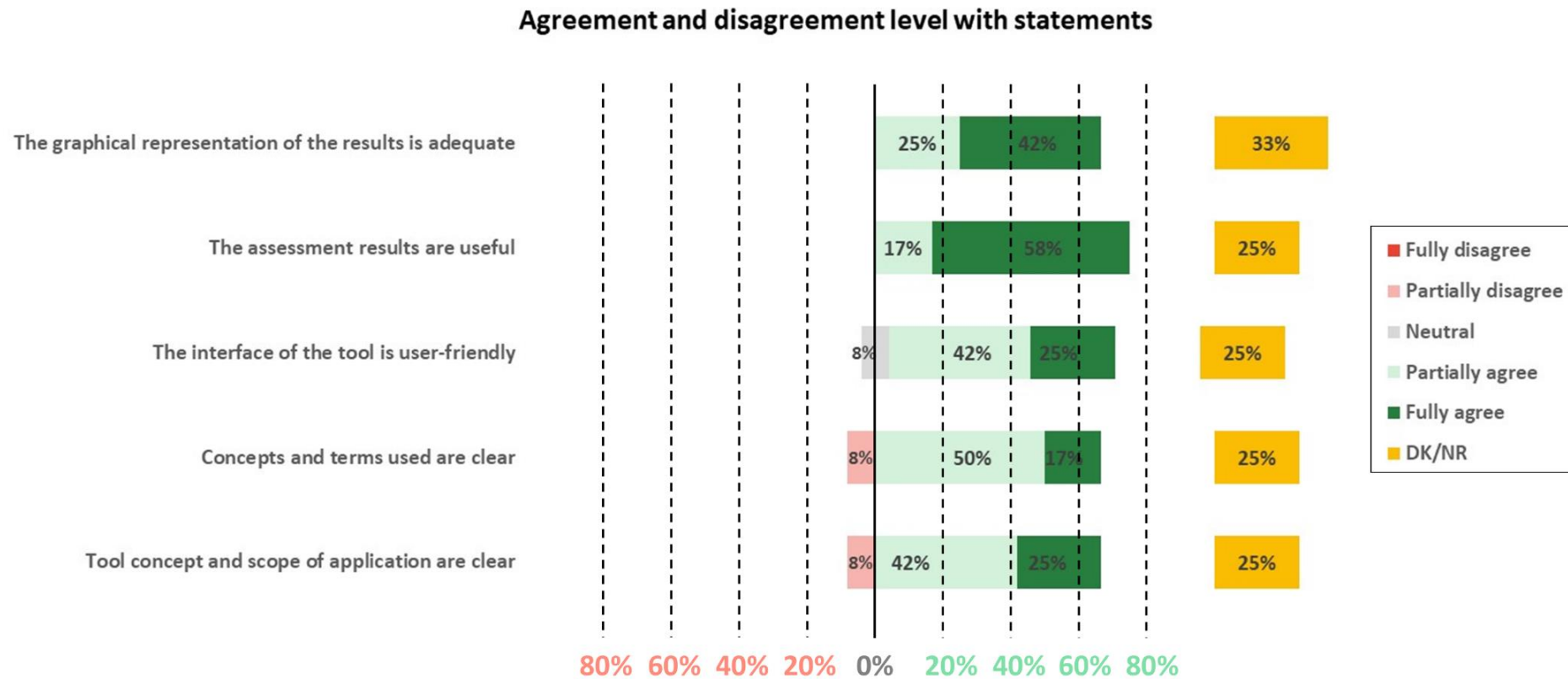
be introduced, providing answers to common queries, and a live comment or feedback feature, enabling users to submit reviews and engage with others transparently. Finally, improving mobile compatibility was also emphasised, as issues with session retention when switching between desktop and mobile views might negatively impact the user experience.

As previously stated, not all PUs had the opportunity of contrasting their results with their respective national authorities, as in many cases this MSP assessment exercise was conducted with MSP practitioners. Thus, MarinePlan consortium members were asked about what they believed would be the future use of the EB-MSP framework and tool within their corresponding PUs. A range of responses were obtained, with five PUs confirming that the results had been shared, and one PU indicating that the findings were presented to a member of the local administration, demonstrating direct engagement with the authorities. Another respondent expressed intentions to share the results in the future, reflecting a commitment to strengthening collaboration.

Regarding the intended use of the EB-MSP assessment results by national, regional, or local competent authorities, a diverse spectrum of perspectives emerged. Six participants (50% of the PUs) indicated uncertainty, reflecting a lack of clarity concerning the influence of these results on planning processes or current plan adaptations. One respondent deemed the question not applicable to their specific context, while three provided a definitive "no", suggesting that the assessment results may not be considered essential or integrated into official procedures. Conversely, two respondents (i.e., Greece and France) affirmed that the results are intended to guide decision-making, demonstrating alignment with the objectives of enhancing marine spatial plans. These varied responses underscore the complex and multifaceted nature of utilising EB-MSP assessment outcomes, indicating opportunities for improved communication and collaboration to ensure more widespread and effective application.

Users recognised the tool's potential utility for reporting to the EU and for plan review processes, underscoring the possibility of its integration into formal procedures. In addition, some responses pointed toward specific applications of the assessment outcomes. For instance, one individual noted the likelihood that the results would contribute to identifying the 10% fully protected areas, which have yet to be defined. Finally, a more strategic perspective emerged from a respondent who stated that the results would be used in internal discussions aimed at aligning the national MSP process with an ecosystem-based approach. This observation suggests that the assessment could play a pivotal role in shaping policies and processes to better reflect sustainable management principles.

When MarinePlan consortium members were asked regarding the prospective continued use of the EB-MSP assessment tool by their respective MSP practitioners and national authorities, responses varied significantly. Seven participants (58% of the PUs) expressed uncertainty, indicating that while their national authorities might consider engaging with the tool, they were unsure about the integration of the assessment outcomes into their national processes. Conversely, four respondents (33% of the PUs) provided a definitive "no," suggesting their belief that the tool would not be used in their respective countries. Only one participant confidently stated "yes," affirming the intention of their national authorities to continue using the EB-MSP assessment tool, showcasing alignment with its objectives and potential for broader application.



**Figure 5.** Responses reflecting the understanding of MarinePlan consortium members of the views held by consulted marine spatial planning practitioners and/or national/regional/local MSP authorities concerning various aspects of the EB-MSP framework and tool. DK/NR refers to “Don’t know/No response”.



## 4 ASSESSING ALIGNMENT OF ECOSYSTEM-BASED MANAGEMENT PRINCIPLES INTO EU MARITIME SPATIAL PLANNING PROCESSES

---

In this section, a comprehensive analysis of the results obtained from the assessments conducted at the 12 PUs is presented. Considering the responses provided by all the PUs as a whole, percentages were calculated for the degree of implementation, relevance, knowledge base, and respondent confidence. These aggregated values provide a clear understanding of the overall progress and areas requiring further attention. The synthesised results are presented in Figure 6.

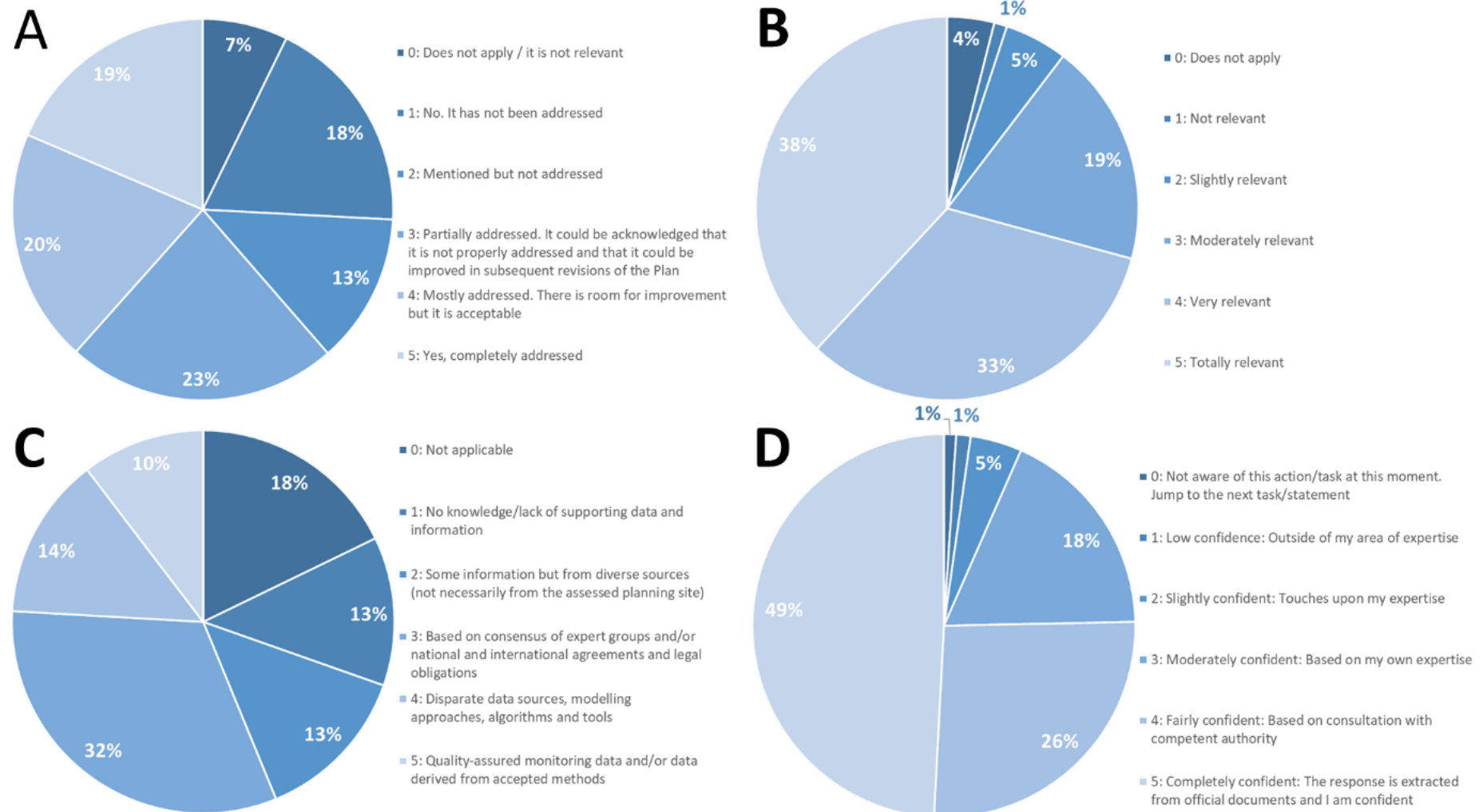
Regarding the implementation degree of tasks and actions towards an ecosystem-based approach to management, 39% of the tasks were mostly or completely addressed during planning processes (Figure 6A), while 23% of actions were partially addressed, indicating they were handled appropriately but could see improved implementation in subsequent plan revisions. It should be noted that 31% of the actions were not addressed at all during the planning processes.

In terms of the relevance of the different task/actions for the PUs, the assessment revealed that 71% of these actions were considered very or highly relevant (Figure 6B). Conversely, only 6% of actions were deemed irrelevant or slightly relevant. This highlights that the tasks/actions incorporated into the EB-MSP assessment framework are relevant for PUs that have undergone diverse marine planning processes and are at different stages of the process (e.g., in the UK the MSP was adopted in 2014, while Greece has not yet officially adopted its plan), demonstrating the applicability of the developed EB-MSP framework and tool across a wide variety of contexts.

Upon examining the knowledge base employed to address the tasks and actions during the planning process, the results exhibited considerable variability (Figure 6C). High-quality monitoring data were employed for only 10% of tasks, while 14% of tasks were addressed using disparate data or information derived from modelling approaches. Expert knowledge and national/international agreements were leveraged for 32% of tasks/actions, indicating a reliance on specialised knowledge within the process. However, it was acknowledged that for 26% of actions and tasks, there was a lack of sufficient knowledge and supporting information to effectively address them.

The confidence of respondents plays a crucial role in the EB-MSP assessment process, as it reflects the respondent's awareness of how each task or action was addressed during the planning process. This measure signifies the respondent's level of expertise and, consequently, the quality of the assessment results. The findings revealed that 49% of respondents were completely confident in their provided responses because official documents, such as the adopted spatial plan and strategic environmental assessment reports, were consulted during the assessment process (Figure 6D). Additionally, 26% of responses were informed by consultations with relevant authorities, particularly for specific actions that may not be officially documented. Another 18% of responses relied on the respondent's personal experience and knowledge. A low degree of confidence was indicated for only 1% of tasks/actions, attributed to the topic being outside the respondent's area of expertise.





**Figure 6.** Percentage values of the responses concerning the degree of implementation of tasks/actions towards ecosystem-based marine spatial planning during the planning process (A), their relevance (B), the knowledge base used to address these tasks/actions (C), and the respondents' confidence levels (D).

Figure 7 illustrates the percentages of implementation degree (left) and relevance (right) for task/actions across each stage of the planning process (i.e., Stage 1 (defining), Stage 2 (developing), Stage 3 (assessing), Stage 4 (implementing) and Stage 5 (following up) (see Figure 1 for a detailed description of each stage).

Discrepancies can be observed in the degree of implementation of tasks/actions at different planning process stages. In Stage 1 (defining), only 51% of actions were mostly or completely addressed within the PUs (Figure 7). It should be noted that Stage 1 involves critical steps such as the definition of objectives and targets, establishing geographical boundaries for the plan, and contextualising the legal framework, among others. These foundational actions, typically implemented at the outset of the planning process, might be perceived as straightforward to adopt. However, the observed lack of full implementation for all tasks at this stage is primarily linked to recognised deficiencies in stakeholder engagement and participation. These are complementary actions and tasks crucial for the early phases of planning, requiring substantial coordination and consensus-building among diverse parties.

The average implementation degree drastically decreased in Stage 2 (developing) and Stage 3 (assessing), falling to 33% and 34%, respectively (Figure 7). This reduction in implementation for tasks and actions corresponding to these stages can be attributed to their focus on complex aspects of marine ecosystem functioning and dynamics, the assessment of pressures and impacts from human activities, and detailed assessments of conflicts and compatibilities among marine uses. It is acknowledged that these actions might not have been properly addressed due to different reasons; these stages demand extensive data collection and analysis, often necessitating sophisticated modelling techniques and comprehensive environmental assessments, which are inherently data and resource-intensive.

In particular, Stage 2 also requires specific governance and institutional setups, alongside stakeholder participation actions, which were identified as inadequately addressed across the 12 PUs. Effective governance frameworks and robust institutional arrangements are critical for ensuring a transparent, inclusive, and adaptive planning process. However, these elements frequently encounter obstacles such as overlapping jurisdictions, regulatory gaps, and limited stakeholder engagement, all of which can impede progress.

Stage 3 requires the assessment of planning options, a comparison of future scenarios regarding the evolving space requirements of human activities, and the integration of climate change effects. These aspects were recognised as not having been fully addressed during the planning processes. The complexity of projecting future scenarios and incorporating climate change considerations demands advanced methodologies and robust data, which may not always be readily available.

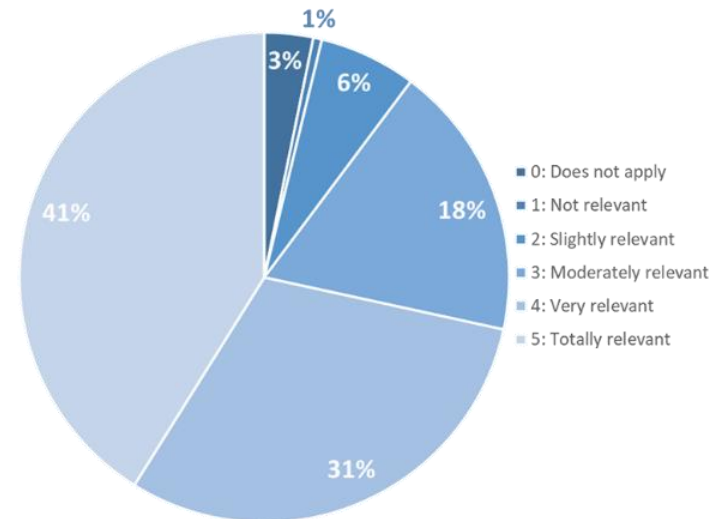
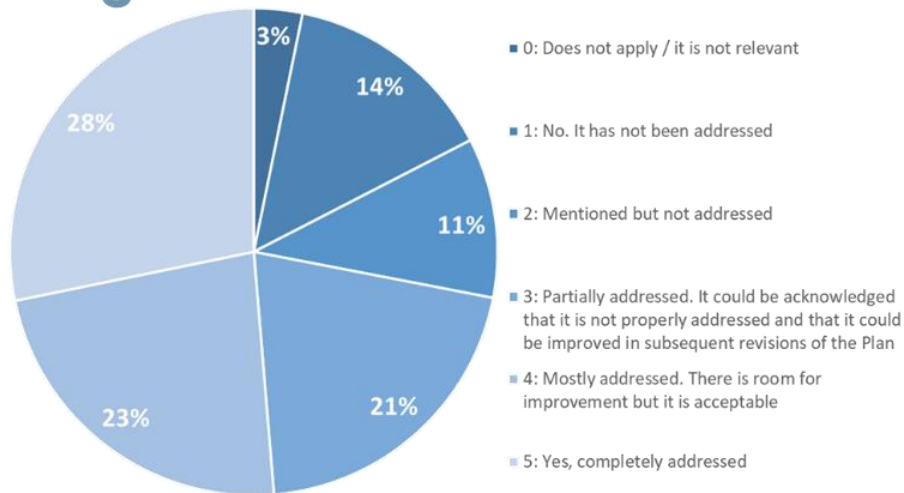
Stage 4 refers to the implementation of the plan, and for this stage, 52% of actions were mostly or completely addressed (Figure 7). This stage involves the actual execution of planned actions, including the establishment of management measures, monitoring programs, and enforcement mechanisms. Successful plan implementation requires effective coordination among agencies, adequate funding, and continuous monitoring to ensure compliance and facilitate adaptation to emerging challenges. The relatively high percentage of actions and tasks mostly or completely addressed at this stage denotes that member states have significantly invested in the implementation of these plans.

In contrast, for Stage 5 (following-up), only 18% of actions were completely or mostly addressed (Figure 7). This is because of the recent implementation of most plans, meaning they have not yet undergone a comprehensive outcomes evaluation process. Follow-up activities encompass reviewing and assessing plan effectiveness, identifying lessons learned, and making adjustments based on

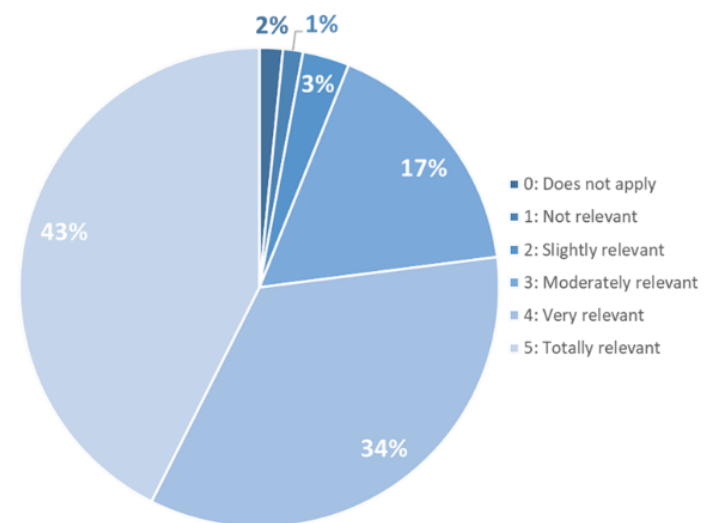
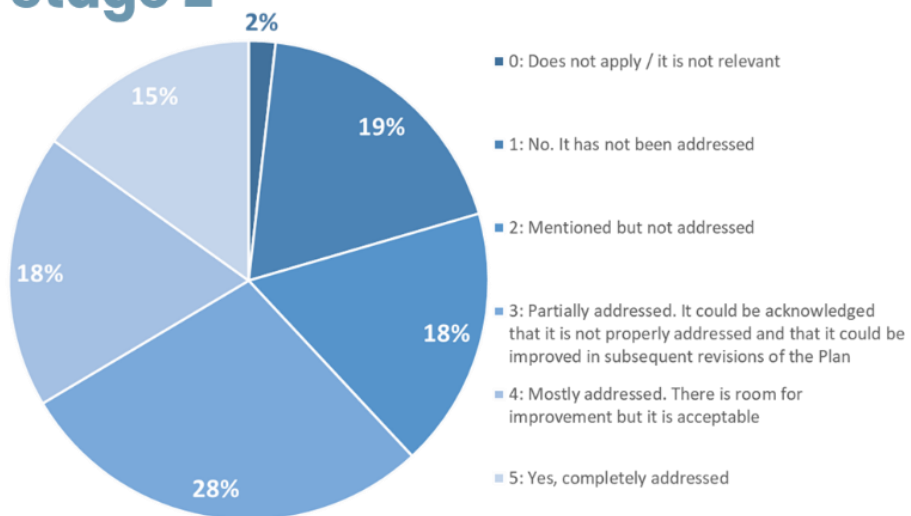
monitoring results and stakeholder feedback. There is a need for a more systematic approach to monitoring and adaptive management to ensure the long-term success of the plans.

When evaluating the average relevance assigned to tasks and actions within the assessment framework, a notable consistency in the responses was observed across all five stages. For Stage 1, 72% of tasks/actions were deemed very or totally relevant. This relevance increased to 77% for Stage 2, reflecting the perceived importance of assessing ecosystem dynamics, human impacts, and establishing effective governance and institutional setups. In Stage 3, 65% of tasks/actions were considered very relevant, reflecting the significance of future scenarios and the need to consider the long-term effectiveness of the plan. Stage 4 was characterised by 69% of tasks/actions being of high relevance, emphasising the crucial role of implementation and management measures. Finally, for Stage 5, 65% of tasks/actions retained their relevance, highlighting the ongoing necessity of post-implementation monitoring and adaptive management.

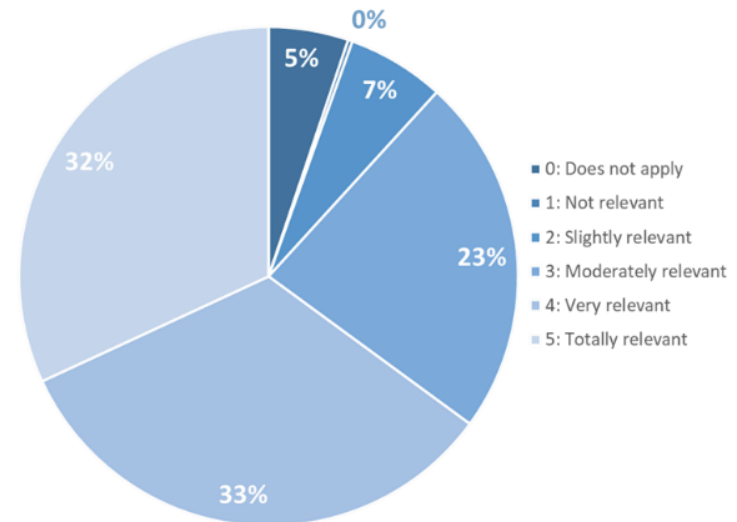
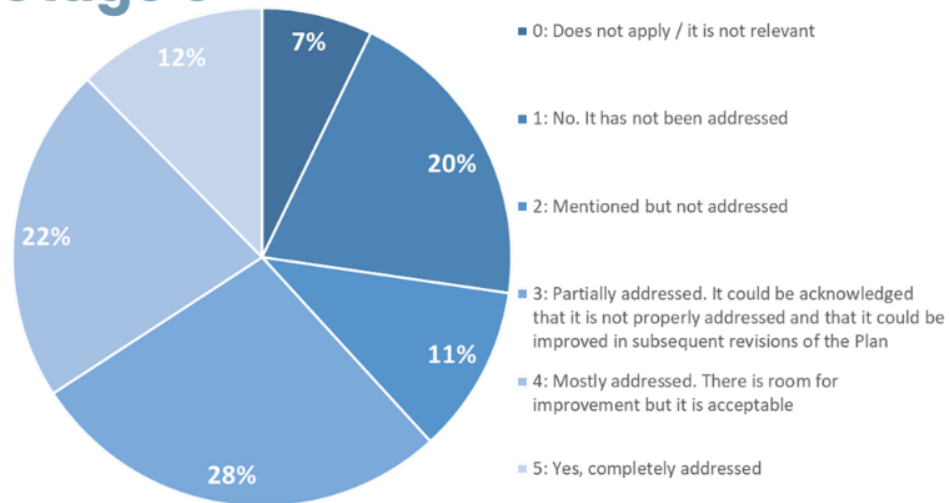
## Stage 1



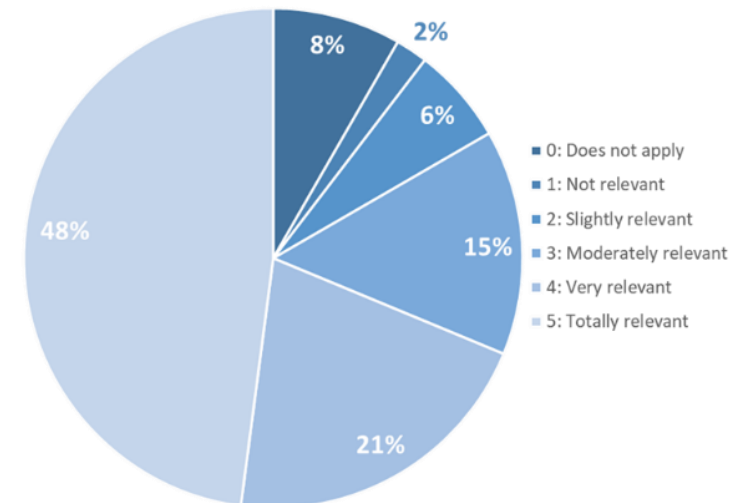
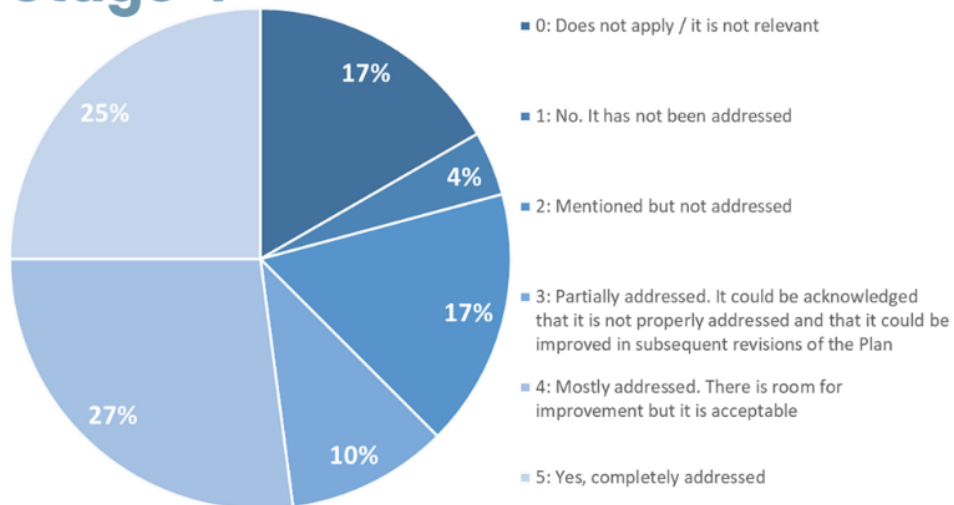
## Stage 2



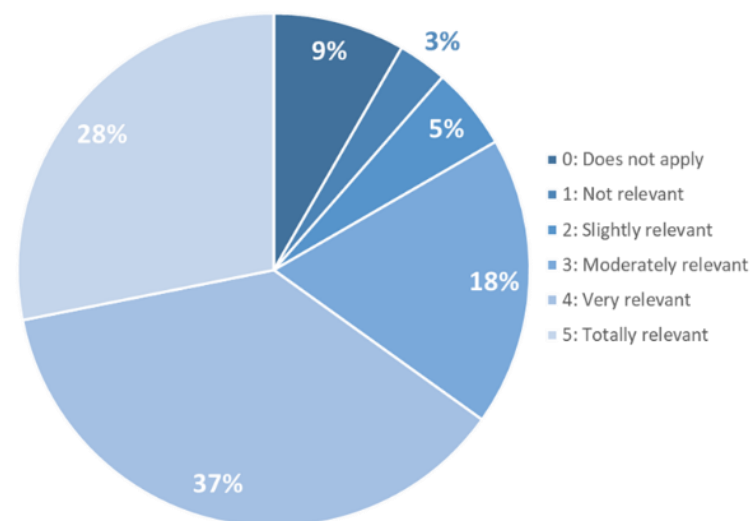
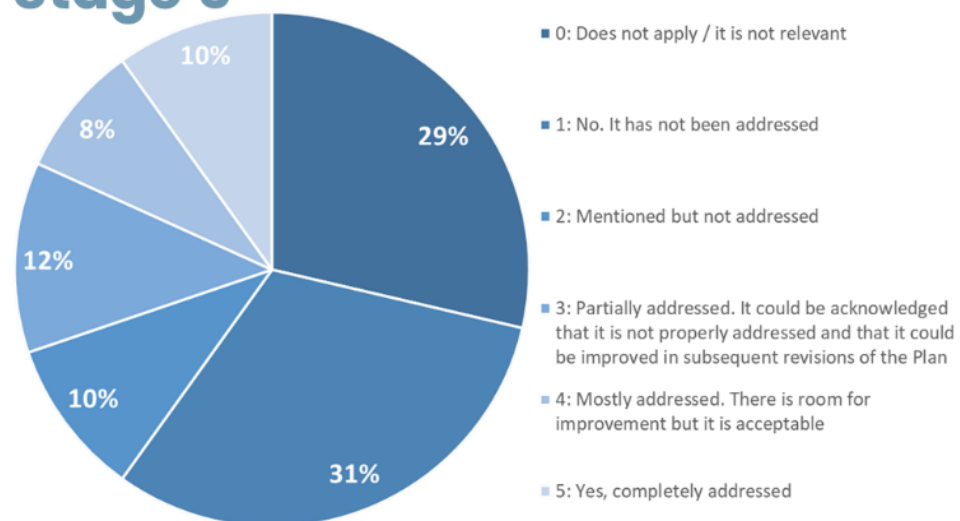
### Stage 3



### Stage 4

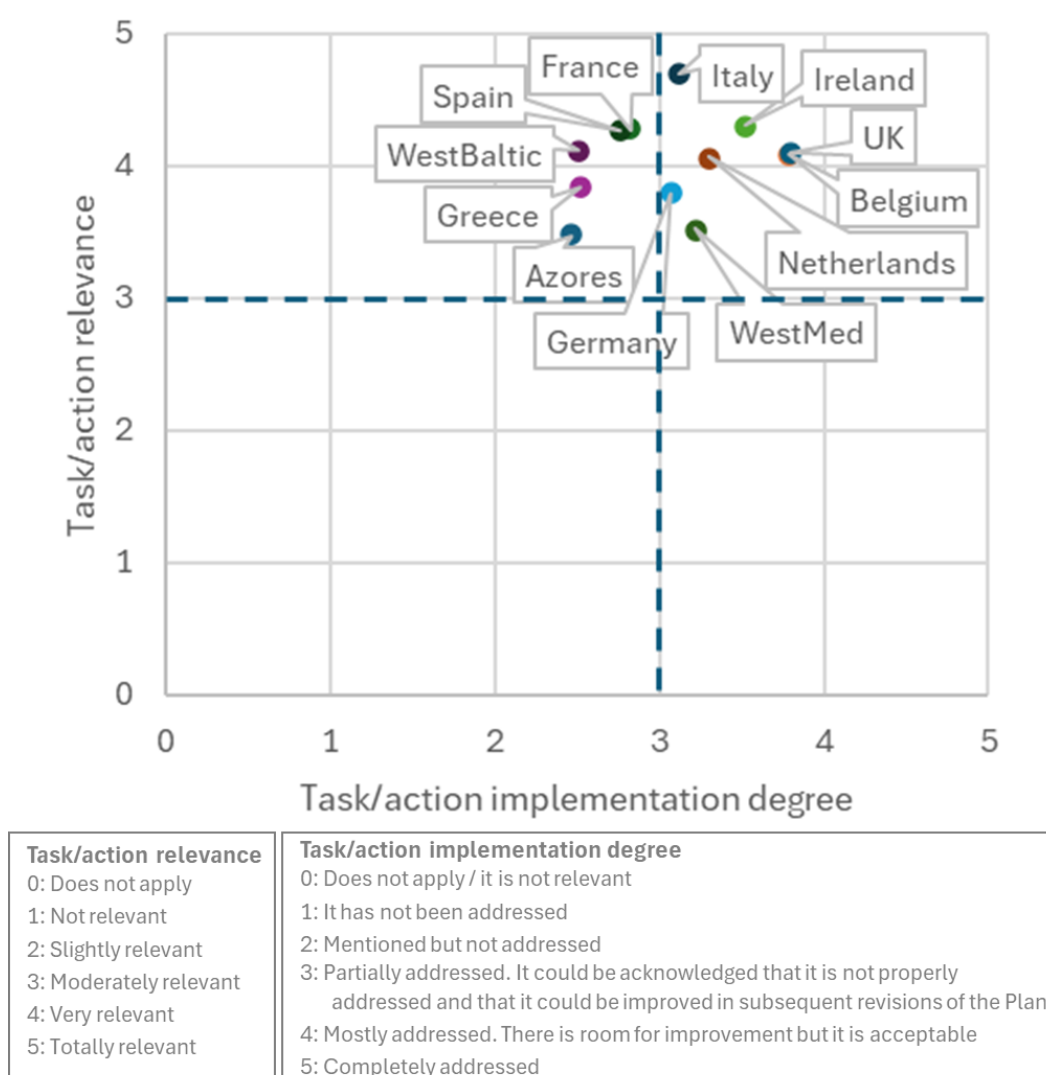


## Stage 5



**Figure 7.** Percentages values of the responses concerning the degree of implementation of tasks/actions towards ecosystem-based marine spatial planning during each of the five stages of the planning process (left), and their relevance (right).

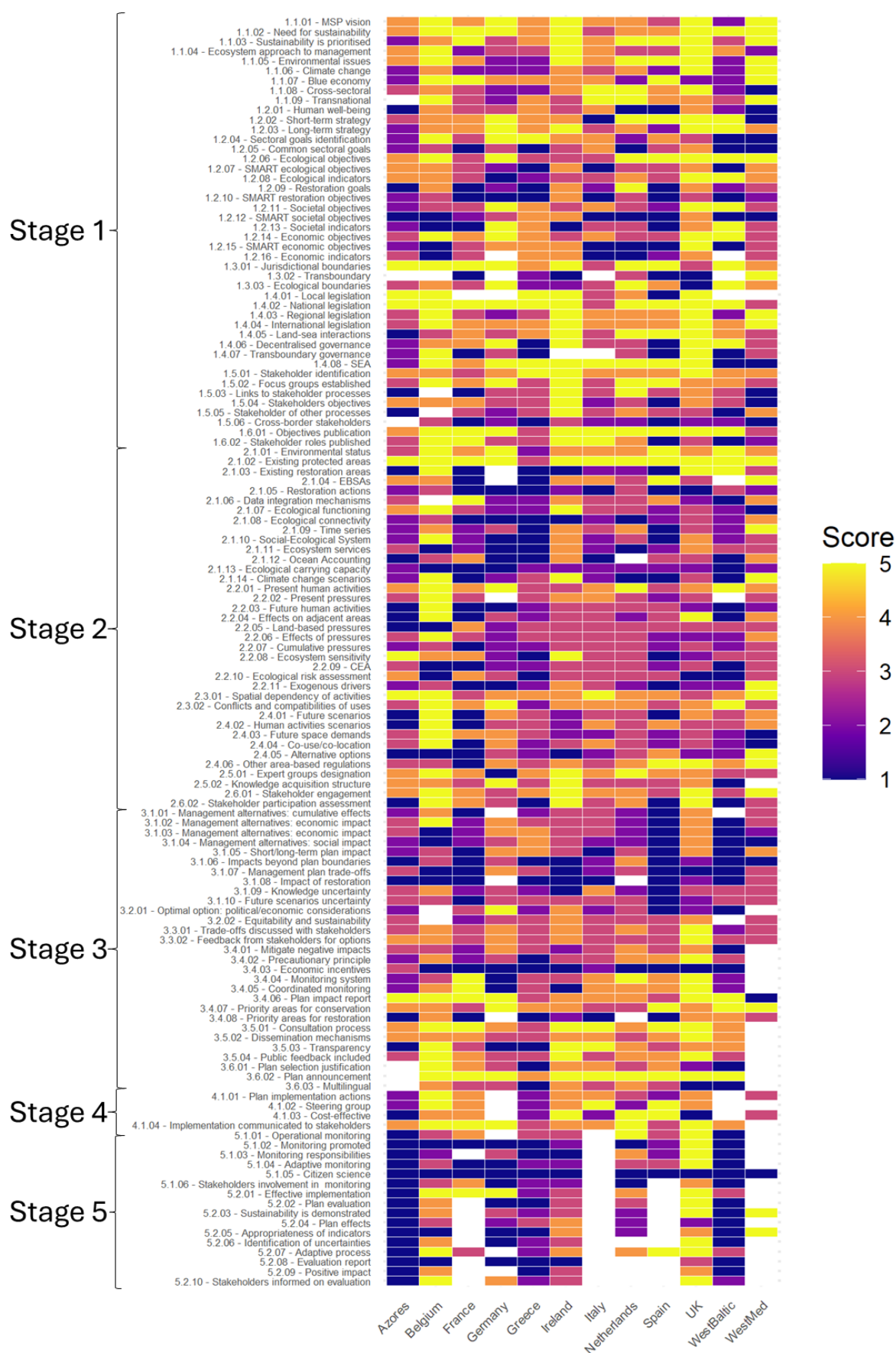
The average values of tasks'/actions' for relevance and implementation degree within each assessed PU are presented in Figure 8. The average relevance value given to the actions/tasks consistently remained above 3, indicating that they were considered moderately to very relevant across all PUs. However, the implementation degree of tasks/actions was less consistent and varied among PUs. Five PUs (i.e., France, Spain, West Baltic, Greece and Azores) reported a mean implementation degree of all tasks/actions lower than three, indicating that actions/tasks were only partially addressed, and in need of improvement in the forthcoming revisions of the plans. The remaining seven PUs showed an implementation degree between 3 and 4 (i.e., all the actions/tasks were partially or mostly addressed during the planning process). Notably, the UK and Belgium displayed the highest degrees of implementation (approaching 4), which may be explained by the earlier adoption of spatial plans in these countries.



**Figure 8.** Mean value of task/actions relevance and implementation degree for each planning unit (PU) during marine spatial plan elaboration processes. The dashed line indicates an implementation degree of 3 (i.e., partially addressed, with the understanding that improvements are needed in subsequent plan revisions), and a relevance level of 3 (i.e., moderately relevant).



Findings on the implementation degree of each action and task during the planning process across the 12 different PUs are summarised in Figure 9. This figure offers an overview of how tasks and actions are grouped and executed throughout the various stages of the planning process, highlighting both achievements and areas requiring further progress. In Stage 1, which focuses on defining the objectives and targets of the plan, as well as establishing geographical boundaries and understanding relevant legal frameworks, generally all tasks/actions exhibited a high degree of implementation. The clarity of these foundational tasks likely contributed to their high completion rate across most sites. Moreover, as EU countries are mandated to develop national marine spatial plans, Stage 1 has likely been adopted by authorities primarily to fulfill or catch up on this obligation. Moving into Stage 2, which involves developing governance structures, institutional setups, and engaging stakeholders, the implementation level decreased. This reflects the inherent complexity and coordination challenges of this phase, particularly as it requires active collaboration and consensus-building among a wide array of participants. Stage 3, dedicated to assessing planning options, envisioning future scenarios for space requirements driven by human activities and incorporating climate change considerations, showed varied implementation degree of tasks/actions. The first part of this stage, which deals with evaluating planning options, presents the lower levels of implementation in relation to future scenarios and their implications. The second half of tasks/actions showed a higher degree of implementation, related to preparing the planning proposal, public consultation and approval of the plan. Stage 4 emphasises the actual execution of the plan. This includes establishing management measures, setting up monitoring programs, and enforcing mechanisms to ensure compliance. In this stage, a relatively high level of implementation is observed, particularly in countries that have already approved their spatial plans. These nations seem to have made significant strides in translating their plans into actionable steps, demonstrating a mature approach to spatial management. Finally, Stage 5, the following-up phase, exhibits the lowest degree of implementation. This stage is crucial as it involves reviewing the effectiveness of the plan, learning from experiences, and making necessary adjustments based on feedback and monitoring results. However, many countries have not yet reached this phase, partly because their plans have only recently been implemented. Consequently, following-up actions remain largely unaddressed, underscoring the need for a stronger focus on systematic monitoring and adaptive management to ensure the long-term success of the plans.



**Figure 9.** Implementation degree of actions/tasks addressed during the planning process across the 12 planning units (PUs) assessed.

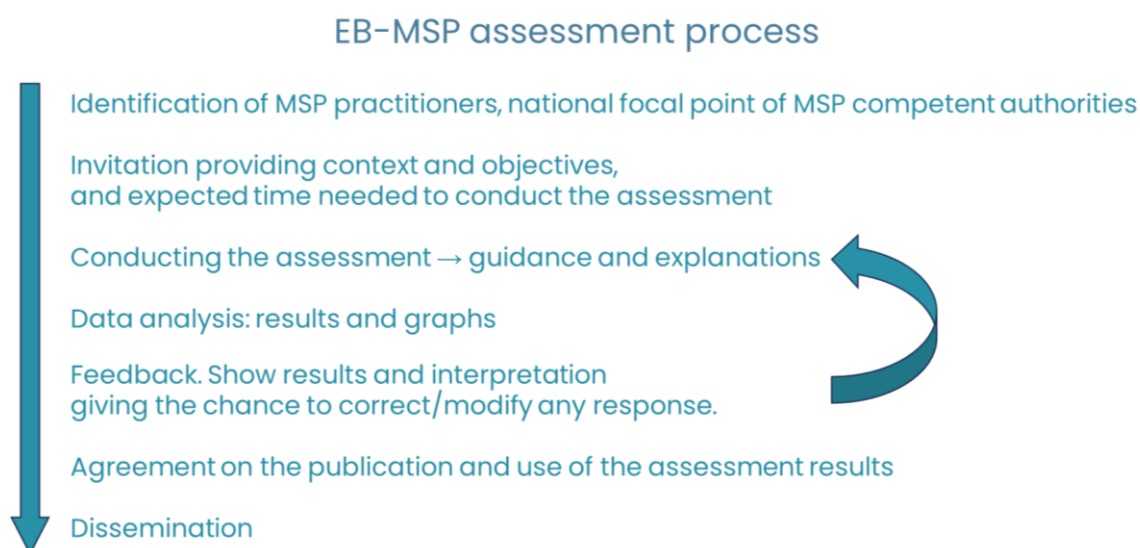
## 5 BEST PRACTICES TOWARDS EB-MSP

### 5.1 MARINE SPATIAL PLANS ASSESSMENT PROCESS

Based on the knowledge acquired during the development of the EB-MSP framework and tool, the feedback obtained from MarinePlan consortium members involved in assessing planning processes in their respective PUs, and the opinions of consulted MSP practitioners and national authorities, an optimised workflow for the assessment of MSP processes using the EB-MSP tool has been developed (Figure 10).

The initial step in conducting a thorough evaluation of MSP processes and their overarching context involves identifying the key personnel engaged in the planning phases. This includes MSP practitioners and national focal points within competent authorities who can offer essential insights into the nuances of the planning process, particularly undocumented aspects. Establishing a contact person with relevant expertise and in-depth knowledge ensures an accurate and comprehensive assessment. When this is not an option, the assessment can still proceed by consulting official documents and reports generated during the planning process and contacting reference individuals for specific clarifications.

When reaching out to key personnel, it is important to clearly communicate the objectives and scope of the assessment and to provide relevant information about the process. The focus should be on explaining the structure of the questionnaire, the dynamics of the assessment process, and an estimation of the time required to complete the evaluation.



**Figure 10.** The recommended workflow for the assessment of a marine spatial planning process using the EB-MSP tool.

When assessing plans that have already been adopted, the objective is not to critique or undervalue national efforts, but to analyse how the planning process was carried out, identify any gaps, and provide constructive recommendations for future iterations. For plans still under development, the assessment framework serves as a guiding tool, emphasising tasks and actions critical to each stage of the process. Not all stages may require equal scrutiny; priority should be given to those already addressed, while strategic guidance should be offered for upcoming planning phases. Adopting this

assessment methodology enables stakeholders to gain a holistic view of the process, aligning with the principles of EB-MSP and outlining actionable steps for subsequent stages.

To achieve optimal outcomes, the assessment should ideally be divided into multiple sessions, involving representatives from national authorities or other relevant bodies. It is recommended to allocate approximately 10 hours, distributed across two or three sessions, as certain concepts and tasks may require additional explanations, particularly when engaging MSP practitioners or officials. If the evaluator is not directly involved in the planning process, additional time may be necessary to review official documents from various planning phases to ensure a thorough understanding of the context.

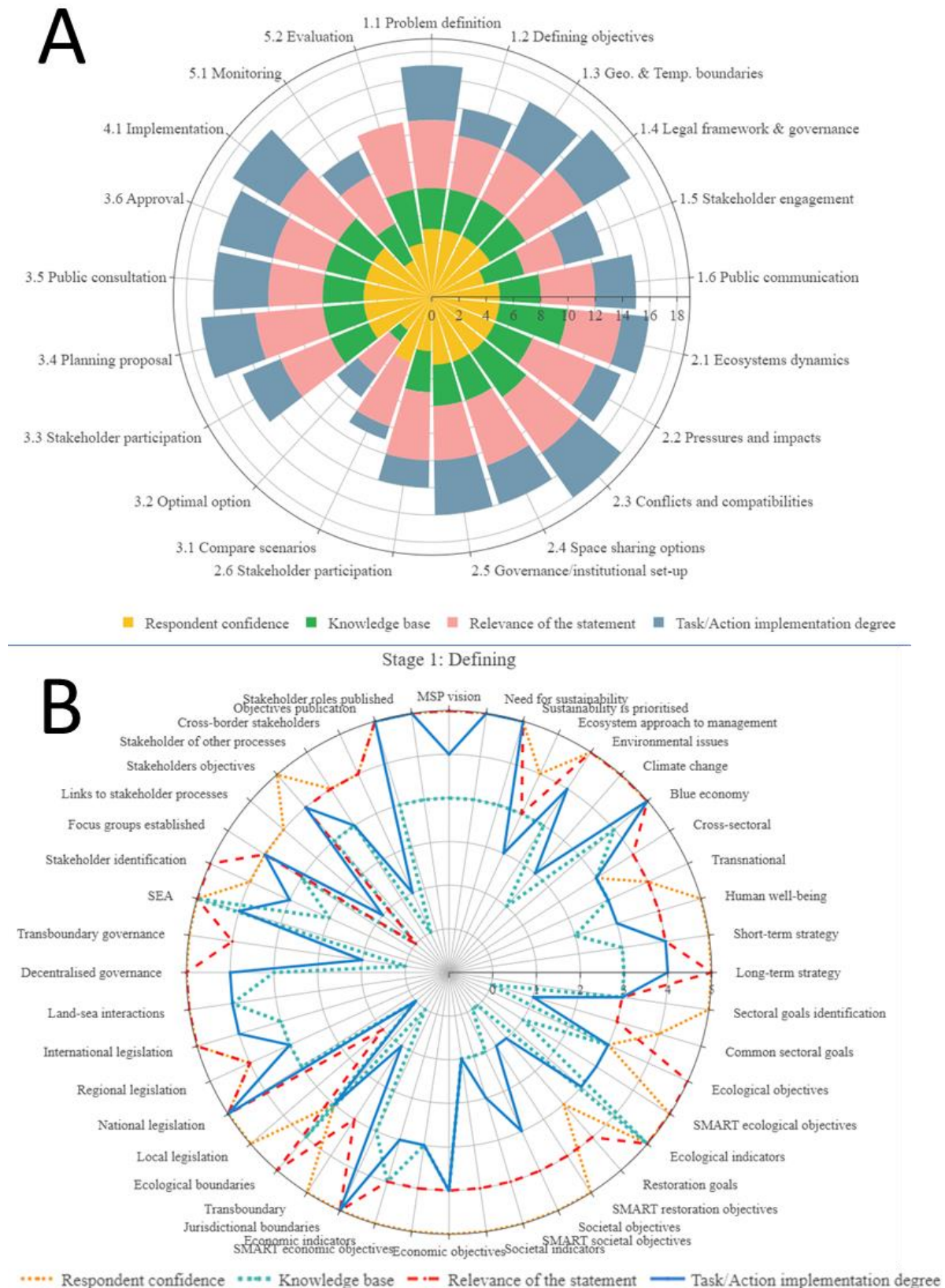
Once the assessment is complete, an exploratory data analysis should be performed to identify any inconsistent or anomalous responses. If inconsistencies are detected, it may be necessary to revisit specific questions and refine the answers. This refinement process can benefit from consulting official documentation or engaging in deeper discussions to clarify discrepancies. Visual tools, such as the synthesis graphs generated by the EB-MSP assessment tool (see Figure 11 as an example), can be instrumental in interpreting the data and pinpointing areas for improvement.

It is strongly advised to present the findings to representatives of national authorities for their feedback. This collaborative approach ensures the accuracy of the results and fosters agreement on how the insights will be utilised. Feedback sessions should include clear explanations of the assessment data, providing opportunities for stakeholders to make adjustments or agree on the next steps.

Consensus on the use of the assessment results is essential. While the results typically do not contain sensitive information, it is important to inform participants that the findings will be publicly accessible. Although the assessment questions are designed to elicit objective responses, some subjectivity may persist due to the individual experiences of those involved in the planning process.

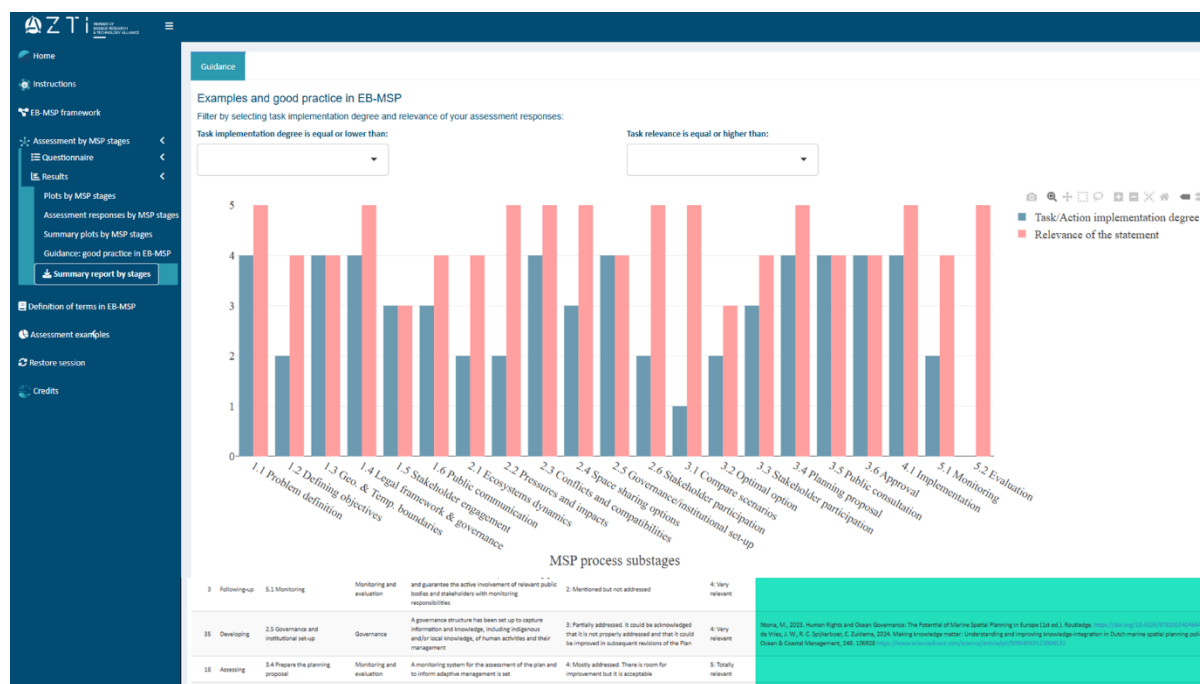
Finally, disseminating the assessment findings is a crucial step. The results should be shared transparently, highlighting both areas of success and those requiring further attention. The EB-MSP assessment tool allows the filtering of tasks/actions that present values lower than a certain threshold of implementation degree, enabling the user to extract those actions/tasks that require reinforcement (Figure 12). The tool also provides a set of key scientific publications and reports, which can serve as examples and guidance for addressing specific tasks/actions.

Whenever possible, these findings should inform the revision or adaptation of existing plans, ensuring that future efforts build on lessons learned and align more closely with the principles of sustainable marine management. By fostering a culture of continuous improvement and transparency, the assessment process can drive meaningful advancements in marine spatial planning across diverse contexts.



**Figure 11.** Two examples of graphs produced by the ecosystem-based marine spatial planning (EB-MSP) assessment tool (<https://aztidata.es/EB-MSP/>). Stacked bar chart showing the synthesis results of the assessment for the 21 substages considered during the planning process (A), and a radar plot showing the results for Stage 1 of the planning process. The online graphs allow users to visualise, rotate, move, and download them for presentations or reports.





**Figure 12.** Screenshot of the guidance and recommendations section of the ecosystem-based marine spatial planning (EB-MSP) assessment tool (<https://aztidata.es/EB-MSP/>). The user can filter the assessment results based on the implementation degree of actions/tasks and their relevance to the specific planning site (see two boxes in the upper part with the dropdown menu). Once the results are filtered, users gain access to further explanations and key references (see lower right corner as an example).

## 5.2 GUIDANCE AND RECOMMENDATIONS TOWARDS EB-MSP

This section provides a clear set of definitions, detailed guidance and recommendations for undertaking all necessary actions and tasks toward an ecosystem-based marine spatial planning (EB-MSP) process. These guidelines are carefully structured to align with the stages and sub-stages defined in the EB-MSP framework and tool, offering a systematic framework for implementation (Table 3).

Additionally, we include a curated selection of documents, including scientific publications and reports, which serve as examples of best practices within the field. While this collection is not intended to be exhaustive or cover every aspect of EB-MSP, it highlights key references that practitioners, planners, consultants and scientists can consult to enhance their understanding and improve the implementation of EB-MSP in their planning sites.

**Table 3.** Guidance, recommendations, and key reference documents to address tasks and actions regarding ecosystem-based management principles in the marine spatial planning process.

Stage	Code	Action/task	Short	Topic	Description	Guidance and recommendations	Additional documents
Stage 1	1	Stage 1. Defining	Stage 1. Defining				
Stage 1	1.1	Identification of the problem(s) that MSP can solve (problem definition)	Identification of the problem(s) that MSP can solve (problem definition)				
Stage 1	1.1.01	MSP vision is built on clear narratives which are confined by spatial and temporal boundaries	MSP vision	Definition of targets and operational objectives	An effective long-term plan can only be guaranteed if key drivers have been identified and a clear vision for the use of marine space is defined, minimising conflicts between human activities and maximising benefits, while ensuring the sustainable use and resilience of marine ecosystems.	The MSP vision ought to be built upon distinct stakeholder-driven narratives that delineate the desired future of the marine space in line with existing national and international policies. Spatial boundaries define the geographical extent of the planning area, thereby facilitating the mapping of zones designated for various activities and the identification of potential conflicts or synergies. Conversely, temporal boundaries establish the timeframe for both the planning process and the subsequent implementation of the plan, while helping to project future conditions and assess the long-term impacts of current decisions.	<p>Ehler, C., and Douvère, F., 2009. Marine Spatial Planning: a step-by-step approach toward ecosystem-based management. Intergovernmental Oceanographic Commission and Man and the Biosphere Programme. IOC Manual and Guides No. 53, 100 pp. <a href="https://www.mspglobal2030.org/resources/key-msp-references/step-by-step-approach/">https://www.mspglobal2030.org/resources/key-msp-references/step-by-step-approach/</a></p> <p>UNESCO-IOC/European Commission, 2021. MSPglobal International Guide on Marine/Maritime Spatial Planning. Paris, UNESCO. (IOC Manuals and Guides no 89), 152 pp. <a href="https://unesdoc.unesco.org/ark:/48223/pf0000379196">https://unesdoc.unesco.org/ark:/48223/pf0000379196</a></p> <p>Lukic et al. 2018. Handbook for developing Visions in MSP. Technical Study under the Assistance Mechanism for the Implementation of Maritime Spatial Planning. <a href="https://maritime-spatial-planning.ec.europa.eu/practices/handbook-visions-msp">https://maritime-spatial-planning.ec.europa.eu/practices/handbook-visions-msp</a></p>
Stage 1	1.1.02	The need to maintain the balance between ecosystem protection and long-term sustainable use of marine areas, resources and services is acknowledged	Need for sustainability	Definition of targets and operational objectives	Maintaining the balance between ecosystem protection and the long-term sustainable use of marine areas, resources, and services is a fundamental objective of marine spatial plans. This balance ensures that marine ecosystems remain healthy and resilient while supporting economic activities and social well-being.	The intensification of human activities in marine areas requires a continuous readjustment to ensure sustainable use of resources and effective ecosystem protection. When planning, it is essential to balance the use and protection of natural features, while considering the requirements of both public and private sectors, adhere to environmental laws, assess ecological feasibility, account for local/national/regional development objectives and reconcile short-term productivity with long-term sustainable development goals.	<p>Calado, H., C. Pegorelli, C. Frazão Santos. 2022. Maritime Spatial Planning and Sustainable Development, in Life Below Water. W. Leal Filho, A. M. Azul, L. Brandli, A. Lange Salvia, T. Wall Series volume: Pages: 644-655. Springer International Publishing, Cham. <a href="https://doi.org/10.1007/978-3-319-98536-7_122">https://doi.org/10.1007/978-3-319-98536-7_122</a></p> <p>Chen, F., Y. Jiang, Z. Liu, R. Lin, W. Yang, 2023. Framework system of marine sustainable development assessment based on systematic review. Marine Policy, 154: 105689 <a href="https://doi.org/10.1016/j.marpol.2023.105689">https://doi.org/10.1016/j.marpol.2023.105689</a></p>



## D1.2 A BEST PRACTICE GUIDE FOR THE IMPLEMENTATION OF EB-MSP IN EUROPEAN SEAS

Stage	Code	Action/task	Short	Topic	Description	Guidance and recommendations	Additional documents
Stage 1	1.1.03	Sustainable development is prioritised	Sustainability is prioritised	Definition of targets and operational objectives	Sustainable development is a core priority in MSP. This approach ensures that the use of marine resources satisfies present requirements without jeopardising the capacity of future generations to meet their own needs. The fundamental principles of sustainability encompass biodiversity conservation, involving the protection of critical habitats and vulnerable species, economic viability to ensure that marine resources are used sustainably to support long-term economic activities, and social well-being to guarantee the health and resilience of coastal communities and their livelihoods.	Adopting a holistic approach that integrates economic, social and environmental considerations is essential for prioritising sustainable development. This necessitates a long-term perspective, aligned with sustainability principles, where all marine activities are performed within the ecological carrying capacity, contributing to ecological resilience and social well-being. Furthermore, minimising environmental impacts (e.g., accounting for multiple pressures) and fostering inclusivity in governance processes, thereby involving all sectors and stakeholders in decision-making, are vital. Such measures are instrumental in achieving a future where marine resources are utilised to satisfy both current and future demands effectively.	<p>Kunming-Montreal Global Biodiversity Framework (<a href="https://www.cbd.int/gbf">https://www.cbd.int/gbf</a>) (<a href="https://www.cbd.int/doc/decisions/cop-15/cop-15-dec-04-en.pdf">https://www.cbd.int/doc/decisions/cop-15/cop-15-dec-04-en.pdf</a>)</p> <p>Ehler, C., and Douvère, F., 2009. Marine Spatial Planning: a step-by-step approach toward ecosystem-based management. Intergovernmental Oceanographic Commission and Man and the Biosphere Programme. IOC Manual and Guides No. 53, 100 pp. <a href="https://www.mspglobal2030.org/resources/key-msp-references/step-by-step-approach/">https://www.mspglobal2030.org/resources/key-msp-references/step-by-step-approach/</a></p> <p>UNESCO-IOC/European Commission, 2021. MSPglobal International Guide on Marine/Maritime Spatial Planning. Paris, UNESCO. (IOC Manuals and Guides no 89), 152 pp. <a href="https://unesdoc.unesco.org/ark:/48223/pf0000379196">https://unesdoc.unesco.org/ark:/48223/pf0000379196</a></p> <p>Chen, F., Y. Jiang, Z. Liu, R. Lin, W. Yang, 2023. Framework system of marine sustainable development assessment based on systematic review. Marine Policy, 154. <a href="https://www.sciencedirect.com/science/article/pii/S0308597X23002166">https://www.sciencedirect.com/science/article/pii/S0308597X23002166</a></p>

## D1.2 A BEST PRACTICE GUIDE FOR THE IMPLEMENTATION OF EB-MSP IN EUROPEAN SEAS

Stage	Code	Action/task	Short	Topic	Description	Guidance and recommendations	Additional documents
Stage 1	1.1.04	The need to implement an ecosystem approach to management is clearly specified	Ecosystem approach to management	Definition of targets and operational objectives	The adoption of an ecosystem approach to management is a fundamental principle in MSP and involves the balancing of ecological, economic and social goals and objectives to achieve sustainable use of resources. This management paradigm acknowledges that humans are an integral component of marine ecosystems and that their activities can exert considerable impacts. Therefore, it necessitates a comprehensive assessment of the socio-economic drivers of marine activities and their associated ecological consequences for developing management strategies that effectively balance human needs with ecosystem functioning, thereby ensuring healthy and productive marine environments for both present and future generations.	Implementing an ecosystem approach to management requires a shift from traditional single-sector management to a comprehensive understanding of the interconnectedness of all ecosystem components. The planning process should adopt an integrated approach, considering the intrinsic connections within and among ecosystems and addressing the cumulative impacts of multiple human activities across spatial and temporal scales. The overarching goal of the plan should be sustainability, specifically aiming to ensure the continued provision of ecosystem services that people depend on, by maintaining healthy and productive marine ecosystems. To mitigate potential harm, the precautionary principle should be consistently applied to minimize negative impacts on marine ecosystems. Additionally, the plan should be adaptive, incorporating mechanisms for continuous monitoring and the adjustment of management strategies based on new information and evolving socio-economic and environmental conditions. Finally, equitable and transparent engagement of political, sectoral and societal stakeholders must be ensured throughout the entire MSP process.	<p>implementing an Ecosystem-based Approach in Maritime Spatial Planning <a href="https://cinea.ec.europa.eu/publications/guidelines-implementing-ecosystem-based-approach-maritime-spatial-planning_en">https://cinea.ec.europa.eu/publications/guidelines-implementing-ecosystem-based-approach-maritime-spatial-planning_en</a></p> <p>Katsanevakis, S., V. Stelzenmüller, A. South, T. K. Sorensen, P. J. S. Jones, S. Kerr, F. Badalamenti, C. Anagnostou, P. Breen, G. Chust, G. D'Anna, M. Duijn, T. Filatova, F. Fiorentino, H. Hulsman, K. Johnson, A. P. Karageorgis, I. Kröncke, S. Mirto, C. Pipitone, S. Portelli, W. Qiu, H. Reiss, D. Sakellariou, M. Salomidi, L. van Hoof, V. Vassilopoulou, T. Vega Fernández, S. Vöge, A. Weber, A. Zenetos, R. t. Hofstede, 2011. Ecosystem-based marine spatial management: Review of concepts, policies, tools, and critical issues. Ocean &amp; Coastal Management, 54: 807-820 <a href="https://doi.org/10.1016/j.ocecoaman.2011.09.002">https://doi.org/10.1016/j.ocecoaman.2011.09.002</a></p> <p>WWF, 2021. Ecosystem-based Maritime Spatial Planning in Europe and how to assess it. <a href="https://www.wwf.eu/?4076441/Ecosystem-based-Maritime-Spatial-Planning-in-Europe-and-how-to-assess-it">https://www.wwf.eu/?4076441/Ecosystem-based-Maritime-Spatial-Planning-in-Europe-and-how-to-assess-it</a></p>

Stage	Code	Action/task	Short	Topic	Description	Guidance and recommendations	Additional documents
Stage 1	1.1.05	Environmental issues and biodiversity loss are specified	Environmental issues	Definition of targets and operational objectives	Refers to acknowledging the need for comprehensive environmental assessments to identify and mitigate pressures (e.g., pollution) together with the development of explicit biodiversity objectives, consistent with established biodiversity targets (e.g., Global Biodiversity Framework and EU Biodiversity Strategy) and other relevant policy instruments and commitments. Such exercises are crucial for maintaining ecosystem integrity and require adaptive strategies supported by robust data to ensure the effectiveness of MSP measures in conserving marine biodiversity.	The preservation of good environmental conditions and biodiversity depends upon establishing policies, practices, and behaviours that foster the conservation of biodiversity and natural resources human activities depend on, facilitating the achievement of numerous Sustainable Development Goals and the Aichi Biodiversity Targets. Currently, the vast majority of ecosystem and biodiversity indicators show a rapid decline, therefore, it is imperative to establish robust reference baselines for determining biodiversity status and potential losses, providing critical points of comparison for detecting changes over time. Baselines rooted in long-term data or paleoecological records are vital for setting meaningful conservation targets and accurately quantifying anthropogenic impacts.	<p>IPBES (2019): Summary for policymakers of the global assessment report on biodiversity and ecosystem services of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services. S. Díaz, J. Settele, E. S. Brondízio, H. T. Ngo, M. Guèze, J. Agard, A. Arneth, P. Balvanera, K. A. Brauman, S. H. M. Butchart, K. M. A. Chan, L. A. Garibaldi, K. Ichii, J. Liu, S. M. Subramanian, G. F. Midgley, P. Miloslavich, Z. Molnár, D. Obura, A. Pfaff, S. Polasky, A. Purvis, J. Razzaque, B. Reyers, R. Roy Chowdhury, Y. J. Shin, I. J. Visseren-Hamakers, K. J. Willis, and C. N. Zayas (eds.). IPBES secretariat, Bonn, Germany. 56 pages. <a href="https://doi.org/10.5281/zenodo.3553579">https://doi.org/10.5281/zenodo.3553579</a></p> <p>EU biodiversity strategy for 2030 <a href="https://environment.ec.europa.eu/strategy/biodiversity-strategy-2030_en">https://environment.ec.europa.eu/strategy/biodiversity-strategy-2030_en</a></p> <p>Papworth, S. K., Rist, J., Coad, L., &amp; Milner-Gulland, E. J. (2009). Evidence for shifting baseline syndrome in conservation. <i>Conservation Letters</i>, 2(2), 93-100. <a href="https://doi.org/10.1111/j.1755-263X.2009.00049.x">https://doi.org/10.1111/j.1755-263X.2009.00049.x</a></p> <p>Soga, M., K. J. Gaston, 2018. Shifting baseline syndrome: causes, consequences, and implications. <i>Frontiers in Ecology and the Environment</i>, 16: 222-230 <a href="https://doi.org/10.1002/fee.1794">https://doi.org/10.1002/fee.1794</a></p>
Stage 1	1.1.06	Climate change and its effects are clearly specified	Climate change	Definition of targets and operational objectives	Integrating knowledge on climate impacts, risks, and opportunities to ensure a climate-smart MSP. The biggest challenge posed by climate change for MSP is the associated uncertainty, as there is limited knowledge of the complexity of the processes underlying the impacts. Thus, the available knowledge (environmental, social, economic) must be used to develop flexible planning and management options that unravel the range of	MSP initiatives that are designed and implemented with explicit climate-related objectives can notably contribute to minimising climate impacts by supporting climate adaptation (e.g., allocating space for the protection of marine biodiversity and ecological resilience, decreasing some human stressors and increasing socio-ecological resilience, community-based adaptation) and mitigation actions (e.g., reduction of emissions, conservation and restoration of blue carbon ecosystems, renewable energy production), and further promoting the sustainable use and conservation of the ocean. It is important to consider climate-related changes (e.g., how, when and where) and the expected social,	<p>Frazão Santos et al., 2020. Integrating climate change in ocean planning. <i>Nature Sustainability</i> 3, 505–516. <a href="https://doi.org/10.1038/s41893-020-0513-x">https://doi.org/10.1038/s41893-020-0513-x</a></p> <p>Gissi, E., E. Manea, A. D. Mazaris, S. Frascetti, V. Almpandou, S. Bevilacqua, M. Coll, G. Guarnieri, E. Lloret-Lloret, M. Pascual, D. Petza, G. Rilov, M. Schonwald, V. Stelzenmüller, S. Katsanevakis, 2021. A review of the combined effects of climate change and other local human stressors on the marine environment. <i>Science of The Total Environment</i>, 755: 142564 <a href="https://doi.org/10.1016/j.scitotenv.2020.142564">https://doi.org/10.1016/j.scitotenv.2020.142564</a></p> <p>Frazão Santos, C., T. Agardy, L. B. Crowder, J. C. Day, M. L. Pinsky,</p>

Stage	Code	Action/task	Short	Topic	Description	Guidance and recommendations	Additional documents
					possible futures that may occur. Climate change considerations should be integrated from the outset of the planning process, ensuring this topic is consistently incorporated and mainstreamed throughout the entire plan.	economic, political and environmental consequences of those changes (e.g., fish stock movement could lead to conflicts for fisheries resources, different sectors and groups of society might be affected unequally by climate change).	<p>A. Himes-Cornell, J. M. Reimer, S. García-Morales, N. J. Bennett, A. T. Lombard, H. Calado, M. Scherer, W. Flannery, L. M. Wedding, E. Gissi, 2024. Key components of sustainable climate-smart ocean planning. npj Ocean Sustainability, 3: 10 <a href="https://doi.org/10.1038/s44183-024-00045-x">https://doi.org/10.1038/s44183-024-00045-x</a></p> <p>Queirós, A. M., T. ten Brink, M. Bas, C. J. Sweeting, S. McGuinness, H. Edwards, E. Talbot, P. B. Sør Dahl, C. Lønborg, S. R. Deecker-Simon, M. Elliott, R. Sardá, J. A. Fernandes-Salvador, C. Pretty, R. Varjopuro, E. A. Virtanen, E. Gissi, K. Yates, A. Morf, C. Frazão-Santos, I. Withouck, M. Frost, M. Coll, K. Gee, C. nic Aonghusa, 2025. The opportunity for climate action through climate-smart Marine Spatial Planning. npj Ocean Sustainability, 4: 26 <a href="https://doi.org/10.1038/s44183-025-00129-2">https://doi.org/10.1038/s44183-025-00129-2</a></p> <p>Zaucha, J., K. Gee, E. Ramieri, L. Neimane, N. Alloncle, N. Blažauskas, H. Calado, C. Cervera-Núñez, V. M. Kuzmanović, M. Stancheva, J. Witkowska, S. E. Schütz, J. R. Zapatero, C. N. Ehler, 2025. Implementing the EU MSP Directive: Current status and lessons learned in 22 EU Member States. Marine Policy, 171: 106425 <a href="https://doi.org/10.1016/j.marpol.2024.106425">https://doi.org/10.1016/j.marpol.2024.106425</a></p> <p>Arafeh-Dalmau, N., A. Munguia-Vega, F. Micheli, A. Vilalta-Navas, J. C. Villaseñor-Derbez, M. Précoma-de la Mora, D. S. Schoeman, A. Medellín-Ortíz, K. C. Cavanaugh, O. Sosa-Nishizaki, T. L. U. Burnham, C. J. Knight, C. B. Woodson, M. Abas, A. Abadía-Cardoso, O. Aburto-Oropeza, M. W. Esgro, N. Espinosa-Andrade, R. Beas-Luna, N. Cardenas, M. H. Carr, K. E. Dale, F. Cisneros-Soberanis, A. L. Flores-Morales, S. Fulton, E. García-Rodríguez, A. Giron-Nava, M. G. Gleason, A. L. Green, A. Hernández-Velasco, B. Ibarra-Macías, A. F. Johnson, J. Lorda, L. Malpica-Cruz, G. Montaña-Moctezuma, C. Olguín-Jacobson, A. Parés-Sierra, P. T. Raimondi, G. Ramírez-Ortiz, A. Ramírez-Valdez, H. Reyes-Bonilla, E. Saarman, L. E. Saldaña-Ruiz, A. Smith, C. Soldatini, A. Suárez, G. Torres-Moye, M. Walther, E. B. Watson, S. Worden, H. P. Possingham, 2023. Integrating climate adaptation and transboundary management: Guidelines for designing climate-</p>

## D1.2 A BEST PRACTICE GUIDE FOR THE IMPLEMENTATION OF EB-MSP IN EUROPEAN SEAS

Stage	Code	Action/task	Short	Topic	Description	Guidance and recommendations	Additional documents
							<p>smart marine protected areas. One Earth, 6: 1523-1541  <a href="https://doi.org/10.1016/j.oneear.2023.10.002">https://doi.org/10.1016/j.oneear.2023.10.002</a></p> <p>UNESCO-IOC. 2021. MSPglobal Policy Brief: Climate Change and Marine Spatial Planning. Paris, UNESCO. (IOC Policy Brief no 3).  <a href="https://unesdoc.unesco.org/ark:/48223/pf0000375721">https://unesdoc.unesco.org/ark:/48223/pf0000375721</a></p>
Stage 1	1.1.07	The need for new space for the diversification of blue economy sectors is clearly recognised	Blue economy	Definition of targets and operational objectives	<p>The blue economy encompasses all sectoral activities occurring in marine and coastal areas, or those related to the sea (i.e., activities that use or produce goods and services from the ocean or sea-based operations). Alongside traditional maritime activities, new and emerging sectors (e.g., blue bioeconomy and biotechnology, submarine cables, renewable energies) are developing to leverage untapped resources that can generate jobs and socioeconomic benefits. These activities will compete for space with existing marine activities or will require new areas for their development, potentially leading to conflicts and increasing (cumulative) pressure on marine ecosystems. Thus, the need for new space to accommodate the diversification of blue economy sectors must be considered during planning to ensure the sustainability of marine activities.</p>	<p>The blue economy is projected to continue its growth, posing management challenges in balancing the pace of development with the potential conflicts among different sectors and the preservation of marine ecosystems and their services. The allocation of space for new activities must adhere to a transparent process that ensures all sectors, including minority ones, are equitably represented.</p>	<p>Strosser et al. 2021. Study on Integrating an Eco-system-based Approach into Maritime Spatial Planning. What are the lessons from current practice in applying Ecosystem-Based Approaches in Maritime Spatial Planning? Results from the literature review.  <a href="https://cinea.ec.europa.eu/publications/digital-publications/study-integrating-ecosystem-based-approach-maritime-spatial-planning_en">https://cinea.ec.europa.eu/publications/digital-publications/study-integrating-ecosystem-based-approach-maritime-spatial-planning_en</a></p> <p>World Bank. 2022. Marine Spatial Planning for a Resilience and Inclusive Blue Economy.  <a href="https://www.worldbank.org/en/programs/problue/publication/marine-spatial-planning-for-a-resilient-and-inclusive-blue-economy-toolkit">https://www.worldbank.org/en/programs/problue/publication/marine-spatial-planning-for-a-resilient-and-inclusive-blue-economy-toolkit</a></p>

Stage	Code	Action/task	Short	Topic	Description	Guidance and recommendations	Additional documents
Stage 1	1.1.08	Cross-sectoral issues are clearly raised	Cross-sectoral	Definition of targets and operational objectives	In MSP, addressing cross-sectoral issues is essential to balance diverse uses and ensure sustainable activities	<p>UN Agenda 21 advocates for integrated coastal and ocean management by promoting compatibility among various sectors. This involves identifying current and future coastal uses and their interactions and applying preventive and precautionary approaches throughout project planning and implementation. This integrated approach helps mitigate conflicts, conserve marine ecosystems, and support sustainable resource utilization. Achieving these goals necessitates the development of effective communication and coordination mechanisms. This includes establishing platforms that facilitate the engagement of all stakeholders in joint planning processes, thereby enhancing knowledge exchange and reconciling potential conflicts between sectors (e.g. fishing vs offshore renewable energy vs marine conservation). When addressing cross-sectoral issues, key sectors to consider, among others, include: marine renewable energies, commercial, small-scale and recreational fisheries, aquaculture, shipping, oil and gas, military, deep sea mining, conservation, coastal communities, coastal development, tourism, biotechnology, shipyards and ports (see Haugen et al. 2024).</p>	<p>UN 1992. Report of the United Nations conference on environment and development: protection of the oceans, all kinds of seas, including enclosed and semi-enclosed seas, and coastal areas and the protection, rational use and development of their living resources. A/CONF.151/26 (Vol. II)  <a href="https://www.un.org/depts/los/consultative_process/documents/A21-Ch17.htm?utm_source=chatgpt.com">https://www.un.org/depts/los/consultative_process/documents/A21-Ch17.htm?utm_source=chatgpt.com</a></p> <p>Haugen, J. B., J. S. Link, E. A. Fulton, M. Dickey-Collas, R. E. Brainard, A. Bundy, 2024. A performance measure framework for ecosystem-based management. ICES Journal of Marine Science: <a href="https://doi.org/10.1093/icesjms/fsae164">https://doi.org/10.1093/icesjms/fsae164</a></p>

Stage	Code	Action/task	Short	Topic	Description	Guidance and recommendations	Additional documents
Stage 1	1.1.09	The need for transnational cooperation is clearly acknowledged	Transnational	Definition of targets and operational objectives	Acknowledging transnational cooperation is important, particularly when dealing with shared marine ecosystems and resources, creating the need for formal collaborative processes, e.g. joint management plans and transboundary spatial zoning aligning with regional sea frameworks.	Transnational cooperation will primarily require the identification of human activities, infrastructures and ecological or underwater cultural heritage features of cross-border interest (e.g., fisheries, protected areas, offshore renewable energy projects, environmental threats). Then, the relevance of cross-border topics should be established and coherent handling among neighbouring countries should be pursued (see Pınarbaşı et al. (2020) and HELCOM-VASAB (2022) for recommendations on how coherence in handling several topics between neighbouring countries can be assessed). Transnational cooperation will be facilitated by harmonizing data collection and monitoring procedures and guaranteeing the interoperability of data, creating cross-border collaboration platforms to share best practices and developing common indicators to assess ecosystem health across national borders and solve problems jointly. Maintaining platforms that facilitate regular intergovernmental dialogue and stakeholder participation will also ensure coordination in decision-making while promoting cross-border scientific research.	<p>HELCOM-VASAB, 2022. Voluntary guidance for assessment of cross-border coherence in Maritime Spatial Planning, Version submitted to HELCOM-VASAB MSP WG 23- 2021, 2022. Available from <a href="https://helcom.fi/wp-content/uploads/2022/02/Voluntary-guidance-for-assessment-of-cross-border-coherence-in-MSP-.pdf">https://helcom.fi/wp-content/uploads/2022/02/Voluntary-guidance-for-assessment-of-cross-border-coherence-in-MSP-.pdf</a></p> <p>VASAB, 2024. Policy Brief Addressing the fragmentation of Ocean Governance across borders, 16 pp. <a href="https://vasab.org/project/emsp-nbsr/allresults/policy-briefs-reports/">https://vasab.org/project/emsp-nbsr/allresults/policy-briefs-reports/</a></p> <p>Pınarbaşı, K., I. Galparsoro, N. Alloncle, F. Quemmerais, Á. Borja, 2020. Key issues for a transboundary and ecosystem-based maritime spatial planning in the Bay of Biscay. Marine Policy, 120: 104131 <a href="https://doi.org/10.1016/j.marpol.2020.104131">https://doi.org/10.1016/j.marpol.2020.104131</a></p>
Stage 1	1.2	Defining goals and objectives	Defining goals and objectives				



## D1.2 A BEST PRACTICE GUIDE FOR THE IMPLEMENTATION OF EB-MSP IN EUROPEAN SEAS

Stage	Code	Action/task	Short	Topic	Description	Guidance and recommendations	Additional documents
Stage 1	1.2.01	Human well-being is identified as the overarching objective of the plan	Human well-being	Definition of targets and operational objectives	Prioritizing human well-being as the overarching objective requires an integration of cultural, social and economic dimensions together with ecological considerations to make sure that MSP enhances livelihoods, promotes equitable access, and supports community resilience.	The equitable use of marine resources and the maintenance of healthy and sustainable marine ecosystems are essential to achieving the UN SDGs and fostering global well-being. Therefore, planning, through equitable governance processes and policies that prioritize the sustainable use of marine resources, must safeguard the health of ocean ecosystems and their capacity to provide vital ecosystem services to human populations. This will require empowering stakeholders' decision-making, facilitating the co-development of management strategies and monitoring social indicators alongside ecological and economic metrics to assess progress towards enhanced human well-being. Metrics required for scoring community well-being can be found in UNESCO/EC (2021).	<p>Chen, M., Y. Wang, Z. Xu, 2024. A framework for assessing the blue equity of social-ocean systems in marine governance transformation. <i>Frontiers in Marine Science</i>, Volume 11 - 2024: <a href="https://doi.org/10.3389/fmars.2024.1403194">https://doi.org/10.3389/fmars.2024.1403194</a></p> <p>UNESCO-IOC/EC, 2021. MSPglobal International Guide on Marine/Maritime Spatial Planning. Paris, UNESCO. (IOC Manuals and Guides no 89), 152 pp. <a href="https://unesdoc.unesco.org/ark:/48223/pf0000379196">https://unesdoc.unesco.org/ark:/48223/pf0000379196</a></p>
Stage 1	1.2.02	Short-term strategic goals are defined (<6 years; i.e., the Plan is linked to other legislative cycles and sectoral strategies)	Short-term strategy	Definition of targets and operational objectives	It is imperative to establish short-term strategic goals. These goals, intrinsically linked to prevailing legislative cycles and sectoral strategies, serve to direct efforts towards the attainment of the expected results and will provide specific checkpoints for progress. While objectives are precise and tangible, allowing for the establishment of measurable indicators and targets to measure progress, goals represent broader intentions that provide overall direction and purpose for MSP (e.g., to protect ecologically valuable areas, to restore degraded zones, to reduce conflicts between existing and future human activities), acting as the overarching framework within which specific objectives are subsequently developed.	<p>To ensure effective and coherent MSP, short-term strategic goals should be closely aligned with the implementation cycles of key legislation. This alignment is critical for reflecting changes in environmental, economic, or social conditions. It is also important to ensure that MSP goals are responsive to updates in sectoral strategies (e.g., fisheries, energy, transport) and their associated planning instruments. Furthermore, establishing robust institutional mechanisms is essential to enable adaptive management and facilitate mid-cycle reviews of the plan, guaranteeing responsiveness to emerging data, policy shifts, and stakeholder input.</p>	<p>Ehler, C., Douvère, F., 2009. Marine Spatial Planning: a step-by-step approach toward ecosystem-based management. IOC Manual and Guides no. 53, 98 pp. <a href="https://www.mspglobal2030.org/wp-content/uploads/2019/03/Marine-spatial-planning-a-step-by-step-approach.pdf">https://www.mspglobal2030.org/wp-content/uploads/2019/03/Marine-spatial-planning-a-step-by-step-approach.pdf</a></p> <p>UNESCO-IOC/European Commission, 2021. MSPglobal International Guide on Marine/Maritime Spatial Planning. Paris, UNESCO. (IOC Manuals and Guides no 89), 152 pp. <a href="https://unesdoc.unesco.org/ark:/48223/pf0000379196">https://unesdoc.unesco.org/ark:/48223/pf0000379196</a></p> <p>World Bank, 2022. Marine Spatial Planning for a Resilience and Inclusive Blue Economy. <a href="https://www.worldbank.org/en/programs/problue/publication/marine-spatial-planning-for-a-resilient-and-inclusive-blue-economy-toolkit">https://www.worldbank.org/en/programs/problue/publication/marine-spatial-planning-for-a-resilient-and-inclusive-blue-economy-toolkit</a></p>

## D1.2 A BEST PRACTICE GUIDE FOR THE IMPLEMENTATION OF EB-MSP IN EUROPEAN SEAS

Stage	Code	Action/task	Short	Topic	Description	Guidance and recommendations	Additional documents
Stage 1	1.2.03	Long-term strategic goals are defined (>6 years). Climate change consideration and long-term conservation and sustainability	Long-term strategy	Definition of targets and operational objectives	Long-term strategic goals (>6 years) should prioritize climate resilience, conservation, and the sustainable use of marine resources, accounting for shifting baselines and ecological uncertainty. Embedding projections of climate-driven species redistributions and cumulative impacts into planning is important as it enables adaptive, future-proof strategies. Priority should be given to protecting climatic refugia and ensuring ecological connectivity across space and time to support biodiversity persistence under long-term change.	Several approaches have been proposed to integrate climate change into systematic conservation planning by incorporating climate change-related temporal dynamics (e.g. climate velocity, species range shifts, climate refugia) alongside spatial biodiversity data.	<p>UNESCO-IOC. 2021. MSPglobal Policy Brief: Climate Change and Marine Spatial Planning. Paris, UNESCO. (IOC Policy Brief no 3). <a href="https://unesdoc.unesco.org/ark:/48223/pf0000375721">https://unesdoc.unesco.org/ark:/48223/pf0000375721</a></p> <p>Frazão Santos, C., T. Agardy, L. B. Crowder, J. C. Day, M. L. Pinsky, A. Himes-Cornell, J. M. Reimer, S. García-Morales, N. J. Bennett, A. T. Lombard, H. Calado, M. Scherer, W. Flannery, L. M. Wedding, E. Gissi, 2024. Key components of sustainable climate-smart ocean planning. npj Ocean Sustainability, 3: 10 <a href="https://doi.org/10.1038/s44183-024-00045-x">https://doi.org/10.1038/s44183-024-00045-x</a></p>
Stage 1	1.2.04	Sectoral goals have been identified and addressed	Sectoral goals identification	Definition of targets and operational objectives	The marine environment is experiencing a remarkable proliferation of emerging human activities (e.g., renewable energy, biotechnology, recreational activities), each with its specific objectives that may generate conflicts with one another or with established, traditional marine activities such as shipping and fisheries. To mitigate potential conflicts and foster synergies among sectors pursuing shared goals, it is imperative that marine spatial planning comprehensively identifies both existing and prospective marine activities and their respective goals.	The identification of sectoral goals should be conducted through transparent dialogues with all stakeholders interested in marine resources, avoiding inequalities and power imbalances. Such disparities become particularly pronounced when there are conflicting interests between resource-rich sectors (e.g., oil and gas, commercial fisheries), with established access to decision-makers, and resource-poor or unorganized sectors that have historically exercised less influence in decision-making processes (e.g., recreational and artisanal fisheries, Indigenous peoples). Therefore, special efforts must be undertaken to ensure the equitable representation of the objectives of all sectors within the marine spatial plan.	<p>Stephenson, R. L., A. J. Hobday, C. Cvitanovic, K. A. Alexander, G. A. Begg, R. H. Bustamante, P. K. Dunstan, S. Frusher, M. Fudge, E. A. Fulton, M. Haward, C. Macleod, J. McDonald, K. L. Nash, E. Ogier, G. Pecl, É. E. Plagányi, I. van Putten, T. Smith, T. M. Ward, 2019. A practical framework for implementing and evaluating integrated management of marine activities. Ocean &amp; Coastal Management, 177: 127-138 <a href="https://doi.org/10.1016/j.ocecoaman.2019.04.008">https://doi.org/10.1016/j.ocecoaman.2019.04.008</a></p> <p>Haugen, J. B., J. S. Link, K. Cribari, A. Bundy, M. Dickey-Collas, H. M. Leslie, J. Hall, E. A. Fulton, J. J. Levenson, D. M. Parsons, I. M. Hassellöv, E. Olsen, G. S. DePiper, R. R. Gentry, D. E. Clark, R. E. Brainard, D. Mateos-Molina, A. Borja, S. Gelcich, M. Guilhon, N. C. Ban, D. Pedreschi, A. Khan, R. Chuenpagdee, S. I. Large, O. Defeo, L. Shannon, S. A. Bailey, A. Jordan, A. L. Agnalt, 2024. Marine ecosystem-based management: challenges remain, yet solutions exist, and progress is occurring. npj Ocean Sustainability, 3: 7 <a href="https://doi.org/10.1038/s44183-024-00041-1">https://doi.org/10.1038/s44183-024-00041-1</a></p>

## D1.2 A BEST PRACTICE GUIDE FOR THE IMPLEMENTATION OF EB-MSP IN EUROPEAN SEAS

Stage	Code	Action/task	Short	Topic	Description	Guidance and recommendations	Additional documents
Stage 1	1.2.05	Common goals for different sectors sharing the same space have been addressed	Common sectoral goals	Definition of targets and operational objectives	Addressing multiple management objectives is a fundamental consideration. However, an efficient strategy for the multi-faceted use of ocean space and marine resources necessitates more than mere trade-off estimations. It demands a holistic approach that explicitly identifies opportunities to achieve common objectives across diverse sectors, while simultaneously ensuring adherence to marine ecosystem conservation and sustainable use objectives. Given the inherent competition for marine space, this approach is not a natural outcome but must be driven by clear motivations and demonstrable added values, such as socioeconomic synergies, the facilitation of otherwise unfeasible uses, and more efficient use of ocean space.	Understanding the shared goals of various sectors operating within the same spatial area facilitates the integrated management of their activities, enabling the identification of compatibilities between activities that can coexist or even benefit each other, making it possible to evaluate options for shared use and co-location of these activities. When common objectives are identified for activities that share the same space, it allows for coordinated management, minimizing potential conflicts between these activities, while maximizing common benefits.	<p>Stephenson, R. L., A. J. Hobday, C. Cvitanovic, K. A. Alexander, G. A. Begg, R. H. Bustamante, P. K. Dunstan, S. Frusher, M. Fudge, E. A. Fulton, M. Haward, C. Macleod, J. McDonald, K. L. Nash, E. Ogier, G. Pecl, É. E. Plagányi, I. van Putten, T. Smith, T. M. Ward, 2019. A practical framework for implementing and evaluating integrated management of marine activities. <i>Ocean &amp; Coastal Management</i>, 177: 127-138  <a href="https://doi.org/10.1016/j.ocecoaman.2019.04.008">https://doi.org/10.1016/j.ocecoaman.2019.04.008</a></p> <p>Haugen, J. B., J. S. Link, K. Cribari, A. Bundy, M. Dickey-Collas, H. M. Leslie, J. Hall, E. A. Fulton, J. J. Levenson, D. M. Parsons, I. M. Hassellöv, E. Olsen, G. S. DePiper, R. R. Gentry, D. E. Clark, R. E. Brainard, D. Mateos-Molina, A. Borja, S. Gelcich, M. Guilhon, N. C. Ban, D. Pedreschi, A. Khan, R. Chuenpagdee, S. I. Large, O. Defeo, L. Shannon, S. A. Bailey, A. Jordan, A. L. Agnalt, 2024. Marine ecosystem-based management: challenges remain, yet solutions exist, and progress is occurring. <i>npj Ocean Sustainability</i>, 3: 7 <a href="https://doi.org/10.1038/s44183-024-00041-1">https://doi.org/10.1038/s44183-024-00041-1</a></p> <p>Schultz- et al. (2018). Ocean Multi-Use Action Plan, MUSES project. Edinburgh. <a href="https://sites.dundee.ac.uk/muses/wp-content/uploads/sites/70/2018/10/MUSES-Multi-Use-Action-Plan.pdf">https://sites.dundee.ac.uk/muses/wp-content/uploads/sites/70/2018/10/MUSES-Multi-Use-Action-Plan.pdf</a></p>
Stage 1	1.2.06	Ecological objectives are defined, accounting for biodiversity, natural values, and preservation of ecosystem components and services	Ecological objectives	Definition of targets and operational objectives	The definition of ecological objectives requires accounting for biodiversity, natural values and preservation of critical habitats and ecosystem functioning and services. It is essential to establish these objectives at the beginning of the planning process, as they will direct decision-making and the management of human activities to achieve desired outcomes without compromising sustainability. These objectives must be precise, specific, tangible, concrete, and	<p>The formulation of ecological objectives should rely on the most current and robust scientific data and evidence, account for uncertainty by applying the precautionary principle and ensure alignment with relevant environmental legislation. Ultimately, these objectives should aim to guarantee that marine ecosystems are healthy, resilient and fully functional, providing essential ecosystem goods and services and that critical habitats and key species are adequately protected.</p>	<p>Ehler, C., Douvère, F., 2009. Marine Spatial Planning: a step-by-step approach toward ecosystem-based management. <i>IOC Manual and Guides no. 53</i>, 98 pp.  <a href="https://www.mspglobal2030.org/wp-content/uploads/2019/03/Marine-spatial-planning-a-step-by-step-approach.pdf">https://www.mspglobal2030.org/wp-content/uploads/2019/03/Marine-spatial-planning-a-step-by-step-approach.pdf</a></p> <p>UNESCO-IOC/European Commission, 2021. MSPglobal International Guide on Marine/Maritime Spatial Planning. Paris, UNESCO. (IOC Manuals and Guides no 89), 152 pp.  <a href="https://unesdoc.unesco.org/ark:/48223/pf0000379196">https://unesdoc.unesco.org/ark:/48223/pf0000379196</a></p> <p>Stephenson, R. L., A. J. Hobday, 2024. Blueprint for Blue</p>

Stage	Code	Action/task	Short	Topic	Description	Guidance and recommendations	Additional documents
					measurable, facilitating the identification of appropriate evaluation criteria, which can be used to determine the degree of objective attainment over time. Such an approach enables the evaluation of management performance, reduces uncertainty, and allows for the establishment of corrective measures through adaptive management, ultimately improving planning and management efficacy.		<p>Economy implementation. Marine Policy, 163: 106129  <a href="https://doi.org/10.1016/j.marpol.2024.106129">https://doi.org/10.1016/j.marpol.2024.106129</a></p> <p>Manea, E., S. Bianchelli, E. Fanelli, R. Danovaro, E. Gissi, 2020. Towards an Ecosystem-Based Marine Spatial Planning in the deep Mediterranean Sea. Science of The Total Environment, 715: 136884 <a href="https://doi.org/10.1016/j.scitotenv.2020.136884">https://doi.org/10.1016/j.scitotenv.2020.136884</a></p>
Stage 1	1.2.07	Ecological objectives are SMART (specific, measurable, achievable, relevant, and time-bound)	SMART ecological objectives	Definition of targets and operational objectives	<p>Ecological objectives must adhere to the SMART criteria (specific, measurable, achievable, relevant and time-bound). This approach ensures that overarching conservation goals are translated into actionable and measurable outcomes.</p>	<p>SMART objectives should be concrete and well-defined, allowing for the verification of their achievement through indicators. They must be ambitious yet realistically achievable within the given context, available knowledge, and resources. Furthermore, they should be intrinsically linked to the drivers and vision of the MSP, lead to a desired goal, and should be bound by a specific timeframe for completion, thereby enabling the evaluation of their attainment. Additionally, established objectives must be inclusive, ensuring the participation of all parties potentially affected by the plan, and equitable, aiming to address systemic injustice and inequity (see Ehler and Douvère, 2009; UNESCO-IOC/EC, 2021).</p> <p>The use of SMART objectives ensures clarity for stakeholders, facilitates the tracking of progress through indicators, and enables adaptive management. Their consistent use ultimately strengthens accountability and promotes the alignment of ecological targets with relevant policy instruments.</p>	<p>Ehler, C., Douvère, F., 2009. Marine Spatial Planning: a step-by-step approach toward ecosystem-based management. IOC Manual and Guides no. 53, 98 pp.  <a href="https://www.mspglobal2030.org/wp-content/uploads/2019/03/Marine-spatial-planning-a-step-by-step-approach.pdf">https://www.mspglobal2030.org/wp-content/uploads/2019/03/Marine-spatial-planning-a-step-by-step-approach.pdf</a></p> <p>UNESCO-IOC/EC, 2021. MSPglobal International Guide on Marine/Maritime Spatial Planning. Paris, UNESCO. (IOC Manuals and Guides no 89), 152 pp.  <a href="https://unesdoc.unesco.org/ark:/48223/pf0000379196">https://unesdoc.unesco.org/ark:/48223/pf0000379196</a></p> <p>Katsanevakis, S., V. Stelzenmüller, A. South, T. K. Sørensen, P. J. S. Jones, S. Kerr, F. Badalamenti, C. Anagnostou, P. Breen, G. Chust, G. D'Anna, M. Duijn, T. Filatova, F. Fiorentino, H. Hulsman, K. Johnson, A. P. Karageorgis, I. Kröncke, S. Mirto, C. Pipitone, S. Portelli, W. Qiu, H. Reiss, D. Sakellariou, M. Salomidi, L. van Hoof, V. Vassilopoulou, T. Vega Fernández, S. Vöge, A. Weber, A. Zenetos, R. t. Hofstede, 2011. Ecosystem-based marine spatial management: Review of concepts, policies, tools, and critical issues. Ocean &amp; Coastal Management, 54: 807-820  <a href="https://doi.org/10.1016/j.ocecoaman.2011.09.002">https://doi.org/10.1016/j.ocecoaman.2011.09.002</a></p>

Stage	Code	Action/task	Short	Topic	Description	Guidance and recommendations	Additional documents
Stage 1	1.2.08	Ecological indicators and their targets/threshold levels have been defined to monitor the performance of the plan	Ecological indicators	Definition of targets and operational objectives	Ecological indicators and their corresponding targets/thresholds are employed to objectively assess progress toward predetermined ecological objectives and evaluate the effectiveness of management actions. By comparing results against these benchmarks, it is possible to ascertain the extent to which management actions have been successful, allowing for the adaptation of these strategies, if necessary, to ensure the fulfilment of established conservation objectives. For these ecological indicators and their associated targets/thresholds to be truly valuable in evaluating management outcomes, they must be aligned with the overarching ecological objectives.	For indicators to be effective, they must possess ecological significance, demonstrate responsiveness to pressures, and be linked to defined reference conditions. This enables the detection of deviations and facilitates the implementation of adaptive management strategies when predefined thresholds are exceeded. Of high importance here are the specific criteria and methodological standards that have been developed to operationalize the MSFD (EC, 2017). In an EBM context, performance measures are required to encompass the ecological characteristics of the ecosystem. Crucial data concerning the principal dynamics of an ecosystem, including, but not limited to, species diversity and abundance, systemic changes and perturbations, population demographics, growth rates, and mortality rates of keystone species. For illustrative examples of ecological indicators and proposed performance targets, refer to Karnauskaitė et al. (2019) and Haugen et al. (2024).	<p>Haugen, J. B., J. S. Link, E. A. Fulton, M. Dickey-Collas, R. E. Brainard, A. Bundy, 2024. A performance measure framework for ecosystem-based management. ICES Journal of Marine Science: <a href="https://doi.org/10.1093/icesjms/fsae164">https://doi.org/10.1093/icesjms/fsae164</a></p> <p>EC, 2017. Commission Decision (EU) 2017/848 of 17 May 2017 laying down criteria and methodological standards on good environmental status of marine waters and specifications and standardised methods for monitoring and assessment, and repealing Decision 2010/477/EU. <a href="https://eur-lex.europa.eu/eli/dec/2017/848/oj/eng">https://eur-lex.europa.eu/eli/dec/2017/848/oj/eng</a></p> <p>Karnauskaitė, D., G. Schernewski, J. G. Støttrup, M. Kataržytė, 2019. Indicator-Based Sustainability Assessment Tool to Support Coastal and Marine Management. Sustainability, 11: 3175 <a href="https://doi.org/10.3390/su11113175">https://doi.org/10.3390/su11113175</a></p>

## D1.2 A BEST PRACTICE GUIDE FOR THE IMPLEMENTATION OF EB-MSP IN EUROPEAN SEAS

Stage	Code	Action/task	Short	Topic	Description	Guidance and recommendations	Additional documents
Stage 1	1.2.09	Broad restoration goals have been defined (e.g., an increase of habitat area in good condition)	Restoration goals	Definition of targets and operational objectives	Defining restoration goals requires a strategic approach that integrates ecological priorities with spatial considerations. It is essential to establish these goals at the beginning of the planning process, as they will direct decision-making and the management of human activities to achieve desired outcomes without compromising sustainability. These objectives must be precise, specific, tangible, concrete, and measurable, facilitating the identification of appropriate evaluation criteria, which can be used to determine the degree of objective attainment over time. Such an approach enables the evaluation of management performance, reduces uncertainty, and allows for the establishment of corrective measures through adaptive management, ultimately improving planning and management efficacy.	The formulation of restoration goals should rely on the most current and robust scientific data and evidence, account for uncertainty by applying the precautionary principle and ensure alignment with relevant legislation. Effective planning must encompass the establishment of clear baselines for degraded habitats or species, the setting of quantifiable restoration goals (e.g., intended area of habitat to be restored), and the development of realistic timelines for achieving these objectives, considering recovery rates and available resources. To ensure the efficacy of such restoration plans, the implementation of robust monitoring programs will be essential to assess progress and facilitate the adaptation of restoration strategies based on measured outcomes. Incorporating systematic conservation planning principles is important to enhance the selection of restoration sites by evaluating factors such as habitat suitability, connectivity, and potential for long-term success. Such an approach will ensure that restoration efforts are ecologically meaningful and contribute effectively to broader conservation and sustainability goals.	<p>Manea, E., T. Agardy, L. Bongiorno, 2023. Link marine restoration to marine spatial planning through ecosystem-based management to maximize ocean regeneration. <i>Aquatic Conservation: Marine and Freshwater Ecosystems</i>, 33: 1387-1399  <a href="https://onlinelibrary.wiley.com/doi/abs/10.1002/aqc.3999">https://onlinelibrary.wiley.com/doi/abs/10.1002/aqc.3999</a>  <a href="https://onlinelibrary.wiley.com/doi/abs/10.1002/aqc.3999">https://onlinelibrary.wiley.com/doi/abs/10.1002/aqc.3999</a></p> <p>Lester, S. E., Dubel, A. K., Hernán, G., McHenry, J., &amp; Rassweiler, A. (2020). Spatial planning principles for marine ecosystem restoration. <i>Frontiers in Marine Science</i>, 7, 328.  <a href="https://doi.org/10.3389/fmars.2020.00328">https://doi.org/10.3389/fmars.2020.00328</a></p> <p>Gann, G. D., T. McDonald, B. Walder, J. Aronson, C. R. Nelson, J. Jonson, J. G. Hallett, C. Eisenberg, M. R. Guariguata, J. Liu, F. Hua, C. Echeverría, E. Gonzales, N. Shaw, K. Decler, K. W. Dixon, 2019. International principles and standards for the practice of ecological restoration. Second edition. <i>Restoration Ecology</i>, 27: S1-S46 <a href="https://doi.org/10.1111/rec.13035">https://doi.org/10.1111/rec.13035</a></p>
Stage 1	1.2.10	Restoration objectives are SMART (specific, measurable, achievable, relevant, and time-bound)	SMART restoration objectives	Definition of targets and operational objectives	In marine spatial planning, restoration objectives must adhere to the SMART criteria (specific, measurable, achievable, relevant and time-bound). This action involves defining clear and specific indicators for social progress, setting realistic targets within defined timeframes, and ensuring that the objectives are relevant to the specific socio-	SMART objectives should be concrete and well-defined, allowing for the verification of their achievement through indicators. They must be ambitious yet realistically achievable within the given context, available knowledge, and resources. Furthermore, they should be intrinsically linked to the drivers and vision of the MSP, lead to a desired goal, and should be bound by a specific timeframe for completion, thereby enabling the evaluation of their attainment. Additionally, established objectives must be inclusive, ensuring the participation of all	<p>Ehler, C., Douvère, F., 2009. Marine Spatial Planning: a step-by-step approach toward ecosystem-based management. <i>IOC Manual and Guides no. 53</i>, 98 pp.  <a href="https://www.mspglobal2030.org/wp-content/uploads/2019/03/Marine-spatial-planning-a-step-by-step-approach.pdf">https://www.mspglobal2030.org/wp-content/uploads/2019/03/Marine-spatial-planning-a-step-by-step-approach.pdf</a></p> <p>UNESCO-IOC/EC, 2021. MSPglobal International Guide on Marine/Maritime Spatial Planning. Paris, UNESCO. (IOC Manuals and Guides no 89), 152 pp.  <a href="https://unesdoc.unesco.org/ark:/48223/pf0000379196">https://unesdoc.unesco.org/ark:/48223/pf0000379196</a></p>

## D1.2 A BEST PRACTICE GUIDE FOR THE IMPLEMENTATION OF EB-MSP IN EUROPEAN SEAS

Stage	Code	Action/task	Short	Topic	Description	Guidance and recommendations	Additional documents
					economic context of the planning area. This approach ensures that overarching restoration goals are translated into actionable and measurable outcomes.	<p>parties potentially affected by the plan, and equitable, aiming to address systemic injustice and inequity (see Ehler and Douvère, 2009; UNESCO-IOC/EC, 2021).</p> <p>The use of SMART objectives ensures clarity for stakeholders, facilitates the tracking of progress through indicators, and enables adaptive management. Their consistent use ultimately strengthens accountability and promotes the alignment of restoration targets with relevant policy instruments.</p> <p>Some indicators that could be used to evaluate the progress of restoration initiatives are the survival rates of reintroduced species, improvement in ecosystem functioning (biomass, production, growth), expansion (changes in the distribution of reintroduced habitat-forming species), biodiversity metrics, and overall environmental quality (see Danovaro et al. 2025). In Murillas-Mazas et al. (2023), a comprehensive list of biodiversity and environmental, economic and social indicators for the assessment of the effectiveness of restoration strategies is provided.</p>	<p>Danovaro, R., J. Aronson, S. Bianchelli, C. Boström, W. Chen, R. Cimino, C. Corinaldesi, J. Cortina-Segarra, P. D'Ambrosio, C. Gambi, J. Garrabou, A. Giorgetti, A. Grehan, A. Hannachi, L. Mangialajo, T. Morato, S. Orfanidis, N. Papadopoulou, E. Ramirez-Llodra, C. J. Smith, P. Snelgrove, J. van de Koppel, J. van Tatenhove, S. Frascchetti, 2025. Assessing the success of marine ecosystem restoration using meta-analysis. <i>Nature Communications</i>, 16: 3062 <a href="https://doi.org/10.1038/s41467-025-57254-2">https://doi.org/10.1038/s41467-025-57254-2</a></p> <p>Murillas-Maza, A., S. Broszeit, S. Pouso, J. Bueno-Pardo, A. Ruiz-Frau, J. Terrados, S. Jernberg, A. Iriondo, M. Dolbeth, S. Katsanevakis, P. J. Somerfield, J. A. Fernandes-Salvador, 2023. Ecosystem indicators to measure the effectiveness of marine nature-based solutions on society and biodiversity under climate change. <i>Nature-Based Solutions</i>, 4: 100085 <a href="https://doi.org/10.1016/j.nbsi.2023.100085">https://doi.org/10.1016/j.nbsi.2023.100085</a></p>
Stage 1	1.2.11	Societal objectives are defined. Justify	Societal objectives	Definition of targets and operational objectives	<p>Social objectives frequently receive insufficient attention within MSP processes. EB-MSP should actively plan for equity and social cohesion by explicitly addressing societal objectives in a democratic manner. This entails prioritising social recognition and the well-being of diverse groups, transforming dominant power relations, and creating opportunities to foster harmonious coexistence and mitigate social conflicts.</p> <p>It is essential to establish societal objectives at the beginning of the</p>	<p>The formulation of societal objectives should rely upon the most current and robust scientific data and evidence, acquired through the application of participatory approaches and social impact assessments. These objectives should be defined accounting for uncertainty, by applying the precautionary approach, and must align with global frameworks, such as the UN SDGs. This comprehensive approach will ultimately ensure that the MSP process and resulting decisions are grounded in evidence-based assessments that accurately represent the diversity of stakeholder values and foster community resilience.</p> <p>Ultimately, these objectives should aim for a high standard of health and well-being for individuals, households and communities, equitable distribution</p>	<p>Ehler, C., Douvère, F., 2009. <i>Marine Spatial Planning: a step-by-step approach toward ecosystem-based management</i>. IOC Manual and Guides no. 53, 98 pp. <a href="https://www.mspglobal2030.org/wp-content/uploads/2019/03/Marine-spatial-planning-a-step-by-step-approach.pdf">https://www.mspglobal2030.org/wp-content/uploads/2019/03/Marine-spatial-planning-a-step-by-step-approach.pdf</a></p> <p>UNESCO-IOC/European Commission, 2021. <i>MSPglobal International Guide on Marine/Maritime Spatial Planning</i>. Paris, UNESCO. (IOC Manuals and Guides no 89), 152 pp. <a href="https://unesdoc.unesco.org/ark:/48223/pf0000379196">https://unesdoc.unesco.org/ark:/48223/pf0000379196</a></p> <p>Stephenson, R. L., A. J. Hobday, 2024. Blueprint for Blue Economy implementation. <i>Marine Policy</i>, 163: 106129 <a href="https://doi.org/10.1016/j.marpol.2024.106129">https://doi.org/10.1016/j.marpol.2024.106129</a></p>



Stage	Code	Action/task	Short	Topic	Description	Guidance and recommendations	Additional documents
					<p>planning process, as they will direct decision-making and the management of human activities to achieve desired outcomes without compromising sustainability. These objectives must be precise, specific, tangible, concrete, and measurable, facilitating the identification of appropriate evaluation criteria, which can be used to determine the degree of objective attainment over time. Such an approach enables the evaluation of management performance, reduces uncertainty, and allows for the establishment of corrective measures through adaptive management, ultimately improving planning and management efficacy.</p>	<p>of costs, benefits, obligations and rights related to the use of marine resources, and recognition of cultural heritage and historical rights. Further examples of aspects to be considered when defining societal objectives can be consulted in Issifu et al. (2024).</p>	<p>Pennino, M. G., S. Brodie, A. Frainer, P. F. M. Lopes, J. Lopez, K. Ortega-Cisneros, S. Selim, N. Vaidianu, 2021. The Missing Layers: Integrating Sociocultural Values Into Marine Spatial Planning. <i>Frontiers in Marine Science</i>, Volume 8 - 2021: <a href="https://doi.org/10.3389/fmars.2021.633198">https://doi.org/10.3389/fmars.2021.633198</a></p> <p>Issifu, I., I. Dahmouni, I. García-Lorenzo, U. R. Sumaila, 2024. Economics in Marine Spatial Planning: A Review of Issues in British Columbia and Similar Jurisdictions. <i>Sustainability</i>, 16: 1210 <a href="https://doi.org/10.3390/su16031210">https://doi.org/10.3390/su16031210</a></p> <p>Saunders, F. P., M. Gilek, R. Tafon. 2019. Adding People to the Sea: Conceptualizing Social Sustainability in Maritime Spatial Planning, in <i>Maritime Spatial Planning: past, present, future</i>. J. Zaucha, K. Gee Series volume: Pages: 175-199. Springer International Publishing, Cham. <a href="https://doi.org/10.1007/978-3-319-98696-8_8">https://doi.org/10.1007/978-3-319-98696-8_8</a></p> <p>Gilek, M., A. Armoskaite, K. Gee, F. Saunders, R. Tafon, J. Zaucha, 2021. In search of social sustainability in marine spatial planning: A review of scientific literature published 2005–2020. <i>Ocean &amp; Coastal Management</i>, 208: 105618 <a href="https://doi.org/10.1016/j.ocecoaman.2021.105618">https://doi.org/10.1016/j.ocecoaman.2021.105618</a></p> <p>Chen, M., Y. Wang, Z. Xu, 2024. A framework for assessing the blue equity of social-ocean systems in marine governance transformation. <i>Frontiers in Marine Science</i>, Volume 11 - 2024: <a href="https://doi.org/10.3389/fmars.2024.1403194">https://doi.org/10.3389/fmars.2024.1403194</a></p>

Stage	Code	Action/task	Short	Topic	Description	Guidance and recommendations	Additional documents
Stage 1	1.2.12	Societal objectives are SMART (specific, measurable, achievable, relevant, and time-bound)	SMART societal objectives	Definition of targets and operational objectives	<p>In marine spatial planning, societal objectives must adhere to the SMART criteria (specific, measurable, achievable, relevant and time-bound). This action involves defining clear and specific indicators for social progress, setting realistic targets within defined timeframes, and ensuring that the objectives are relevant to the specific socio-economic context of the planning area. This approach ensures that overarching societal goals are translated into actionable and measurable outcomes.</p>	<p>SMART objectives should be concrete and well-defined, allowing for the verification of their achievement through indicators. They must be ambitious yet realistically achievable within the given context, available knowledge, and resources. Furthermore, they should be intrinsically linked to the drivers and vision of the MSP, lead to a desired goal, and should be bound by a specific timeframe for completion, thereby enabling the evaluation of their attainment. Additionally, established objectives must be inclusive, ensuring the participation of all parties potentially affected by the plan, and equitable, aiming to address systemic injustice and inequity (see Ehler and Douvère, 2009; UNESCO-IOC/EC, 2021).</p> <p>The use of SMART objectives ensures clarity for stakeholders, facilitates the tracking of progress through indicators, and enables adaptive management. Their consistent use ultimately strengthens accountability and promotes the alignment of societal targets with relevant policy instruments</p>	<p>Ehler, C., Douvère, F., 2009. Marine Spatial Planning: a step-by-step approach toward ecosystem-based management. IOC Manual and Guides no. 53, 98 pp.  <a href="https://www.mspglobal2030.org/wp-content/uploads/2019/03/Marine-spatial-planning-a-step-by-step-approach.pdf">https://www.mspglobal2030.org/wp-content/uploads/2019/03/Marine-spatial-planning-a-step-by-step-approach.pdf</a></p> <p>UNESCO-IOC/EC, 2021. MSPglobal International Guide on Marine/Maritime Spatial Planning. Paris, UNESCO. (IOC Manuals and Guides no 89), 152 pp.  <a href="https://unesdoc.unesco.org/ark:/48223/pf0000379196">https://unesdoc.unesco.org/ark:/48223/pf0000379196</a></p>

## D1.2 A BEST PRACTICE GUIDE FOR THE IMPLEMENTATION OF EB-MSP IN EUROPEAN SEAS

Stage	Code	Action/task	Short	Topic	Description	Guidance and recommendations	Additional documents
Stage 1	1.2.13	Societal indicators and their targets/threshold levels have been defined to monitor the performance of the plan	Societal indicators	Definition of targets and operational objectives	Societal indicators and their corresponding targets/thresholds are used to objectively assess progress toward predetermined social objectives and evaluate the effectiveness of management actions. By comparing results against these benchmarks, it is possible to ascertain the extent to which management actions have been successful, allowing for the adaptation of these strategies, if necessary, to ensure the fulfilment of established objectives. For these societal indicators and their associated targets/thresholds to be truly valuable in evaluating management outcomes, they must be aligned with the overarching societal objectives.	Societal indicators can be defined using socio-demographic data, thus accounting for population characteristics. Examples of societal indicators (e.g., well-being index, public access to resources, total insurance claims for coastal regions, etc) and their corresponding benchmarks or time series trends can be found in Karnauskaitė et al. (2019) and Haugen et al. (2024). Relevant information for the definition of societal indicators can be found in the following sources: <a href="https://ec.europa.eu/CensusHub/selectHyperCube?clearSession=true">https://ec.europa.eu/CensusHub/selectHyperCube?clearSession=true</a> (Europe); <a href="https://www.bls.gov/iag/tgs/iag_index_naics.htm">https://www.bls.gov/iag/tgs/iag_index_naics.htm</a> (US); <a href="https://de-cith.statcan.gc.ca/?lc=en&amp;pg=0">https://de-cith.statcan.gc.ca/?lc=en&amp;pg=0</a> (Canada).	Haugen, J. B., J. S. Link, E. A. Fulton, M. Dickey-Collas, R. E. Brainard, A. Bundy, 2024. A performance measure framework for ecosystem-based management. ICES Journal of Marine Science: fsae164 <a href="https://doi.org/10.1093/icesjms/fsae164">https://doi.org/10.1093/icesjms/fsae164</a>  Abramic, A., Norton, D., Sarretta, A., Menegon, S., Katsika, M., Gekas, V., Rybka, K., Fernández- Palacios, Y. 2023. Maritime Spatial Planning Data Framework (MSPdF). How to structure input data for MSP process, monitoring & evaluation. Produced by Technical Expert Group (TEG) on Data for MSP. Supported by CINEA and DG MARE (EC). 45 pp. <a href="https://doi.org/10.2926/440667">https://doi.org/10.2926/440667</a>  Karnauskaitė, D., G. Schernewski, J. G. Støttrup, M. Kataržytė, 2019. Indicator-Based Sustainability Assessment Tool to Support Coastal and Marine Management. Sustainability, 11: 3175 <a href="https://doi.org/10.3390/su11113175">https://doi.org/10.3390/su11113175</a>

## D1.2 A BEST PRACTICE GUIDE FOR THE IMPLEMENTATION OF EB-MSP IN EUROPEAN SEAS

Stage	Code	Action/task	Short	Topic	Description	Guidance and recommendations	Additional documents
Stage 1	1.2.14	Economic objectives are defined. Justify	Economic objectives	Definition of targets and operational objectives	<p>Clearly defined economic objectives are essential to ensure transparency, guide trade-offs among competing uses, and align spatial zoning with sustainable development goals.</p> <p>It is essential to establish economic objectives at the beginning of the planning process, as they will direct decision-making and the management of human activities to achieve desired outcomes without compromising sustainability. These objectives must be precise, specific, tangible, concrete, and measurable, facilitating the identification of appropriate evaluation criteria, which can be used to determine the degree of objective attainment over time. Such an approach enables the evaluation of management performance, reduces uncertainty, and allows for the establishment of corrective measures through adaptive management, ultimately improving planning and management efficacy.</p>	<p>The formulation of economic objectives should rely on the most current and robust scientific data and evidence, account for uncertainty by applying the precautionary principle and ensure the alignment with relevant legislation.</p> <p>Ultimately, economic objectives should aim at enhancing present economic outputs and benefits for all users, ensure equitable ocean opportunities and benefits, foster long-term, prosperous livelihoods that contribute to the sustainability of coastal communities. Integrating economic objectives with ecological and social objectives and assessing synergies and trade-offs enables balanced decision-making, facilitates stakeholder engagement, and supports outcome-based monitoring and adaptive planning. Further examples of aspects to be considered when defining economic objectives can be consulted in Issifu et al. (2024).</p>	<p>Ehler, C., Douvère, F., 2009. Marine Spatial Planning: a step-by-step approach toward ecosystem-based management. IOC Manual and Guides no. 53, 98 pp.  <a href="https://www.mspglobal2030.org/wp-content/uploads/2019/03/Marine-spatial-planning-a-step-by-step-approach.pdf">https://www.mspglobal2030.org/wp-content/uploads/2019/03/Marine-spatial-planning-a-step-by-step-approach.pdf</a></p> <p>UNESCO-IOC/European Commission, 2021. MSPglobal International Guide on Marine/Maritime Spatial Planning. Paris, UNESCO. (IOC Manuals and Guides no 89), 152 pp.  <a href="https://unesdoc.unesco.org/ark:/48223/pf0000379196">https://unesdoc.unesco.org/ark:/48223/pf0000379196</a></p> <p>Stephenson, R. L., A. J. Hobday, 2024. Blueprint for Blue Economy implementation. Marine Policy, 163: 106129  <a href="https://doi.org/10.1016/j.marpol.2024.106129">https://doi.org/10.1016/j.marpol.2024.106129</a></p> <p>Issifu, I., I. Dahmouni, I. García-Lorenzo, U. R. Sumaila, 2024. Economics in Marine Spatial Planning: A Review of Issues in British Columbia and Similar Jurisdictions. Sustainability, 16: 1210 <a href="https://doi.org/10.3390/su16031210">https://doi.org/10.3390/su16031210</a></p> <p>World Bank. 2022. Applying Economic Analysis to Marine Spatial Planning.  <a href="https://documents1.worldbank.org/curated/en/099515006062210102/pdf/P1750970bba3a60940831205d770baece51.pdf?utm">https://documents1.worldbank.org/curated/en/099515006062210102/pdf/P1750970bba3a60940831205d770baece51.pdf?utm</a></p>

Stage	Code	Action/task	Short	Topic	Description	Guidance and recommendations	Additional documents
Stage 1	1.2.15	Economic objectives are SMART (specific, measurable, achievable, relevant, and time-bound)	SMART economic objectives	Definition of targets and operational objectives	Economic objectives must adhere to the SMART criteria (specific, measurable, achievable, relevant and time-bound). This approach ensures that overarching conservation goals are translated into actionable and measurable outcomes.	<p>SMART objectives should be specific and well-defined (e.g., increasing marine-based tourism revenue), allowing for the verification of their achievement through measurable indicators (e.g., the targeted percentage increase in employment within the blue economy sectors). They must be ambitious yet realistically achievable within the given context, available knowledge, and resources. Furthermore, they should be intrinsically linked to the drivers and vision of the MSP, lead to a desired goal, and be bound by a specific timeframe for completion, thereby enabling the evaluation of their attainment (e.g. a five-year plan to double revenues from recreational diving). Additionally, established objectives must be inclusive, ensuring the participation of all parties potentially affected by the plan, and equitable, aiming to address systemic injustice and inequity (see Ehler and Douvère, 2009; UNESCO-IOC/EC, 2021).</p> <p>The use of SMART objectives ensures clarity for stakeholders, facilitates the tracking of progress through indicators, and enables adaptive management. Their consistent use ultimately strengthens accountability and promotes the alignment of economic targets with relevant policy instruments</p>	<p>Ehler, C., Douvère, F., 2009. Marine Spatial Planning: a step-by-step approach toward ecosystem-based management. IOC Manual and Guides no. 53, 98 pp.  <a href="https://www.mspglobal2030.org/wp-content/uploads/2019/03/Marine-spatial-planning-a-step-by-step-approach.pdf">https://www.mspglobal2030.org/wp-content/uploads/2019/03/Marine-spatial-planning-a-step-by-step-approach.pdf</a></p> <p>UNESCO-IOC/EC, 2021. MSPglobal International Guide on Marine/Maritime Spatial Planning. Paris, UNESCO. (IOC Manuals and Guides no 89), 152 pp.  <a href="https://unesdoc.unesco.org/ark:/48223/pf0000379196">https://unesdoc.unesco.org/ark:/48223/pf0000379196</a></p>

## D1.2 A BEST PRACTICE GUIDE FOR THE IMPLEMENTATION OF EB-MSP IN EUROPEAN SEAS

Stage	Code	Action/task	Short	Topic	Description	Guidance and recommendations	Additional documents
Stage 1	1.2.16	Economic indicators and their targets/threshold levels have been defined to monitor the performance of the plan	Economic indicators	Definition of targets and operational objectives	Economic indicators and their corresponding targets/thresholds are employed to objectively assess progress toward predetermined economic objectives and evaluate the effectiveness of management actions. By comparing results against these benchmarks, it is possible to ascertain the extent to which management actions have been successful, allowing for the adaptation of these strategies, if necessary, to ensure the fulfilment of established objectives. For these economic indicators and their associated targets/thresholds to be truly valuable in evaluating management outcomes, they must be aligned with the overarching economic objectives.	The following are some economic indicators that are considered relevant for the measurement of ocean and coastal economies: number of businesses/establishments, employment, wages/income, and contribution to Gross Domestic Product (GDP). Relevant information can be found in the following sources: <a href="https://ec.europa.eu/eurostat/web/main/data/data_base">https://ec.europa.eu/eurostat/web/main/data/data_base</a> (Europe); <a href="https://ec.europa.eu/eurostat/web/main/search/-/search/">https://ec.europa.eu/eurostat/web/main/search/-/search/</a> (Europe); <a href="https://www.bls.gov/iag/tgs/iag_index_naics.htm">https://www.bls.gov/iag/tgs/iag_index_naics.htm</a> (US); <a href="https://de-cith.statcan.gc.ca/?lc=en&amp;pg=0">https://de-cith.statcan.gc.ca/?lc=en&amp;pg=0</a> (Canada). Examples of economic indicators and targets (e.g., landings of small-scale/commercial fisheries, number of tour guides and boat operators, biomass produced by aquaculture, etc.) as well as example indicators for the management and trade-offs, can be found in Karnauskaitė et al. (2019) and Haugen et al. (2024).	Haugen, J. B., J. S. Link, E. A. Fulton, M. Dickey-Collas, R. E. Brainard, A. Bundy, 2024. A performance measure framework for ecosystem-based management. ICES Journal of Marine Science: <a href="https://doi.org/10.1093/icesjms/fsae164">https://doi.org/10.1093/icesjms/fsae164</a>  Abramic, A., Norton, D., Sarretta, A., Menegon, S., Katsika, M., Gekas, V., Rybka, K., Fernández- Palacios, Y. 2023. Maritime Spatial Planning Data Framework (MSPdF). How to structure input data for MSP process, monitoring & evaluation. Produced by Technical Expert Group (TEG) on Data for MSP. Supported by CINEA and DG MARE (EC). 45 pp. <a href="https://doi.org/10.2926/440667">https://doi.org/10.2926/440667</a>  Karnauskaitė, D., G. Schernewski, J. G. Støttrup, M. Kataržytė, 2019. Indicator-Based Sustainability Assessment Tool to Support Coastal and Marine Management. Sustainability, 11: 3175 <a href="https://doi.org/10.3390/su11113175">https://doi.org/10.3390/su11113175</a>
Stage 1	1.3	Geographical and temporal boundaries	Geographical and temporal boundaries				

Stage	Code	Action/task	Short	Topic	Description	Guidance and recommendations	Additional documents
Stage 1	1.3.01	The planning area is defined by jurisdictional boundaries	Jurisdictional boundaries	Legal framework	For a marine spatial plan to achieve legal enforceability and to guarantee its effectiveness, its development must adhere to the jurisdictional boundaries over which the planning authority exercises sovereignty, in full compliance with national and international laws.	When defining the boundaries of the planning area, and depending on the specific characteristics, different boundaries for management and analysis need to be established. The former is defined through a political and legal process that determines the area to be managed (e.g., the entire exclusive economic zone, a specific marine demarcation, etc). In contrast, the latter takes into account ecosystems and natural processes (e.g., larval dispersion, sediment transport, etc.), allowing for the assessment of potential impacts stemming from processes originating outside the direct management area and facilitating the identification and inclusion of relevant authorities or institutions responsible for these external sources in the implementation of the plan. When defining the boundaries of the plan, it is also necessary to account for existing governance initiatives within the area (e.g., terrestrial plans, Integrated Coastal Zone Management, river basin management plans) and the competencies of the various administrative and ministerial departments involved in marine governance.	<p>Ehler, C., Douvère, F., 2009. Marine Spatial Planning: a step-by-step approach toward ecosystem-based management. IOC Manual and Guides no. 53, 98 pp.  <a href="https://www.mspglobal2030.org/wp-content/uploads/2019/03/Marine-spatial-planning-a-step-by-step-approach.pdf">https://www.mspglobal2030.org/wp-content/uploads/2019/03/Marine-spatial-planning-a-step-by-step-approach.pdf</a></p> <p>UNESCO-IOC/European Commission, 2021. MSPglobal International Guide on Marine/Maritime Spatial Planning. Paris, UNESCO. (IOC Manuals and Guides no 89), 152 pp.  <a href="https://unesdoc.unesco.org/ark:/48223/pf0000379196">https://unesdoc.unesco.org/ark:/48223/pf0000379196</a></p>
Stage 1	1.3.02	It is a transboundary planning area (regional and sub-regional scale)	Transboundary	Governance	Involves coordinating marine spatial planning efforts across national boundaries to manage the shared marine environment (i.e. resources and conservation) effectively by fostering cooperation between neighbouring countries. This approach is crucial because marine ecosystems and ecological processes, as well as marine activities, such as navigation and fishing, often extend beyond political borders.	Transboundary collaborative governance seeks to address environmental, spatial, and socio-economic challenges by fostering cooperation between neighbouring countries and promoting shared values. It involves creating joint policies and decision-making processes to balance different interests sustainably. This can be particularly challenging due to differences in administrative and governance structures, varying national regulations and priorities, and the lack of standardised sectoral spatial data.	<p>Li, S., S. Jay, 2023. Addressing transboundary challenges: Exploring the interactive relations between collaborative governance and transboundary marine spatial planning in Europe. Marine Policy, 158: 105880  <a href="https://doi.org/10.1016/j.marpol.2023.105880">https://doi.org/10.1016/j.marpol.2023.105880</a></p> <p>HELCOM-VASAB, Voluntary guidance for assessment of cross-border coherence in Maritime Spatial Planning, Version submitted to HELCOM-VASAB MSP WG 23- 2021, 2022. Available at  <a href="https://helcom.fi/wp-content/uploads/2022/02/Voluntary-guidance-for-assessment-of-cross-border-coherence-in-MSP-.pdf">https://helcom.fi/wp-content/uploads/2022/02/Voluntary-guidance-for-assessment-of-cross-border-coherence-in-MSP-.pdf</a></p> <p>Gómez-Ballesteros, M., Cervera-Núñez, C., Campillos-Llanos, M.,</p>



## D1.2 A BEST PRACTICE GUIDE FOR THE IMPLEMENTATION OF EB-MSP IN EUROPEAN SEAS

Stage	Code	Action/task	Short	Topic	Description	Guidance and recommendations	Additional documents
							Quintela, A., Sousa, L., Marques, M., Alves, F.L., Murciano, C., Alloncle, N., Sala, P. and Lloret, A., 2021. Transboundary cooperation and mechanisms for Maritime Spatial Planning implementation. SIMNORAT project. Marine Policy, 127, p.104434. <a href="https://doi.org/10.1016/j.marpol.2021.104434">https://doi.org/10.1016/j.marpol.2021.104434</a>
Stage 1	1.3.03	Ecologically relevant spatial and temporal boundaries have been defined (accounting for ecological processes and functions)	Ecological boundaries	Ecosystem processes and functioning	Marine spatial plans are usually developed only considering the jurisdictional boundaries of countries, where planning authority exercises sovereignty. However, ecological processes transcend these artificial boundaries, and thus, it is advisable to consider ecologically relevant spatial and temporal boundaries that account for ecosystems and natural processes (e.g., larval dispersion, sediment transport, etc.). This approach enables the assessment of potential impacts originating outside the direct management area and facilitates the identification and inclusion of relevant authorities or institutions responsible for these external sources in the in the development of the plan.	States possess national marine boundaries, yet their pressures, effects, and management actions both influence and are influenced by changes in adjacent marine areas. Beyond acknowledging the diverse political conditions between adjacent states, essential physical and ecological patterns and processes (e.g., basic habitat distributions and vital habitat functions) should form the foundation for determining planning areas or sub-areas. While a universal solution does not exist, 'maritime bioregionalisation', where environmental characteristics primarily dictate boundaries, must be prioritised to enable ecological integrity and vital processes to be effectively managed across administrative jurisdictions. One way to operationalize this is by considering the ecoregions proposed by Spalding et al. (2007), that offers a scientifically grounded framework that reflects species assemblages, oceanographic processes, and ecological connectivity. Aligning MSP efforts with these ecoregions, or other more refined classifications, ensures that planning regions correspond to natural ecological boundaries rather than arbitrary administrative ones. Moreover,	<p>Cormier, 2023. Managing marine resources sustainably – Ecological, societal and governance connectivity, coherence and equivalence in complex marine transboundary regions. Ocean &amp; Coastal Management, 245: 106875 <a href="https://doi.org/10.1016/j.ocecoaman.2023.106875">https://doi.org/10.1016/j.ocecoaman.2023.106875</a></p> <p>Spalding, M. D., H. E. Fox, G. R. Allen, N. Davidson, Z. A. Ferdaña, M. Finlayson, B. S. Halpern, M. A. Jorge, A. Lombana, S. A. Lourie, K. D. Martin, E. McManus, J. Molnar, C. A. Recchia, J. Robertson, 2007. Marine Ecoregions of the World: A Bioregionalization of Coastal and Shelf Areas. BioScience, 57: 573-583 <a href="https://doi.org/10.1641/B570707">https://doi.org/10.1641/B570707</a></p> <p>Boero, F., F. De Leo, S. Fraschetti, G. Ingrosso. 2019. Chapter Four - The Cells of Ecosystem Functioning: Towards a holistic vision of marine space, in Advances in Marine Biology. C. Sheppard Series volume: Pages: 129-153. Academic Press. <a href="https://doi.org/10.1016/bs.amb.2019.03.001">https://doi.org/10.1016/bs.amb.2019.03.001</a></p>

## D1.2 A BEST PRACTICE GUIDE FOR THE IMPLEMENTATION OF EB-MSP IN EUROPEAN SEAS

Stage	Code	Action/task	Short	Topic	Description	Guidance and recommendations	Additional documents
						incorporating temporal dynamics, such as breeding and spawning seasons, migration periods, and phenological shifts, enables MSP to account for the timing of key ecological processes, thereby enhancing the effectiveness of conservation and management measures. Another approach involves using the Cells of Ecosystem Functioning concept proposed by Boero et al. (2019), that is, ecologically significant spatial units that consider the four dimensions of marine ecosystems (3D and time), as well as significant ecological connections (biogeochemical cycles, life cycles and food webs).	
Stage 1	1.4	Legal framework and governance	Legal framework and governance				
Stage 1	1.4.01	Local legislation has been considered	Local legislation	Legal framework	It is important to consider all the local regulations applying to the planning area, including marine and coastal areas, because they can support the planning process and implementation, enabling the establishment of synergies, but also constrain its development due to potential incompatibilities.	This process can be started by listing the local sectoral, planning and environmental regulations, policies and laws that apply to the planning area (e.g., local development plans, integrated coastal zone management).	Abramic, A., Norton, D., Sarretta, A., Menegon, S., Katsika, M., Gekas, V., Rybka, K., Fernández- Palacios, Y. 2023. Maritime Spatial Planning Data Framework (MSPdF). How to structure input data for MSP process, monitoring & evaluation. Produced by Technical Expert Group (TEG) on Data for MSP. Supported by CINEA and DG MARE (EC). 45 pp. <a href="https://doi.org/10.2926/440667">https://doi.org/10.2926/440667</a>  UNESCO-IOC/European Commission, 2021. MSPglobal International Guide on Marine/Maritime Spatial Planning. Paris, UNESCO. (IOC Manuals and Guides no 89), 152 pp. <a href="https://unesdoc.unesco.org/ark:/48223/pf0000379196">https://unesdoc.unesco.org/ark:/48223/pf0000379196</a>
Stage 1	1.4.02	National legislation has been considered	National legislation	Legal framework	It is important to consider all the national regulations applying to the planning area, including marine and coastal areas, because they can support the planning process and implementation, enabling the establishment of synergies, but also constrain its development due to incompatibilities (e.g., environmental legislation dedicated to the conservation of	National sectoral, maritime, planning, environmental and blue economy regulations, policies and laws that apply to the planning area (e.g., national ocean policy, and sectoral management plans) should be identified and considered.	Abramic, A., Norton, D., Sarretta, A., Menegon, S., Katsika, M., Gekas, V., Rybka, K., Fernández- Palacios, Y. 2023. Maritime Spatial Planning Data Framework (MSPdF). How to structure input data for MSP process, monitoring & evaluation. Produced by Technical Expert Group (TEG) on Data for MSP. Supported by CINEA and DG MARE (EC). 45 pp. <a href="https://doi.org/10.2926/440667">https://doi.org/10.2926/440667</a>  UNESCO-IOC/European Commission, 2021. MSPglobal International Guide on Marine/Maritime Spatial Planning. Paris,

## D1.2 A BEST PRACTICE GUIDE FOR THE IMPLEMENTATION OF EB-MSP IN EUROPEAN SEAS

Stage	Code	Action/task	Short	Topic	Description	Guidance and recommendations	Additional documents
					habitats or marine birds, might limit the development of some maritime activities in certain areas).		UNESCO. (IOC Manuals and Guides no 89), 152 pp. <a href="https://unesdoc.unesco.org/ark:/48223/pf0000379196">https://unesdoc.unesco.org/ark:/48223/pf0000379196</a>
Stage 1	1.4.03	Regional legislation and instruments/agreements/obligations have been considered	Regional legislation	Legal framework	It is important to consider all the regional regulations applying to the planning area, including marine and coastal areas, because they can support the planning process and implementation, enabling the establishment of synergies, but also constrain its development due to incompatibilities.	Regional sectoral, maritime, planning, environmental and blue economy regulations, policies and laws that apply to the planning area (e.g., renewable energy targets, climate change adaptation strategies) should be identified and considered.	Abramic, A., Norton, D., Sarretta, A., Menegon, S., Katsika, M., Gekas, V., Rybka, K., Fernández- Palacios, Y. 2023. Maritime Spatial Planning Data Framework (MSPdF). How to structure input data for MSP process, monitoring & evaluation. Produced by Technical Expert Group (TEG) on Data for MSP. Supported by CINEA and DG MARE (EC). 45 pp. <a href="https://doi.org/10.2926/440667">https://doi.org/10.2926/440667</a>  UNESCO-IOC/European Commission, 2021. MSPglobal International Guide on Marine/Maritime Spatial Planning. Paris, UNESCO. (IOC Manuals and Guides no 89), 152 pp. <a href="https://unesdoc.unesco.org/ark:/48223/pf0000379196">https://unesdoc.unesco.org/ark:/48223/pf0000379196</a>
Stage 1	1.4.04	International legal obligations and agreements have been considered	International legislation	Legal framework	It is important to consider all the international regulations applying to the planning area, including marine and coastal areas, because they can support the planning process and implementation, enabling the establishment of synergies, but also constrain its development due to incompatibilities (e.g., environmental legislation dedicated to the conservation of habitats or marine birds, might limit the development of some maritime activities in certain areas).	International sectoral, maritime, planning, environmental and blue economy regulations, policies and laws that apply to your planning area (e.g., United Nations Convention on the Law of the Sea (UNCLOS), FAO Compliance Agreement, Convention on Biological Diversity (CBD), United Nations Framework Convention on Climate Change (UNFCCC), United Nations 2030 Agenda for Sustainable Development) should be identified and considered.	Abramic, A., Norton, D., Sarretta, A., Menegon, S., Katsika, M., Gekas, V., Rybka, K., Fernández- Palacios, Y. 2023. Maritime Spatial Planning Data Framework (MSPdF). How to structure input data for MSP process, monitoring & evaluation. Produced by Technical Expert Group (TEG) on Data for MSP. Supported by CINEA and DG MARE (EC). 45 pp. <a href="https://doi.org/10.2926/440667">https://doi.org/10.2926/440667</a>  UNESCO-IOC/European Commission, 2021. MSPglobal International Guide on Marine/Maritime Spatial Planning. Paris, UNESCO. (IOC Manuals and Guides no 89), 152 pp. <a href="https://unesdoc.unesco.org/ark:/48223/pf0000379196">https://unesdoc.unesco.org/ark:/48223/pf0000379196</a>

## D1.2 A BEST PRACTICE GUIDE FOR THE IMPLEMENTATION OF EB-MSP IN EUROPEAN SEAS

Stage	Code	Action/task	Short	Topic	Description	Guidance and recommendations	Additional documents
Stage 1	1.4.05	Land-sea interactions. The achievement of consistency between terrestrial planning (including coastal zones) and maritime planning is pursued	Land-sea interactions	Legal framework	It is important to include a land-sea interaction analysis to identify potential conflicts and synergies between present and future coastal and sea activities. The consistency between terrestrial and marine planning can be enhanced by ensuring the coherence between both processes, in terms of policy objectives, competent authorities in charge of both processes, spatial (integration) and temporal (i.e., assessment cycles) dimensions and data exchange.	<p>When referring to the necessity of integrating land-sea interactions in the MSP, natural processes (e.g., release of sediment loads, coastal erosion), socio-economic activities (i.e., many maritime activities are partly based on land, such as ports, grid connections, land-based transport) and socio-cultural dimension (e.g., visual imagery, cultural heritage) should be considered.</p> <p>A land-sea interaction and MSP planning tool (LSI-MSP), consisting in a tiered approach that includes a stocktaking phase, an in-depth analysis and management recommendations, can be accessed at <a href="https://msp.iczmplatform.org/planning-tools/land-sea-interaction-and-msp-planning-tool/">https://msp.iczmplatform.org/planning-tools/land-sea-interaction-and-msp-planning-tool/</a>. Examples of approaches used in different countries for land-sea interaction analysis and practical implementation of the LSI-MSP tool in different countries in the Mediterranean and the Black Sea can be found in Bocci et al. (2024). Good practice examples for promoting coherence in MSP can be found in Zaucha et al. (2025).</p>	<p>Zaucha, J., K. Gee, E. Ramieri, L. Neimane, N. Alloncle, N. Blažauskas, H. Calado, C. Cervera-Núñez, V. M. Kuzmanović, M. Stancheva, J. Witkowska, S. E. Schütz, J. R. Zapatero, C. N. Ehler, 2025. Implementing the EU MSP Directive: Current status and lessons learned in 22 EU Member States. Marine Policy, 171: 106425 <a href="https://doi.org/10.1016/j.marpol.2024.106425">https://doi.org/10.1016/j.marpol.2024.106425</a></p> <p>Abramic, A., Norton, D., Sarretta, A., Menegon, S., Katsika, M., Gekas, V., Rybka, K., Fernández- Palacios, Y. 2023. Maritime Spatial Planning Data Framework (MSPdF). How to structure input data for MSP process, monitoring &amp; evaluation. Produced by Technical Expert Group (TEG) on Data for MSP. Supported by CINEA and DG MARE (EC). 45 pp. <a href="https://doi.org/10.2926/440667">https://doi.org/10.2926/440667</a></p> <p>Bocci, M., M. Markovic, A. Mlakar, M. Stancheva, M. Borg, F. Carella, A. Barbanti, E. Ramieri, 2024. Land-Sea-Interactions in MSP and ICZM: A regional perspective from the Mediterranean and the Black Sea. Marine Policy, 159: 105924 <a href="https://doi.org/10.1016/j.marpol.2023.105924">https://doi.org/10.1016/j.marpol.2023.105924</a></p> <p>Kidd, S., H. Jones, S. Jay. 2019. Taking Account of Land-Sea Interactions in Marine Spatial Planning, in Maritime Spatial Planning: past, present, future. J. Zaucha, K. Gee Series volume: Pages: 245-270. Springer International Publishing, Cham. <a href="https://doi.org/10.1007/978-3-319-98696-8_11">https://doi.org/10.1007/978-3-319-98696-8_11</a></p> <p>Ramieri, E., M. Bocci, M. Markovic. 2019. Linking Integrated Coastal Zone Management to Maritime Spatial Planning: The Mediterranean Experience, in Maritime Spatial Planning: past, present, future. J. Zaucha, K. Gee Series volume: Pages: 271-294. Springer International Publishing, Cham. <a href="https://doi.org/10.1007/978-3-319-98696-8_12">https://doi.org/10.1007/978-3-319-98696-8_12</a></p>
Stage 1	1.4.06	A nested (vertical or decentralised) governance system has been adopted within the planning	Decentralised governance	Governance	The development and implementation of an effective MSP should rely on a nested governance system, where all the relevant local and national	At the beginning of the planning process, it is recommended to create a steering committee consisting of a multi-institutional or multi-agency working group, formed by key stakeholders and experts with experience in marine planning. It is also	<p>Ntona, M., 2023. Human Rights and Ocean Governance: The Potential of Marine Spatial Planning in Europe (1st ed.). Routledge. <a href="https://doi.org/10.4324/9781003404644">https://doi.org/10.4324/9781003404644</a></p>

Stage	Code	Action/task	Short	Topic	Description	Guidance and recommendations	Additional documents
		area (i.e. national and local)			authorities that have a strategic role in the MSP (e.g., ministries, state agencies, municipalities and local government), key marine sectors operating in the area and civil-society stakeholders have been identified and their roles and responsibilities have been defined.	<p>necessary to develop an MSP communication strategy, where the roles and responsibilities are defined and a stakeholder engagement strategy is defined.</p> <p>It is essential to understand and consider the competencies of the different public administrations (i.e., management of internal waters, territorial sea, contiguous zone, EEZ, continental shelf, etc.), maritime sectors (e.g., fisheries, energy, transport, ports, tourism, recreational activities, etc.) and society (e.g., the research community, citizen and community-based organisations, non-governmental organisations (NGOs) and conservation groups) within the planning area to establish an optimised governance system for the plan.</p> <p>The use of organograms might help in identifying the different statutory organizations and agencies with marine competencies that have a strategic role in the MSP, obtaining valuable insight into who the key governance actors are within the region, at different levels, and their potential roles. Regional and local authorities might play an intermediate role between central decision-making government and local communities.</p>	<p>Zauch a et al., 2025. Implementing the EU MSP Directive: Current status and lessons learned in 22 EU Member States. Marine Policy 17, 106425. <a href="https://doi.org/10.1016/j.marpol.2024.106425">https://doi.org/10.1016/j.marpol.2024.106425</a></p> <p>Abramic, A., Norton, D., Sarretta, A., Menegon, S., Katsika, M., Gekas, V., Rybka, K., Fernández- Palacios, Y. 2023. Maritime Spatial Planning Data Framework (MSPdF). How to structure input data for MSP process, monitoring &amp; evaluation. Produced by Technical Expert Group (TEG) on Data for MSP. Supported by CINEA and DG MARE (EC). 45 pp. <a href="https://doi.org/10.2926/440667">https://doi.org/10.2926/440667</a></p> <p>Papageorgiou, M., G. Pozoukidou, T. Istorlou, T. Kostopoulou, 2024. Inclusive Maritime Spatial Planning: Stakes at the Regional Level. Sustainability, 16: 10148 <a href="https://www.mdpi.com/2071-1050/16/22/10148">https://www.mdpi.com/2071-1050/16/22/10148</a>. <a href="https://doi.org/10.3390/su162210148">https://doi.org/10.3390/su162210148</a></p> <p>Twomey, S., C. O'Mahony. 2019. Stakeholder Processes in Marine Spatial Planning: Ambitions and Realities from the European Atlantic Experience, in Maritime Spatial Planning: past, present, future. J. Zaucha, K. Gee Series volume: Pages: 295-325. Springer International Publishing, Cham. <a href="https://doi.org/10.1007/978-3-319-98696-8_13">https://doi.org/10.1007/978-3-319-98696-8_13</a></p> <p>UNESCO-IOC/European Commission, 2021. MSPglobal International Guide on Marine/Maritime Spatial Planning. Paris, UNESCO. (IOC Manuals and Guides no 89), 152 pp. <a href="https://unesdoc.unesco.org/ark:/48223/pf0000379196">https://unesdoc.unesco.org/ark:/48223/pf0000379196</a></p> <p>McAteer, B., Flannery, W., Elliott, M., Boyes, S., Morato, T., Fauconnet, L., Galparsoro, I., Menchaca, I., Aranda, M., Meirelles de Oliveria, B., Frascchetti, S., Tunesi, L., Colloca, F., Moro, S., Fabbrizzi, E., Reid, D., O'Sullivan, D., Runya, M.R., Katsanevakis, S., Doxa, A., Petza, D., Papazekou, M., Degraer, S., Van Gerven, A., Leahy, A., Barnard, S., de Vries, P., Kruse, M., Stelzenmüller,</p>

## D1.2 A BEST PRACTICE GUIDE FOR THE IMPLEMENTATION OF EB-MSP IN EUROPEAN SEAS

Stage	Code	Action/task	Short	Topic	Description	Guidance and recommendations	Additional documents
							V., Jongbloed, R., Coll, M., Bas Lopez, M., Ortega, M., Neuenfeldt, S., and Funk, N., 2023. Report on the analysis of existing policies and institutions. Deliverable D4.1 of MarinePlan project: "Improved transdisciplinary science for effective ecosystem-based maritime spatial planning and conservation in European Seas". Horizon Europe grant agreement No 101059407; UKRI grant numbers 10038951 & 10050537. 97 pp.
Stage 1	1.4.07	A nested (vertical) governance system has been adopted within the planning area at transboundary level	Transboundary governance	Governance	To effectively address challenges and establish synergies at the transboundary level it is necessary to adopt a nested governance system, which encompasses multi-actor involvement, regional cooperation/cross-sectoral integration and joint adaptive actions. When possible, establishing an international partnership that goes beyond national administrative boundaries might help the cooperation between neighbouring countries and the development and implementation of coherent marine plans with common goals for the shared area.	Revising the competence distribution is helpful to improve the cooperation and coordination between administrations who should work together. A transboundary framework should include the establishment of a common vision between neighbouring countries and facilitate cooperation and coordination among different levels of decision-making (i.e., multi-level cooperation between national, subnational and local governments). It is also necessary for the coherent management of sectoral issues at the transboundary level, reducing user-user and user-environment conflicts, as well as engaging multiple stakeholders to agree on shared action strategies. Past or existing bilateral or multilateral collaborations or previous joint experiences or agreements, even if not marine-related, could pave the way for establishing an effective transboundary governance system.	<p>Li, S., S. Jay, 2023. Addressing transboundary challenges: Exploring the interactive relations between collaborative governance and transboundary marine spatial planning in Europe. Marine Policy, 158: 105880  <a href="https://doi.org/10.1016/j.marpol.2023.105880">https://doi.org/10.1016/j.marpol.2023.105880</a></p> <p>HELCOM-VASAB, Voluntary guidance for assessment of cross-border coherence in Maritime Spatial Planning, Version submitted to HELCOM-VASAB MSP WG 23- 2021, 2022. Available at <a href="https://helcom.fi/wp-content/uploads/2022/02/Voluntary-guidance-for-assessment-of-cross-border-coherence-in-MSP-.pdf">https://helcom.fi/wp-content/uploads/2022/02/Voluntary-guidance-for-assessment-of-cross-border-coherence-in-MSP-.pdf</a></p> <p>UNESCO-IOC/European Commission, 2021. MSPglobal International Guide on Marine/Maritime Spatial Planning. Paris, UNESCO. (IOC Manuals and Guides no 89), 152 pp.  <a href="https://unesdoc.unesco.org/ark:/48223/pf0000379196">https://unesdoc.unesco.org/ark:/48223/pf0000379196</a></p>

## D1.2 A BEST PRACTICE GUIDE FOR THE IMPLEMENTATION OF EB-MSP IN EUROPEAN SEAS

Stage 1	1.4.08	A Strategic Environment Assessment (SEA) and/or other relevant (regional Environmental Assessment) have been conducted	SEA	Legal framework	<p>Strategic Environmental Assessments (SEAs) can be used to identify the potential environmental impacts of plans and policies, such as MSP, to guarantee their sustainability. SEA can support a more environmentally oriented MPS process by providing a structured approach to assessing potential environmental impacts while ensuring greater stakeholder participation.</p> <p>SEA can serve as a crucial tool for implementing an EB-MSP. It is recommended that SEAs be initiated at the outset of the planning process and continued through the defining, developing, and assessing stages. This approach allows decision-makers to integrate potential environmental impacts as variables when evaluating alternatives, thereby facilitating the avoidance and mitigation of adverse environmental effects and unforeseen ecosystem harm. Furthermore, SEAs can enhance communication across different governance levels and international borders, and help identify deficiencies and areas for improvement in monitoring and data collection.</p> <p>For detailed guidance, Calado et al. (2021) propose a stepwise approach for the development, implementation, and monitoring of SEA for MSP plans, which incorporates participatory mapping with experts and the use of indicators to assess conflict and synergy areas in future scenarios. Additionally, Piet et al. (2021) and Kusters et al. (2024) offer a comprehensive list of relevant aspects of SEAs (with reference to relevant documents), that can assist in guiding the process (e.g., assessment of policies and their interrelations, assessing cumulative effects, active involvement of stakeholders) and complying with the requirements of MSP processes. Useful checklists for evaluating the implementation of key EB-MSP elements within your SEA can be found in WWF (2017) and Pinkau and Schiele (2021).</p>	<p>Calado, H., Gutierrez, D., Pegorelli, C., Kirkfeldt, T.S., Hipólito, C., Moniz, F., McClintock, W., Vergilio, M., Guerreiro, J. and Papaioannou, E., 2021. A tailored method for strategic environmental assessment in maritime spatial planning. <i>Journal of Environmental Assessment Policy and Management</i>, 23(01n02), p.2250009. <a href="https://doi.org/10.1142/S1464333222500090">https://doi.org/10.1142/S1464333222500090</a></p> <p>Kusters, J. E. H., F. M. G. van Kann, C. Zuidema, J. Arts, 2024. SEAs for seas: Strategic environmental assessment for more strategic and environmentally-oriented marine spatial planning processes. <i>Environmental Science &amp; Policy</i>, 162: 103920 <a href="https://doi.org/10.1016/j.envsci.2024.103920">https://doi.org/10.1016/j.envsci.2024.103920</a></p> <p>Pinkau, A., K. S. Schiele, 2021. Strategic Environmental Assessment in marine spatial planning of the North Sea and the Baltic Sea – An implementation tool for an ecosystem-based approach? <i>Marine Policy</i>, 130: 104547 <a href="https://doi.org/10.1016/j.marpol.2021.104547">https://doi.org/10.1016/j.marpol.2021.104547</a></p> <p>WWF (2017). Delivering ecosystem-based marine spatial planning in practice: An assessment of the integration of the ecosystem approach into UK and Ireland Marine Spatial Plans, 129 pp. <a href="https://www.wwf.org.uk/sites/default/files/2017-12/Final%20Report_WWF_Ecosystem-based%20approach%20in%20MSP%20%28002%29.pdf">https://www.wwf.org.uk/sites/default/files/2017-12/Final%20Report_WWF_Ecosystem-based%20approach%20in%20MSP%20%28002%29.pdf</a></p> <p>Piet et al. 2021. Guidelines for implementing an Ecosystem-based Approach in Maritime Spatial Planning: Including a method for the evaluation, monitoring and review of EBA in MSP. EC-CINEA, 102 pp. <a href="https://op.europa.eu/en/publication-detail/-/publication/a8ee2988-4693-11ec-89db-01aa75ed71a1">https://op.europa.eu/en/publication-detail/-/publication/a8ee2988-4693-11ec-89db-01aa75ed71a1</a></p>
---------	--------	--	-----	-----------------	--	---



Stage	Code	Action/task	Short	Topic	Description	Guidance and recommendations	Additional documents
Stage 1	1.5	Stakeholder engagement and participation process	Stakeholder engagement and participation process				
Stage 1	1.5.01	Authorities, NGOs and other interested parties whom the plan may concern and/or are interested in being involved have been identified	Stakeholder identification	Stakeholder engagement	As part of an effective governance structure, all the authorities, industry and civil society stakeholders that are or will be affected (positively or negatively) by the plan or might want to participate in its development should be identified.	<p>All the relevant decision-making authorities (i.e. government stakeholders including ministries, state agencies, municipalities and local government) should be identified. Additionally, industry and commercial stakeholders (e.g., ports, oil and gas-related activities, fisheries, renewable energy projects, etc.) operating in the area should be considered but also the civil society and other minority activities (e.g., local conservation NGOs, artisanal fisheries, local tourism and/or recreational agencies, etc.) present in coastal zones and that might be affected by the plan. Stakeholder identification and mapping could follow the approach proposed by Papageorgiou et al. (2024), promoting the equal participation of the different stakeholders present in the region. To promote a wide representativity of stakeholders, it might be useful to create a database with relevant information about stakeholders, such as their affiliations, sector or group and demography details.</p>	<p>Tafon, R., A. Armoskaite, K. Gee, M. Gilek, A. Ikauniece, F. Saunders, 2023. Mainstreaming coastally just and equitable marine spatial planning: Planner and stakeholder experiences and perspectives on participation in Latvia. <i>Ocean &amp; Coastal Management</i>, 242: 106681  <a href="https://doi.org/10.1016/j.ocecoaman.2023.106681">https://doi.org/10.1016/j.ocecoaman.2023.106681</a></p> <p>Papageorgiou, M., G. Pozoukidou, T. Istorou, T. Kostopoulou, 2024. Inclusive Maritime Spatial Planning: Stakes at the Regional Level. <i>Sustainability</i>, 16: 10148  <a href="https://doi.org/10.3390/su162210148">https://doi.org/10.3390/su162210148</a></p> <p>Twomey, S., C. O'Mahony. 2019. Stakeholder Processes in Marine Spatial Planning: Ambitions and Realities from the European Atlantic Experience, in <i>Maritime Spatial Planning: past, present, future</i>. J. Zauha, K. Gee Series volume: Pages: 295-325. Springer International Publishing, Cham.  <a href="https://doi.org/10.1007/978-3-319-98696-8_13">https://doi.org/10.1007/978-3-319-98696-8_13</a></p> <p>UNESCO-IOC/European Commission, 2021. MSPglobal International Guide on Marine/Maritime Spatial Planning.Paris, UNESCO. (IOC Manuals and Guides no 89), 152 pp.  <a href="https://unesdoc.unesco.org/ark:/48223/pf0000379196">https://unesdoc.unesco.org/ark:/48223/pf0000379196</a></p>

## D1.2 A BEST PRACTICE GUIDE FOR THE IMPLEMENTATION OF EB-MSP IN EUROPEAN SEAS

Stage	Code	Action/task	Short	Topic	Description	Guidance and recommendations	Additional documents
Stage 1	1.5.02	Focus groups and other methods with a panel of interdisciplinary experts and stakeholders have been established	Focus groups established	Stakeholder engagement	At the beginning of the planning process, the planning authority might want to establish advisory bodies or working groups, with a panel of interdisciplinary experts and stakeholders (e.g., non-governmental and governmental organisations, industry, academia, local authorities, general public), to structure a participatory governance. The skills of these focus groups should match the objectives and goals of the marine spatial plan.	Examining focus group dynamics followed in other MSP processes might be useful for selecting the most adequate approach for your plan. An example of stakeholder group organization can be found in Tafon et al. (2023), where three groups of participants were established, with different degrees of influence in the development of the first MSP draft: (1) a MSP Working Group, presenting the highest influence level (i.e., technical team consisting in experts from different disciplines that guide the direction and priorities of the MSP); (2) group of target stakeholders, presenting a consultative role (i.e., actively shaping the initial MSP phase through the creation of the knowledge base), consisting in representatives of economic sectors, interest groups and public institutions; (3) the general public, with the lowest influence level (i.e., could provide written feedback on draft plans and participate and provide opinions in public hearings/seminars).	<p>Flynn, S., E. Tray, T. Woolley, A. Leadbetter, K. Heney, D. O'Driscoll, C. Nic Aonghusa, A. Conway, 2023. Management of spatial data integrity including stakeholder feedback in Maritime Spatial Planning. <i>Marine Policy</i>, 156: 105799  <a href="https://doi.org/10.1016/j.marpol.2023.105799">https://doi.org/10.1016/j.marpol.2023.105799</a></p> <p>UNESCO-IOC/European Commission, 2021. MSPglobal International Guide on Marine/Maritime Spatial Planning. Paris, UNESCO. (IOC Manuals and Guides no 89), 152 pp.  <a href="https://unesdoc.unesco.org/ark:/48223/pf0000379196">https://unesdoc.unesco.org/ark:/48223/pf0000379196</a></p> <p>Tafon, R., A. Armoskaite, K. Gee, M. Gilek, A. Ikauniece, F. Saunders, 2023. Mainstreaming coastally just and equitable marine spatial planning: Planner and stakeholder experiences and perspectives on participation in Latvia. <i>Ocean &amp; Coastal Management</i>, 242: 106681  <a href="https://doi.org/10.1016/j.ocecoaman.2023.106681">https://doi.org/10.1016/j.ocecoaman.2023.106681</a></p>

## D1.2 A BEST PRACTICE GUIDE FOR THE IMPLEMENTATION OF EB-MSP IN EUROPEAN SEAS

Stage	Code	Action/task	Short	Topic	Description	Guidance and recommendations	Additional documents
Stage 1	1.5.03	Links with parallel stakeholder participation processes have been established	Links to stakeholder processes	Stakeholder engagement	It is important to establish links with parallel stakeholder participation processes at the beginning of the planning process, because this ensures that marine planning is consistent with broader societal and environmental initiatives.	The establishment of links with parallel stakeholder participation processes will involve the identification and mapping of these processes, including, among others, those related to fisheries, governance, and sectoral and environmental management, and developing mechanisms for information sharing and coordinated decision-making. Organizing workshops, shared online engagement strategies and cross-sectoral dialogues enables the integration of diverse views and avoids duplication of efforts. As such, the approach reinforces the legitimacy and effectiveness of EB-MSP by building on existing social networks and governance mechanisms.	<p>Piet et al. 2021. Guidelines for implementing an Ecosystem-based Approach in Maritime Spatial Planning: Including a method for the evaluation, monitoring and review of EBA in MSP. EC-CINEA, 102 pp. <a href="https://op.europa.eu/en/publication-detail/-/publication/a8ee2988-4693-11ec-89db-01aa75ed71a1">https://op.europa.eu/en/publication-detail/-/publication/a8ee2988-4693-11ec-89db-01aa75ed71a1</a></p> <p>Ramieri, E., M. Bocci, M. Markovic. 2019. Linking Integrated Coastal Zone Management to Maritime Spatial Planning: The Mediterranean Experience, in Maritime Spatial Planning: past, present, future. J. Zaucha, K. Gee Series volume: Pages: 271-294. Springer International Publishing, Cham. <a href="https://doi.org/10.1007/978-3-319-98696-8_12">https://doi.org/10.1007/978-3-319-98696-8_12</a></p> <p>Zaucha, J., K. Gee, E. Ramieri, L. Neimane, N. Alloncle, N. Blažauskas, H. Calado, C. Cervera-Núñez, V. M. Kuzmanović, M. Stancheva, J. Witkowska, S. E. Schütz, J. R. Zapatero, C. N. Ehler, 2025. Implementing the EU MSP Directive: Current status and lessons learned in 22 EU Member States. Marine Policy, 171: 106425 <a href="https://doi.org/10.1016/j.marpol.2024.106425">https://doi.org/10.1016/j.marpol.2024.106425</a></p>
Stage 1	1.5.04	Stakeholders have been facilitated with the opportunity to participate in the definition of objectives in a just and open manner to provide insights into societal choices	Stakeholders objectives	Stakeholder engagement	Stakeholders should be involved from the very beginning of the planning process, to integrate their insights into the development phase, enabling the improvement of the plan based on their place-based material (e.g., fishing, environmental conditions, tourism) and non-material (culture, place identity, socio-natural relationships) concerns. Actively involving stakeholders from the beginning of the plan development builds trust between stakeholders and decision-makers and facilitates compliance with established rules and regulations.	Aiming at the development of equitable and inclusive planning processes, efforts for establishing a bottom-up approach should be made, identifying the diverse coastal communities concerned by the plan, especially those more affected by the plan and that traditionally have faced more barriers to effective engagement, and involving them in the planning process from the beginning. People-related inclusion should account for the vulnerability and well-being of individuals, by considering factors such as age, gender, disabilities, economic status, and where applicable race, ethnicity and religion. Sector-based inclusivity refers to existing and potential sectors, including small-scale ones, such as fisheries, coastal tourism, aquaculture, recreation, offshore renewable energy, and where applicable, community groups or associations. Organization-related inclusion might also include environmental NGOs, small-scale fisheries, and where applicable,	<p>Tafon, R., A. Armoskaite, K. Gee, M. Gilek, A. Ikauniece, F. Saunders, 2023. Mainstreaming coastally just and equitable marine spatial planning: Planner and stakeholder experiences and perspectives on participation in Latvia. Ocean &amp; Coastal Management, 242: 106681 <a href="https://doi.org/10.1016/j.ocecoaman.2023.106681">https://doi.org/10.1016/j.ocecoaman.2023.106681</a></p> <p>Twomey, S., C. O'Mahony. 2019. Stakeholder Processes in Marine Spatial Planning: Ambitions and Realities from the European Atlantic Experience, in Maritime Spatial Planning: past, present, future. J. Zaucha, K. Gee Series volume: Pages: 295-325. Springer International Publishing, Cham. <a href="https://doi.org/10.1007/978-3-319-98696-8_13">https://doi.org/10.1007/978-3-319-98696-8_13</a></p> <p>Papageorgiou, M., G. Pozoukidou, T. Istoriu, T. Kostopoulou, 2024. Inclusive Maritime Spatial Planning: Stakes at the Regional Level. Sustainability, 16: 10148 <a href="https://doi.org/10.3390/su162210148">https://doi.org/10.3390/su162210148</a></p>

Stage	Code	Action/task	Short	Topic	Description	Guidance and recommendations	Additional documents
						<p>scholar activists, Indigenous Peoples, and ethnic groups. A practical approach for the identification and engagement of poorly heard stakeholders can be found at Papageorgiou et al. (2024).</p> <p>The participation of stakeholders can take the form of direct participation, where individuals represent themselves during the process or indirect participation, consisting in the representation of coastal communities through organized groups and associations or through an elected coastal municipal government. The use of innovative methods that are accessible to all and facilitate the outreach and ensure a balanced participation of the different stakeholder groups should be promoted, such as online resources, social media, local newspapers and media. Some practical recommendations for planning authorities to address challenges for stakeholder participation in MSP can be found in Twomey and O'Mahony (2019). A list of mechanisms for promoting the engagement of stakeholders and their benefits and limitations can be found in Ison et al. (2024).</p>	<p>Ison, S., C. Cvitanovic, G. Pecl, A. J. Hobday, I. van Putten, 2024. Participatory research in complex marine conservation settings: A review of recent trends and lessons for the future. <i>Ocean &amp; Coastal Management</i>, 253: 107053  <a href="https://doi.org/10.1016/j.ocecoaman.2024.107053">https://doi.org/10.1016/j.ocecoaman.2024.107053</a></p>
Stage 1	1.5.05	Relevant stakeholders that have taken part in other planning processes have participated (e.g., terrestrial plans)	Stakeholder of other processes	Stakeholder engagement	The collaboration with stakeholders that have participated in other planning processes will enhance the incorporation of information from other sources and the co-production of knowledge and will enrich the expert-based evaluation process, favouring the development of an effective MSP that gathers the needs and priorities of all the stakeholders present in the area.	<p>Engagement of stakeholders that have been involved in other planning processes, such as terrestrial plans, is very relevant for an effective land-sea interaction analysis, as it enables to take into consideration both directions of interaction across the coast interface.</p>	<p>Bocci, M., M. Markovic, A. Mlakar, M. Stancheva, M. Borg, F. Carella, A. Barbanti, E. Ramieri, 2024. Land-Sea-Interactions in MSP and ICZM: A regional perspective from the Mediterranean and the Black Sea. <i>Marine Policy</i>, 159: 105924  <a href="https://doi.org/10.1016/j.marpol.2023.105924">https://doi.org/10.1016/j.marpol.2023.105924</a></p> <p>Zaucha, J., K. Gee, E. Ramieri, L. Neimane, N. Alloncle, N. Blažauskas, H. Calado, C. Cervera-Núñez, V. M. Kuzmanović, M. Stancheva, J. Witkowska, S. E. Schütz, J. R. Zapatero, C. N. Ehler, 2025. Implementing the EU MSP Directive: Current status and lessons learned in 22 EU Member States. <i>Marine Policy</i>, 171: 106425  <a href="https://doi.org/10.1016/j.marpol.2024.106425">https://doi.org/10.1016/j.marpol.2024.106425</a></p>

Stage	Code	Action/task	Short	Topic	Description	Guidance and recommendations	Additional documents
Stage 1	1.5.06	Cross-border stakeholders have been facilitated with the opportunity to participate in the definition of objectives in a just and open manner	Cross-border stakeholders	Stakeholder engagement	In transboundary settings, establishing a formal cross-border information exchange and consultation process is essential for guaranteeing a successful MSP.	A formal cross-border information exchange and consultation process includes (i) consulting neighbouring countries at an early stage of preparation of the plan, (ii) the competent authorities informing the neighbouring counterparts of the intention of starting a marine spatial planning process or revising an existing one, (iii) clearly explaining the objectives and scope of the plan so they can evaluate the potential impact of the plan in their area, (iv) competent authorities requesting the exchange of information that could be relevant to the plan (e.g., socio-economic activities in the shared zone, environmental data) and (v) competent authorities informing neighbouring countries about the start of the stakeholder process. This will give them the opportunity of starting a parallel domestic stakeholder process where the issues affecting to the shared area, or of cross-border significance, are discussed, providing them the opportunity to participate in the definition of objectives for the shared area.	HELCOM-VASAB, 2022. Voluntary guidance for assessment of cross-border coherence in Maritime Spatial Planning, Version submitted to HELCOM-VASAB MSP WG 23- 2021, 2022. Available from <a href="https://helcom.fi/wp-content/uploads/2022/02/Voluntary-guidance-for-assessment-of-cross-border-coherence-in-MSP-.pdf">https://helcom.fi/wp-content/uploads/2022/02/Voluntary-guidance-for-assessment-of-cross-border-coherence-in-MSP-.pdf</a>
Stage 1	1.6	Public communication	Public communication				

## D1.2 A BEST PRACTICE GUIDE FOR THE IMPLEMENTATION OF EB-MSP IN EUROPEAN SEAS

Stage	Code	Action/task	Short	Topic	Description	Guidance and recommendations	Additional documents
Stage 1	1.6.01	At the start of the planning process, the goals and the participation procedure were announced and published	Objectives publication	Stakeholder engagement	Drafting and publishing a public participation strategy at the beginning of the planning process, where information about the MSP is provided, including its scope and goals, and the participation procedure is defined, ensures transparency and inclusivity from the start of the marine spatial plan development.	Documenting and publishing the participation procedure and providing opportunities for input fosters transparency and trust in the MSP process while encouraging participation and ownership of the marine spatial plan.  Public participation might consist of (i) an informing phase (e.g., workshops for local communities informing about MSP and the potential positive/negative effects, training sessions for certain stakeholder groups), where relevant information about the MSP is supplied to the public (e.g., media, internet, social network, printed documents, short explanatory videos, visually appealing documents), (ii) a consulting phase (e.g., public hearing, written comments, questionnaires), where stakeholders can provide their perspectives on different MSP aspects and (iii) an active involvement phase, where stakeholders can provide MSP-relevant information and data or take part in the evaluation of different issues (e.g., stakeholder individual and cross-sectoral events).	Ehler, C., Douvère, F., 2009. Marine Spatial Planning: a step-by-step approach toward ecosystem-based management. IOC Manual and Guides no. 53, 98 pp. <a href="https://www.mspglobal2030.org/wp-content/uploads/2019/03/Marine-spatial-planning-a-step-by-step-approach.pdf">https://www.mspglobal2030.org/wp-content/uploads/2019/03/Marine-spatial-planning-a-step-by-step-approach.pdf</a>  UNESCO-IOC/European Commission, 2021. MSPglobal International Guide on Marine/Maritime Spatial Planning. Paris, UNESCO. (IOC Manuals and Guides no 89), 152 pp. <a href="https://unesdoc.unesco.org/ark:/48223/pf0000379196">https://unesdoc.unesco.org/ark:/48223/pf0000379196</a>
Stage 1	1.6.02	The participating stakeholders and their roles have been published	Stakeholder roles published	Stakeholder engagement	Publicly publishing the participating stakeholders and their clearly defined roles ensures transparency and accountability in the MSP process.	This may involve outlining their specific contributions and responsibilities (e.g., organizations, interest groups) in public participation reports produced during the planning process. This measure builds trust and allows for public scrutiny, ensuring that diverse perspectives are represented and that stakeholders are accountable, promoting a collaborative and inclusive governance mechanism.	NMPF, 2021 National Marine Planning Framework Public Consultation Report 2021, 68 pp. <a href="https://assets.gov.ie/225048/0859dec2-7322-40c1-ab9f-c82d19d0fd2c.pdf">https://assets.gov.ie/225048/0859dec2-7322-40c1-ab9f-c82d19d0fd2c.pdf</a>
Stage 2	2	Stage 2. Developing	Stage 2. Developing				

Stage	Code	Action/task	Short	Topic	Description	Guidance and recommendations	Additional documents
Stage 2	2.1	Capturing the integrity, functioning and dynamics of marine ecosystems (inventory and mapping)	Capturing the integrity, functioning and dynamics of marine ecosystems (inventory and mapping)				
Stage 2	2.1.01	The <b>current environmental/conservation status</b> of marine ecosystems, habitats and species has been collated (to be used in subsequent knowledge integration and development of the plan)	Environmental status	Environmental status, conservation, protection and restoration	The development of an effective plan requires an inventory of reliable and up-to-date data to provide baseline information on the management area. In this context, it is necessary to collate information regarding the current environmental/conservation status of marine ecosystems, habitats, and species, which, together with other relevant data, will be used for the development of the plan.	<p>The current environmental/conservation status of marine ecosystems, habitats, and species must be collated, considering the structure, function and processes of the constituent marine ecosystems, together with natural physiographic, geographic, biological, geological and climatic factors, as well as physical, acoustic and chemical conditions, including those resulting from human activities inside or outside the area concerned (see EU, 2017). The list of variables required by the MSFD to assess the Good Environmental Status (GEnS) and the Water Framework Directive (WFD; EU, 2000) to assess the Good Ecological Status (GES) could be used as a structured checklist for data collection. The former consists of 11 quality descriptors (Biological Diversity; Non-indigenous Species; Commercial species; Marine Food Webs; Eutrophication; Sea Floor Integrity; Alteration of Hydrographical Conditions; Contaminants; Contaminants in Fish and Seafood; Marine Litter; Energy and Noise) and 39 related criteria elements, while the latter is based on the assessment of biological, physico-chemical and hydromorphological quality elements (see EU 2000, 2017).</p> <p>Data for the inventory can be obtained from various sources, such as scientific literature, scientific experts, government sources, local knowledge, or field measurements.</p>	<p>Paramana, T., M. Dassenakis, N. Bassan, C. Dallangelo, P. Campostrini, S. Raicevich, F. Ronchi, G. Giorgi, A. Murillas-Maza, M. C. Uyarra, N. Papadopoulou, C. Smith, K. Jarni, Š. Koren Bačovnik, K. Klančnik, M. Pavičić, S. Skejić, O. Vidjak, J. F. Cadiou, L. López-López, I. Alvarez, L. Giannoudi, N. Streftaris, P. Pagkou, 2023. Achieving coherence between the Marine Strategy Framework Directive and the Maritime Spatial Planning Directive. Marine Policy, 155: 105733  <a href="https://doi.org/10.1016/j.marpol.2023.105733">https://doi.org/10.1016/j.marpol.2023.105733</a></p> <p>Abramic, A., Norton, D., Sarretta, A., Menegon, S., Katsika, M., Gekas, V., Rybka, K., Fernández- Palacios, Y. 2023. Maritime Spatial Planning Data Framework (MSPdF). How to structure input data for MSP process, monitoring &amp; evaluation. Produced by Technical Expert Group (TEG) on Data for MSP. Supported by CINEA and DG MARE (EC). 45 pp.  <a href="https://doi.org/10.2926/440667">https://doi.org/10.2926/440667</a></p> <p>EU, 2000. Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy. OJ L327, 93 pp.  <a href="https://eur-lex.europa.eu/eli/dir/2000/60">https://eur-lex.europa.eu/eli/dir/2000/60</a></p> <p>EU, 2017. Commission Decision (EU) 2017/848 of 17 May 2017 laying down criteria and methodological standards on good environmental status of marine waters and specifications and standardised methods for monitoring and assessment, and repealing Decision 2010/477/EU. Official Journal of the European Union L125, 43-74. <a href="https://eur-lex.europa.eu/eli/dec/2017/848">https://eur-lex.europa.eu/eli/dec/2017/848</a></p>



Stage	Code	Action/task	Short	Topic	Description	Guidance and recommendations	Additional documents
						<p>Some available online data resources in Europe are:</p> <p>(i) INSPIRE Geoportal (<a href="https://inspire-geoportal.ec.europa.eu/srv/eng/catalog/search#/hvdshome">https://inspire-geoportal.ec.europa.eu/srv/eng/catalog/search#/hvdshome</a>), which includes geospatial data provided by EU Member States and EFTA countries; (ii) Marine Water Information System for Europe – WISE Marine (<a href="https://water.europa.eu/marine">https://water.europa.eu/marine</a>), provides data and information on the state and pressures on Europe's seas, including human activities, pressures, state of biodiversity and MPAs; (iii) European Global Ocean Observing System (EuroGOOS; <a href="https://eurogoos.eu/">https://eurogoos.eu/</a>), which provides operational oceanographic data; (iv) European Marine Observation and Data Network (EMODnet; <a href="https://emodnet.ec.europa.eu/geonetwork/srv/eng/catalog.search#/home">https://emodnet.ec.europa.eu/geonetwork/srv/eng/catalog.search#/home</a>), which provides in situ marine environmental and human activities data (i.e. bathymetry, geology, physics, chemistry, biology, seabed habitats and human activities); (v) SeaDataNet (<a href="https://www.seadatanet.org/">https://www.seadatanet.org/</a>), a Pan-European infrastructure for ocean and marine in situ data management.</p> <p>At global level, relevant information can be obtained from: (i) Global Ocean Observing System (<a href="https://www.ocean-ops.org/board">https://www.ocean-ops.org/board</a>), an intergovernmental oceanographic commission part of UNESCO; (ii) Copernicus Marine Service (<a href="https://marine.copernicus.eu/access-data">https://marine.copernicus.eu/access-data</a>), a EU funded service providing free and open marine data on global and regional scale; (iii) Ocean Biodiversity Information System (OBIS; <a href="https://obis.org/">https://obis.org/</a>), which offers open-access data and information on marine biodiversity; (iv) OneStop data search platform (<a href="https://data.noaa.gov/onestop/">https://data.noaa.gov/onestop/</a>), with offers access to the environmental data collection of the National Oceanic and Atmospheric Administration (NOAA); (v) GeoPlatform (<a href="https://www.geoplatform.gov/search">https://www.geoplatform.gov/search</a>), which</p>	<p>Papadopoulou, N., C. J. Smith, A. Franco, M. Elliott, A. Borja, J. H. Andersen, E. Amorim, J. P. Atkins, S. Barnard, T. Berg, S. N. R. Birchenough, D. Burdon, J. Claudet, R. Cormier, I. Galparsoro, A. Judd, S. Katsanevakis, S. Korpinen, L. Lazar, C. Loiseau, C. Lynam, I. Menchaca, C. O'Toole, D. Pedreschi, G. Piet, D. Reid, I. A. Salinas-Akhmadeeva, V. Stelzenmüller, J. E. Tamis, L. Uusitalo, M. C. Uyerra, 2025. 'Horses for courses' – an interrogation of tools for marine ecosystem-based management. <i>Frontiers in Marine Science</i>, Volume 12 - 2025: <a href="https://doi.org/10.3389/fmars.2025.1426971">https://doi.org/10.3389/fmars.2025.1426971</a></p>

Stage	Code	Action/task	Short	Topic	Description	Guidance and recommendations	Additional documents
						<p>shares the geographic data, maps and online services of the Federal Geographic Data Committee; (vi) specific information for Canada (<a href="https://catalogue.cioos.ca/">https://catalogue.cioos.ca/</a>).</p> <p>Some recommended tools for assessing the environmental/conservation status of the planning area are (i) “Indicator-based integrative tools” (e.g., HEAT, BEAT, CHASE), where the un-acceptable state is determined against a threshold value, (ii) “Overarching assessment tools” (e.g., NEAT, OHI), for biodiversity assessments or assessing ocean health based on the provisioning of human-related benefits and services (see Papadopoulou et al., 2025).</p>	
Stage 2	2.1.02	Information on <b>existing or planned protected areas</b> has been collated (location, area, etc.)	Existing protected areas	Environmental status, conservation, protection and restoration	During the development of the plan, information on existing or planned protected areas must be collated. This information is essential for assessing potential incompatibilities with current and future maritime uses and activities. This might include, among others, location, area	Marine protected areas are geographically distinct zones for which protection objectives are set (EEA, 2018). The designation of protected areas is recognised as an effective management tool for safeguarding marine biodiversity and ecosystems. Although the planning process and MPA designation typically occur in parallel, the former can help in identifying optimal areas for the location of new MPAs.	Abramic, A., Norton, D., Sarretta, A., Menegon, S., Katsika, M., Gekas, V., Rybka, K., Fernández- Palacios, Y. 2023. Maritime Spatial Planning Data Framework (MSPdF). How to structure input data for MSP process, monitoring & evaluation. Produced by Technical Expert Group (TEG) on Data for MSP. Supported by CINEA and DG MARE (EC). 45 pp. <a href="https://doi.org/10.2926/440667">https://doi.org/10.2926/440667</a>

## D1.2 A BEST PRACTICE GUIDE FOR THE IMPLEMENTATION OF EB-MSP IN EUROPEAN SEAS

Stage	Code	Action/task	Short	Topic	Description	Guidance and recommendations	Additional documents
					extension, conservation objectives, management and regulation criteria and restrictions.	<p>Some available data sources of conservation data and spatial information in Europe are the Nationally designated areas (CDDA; <a href="https://doi.org/10.2909/616ef48f-7196-4e30-b201-6c97808fa68a">https://doi.org/10.2909/616ef48f-7196-4e30-b201-6c97808fa68a</a>) and the Natura 2000 protected areas network (<a href="https://natura2000.eea.europa.eu/">https://natura2000.eea.europa.eu/</a>) provided by the European Environment Agency. The World Database on Protected Areas (WDPA) is the most comprehensive global database on terrestrial and marine protected areas, including EU waters (<a href="https://www.protectedplanet.net/en/thematic-areas/wdpa?tab=WDPA">https://www.protectedplanet.net/en/thematic-areas/wdpa?tab=WDPA</a>)</p> <p>Relevant information about protected areas at national or regional scales can be also found at GeoPlatform for the US (<a href="https://www.geoplatform.gov/">https://www.geoplatform.gov/</a>); at the North American Environmental Atlas from the Commission for Environmental Cooperation of North America (<a href="https://www.cec.org/files/atlas">https://www.cec.org/files/atlas</a>). For the Mediterranean Sea the MAPAMED database (<a href="https://medpan.org/main_activities/mapamed/">https://medpan.org/main_activities/mapamed/</a>) can be also of help.</p>	<p>European Environment Agency. 2018. Marine protected areas <a href="https://www.eea.europa.eu/publications/marine-protected-areas/marine-protected-areas">https://www.eea.europa.eu/publications/marine-protected-areas/marine-protected-areas</a></p> <p>Trouillet, B., S. Jay, 2021. The complex relationships between marine protected areas and marine spatial planning: Towards an analytical framework. Marine Policy, 127: 104441 <a href="https://doi.org/10.1016/j.marpol.2021.104441">https://doi.org/10.1016/j.marpol.2021.104441</a></p> <p>Vaughan, D., T. Agardy. 2020. Chapter 2 - Marine protected areas and marine spatial planning – allocation of resource use and environmental protection, in Marine Protected Areas. J. Humphreys, R. W. E. Clark Series volume: Pages: 13-35. Elsevier. <a href="https://doi.org/10.1016/B978-0-08-102698-4.00002-2">https://doi.org/10.1016/B978-0-08-102698-4.00002-2</a></p>
Stage 2	2.1.03	Information on <b>existing or planned restoration areas</b> has been collated (location, area, etc.)	Existing restoration areas	Environmental status, conservation, protection and restoration	Restoration refers to the process of halting and reversing degradation, resulting in improved ecosystem services and biodiversity recovery. This encompasses actions and techniques designed to improve the quality, size or distribution of a target habitat and/or species. For each designated area, collate information on existing or planned restoration areas. This may include, but is not limited to,	The United Nations Decade on Ecosystem Restoration 2021-2030 calls for the implementation of actions that facilitate and accelerate the recovery of degraded ecosystems, to benefit both humans and nature. At global level, there are various international agreements that set restoration targets (e.g., the Kunming-Montreal Global Biodiversity Framework, which aims to restore at least 30% of all degraded ecosystems by 2030; the EU Nature Restoration Law, which aims to restore 20% of the EU's land and sea areas by 2030 and all ecosystems in need of restoration by 2050 and lists the ecosystems subject to restoration and specifies	<p>MSPglobal. 2025. Training on Marine Spatial Planning <a href="https://www.mspglobal2030.org/wp-content/uploads/2025/04/7_MSPglobal_MSP_MARINE_PROTECTION_FUJ_20250317.pdf">https://www.mspglobal2030.org/wp-content/uploads/2025/04/7_MSPglobal_MSP_MARINE_PROTECTION_FUJ_20250317.pdf</a></p> <p>Gerosvasileiou, V., C. J. Smith, K. Sevastou, N. Papadopoulou, T. Dailianis, T. Bekkby, D. Fiorentino, C. J. McOwen, T. Amaro, E. G. T. Bengil, M. Bilan, C. Boström, M. Carreiro-Silva, E. Cebrian, C. Cerrano, R. Danovaro, S. Frascchetti, K. Gagnon, C. Gambi, A. Grehan, B. Hereu, S. Kipson, J. Kotta, C. Linares, T. Morato, H. Ojaveer, H. Orav-Kotta, A. Sarà, R. Scrimgeour, 2019. Habitat mapping in the European Seas - is it fit for purpose in the marine</p>

Stage	Code	Action/task	Short	Topic	Description	Guidance and recommendations	Additional documents
					restoration objectives, the extension of the restored area, the condition of the restored area in comparison to reference areas, and management and regulation criteria and restrictions, including any potential overlap between restoration interventions and the presence of MPAs.	<p>measurable indicators for assessing the condition of ecosystem). In this context, planning restoration areas is essential to achieve these established targets.</p> <p>Incorporating systematic conservation planning principles is important to enhance the selection of restoration sites by evaluating factors such as habitat suitability, connectivity, and potential for long-term success. Such an approach will ensure that restoration efforts are ecologically meaningful and contribute effectively to broader conservation and sustainability goals. For a review on restoration projects and the methodological approaches (e.g., experimental techniques, habitat suitability models, spatial prioritization algorithms, etc.) and site selection parameters (e.g., environmental/biological factors, current/historical presence, human use, etc.) used for spatial planning, refer to Lester et al. (2020).</p> <p>At present, EU databases detailing existing or planned restoration efforts are still not available, but there are reviews (e.g. Fraschetti et al. 2021) documenting the distribution of restored areas. Additionally, Gerovasileiou et al. (2019) reviewed map records at European scale to collate information on degraded marine habitats and their restoration potential.</p>	<p>restoration agenda? Marine Policy, 106: 103521 <a href="https://doi.org/10.1016/j.marpol.2019.103521">https://doi.org/10.1016/j.marpol.2019.103521</a></p> <p>Fraschetti, S., C. McOwen, L. Papa, N. Papadopoulou, M. Bilan, C. Boström, P. Capdevila, M. Carreiro-Silva, L. Carugati, E. Cebrian, M. Coll, T. Dailianis, R. Danovaro, F. De Leo, D. Fiorentino, K. Gagnon, C. Gambi, J. Garrabou, V. Gerovasileiou, B. Hereu, S. Kipson, J. Kotta, J.-B. Ledoux, C. Linares, J. Martin, A. Medrano, I. Montero-Serra, T. Morato, A. Pusceddu, K. Sevastou, C. J. Smith, J. Verdura, G. Guarnieri, 2021. Where Is More Important Than How in Coastal and Marine Ecosystems Restoration. <i>Frontiers in Marine Science</i>, Volume 8 - 2021: <a href="https://doi.org/10.3389/fmars.2021.626843">https://doi.org/10.3389/fmars.2021.626843</a></p> <p>Lester, S. E., A. K. Dubel, G. Hernán, J. McHenry, A. Rassweiler, 2020. Spatial Planning Principles for Marine Ecosystem Restoration. <i>Frontiers in Marine Science</i>, Volume 7 - 2020: <a href="https://doi.org/10.3389/fmars.2020.00328">https://doi.org/10.3389/fmars.2020.00328</a></p> <p>Danovaro, R., J. Aronson, S. Bianchelli, C. Boström, W. Chen, R. Cimino, C. Corinaldesi, J. Cortina-Segarra, P. D'Ambrosio, C. Gambi, J. Garrabou, A. Giorgetti, A. Grehan, A. Hannachi, L. Mangialajo, T. Morato, S. Orfanidis, N. Papadopoulou, E. Ramirez-Llodra, C. J. Smith, P. Snelgrove, J. van de Koppel, J. van Tatenhove, S. Fraschetti, 2025. Assessing the success of marine ecosystem restoration using meta-analysis. <i>Nature Communications</i>, 16: 3062 <a href="https://doi.org/10.1038/s41467-025-57254-2">https://doi.org/10.1038/s41467-025-57254-2</a></p> <p>CBD, 2022. Decision adopted by the conference of the parties to the convention on biological diversity: Kunming-Montreal Global Biodiversity Framework. <a href="https://www.cbd.int/gbf/targets">https://www.cbd.int/gbf/targets</a></p> <p>EU, 2024. Regulation (EU) 2024/1991 of the European Parliament and of the Council of 24 June 2024 on nature restoration and amending Regulation (EU) 2022/869 (Text with EEA relevance). <a href="https://eur-lex.europa.eu/legal-">https://eur-lex.europa.eu/legal-</a></p>

Stage	Code	Action/task	Short	Topic	Description	Guidance and recommendations	Additional documents
							<a href="https://content/EN/TXT/?uri=CELEX%3A32024R1991&amp;qid=1722240349976">content/EN/TXT/?uri=CELEX%3A32024R1991&amp;qid=1722240349976</a>  UN, 2019. Resolution adopted by the General Assembly on 1 March 2019: United Nations Decade on Ecosystem Restoration (2021–2030). <a href="https://docs.un.org/en/A/RES/73/284">https://docs.un.org/en/A/RES/73/284</a>
Stage 2	2.1.04	Information contributing to <b>EBSA</b> (Ecologically and Biologically Significant Areas) criteria has been collated (i.e., (i) Uniqueness or rarity; (ii) Special importance for life history stages of species; (iii) Importance for threatened, endangered or declining species and/or habitats; (iv) Vulnerability, fragility, sensitivity, or slow recovery; (v) Biological productivity; (vi) Biological diversity; (vii) Naturalness)	EBSAs	Ecosystem processes and functioning	It is recommended that in addition to traditional ecological features (species, habitats) that are targeted in conservation legislation, information contributing to EBSA criteria is also collated, helping to identify important areas that hold special biological and ecological characteristics. EBSAs are defined as “special areas in the ocean, recognized for its unique ecological and/or biological features, that serve important purposes, in one way or another, to support the healthy functioning of oceans and the many services that it provides” (CBD, 2006).	EBSAs are identified based on seven scientific criteria established under the Convention on Biological Diversity (CBD) to address aspects of particular relevance to marine conservation and management. An EBSA is an area that meets at least one of the criteria. Information about the EBSA criteria and the areas described by CBD as meeting these criteria can be found at <a href="https://www.cbd.int/ebsa/">https://www.cbd.int/ebsa/</a> . While most of the EBSAs currently described through the CBD process do not benefit from any specific form of management, the criteria have been used in regional and national assessments supporting MSP and conservation efforts (e.g., Harris et al, 2022; Kuusmanen et al, 2023; Lukyanova et al, 2025).	Kuusmanen, L. M. J., E. A. Virtanen, J. Lappalainen, L. Kurvinen, P. Blankett, M. Viitasalo, 2023. Identifying ecologically valuable marine areas to support conservation and spatial planning at scales relevant for decision making. Marine Policy, 158: 105890 <a href="https://doi.org/10.1016/j.marpol.2023.105890">https://doi.org/10.1016/j.marpol.2023.105890</a>  Harris, L. R., S. D. Holness, G. Finke, M. Amunyele, R. Braby, N. Coelho, K. Gee, S. P. Kirkman, A. Kreiner, E. Mausolf, P. Majiedt, E. Maletzky, K. K. Nsengi, V. Russo, K. J. Sink, R. Sorgenfrei, 2022. Practical Marine Spatial Management of Ecologically or Biologically Significant Marine Areas: Emerging Lessons From Evidence-Based Planning and Implementation in a Developing-World Context. Frontiers in Marine Science, Volume 9 - 2022: <a href="https://doi.org/10.3389/fmars.2022.831678">https://doi.org/10.3389/fmars.2022.831678</a>  Lukyanova, O., S. Pouso, I. García-Barón, A. Borja, M. Bas, R. Cormier, S. Katsanevakis, S. Neuenfeldt, V. Stelzenmüller, I. Galparsoro, 2025. Operationalising Ecologically or Biologically Significant Marine Areas criteria for ecosystem-based conservation and management: The Bay of Biscay case. Biological Conservation, 308: 111156 <a href="https://doi.org/10.1016/j.biocon.2025.111156">https://doi.org/10.1016/j.biocon.2025.111156</a>

Stage	Code	Action/task	Short	Topic	Description	Guidance and recommendations	Additional documents
Stage 2	2.1.05	Information on restoration actions (passive and active) has been collated	Restoration actions	Environmental status, conservation, protection and restoration	<p>During the development of the plan, information on restoration actions (passive and active) has to be collated. Active actions refer to direct, usually small-scale interventions aimed at restoring specific species or habitats, such as planting organisms. Conversely, passive restoration involves removing pressures to facilitate natural recovery, with recovery anticipated across a large spatial scale.</p>	<p>It is recommended the collation of spatial information about the distribution of restoration interventions, methodologies, spatial scales of interventions, temporal scale of monitoring and outcomes of the intervention. The complete recovery of degraded habitats through passive restoration can be very lengthy, potentially spanning 100-200 years, particularly for habitat-forming species. This recovery process could be accelerated with an initial kickstart combined with ongoing active restoration measures. One recommendation for implementing passive restoration actions involves establishing a buffer zone around areas undergoing active restoration. This approach could maximize the results of restoration measures, yielding a higher return on the investment made in restoration. For a comprehensive list of restoration interventions, including information on the ecosystem restored, the methodological approach followed, and the success and failure rates of restoration actions, refer to Fraschetti et al. (2021) and Danovaro et al. (2025).</p> <p>Projects like MERCES have assessed the potential of different technologies and approaches, also quantifying the returns in terms of ecosystems services and their socio-economic impacts. Since several ongoing EU projects (CLIMAREST; Life Mapper) share this objective, specific databases are expected to become available soon.</p>	<p>Fraschetti, S., C. McOwen, L. Papa, N. Papadopoulou, M. Bilan, C. Boström, P. Capdevila, M. Carreiro-Silva, L. Carugati, E. Cebrian, M. Coll, T. Dailianis, R. Danovaro, F. De Leo, D. Fiorentino, K. Gagnon, C. Gambi, J. Garrabou, V. Gerovasileiou, B. Hereu, S. Kipson, J. Kotta, J.-B. Ledoux, C. Linares, J. Martin, A. Medrano, I. Montero-Serra, T. Morato, A. Pusceddu, K. Sevastou, C. J. Smith, J. Verdura, G. Guarnieri, 2021. Where Is More Important Than How in Coastal and Marine Ecosystems Restoration. <i>Frontiers in Marine Science</i>, Volume 8 - 2021: <a href="https://doi.org/10.3389/fmars.2021.626843">https://doi.org/10.3389/fmars.2021.626843</a></p> <p>Lester, S. E., A. K. Dubel, G. Hernán, J. McHenry, A. Rassweiler, 2020. Spatial Planning Principles for Marine Ecosystem Restoration. <i>Frontiers in Marine Science</i>, Volume 7 - 2020: <a href="https://doi.org/10.3389/fmars.2020.00328">https://doi.org/10.3389/fmars.2020.00328</a></p> <p>MSPglobal. 2025. Training on Marine Spatial Planning <a href="https://www.mspglobal2030.org/wp-content/uploads/2025/04/7_MSPglobal_MSP_MARINE_PROTECTION_FUI_20250317.pdf">https://www.mspglobal2030.org/wp-content/uploads/2025/04/7_MSPglobal_MSP_MARINE_PROTECTION_FUI_20250317.pdf</a></p> <p>Danovaro, R., J. Aronson, S. Bianchelli, C. Boström, W. Chen, R. Cimino, C. Corinaldesi, J. Cortina-Segarra, P. D'Ambrosio, C. Gambi, J. Garrabou, A. Giorgetti, A. Grehan, A. Hannachi, L. Mangialajo, T. Morato, S. Orfanidis, N. Papadopoulou, E. Ramirez-Llodra, C. J. Smith, P. Snelgrove, J. van de Koppel, J. van Tatenhove, S. Fraschetti, 2025. Assessing the success of marine ecosystem restoration using meta-analysis. <i>Nature Communications</i>, 16: 3062 <a href="https://doi.org/10.1038/s41467-025-57254-2">https://doi.org/10.1038/s41467-025-57254-2</a></p> <p>Manea, E., T. Agardy, L. Bongiorno, 2023. Link marine restoration to marine spatial planning through ecosystem-based management to maximize ocean regeneration. <i>Aquatic Conservation: Marine and Freshwater Ecosystems</i>, 33: 1387-1399 <a href="https://doi.org/10.1002/aqc.3999">https://doi.org/10.1002/aqc.3999</a></p>

Stage	Code	Action/task	Short	Topic	Description	Guidance and recommendations	Additional documents
Stage 2	2.1.06	Mechanisms for the integration of data and information from different sources have been established	Data integration mechanisms	Approaches, tools and methods	A unified strategy oversees data collection to prevent overlapping efforts and ensure compatibility of formats. This includes the identification of data sources, periods in which new data is produced, etc. (i.e., metadata). The use of common data-gathering strategies is especially useful in transboundary situations (i.e., connected databases) avoid duplication, promote comparability, etc.).	<p>Specific institutions are designated as the custodians of certain data types and should host a principal repository of marine-related data to support both the development and evidence-based decision-making under the MSP framework by marine regulatory authorities. Thus, this approach must consider the variety of institutions responsible for different data types and scales, including local authorities.</p> <p>The implementation of a Data Management Plan is recommended to fulfil international principles of transparency. The FAIR principles should be followed for data management to enhance the Findability, Accessibility, Interoperability, and Reusability of digital assets. These principles ensure that data can be easily located, accessed, integrated, and reused by both humans and machines, promoting efficient and effective data stewardship. The creation of a common database, such as the INSPIRE model used in Europe (see Piet et al. 2021), should be pursued, enabling the sharing of harmonized data across various planning processes (e.g., land planning, adjacent areas, transboundary areas), while simultaneously enhancing the transparency of MSP processes. Once all pertinent information has been centralized within a single structure or institution, it is advisable to make it available to stakeholders and the general public via an official website. This platform can serve multiple functions throughout the planning process (e.g., receiving feedback, encouraging engagement, and publishing all official documentation). This approach conveys confidence and promotes public participation in decision-making thereby encouraging a sense of ownership over the plan and cultivating support. For a comprehensive list of geoportals valuable for marine spatial planning, refer to Bosso et al. (2025). Additional geoportals or sites providing relevant</p>	<p>Abramic, A., Norton, D., Sarretta, A., Menegon, S., Katsika, M., Gekas, V., Rybka, K., Fernández- Palacios, Y. 2023. Maritime Spatial Planning Data Framework (MSPdF). How to structure input data for MSP process, monitoring &amp; evaluation. Produced by Technical Expert Group (TEG) on Data for MSP. Supported by CINEA and DG MARE (EC). 45 pp.  <a href="https://doi.org/10.2926/440667">https://doi.org/10.2926/440667</a></p> <p>Piet et al. 2021. Guidelines for implementing an Ecosystem-based Approach in Maritime Spatial Planning: Including a method for the evaluation, monitoring and review of EBA in MSP. EC-CINEA, 102 pp.  <a href="https://op.europa.eu/en/publication-detail/-/publication/a8ee2988-4693-11ec-89db-01aa75ed71a1">https://op.europa.eu/en/publication-detail/-/publication/a8ee2988-4693-11ec-89db-01aa75ed71a1</a></p> <p>Bosso, L., F. Raffini, L. Ambrosino, R. Panzuto, C. Gili, M. L. Chiusano, M. Miralto, 2025. Geoportals in marine spatial planning: state of the art and future perspectives. Ocean &amp; Coastal Management, 266: 107688  <a href="https://doi.org/10.1016/j.ocecoaman.2025.107688">https://doi.org/10.1016/j.ocecoaman.2025.107688</a></p> <p>Menegon, S., A. Fadini, L. Perini, A. Sarretta, D. Depellegrin, E. De Maio, G. Farella, M. Landini, C. Fava, C. Ferrarin, M. Ghezzi, E. Manea, E. M. D. Porporato, R. Pastres, O. Sedioli, D. V. Politikos, I. Maina, S. Kavadas, R. Matarrese, A. Barbanti, 2023. A geoportal of data and tools for supporting Maritime Spatial Planning in the Adriatic-Ionian Region. Environmental Modelling &amp; Software, 160: 105585 <a href="https://doi.org/10.1016/j.envsoft.2022.105585">https://doi.org/10.1016/j.envsoft.2022.105585</a></p> <p>INSPIRE. Infrastructure for Spatial Information in Europe  <a href="https://knowledge-base.inspire.ec.europa.eu/index_en">https://knowledge-base.inspire.ec.europa.eu/index_en</a></p>



Stage	Code	Action/task	Short	Topic	Description	Guidance and recommendations	Additional documents
						datasets include the Geoportal of the Adriatic-Ionian Region (GAIR; Menegon et al. 2023).	
Stage 2	2.1.07	Ecological functioning, integrity and resilience have been addressed	Ecological functioning	Ecosystem processes and functioning	<p>The development of the plan should account for ecological functioning, integrity and resilience. Ecological functioning refers to the processes, roles of organisms, and services that occur within ecosystems, including the interactions among organisms and between organisms and their environment. These functions are essential for the maintenance and regulation of ecosystem structure and dynamics (Jax, 2010). (Ecosystem functioning should be assessed at relevant spatial and temporal scales that account for change (Papadopoulou et al., 2025). Ecological resilience is defined as the amount of disturbance that a system can withstand without changing self-organized processes and structures (Flensburg et al. 2023). Resilience in a marine area can be analysed with a combination of key indicators, such as richness, redundancy, evenness, and response diversity.</p>	<p>Some recommended tools for assessing specific ecosystem functions are (1) Marine Ecosystem Modelling (MEM), such as Ecopath with Ecosim (EwE) framework and (2) Ecological Network Analysis (ENA), where the structure and flow of energy and nutrients between ecosystem components (food web effects) is simulated aiming at understanding the trophic patterns and the implication for the ecosystem (see Papadopoulou et al., 2025).</p> <p>As guidance, Flensburg et al. (2023) presented a practical and spatially explicit analysis for assessing ecological resilience in the North Sea. Using four biodiversity-related indicators of resilience (richness, redundancy, evenness and response diversity), the authors present a “joint resilience indicator”, as a metric of overall community resilience for the marine space.</p>	<p>Flensburg, L. C., A. A. Maureaud, D. N. Bravo, M. Lindegren, 2023. An indicator-based approach for assessing marine ecosystem resilience. ICES Journal of Marine Science, 80: 1487-1499 <a href="https://doi.org/10.1093/icesjms/fsad077">https://doi.org/10.1093/icesjms/fsad077</a></p> <p>Papadopoulou, N., C. J. Smith, A. Franco, M. Elliott, A. Borja, J. H. Andersen, E. Amorim, J. P. Atkins, S. Barnard, T. Berg, S. N. R. Birchenough, D. Burdon, J. Claudet, R. Cormier, I. Galparsoro, A. Judd, S. Katsanevakis, S. Korpinen, L. Lazar, C. Loiseau, C. Lynam, I. Menchaca, C. O’Toole, D. Pedreschi, G. Piet, D. Reid, I. A. Salinas-Akhmadeeva, V. Stelzenmüller, J. E. Tamis, L. Uusitalo, M. C. Uyarra, 2025. ‘Horses for courses’ – an interrogation of tools for marine ecosystem-based management. Frontiers in Marine Science, Volume 12 - 2025: <a href="https://doi.org/10.3389/fmars.2025.1426971">https://doi.org/10.3389/fmars.2025.1426971</a></p> <p>Coll, M., J. Steenbeek, 2017. Standardized ecological indicators to assess aquatic food webs: The ECOIND software plug-in for Ecopath with Ecosim models. Environmental Modelling &amp; Software, 89: 120-130 <a href="https://doi.org/10.1016/j.envsoft.2016.12.004">https://doi.org/10.1016/j.envsoft.2016.12.004</a></p> <p>Jax, K. 2010. Ecosystem Functioning. Cambridge University Press, Cambridge. <a href="https://doi.org/10.1017/CBO9780511781216">https://doi.org/10.1017/CBO9780511781216</a></p>

## D1.2 A BEST PRACTICE GUIDE FOR THE IMPLEMENTATION OF EB-MSP IN EUROPEAN SEAS

Stage	Code	Action/task	Short	Topic	Description	Guidance and recommendations	Additional documents
Stage 2	2.1.08	Ecological connectivity has been addressed	Ecological connectivity	Ecosystem processes and functioning	<p>The development of the plan should account for ecological connectivity, which is defined as the unimpeded movement of species, connection of habitats without hindrance and the flow of natural processes that sustain life on Earth (CMS, 2024). Connectivity is essential for many ecological processes and is influenced by both the structure of the seascape (i.e., structural connectivity) and the ability of different species to move through it (i.e., functional connectivity).</p>	<p>To achieve maximum conservation effectiveness, EB-MSP must move beyond theoretical assumptions of ecological connectivity by incorporating systematic conservation planning techniques that explicitly account for it. This involves integrating a variety of connectivity-related ecological processes such as ecological corridors, species migration pathways, oceanic currents, larval dispersal, cross-realm, and vertical (depth-related) connectivity. By adopting advanced methodologies, conservation planning can better capture the complexity of marine ecosystems and ensure the ecological coherence of marine spatial plans and support the resilience of marine ecosystems in response to environmental changes.</p> <p>A recommended tool for incorporating connectivity in conservation planning is priorCON. Using advanced algorithms, it analyses spatial data to detect clusters of interconnected habitats that support critical processes like species migration, feeding, and reproduction. By integrating species distribution models, habitat data, and human pressures (e.g., fishing, shipping), priorCON highlights natural pathways and identifies obstacles to connectivity, guiding protection efforts in strategically important areas. Its customizable design allows adaptation to various marine environments and conservation objectives, from coastal zones to the deep sea. The use and integration of priorCON into broader planning frameworks can enhance the overall effectiveness of networks of MPAs through improved connectivity.</p>	<p>Podda, C., E. M. D. Porporato, 2023. Marine spatial planning for connectivity and conservation through ecological corridors between marine protected areas and other effective area-based conservation measures. <i>Frontiers in Marine Science</i>, 10:1271397. <a href="https://doi.org/10.3389/fmars.2023.1271397">https://doi.org/10.3389/fmars.2023.1271397</a></p> <p>CMS, 2024. Resolution 14.16: Ecological connectivity. Conference of the Parties, 14th meeting UNEP/CMS, Samarkand, Uzbekistan. <a href="https://www.cms.int/en/meeting/fourteenth-meeting-conference-parties-cms">https://www.cms.int/en/meeting/fourteenth-meeting-conference-parties-cms</a></p> <p>Jonsson, P. R., L. Hammar, I. Wåhlström, J. Pålsson, D. Hume, E. Almroth-Rosell, M. Mattsson, 2021. Combining seascape connectivity with cumulative impact assessment in support of ecosystem-based marine spatial planning. <i>Journal of Applied Ecology</i>, 58: 576-586 <a href="https://doi.org/10.1111/1365-2664.13813">https://doi.org/10.1111/1365-2664.13813</a></p> <p>Nagkoulis, N., M. Papazekou, S. Katsanevakis, A. Mazaris, 2025. Spatial conservation planning: Proposing clustering methods to improve connectivity protection. <i>Methods in Ecology and Evolution</i>, 16: 377-387 <a href="https://doi.org/10.1111/2041-210X.14459">https://doi.org/10.1111/2041-210X.14459</a></p>
Stage 2	2.1.09	Long-time series that capture the dynamic nature of ecosystems have been addressed	Time series	Ecosystem processes and functioning	<p>Long-term time series are important for MSP and conservation planning, to capture the dynamic nature of marine ecosystems and to help reducing or accounting for uncertainty and its potential negative impacts.</p>	<p>The use of long-time series will facilitate the identification of trends in species distributions, habitat conditions, and environmental variability. These data underpin more accurate scenario modelling, support adaptive management, and improve the resilience of planning decisions in the face of climate change and other long-term</p>	<p>Heymans, J. J., M. Coll, J. S. Link, S. Mackinson, J. Steenbeek, C. Walters, V. Christensen, 2016. Best practice in Ecopath with Ecosim food-web models for ecosystem-based management. <i>Ecological Modelling</i>, 331: 173-184 <a href="https://doi.org/10.1016/j.ecolmodel.2015.12.007">https://doi.org/10.1016/j.ecolmodel.2015.12.007</a></p>

## D1.2 A BEST PRACTICE GUIDE FOR THE IMPLEMENTATION OF EB-MSP IN EUROPEAN SEAS

Stage	Code	Action/task	Short	Topic	Description	Guidance and recommendations	Additional documents
						pressures. Sufficiently long time series are also required for calibrating models and testing their capacity to capture historical temporal dynamics.	
Stage 2	2.1.10	Social-Ecological System has been addressed	Social-Ecological System	Ecosystem processes and functioning	It is important to account for the Social-Ecological System within the management area. Social-Ecological Systems are defined as complex adaptive systems where human societies are embedded in nature and where an ecological (biophysical) system is intricately linked with and affected by one or more social (human) systems (Anderies et al. (2004). Therefore, the concept of a social-ecological system is closely related to MSP, as it aims at managing human activities in marine areas while considering ecological, economic and social characteristics.	The ecological and social systems are inherently interlinked, and as such, they should be addressed, included and integrated in the plan. This will ensure a more equitable distribution of access to marine resources for different stakeholders, while at the same time safeguarding marine systems and the ecosystem services they provide. In the context of MSP, the social-ecological system approach can be implemented through co-creation processes, where the vision of different stakeholders is considered and integrated (see Lähde et al. 2024), or by incorporating socio-economic data in biophysical models (see Ortega et al. 2025).	Smith, G., J. Atkins, A. Gregory, M. Elliott, 2025. The minimum complexity necessary: The value of a simple Social-Ecological systems analysis in holistic marine environmental management. Sustainable Futures, 9: 100476 <a href="https://doi.org/10.1016/j.sfr.2025.100476">https://doi.org/10.1016/j.sfr.2025.100476</a>  Anderies, J. M., M. A. Janssen, E. Ostrom, 2004. A framework to analyze the robustness of social-ecological systems from an institutional perspective. Ecology and Society 9(1): 18. [online] URL: <a href="http://www.ecologyandsociety.org/vol9/iss1/art18/">http://www.ecologyandsociety.org/vol9/iss1/art18/</a>  Lähde, E., M. Pohja-Mykrä, J. Schreck, 2024. Co-creation of socio-ecological systems knowledge to adopt an Ecosystem-based Approach and Land-Sea Interactions in maritime spatial planning. Marine Policy, 63: 106079 <a href="https://doi.org/10.1016/j.marpol.2024.106079">https://doi.org/10.1016/j.marpol.2024.106079</a>  Ortega, M., E. Lloret-Lloret, M. Coll, 2025. Linking sea and land systems through food web models and value chains: a portrait of the Ebro Delta (NW Mediterranean Sea). Sustainability Science, 20: 937-959 <a href="https://doi.org/10.1007/s11625-025-01644-4">https://doi.org/10.1007/s11625-025-01644-4</a>
Stage 2	2.1.11	Mapping, assessment or valuation of ecosystem services has been performed	Ecosystem services	Ecosystem processes and functioning	During the development of the planning proposal, it is essential the mapping, assessment and/or valuation of ecosystem services. Ecosystem services are the final outputs or products from ecosystems that lead to societal goods and benefits, which are then directly consumed, used (actively or passively) or enjoyed by people. Broadly, they can be divided into provisioning, regulation and maintenance, and	Mapping and assessment of ecosystem services includes biophysical, socio-cultural and economic techniques. Valuable information about the classification of ecosystem services and the goods and benefits derived from them can be found at CICES (Common International Classification of Ecosystem Services; <a href="https://cices.eu/">https://cices.eu/</a> ). Some recommended tools for the valuation and/or assessment of ecosystem services are (i) “Bioeconomic models” used for resource management; (ii) “Socioeconomic models” (Cost-benefit analysis; CBA), consisting in the calculation of the costs and benefits of policy options and projects;	Galparsoro, I., K. Pınarbaşı, E. Gissi, F. Culhane, J. Gacutan, J. Kotta, D. Cabana, S. Wanke, R. Aps, D. Bazzucchi, G. Cozzolino, M. Custodio, M. Fetissov, M. Inácio, S. Jernberg, A. Piazzini, K. P. Paudel, A. Ziemba, D. Depellegrin, 2021. Operationalisation of ecosystem services in support of ecosystem-based marine spatial planning: insights into needs and recommendations. Marine Policy, 131: 104609 <a href="https://doi.org/10.1016/j.marpol.2021.104609">https://doi.org/10.1016/j.marpol.2021.104609</a>  Murillas-Maza, A., S. Broszeit, S. Pouso, J. Bueno-Pardo, A. Ruiz-Frau, J. Terrados, S. Jernberg, A. Iriondo, M. Dolbeth, S. Katsanevakis, P. J. Somerfield, J. A. Fernandes-Salvador, 2023.

## D1.2 A BEST PRACTICE GUIDE FOR THE IMPLEMENTATION OF EB-MSP IN EUROPEAN SEAS

Stage	Code	Action/task	Short	Topic	Description	Guidance and recommendations	Additional documents
					<p>cultural services.</p> <p>Marine Spatial Planning should aim at achieving the sustainable use of ecosystem services as well as the maintenance of ecosystem integrity.</p>	<p>(iii) “Valuation of societal benefits”, resulting in the determination of the total social value (ecological, economic and socio-cultural) of ecosystem services leading to benefits for society; (iv) Natural capital accounting that considers the value of the natural environment for people and the economy; (v) Ocean health index (OHI) (see Papadopoulou et al., 2025). You might also want to check out the set of good practice checklists developed by Barton et al. (2024) for practitioners, which can be used for self-assessment of projects and to improve their design and implementation, thereby increasing the robustness of the ecosystem services assessments.</p> <p>Stakeholders’ engagement is also highly recommended, as they can enrich the processes of assessment and prioritization of ecosystem services (see Custodio et al. (2022)).</p>	<p>Ecosystem indicators to measure the effectiveness of marine nature-based solutions on society and biodiversity under climate change. Nature-Based Solutions, 4: 100085  <a href="https://doi.org/10.1016/j.nbsj.2023.100085">https://doi.org/10.1016/j.nbsj.2023.100085</a></p> <p>Papadopoulou, N., C. J. Smith, A. Franco, M. Elliott, A. Borja, J. H. Andersen, E. Amorim, J. P. Atkins, S. Barnard, T. Berg, S. N. R. Birchenough, D. Burdon, J. Claudet, R. Cormier, I. Galparsoro, A. Judd, S. Katsanevakis, S. Korpinen, L. Lazar, C. Loiseau, C. Lynam, I. Menchaca, C. O’Toole, D. Pedreschi, G. Piet, D. Reid, I. A. Salinas-Akhmadeeva, V. Stelzenmüller, J. E. Tamis, L. Uusitalo, M. C. Uyarra, 2025. ‘Horses for courses’ – an interrogation of tools for marine ecosystem-based management. Frontiers in Marine Science, Volume 12 - 2025:  <a href="https://doi.org/10.3389/fmars.2025.1426971">https://doi.org/10.3389/fmars.2025.1426971</a></p> <p>Custodio, M., I. Moulaert, J. Asselman, K. van der Biest, L. van de Pol, M. Drouillon, S. Hernandez Lucas, S. E. Taelman, G. Everaert, 2022. Prioritizing ecosystem services for marine management through stakeholder engagement. Ocean &amp; Coastal Management, 225: 106228  <a href="https://doi.org/10.1016/j.ocecoaman.2022.106228">https://doi.org/10.1016/j.ocecoaman.2022.106228</a></p>

## D1.2 A BEST PRACTICE GUIDE FOR THE IMPLEMENTATION OF EB-MSP IN EUROPEAN SEAS

Stage	Code	Action/task	Short	Topic	Description	Guidance and recommendations	Additional documents
Stage 2	2.1.12	Ocean Accounting data have been collated	Ocean Accounting	Approaches, tools and methods	<p>Ocean accounts are structured, standardised records of data, maps, statistics and indicators that help planners make informed decisions by providing comprehensive insights into the economic, environmental and social aspects of marine and coastal areas.</p> <p>Ocean Accounting provides transparent and accountable data to inform policies and evaluate trade-offs between different uses, identify compatibilities, and design measures to reduce conflicts while safeguarding marine ecosystems.</p> <p>Accounting facilitates cross-border comparisons and promotes collaboration by providing a standardised framework for mapping policies, legislation, and stakeholder interests, facilitating transparency and the establishment of synergies and common strategies.</p>	<p>Key components of ocean accounts include macro-economic data (e.g., employment levels in marine industries, revenue from marine sectors as percentage of the GDP), environmental-economic data (e.g., marine and coastal assets, flows to economy and environment), ecosystem data (e.g., extent, initial conditions to inform progress on restoration and conservation efforts, services ecosystem health), structured data on ocean beneficiaries (e.g., employment rates, income levels, demographic changes, equitable access to natural resources across different social groups, cultural heritage sites, number of infrastructures vulnerable to storms and sea-level rise), and governance (i.e., mapping of policies, legislation and current management actions to streamline the regulatory framework and clarify responsibilities among stakeholders). Technical guidance for the compilation of Ocean Accounts can be found in GOAP (2021). Continuous monitoring and updating of ocean accounts enables adaptive management based on the latest data on the state of marine resources and human activities, allowing policymakers and/or planners to proactively manage in response to new challenges and changing conditions.</p>	<p>Gacutan, J., I. Galparsoro, K. Pınarbaşı, A. Murillas, I. J. Adewumi, T. Praphotjanaporn, E. L. Johnston, K. P. Findlay, B. M. Milligan, 2022. Marine spatial planning and ocean accounting: Synergistic tools enhancing integration in ocean governance. <i>Marine Policy</i>, 136: 104936 <a href="https://doi.org/10.1016/j.marpol.2021.104936">https://doi.org/10.1016/j.marpol.2021.104936</a></p> <p>Gacutan, J., K. Pınarbaşı, M. Agbaglah, C. Bradley, I. Galparsoro, A. Murillas, I. Adewumi, T. Praphotjanaporn, M. Bordt, K. Findlay, C. Lantz, B. M. Milligan, 2022. The emerging intersection between marine spatial planning and ocean accounting: A global review and case studies. <i>Marine Policy</i>, 140: 105055 <a href="https://doi.org/10.1016/j.marpol.2022.105055">https://doi.org/10.1016/j.marpol.2022.105055</a></p> <p>GOAP, 2021, Technical Guidance on Ocean Accounting for Sustainable Development. <a href="https://oceanaccounts.atlassian.net/wiki/spaces/DTGOOA/overview?homepageld=20512905">https://oceanaccounts.atlassian.net/wiki/spaces/DTGOOA/overview?homepageld=20512905</a></p> <p>GOAP, 2025. Leveraging Ocean Accounts for Effective Marine Spatial Planning. <a href="https://www.oceanaccounts.org/content/files/2025/02/Ocean-Accounts-for-Effective-Marine-Spatial-Planning.pdf">https://www.oceanaccounts.org/content/files/2025/02/Ocean-Accounts-for-Effective-Marine-Spatial-Planning.pdf</a></p>

## D1.2 A BEST PRACTICE GUIDE FOR THE IMPLEMENTATION OF EB-MSP IN EUROPEAN SEAS

Stage	Code	Action/task	Short	Topic	Description	Guidance and recommendations	Additional documents
Stage 2	2.1.13	Ecological carrying capacity and limits to its functioning are addressed	Ecological carrying capacity	Ecosystem processes and functioning	<p>The development of the plan should account for ecological carrying capacity and limits to its functioning. Ecological carrying capacity is defined as the maximum and feasible volume of marine human activities which can be supported by marine resources and environment in a given sea area, which is associated with levels of development, economy and technology, production and lifestyle and goals for ecological protection (Borja et al., 2022). The assessment of ecological carrying capacity integrates information on environmental characteristics and current human activities.</p>	<p>Ma et al. (2017) proposed a three-step conceptual model for evaluating the carrying capacity of marine ecosystems: (i) standardisation of the value of each indicator; (ii) determination of the weight of each indicator and (iii) calculation of marine ECC.</p> <p>You could check Zheng and Wang (2025) for a thorough review of the available measure methods for applying the ECC concept, including an analysis of advantages and disadvantages of each of them.</p>	<p>Borja, A., S. Pouso, I. Galparsoro, E. Manca, M. Vasquez, W. Lu, L. Yang, A. Uriarte, 2022. Applying the China's marine resource-environment carrying capacity and spatial development suitability approach to the Bay of Biscay (North-East Atlantic). <i>Frontiers in Marine Science</i>, 9: <a href="https://doi.org/10.3389/fmars.2022.972448">https://doi.org/10.3389/fmars.2022.972448</a></p> <p>Ma, P., G. Ye, X. Peng, J. Liu, J. Qi, S. Jia, 2017. Development of an index system for evaluation of ecological carrying capacity of marine ecosystems. <i>Ocean &amp; Coastal Management</i>, 144: 23-30 <a href="https://doi.org/10.1016/j.ocecoaman.2017.04.012">https://doi.org/10.1016/j.ocecoaman.2017.04.012</a></p> <p>Zheng, L., S. Wang, 2025. Assessing Marine Resource Carrying Capacity: Methods, Economic Impacts, and Management Strategies. <i>Water</i>, 17: 691 <a href="https://doi.org/10.3390/w17050691">https://doi.org/10.3390/w17050691</a></p>

Stage	Code	Action/task	Short	Topic	Description	Guidance and recommendations	Additional documents
Stage 2	2.1.14	Climate change scenarios and indicators have been defined	Climate change scenarios	Ecosystem processes and functioning	The effects of climate change on ocean conditions (e.g., sea surface temperature, nutrient levels, salinity, oxygen levels, etc.) can cause the redistribution of key species and marine ecosystem services. Thus, understanding, by means of indicators and climate change scenarios, the potential effects of climate-related drivers on marine biophysical features and the related ecosystem processes and functioning is essential for the establishment of effective management measures.	Climate change can be integrated in MSP using different approaches and tools, such as (i) scenario analysis, (ii) modelling and mapping, and (iii) risk and vulnerability analysis (Frazão Santos et al. 2020). Scenario analysis involves the use of alternative future visions that provide insights into how an area could look in the future. The first approach, scenario analysis, involves the use of alternative future visions that provide insights into how an area could look in the future. This analysis allows for a better understanding of how the adoption of different management measures could affect the future. On the second approach, some of the most common modelling tools used to study the effects of climate change are climate models, ecosystem (trophic) and species distribution models. Ecopath with Ecosim (EwE) is an ecosystem modelling tool that has been widely used for understanding and forecasting the spatial and temporal dynamic of marine ecosystems, including future climate projections (see Coll et al. 2024 for a practical example across different European seas). Other option is the 4D approach proposed by Doxa et al. (2022), which offers a robust framework for integrating climate change by explicitly addressing the temporal and spatial dynamics of ecosystem components. By incorporating current and projected species distributions across depth zones, alongside spatial metrics of climatic stability and heterogeneity, this approach effectively captures ecological shifts over time. This enables the identification of climate-resilient areas (i.e., climatic refugia) that are more likely to sustain biodiversity under changing conditions. The third and last approach, spatially explicit vulnerability and risk analysis, are also commonly used to integrate climate change analysis in MSP, as they allow the identification of areas where adaptation actions will be most needed. These analyses allow to explore where the	<p>Rilov, G., S. Frascchetti, E. Gissi, C. Pipitone, F. Badalamenti, et. al.. 2023. A fastmoving target: achieving marine conservation goals under shifting climate and policies Running head: conservation &amp; climate and policy shifts. Ecological Applications, 2020, 30 (1), <a href="https://digital.csic.es/bitstream/10261/216637/1/Gil_et_al_2020.pdf">https://digital.csic.es/bitstream/10261/216637/1/Gil et al 2020.pdf</a></p> <p>UNESCO, 2021. MSPglobal Policy Brief: Climate Change and Marine Spatial Planning, 12 pp. <a href="https://unesdoc.unesco.org/ark:/48223/pf0000375721">https://unesdoc.unesco.org/ark:/48223/pf0000375721</a></p> <p>Frazão Santos, C., T. Agardy, F. Andrade, H. Calado, L. B. Crowder, C. N. Ehler, S. García-Morales, E. Gissi, B. S. Halpern, M. K. Orbach, H.-O. Pörtner, R. Rosa, 2020. Integrating climate change in ocean planning. Nature Sustainability, 3: 505-516 <a href="https://doi.org/10.1038/s41893-020-0513-x">https://doi.org/10.1038/s41893-020-0513-x</a></p> <p>Papadopoulou, N., C. J. Smith, A. Franco, M. Elliott, A. Borja, J. H. Andersen, E. Amorim, J. P. Atkins, S. Barnard, T. Berg, S. N. R. Birchenough, D. Burdon, J. Claudet, R. Cormier, I. Galparsoro, A. Judd, S. Katsanevakis, S. Korpinen, L. Lazar, C. Loiseau, C. Lynam, I. Menchaca, C. O'Toole, D. Pedreschi, G. Piet, D. Reid, I. A. Salinas-Akhmadeeva, V. Stelzenmüller, J. E. Tamis, L. Uusitalo, M. C. Uyarra, 2025. 'Horses for courses' – an interrogation of tools for marine ecosystem-based management. Frontiers in Marine Science, Volume 12 - 2025: <a href="https://doi.org/10.3389/fmars.2025.1426971">https://doi.org/10.3389/fmars.2025.1426971</a></p> <p>Cambra et al., 2024. Guidance for including climate change scenarios in protection and prioritization strategies for Marine Protected Areas development. <a href="https://submariner-network.eu/guidance-for-building-climate-change-scenarios-for-protection-strategies/">https://submariner-network.eu/guidance-for-building-climate-change-scenarios-for-protection-strategies/</a></p> <p>Doxa, A., V. Almpandou, S. Katsanevakis, A. M. Queirós, K. Kaschner, C. Garilao, K. Kesner-Reyes, A. D. Mazaris, 2022. 4D marine conservation networks: Combining 3D prioritization of</p>



Stage	Code	Action/task	Short	Topic	Description	Guidance and recommendations	Additional documents
						<p>consequences of climate changes are most significant (i.e., which areas are more vulnerable, more exposed or areas where the probability of hazardous events is higher). To explore some examples on how climate change scenarios can be integrated in MSP, you could check Cambra et al. (2024), who provide guidance to assess, using climate scenarios at multiple spatial and temporal scales, the vulnerability, resistance, mitigation and adaptation of marine species and ecosystems to climate stressors. Furthermore, Pearce-Higgins et al. (2022) proposes a set of three process-based and two results-based indicators to track progress in climate change adaptation. These indicators are flexible and widely applicable across species, habitats and monitoring programs, enabling their use for the evaluation of management interventions. Access to this information can significantly enhance stakeholders' understanding of the system, leading to more informed decision-making.</p>	<p>present and future biodiversity with climatic refugia. <i>Global Change Biology</i>, 28: 4577-4588  <a href="https://doi.org/10.1111/gcb.16268">https://doi.org/10.1111/gcb.16268</a></p> <p>Coll, M., Lynam, C.P., Corrales, X., Espasandín, L., Ortega, M., Puntilla-Dodd, R., Steenbeek, J., Szalaj, D., Tomczak, M., Butenschon, M., Andonegi, E., Castro, M. D., Heye, S., Kristiansen, T., van Duren, L., Vilmin, V., &amp; Peck, M. 2024. Mechanistic projections for changing species and ecosystems: preliminary projections and report. FutureMARES Deliverable Report.</p> <p>Pearce-Higgins, J. W., L. H. Antão, R. E. Bates, K. M. Bowgen, C. D. Bradshaw, S. J. Duffield, C. Ffoulkes, A. M. A. Franco, J. Geschke, R. D. Gregory, M. J. Harley, J. A. Hodgson, R. L. M. Jenkins, V. Kapos, K. M. Maltby, O. Watts, S. G. Willis, M. D. Morecroft, 2022. A framework for climate change adaptation indicators for the natural environment. <i>Ecological Indicators</i>, 136: 108690  <a href="https://doi.org/10.1016/j.ecolind.2022.108690">https://doi.org/10.1016/j.ecolind.2022.108690</a></p>
Stage 2	2.2	Assessment of human pressures and impacts (inventory and mapping)	Assessment of human pressures and impacts (inventory and mapping)				

Stage	Code	Action/task	Short	Topic	Description	Guidance and recommendations	Additional documents
Stage 2	2.2.01	Human activities have been identified and assessed at spatial and temporal scales	Present human activities	Human activities and their effects	All human activities present in the management area should be identified and mapped at the appropriate spatial and temporal scales.	<p>To accurately characterise existing human activities, information on the spatial and temporal distribution and intensity of maritime activities (e.g., commercial and recreational fishing, aquaculture, maritime transport, tourism, renewable and non-renewable energy production, sand and gravel extraction, installations and infrastructures, submarine cables and pipelines, maritime and underwater cultural heritage, defence, etc.) should be collected.</p> <p>When it comes to cross-border areas, it is essential to consider all activities performed in neighbouring countries (e.g., shipping routes) that could affect the shared area (see HELCOM-VASAB (2022) for guidance). In such cases, a common database shared between countries is useful for mapping activities within the shared area.</p> <p>Some available sources are:  <a href="https://globalfishingwatch.org/our-map/">https://globalfishingwatch.org/our-map/</a> (global);  <a href="https://www.maps.com/an-atlas-for-our-oceans/">https://www.maps.com/an-atlas-for-our-oceans/</a> (global);  <a href="https://emodnet.ec.europa.eu/geoviewer/">https://emodnet.ec.europa.eu/geoviewer/</a> (Europe);  <a href="https://basemaps.helcom.fi/">https://basemaps.helcom.fi/</a> (Baltic &amp; North Sea).</p>	<p>UNESCO-IOC/European Commission, 2021. MSPglobal International Guide on Marine/Maritime Spatial Planning. Paris, UNESCO. (IOC Manuals and Guides no 89), 152 pp.  <a href="https://unesdoc.unesco.org/ark:/48223/pf0000379196">https://unesdoc.unesco.org/ark:/48223/pf0000379196</a></p> <p>HELCOM-VASAB, 2022. Voluntary guidance for assessment of cross-border coherence in Maritime Spatial Planning, Version submitted to HELCOM-VASAB MSP WG 23- 2021, 2022. Available at <a href="https://helcom.fi/wp-content/uploads/2022/02/Voluntary-guidance-for-assessment-of-cross-border-coherence-in-MSP-.pdf">https://helcom.fi/wp-content/uploads/2022/02/Voluntary-guidance-for-assessment-of-cross-border-coherence-in-MSP-.pdf</a></p>
Stage 2	2.2.02	Pressures produced by human activities have been assessed at spatial and temporal scales	Present pressures	Human activities and their effects	Human activities must be managed in such a way that the collective pressures of the activities do not compromise the capacity of ecosystems to cope with human-induced changes and impacts and that the use of resources does not compromise the environmental status and sustainability of the activities. Thus, for optimal management, it is essential to identify and assess all the pressures generated by	<p>The growing demand for ocean resources intensifies the pressure on marine ecosystems. Pressures caused by human activities can operate at the organism level, leading to outcomes such as reduced survival, and also at the population and ecosystem levels (e.g., habitat loss). In addition, a single activity can generate multiple pressures, and conversely, a single pressure can result from different activities, adding complexity to the accurate assessment of pressures caused by human activities. A comprehensive list of human activities and resultant pressures can be found in Dailianis et al. (2018) and Vargas-Fonseca et al. (2024).</p>	<p>Elliott, M., A. Borja, R. Cormier, 2020. Activity-footprints, pressures-footprints and effects-footprints – Walking the pathway to determining and managing human impacts in the sea. Marine Pollution Bulletin, 155: 111201  <a href="https://doi.org/10.1016/j.marpolbul.2020.111201">https://doi.org/10.1016/j.marpolbul.2020.111201</a></p> <p>Vargas-Fonseca, O. A., M. Frazier, A. T. Lombard, B. S. Halpern, 2024. Knowns and Unknowns in Future Human Pressures on the Ocean. Earth's Future, 12: e2024EF004559  <a href="https://doi.org/10.1029/2024EF004559">https://doi.org/10.1029/2024EF004559</a></p> <p>Dailianis, T., C. J. Smith, N. Papadopoulou, V. Gerovasileiou, K.</p>

## D1.2 A BEST PRACTICE GUIDE FOR THE IMPLEMENTATION OF EB-MSP IN EUROPEAN SEAS

Stage	Code	Action/task	Short	Topic	Description	Guidance and recommendations	Additional documents
					human activities across relevant temporal and spatial scales (i.e., the footprint of human activities on prevailing habitats and species).	It is also crucial to account for pressures originating from human activities conducted outside the immediate management area, including land-based pressures and those arising from activities in adjacent or cross-border regions. As the management of these external activities falls beyond this specific planning, cooperative management strategies with land-use planning bodies and adjacent/cross-border areas should be pursued. Establishing such cooperative integrated management will ensure coherence between plans and the effective management of pressures, irrespective of their origin. Pressures are to be assessed qualitatively and, where feasible, quantitatively. The DPSIR approach (Drivers-Pressures-State-Impact-Responses) has been extensively employed for evaluating pressures derived from human activities and their associated state changes and impacts. Additionally, cumulative impact spatial mapping can be used to assess the footprint of pressures related to human activities (see Papadopoulou et al., 2025).	<p>Sevastou, T. Bekkby, M. Bilan, D. Billett, C. Boström, M. Carreiro-Silva, R. Danovaro, S. Fraschetti, K. Gagnon, C. Gambi, A. Grehan, S. Kipson, J. Kotta, C. J. McOwen, T. Morato, H. Ojaveer, C. K. Pham, R. Scrimgeour, 2018. Human activities and resultant pressures on key European marine habitats: An analysis of mapped resources. <i>Marine Policy</i>, 98: 1-10  <a href="https://doi.org/10.1016/j.marpol.2018.08.038">https://doi.org/10.1016/j.marpol.2018.08.038</a></p> <p>Papadopoulou, N., C. J. Smith, A. Franco, M. Elliott, A. Borja, J. H. Andersen, E. Amorim, J. P. Atkins, S. Barnard, T. Berg, S. N. R. Birchenough, D. Burdon, J. Claudet, R. Cormier, I. Galparsoro, A. Judd, S. Katsanevakis, S. Korpinen, L. Lazar, C. Loiseau, C. Lynam, I. Menchaca, C. O'Toole, D. Pedreschi, G. Piet, D. Reid, I. A. Salinas-Akhmadeeva, V. Stelzenmüller, J. E. Tamis, L. Uusitalo, M. C. Uyerra, 2025. 'Horses for courses' – an interrogation of tools for marine ecosystem-based management. <i>Frontiers in Marine Science</i>, Volume 12 - 2025:  <a href="https://doi.org/10.3389/fmars.2025.1426971">https://doi.org/10.3389/fmars.2025.1426971</a></p> <p>Fudge, M., L. Fullbrook, J. Vince, 2025. Integrative capacity enabling integrated oceans management: Insights from Australia. <i>Ocean &amp; Coastal Management</i>, 267: 107730  <a href="https://doi.org/10.1016/j.ocecoaman.2025.107730">https://doi.org/10.1016/j.ocecoaman.2025.107730</a></p>

## D1.2 A BEST PRACTICE GUIDE FOR THE IMPLEMENTATION OF EB-MSP IN EUROPEAN SEAS

Stage	Code	Action/task	Short	Topic	Description	Guidance and recommendations	Additional documents
Stage 2	2.2.03	Future human activities and their pressures, at appropriate spatial and temporal scales have been identified	Future human activities	Human activities and their effects	<p>Based on global projections for marine space use, the number of human activities is anticipated to increase, leading to a corresponding rise in pressures on marine ecosystems. Therefore, to ensure the short and long-term sustainability of the plan, it is essential to identify and assess future human activities and their associated pressures at appropriate spatial and temporal scales.</p>	<p>This process involves identifying new activities that will be developed in the region, those likely to intensify, and those that may cease. The future development of human activities within your management area might be predicted by consulting national strategic documents, analysing the anticipated evolution of human activities, and reviewing demanded licenses and permits. This process entails recognizing new activities slated for regional development, those likely to intensify, and those that may cease. Once these future human activities are identified, their potential pressures must be assessed at relevant temporal and spatial scales.</p> <p>A comprehensive list of anthropogenic pressures and the activities known to cause them is available in Vargas-Fonseca et al. (2024). It is also necessary to consider pressures originating from marine activities conducted outside the immediate management area, such as land-based pressures or those arising from activities in adjacent/neighbouring areas.</p>	<p>UNESCO-IOC/European Commission, 2021. MSPglobal International Guide on Marine/Maritime Spatial Planning. Paris, UNESCO. (IOC Manuals and Guides no 89), 152 pp.  <a href="https://unesdoc.unesco.org/ark:/48223/pf0000379196">https://unesdoc.unesco.org/ark:/48223/pf0000379196</a></p> <p>Vargas-Fonseca, O. A., M. Frazier, A. T. Lombard, B. S. Halpern, 2024. Knowns and Unknowns in Future Human Pressures on the Ocean. Earth's Future, 12: e2024EF004559  <a href="https://doi.org/10.1029/2024EF004559">https://doi.org/10.1029/2024EF004559</a></p>

## D1.2 A BEST PRACTICE GUIDE FOR THE IMPLEMENTATION OF EB-MSP IN EUROPEAN SEAS

Stage	Code	Action/task	Short	Topic	Description	Guidance and recommendations	Additional documents
Stage 2	2.2.04	The effects (actual or potential) of activities on adjacent areas have been assessed	Effects on adjacent areas	Human activities and their effects	The plan must account for the effects of human activities on adjacent areas. This assessment is essential for understanding how activities within the management area can impact adjacent areas and neighbouring regions, thereby ensuring the sustainable and balanced use of marine resources. Examples of such effects on adjacent areas include the dispersion of pollution, habitat disruption, or economic shifts (e.g., changes in fishing zones or tourism hotspots can impact local economies and livelihoods in adjacent areas).	It should be noted that management areas, even if defined by political or jurisdictional boundaries, are subject to ecological processes that extend beyond those boundaries, meaning that activities carried out in one area may have negative effects on adjacent areas. This must be considered in the planning process when identifying current and future challenges and conflicts in the marine environment so that measures can be implemented to prevent or minimise negative effects. It is also recommended to promote cooperation with areas adjacent to the management area and extend it to the transboundary area, if applicable, to jointly examine potential mitigation or compensation measures agreed upon by the parties, in cases where negative effects on adjacent areas cannot be avoided.	<p>HELCOM-VASAB, Voluntary guidance for assessment of cross-border coherence in Maritime Spatial Planning, Version submitted to HELCOM-VASAB MSP WG 23- 2021, 2022. Available from <a href="https://helcom.fi/wp-content/uploads/2022/02/Voluntary-guidance-for-assessment-of-cross-border-coherence-in-MSP-.pdf">https://helcom.fi/wp-content/uploads/2022/02/Voluntary-guidance-for-assessment-of-cross-border-coherence-in-MSP-.pdf</a></p> <p>Fudge, M., L. Fullbrook, J. Vince, 2025. Integrative capacity enabling integrated oceans management: Insights from Australia. Ocean &amp; Coastal Management, 267: 107730 <a href="https://doi.org/10.1016/j.ocecoaman.2025.107730">https://doi.org/10.1016/j.ocecoaman.2025.107730</a></p>
Stage 2	2.2.05	Pressures from land-based sources and activities have been assessed	Land-based pressures	Human activities and their effects	Land-based activities and associated pressures can impact the marine environment, especially in coastal areas, and thus, they should be considered in the MSP process.	A good starting point for identifying and assessing the pressures from land-based sources and activities in the area could be to consider available land use data and coastal zone management plans. Land and marine planners should pursue a multi-sectoral approach that encompasses multiple spatial scales and that promotes the alignment of terrestrial and marine planning systems. The sharing and harmonisation of land and maritime data should be promoted, enabling the integration of data with different resolutions, and thus facilitating the consideration of land-based pressures in the MSP process (see CINEA (2021) for support on data harmonisation for MSP). A land-sea interaction and MSP planning tool (LSI-MSP), consisting of a tiered approach that includes a stocktaking phase, an in-depth analysis and management recommendations, can be accessed at <a href="https://msp.iczmplatform.org/planning-tools/land-">https://msp.iczmplatform.org/planning-tools/land-</a>	<p>Abramic, A., Norton, D., Sarretta, A., Menegon, S., Katsika, M., Gekas, V., Rybka, K., Fernández- Palacios, Y. 2023. Maritime Spatial Planning Data Framework (MSPdF). How to structure input data for MSP process, monitoring &amp; evaluation. Produced by Technical Expert Group (TEG) on Data for MSP. Supported by CINEA and DG MARE (EC). 45 pp. <a href="https://doi.org/10.2926/440667">https://doi.org/10.2926/440667</a></p> <p>CINEA, 2021. Proposal for making harmonized MSP plan data available across Europe: Results of the work of the Technical Expert Group (TEG) on MSP data. Publications Office of the European Union, 21 pp. <a href="https://doi.org/10.2926/029516">https://doi.org/10.2926/029516</a></p> <p>Bocci, M., M. Markovic, A. Mlakar, M. Stancheva, M. Borg, F. Carella, A. Barbanti, E. Ramieri, 2024. Land-Sea-Interactions in MSP and ICZM: A regional perspective from the Mediterranean and the Black Sea. Marine Policy, 159: 105924 <a href="https://doi.org/10.1016/j.marpol.2023.105924">https://doi.org/10.1016/j.marpol.2023.105924</a></p>

Stage	Code	Action/task	Short	Topic	Description	Guidance and recommendations	Additional documents
						<a href="#">sea-interaction-and-msp-planning-tool/</a> . Some available resources for the identification of land-based sources are: <a href="https://land.copernicus.eu/en/products/corine-land-cover?tab=datasets">https://land.copernicus.eu/en/products/corine-land-cover?tab=datasets</a> (Europe); <a href="https://land.copernicus.eu/en/products/global-dynamic-land-cover">https://land.copernicus.eu/en/products/global-dynamic-land-cover</a> (global); <a href="https://osmlanduse.org/#10.706627912114154/-15.6652/18.05432/0/">https://osmlanduse.org/#10.706627912114154/-15.6652/18.05432/0/</a> (global); <a href="https://www.arcgis.com/apps/mapviewer/index.html?layers=cfc7609de5f478eb7666240902d4d3d">https://www.arcgis.com/apps/mapviewer/index.html?layers=cfc7609de5f478eb7666240902d4d3d</a> (global); <a href="https://viewer.esa-worldcover.org/worldcover/?language=en&amp;bbox=-157.45737214749036,-42.3303954178752,204.49278592486078,78.46165392648223&amp;overlay=false&amp;bgLayer=OSM&amp;date=2025-03-19&amp;layer=WORLDCOVER_2021_MAP">https://viewer.esa-worldcover.org/worldcover/?language=en&amp;bbox=-157.45737214749036,-42.3303954178752,204.49278592486078,78.46165392648223&amp;overlay=false&amp;bgLayer=OSM&amp;date=2025-03-19&amp;layer=WORLDCOVER_2021_MAP</a> (global); <a href="https://www.fao.org/geospatial/our-work/what-we-do/land-cover-and-land-use/en/">https://www.fao.org/geospatial/our-work/what-we-do/land-cover-and-land-use/en/</a> (Asia & Africa). Combined effects of land-based pressures on marine species and habitats in Europe's seas can be consulted at <a href="https://sdi.eea.europa.eu/catalogue/srv/eng/catalogsearch#/metadata/231a62c7-f2fb-4e7b-b805-4ce06f4f61db">https://sdi.eea.europa.eu/catalogue/srv/eng/catalogsearch#/metadata/231a62c7-f2fb-4e7b-b805-4ce06f4f61db</a>	Zaucha, J., K. Gee, E. Ramieri, L. Neimane, N. Alloncle, N. Blažauskas, H. Calado, C. Cervera-Núñez, V. M. Kuzmanović, M. Stancheva, J. Witkowska, S. E. Schütz, J. R. Zapatero, C. N. Ehler, 2025. Implementing the EU MSP Directive: Current status and lessons learned in 22 EU Member States. Marine Policy, 171: 106425 <a href="https://doi.org/10.1016/j.marpol.2024.106425">https://doi.org/10.1016/j.marpol.2024.106425</a>

## D1.2 A BEST PRACTICE GUIDE FOR THE IMPLEMENTATION OF EB-MSP IN EUROPEAN SEAS

Stage	Code	Action/task	Short	Topic	Description	Guidance and recommendations	Additional documents
Stage 2	2.2.06	Direct and indirect effects of pressures on ecosystem components have been assessed	Effects of pressures	Human activities and their effects	It is necessary to consider both the direct and indirect effects that marine activities can have on ecosystem components. Direct effects are immediate and observable impacts caused by human activities on marine ecosystems (e.g., overfishing, habitat damage caused by bottom trawling, or recreational boat anchors, etc.). Indirect effects are secondary impacts that occur as a result of direct effects (e.g., introduction of species that compete with or feed on native species). While indirect effects can be more challenging to identify and manage, they must be factored into planning to ensure the maintenance of healthy marine ecosystems.	Different methods can be used for the quantitative and qualitative assessment of the effects produced by human activities. Some recommended tools are (1) "Impact risk ranking through linkage-chain-frameworks" (e.g., ODEMM), which consists of the tracing of sector-pressure-ecosystem component pathways and their scoring, using expert judgment and data where available, to get total impact risk scores; (2) "Knowledge graphs", that are a structured representation of knowledge, in the form of networks or graphs, where nodes represent entities and edges the relationships between them, and (3) "Bayesian Belief Network (BBN) probabilistic models", where correlative and causal relationships among variables are established, taking into account uncertainty, by quantifying the links between the model's variables and the strength of these links (see Papadopoulou et al., 2025).	<p>Papadopoulou, N., C. J. Smith, A. Franco, M. Elliott, A. Borja, J. H. Andersen, E. Amorim, J. P. Atkins, S. Barnard, T. Berg, S. N. R. Birchenough, D. Burdon, J. Claudet, R. Cormier, I. Galparsoro, A. Judd, S. Katsanevakis, S. Korpinen, L. Lazar, C. Loiseau, C. Lynam, I. Menchaca, C. O'Toole, D. Pedreschi, G. Piet, D. Reid, I. A. Salinas-Akhmadeeva, V. Stelzenmüller, J. E. Tamis, L. Uusitalo, M. C. Uyarra, 2025. 'Horses for courses' – an interrogation of tools for marine ecosystem-based management. <i>Frontiers in Marine Science</i>, Volume 12 - 2025: <a href="https://doi.org/10.3389/fmars.2025.1426971">https://doi.org/10.3389/fmars.2025.1426971</a></p> <p>UNESCO-IOC/European Commission, 2021. <i>MSPglobal International Guide on Marine/Maritime Spatial Planning</i>. Paris, UNESCO. (IOC Manuals and Guides no 89), 152 pp. <a href="https://unesdoc.unesco.org/ark:/48223/pf0000379196">https://unesdoc.unesco.org/ark:/48223/pf0000379196</a></p>



## D1.2 A BEST PRACTICE GUIDE FOR THE IMPLEMENTATION OF EB-MSP IN EUROPEAN SEAS

Stage	Code	Action/task	Short	Topic	Description	Guidance and recommendations	Additional documents
Stage 2	2.2.07	Cumulative pressures have been assessed	Cumulative pressures	Human activities and their effects	Assessing cumulative pressures in marine spatial planning involves evaluating the combined footprint of the multiple human activities present in the management area.	<p>This process is essential for sustainable management and facilitates an understanding of the implications arising from the interactions among various activities within a specific area, and how these interactions influence associated pressures (i.e., synergistic, additive, and antagonistic effects). Cumulative impact spatial mapping may be employed to assess the footprint of pressures related to human activities (see Papadopoulou et al., 2025).</p>	<p>Dailianis, T., C. J. Smith, N. Papadopoulou, V. Gerovasileiou, K. Sevastou, T. Bekkby, M. Bilan, D. Billett, C. Boström, M. Carreiro-Silva, R. Danovaro, S. Frascchetti, K. Gagnon, C. Gambi, A. Grehan, S. Kipson, J. Kotta, C. J. McOwen, T. Morato, H. Ojaveer, C. K. Pham, R. Scrimgeour, 2018. Human activities and resultant pressures on key European marine habitats: An analysis of mapped resources. <i>Marine Policy</i>, 98: 1-10  <a href="https://doi.org/10.1016/j.marpol.2018.08.038">https://doi.org/10.1016/j.marpol.2018.08.038</a></p> <p>Elliott, M., A. Borja, R. Cormier, 2020. Activity-footprints, pressures-footprints and effects-footprints – Walking the pathway to determining and managing human impacts in the sea. <i>Marine Pollution Bulletin</i>, 155: 111201  <a href="https://doi.org/10.1016/j.marpolbul.2020.111201">https://doi.org/10.1016/j.marpolbul.2020.111201</a></p> <p>Kirkfeldt, T. S., J. H. Andersen, 2021. Assessment of collective pressure in marine spatial planning: The current approach of EU Member States. <i>Ocean &amp; Coastal Management</i>, 203: 105448  <a href="https://doi.org/10.1016/j.ocecoaman.2020.105448">https://doi.org/10.1016/j.ocecoaman.2020.105448</a></p> <p>Papadopoulou, N., C. J. Smith, A. Franco, M. Elliott, A. Borja, J. H. Andersen, E. Amorim, J. P. Atkins, S. Barnard, T. Berg, S. N. R. Birchenough, D. Burdon, J. Claudet, R. Cormier, I. Galparsoro, A. Judd, S. Katsanevakis, S. Korpinen, L. Lazar, C. Loiseau, C. Lynam, I. Menchaca, C. O'Toole, D. Pedreschi, G. Piet, D. Reid, I. A. Salinas-Akhmadeeva, V. Stelzenmüller, J. E. Tamis, L. Uusitalo, M. C. Uyarra, 2025. 'Horses for courses' – an interrogation of tools for marine ecosystem-based management. <i>Frontiers in Marine Science</i>, Volume 12 - 2025:  <a href="https://doi.org/10.3389/fmars.2025.1426971">https://doi.org/10.3389/fmars.2025.1426971</a></p>

## D1.2 A BEST PRACTICE GUIDE FOR THE IMPLEMENTATION OF EB-MSP IN EUROPEAN SEAS

Stage	Code	Action/task	Short	Topic	Description	Guidance and recommendations	Additional documents
Stage 2	2.2.08	The sensitivity of ecosystem components to pressures has been assessed	Ecosystem sensitivity	Environmental status, conservation, protection and restoration	Assessing the sensitivity of ecosystem components to pressures is a crucial aspect of marine spatial planning. This assessment helps understanding better the impacts of human activities on marine ecosystems and developing effective strategies to mitigate these pressures effectively.	It is recommended to follow the next steps: (i) identification of ecosystem components, consisting in the identification of those components of marine ecosystem (e.g., habitats, species, ecological processes) that are most relevant to the planning area; (ii) pressures identification, referring to the identification of the types of pressures exerted by human activities, such as pollution, fishing, shipping, and coastal development; and (iii) sensitivity analysis, consisting in the evaluation of the sensitivity of each ecosystem component to different pressures. This involves understanding the threshold levels beyond which significant adverse effects occur.	<p>Kallio, N., J. H. Andersen, J. Carstensen, E. Gissi, B. S. Halpern, L. Hammar, C. Murray, V. Stelzenmuller, A. Stock, S. Korpinen, 2025. Challenges in expert ratings of marine habitat and species sensitivity to anthropogenic pressures. <i>Sci Rep</i>, 15: 12546  <a href="https://doi.org/10.1038/s41598-025-96913-8">https://doi.org/10.1038/s41598-025-96913-8</a></p> <p>Korpinen, S., L. Laamanen, L. Bergstrom, M. Nurmi, J. H. Andersen, J. Haapaniemi, E. T. Harvey, C. J. Murray, M. Peterlin, E. Kallenbach, K. Klancnik, U. Stein, L. Tunesi, D. Vaughan, J. Reker, 2021. Combined effects of human pressures on Europe's marine ecosystems. <i>Ambio</i>, 50: 1325-1336  <a href="https://doi.org/10.1007/s13280-020-01482-x">https://doi.org/10.1007/s13280-020-01482-x</a></p>

Stage	Code	Action/task	Short	Topic	Description	Guidance and recommendations	Additional documents
Stage 2	2.2.09	A Cumulative Effects Assessment (CEA) has been conducted	CEA	Human activities and their effects	<p>Cumulative Effects Assessment (CEA) is a process used to evaluate the combined impacts of multiple human activities on marine ecosystems. This assessment is crucial for understanding how the combination of individual impacts (i.e., positive or negative, direct and indirect, long-term and short-term) affect the environment over time, ensuring the sustainable management of marine resources</p>	<p>CEAs are defined as systemic procedures designed to determine the significance of effects from different activities or pressures on single or multiple receptors. It is an essential part of planning marine space use, as the interaction and cumulative effects of diverse marine activities can lead to unpredictable consequences.</p> <p>Some recommended tools for performing CEAs are (1) Cumulative impact spatial mapping, consisting of the overlapping of layers of pressures and ecosystem components and the derivation of a cumulative impact index based on the sensitivity of the ecosystem components (see Papadopoulou et al., 2025); (2) Impact risk ranking through linkage-chain-frameworks (e.g., ODEMM), which consist in the tracing of sector-pressure-ecosystem component pathways and their scoring, using expert judgment and data, where available, to get total impact risk scores (see Papadopoulou et al., 2025); (3) SCAIRM, that provides an impact risk from cumulative pressures (see Piet et al. 2023).</p> <p>A dataset with the combined effects of human activities and pressures on marine species and habitats in Europe's seas can be accessed at: <a href="https://sdi.eea.europa.eu/catalogue/marine/eng/catalog_search#/metadata/6bea3720-f2dc-4e64-813c-80f89eef019">https://sdi.eea.europa.eu/catalogue/marine/eng/catalog_search#/metadata/6bea3720-f2dc-4e64-813c-80f89eef019</a></p>	<p>Armoškaitė, A., J. Aigars, I. Andersone, I. M. Bonnevie, H. S. Hansen, S. Stråke, M. v. Thenen, L. Schrøder, 2023. Setting the scene for a multi-map toolset supporting maritime spatial planning by mapping relative cumulative impacts on ecosystem service supply. <i>Frontiers in Marine Science</i>, Volume 10 - 2023: <a href="https://doi.org/10.3389/fmars.2023.1213119">https://doi.org/10.3389/fmars.2023.1213119</a></p> <p>Piet, G., A. Grundlehner, R. Jongbloed, J. Tamis, P. de Vries, 2023. SCAIRM: A spatial cumulative assessment of impact risk for management. <i>Ecological Indicators</i>, 157: 111157 <a href="https://doi.org/10.1016/j.ecolind.2023.111157">https://doi.org/10.1016/j.ecolind.2023.111157</a></p> <p>Hammar, L., S. Molander, J. Pålsson, J. Schmidtbauer Crona, G. Carneiro, T. Johansson, D. Hume, G. Kågesten, D. Mattsson, O. Törnqvist, L. Zillén, M. Mattsson, U. Bergström, D. Perry, C. Caldow, J. H. Andersen, 2020. Cumulative impact assessment for ecosystem-based marine spatial planning. <i>Science of The Total Environment</i>, 734 <a href="https://doi.org/10.1016/j.scitotenv.2020.139024">https://doi.org/10.1016/j.scitotenv.2020.139024</a></p> <p>Papadopoulou, N., C. J. Smith, A. Franco, M. Elliott, A. Borja, J. H. Andersen, E. Amorim, J. P. Atkins, S. Barnard, T. Berg, S. N. R. Birchenough, D. Burdon, J. Claudet, R. Cormier, I. Galparsoro, A. Judd, S. Katsanevakis, S. Korpinen, L. Lazar, C. Loiseau, C. Lynam, I. Menchaca, C. O'Toole, D. Pedreschi, G. Piet, D. Reid, I. A. Salinas-Akhmadeeva, V. Stelzenmüller, J. E. Tamis, L. Uusitalo, M. C. Uyerra, 2025. 'Horses for courses' – an interrogation of tools for marine ecosystem-based management. <i>Frontiers in Marine Science</i>, Volume 12 - 2025: <a href="https://doi.org/10.3389/fmars.2025.1426971">https://doi.org/10.3389/fmars.2025.1426971</a></p> <p>Piet, G., A. Grundlehner, R. Jongbloed, J. Tamis, P. de Vries, 2023. SCAIRM: A spatial cumulative assessment of impact risk for management. <i>Ecological Indicators</i>, 157: 111157 <a href="https://doi.org/10.1016/j.ecolind.2023.111157">https://doi.org/10.1016/j.ecolind.2023.111157</a></p>

Stage	Code	Action/task	Short	Topic	Description	Guidance and recommendations	Additional documents
Stage 2	2.2.10	An ecological risk assessment (for existing ecosystem components and human activities) has been conducted	Ecological risk assessment	Ecosystem processes and functioning	In the context of MSP, it is important to calculate meaningful estimates of risks associated with human pressures, to ensure that human activities are managed in such a way that maintains the balance between ecological, economic and social aspects. Thus, an Ecological Risk Assessment, involving the assessment of the risks posed by the presence of substances released to the environment by humans, should be conducted.	Stelzenmüller et al (2015) presented a simplified risk management framework adapted for marine spatial management, comprising three steps (risk identification, risk analysis and risk evaluation). They also performed a practical application of the framework for the German EEZ. You could also check some practical examples of implementation of ERA for renewable energy projects and from an MSP perspective (Copping et al, 2020; Galparsoro et al.,2021).	<p>Papadopoulou, N., C. J. Smith, A. Franco, M. Elliott, A. Borja, J. H. Andersen, E. Amorim, J. P. Atkins, S. Barnard, T. Berg, S. N. R. Birchenough, D. Burdon, J. Claudet, R. Cormier, I. Galparsoro, A. Judd, S. Katsanevakis, S. Korpinen, L. Lazar, C. Loiseau, C. Lynam, I. Menchaca, C. O'Toole, D. Pedreschi, G. Piet, D. Reid, I. A. Salinas-Akhmadeeva, V. Stelzenmüller, J. E. Tamis, L. Uusitalo, M. C. Uyarra, 2025. 'Horses for courses' – an interrogation of tools for marine ecosystem-based management. <i>Frontiers in Marine Science</i>, Volume 12 - 2025: <a href="https://doi.org/10.3389/fmars.2025.1426971">https://doi.org/10.3389/fmars.2025.1426971</a></p> <p>Stelzenmüller, V., H. O. Fock, A. Gimpel, H. Rambo, R. Diekmann, W. N. Probst, U. Callies, F. Bockelmann, H. Neumann, I. Kröncke, 2014. Quantitative environmental risk assessments in the context of marine spatial management: current approaches and some perspectives. <i>ICES Journal of Marine Science</i>, 72: 1022-1042 <a href="https://doi.org/10.1093/icesjms/fsu206">https://doi.org/10.1093/icesjms/fsu206</a></p> <p>Stelzenmüller, V., M. Coll, A. D. Mazaris, S. Giakoumi, S. Katsanevakis, M. E. Portman, R. Degen, P. Mackelworth, A. Gimpel, P. G. Albano, V. Alpanidou, J. Claudet, F. Essl, T. Evagelopoulou, J. J. Heymans, T. Genov, S. Kark, F. Micheli, M. G. Pennino, G. Rilov, B. Rumes, J. Steenbeek, H. Ojaveer, 2018. A risk-based approach to cumulative effect assessments for marine management. <i>Science of The Total Environment</i>, 612: 1132-1140 <a href="https://doi.org/10.1016/j.scitotenv.2017.08.289">https://doi.org/10.1016/j.scitotenv.2017.08.289</a></p> <p>Copping, A. E., A. M. Gorton, R. May, F. Bennet, E. DeGeorge, M. Repas Goncalves, B. Rumes, 2020. Enabling Renewable Energy While Protecting Wildlife: An Ecological Risk-Based Approach to Wind Energy Development Using Ecosystem-Based Management Values. <i>Sustainability</i>, 12: 9352 <a href="https://doi.org/10.3390/su12229352">https://doi.org/10.3390/su12229352</a></p> <p>Galparsoro, I., M. Korta, I. Subirana, Á. Borja, I. Menchaca, O. Solaun, I. Muxika, G. Iglesias, J. Bald, 2021. A new framework and tool for ecological risk assessment of wave energy converters</p>

Stage	Code	Action/task	Short	Topic	Description	Guidance and recommendations	Additional documents
							projects. Renewable and Sustainable Energy Reviews, 151: 111539 <a href="https://doi.org/10.1016/j.rser.2021.111539">https://doi.org/10.1016/j.rser.2021.111539</a>
Stage 2	2.2.11	The effect of exogenous drivers (e.g., climate change, economic/political constraints) in the dynamic nature of ecosystems, affecting the temporal and spatial distribution of ecosystem components has been addressed	Exogenous drivers	Ecosystem processes and functioning	Planning options should take into consideration the effect of exogenous drivers (e.g., climate change, economic/political constraints) in the dynamic nature of ecosystems. For example, climate change can lead to the redistribution of key species and marine ecosystem services, consequently impacting maritime activities and societal value chains.	<p>It is important to address these exogenous drivers and assess their importance in the area and the potential impacts on ecosystems to inform planning (e.g., cumulative impacts, impacts of renewable energy and new technologies, displacement of existing activities). In addition, the cumulative effects of climate change on marine ecosystems are expected to intensify those caused by other anthropogenic pressures, resulting in heightened vulnerability and reduced resilience. Additionally, intricate governance structures, economic/political limitations and competing sectoral priorities can alter economic sectors' development priorities and affect the distribution and intensity of maritime activities, thereby influencing the temporal and spatial distribution of ecosystem components.</p> <p>The use of long-time series, future projections and management scenarios might be the best way of ensuring a transparent and robust decision-making that accounts for uncertainty.</p>	<p>Gissi, E., E. Manea, A. D. Mazaris, S. Frascchetti, V. Almpnidou, S. Bevilacqua, M. Coll, G. Guarnieri, E. Lloret-Lloret, M. Pascual, D. Petza, G. Rilov, M. Schonwald, V. Stelzenmüller, S. Katsanevakis, 2021. A review of the combined effects of climate change and other local human stressors on the marine environment. Science of The Total Environment, 755: 142564 <a href="https://doi.org/10.1016/j.scitotenv.2020.142564">https://doi.org/10.1016/j.scitotenv.2020.142564</a></p> <p>UNESCO, 2021. MSPglobal Policy Brief: Climate Change and Marine Spatial Planning, 12 pp. <a href="https://unesdoc.unesco.org/ark:/48223/pf0000375721">https://unesdoc.unesco.org/ark:/48223/pf0000375721</a></p> <p>Queirós, A. M., T. ten Brink, M. Bas, C. J. Sweeting, S. McGuinness, H. Edwards, E. Talbot, P. B. Sørdaahl, C. Lønborg, S. R. Deecker-Simon, M. Elliott, R. Sardá, J. A. Fernandes-Salvador, C. Pretty, R. Varjopuro, E. A. Virtanen, E. Gissi, K. Yates, A. Morf, C. Frazão-Santos, I. Withouck, M. Frost, M. Coll, K. Gee, C. nic Aonghusa, 2025. The opportunity for climate action through climate-smart Marine Spatial Planning. npj Ocean Sustainability, 4: 26 <a href="https://doi.org/10.1038/s44183-025-00129-2">https://doi.org/10.1038/s44183-025-00129-2</a></p> <p>Piet et al. 2021. Guidelines for implementing an Ecosystem-based Approach in Maritime Spatial Planning: Including a method for the evaluation, monitoring and review of EBA in MSP. EC-CINEA, 102 pp. <a href="https://op.europa.eu/en/publication-detail/-/publication/a8ee2988-4693-11ec-89db-01aa75ed71a1">https://op.europa.eu/en/publication-detail/-/publication/a8ee2988-4693-11ec-89db-01aa75ed71a1</a></p>

## D1.2 A BEST PRACTICE GUIDE FOR THE IMPLEMENTATION OF EB-MSP IN EUROPEAN SEAS

Stage	Code	Action/task	Short	Topic	Description	Guidance and recommendations	Additional documents
Stage 2	2.3	Characterise use conflicts and compatibilities identifying current environmental, social and economic implications	Characterise use conflicts and compatibilities identifying current environmental, social and economic implications				
Stage 2	2.3.01	The dependency of maritime sectors on certain areas of marine space has been considered	Spatial dependency of activities	Human activities and their effects	Understanding the dependency of maritime sectors on specific areas of marine space is crucial for determining their preferred location and considering their spatial extent during planning, ensuring effective management and sustainable development.	The reliance of various sectors on specific marine areas for their activities requires careful consideration to effectively balance competing demands and minimize conflicts. By understanding these dependencies, marine spatial planning can optimize space use, reduce conflicts, and foster synergies.	<p>Gacutan, J., I. Galparsoro, A. Murillas-Maza, 2019. Towards an understanding of the spatial relationships between natural capital and maritime activities: A Bayesian Belief Network approach. <i>Ecosystem Services</i>, 40: 101034 <a href="https://doi.org/10.1016/j.ecoser.2019.101034">https://doi.org/10.1016/j.ecoser.2019.101034</a></p> <p>Piet et al. 2021. Guidelines for implementing an Ecosystem-based Approach in Maritime Spatial Planning: Including a method for the evaluation, monitoring and review of EBA in MSP. EC-CINEA, 102 pp. <a href="https://op.europa.eu/en/publication-detail/-/publication/a8ee2988-4693-11ec-89db-01aa75ed71a1">https://op.europa.eu/en/publication-detail/-/publication/a8ee2988-4693-11ec-89db-01aa75ed71a1</a></p>

Stage	Code	Action/task	Short	Topic	Description	Guidance and recommendations	Additional documents
Stage 2	2.3.02	Conflicts and compatibilities between different human activities (ongoing and foreseen activities) have been assessed	Conflicts and compatibilities of uses	Human activities and their effects	Assessing conflicts and compatibilities between ongoing and future human activities is a crucial aspect of a marine spatial plan. This process helps to manage competing demands for marine space and promotes the sustainable use of marine resources. Conflicts arise when there is a spatial and temporal overlap of different activities or they compete for the same resources, while compatibilities occur when activities can coexist or even benefit from each other.	Conflict management should follow the next three consecutive stages: (i) detection of conflicts and compatibilities between activities and among the stakeholders during the decision-making process, (ii) prevention of conflict by fostering the compatibilities and avoiding or minimizing the spatial conflicts and (iii) resolution of conflicts, where an agreement between the stakeholders is pursued to maximize the overall benefits. See Kyriazi et al. (2018) for the actions required at each of the marine conflict management stages. Various tools can be employed to assess conflicts and compatibilities between activities (present and future) and environmental receptors within your management area. A direct approach involves building a conflicts and compatibilities matrix (see Ehler and Douvère 2009) for an example) to determine the level of compatibility among them (i.e., compatible, probably compatible, incompatible). Also, the MYTILUS tools suite can be used to calculate a conflict score (i.e., positive indicates conflict, negative indicates synergy, enabling multi-use potential) between various maritime activities (see Zaucha et al. 2021). The insights derived from these conflicts and compatibilities assessment will inform subsequent planning stages, aiding in the determination of marine space requirements and the identification of potential synergies among activities to facilitate multi-use and co-use solutions.	<p>Calado, H., D. Gutierrez, A. De Bruyn, 2025. Navigating trade-offs on conservation: the use of participatory mapping in maritime spatial planning. npj Ocean Sustainability, 4: 8 <a href="https://doi.org/10.1038/s44183-025-00109-6">https://doi.org/10.1038/s44183-025-00109-6</a></p> <p>Ehler, C., Douvère, F., 2009. Marine Spatial Planning: a step-by-step approach toward ecosystem-based management. IOC Manual and Guides no. 53, 98 pp. <a href="https://www.mspglobal2030.org/wp-content/uploads/2019/03/Marine-spatial-planning-a-step-by-step-approach.pdf">https://www.mspglobal2030.org/wp-content/uploads/2019/03/Marine-spatial-planning-a-step-by-step-approach.pdf</a></p> <p>Kyriazi, Z., 2018. From identification of compatibilities and conflicts to reaching marine spatial allocation agreements. Review of actions required and relevant tools and processes. Ocean &amp; Coastal Management, 166: 103-112 <a href="https://doi.org/10.1016/j.ocecoaman.2018.03.018">https://doi.org/10.1016/j.ocecoaman.2018.03.018</a></p> <p>Zaucha et al. 2021. Synthesis Report on the Experience from Maritime Spatial Planning Projects in the Baltic Sea Region and the Resultant Policy Messages. <a href="https://vasab.org/wp-content/uploads/2021/11/Capacity4MSP_Synthesis_report_final.pdf">https://vasab.org/wp-content/uploads/2021/11/Capacity4MSP_Synthesis_report_final.pdf</a></p>
Stage 2	2.4	Identify different options for sharing maritime space	Identify different options for sharing maritime space				

Stage	Code	Action/task	Short	Topic	Description	Guidance and recommendations	Additional documents
Stage 2	2.4.01	Possible alternative future scenarios (e.g., climate change scenarios, invasive species) for the planning area have been defined	Future scenarios	Future scenarios	Developing future scenarios involves a structured, participatory process that explores the implications of environmental and socio-economic uncertainty. Scenario analysis, unlike predictive modelling, offers qualitative narratives that examine the outcomes of various plausible futures shaped by interacting drivers of change.	<p>The definition of future scenarios enables assessing the probabilities and consequences of outcomes under different alternative decisions, e.g., identification of new areas to be used sustainably, potential future marine use conflicts, new cumulative environmental pressures, and identification of the communities more at risk). To apply this method effectively in MSP, planners should follow six key steps: (1) clearly define the objective of the scenario exercise; (2) identify a broad set of environmental, social, and economic drivers relevant to the marine context; (3) select the most critical and uncertain drivers; (4) define contrasting states of these key drivers to form a matrix; (5) develop internally consistent, plausible narratives based on this matrix; and (6) translate each scenario into concrete spatial planning options. Incorporating stakeholder perspectives throughout this process enhances relevance, legitimacy, and creativity. This approach not only supports adaptive management and resilience thinking but also facilitates the identification of robust strategies under deep uncertainty.</p>	<p>Roura-Pascual N, Leung B, Rabitsch W, Rutting L, Vervoort J, Bacher S, Dullinger S, 2021. Alternative futures for global biological invasions. Sustainability Science 16: 1637-1650. <a href="https://doi.org/10.1007/s11625-021-00963-6">https://doi.org/10.1007/s11625-021-00963-6</a></p> <p>Pereira LM, Davies KK, den Belder E, Ferrier F, Karlsson-Vinkhuyzen S, Kim H, Kuiper JJ, et al. (2020) Developing multiscale and integrative nature–people scenarios using the nature futures framework. People and Nature 2:1172–1195. <a href="https://doi.org/10.1002/pan3.10146">https://doi.org/10.1002/pan3.10146</a></p> <p>Biggs R, Schlüter M, Schoon ML (Eds) (2015) Principles for Building Resilience: Sustaining Ecosystem Services in Social-Ecological Systems. Cambridge University Press. <a href="https://doi.org/10.1017/CBO9781316014240">https://doi.org/10.1017/CBO9781316014240</a></p> <p>Frazão Santos et al., 2020. Integrating climate change in ocean planning. Nature Sustainability 3, 505–516. <a href="https://doi.org/10.1038/s41893-020-0513-x">https://doi.org/10.1038/s41893-020-0513-x</a></p> <p>Katsanevakis S, Elliott M, Mazaris A, Nagkoulis N, Bas M, Ortega M, et al. (2024). Deliverable D3.3: Technical report describing the developed scenarios, accompanied by short factsheets in plain language. MarinePlan Project, 53 p.</p> <p>Stelzenmüller, V., J. Rehren, S. Örey, C. Lemmen, S. Krishna, M. Hasenbein, M. Püts, W. N. Probst, R. Diekmann, J. Scheffran, O. G. Bos, K. Wirtz, 2024. Framing future trajectories of human activities in the German North Sea to inform cumulative effects assessments and marine spatial planning. Journal of Environmental Management, 349: 119507 <a href="https://doi.org/10.1016/j.jenvman.2023.119507">https://doi.org/10.1016/j.jenvman.2023.119507</a></p>



## D1.2 A BEST PRACTICE GUIDE FOR THE IMPLEMENTATION OF EB-MSP IN EUROPEAN SEAS

Stage	Code	Action/task	Short	Topic	Description	Guidance and recommendations	Additional documents
Stage 2	2.4.02	Future scenarios in terms of the spatial and temporal needs of human uses have been projected	Human activities scenarios	Future scenarios	To incorporate future spatial and temporal needs of human uses into the MSP process, scenario development should integrate dynamic socio-economic drivers alongside ecological considerations.	<p>The development of alternative future scenarios is a crucial component of marine planning. This process involves examining potential future conditions and generating distinct scenarios based on the desired developmental trajectory for the area over a selected timeframe. The mapping of the projections for each activity will facilitate the visualisation of their temporal and spatial implications. These maps should delineate the patterns, trends, and directions of projected human uses.</p> <p>Stakeholder involvement in this process is highly important to obtain first-hand information and to envision and develop future scenarios that are both desirable and representative of common interests. Katsanevakis et al. (2024) provide a structured framework using scenario analysis to explore the interplay between human activities and environmental change by identifying critical, uncertain drivers, such as climate change and international governance, and developing narratives that reflect different trajectories. These scenarios inform planning by anticipating shifts in maritime sectors (e.g., energy, fisheries, transport) and their spatial footprints.</p>	<p>UNESCO-IOC/European Commission, 2021. MSPglobal International Guide on Marine/Maritime Spatial Planning. Paris, UNESCO. (IOC Manuals and Guides no 89), 152 pp.  <a href="https://unesdoc.unesco.org/ark:/48223/pf0000379196">https://unesdoc.unesco.org/ark:/48223/pf0000379196</a></p> <p>Katsanevakis S, Elliott M, Mazari A, Nagkoulis N, Bas M, Ortega M, et al. (2024). Deliverable D3.3: Technical report describing the developed scenarios, accompanied by short factsheets in plain language. MarinePlan Project, 53 pp.</p> <p>Ehler, C., Douvère, F., 2009. Marine Spatial Planning: a step-by-step approach toward ecosystem-based management. IOC Manual and Guides no. 53, 98 pp.  <a href="https://www.mspglobal2030.org/wp-content/uploads/2019/03/Marine-spatial-planning-a-step-by-step-approach.pdf">https://www.mspglobal2030.org/wp-content/uploads/2019/03/Marine-spatial-planning-a-step-by-step-approach.pdf</a></p>
Stage 2	2.4.03	Spatial and temporal requirements for new demands of ocean space have been estimated	Future space demands	Future scenarios	MSP should effectively anticipate and manage future human activities demands, particularly to prevent future conflicts among activities. Therefore, in addition to projecting trends in existing uses, it is necessary to include an estimate of spatial and temporal requirements of new demands for ocean space (e.g., new technologies, new recreational activities) within the management	<p>Estimates of the required space can be derived from government policies, submitted license applications, and industry development proposals. The temporal and spatial requirements associated with these new demands for ocean space should be incorporated into future scenario maps that depict existing activities. This integration will enable an estimation of the total demand for ocean space by the end of the established timeframe.</p>	<p>Ehler, C., Douvère, F., 2009. Marine Spatial Planning: a step-by-step approach toward ecosystem-based management. IOC Manual and Guides no. 53, 98 pp.  <a href="https://www.mspglobal2030.org/wp-content/uploads/2019/03/Marine-spatial-planning-a-step-by-step-approach.pdf">https://www.mspglobal2030.org/wp-content/uploads/2019/03/Marine-spatial-planning-a-step-by-step-approach.pdf</a></p>

Stage	Code	Action/task	Short	Topic	Description	Guidance and recommendations	Additional documents
					area, considering the selected time frame.		

Stage	Code	Action/task	Short	Topic	Description	Guidance and recommendations	Additional documents
Stage 2	2.4.04	Co-use and co-location options for activities have been considered	Co-use/co-location	Human activities and their effects	Co-use and co-location are strategies to manage the escalating demand for maritime space, aiming to minimise conflicts and maximise synergies among diverse activities. Co-use refers to the simultaneous use of the same marine space by multiple activities with minimal interaction. For example, fishing and tourism can coexist in the same area without significant mutual interference. Co-location, conversely, entails a higher level of integration between activities, where infrastructure or designated areas are shared by two or more different activities. This can lead to more efficient use of space and resources. For instance, offshore wind farms might be co-located with aquaculture facilities, allowing both to benefit from shared infrastructure and reduced spatial conflicts.	In contrast to single-use zoning, multi-use zoning of compatible activities (e.g., tourism and fishing, offshore wind farms and aquaculture or conservation, etc.) is suggested to be a better option as a conflict avoidance strategy. This approach facilitates opportunities for co-use or co-location among human activities, thereby resolving conflicts over spatial allocation in increasingly congested maritime areas, together with the benefit of shared supporting infrastructure and shared cost to service the facilities. Furthermore, multi-use can enable emerging and smaller sectors to secure maritime presence through shared arrangements with more established industries, fostering synergistic outcomes. In specific contexts and with appropriate design, multi-use initiatives can also be integrated with conservation and/or restoration measures. As multi-use remains an evolving practice, its inclusion in MSPs should be promoted, either as a potential option or a mandatory requirement (e.g., a prerequisite for obtaining an offshore wind farm permit). Nevertheless, to ensure that multi-use is implemented with minimal environmental impact, MSPs must concurrently include rigorous impact prediction assessments and establish clear regulations defining permissible impacts and their magnitudes.	Co-existence and multi-use of activities   The European Maritime Spatial Planning Platform. <a href="https://maritime-spatial-planning.ec.europa.eu/msp-resources/co-existence-and-multi-use-activities">https://maritime-spatial-planning.ec.europa.eu/msp-resources/co-existence-and-multi-use-activities</a>  Kyriazi, Z., 2018. From identification of compatibilities and conflicts to reaching marine spatial allocation agreements. Review of actions required and relevant tools and processes. Ocean & Coastal Management, 166: 103-112 <a href="https://doi.org/10.1016/j.ocecoaman.2018.03.018">https://doi.org/10.1016/j.ocecoaman.2018.03.018</a>  Przedzrymirska, J., J. Zaucha, H. Calado, I. Lukic, M. Bocci, E. Ramieri, M. C. Varona, A. Barbanti, D. Depellegrin, M. de Sousa Vergilio, A. Schultz-Zehden, V. Onyango, E. Papaioannou, B. H. Buck, G. Krause, M. F. Schupp, R. Läkamp, K. Szeffler, M. Michałek, M. Maniopolou, V. Vassilopoulou, Z. Kyriazi, K. Gawlikowska-Hueckel, S. Szultka, C. Orobello, K. Gee, B. Buchanan, M. Lazić, 2021. Multi-Use of the Sea as a Sustainable Development Instrument in Five EU Sea Basins. Sustainability, 13: 8159 <a href="https://doi.org/10.3390/su13158159">https://doi.org/10.3390/su13158159</a>  World Bank. 2022. Marine Spatial Planning for a Resilience and Inclusive Blue Economy. <a href="https://www.worldbank.org/en/programs/problue/publication/marine-spatial-planning-for-a-resilient-and-inclusive-blue-economy-toolkit">https://www.worldbank.org/en/programs/problue/publication/marine-spatial-planning-for-a-resilient-and-inclusive-blue-economy-toolkit</a>

## D1.2 A BEST PRACTICE GUIDE FOR THE IMPLEMENTATION OF EB-MSP IN EUROPEAN SEAS

Stage	Code	Action/task	Short	Topic	Description	Guidance and recommendations	Additional documents
Stage 2	2.4.05	Nature-based solutions are considered when defining alternative management options to mitigate/limit potential threats	Alternative options	Future scenarios	Nature-based solutions (NbS) are solutions inspired and supported by nature that simultaneously deliver environmental, social and economic benefits while promoting resilience. The conservation and restoration of healthy marine ecosystems and their services can effectively mitigate or limit potential threats, offering advantages such as enhanced carbon sequestration, reduced wave energy, increased coastal protection, greater biodiversity and ecological resilience, reduced ocean acidification, and enhanced resilience to climate change. These contributions significantly improve the overall sustainability and resilience of the ocean. To effectively incorporate NbS (e.g., kelp and seagrass meadows, blue carbon ecosystems) into MSP, planners should comprehensively evaluate the array of services provided by marine and coastal ecosystems to identify areas where NbS can deliver the most substantial benefits.	Local communities, sectoral stakeholders, and conservation organizations should be actively involved in the planning process to ensure that NbS initiatives align with ecological and socio-economic objectives, thereby securing public support. NbS strategies must also align with current environmental regulations and conservation objectives to facilitate the creation of cohesive and effective management plans. In Murillas-Mazas et al. (2023), an assessment framework of marine ecosystem services indicators to quantify the socio-ecological effectiveness of NbS under climate-driven changes can be found.	<p>O’Leary, B. C., Wood, L. E., Cornet, C., Roberts, C. M., &amp; Fonseca, C. (2024). Practitioner insights on challenges and options for advancing blue Nature-based Solutions. <i>Marine Policy</i>, 163, 106104. <a href="https://doi.org/10.1016/j.marpol.2024.106104">https://doi.org/10.1016/j.marpol.2024.106104</a></p> <p>UNESCO, 2021. MSPglobal Policy Brief: Climate Change and Marine Spatial Planning, 12 pp. <a href="https://unesdoc.unesco.org/ark:/48223/pf0000375721">https://unesdoc.unesco.org/ark:/48223/pf0000375721</a></p> <p>Murillas-Maza, A., S. Broszeit, S. Pouso, J. Bueno-Pardo, A. Ruiz-Frau, J. Terrados, S. Jernberg, A. Iriondo, M. Dolbeth, S. Katsanevakis, P. J. Somerfield, J. A. Fernandes-Salvador, 2023. Ecosystem indicators to measure the effectiveness of marine nature-based solutions on society and biodiversity under climate change. <i>Nature-Based Solutions</i>, 4: 100085 <a href="https://doi.org/10.1016/j.nbsi.2023.100085">https://doi.org/10.1016/j.nbsi.2023.100085</a></p>
Stage 2	2.4.06	Other area-based management regulations (e.g., fisheries exclusions) and priority areas for conservation, such as Marine Protected Areas (MPAs), priority	Other area-based regulations	Legal framework	When identifying different options for sharing maritime space, it is essential to account for other area-based management regulations (e.g., fisheries exclusions) and priority areas for conservation or critical habitats to avoid conflicts with current and future human	In addition to established MPAs and other formally designated protected areas, such as fisheries exclusion areas and VMEs, which possess legally binding mandates and their own intrinsic management provisions, there are other conservation figures (e.g., OECMs, EBSAs, priority areas for restoration) that should be also considered when identifying the different options for sharing the maritime space. Their inclusion is paramount for	<p>Alves-Pinto, H., Geldmann, J., Jonas, H., Maioli, V., Balmford, A., Latawiec, A.E., Crouzeilles, R. and Strassburg, B., 2021. Opportunities and challenges of other effective area-based conservation measures (OECMs) for biodiversity conservation. <i>Perspectives in Ecology and Conservation</i>, 19(2), pp.115-120. <a href="https://doi.org/10.1016/j.pecon.2021.01.004">https://doi.org/10.1016/j.pecon.2021.01.004</a></p> <p>Kuismanen, L. M. J., E. A. Virtanen, J. Lappalainen, L. Kurvinen, P. Blankett, M. Viitasalo, 2023. Identifying ecologically valuable</p>

## D1.2 A BEST PRACTICE GUIDE FOR THE IMPLEMENTATION OF EB-MSP IN EUROPEAN SEAS

Stage	Code	Action/task	Short	Topic	Description	Guidance and recommendations	Additional documents
		areas for restoration, Vulnerable Marine Ecosystems (VMEs), Ecologically and/or Biologically Significant Areas (EBSAs), Other area-based Effective Conservation Measures (OECMs) or critical habitats have been considered			activities and to guarantee the sustainable development of the plan.	<p>the long-term conservation of marine biodiversity, the sustained provision of ecosystem services, and the achievement of the '30x30' conservation target stipulated by the Kunming-Montreal Global Biodiversity Framework.</p> <p>the comprehensive list of area-based management tools (ABMTs), identified in international and regional conventions and agreements, provided by Gissi et al. (2022) can be used as guidance. ABMTs are grouped according to the specific sector/purpose they target (e.g., shipping-related, fisheries-related, and conservation-related ABMTs). Further insights regarding OECMs, including definition and criteria, as well as guidance on establishing enabling conditions for their implementation, identification (including a site-level tool for identifying OECMs), reporting, monitoring and strengthening, are available at Jonas et al. (2024). Pertinent information concerning VMEs can be found in Thompson and Reid (2024), and a dedicated VME database is accessible at <a href="https://www.fao.org/in-action/vulnerable-marine-ecosystems/en/">https://www.fao.org/in-action/vulnerable-marine-ecosystems/en/</a>. Information about the EBSA criteria and the areas meeting these criteria can be found at <a href="https://www.cbd.int/ebsa/">https://www.cbd.int/ebsa/</a></p>	<p>marine areas to support conservation and spatial planning at scales relevant for decision making. Marine Policy, 158: 105890 <a href="https://doi.org/10.1016/j.marpol.2023.105890">https://doi.org/10.1016/j.marpol.2023.105890</a></p> <p>Gissi, E., F. Maes, Z. Kyriazi, A. Ruiz-Frau, C. F. Santos, B. Neumann, A. Quintela, F. L. Alves, S. Borg, W. Chen, M. da Luz Fernandes, M. Hadjimichael, E. Manea, M. Marques, F. M. Platjouw, M. E. Portman, L. P. Sousa, L. Bolognini, W. Flannery, F. Grati, C. Pita, V. Nataša, R. Stojanov, J. van Tatenhove, F. Micheli, A.-K. Hornidge, S. Unger, 2022. Contributions of marine area-based management tools to the UN sustainable development goals. Journal of Cleaner Production, 330: 129910 <a href="https://doi.org/10.1016/j.jclepro.2021.129910">https://doi.org/10.1016/j.jclepro.2021.129910</a></p> <p>Jonas, H. D., Wood, P. &amp; Woodley, S., Volume Editors (2024). Guidance on other effective area-based conservation measures (OECMs). IUCN WCPA Good Practice Series, No.36. Gland, Switzerland, 92 pp. <a href="https://portals.iucn.org/library/node/51773">https://portals.iucn.org/library/node/51773</a></p> <p>Thompson, A.B. and Reid, K. 2024. Review of the implementation of the International Guidelines for the Management of Deep-sea Fisheries in the High Seas. FAO Fisheries and Aquaculture Technical Paper, No. 703. Rome, FAO. <a href="https://doi.org/10.4060/cd0243en">https://doi.org/10.4060/cd0243en</a></p>
Stage 2	2.5	Governance and institutional set-up	Governance and institutional set-up				

Stage	Code	Action/task	Short	Topic	Description	Guidance and recommendations	Additional documents
Stage 2	2.5.01	Expert groups have been designated for integration of the most recent knowledge	Expert groups designation	Stakeholder engagement	The development of a holistic MSP, with long-term goals and vision, must be based on the latest knowledge. The designation of working groups, bringing together experts from different disciplines, will facilitate the collection and integration of all existing and new knowledge from different areas (e.g., social, technical, legal, political, economic, ecological, cultural, etc.).	<p>While a standardized framework for knowledge integration in Marine Spatial Plans is currently lacking, insights into the enabling conditions for such integration can be found in de Vries et al. (2024). These conditions align with the strategic (e.g., scientific quality, holistic knowledge, relevance to societal problems and policy processes), multidisciplinary (e.g., close cooperation, consistent definitions, interpretations and valuations, integrated assessments), adaptive (e.g., increased focus on adaptivity, multiple iterations, explicit learning), and functional science-policy interface (e.g., transparency of inputs, interactive and cooperative dissemination, structural embedding of knowledge in policy processes) requirements of planning processes. Participatory mapping or participatory GIS (PGIS) can be used for engaging communities that are typically excluded from planning processes, gathering critical information about maritime activities or environmental/social dimensions (see James 2025). Special attention should be given in including indigenous and local knowledge (e.g., Kitolelei et al., 2022).</p>	<p>de Vries, J. W., R. C. Spijkerboer, C. Zuidema, 2024. Making knowledge matter: Understanding and improving knowledge-integration in Dutch marine spatial planning policy. <i>Ocean &amp; Coastal Management</i>, 248: 106928  <a href="https://doi.org/10.1016/j.ocecoaman.2023.106928">https://doi.org/10.1016/j.ocecoaman.2023.106928</a></p> <p>Kitolelei, S., J. H. Lowry, N. Qaqara, J. Ryle, J. Veitayaki, S. Piovano, 2022. Spatial use of marine resources in a rural village: A case study from Qoma, Fiji. <i>Frontiers in Marine Science</i>, Volume 9 - 2022: <a href="https://doi.org/10.3389/fmars.2022.993103">https://doi.org/10.3389/fmars.2022.993103</a></p> <p>James, I., 2025. Participatory seascape mapping: A community-based approach to ocean governance and marine conservation. <i>Ocean &amp; Coastal Management</i>, 261: 107531  <a href="https://doi.org/10.1016/j.ocecoaman.2024.107531">https://doi.org/10.1016/j.ocecoaman.2024.107531</a></p>

Stage	Code	Action/task	Short	Topic	Description	Guidance and recommendations	Additional documents
Stage 2	2.5.02	A governance structure has been set up to capture information and knowledge, including indigenous and/or local knowledge, of human activities and their management	Knowledge acquisition structure	Governance	A governance structure that ensures the gathering and development of a holistic knowledge base (data and information) on existing and future human activities should be created, ensuring that local and traditional knowledge is fairly represented.	A governance structure that organizes and evaluates the stakeholder participatory process and the community engagement impact should be established, in order to capture information and knowledge but also to explore actions for the improvement of the participation and engagement processes based on outcome criteria (e.g., was it inclusive, fair and flexible? Have community needs, values and visions been incorporated into the planning process? Has the process led to the co-production of knowledge and actions transferable to the plan?).	<p>Ntona, M., 2023. Human Rights and Ocean Governance: The Potential of Marine Spatial Planning in Europe (1st ed.). Routledge. <a href="https://doi.org/10.4324/9781003404644">https://doi.org/10.4324/9781003404644</a></p> <p>Haugen, J. B., J. S. Link, K. Cribari, A. Bundy, M. Dickey-Collas, H. M. Leslie, J. Hall, E. A. Fulton, J. J. Levenson, D. M. Parsons, I. M. Hassellöv, E. Olsen, G. S. DePiper, R. R. Gentry, D. E. Clark, R. E. Brainard, D. Mateos-Molina, A. Borja, S. Gelcich, M. Guilhon, N. C. Ban, D. Pedreschi, A. Khan, R. Chuenpagdee, S. I. Large, O. Defeo, L. Shannon, S. A. Bailey, A. Jordan, A. L. Agnalt, 2024. Marine ecosystem-based management: challenges remain, yet solutions exist, and progress is occurring. npj Ocean Sustainability, 3: 7 <a href="https://doi.org/10.1038/s44183-024-00041-1">https://doi.org/10.1038/s44183-024-00041-1</a></p> <p>Said, A. and Trouillet, B., 2020. Bringing 'deep knowledge' of fisheries into marine spatial planning. Maritime Studies, 19(3), pp.347-357. <a href="https://doi.org/10.1007/s40152-020-00178-y">https://doi.org/10.1007/s40152-020-00178-y</a></p> <p>Tafon, R., A. Armoskaite, K. Gee, M. Gilek, A. Ikauniece, F. Saunders, 2023. Mainstreaming coastally just and equitable marine spatial planning: Planner and stakeholder experiences and perspectives on participation in Latvia. Ocean &amp; Coastal Management, 242: 106681. <a href="https://doi.org/10.1016/j.ocecoaman.2023.106681">https://doi.org/10.1016/j.ocecoaman.2023.106681</a></p>
Stage 2	2.6	Stakeholder participation	Stakeholder participation				

Stage	Code	Action/task	Short	Topic	Description	Guidance and recommendations	Additional documents
Stage 2	2.6.01	Relevant stakeholders who could be affected by the plan options have been engaged and consulted	Stakeholder engagement	Stakeholder engagement	Involving stakeholders at this stage of the process helps develop a common understanding of the present and future problems and challenges present in the management area and facilitates consideration of their requirements and needs in decision-making during the development of planning options. Additionally, a participatory process that includes all stakeholders who might be affected by the plan, including minority groups, increases and diversifies the information available to decision-makers (i.e., local knowledge, traditions and culture).	<p>The participation of stakeholders facilitates understanding of their perceptions and interests, which may sometimes be sector-specific, and could hinder the implementation of established management measures. It will also provide first-hand information on potential conflicts between existing and future activities, but also compatibilities that allow for the multi-use of the marine space. Furthermore, it will facilitate the joint creation of new options and consensus among the parties. Special attention should be given to the engagement of traditionally underrepresented stakeholder groups or minorities to ensure inclusiveness and equity of the plan. This could be promoted by organizing safe and accessible spaces for the different interested parties, and by tailoring the participatory process to the specificities of each stakeholder group in terms of needs, logistics, power imbalance and time. A collaborative approach should be followed, consisting in the assessment of sustainability, threats, opportunities, and the co-production of knowledge and actions that could be incorporated into the plan. See Ehler and Douvère (2009) for guidance about stakeholder engagement mechanisms.</p>	<p>Tafon, R., A. Armoskaite, K. Gee, M. Gilek, A. Ikauniece, F. Saunders, 2023. Mainstreaming coastally just and equitable marine spatial planning: Planner and stakeholder experiences and perspectives on participation in Latvia. <i>Ocean &amp; Coastal Management</i>, 242: 106681  <a href="https://doi.org/10.1016/j.ocecoaman.2023.106681">https://doi.org/10.1016/j.ocecoaman.2023.106681</a></p> <p>Haugen, J. B., J. S. Link, K. Cribari, A. Bundy, M. Dickey-Collas, H. M. Leslie, J. Hall, E. A. Fulton, J. J. Levenson, D. M. Parsons, I. M. Hassellöv, E. Olsen, G. S. DePiper, R. R. Gentry, D. E. Clark, R. E. Brainard, D. Mateos-Molina, A. Borja, S. Gelcich, M. Guilhon, N. C. Ban, D. Pedreschi, A. Khan, R. Chuenpagdee, S. I. Large, O. Defeo, L. Shannon, S. A. Bailey, A. Jordan, A. L. Agnalt, 2024. Marine ecosystem-based management: challenges remain, yet solutions exist, and progress is occurring. <i>npj Ocean Sustainability</i>, 3: 7  <a href="https://doi.org/10.1038/s44183-024-00041-1">https://doi.org/10.1038/s44183-024-00041-1</a></p> <p>Ehler, C., Douvère, F., 2009. Marine Spatial Planning: a step-by-step approach toward ecosystem-based management. <i>IOC Manual and Guides</i> no. 53, 98 pp.  <a href="https://www.mspglobal2030.org/wp-content/uploads/2019/03/Marine-spatial-planning-a-step-by-step-approach.pdf">https://www.mspglobal2030.org/wp-content/uploads/2019/03/Marine-spatial-planning-a-step-by-step-approach.pdf</a></p> <p>Twomey, S., C. O'Mahony. 2019. Stakeholder Processes in Marine Spatial Planning: Ambitions and Realities from the European Atlantic Experience, in <i>Maritime Spatial Planning: past, present, future</i>. J. Zaucha, K. Gee Series volume: Pages: 295-325. Springer International Publishing, Cham.  <a href="https://doi.org/10.1007/978-3-319-98696-8_13">https://doi.org/10.1007/978-3-319-98696-8_13</a></p>



## D1.2 A BEST PRACTICE GUIDE FOR THE IMPLEMENTATION OF EB-MSP IN EUROPEAN SEAS

Stage	Code	Action/task	Short	Topic	Description	Guidance and recommendations	Additional documents
Stage 2	2.6.02	The success of stakeholder participation process has been assessed and the results published	Stakeholder participation assessment	Stakeholder engagement	Equitable stakeholder participation should be promoted, ensuring that the interests and needs of all groups that could be affected by the plan are reflected, especially those of minorities and groups that are normally underrepresented. It is therefore important to keep a record of the success of stakeholder participation, including information on the groups or sectors to which they belong and additional demographic information, to ensure that all stakeholder groups have had the opportunity to participate actively in the process and that there are not power unbalances. Transparency should be promoted by publishing these results.	The success of the stakeholder participation process can be assessed by analysing the level of attendance to the organized events and assessing the received comments by sector or group and launching specific events targeting the missing or underrepresented audience.	<p>NMPF, 2021 National Marine Planning Framework Public Consultation Report 2021, 68 pp.  <a href="https://assets.gov.ie/225048/0859dec2-7322-40c1-ab9f-c82d19d0fd2c.pdf">https://assets.gov.ie/225048/0859dec2-7322-40c1-ab9f-c82d19d0fd2c.pdf</a></p> <p>Retzlaff, R., C. LeBleu, 2018. Marine Spatial Planning: Exploring the Role of Planning Practice and Research. Journal of Planning Literature, 33: 466-491  <a href="https://doi.org/10.1177/0885412218783462">https://doi.org/10.1177/0885412218783462</a></p> <p>Saunders, F. P., M. Gilek, R. Tafon. 2019. Adding People to the Sea: Conceptualizing Social Sustainability in Maritime Spatial Planning, in Maritime Spatial Planning: past, present, future. J. Zaucha, K. Gee Series volume: Pages: 175-199. Springer International Publishing, Cham. <a href="https://doi.org/10.1007/978-3-319-98696-8_8">https://doi.org/10.1007/978-3-319-98696-8_8</a></p>
Stage 3	3	Stage 3. Assessing	Stage 3. Assessing				
Stage 3	3.1	Assess the planning options and compare the future scenarios	Assess the planning options and compare the future scenarios				
Stage 3	3.1.01	Management alternatives account for the cumulative effects of human activities and how they impact the ecosystem	Management alternatives: cumulative effects	Future scenarios	To ensure the sustainability and effectiveness of spatial plans, management alternatives must explicitly account for the cumulative effects of human activities on marine ecosystems.	As highlighted by Stelzenmüller et al. (2018), cumulative effect assessments (CEAs) should be embedded into a structured risk-based framework that includes risk identification, analysis, and evaluation. This approach enables planners to understand the probability and intensity of ecological impacts stemming from multiple pressures and to assess whether existing or proposed management measures can keep these effects below acceptable thresholds. Incorporating	<p>Stelzenmüller, V., M. Coll, A. D. Mazari, S. Giakoumi, S. Katsanevakis, M. E. Portman, R. Degen, P. Mackelworth, A. Gimpel, P. G. Albano, V. Alpanidou, J. Claudet, F. Essl, T. Evagelopoulou, J. J. Heymans, T. Genov, S. Kark, F. Micheli, M. G. Pennino, G. Rilov, B. Rumes, J. Steenbeek, H. Ojaveer, 2018. A risk-based approach to cumulative effect assessments for marine management. Science of The Total Environment, 612: 1132-1140  <a href="https://doi.org/10.1016/j.scitotenv.2017.08.289">https://doi.org/10.1016/j.scitotenv.2017.08.289</a></p>

Stage	Code	Action/task	Short	Topic	Description	Guidance and recommendations	Additional documents
					<p>CEAs into MSP supports the development of robust, transparent, and adaptive strategies that account for non-linear and synergistic interactions between pressures and can better inform trade-offs and mitigation actions.</p> <p>Different tools can be used to compare several scenarios and evaluate the performance of different planning alternatives, as regard cumulative impacts of human activities on ecosystems: (i) Symphony facilitates the assessment of cumulative environmental impacts resulting from human pressures from various management scenarios across the planning area. The cumulative impact is calculated by adding up all the impacts on ecosystem components and generating heat maps showing both the overall cumulative environmental impact and the specific contribution of each sector or activity in each area. This approach is valuable for comparing different planning alternatives and identifying solutions that minimize environmental impact; (ii) MYTILUS provides an open-source toolbox that enables to compare cumulative impacts of different planning options; (iii) Spatial planning models, such as Geographic Information Systems (GIS) and Ecological Assessment and Marine Spatial Planning Tool (VAPEM) can be used to get insights into the potential impacts of different planning scenarios and to make informed decisions about the use of marine space and resources. The former can be used to visualize spatial or geographic data while the latter allows for the integration of environmental risk information with technical and socio-ecological information (see Papadopoulos et al., 2025).</p>	<p>CEAs into MSP supports the development of robust, transparent, and adaptive strategies that account for non-linear and synergistic interactions between pressures and can better inform trade-offs and mitigation actions.</p> <p>Different tools can be used to compare several scenarios and evaluate the performance of different planning alternatives, as regard cumulative impacts of human activities on ecosystems: (i) Symphony facilitates the assessment of cumulative environmental impacts resulting from human pressures from various management scenarios across the planning area. The cumulative impact is calculated by adding up all the impacts on ecosystem components and generating heat maps showing both the overall cumulative environmental impact and the specific contribution of each sector or activity in each area. This approach is valuable for comparing different planning alternatives and identifying solutions that minimize environmental impact; (ii) MYTILUS provides an open-source toolbox that enables to compare cumulative impacts of different planning options; (iii) Spatial planning models, such as Geographic Information Systems (GIS) and Ecological Assessment and Marine Spatial Planning Tool (VAPEM) can be used to get insights into the potential impacts of different planning scenarios and to make informed decisions about the use of marine space and resources. The former can be used to visualize spatial or geographic data while the latter allows for the integration of environmental risk information with technical and socio-ecological information (see Papadopoulos et al., 2025).</p>	<p>Armoškaitė, A., J. Aigars, I. Andersone, I. M. Bonnevie, H. S. Hansen, S. Stråke, M. v. Thenen, L. Schrøder, 2023. Setting the scene for a multi-map toolset supporting maritime spatial planning by mapping relative cumulative impacts on ecosystem service supply. <i>Frontiers in Marine Science</i>, 10: <a href="https://doi.org/10.3389/fmars.2023.1213119">https://doi.org/10.3389/fmars.2023.1213119</a></p> <p>Piet et al. 2023. SCAIRM: A spatial cumulative assessment of impact risk for management. <i>Ecological Indicators</i> 157, 111157. <a href="https://doi.org/10.1016/j.ecolind.2023.111157">https://doi.org/10.1016/j.ecolind.2023.111157</a></p> <p>Zauchta et al. 2021. Synthesis Report on the Experience from Maritime Spatial Planning Projects in the Baltic Sea Region and the Resultant Policy Messages. <a href="https://vasab.org/wp-content/uploads/2021/11/Capacity4MSP_Synthesis_report_final.pdf">https://vasab.org/wp-content/uploads/2021/11/Capacity4MSP_Synthesis_report_final.pdf</a></p> <p>UNESCO-IOC/European Commission, 2021. MSPglobal International Guide on Marine/Maritime Spatial Planning. Paris, UNESCO. (IOC Manuals and Guides no 89), 152 pp. <a href="https://unesdoc.unesco.org/ark:/48223/pf0000379196">https://unesdoc.unesco.org/ark:/48223/pf0000379196</a></p> <p>Papadopoulos, N., C. J. Smith, A. Franco, M. Elliott, A. Borja, J. H. Andersen, E. Amorim, J. P. Atkins, S. Barnard, T. Berg, S. N. R. Birchenough, D. Burdon, J. Claudet, R. Cormier, I. Galparsoro, A. Judd, S. Katsanevakis, S. Korpinen, L. Lazar, C. Loiseau, C. Lynam, I. Menchaca, C. O'Toole, D. Pedreschi, G. Piet, D. Reid, I. A. Salinas-Akhmadeeva, V. Stelzenmüller, J. E. Tamis, L. Uusitalo, M. C. Uyarra, 2025. 'Horses for courses' – an interrogation of tools for marine ecosystem-based management. <i>Frontiers in Marine Science</i>, Volume 12 – 2025. <a href="https://doi.org/10.3389/fmars.2025.1426971">https://doi.org/10.3389/fmars.2025.1426971</a></p> <p>VAPEM. Environmental Assessment and Marine Spatial Planning Tool. <a href="https://aztidata.es/vapem/">https://aztidata.es/vapem/</a></p>

## D1.2 A BEST PRACTICE GUIDE FOR THE IMPLEMENTATION OF EB-MSP IN EUROPEAN SEAS

Stage	Code	Action/task	Short	Topic	Description	Guidance and recommendations	Additional documents
Stage 3	3.1.02	Management alternatives account for environmental impacts	Management alternatives: economic impact	Future scenarios	The different alternative scenarios for maritime space use should be compared to assess the environmental consequences of the various management options. This comparison helps in identifying the most sustainable and least environmentally harmful alternatives.	Strategic Environmental Assessment (SEA) procedures can be used by decision-makers to integrate potential environmental impacts as variables when evaluating alternative proposals. This integration facilitates the avoidance and mitigation of adverse environmental effects and unforeseen ecosystem harm associated with proposed activities and plans. SEA favours addressing the consequences at the earliest possible stage of decision-making.	Elliott, M., A. Borja, R. Cormier, 2020. Activity-footprints, pressures-footprints and effects-footprints – Walking the pathway to determining and managing human impacts in the sea. Marine Pollution Bulletin, 155: 111201 <a href="https://doi.org/10.1016/j.marpolbul.2020.111201">https://doi.org/10.1016/j.marpolbul.2020.111201</a>  UNESCO-IOC/European Commission, 2021. MSPglobal International Guide on Marine/Maritime Spatial Planning. Paris, UNESCO. (IOC Manuals and Guides no 89), 152 pp. <a href="https://unesdoc.unesco.org/ark:/48223/pf0000379196">https://unesdoc.unesco.org/ark:/48223/pf0000379196</a>
Stage 3	3.1.03	Management alternatives account for economical impacts	Management alternatives: economic impact	Future scenarios	The different alternative scenarios for maritime space use should be compared accounting for the economic impacts of the management alternatives. An economic valuation assessment (direct and indirect) for each activity, concerning the ocean space demand and the potential environmental degradation, should be conducted.	An economic valuation assessment for each activity, considering the economic performance, added value to the economy, and generated employment should be conducted. This information can be obtained from economic and financial statistics, historical product prices, international trade forecasts, and expert opinions.  It is essential to consider both coastal and ocean-related activities. The former refers to all economic activity occurring within the coastal area, while the latter refers to economic activities that use the ocean as an input or output, either directly or indirectly.  The costs associated with the present and future degradation of marine ecosystems should also be considered. This can be assessed by calculating, quantitatively or qualitatively, the change in benefits to human well-being (i.e., direct and indirect use values and non-use values, such as the legacy value and altruistic value of marine ecosystems), evaluating the increase in production or mitigation expenses incurred to preserve the existing quality of marine ecosystems.  In the case of protection and conservation measures, all associated costs and benefits must be carefully identified. This includes the direct costs and benefits	Ehler, C., Douvère, F., 2009. Marine Spatial Planning: a step-by-step approach toward ecosystem-based management. IOC Manual and Guides no. 53, 98 pp. <a href="https://www.mspglobal2030.org/wp-content/uploads/2019/03/Marine-spatial-planning-a-step-by-step-approach.pdf">https://www.mspglobal2030.org/wp-content/uploads/2019/03/Marine-spatial-planning-a-step-by-step-approach.pdf</a>  Strosser et al. 2021. Study on Integrating an Ecosystem-based Approach into Maritime Spatial Planning that are the lessons from current practice in applying Ecosystem-Based Approaches in Maritime Spatial Planning? Results from the literature review. <a href="https://cinea.ec.europa.eu/publications/digital-publications/study-integrating-ecosystem-based-approach-maritime-spatial-planning_en">https://cinea.ec.europa.eu/publications/digital-publications/study-integrating-ecosystem-based-approach-maritime-spatial-planning_en</a>  Surís-Regueiro, J. C., J. L. Santiago, X. M. González-Martínez, M. D. Garza-Gil, 2021. Estimating economic impacts linked to Marine Spatial Planning with input-output techniques. Application to three case studies. Marine Policy, 129. 104541. <a href="https://doi.org/10.1016/j.marpol.2021.104541">https://doi.org/10.1016/j.marpol.2021.104541</a>  Abramic, A., Norton, D., Sarretta, A., Menegon, S., Katsika, M., Gekas, V., Rybka, K., Fernández- Palacios, Y. 2023. Maritime Spatial Planning Data Framework (MSPdF). How to structure

## D1.2 A BEST PRACTICE GUIDE FOR THE IMPLEMENTATION OF EB-MSP IN EUROPEAN SEAS

Stage	Code	Action/task	Short	Topic	Description	Guidance and recommendations	Additional documents
						<p>related to their design and implementation, direct economic impacts (i.e., economic losses/gains for specific sectors and potential employment impact), and indirect benefits derived from environmental improvement (e.g., reduction in marine plastic pollution could yield substantial advantages for the fisheries sector).</p> <p>Relevant information for performing a cost-benefit analysis can be found in the following sources: <a href="https://ec.europa.eu/eurostat/web/main/data/data-base">https://ec.europa.eu/eurostat/web/main/data/data-base</a> (Europe); <a href="https://ec.europa.eu/eurostat/web/main/search/-/search/">https://ec.europa.eu/eurostat/web/main/search/-/search/</a> (Europe); <a href="https://www.bls.gov/iag/tgs/iag_index_naics.htm">https://www.bls.gov/iag/tgs/iag_index_naics.htm</a> (US); <a href="https://de-cith.statcan.gc.ca/?lc=en&amp;pg=0">https://de-cith.statcan.gc.ca/?lc=en&amp;pg=0</a> (Canada).</p>	<p>input data for MSP process, monitoring &amp; evaluation. Produced by Technical Expert Group (TEG) on Data for MSP. Supported by CINEA and DG MARE (EC). 45 pp. <a href="https://doi.org/10.2926/440667">https://doi.org/10.2926/440667</a></p> <p>Calado, H., Gutierrez, D., Pegorelli, C., Kirkfeldt, T.S., Hipólito, C., Moniz, F., McClintock, W., Vergilio, M., Guerreiro, J. and Papaioannou, E., 2021. A tailored method for strategic environmental assessment in maritime spatial planning. Journal of Environmental Assessment Policy and Management, 23(01n02), p.2250009. <a href="https://doi.org/10.1142/S146433322500090">https://doi.org/10.1142/S146433322500090</a></p>
Stage 3	3.1.04	Management alternatives account for social impacts	Management alternatives: social impact	Future scenarios	<p>The different alternative scenarios for maritime space use should be compared, taking into account the social impacts of the present and planned activities.</p>	<p>The equitable distribution of costs and benefits among society must be taken into account in decision-making to establish compensatory measures and/or mechanisms if needed, that can mitigate the impacts on affected social groups. It is essential to consider all social factors that influence human well-being. This encompasses both the purely social dimension, including, but not limited to, individual well-being and health, human rights and access to resources, knowledge and education, local culture, and social equity and inclusion, as well as the socio-economic dimension, which refers to local job creation and generation of revenue for local businesses, thereby improving the quality of life of the local population.</p> <p>The socio-demographic characteristics of the population present in the coastal zone (e.g., size of the locality, current activity status, occupation, level of formal education, etc.) should be considered when evaluating the potential impacts. Relevant information can be found in the following sources: <a href="https://ec.europa.eu/CensusHub/selectHyperCube?clearSession=true">https://ec.europa.eu/CensusHub/selectHyperCube?clearSession=true</a> (Europe);</p>	<p>Strosser et al. 2021. Study on Integrating an Ecosystem-based Approach into Maritime Spatial Planning What are the lessons from current practice in applying Ecosystem-Based Approaches in Maritime Spatial Planning? Results from the literature review. <a href="https://cinea.ec.europa.eu/publications/digital-publications/study-integrating-ecosystem-based-approach-maritime-spatial-planning_en">https://cinea.ec.europa.eu/publications/digital-publications/study-integrating-ecosystem-based-approach-maritime-spatial-planning_en</a></p> <p>Abramic, A., Norton, D., Sarretta, A., Menegon, S., Katsika, M., Gekas, V., Rybka, K., Fernández- Palacios, Y. 2023. Maritime Spatial Planning Data Framework (MSPdF). How to structure input data for MSP process, monitoring &amp; evaluation. Produced by Technical Expert Group (TEG) on Data for MSP. Supported by CINEA and DG MARE (EC). 45 pp. <a href="https://doi.org/10.2926/440667">https://doi.org/10.2926/440667</a></p>

## D1.2 A BEST PRACTICE GUIDE FOR THE IMPLEMENTATION OF EB-MSP IN EUROPEAN SEAS

Stage	Code	Action/task	Short	Topic	Description	Guidance and recommendations	Additional documents
						<a href="https://www.bls.gov/iag/tgs/iag_index_naics.htm">https://www.bls.gov/iag/tgs/iag_index_naics.htm</a> (US); <a href="https://de-cith.statcan.gc.ca/?lc=en&amp;pg=0">https://de-cith.statcan.gc.ca/?lc=en&amp;pg=0</a> (Canada).	
Stage 3	3.1.05	Environmental and socio-economic effects of the plan have been assessed in the near (<6 years) and far future (>6 years)	Short/long-term plan impact	Future scenarios	Marine planning is an inherently future-oriented activity. Therefore, when evaluating prospective scenarios, it is essential to assess the social, economic, and environmental impacts in both the near (<6 years) and far future (>6 years) to ensure the sustainability of the selected planning option.	<p>Planning for the short-term management of a given area, typically aligned with the cycles of other directives and the plan's inherent review cycle (&lt;6 years), facilitates the collaborative development of an agreed plan with stakeholders. The potential effects of such a plan can be assessed, with a degree of certainty, enabling proactive short-term decision-making that advances towards the desired outcome through adaptive management. However, certain factors, such as climate change, natural disasters, and political or economic shifts, are inherently unpredictable and introduce significant uncertainty. Consequently, it is necessary to establish longer planning horizons (&gt;6 years) that account for these variables.</p> <p>For a tool that integrates environmental, social, and economic aspects, along with stakeholder involvement, to support marine management with a particular focus on sustainability, refer to Karnauskaitė et al. (2019).</p>	<p>UNESCO-IOC/European Commission, 2021. MSPglobal International Guide on Marine/Maritime Spatial Planning. Paris, UNESCO. (IOC Manuals and Guides no 89), 152 pp. <a href="https://unesdoc.unesco.org/ark:/48223/pf0000379196">https://unesdoc.unesco.org/ark:/48223/pf0000379196</a></p> <p>Karnauskaitė, D., G. Schernewski, J. G. Støttrup, M. Kataržytė, 2019. Indicator-Based Sustainability Assessment Tool to Support Coastal and Marine Management. Sustainability, 11: 3175 <a href="https://doi.org/10.3390/su11113175">https://doi.org/10.3390/su11113175</a></p>

## D1.2 A BEST PRACTICE GUIDE FOR THE IMPLEMENTATION OF EB-MSP IN EUROPEAN SEAS

Stage	Code	Action/task	Short	Topic	Description	Guidance and recommendations	Additional documents
Stage 3	3.1.06	Environmental and socio-economic effects of the plan have been assessed beyond MSP boundaries	Impacts beyond plan boundaries	Future scenarios	When evaluating planning options, it is necessary to consider the environmental and socio-economic effects beyond the boundaries of the MSP, to ensure the sustainability of the plan also in adjacent/cross-border areas. Such an approach will facilitate the assessment of incompatibilities and compatibilities between sectors, thereby promoting synergies, fostering cooperation, and reducing potential conflicts among various uses, as well as between uses and the environment.	The integrated management of the whole area (i.e., adjacent area or cross-border situation) potentially affected by the plan should be pursued, fostering coordination and coherence (e.g., policies designed to minimise conflicts, alignment of sectoral policies) and accountability, transparency and legitimacy (e.g., clear overarching sectoral objectives, participatory processes, access to information, robust accountability measures), to ensure the sustainable use of resources and the protection of common goods.	<p>Fudge, M., L. Fullbrook, J. Vince, 2025. Integrative capacity enabling integrated oceans management: Insights from Australia. <i>Ocean &amp; Coastal Management</i>, 267: 107730 <a href="https://doi.org/10.1016/j.ocecoaman.2025.107730">https://doi.org/10.1016/j.ocecoaman.2025.107730</a></p> <p>Plan Beu (2025). MED 2050, The Mediterranean by 2050, a foresight by Plan Bleu. <a href="https://planbleu.org/en/publications/discover-the-med2050-report-for-a-sustainable-and-resilient-mediterranean/">https://planbleu.org/en/publications/discover-the-med2050-report-for-a-sustainable-and-resilient-mediterranean/</a></p> <p>Neimane, L., S. Michalak, 2023. Maritime spatial plans as an object of the right of access to information. <i>Marine Policy</i>, 158: 105870 <a href="https://doi.org/10.1016/j.marpol.2023.105870">https://doi.org/10.1016/j.marpol.2023.105870</a></p> <p>Elliott, M., Á. Borja, R. Cormier, 2023. Managing marine resources sustainably – Ecological, societal and governance connectivity, coherence and equivalence in complex marine transboundary regions. <i>Ocean &amp; Coastal Management</i>, 245: 106875 <a href="https://doi.org/10.1016/j.ocecoaman.2023.106875">https://doi.org/10.1016/j.ocecoaman.2023.106875</a></p>

Stage	Code	Action/task	Short	Topic	Description	Guidance and recommendations	Additional documents
Stage 3	3.1.07	Trade-offs of different management options have been assessed	Management plan trade-offs	Future scenarios	Trade-offs need to weigh the benefits and costs of different management options, considering both spatial and temporal scales, and carefully balancing ecological, economic and social factors. Explicitly acknowledging these trade-offs enhances transparency in the decision-making process, minimises potential conflicts, maximises compatibilities between human activities, and directs efforts towards mitigating the impacts of unavoidable trade-offs while maximising sectoral benefits.	Trade-offs are specific to each marine spatial planning process. Calado et al. (2025) provide a comprehensive guide of arguments to consider in the trade-off process between (i) marine conservation and economic development, (ii) ecological and cultural values, (iii) short-term and long-term benefits, (iv) ecological integrity and human uses (v) exclusive uses and shared uses; (vi) local and global interest and (vii) specific stakeholder interests, and examples of management measures, can be found. Trade-offs can be analysed with quantitative or qualitative methods, followed by expert judgement, or using market and non-market economic components (see Rodrigues de Queiroz et al. (2024) for a list of methods used for trade-offs). Different decision support tools have been suggested for the visualisation of alternative scenarios and the assessment of trade-offs: (i) spatially explicit models, such as Ecopath with Ecosim (EwE), (see Püts et al. 2023); (ii) Open OceanMap, MIMES, the Multipurpose Marine Cadastre, etc. (see Kyriazi, 2018). Haughen et al. (2024) provide a comprehensive list of questions that can guide the trade-off management (e.g., are sectors engaging with each other, is the resource/area still accessible to other sectors, did sectors involved agree with the management action, etc.).	<p>Püts et al. 2023. Trade-offs between fisheries, offshore wind farms and marine protected areas in the southern North Sea – Winners, losers and effective spatial management. Marine Policy 152. <a href="https://doi.org/10.1016/j.marpol.2023.105574">https://doi.org/10.1016/j.marpol.2023.105574</a></p> <p>Calado, H., D. Gutierrez, A. De Bruyn, 2025. Navigating trade-offs on conservation: the use of participatory mapping in maritime spatial planning. npj Ocean Sustainability, 4: 8 <a href="https://doi.org/10.1038/s44183-025-00109-6">https://doi.org/10.1038/s44183-025-00109-6</a></p> <p>Kyriazi, Z., 2018. From identification of compatibilities and conflicts to reaching marine spatial allocation agreements. Review of actions required and relevant tools and processes. Ocean &amp; Coastal Management, 166: 103-112 <a href="https://doi.org/10.1016/j.ocecoaman.2018.03.018">https://doi.org/10.1016/j.ocecoaman.2018.03.018</a></p> <p>de Queiroz, J. D. G. R., D. Gutierrez, H. M. G. P. Calado, 2024. Trade-Offs in Marine Policy Decisions Through the Lens of Literature. Oceans, 5: 982-1007 <a href="https://doi.org/10.3390/oceans5040056">https://doi.org/10.3390/oceans5040056</a></p> <p>Haugen, J. B., J. S. Link, E. A. Fulton, M. Dickey-Collas, R. E. Brainard, A. Bundy, 2024. A performance measure framework for ecosystem-based management. ICES Journal of Marine Science: <a href="https://doi.org/10.1093/icesjms/fsae164">https://doi.org/10.1093/icesjms/fsae164</a></p>

Stage	Code	Action/task	Short	Topic	Description	Guidance and recommendations	Additional documents
Stage 3	3.1.08	The impact of alternative restoration interventions has been assessed	Impact of restoration	Future scenarios	The different alternative scenarios should be compared, considering the impact of restoration interventions. Long-term direct and indirect benefits for future generations should be factored into the cost-benefit ratio estimation.	<p>When applying cost-benefit analysis to restoration interventions, it often seems that these measures lack economic viability. This is primarily because the short-term benefits frequently fail to offset the costs associated with these actions. Consequently, it has been proposed that for restoration projects, long-term benefits, that is, those for future generations, should also be factored into the cost-benefit ratio estimation.</p> <p>Both the direct socio-economic benefits, such as potential job creation at the local, national, or regional levels, and indirect benefits, encompassing the diversification of livelihoods and income sources for local communities (e.g., increased blue tourism), as well as enhanced welfare, should be considered. Costs will include the inherent expenses of the actions themselves, alongside expenditures resulting from activities that will no longer be feasible in the designated area.</p> <p>It is also necessary to account for the potential benefits that restoration actions could bring to biodiversity and ecosystem services. Factors such as their effect on the creation or improvement of habitats supporting Red List species, benefits generated for areas of high conservation and biodiversity importance, carbon sequestration and coastal protection should be considered.</p>	<p>Strosser et al. 2021. Study on Integrating an Ecosystem-based Approach into Maritime Spatial Planning What are the lessons from current practice in applying Ecosystem-Based Approaches in Maritime Spatial Planning? Results from the literature review. <a href="https://cinea.ec.europa.eu/document/download/ec6a2dfb-2797-477f-a4ab-3c56e307d05c_en?filename=Study%20on%20EBA%20in%20MSP%20-%20LIT%20REVIEW%20Report%20FINAL%20-%20HZ-01-21-241-EN-N%20.pdf">https://cinea.ec.europa.eu/document/download/ec6a2dfb-2797-477f-a4ab-3c56e307d05c_en?filename=Study%20on%20EBA%20in%20MSP%20-%20LIT%20REVIEW%20Report%20FINAL%20-%20HZ-01-21-241-EN-N%20.pdf</a></p> <p>Danovaro, R., J. Aronson, S. Bianchelli, C. Boström, W. Chen, R. Cimino, C. Corinaldesi, J. Cortina-Segarra, P. D'Ambrosio, C. Gambi, J. Garrabou, A. Giorgetti, A. Grehan, A. Hannachi, L. Mangialajo, T. Morato, S. Orfanidis, N. Papadopoulou, E. Ramirez-Llodra, C. J. Smith, P. Snelgrove, J. van de Koppel, J. van Tatenhove, S. Fraschetti, 2025. Assessing the success of marine ecosystem restoration using meta-analysis. Nature Communications, 16: 3062 <a href="https://doi.org/10.1038/s41467-025-57254-2">https://doi.org/10.1038/s41467-025-57254-2</a></p> <p>IUCN, 2017. Restoration Barometer: A Guide for Governments. <a href="https://restorationbarometer.org/knowledge-hub/restoration-barometer-a-guide-for-governments/">https://restorationbarometer.org/knowledge-hub/restoration-barometer-a-guide-for-governments/</a></p>
Stage 3	3.1.09	Uncertainty about background information is acknowledged when assessing planning options	Knowledge uncertainty	Approaches, tools and methods	Acknowledging uncertainty in background information helps planners make informed decisions while considering the limitations and variability of available data. By acknowledging uncertainty, planners can better assess risks and develop more robust strategies. Transparency	<p>Capturing the complexity of the ecological system and the effects of human activities requires a substantial amount of robust and reliable data. In most cases, sufficient information will not be available to assess all causal relationships between human pressures and their effects on ecosystems and the services they provide. Thus, recognising uncertainty allows for flexible and adaptive management approaches that can be adjusted as</p>	<p>de Vries, J. W., R. C. Spijkerboer, C. Zuidema, 2024. Making knowledge matter: Understanding and improving knowledge-integration in Dutch marine spatial planning policy. Ocean &amp; Coastal Management, 248: 106928 <a href="https://doi.org/10.1016/j.ocecoaman.2023.106928">https://doi.org/10.1016/j.ocecoaman.2023.106928</a></p> <p>Rullens, V., F. Stephenson, M. Townsend, A. M. Lohrer, J. E. Hewitt, C. A. Pilditch, J. I. Ellis, 2024. Accounting for uncertainty</p>



Stage	Code	Action/task	Short	Topic	Description	Guidance and recommendations	Additional documents
					about uncertainties helps build trust among stakeholders, ensuring their engagement and support.	new information becomes available. Uncertainty of technical, ecological, social and economic information should be considered. Different approaches can be found in the literature for the accounting of uncertainty in (i) the estimation of ecosystem services provision (e.g., Rullens et al. 2024; Walther et al. 2025); (ii) the modelling of cumulative impacts (Gissi et al. 2017).	<p>in marine ecosystem service predictions for spatial prioritisation. Diversity and Distributions, 30: e13823  <a href="https://doi.org/10.1111/ddi.13823">https://doi.org/10.1111/ddi.13823</a></p> <p>Walther, F., D. N. Barton, J. Schwaab, J. Kato-Huerta, B. Immerzeel, M. Adamescu, E. Andersen, M. V. Arámbula Coyote, I. Arany, M. Balzan, A. Bruggeman, C. Carvalho-Santos, C. Cazacu, D. Geneletti, R. Giuca, M. Inácio, E. Lagabriele, S. Lange, S. L. Clec'h, Z. Y. Vanessa Lim, U. Mörtberg, S. Nedkov, A. P. Portela, A. Porucznik, T. Racoviceanu, P. Rendón, D. Ribeiro, J. Seguin, M. Š. Hribar, V. Stoycheva, H. Vejre, C. Zoumides, A. Grêt-Regamey, 2025. Uncertainties in ecosystem services assessments and their implications for decision support – A semi-systematic literature review. Ecosystem Services, 73: 101714  <a href="https://doi.org/10.1016/j.ecoser.2025.101714">https://doi.org/10.1016/j.ecoser.2025.101714</a></p> <p>Gissi, E., S. Menegon, A. Sarretta, F. Appiotti, D. Maragno, A. Vianello, D. Depellegrin, C. Venier, A. Barbanti, 2017. Addressing uncertainty in modelling cumulative impacts within maritime spatial planning in the Adriatic and Ionian region. PLoS ONE, 12: e0180501 <a href="https://doi.org/10.1371/journal.pone.0180501">https://doi.org/10.1371/journal.pone.0180501</a></p> <p>Piet et al. 2021. Guidelines for implementing an Ecosystem-based Approach in Maritime Spatial Planning: Including a method for the evaluation, monitoring and review of EBA in MSP. CINEA, 102 pp. <a href="https://op.europa.eu/en/publication-detail/-/publication/a8ee2988-4693-11ec-89db-01aa75ed71a1">https://op.europa.eu/en/publication-detail/-/publication/a8ee2988-4693-11ec-89db-01aa75ed71a1</a></p> <p>Strosser et al. 2021. Study on Integrating an Ecosystem-based Approach into Maritime Spatial Planning. What are the lessons from current practice in applying Ecosystem-Based Approaches in Maritime Spatial Planning? Results from the literature review. <a href="https://cinea.ec.europa.eu/publications/digital-publications/study-integrating-ecosystem-based-approach-maritime-spatial-planning_en">https://cinea.ec.europa.eu/publications/digital-publications/study-integrating-ecosystem-based-approach-maritime-spatial-planning_en</a></p>

Stage	Code	Action/task	Short	Topic	Description	Guidance and recommendations	Additional documents
Stage 3	3.1.10	The uncertainty is addressed when identifying future management scenarios, accounting for potential climate and socio-economic development changes	Future scenarios uncertainty	Approaches, tools and methods	Addressing uncertainty is crucial when identifying future management scenarios, especially considering potential climate and socio-economic changes.	<p>Unexpected changes may arise from unpredictable global shifts (e.g., climate phenomena, significant socio-economic changes) or from the inherent dynamic nature of ecosystems, thereby introducing uncertainty into planning. Consequently, measures should be implemented to identify the main sources of uncertainty and consider them when planning. This will enable an appropriate response to such changes and help minimise potential negative effects.</p> <p>Recommended ways to address uncertainty include: Implement adaptive management and governance practices: adopt flexible, iterative planning approaches that allow for adjustments as new information emerges. This enhances the capacity to respond to unforeseen changes and uncertainties. Utilise scenario planning: develop and analyse multiple plausible future scenarios incorporating various climate projections and socio-economic pathways. This approach aids in understanding potential outcomes and formulating robust strategies across different futures. Conduct comprehensive uncertainty analyses: assess and document uncertainties associated with data, models, and projections. Recognising and communicating these uncertainties is important for informed decision-making and stakeholder trust. Engage stakeholders continuously: Involve local communities, industries, scientists, and policymakers throughout the planning process. Diverse perspectives contribute to a better understanding of uncertainties and help develop broadly supported, adaptable strategies. Some decision-making tools that account for risks and uncertainties are: (i) dynamic ocean management; (ii) dynamic adaptive policy pathways (DAPP) approach; and (iii) robust decision-making (RDM).</p>	<p>Papadopolou, N., C. J. Smith, A. Franco, M. Elliott, A. Borja, J. H. Andersen, E. Amorim, J. P. Atkins, S. Barnard, T. Berg, S. N. R. Birchenough, D. Burdon, J. Claudet, R. Cormier, I. Galparsoro, A. Judd, S. Katsanevakis, S. Korpinen, L. Lazar, C. Loiseau, C. Lynam, I. Menchaca, C. O'Toole, D. Pedreschi, G. Piet, D. Reid, I. A. Salinas-Akhmadeeva, V. Stelzenmüller, J. E. Tamis, L. Uusitalo, M. C. Uyarra, 2025. 'Horses for courses' – an interrogation of tools for marine ecosystem-based management. <i>Frontiers in Marine Science</i>, Volume 12 - 2025: <a href="https://doi.org/10.3389/fmars.2025.1426971">https://doi.org/10.3389/fmars.2025.1426971</a></p> <p>Chollett, I., X. Escovar-Fadul, S. R. Schill, A. Croquer, A. M. Dixon, M. Beger, E. Shaver, V. Pietsch McNulty, N. H. Wolff, 2022. Planning for resilience: Incorporating scenario and model uncertainty and trade-offs when prioritizing management of climate refugia. <i>Global Change Biology</i>, 28: 4054-4068 <a href="https://doi.org/10.1111/gcb.16167">https://doi.org/10.1111/gcb.16167</a></p> <p>Gissi, E., S. Fraschetti, F. Micheli, 2019. Incorporating change in marine spatial planning: A review. <i>Environmental Science &amp; Policy</i>, 92: 191-200 <a href="https://doi.org/10.1016/j.envsci.2018.12.002">https://doi.org/10.1016/j.envsci.2018.12.002</a></p> <p>Piet et al. 2021. Guidelines for implementing an Ecosystem-based Approach in Maritime Spatial Planning: Including a method for the evaluation, monitoring and review of EBA in MSP. CINEA, 102 pp. <a href="https://op.europa.eu/en/publication-detail/-/publication/a8ee2988-4693-11ec-89db-01aa75ed71a1">https://op.europa.eu/en/publication-detail/-/publication/a8ee2988-4693-11ec-89db-01aa75ed71a1</a></p> <p>Strosser et al. 2021. Study on Integrating an Ecosystem-based Approach into Maritime Spatial Planning. What are the lessons from current practice in applying Ecosystem-Based Approaches in Maritime Spatial Planning? Results from the literature review. <a href="https://cinea.ec.europa.eu/document/download/ec6a2dfb-2797-477f-a4ab-3c56e307d05c_en?filename=Study%20on%20EBA%20in%20MSP%20-%20LIT%20REVIEW%20Report%20FINAL%20-%20HZ-01-21-241-EN-N%20.pdf">https://cinea.ec.europa.eu/document/download/ec6a2dfb-2797-477f-a4ab-3c56e307d05c_en?filename=Study%20on%20EBA%20in%20MSP%20-%20LIT%20REVIEW%20Report%20FINAL%20-%20HZ-01-21-241-EN-N%20.pdf</a></p>

Stage	Code	Action/task	Short	Topic	Description	Guidance and recommendations	Additional documents
Stage 3	3.2	Selection of the optimal option	Selection of the optimal option				
Stage 3	3.2.01	Timing (e.g., the time required to achieve results), political considerations and feasibility of financing have been considered when selecting the optimal option	Optimal option: political/economic considerations	Governance	The selection of the optimal option should consider the timing and potential political and economic characteristics challenges to ensure the effective implementation of the plan.	<p>To understand the influence of such considerations on marine management and the success of the selected option, it is crucial to identify and address the key problems hindering progress in governance regimes (e.g., limited coherence across government departments, tokenistic participation processes, lack of transparency in policy design). Concurrently, it is essential to consider the timing (i.e., create a work plan and establish timelines) and to ensure the allocation of a dedicated budget for the implementation, monitoring and evaluation of the spatial plan by establishing a sustainable financing strategy (see Ehler and Douvère (2009) for examples of financing mechanisms for the MSP). Securing continuous funding for the ongoing operation of the technical and administrative structures responsible for executing the marine plan and developing its implementation tools is also critical.</p>	<p>Ehler, C., Douvère, F., 2009. Marine Spatial Planning: a step-by-step approach toward ecosystem-based management. IOC Manual and Guides no. 53, 98 pp.  <a href="https://www.mspglobal2030.org/wp-content/uploads/2019/03/Marine-spatial-planning-a-step-by-step-approach.pdf">https://www.mspglobal2030.org/wp-content/uploads/2019/03/Marine-spatial-planning-a-step-by-step-approach.pdf</a></p> <p>UNESCO-IOC/European Commission, 2021. MSPglobal International Guide on Marine/Maritime Spatial Planning. Paris, UNESCO. (IOC Manuals and Guides no 89), 152 pp.  <a href="https://unesdoc.unesco.org/ark:/48223/pf0000379196">https://unesdoc.unesco.org/ark:/48223/pf0000379196</a></p> <p>McAteer, B., Flannery, W., Elliott, M., Boyes, S., Morato, T., Fauconnet, L., Galparsoro, I., Menchaca, I., Aranda, M., Frascchetti, S., Colloca, F., Moro, S., Fabbri, E., Acampa, F., Runya, M.R., Papazekou, M., Van Gerven, A., Leahy, A., Barnard, S., Piet, G., Kruse, M., Stelzenmüller, V., Jongbloed, R., Coll, M., Bas, M., Ortega, M., Neuenfeldt, S., and Funk, N., 2024. Report on the barriers to adopting novel and dynamic approaches to Marine Protected Areas designation and implementation. Deliverable D4.2 of MarinePlan project: “Improved transdisciplinary science for effective ecosystem-based maritime spatial planning and conservation in European Seas”. Horizon Europe grant agreement No 101059407; UKRI grant numbers 10038951 &amp; 10050537. 58 pp.</p>

Stage	Code	Action/task	Short	Topic	Description	Guidance and recommendations	Additional documents
Stage 3	3.2.02	The selected option promotes equitability and sustainability	Equitability and sustainability	Governance	Promoting equitability and sustainability in marine spatial planning involves selecting options that balance environmental protection, social equity, and economic viability.	<p>The selected option should be aligned with the four dimensions of equity: (i) distributional (i.e., equitable distribution of costs, benefits, obligations and rights regarding the use of marine resources), (ii) procedural (inclusivity and engagement in policy or decision-making regarding the use of marine resources), (iii) recognitional (i.e., rights and livelihoods of various stakeholders related to marine resources are acknowledged and honoured) and (iv) contextual (i.e., recognizing the effect of contextual elements, such as economic, political, social factors or climate, in hindering or supporting the fair allocation of resources or the engagement in decision-making processes).</p> <p>Regarding the sustainability of the selected option, in Chen et al. (2023) a comprehensive list of approaches for the quantitative and qualitative analysis of marine sustainable development is provided: e.g., (i) system dynamic methods that can be used for understanding the complex interrelation between society, environment, ecology and the management of marine activities; (ii) Ocean Health Index (OHI) method that can be used to evaluate the ability of the ocean to provide human welfare (i.e., social and ecological benefits, ecosystem services); (iii) the Common International Classification of Ecosystem Services (CICES) framework for the valuation of ecosystem services.</p>	<p>Chen, F., Y. Jiang, Z. Liu, R. Lin, W. Yang, 2023. Framework system of marine sustainable development assessment based on systematic review. Marine Policy, 154: <a href="https://doi.org/10.1016/j.marpol.2023.105689">https://doi.org/10.1016/j.marpol.2023.105689</a></p> <p>Saunders, F., Gilek, M., Ikauniece, A., Tafon, R.V., Gee, K. and Zaucha, J., 2020. Theorizing social sustainability and justice in marine spatial planning: Democracy, diversity, and equity. Sustainability, 12(6), p.2560. <a href="https://doi.org/10.3390/su12062560">https://doi.org/10.3390/su12062560</a></p> <p>Chen, M., Y. Wang, Z. Xu, 2024. A framework for assessing the blue equity of social-ocean systems in marine governance transformation. Frontiers in Marine Science, Volume 11 - 2024: <a href="https://doi.org/10.3389/fmars.2024.1403194">https://doi.org/10.3389/fmars.2024.1403194</a></p> <p>Reimer, J.M., Devillers, R., Zuercher, R., Groulx, P., Ban, N.C. and Claudet, J., 2023. The Marine Spatial Planning Index: a tool to guide and assess marine spatial planning. npj Ocean Sustainability, 2(1), p.15. <a href="https://doi.org/10.1038/s44183-023-00022-w">https://doi.org/10.1038/s44183-023-00022-w</a></p>
Stage 3	3.3	Stakeholder participation	Stakeholder participation				

## D1.2 A BEST PRACTICE GUIDE FOR THE IMPLEMENTATION OF EB-MSP IN EUROPEAN SEAS

Stage	Code	Action/task	Short	Topic	Description	Guidance and recommendations	Additional documents
Stage 3	3.3.01	Workshops or other methods with relevant sectors have been performed to assess and discuss trade-offs of the different planning options	Trade-offs discussed with stakeholders	Stakeholder engagement	Transparency of trade-offs and decision-making should be promoted, avoiding unnecessary conflicts and seeking the most efficient solutions that maximise the sector's values while minimizing the negative impacts.	<p>The process of assessing trade-offs must be conducted in a fair and equitable manner, culminating in a proposal that enjoys broad support from participating stakeholders. Consequently, it is imperative to engage a diverse array of stakeholders, representative of all the relevant sectors affected by the plan, ensuring the balance and composition of the group, as well as equitable access and allocation of marine resources.</p> <p>Participatory mapping platforms, such as SeaSketch (<a href="https://www.seasketch.org/">https://www.seasketch.org/</a>), have been suggested to facilitate interaction between planners and stakeholders by providing a user-friendly interface for accessing maps and data pertinent to the planning process. This approach can be used for discussing trade-offs of the different planning options and for ensuring a transparent and equitable decision-making process.</p>	<p>Calado, H., D. Gutierrez, A. De Bruyn, 2025. Navigating trade-offs on conservation: the use of participatory mapping in maritime spatial planning. <i>npj Ocean Sustainability</i>, 4: 8 <a href="https://doi.org/10.1038/s44183-025-00109-6">https://doi.org/10.1038/s44183-025-00109-6</a></p> <p>Kyriazi, Z., 2018. From identification of compatibilities and conflicts to reaching marine spatial allocation agreements. Review of actions required and relevant tools and processes. <i>Ocean &amp; Coastal Management</i>, 166: 103-112 <a href="https://doi.org/10.1016/j.ocecoaman.2018.03.018">https://doi.org/10.1016/j.ocecoaman.2018.03.018</a></p> <p>Yang, J.-H., Y. Chang, S.-C. Hsiao, 2024. Finding harmony in the sea: Resolving conflicts by regional marine spatial planning. <i>Ocean &amp; Coastal Management</i>, 254: 107200 <a href="https://doi.org/10.1016/j.ocecoaman.2024.107200">https://doi.org/10.1016/j.ocecoaman.2024.107200</a></p> <p>James, I., 2025. Participatory seascape mapping: A community-based approach to ocean governance and marine conservation. <i>Ocean &amp; Coastal Management</i>, 261: 107531 <a href="https://doi.org/10.1016/j.ocecoaman.2024.107531">https://doi.org/10.1016/j.ocecoaman.2024.107531</a></p>
Stage 3	3.3.02	Feedback from stakeholders has been used to inform optimal planning options	Feedback from stakeholders for options	Stakeholder engagement	Upon the integration of all available information and the evaluation of the various planning options for the area, these options must be shared with stakeholders. This engagement is crucial for soliciting their needs and concerns, thereby enabling their feedback to inform the selection of the optimal planning option.	<p>This process could involve targeted consultations and public workshops to gather diverse perspectives on potential spatial allocations and management strategies. The feedback received could then be used to refine constraint mapping for certain activities in specific areas, identify potential conflicts, and explore alternative scenarios to ensure the plan addresses the main concerns of stakeholders. This iterative process, documented through transparent reporting and public access to the feedback provided and the arisen discussions, facilitates the development of planning options that are both ecologically sound and socially acceptable.</p>	<p>Veidemann, K., A. Reke, A. Ruskule, I. Vinogradovs, 2024. Assessment of Coastal Cultural Ecosystem Services and Well-Being for Integrating Stakeholder Values into Coastal Planning. <i>Land</i>, 13: 362 <a href="https://doi.org/10.3390/land13030362">https://doi.org/10.3390/land13030362</a></p> <p>Yang, J.-H., Y. Chang, S.-C. Hsiao, 2024. Finding harmony in the sea: Resolving conflicts by regional marine spatial planning. <i>Ocean &amp; Coastal Management</i>, 254: 107200 <a href="https://doi.org/10.1016/j.ocecoaman.2024.107200">https://doi.org/10.1016/j.ocecoaman.2024.107200</a></p> <p>Saunders, F. P., M. Gilek, R. Tafon. 2019. Adding People to the Sea: Conceptualizing Social Sustainability in Maritime Spatial Planning, in <i>Maritime Spatial Planning: past, present, future</i>. J. Zaucha, K. Gee Series volume: Pages: 175-199. Springer</p>

## D1.2 A BEST PRACTICE GUIDE FOR THE IMPLEMENTATION OF EB-MSP IN EUROPEAN SEAS

Stage	Code	Action/task	Short	Topic	Description	Guidance and recommendations	Additional documents
							International Publishing, Cham. <a href="https://doi.org/10.1007/978-3-319-98696-8_8">https://doi.org/10.1007/978-3-319-98696-8_8</a>
Stage 3	3.4	Prepare the planning proposal	Prepare the planning proposal				
Stage 3	3.4.01	Solutions to avoid, mitigate or compensate for negative impacts on marine ecosystems and ensure the sustainability of natural resources have been defined	Mitigate negative impacts	Human activities and their effects	When preparing the planning proposal, it is necessary to define solutions to avoid, mitigate, or compensate for the negative impacts of human activities on marine ecosystems. Avoidance refers to measures designed to avert the occurrence of an impact, mitigation focuses on reducing the consequences of the impact when it cannot be avoided, while compensation measures will address the impact of the activity(ies) in comparable proportion.	Risk-based approaches, such as Bow-Tie, produce conceptual models linking a risk (i.e., a central knot of the bow-tie) to its causes (i.e., the left side of the bow-tie) and the resulting consequences (i.e., right side of the bow-tie), can be used to determine the need of solutions to avoid the hazard from occurring or to mitigate or compensate for the magnitude of any consequence. Ideally, compensation measures should focus on addressing on-site the produced impact, through the creation, restoration or relocation of the harmed/lost feature. That might not be possible in all cases, so other options such as establishing measures that benefit the same affected ecological function in a different location, or a comparable function on-site/offsite might be considered, but bearing in mind that this will decrease the certainty of success and increase the extent of compensation required (for further clarifications see UK, 2021).	Chen, F., Y. Jiang, Z. Liu, R. Lin, W. Yang, 2023. Framework system of marine sustainable development assessment based on systematic review. Marine Policy, 154: 105689 <a href="https://doi.org/10.1016/j.marpol.2023.105689">https://doi.org/10.1016/j.marpol.2023.105689</a>  Papadopoulou, N., C. J. Smith, A. Franco, M. Elliott, A. Borja, J. H. Andersen, E. Amorim, J. P. Atkins, S. Barnard, T. Berg, S. N. R. Birchenough, D. Burdon, J. Claudet, R. Cormier, I. Galparsoro, A. Judd, S. Katsanevakis, S. Korpinen, L. Lazar, C. Loiseau, C. Lynam, I. Menchaca, C. O'Toole, D. Pedreschi, G. Piet, D. Reid, I. A. Salinas-Akhmadeeva, V. Stelzenmüller, J. E. Tamis, L. Uusitalo, M. C. Uyarra, 2025. 'Horses for courses' – an interrogation of tools for marine ecosystem-based management. Frontiers in Marine Science, Volume 12 - 2025: <a href="https://doi.org/10.3389/fmars.2025.1426971">https://doi.org/10.3389/fmars.2025.1426971</a>  UK, 2021. Best practice guidance for developing compensatory measures in relation to Marine Protected Areas. Department for Environment Food and Rural Affairs, 25 pp. <a href="https://consult.defra.gov.uk/marine-planning-licensing-team/mpa-compensation-guidance-consultation/supporting_documents/mpacompensatorymeasure_sbestpracticeguidance.pdf">https://consult.defra.gov.uk/marine-planning-licensing-team/mpa-compensation-guidance-consultation/supporting_documents/mpacompensatorymeasure_sbestpracticeguidance.pdf</a>
Stage 3	3.4.02	The precautionary principle has been adopted	Precautionary principle	Approaches, tools and methods	The precautionary principle emphasises taking preventive action in the face of uncertainty to avoid potential harm to the marine environment and ensure sustainable use of marine resources.	Applying the precautionary principle is essential to safeguard marine ecosystems under conditions of uncertainty. Environmental protection should be prioritised when potential impacts are not fully understood, ensuring that a lack of data does not justify inaction or harmful decisions. This requires comprehensive environmental impact assessments for proposed activities, accounting for uncertainties, the adoption of adaptive management strategies that allow for timely adjustments, and the	FAO, 1996. Precautionary Approach to Capture Fisheries and Species Introductions. <a href="https://www.fao.org/4/w3592e/w3592e00.pdf">https://www.fao.org/4/w3592e/w3592e00.pdf</a>  Strosser et al. 2021. Study on Integrating an Eco-system-based Approach into Maritime Spatial Planning. What are the lessons from current practice in applying Ecosystem-Based Approaches in Maritime Spatial Planning? Results from the literature review <a href="https://cinea.ec.europa.eu/document/download/0eaab836-51b1-46a1-bbcb-">https://cinea.ec.europa.eu/document/download/0eaab836-51b1-46a1-bbcb-</a>

## D1.2 A BEST PRACTICE GUIDE FOR THE IMPLEMENTATION OF EB-MSP IN EUROPEAN SEAS

Stage	Code	Action/task	Short	Topic	Description	Guidance and recommendations	Additional documents
						continuous monitoring of environmental, ecological, and socio-economic conditions.	<a href="#">7eb7c8ef2e8_en?filename=Study%20on%20EBA%20in%20MSP%20-%20LIT%20REVIEW%20Report%20FINAL%20-%20HZ-01-21-241-EN-N%20.pdf</a>
Stage 3	3.4.03	Economic incentives have been defined based on trade-off analysis	Economic incentives	Legal framework	The decision-making of trade-offs involves the fair and equitable engagement of a wide variety of stakeholder groups for envisioning and defining a shared future scenario that either satisfies the requirements of all parties or, at minimum, maximizes overall benefits. However, any given scenario will inherently entail gains and losses for specific groups; therefore, it is crucial to implement economic compensation measures to alleviate the potential financial setbacks experienced by these groups.	Trade-off negotiations may necessitate the application of economic instruments, such as incentives, to offset financial losses incurred by groups adversely affected by the decision-making process or to support the development of alternative activities to ensure livelihoods in areas where certain activities have been halted (e.g., within protected areas). The spatial management plan must explicitly detail the management measures and incentive mechanisms designated for resolving potential conflicts arising from the trade-off assessment.	Kyriazi, Z., 2018. From identification of compatibilities and conflicts to reaching marine spatial allocation agreements. Review of actions required and relevant tools and processes. Ocean & Coastal Management, 166: 103-112 <a href="https://doi.org/10.1016/j.ocecoaman.2018.03.018">https://doi.org/10.1016/j.ocecoaman.2018.03.018</a>  Ehler, C., Douvère, F., 2009. Marine Spatial Planning: a step-by-step approach toward ecosystem-based management. IOC Manual and Guides no. 53, 98 pp. <a href="https://www.mspglobal2030.org/wp-content/uploads/2019/03/Marine-spatial-planning-a-step-by-step-approach.pdf">https://www.mspglobal2030.org/wp-content/uploads/2019/03/Marine-spatial-planning-a-step-by-step-approach.pdf</a>
Stage 3	3.4.04	A monitoring system for the assessment of the plan and to inform adaptive management is set	Monitoring system	Monitoring and evaluation	Planning is a cyclical and iterative process, needing the establishment of a monitoring system to assess the plan's performance and inform adaptive management. The objective of monitoring and evaluating the plan is to ensure accountability among authorities, gain new knowledge, and improve the plan.	Establishing an effective monitoring system that evaluates the plan development process (e.g., equity and representativeness, availability and use of robust data, etc.), and provides empirical evidence regarding the effectiveness of implemented measures in achieving objectives, and the potential effects, is essential to inform adaptive management.	UNESCO-IOC/EC, 2021. MSPglobal International Guide on Marine/Maritime Spatial Planning. Paris, UNESCO. (IOC Manuals and Guides no 89), 152 pp. <a href="https://unesdoc.unesco.org/ark:/48223/pf0000379196">https://unesdoc.unesco.org/ark:/48223/pf0000379196</a>
Stage 3	3.4.05	The monitoring programme is coordinated with other established ones	Coordinated monitoring	Monitoring and evaluation	The monitoring programme should be coordinated with other established programs within the management area to promote data exchange and ensure cost-efficiency and consistency.	As established during the planning stage, it is crucial to identify the public administrations with monitoring responsibilities in the planning area, alongside relevant regulations at local, national, and international levels. This approach facilitates the establishment of synergies that enable the development of cost-efficient monitoring programs	Menegon, S., Gusatu, L., Sarretta, A., Mulazzani, A., Fadini, A., Abramic, A., Campillos-Llanos, M., Cervera-Nuñez, C., Gómez-Ballesteros, M., Borst, K., Kaitaranta, J., Lux, M., Suzanne, J.B., Souf, A., A. Souf, Analysing the state of current practices and synergies in data usage between Maritime Spatial Planning Directive and Marine Strategy Framework Directive, Preliminary survey results, Prod. Tech. Expert Group (TEG) on Data Msp.

## D1.2 A BEST PRACTICE GUIDE FOR THE IMPLEMENTATION OF EB-MSP IN EUROPEAN SEAS

Stage	Code	Action/task	Short	Topic	Description	Guidance and recommendations	Additional documents
						while concurrently avoiding the duplication of efforts.	Support. by CINEA and DG MARE (EC), 2024, <a href="https://doi.org/10.2926/904577">https://doi.org/10.2926/904577</a>  S.W.K. Van den Burg, M. Skirtun, O. van der Valk, W.R. Cervi, T. Selnes, T. Neumann, J. Steinmann, G. Arora, P. Roebeling, Monitoring and evaluation of maritime spatial planning – A review of accumulated practices and guidance for future action, Mar. Policy 150 (2023) 105529, <a href="https://doi.org/10.1016/j.marpol.2023.105529">https://doi.org/10.1016/j.marpol.2023.105529</a>
Stage 3	3.4.06	A report, of the potential impacts of the plan has been elaborated (includes environmental, social and economic impact assessments)	Plan impact report	Approaches, tools and methods	Once the optimal planning option has been selected, a report must be prepared detailing the possible impacts of the plan (including environmental, social, and economic impact assessments).	Indicating the potential impacts of the plan provides transparency to the entire process, as it provides information on the assessments conducted for the different alternative planning options and the rationale behind selecting the chosen option. The report should also include details on the trade-offs evaluated and the decisions agreed with stakeholders to minimise impact.	Ehler, C., and Douvère, F., 2009. Marine Spatial Planning: a step-by-step approach toward ecosystem-based management. Intergovernmental Oceanographic Commission and Man and the Biosphere Programme. IOC Manual and Guides No. 53, 100 pp. <a href="https://www.mspglobal2030.org/resources/key-msp-references/step-by-step-approach/">https://www.mspglobal2030.org/resources/key-msp-references/step-by-step-approach/</a>  UNESCO-IOC/European Commission, 2021. MSPglobal International Guide on Marine/Maritime Spatial Planning. Paris, UNESCO. (IOC Manuals and Guides no 89), 152 pp. <a href="https://unesdoc.unesco.org/ark:/48223/pf0000379196">https://unesdoc.unesco.org/ark:/48223/pf0000379196</a>



Stage	Code	Action/task	Short	Topic	Description	Guidance and recommendations	Additional documents
Stage 3	3.4.07	Priority areas for conservation have been included	Priority areas for conservation	Environmental status, conservation, protection and restoration	Prioritization for conservation, in the context of MSP, means that the plan evaluates and ranks areas to ensure that the most critical environmental features for conservation are addressed first.	Conservation planning algorithms such as MARXAN ( <a href="https://marxansolutions.org">https://marxansolutions.org</a> ), ZONATION ( <a href="https://zonationteam.github.io/Zonation5/">https://zonationteam.github.io/Zonation5/</a> ), prioritizr ( <a href="https://prioritizr.net/">https://prioritizr.net/</a> ), prior3D ( <a href="https://cran.r-project.org/web/packages/prior3D/index.html">https://cran.r-project.org/web/packages/prior3D/index.html</a> ), and priorCON ( <a href="https://cran.r-project.org/web/packages/priorCON/vignettes/introduction.html">https://cran.r-project.org/web/packages/priorCON/vignettes/introduction.html</a> ) can be used to prioritise areas for conservation using spatial data of ecological features, and the consideration of threats, costs, uncertainty and connectivity. These decision-support tools can be used for locating, designing and implementing areas for the promotion of biodiversity and other natural values (see Giakoumi et al. 2025; Papadopoulou et al., 2025).	<p>Giakoumi, S., A. J. Richardson, A. Doxa, S. Moro, M. Andreello, J. O. Hanson, V. Hermoso, T. Mazor, J. McGowan, H. Kujala, E. Law, J. G. Álvarez-Romero, R. A. Magris, E. Gissi, N. Arafeh-Dalmau, A. Metaxas, E. A. Virtanen, N. C. Ban, R. M. Runya, D. C. Dunn, S. Fraschetti, I. Galparsoro, R. J. Smith, F. Bastardie, V. Stelzenmüller, H. P. Possingham, S. Katsanevakis, 2025. Advances in systematic conservation planning to meet global biodiversity goals. Trends in Ecology &amp; Evolution, 40: 395-410  <a href="https://doi.org/10.1016/j.tree.2024.12.002">https://doi.org/10.1016/j.tree.2024.12.002</a></p> <p>Papadopoulou, N., C. J. Smith, A. Franco, M. Elliott, A. Borja, J. H. Andersen, E. Amorim, J. P. Atkins, S. Barnard, T. Berg, S. N. R. Birchenough, D. Burdon, J. Claudet, R. Cormier, I. Galparsoro, A. Judd, S. Katsanevakis, S. Korpinen, L. Lazar, C. Loiseau, C. Lynam, I. Menchaca, C. O'Toole, D. Pedreschi, G. Piet, D. Reid, I. A. Salinas-Akhmadeeva, V. Stelzenmüller, J. E. Tamis, L. Uusitalo, M. C. Uyarra, 2025. 'Horses for courses' – an interrogation of tools for marine ecosystem-based management. Frontiers in Marine Science, Volume 12 - 2025:  <a href="https://doi.org/10.3389/fmars.2025.1426971">https://doi.org/10.3389/fmars.2025.1426971</a></p> <p>Doxa, A., C. Adam, N. Nagkoulis, A. D. Mazaris, S. Katsanevakis, 2025. prior3D: An R package for three-dimensional conservation prioritization. Ecological Modelling, 499: 110919  <a href="https://doi.org/10.1016/j.ecolmodel.2024.110919">https://doi.org/10.1016/j.ecolmodel.2024.110919</a></p>

Stage	Code	Action/task	Short	Topic	Description	Guidance and recommendations	Additional documents
Stage 3	3.4.08	Priority areas for restoration have been included	Priority areas for restoration	Environmental status, conservation, protection and restoration	Prioritisation for restoration, in the context of MSP, means that the plan evaluates and ranks areas to ensure that the most critical environmental features in need of restoration are addressed first.	Conservation planning algorithms such as MARXAN ( <a href="https://marxansolutions.org">https://marxansolutions.org</a> ), ZONATION ( <a href="https://zonationteam.github.io/Zonation5/">https://zonationteam.github.io/Zonation5/</a> ), prioritizR ( <a href="https://prioritizr.net/">https://prioritizr.net/</a> ), prior3D ( <a href="https://cran.r-project.org/web/packages/prior3D/index.html">https://cran.r-project.org/web/packages/prior3D/index.html</a> ), and priorCON ( <a href="https://cran.r-project.org/web/packages/priorCON/vignettes/introduction.html">https://cran.r-project.org/web/packages/priorCON/vignettes/introduction.html</a> ) can be used to prioritize areas for restoration based on the ecological status of habitat or species, the existing threats and cost of restoration. Also, dedicated optimisation tools have been developed for this purpose (Restoptr <a href="https://github.com/dimitri-justeau/restoptr">https://github.com/dimitri-justeau/restoptr</a> ).	<p>Manea, E., T. Agardy, L. Bongiorno, 2023. Link marine restoration to marine spatial planning through ecosystem-based management to maximize ocean regeneration. Aquatic Conservation: Marine and Freshwater Ecosystems, 33: 1387-1399 <a href="https://doi.org/10.1002/aqc.3999">https://doi.org/10.1002/aqc.3999</a></p> <p>Giakoumi, S., A. J. Richardson, A. Doxa, S. Moro, M. Andreello, J. O. Hanson, V. Hermoso, T. Mazor, J. McGowan, H. Kujala, E. Law, J. G. Álvarez-Romero, R. A. Magris, E. Gissi, N. Arafah-Dalmau, A. Metaxas, E. A. Virtanen, N. C. Ban, R. M. Runya, D. C. Dunn, S. Frascetti, I. Galparsoro, R. J. Smith, F. Bastardie, V. Stelzenmüller, H. P. Possingham, S. Katsanevakis, 2025. Advances in systematic conservation planning to meet global biodiversity goals. Trends in Ecology &amp; Evolution, 40: 395-410 <a href="https://doi.org/10.1016/j.tree.2024.12.002">https://doi.org/10.1016/j.tree.2024.12.002</a></p> <p>Fabbrizzi, E., S. Giakoumi, F. De Leo, L. Tamburello, A. Chiarore, A. Colletti, M. Coppola, M. Munari, L. Musco, F. Rindi, L. Rizzo, B. Savinelli, G. Franzitta, D. Grech, E. Cebrian, J. Verdura, S. Bianchelli, L. Mangialajo, I. Nasto, D. Sota, S. Orfanidis, N. K. Papadopoulou, R. Danovaro, S. Frascetti, 2023. The challenge of setting restoration targets for macroalgal forests under climate changes. Journal of Environmental Management, 326: 116834 <a href="https://doi.org/10.1016/j.jenvman.2022.116834">https://doi.org/10.1016/j.jenvman.2022.116834</a></p>
Stage 3	3.5	Public consultation	Public consultation				

## D1.2 A BEST PRACTICE GUIDE FOR THE IMPLEMENTATION OF EB-MSP IN EUROPEAN SEAS

Stage	Code	Action/task	Short	Topic	Description	Guidance and recommendations	Additional documents
Stage 3	3.5.01	The planning proposal has been publicly displayed and invited authorities, stakeholders and the general public to take part in the consultation process	Consultation process	Stakeholder engagement	To promote public consultation on the planning proposal, once drafted, it should be made publicly available and widely disseminated to reach all relevant stakeholders and the general public.	The publication of the planning proposal and supporting documentation on a dedicated government website, alongside direct invitations to relevant stakeholders for written recommendations, could effectively engage high-level authorities and key stakeholders. However, supplementing this with specific public consultation events would broaden participation to include in the consultation process traditionally less active stakeholders, minority groups, and the general public. This dual approach would enhance transparency and facilitate informed contributions from a diverse range of stakeholders, ensuring the planning proposal aligns with local/national/regional interests.	NMPF, 2021 National Marine Planning Framework Public Consultation Report 2021, 68 pp. <a href="https://assets.gov.ie/225048/0859dec2-7322-40c1-ab9f-c82d19d0fd2c.pdf">https://assets.gov.ie/225048/0859dec2-7322-40c1-ab9f-c82d19d0fd2c.pdf</a>
Stage 3	3.5.02	Dissemination mechanisms have been implemented to guarantee that the planning options have reached relevant stakeholders and the wider public	Dissemination mechanisms	Stakeholder engagement	To promote public consultation on the planning proposal, once drafted, it should be made publicly available and widely disseminated to reach all relevant stakeholders and the general public.	Public awareness and active participation in the consultation process can be enhanced through effective dissemination strategies. These may include establishing a dedicated website, publishing announcements regarding the public consultation in national and local media outlets (both television and newspapers), and leveraging targeted advertising and social media campaigns.	Ehler, C., Douvère, F., 2009. Marine Spatial Planning: a step-by-step approach toward ecosystem-based management. IOC Manual and Guides no. 53, 98 pp. <a href="https://www.mspglobal2030.org/wp-content/uploads/2019/03/Marine-spatial-planning-a-step-by-step-approach.pdf">https://www.mspglobal2030.org/wp-content/uploads/2019/03/Marine-spatial-planning-a-step-by-step-approach.pdf</a>  UNESCO-IOC/European Commission, 2021. MSPglobal International Guide on Marine/Maritime Spatial Planning. Paris, UNESCO. (IOC Manuals and Guides no 89), 152 pp. <a href="https://unesdoc.unesco.org/ark:/48223/pf0000379196">https://unesdoc.unesco.org/ark:/48223/pf0000379196</a>
Stage 3	3.5.03	Received statements have been publicly acknowledged and the results of discussions have been published and disseminated to the wider public	Transparency	Legal framework	To promote transparency, a report should be prepared and made publicly available, presenting the opinions and statements received (written statements and those directly collected in events), as well as the results of the discussions.	It should be demonstrated that the opinions provided by stakeholders and the general public have been evaluated and the results of these discussions should be gathered in a publicly available report (see NMPF (2021) for guidance).	NMPF, 2021 National Marine Planning Framework Public Consultation Report 2021, 68 pp. <a href="https://assets.gov.ie/225048/0859dec2-7322-40c1-ab9f-c82d19d0fd2c.pdf">https://assets.gov.ie/225048/0859dec2-7322-40c1-ab9f-c82d19d0fd2c.pdf</a>

## D1.2 A BEST PRACTICE GUIDE FOR THE IMPLEMENTATION OF EB-MSP IN EUROPEAN SEAS

Stage	Code	Action/task	Short	Topic	Description	Guidance and recommendations	Additional documents
Stage 3	3.5.04	Opinions and statements derived from public consultation have been received and integrated into the proposal	Public feedback included	Legal framework	It should be demonstrated that the opinions provided by stakeholders and the general public have been evaluated, discussed and integrated into the proposal if deemed necessary.	The report should document all modifications implemented (or not implemented) in the proposal. It must also include any statements that were excluded based on expert judgment, along with a clear rationale for their omission (see NMPF (2021) as an example).	<p>Burns, P., Polidoro, B., Jardim, E., McElroy, D., McGregor, E. and Wood, N., 2024. Defining Best Practice in Global Stakeholder Consultations: Lessons learned from the Marine Stewardship Council's Fishery Standard Review. Marine Policy, 167, p.106238. <a href="https://doi.org/10.1016/j.marpol.2024.106238">https://doi.org/10.1016/j.marpol.2024.106238</a></p> <p>Reilly, K., O'Hagan, A.M. and Dalton, G., 2016. Moving from consultation to participation: A case study of the involvement of fishermen in decisions relating to marine renewable energy projects on the island of Ireland. Ocean &amp; Coastal Management, 134, pp.30-40. <a href="https://doi.org/10.1016/j.ocecoaman.2016.09.030">https://doi.org/10.1016/j.ocecoaman.2016.09.030</a></p> <p>Flynn, S., E. Tray, T. Woolley, A. Leadbetter, K. Heney, D. O'Driscoll, C. Nic Aonghusa, A. Conway, 2023. Management of spatial data integrity including stakeholder feedback in Maritime Spatial Planning. Marine Policy, 156: 105799 <a href="https://doi.org/10.1016/j.marpol.2023.105799">https://doi.org/10.1016/j.marpol.2023.105799</a></p> <p>NMPF, 2021 National Marine Planning Framework Public Consultation Report 2021, 68 pp. <a href="https://assets.gov.ie/225048/0859dec2-7322-40c1-ab9f-c82d19d0fd2c.pdf">https://assets.gov.ie/225048/0859dec2-7322-40c1-ab9f-c82d19d0fd2c.pdf</a></p>
Stage 3	3.6	Approval	Approval				
Stage 3	3.6.01	A statement of how considerations have been integrated into the plan and the reasons for choosing the plan in light of the other reasonable alternatives has been published	Plan selection justification	Legal framework	Any changes made (or not made) to the proposal following expert discussion should be explained, and the reasons for choosing the plan in light of the other reasonable alternatives should be outlined.	It should be demonstrated that the opinions provided by stakeholders and the general public have been evaluated, discussed and integrated into the proposal if deemed necessary. The report must include all changes made to the original document and explain the rationale for choosing that plan over the other alternatives that were considered (see NMPF (2021) as an example).	<p>NMPF, 2021 National Marine Planning Framework Public Consultation Report 2021, 68 pp. <a href="https://assets.gov.ie/225048/0859dec2-7322-40c1-ab9f-c82d19d0fd2c.pdf">https://assets.gov.ie/225048/0859dec2-7322-40c1-ab9f-c82d19d0fd2c.pdf</a></p>

## D1.2 A BEST PRACTICE GUIDE FOR THE IMPLEMENTATION OF EB-MSP IN EUROPEAN SEAS

Stage	Code	Action/task	Short	Topic	Description	Guidance and recommendations	Additional documents
Stage 3	3.6.02	The adopted plan has been announced and it is accessible	Plan announcement	Legal framework	Once the plan has been adopted, it must be formally announced and made publicly accessible. This typically occurs at the ministerial level, through the issuance of a press release and publication in official gazettes.	Traditional dissemination channels often have limited reach, needing improved outreach strategies. One effective approach is to send direct communications to those who participated in the planning process. Furthermore, offering stakeholders and the general public the option to subscribe to an email information system would allow them to receive regular updates on the plan's progress. It is also advisable to notify neighbouring countries of the plan's adoption, particularly in transboundary areas. A critical aspect of effective dissemination is the accessibility of the plan. Therefore, a shift from static PDF versions, published on official websites, to dynamic online platforms is encouraged. These platforms should provide comprehensive information on the planning process and current regulations, offer access to the official document, and feature interactive web maps (e.g., dynamic GIS layers). This would enable users to view information in a spatially explicit manner, such as marine space use designations, characteristics of planned areas, and environmental data layers.	Schultz-Zehden, A, 2021. 'Implementation and M&E Mechanisms for MSPs in the Baltic Sea Region. <a href="https://vasab.org/wp-content/uploads/2022/01/04-Report-on-Implementation-20.01.2022.pdf">https://vasab.org/wp-content/uploads/2022/01/04-Report-on-Implementation-20.01.2022.pdf</a>
Stage 3	3.6.03	The plan has been written in different languages including bordering country languages and minority languages	Multilingual	Legal framework	To enhance both the accessibility of the plan and the transparency of the process, it is highly advisable for the plan to be published in multiple languages. This should include the languages of neighbouring countries, as well as minority languages.	Official plan documents are often extensive, which can complicate their translation into multiple languages. If full translation is not feasible, a summary document containing only the most relevant information could be translated instead. The use of online platforms, particularly interactive web maps, also facilitates the visualization of information (e.g., marine space use designations, characteristics of planned areas, and environmental data layers) without the constraints of language barriers.	Ehler, C., Douvère, F., 2009. Marine Spatial Planning: a step-by-step approach toward ecosystem-based management. IOC Manual and Guides no. 53, 98 pp. <a href="https://www.mspglobal2030.org/wp-content/uploads/2019/03/Marine-spatial-planning-a-step-by-step-approach.pdf">https://www.mspglobal2030.org/wp-content/uploads/2019/03/Marine-spatial-planning-a-step-by-step-approach.pdf</a>  UNESCO-IOC/European Commission, 2021. MSPglobal International Guide on Marine/Maritime Spatial Planning. Paris, UNESCO. (IOC Manuals and Guides no 89), 152 pp. <a href="https://unesdoc.unesco.org/ark:/48223/pf0000379196">https://unesdoc.unesco.org/ark:/48223/pf0000379196</a>
Stage 4	4	Stage 4. Implementing	Stage 4. Implementing				
Stage 4	4.1	Implementation of the plan	Implementation of the plan				

Stage	Code	Action/task	Short	Topic	Description	Guidance and recommendations	Additional documents
Stage 4	4.1.01	Actions required to implement, ensure compliance with, and enforce the plan are in place	Plan implementation actions	Legal framework	Upon the plan's adoption, the necessary measures for its implementation must be established to ensure compliance and enforcement. In general, and depending on each country's specificities, enforcement through legislation will facilitate adherence to the plan's established measures and its effective implementation.	<p>The implementation of the plan is the responsibility of the competent authorities, typically encompassing various ministries and administrative bodies (may be the same group involved in the plan development process), which sometimes also participate in the preparation of subsidiary plans and/or in the licensing or permitting processes. Sometimes implementation is supervised by an intersectoral and/or interministerial steering group, comprising government agencies and key stakeholders (e.g., energy, climate, fisheries, NGOs). To ensure enforcement, it is necessary to establish, by the government, measures that guarantee adherence to the regulations governing human activities and facilitate the implementation of corrective actions in instances where environmental or human health are jeopardized. This enforcement typically involves (i) inspections to ascertain the compliance status of regulated human activities and detect violations, (ii) negotiations with non-compliant parties to reach agreement about the schedule for reaching compliance, and, when necessary, (iii) the initiation of legal action (e.g., financial penalties, withdrawal of permits/licenses) to enforce compliance.</p>	<p>Schultz-Zehden, A, 2021. 'Implementation and M&amp;E Mechanisms for MSPs in the Baltic Sea Region. <a href="https://vasab.org/wp-content/uploads/2022/01/04-Report-on-Implementation-20.01.2022.pdf">https://vasab.org/wp-content/uploads/2022/01/04-Report-on-Implementation-20.01.2022.pdf</a></p> <p>Ehler, C., Douvère, F., 2009. Marine Spatial Planning: a step-by-step approach toward ecosystem-based management. IOC Manual and Guides no. 53, 98 pp. <a href="https://www.mspglobal2030.org/wp-content/uploads/2019/03/Marine-spatial-planning-a-step-by-step-approach.pdf">https://www.mspglobal2030.org/wp-content/uploads/2019/03/Marine-spatial-planning-a-step-by-step-approach.pdf</a></p>

## D1.2 A BEST PRACTICE GUIDE FOR THE IMPLEMENTATION OF EB-MSP IN EUROPEAN SEAS

Stage	Code	Action/task	Short	Topic	Description	Guidance and recommendations	Additional documents
Stage 4	4.1.02	A steering group has been designated to monitor the implementation process	Steering group	Legal framework	A steering group will be responsible of monitoring the implementation of the process. Regular follow-up meetings are recommended to monitor the implementation of the plan and address any deviations.	Once the steering group is established, it is recommendable to define a work plan to track the execution of the measures outlined in the plan. This can be structured as a checklist detailing the objectives, tasks and corresponding indicators, responsible authority and year of completion. Progress can then be monitored using a scale of progress (e.g., not started, some progress and completed). This structured approach will significantly facilitate the plan's implementation and the continuous monitoring of progress on established actions.	Schultz-Zehden, A. 2021. 'Implementation and M&E Mechanisms for MSPs in the Baltic Sea Region. <a href="https://vasab.org/wp-content/uploads/2022/01/04-Report-on-Implementation-0.01.2022.pdf">https://vasab.org/wp-content/uploads/2022/01/04-Report-on-Implementation-0.01.2022.pdf</a>
Stage 4	4.1.03	There are established synergies with other processes to deliver cost-effective implementation	Cost-effective	Legal framework	It is advisable to establish synergies with other processes to achieve cost-effective implementation and prevent duplication of effort to hinder progress.	Establishing synergies with other processes can facilitate the addressing of common issues, such as the socioeconomic development of coastal communities or environmental protection. These synergies prove beneficial for achieving shared objectives and provisions, optimizing the use of common governance and political systems, avoiding duplicated efforts, sharing of stakeholder groups and communication strategies, developing common and robust databases and knowledge, and promoting shared cross-sectoral engagement mechanisms. Ultimately, such synergistic approaches will streamline the implementation of complementary processes and enhance overall coherence between them.	<p>Menegon, S., Gusatu, L., Sarretta, A., Mulazzani, A., Fadini, A., Abramic, A., Campillos-Llanos, M., Cervera-Núñez, C., Gómez-Ballesteros, M., Borst, K., Kaitaranta, J., Lux, M., Suzanne, J.B., Souf, A., A. Souf, Analysing the state of current practices and synergies in data usage between Maritime Spatial Planning Directive and Marine Strategy Framework Directive, Preliminary survey results, Prod. Tech. Expert Group (TEG) on Data Msp. Support. by CINEA and DG MARE (EC), 2024, <a href="https://doi.org/10.2926/904577">https://doi.org/10.2926/904577</a></p> <p>Zaucha, J., K. Gee, E. Ramieri, L. Neimane, N. Alloncle, N. Blažauskas, H. Calado, C. Cervera-Núñez, V. M. Kuzmanović, M. Stancheva, J. Witkowska, S. E. Schütz, J. R. Zapatero, C. N. Ehler, 2025. Implementing the EU MSP Directive: Current status and lessons learned in 22 EU Member States. Marine Policy, 171: 106425 <a href="https://doi.org/10.1016/j.marpol.2024.106425">https://doi.org/10.1016/j.marpol.2024.106425</a></p> <p>Ramieri, E., M. Bocci, M. Markovic. 2019. Linking Integrated Coastal Zone Management to Maritime Spatial Planning: The Mediterranean Experience, in Maritime Spatial Planning: past, present, future. J. Zaucha, K. Gee Series volume: Pages: 271-294. Springer International Publishing, Cham. <a href="https://doi.org/10.1007/978-3-319-98696-8_12">https://doi.org/10.1007/978-3-319-98696-8_12</a></p> <p>Piet et al. 2021. Guidelines for implementing an Ecosystem-based Approach in Maritime Spatial Planning: Including a</p>

## D1.2 A BEST PRACTICE GUIDE FOR THE IMPLEMENTATION OF EB-MSP IN EUROPEAN SEAS

Stage	Code	Action/task	Short	Topic	Description	Guidance and recommendations	Additional documents
							method for the evaluation, monitoring and review of EBA in MSP. EC-CINEA, 102 pp. <a href="https://op.europa.eu/en/publication-detail/-/publication/a8ee2988-4693-11ec-89db-01aa75ed71a1">https://op.europa.eu/en/publication-detail/-/publication/a8ee2988-4693-11ec-89db-01aa75ed71a1</a>
Stage 4	4.1.04	Stakeholders have been informed about the implementation of the plan	Implementation communicated to stakeholders	Stakeholder engagement	Once the plan has been adopted, it is essential to inform stakeholders about its implementation. Appropriate communication strategies must be established, which may extend through the monitoring and evaluation stages. Stakeholders in neighbouring countries should also be notified, particularly if they were involved during the planning process.	If implementation is managed centrally, by ministries or administrative bodies, such as in the issuance of permits and licenses for marine use, communication may occur through established administrative channels. Conversely, if implementation is carried out by various lower-level actors (e.g., coastal communities, municipalities), a broader communication strategy may be required to inform all stakeholders about the implementation of operational measures. A robust communication plan (e.g., participation in sectoral forums and events, public awareness sessions with coastal planners, meetings with local administrative bodies) may	Schultz-Zehden, A, 2021. Implementation and M&E Mechanisms for MSPs in the Baltic Sea Region. <a href="https://vasab.org/wp-content/uploads/2022/01/04-Report-on-Implementation-20.01.2022.pdf">https://vasab.org/wp-content/uploads/2022/01/04-Report-on-Implementation-20.01.2022.pdf</a>



Stage	Code	Action/task	Short	Topic	Description	Guidance and recommendations	Additional documents
						require substantial resources, in terms of workforce and funding, and thus, this should be considered in advance, during the plan development process.	
Stage 5	5	Stage 5. Following-up	Stage 5. Following-up				
Stage 5	5.1	Monitoring	Monitoring				
Stage 5	5.1.01	The monitoring plan is operational	Operational monitoring	Monitoring and evaluation	The monitoring of the state of the system and the development and implementation of the plan and its outcomes is a continuous process that generates the necessary information for the evaluation of the plan.	<p>Monitoring is a continuous activity involving the systematic collection of data on selected indicators to ascertain the degree of progress a plan makes toward achieving its management objectives. Within the context of marine spatial planning, monitoring serves a dual purpose: assessing the state of the system (e.g., what is the state of conservation in the management area?) and monitoring the process and the performance of adopted management measures (e.g., are these measures producing the expected results?). Monitoring, evaluation, and adaptive management are intrinsically linked. Data can be gathered through various approaches, including document reviews, surveys and interviews, using existing databases, and participatory methods. The monitoring of the plan and its outcomes is a continuous process that generates the necessary information for evaluation, which, in turn, provides the insights required to adapt the plan during its review, thereby fostering adaptive management.</p>	<p>UNESCO-IOC/EC, 2021. MSPglobal International Guide on Marine/Maritime Spatial Planning. Paris, UNESCO. (IOC Manuals and Guides no 89), 152 pp.  <a href="https://unesdoc.unesco.org/ark:/48223/pf0000379196">https://unesdoc.unesco.org/ark:/48223/pf0000379196</a></p> <p>Ehler, C., Douvère, F., 2009. Marine Spatial Planning: a step-by-step approach toward ecosystem-based management. IOC Manual and Guides no. 53, 98 pp.  <a href="https://www.mspglobal2030.org/wp-content/uploads/2019/03/Marine-spatial-planning-a-step-by-step-approach.pdf">https://www.mspglobal2030.org/wp-content/uploads/2019/03/Marine-spatial-planning-a-step-by-step-approach.pdf</a></p> <p>Stelzenmüller, V., R. Cormier, K. Gee, R. Shucksmith, M. Gubbins, K. L. Yates, A. Morf, C. Nic Aonghusa, E. Mikkelsen, J. F. Tweddle, E. Pecceu, A. Kannen, S. A. Clarke, 2021. Evaluation of marine spatial planning requires fit for purpose monitoring strategies. J Environ Manage, 278: 111545  <a href="https://doi.org/10.1016/j.jenvman.2020.111545">https://doi.org/10.1016/j.jenvman.2020.111545</a></p> <p>Vieira da Silva et al. 2024. General Guidelines for Monitoring and Evaluating Maritime Spatial Planning in the Outermost Regions. MSP-OR project, European Climate, Infrastructure and Environment Executive Agency, 171 pp. <a href="https://msp-or.eu/resultados/msp-monitoring-and-evaluation/">https://msp-or.eu/resultados/msp-monitoring-and-evaluation/</a></p>

## D1.2 A BEST PRACTICE GUIDE FOR THE IMPLEMENTATION OF EB-MSP IN EUROPEAN SEAS

Stage	Code	Action/task	Short	Topic	Description	Guidance and recommendations	Additional documents
Stage 5	5.1.02	The monitoring plan is promoted by periodic announcements to relevant authorities and general public	Monitoring promoted	Monitoring and evaluation	The monitoring of the plan is a highly relevant part of the MSP that requires the involvement of a wide variety of stakeholder groups and authorities to guarantee its success. Consequently, the start of the monitoring phase should be promoted through periodic announcements to reach these audiences.	The promotion of the monitoring plan can be achieved through a dedicated government website, which would serve as a central repository for information regarding the monitoring process and provide access to supporting documentation. Other options for promoting the monitoring plan include publishing announcements in national and local media outlets (both television and newspapers) and leveraging targeted advertising and social media campaigns.	<p>UNESCO-IOC/European Commission, 2021. MSPglobal International Guide on Marine/Maritime Spatial Planning. Paris, UNESCO. (IOC Manuals and Guides no 89), 152 pp. <a href="https://unesdoc.unesco.org/ark:/48223/pf0000379196">https://unesdoc.unesco.org/ark:/48223/pf0000379196</a></p> <p>Ehler, C., Douvère, F., 2009. Marine Spatial Planning: a step-by-step approach toward ecosystem-based management. IOC Manual and Guides no. 53, 98 pp. <a href="https://www.mspglobal2030.org/wp-content/uploads/2019/03/Marine-spatial-planning-a-step-by-step-approach.pdf">https://www.mspglobal2030.org/wp-content/uploads/2019/03/Marine-spatial-planning-a-step-by-step-approach.pdf</a></p>
Stage 5	5.1.03	A dissemination mechanism is implemented to engage and guarantee the active involvement of relevant public bodies and stakeholders with monitoring responsibilities	Monitoring responsibilities	Monitoring and evaluation	Stakeholders (e.g., government agencies, NGOs, industry, local communities) alongside relevant authorities and public bodies, play a crucial role in monitoring the plan (i.e., collection, analysis, and interpretation of data), therefore effective dissemination strategies are essential to engage these groups and ensure their active involvement in the monitoring process.	Public awareness and active participation in the monitoring process can be enhanced through effective dissemination and engagement strategies. Considering the active role required from stakeholders and authorities in the monitoring of the plan, dissemination via dedicated events and meetings may be the most effective option to reach all relevant parties, promote equal and transparent participation and foster a sense of shared responsibility, thereby enhancing the effectiveness of the monitoring plan.	<p>Schultz-Zehden, A, 2021. 'Implementation and M&amp;E Mechanisms for MSPs in the Baltic Sea Region. <a href="https://vasab.org/wp-content/uploads/2022/01/04-Report-on-Implementation-20.01.2022.pdf">https://vasab.org/wp-content/uploads/2022/01/04-Report-on-Implementation-20.01.2022.pdf</a></p> <p>UNESCO-IOC/European Commission, 2021. MSPglobal International Guide on Marine/Maritime Spatial Planning. Paris, UNESCO. (IOC Manuals and Guides no 89), 152 pp. <a href="https://unesdoc.unesco.org/ark:/48223/pf0000379196">https://unesdoc.unesco.org/ark:/48223/pf0000379196</a></p>
Stage 5	5.1.04	The monitoring plan is adapted to integrate new data and knowledge	Adaptive monitoring	Monitoring and evaluation	The cornerstone of the monitoring plan is the systematic collection of data on selected indicators to determine the progress made toward achieving management objectives. Therefore, the monitoring plan must be adaptable to integrate new data and knowledge. This updated information will subsequently be used during the evaluation stage to assess both the state of the system and the performance of the plan.	The monitoring plan should be adapted to integrate both quantitative and qualitative data from participating stakeholders, authorities, and national statistical offices. This may include, environmental, social and economic data derived from various sources, including direct observations, document reviews, existing databases, participatory methods, focus groups, and expert judgment.	<p>Vieira da Silva et al. 2024. General Guidelines for Monitoring and Evaluating Maritime Spatial Planning in the Outermost Regions. MSP-OR project, European Climate, Infrastructure and Environment Executive Agency, 171 pp. <a href="https://msp-or.eu/resultados/msp-monitoring-and-evaluation/">https://msp-or.eu/resultados/msp-monitoring-and-evaluation/</a></p> <p>de Vries, J. W., R. C. Spijkerboer, C. Zuidema, 2024. Making knowledge matter: Understanding and improving knowledge-integration in Dutch marine spatial planning policy. Ocean &amp; Coastal Management, 248: 106928 <a href="https://doi.org/10.1016/j.ocecoaman.2023.106928">https://doi.org/10.1016/j.ocecoaman.2023.106928</a></p>

## D1.2 A BEST PRACTICE GUIDE FOR THE IMPLEMENTATION OF EB-MSP IN EUROPEAN SEAS

Stage	Code	Action/task	Short	Topic	Description	Guidance and recommendations	Additional documents
Stage 5	5.1.05	The potential to utilise citizen science as a means of addressing knowledge gaps is promoted by defining engagement mechanisms	Citizen science	Monitoring and evaluation	Some data relevant to MSP, such as the location of corridors for specific species (e.g., megafauna, birds), and the spatial distribution of boat anchorage sites, biodiversity hotspots, or traditional maritime activities, are not always captured with existing monitoring plans and readily available on geoportals. However, this information is frequently held by local and regional stakeholders. Promoting citizen science initiatives could ensure access to these types of data.	Community engagement and joint sense-making in the planning process including the acquisition of diverse information to address knowledge gaps, could be promoted through citizen science initiatives by using participatory GIS and mapmaking, serious gaming, storytelling, online surveys and data localization, arts-based approaches and beach walks.	<p>Matear, L., J. R. Robbins, M. Hale, J. Potts, 2019. Cetacean biodiversity in the Bay of Biscay: Suggestions for environmental protection derived from citizen science data. <i>Marine Policy</i>, 109: 103672 <a href="https://doi.org/10.1016/j.marpol.2019.103672">https://doi.org/10.1016/j.marpol.2019.103672</a></p> <p>Tafon, R., A. Armoskaite, K. Gee, M. Gilek, A. Ikauniece, F. Saunders, 2023. Mainstreaming coastally just and equitable marine spatial planning: Planner and stakeholder experiences and perspectives on participation in Latvia. <i>Ocean &amp; Coastal Management</i>, 242: 106681 <a href="https://doi.org/10.1016/j.ocecoaman.2023.106681">https://doi.org/10.1016/j.ocecoaman.2023.106681</a></p> <p>Papageorgiou, M., G. Pozoukidou, T. Istorlou, T. Kostopoulou, 2024. Inclusive Maritime Spatial Planning: Stakes at the Regional Level. <i>Sustainability</i>, 16: 10148 <a href="https://doi.org/10.3390/su162210148">https://doi.org/10.3390/su162210148</a></p>

Stage	Code	Action/task	Short	Topic	Description	Guidance and recommendations	Additional documents
Stage 5	5.1.06	Stakeholder are engaged and actively participating in the monitoring process	Stakeholders involvement in monitoring	Stakeholder engagement	Stakeholders should be actively involved in the monitoring of the plan. Their experience and knowledge can be integrated into the monitoring process, thereby ensuring a thorough evaluation of the plan's implementation results and that that management decisions are based on a wide range of perspectives.	Stakeholders can be involved in monitoring the plan at different levels. Stakeholders (e.g., government agencies, NGOs, industry, local communities) could contribute to the collection, analysis, and interpretation of data for the plan's monitoring and evaluation. Active stakeholder participation in this process can foster a sense of shared responsibility and enhance the long-term effectiveness of the plan. For examples of effective stakeholder involvement in the monitoring stage, refer to Schultz-Zehden (2021): e.g., (i) Compiling the plan's objectives, corresponding indicators, and targets into a template, allowing stakeholders to identify the most relevant indicators and those, among them, who possess the data to measure them. These indicators could also be made available online to gather feedback from a broader audience; (ii) maintaining regular contact with other planning processes in the area (e.g., terrestrial) enhancing the incorporation of information from other sources; (iii) regularly obtaining up-to-date information from other administrations not directly involved in planning, such as national statistics offices; (iv) establishing a scientific committee to collect environmental data, assess the impacts of marine activities, and evaluate socio-economic parameters; (v) using online or web-based tools to gather data and information from a larger number of stakeholders, thereby encouraging participation from groups typically underrepresented in such processes.	<p>NMPF, 2021 National Marine Planning Framework Public Consultation Report 2021, 68 pp. <a href="https://assets.gov.ie/225048/0859dec2-7322-40c1-ab9f-c82d19d0fd2c.pdf">https://assets.gov.ie/225048/0859dec2-7322-40c1-ab9f-c82d19d0fd2c.pdf</a></p> <p>Schultz-Zehden, A, 2021. Implementation and M&amp;E Mechanisms for MSPs in the Baltic Sea Region. <a href="https://vasab.org/wp-content/uploads/2022/01/04-Report-on-Implementation-20.01.2022.pdf">https://vasab.org/wp-content/uploads/2022/01/04-Report-on-Implementation-20.01.2022.pdf</a></p>
Stage 5	5.2	Evaluation	Evaluation				

Stage	Code	Action/task	Short	Topic	Description	Guidance and recommendations	Additional documents
Stage 5	5.2.01	The plan has been effectively implemented and can be demonstrated	Effective implementation	Monitoring and evaluation	The evaluation of the plan serves to demonstrate that the plan has been implemented correctly and will provide information on successful and unsuccessful elements, thereby enabling the launching of corrective measures.	The evaluation of plans, using information obtained during the monitoring phase, is a crucial part of MSP as it allows the periodic assessment of the state of the system and the efficacy of the planning process against established objectives and baselines, facilitating the formulation of improvements through adaptive management. Given that planning cycles and MSP processes span several years, it is advisable to evaluate the following aspects of the plan at distinct intervals: i.e., (i) the planning process, (ii) the plan and its relevance for the management area, (iii) the implementation of the plan, and (iv) the outcomes of the plan. For examples of criteria and guiding questions for evaluating each of these aspects, refer to UNESCO-IOC/EC (2021) and Vieira da Silva et al. (2024). It is recommended that these assessment processes be organised collaboratively with stakeholders and experts, as their involvement can help reduce uncertainties regarding the outcomes of MSP and its impacts on maritime sectors, the marine environment, and society.	<p>UNESCO-IOC/EC, 2021. MSPglobal International Guide on Marine/Maritime Spatial Planning. Paris, UNESCO. (IOC Manuals and Guides no 89), 152 pp. <a href="https://unesdoc.unesco.org/ark:/48223/pf0000379196">https://unesdoc.unesco.org/ark:/48223/pf0000379196</a></p> <p>Schultz-Zehden, A, 2021. 'Implementation and M&amp;E Mechanisms for MSPs in the Baltic Sea Region. <a href="https://vasab.org/wp-content/uploads/2022/01/04-Report-on-Implementation-20.01.2022.pdf">https://vasab.org/wp-content/uploads/2022/01/04-Report-on-Implementation-20.01.2022.pdf</a></p> <p>van den Burg, S. W. K., M. Skirtun, O. van der Valk, W. R. Cervi, T. Selnes, T. Neumann, J. Steinmann, G. Arora, P. Roebeling, 2023. Monitoring and evaluation of maritime spatial planning – A review of accumulated practices and guidance for future action. Marine Policy, 150: 105529 <a href="https://doi.org/10.1016/j.marpol.2023.105529">https://doi.org/10.1016/j.marpol.2023.105529</a></p> <p>Vieira da Silva et al. 2024. General Guidelines for Monitoring and Evaluating Maritime Spatial Planning in the Outermost Regions. MSP-OR project, European Climate, Infrastructure and Environment Executive Agency, 171 pp. <a href="https://msp-or.eu/resultados/msp-monitoring-and-evaluation/">https://msp-or.eu/resultados/msp-monitoring-and-evaluation/</a></p>
Stage 5	5.2.02	The performance of the plan has been evaluated using indicators and targets	Plan evaluation	Monitoring and evaluation	Evaluating the performance of the plan using indicators and targets provides a robust foundation for improving the planning process. Indicators are instrumental for monitoring and assessing conditions, predicting changes in trends, and can be used as early warning signs of such shifts, as well as for evaluating the overall effectiveness of the plan.	Indicators (i.e., context, input, process, output, and outcome indicators; see UNESCO-IOC/EC (2021) for explanations) are valuable for monitoring the achievement of the objectives of the MSP and assessing the degree of progress. They can also facilitate the evaluation process when engaging stakeholders and experts. For a thorough evaluation of plans, the combined use of both quantitative and qualitative indicators is recommended. For example, one could combine data on the number of stakeholders consulted with their qualitative feedback or integrate quantitative information on job creation within a sector with qualitative insights	<p>UNESCO-IOC/EC, 2021. MSPglobal International Guide on Marine/Maritime Spatial Planning. Paris, UNESCO. (IOC Manuals and Guides no 89), 152 pp. <a href="https://unesdoc.unesco.org/ark:/48223/pf0000379196">https://unesdoc.unesco.org/ark:/48223/pf0000379196</a></p>

## D1.2 A BEST PRACTICE GUIDE FOR THE IMPLEMENTATION OF EB-MSP IN EUROPEAN SEAS

Stage	Code	Action/task	Short	Topic	Description	Guidance and recommendations	Additional documents
						from stakeholders in that sector regarding improvements for future development.	
Stage 5	5.2.03	The appropriate balance between the environmental status, conservation, protection and restoration and human activities has been demonstrated	Sustainability is demonstrated	Monitoring and evaluation	The plan must ensure sustainability, by achieving an appropriate balance among environmental status, conservation, protection, restoration, and human activities. These aspects are assessed using the indicators and targets defined during the defining stage of the plan, which will reveal whether objectives have been fulfilled, and the degree of progress achieved.	The evaluation of the plan and its relevance focuses on determining if the obtained results are realistic and align with the established objectives. This evaluation enables the refinement of subsequent plan drafts, helping ensure objective attainment. The plan's evaluation should be an iterative process throughout its implementation (usually cycles lasting 5-10 years). To effectively assess the plan's efficacy in achieving its ecological, social, economic, and restoration objectives, formulating plausible steps and intermediate outcomes (supported by robust data and scientific knowledge) to the desired effects is recommended, which will serve as checkpoints to evaluate the degree of achievement. Defining these plausible steps with experts and stakeholders enhances their understanding of the plan and its measures, fostering a sense of shared ownership. For examples of plausible steps, intermediate outcomes, and guiding evaluation questions, refer to UNESCO-IOC/EC (2021).	UNESCO-IOC/EC, 2021. MSPglobal International Guide on Marine/Maritime Spatial Planning. Paris, UNESCO. (IOC Manuals and Guides no 89), 152 pp. <a href="https://unesdoc.unesco.org/ark:/48223/pf0000379196">https://unesdoc.unesco.org/ark:/48223/pf0000379196</a>  Chen, F., Y. Jiang, Z. Liu, R. Lin, W. Yang, 2023. Framework system of marine sustainable development assessment based on systematic review. Marine Policy, 154: 105689 <a href="https://doi.org/10.1016/j.marpol.2023.105689">https://doi.org/10.1016/j.marpol.2023.105689</a>
Stage 5	5.2.04	Positive and negative effects of the plan have been accounted for, including unintended effects	Plan effects	Monitoring and evaluation	When evaluating the plan and its relevance, and assessing whether the results align with the established objectives, it is imperative to account for both the positive and negative social, economic, and environmental effects, including any unintended consequences.	Given that MSP covers many sectors and issues, it is beneficial to involve a diverse array of individuals (e.g. administrations, NGOs, industry representatives, communities or academia) with relevant experience and knowledge of the underlying processes of MSP and development at sea that may give rise to side effects. It is advisable to identify both negative impacts and side effects, as well as how the positive and negative outcomes of the plan have been distributed among the different actors, to establish measures that ensure that the plan is aligned with the principles of social justice.	UNESCO-IOC/EC, 2021. MSPglobal International Guide on Marine/Maritime Spatial Planning. Paris, UNESCO. (IOC Manuals and Guides no 89), 152 pp. <a href="https://unesdoc.unesco.org/ark:/48223/pf0000379196">https://unesdoc.unesco.org/ark:/48223/pf0000379196</a>  van den Burg, S. W. K., M. Skirtun, O. van der Valk, W. R. Cervi, T. Selnes, T. Neumann, J. Steinmann, G. Arora, P. Roebeling, 2023. Monitoring and evaluation of maritime spatial planning – A review of accumulated practices and guidance for future action. Marine Policy, 150: 105529 <a href="https://doi.org/10.1016/j.marpol.2023.105529">https://doi.org/10.1016/j.marpol.2023.105529</a>

## D1.2 A BEST PRACTICE GUIDE FOR THE IMPLEMENTATION OF EB-MSP IN EUROPEAN SEAS

Stage	Code	Action/task	Short	Topic	Description	Guidance and recommendations	Additional documents
Stage 5	5.2.05	The appropriateness of the defined indicators (i.e., ecological, economic and social), to assess the achievement of predefined objectives, has been assessed	Appropriateness of indicators	Monitoring and evaluation	The plan undergoes evaluation to ascertain whether the observed effects align with the established objectives, utilising both quantitative and qualitative indicators across ecological, economic, and social dimensions. It is at this stage that the appropriateness of the selected indicators can be determined, and adjustments made if necessary.	It is advisable to hold meetings with authorities, experts, and stakeholders during this phase to assess the relevance of the indicators employed. This collaborative approach allows participants to propose additional indicators they deem appropriate and necessary, drawing upon their experience and knowledge. Given the typical 5-10-year implementation cycles of the plan, it is also recommended that these indicators are used to evaluate the intermediate outcomes of various plan decisions.	UNESCO-IOC/EC, 2021. MSPglobal International Guide on Marine/Maritime Spatial Planning. Paris, UNESCO. (IOC Manuals and Guides no 89), 152 pp. <a href="https://unesdoc.unesco.org/ark:/48223/pf0000379196">https://unesdoc.unesco.org/ark:/48223/pf0000379196</a>  Abramic, A., Norton, D., Sarretta, A., Menegon, S., Katsika, M., Gekas, V., Rybka, K., Fernández-Palacios, Y. 2023. Maritime Spatial Planning Data Framework (MSPdF). How to structure input data for MSP process, monitoring & evaluation. Produced by Technical Expert Group (TEG) on Data for MSP. Supported by CINEA and DG MARE (EC). 45p. <a href="https://doi.org/10.2926/440667">https://doi.org/10.2926/440667</a>
Stage 5	5.2.06	The implementation process has produced sufficient information to identify gaps of information and sources of uncertainty	Identification of uncertainties	Monitoring and evaluation	The evaluation process should address the different phases of the planning process to identify gaps and sources of uncertainty. This approach allows for the refinement and improvement of successive drafts, thereby increasing the likelihood of the plan achieving its objectives in a cost-effective manner.	The monitoring and evaluation of the plan will yield new information crucial for identifying gaps and sources of uncertainty, thereby facilitating the plan's refinement. For instance, evaluating the plan's development and stakeholder engagement will contribute to more cost-effective and inclusive processes and enhance the knowledge base for subsequent planning periods (e.g., do the boundaries or timeframe need to be adjusted? Did stakeholder participation respect the principles of equity and inclusivity?). Evaluating the plan and its relevance will determine if the outcomes are realistic and aligned with the established goals (e.g., are the existing and future conditions defined in the plan adequate? Are the objectives clear enough to guide the plan? Are the indicators selected appropriate for evaluating progress in achieving the objectives?). Regarding the implementation, periodic evaluation will assess whether all appropriate steps are being taken to achieve the outcomes (e.g., what is the stakeholders' perception of the plan?), but also evaluating external factors not explicitly part of the plan, such as sectoral changes (e.g., the rise of a sector due to political or economic changes) or environmental changes (e.g., climate change), but that need to be considered to establish corrective	UNESCO-IOC/EC, 2021. MSPglobal International Guide on Marine/Maritime Spatial Planning. Paris, UNESCO. (IOC Manuals and Guides no 89), 152 pp. <a href="https://unesdoc.unesco.org/ark:/48223/pf0000379196">https://unesdoc.unesco.org/ark:/48223/pf0000379196</a>  Piet et al. 2021. Guidelines for implementing an Ecosystem-based Approach in Maritime Spatial Planning: Including a method for the evaluation, monitoring and review of EBA in MSP. EC-CINEA, 102 pp. <a href="https://op.europa.eu/en/publication-detail/-/publication/a8ee2988-4693-11ec-89db-01aa75ed71a1">https://op.europa.eu/en/publication-detail/-/publication/a8ee2988-4693-11ec-89db-01aa75ed71a1</a>

Stage	Code	Action/task	Short	Topic	Description	Guidance and recommendations	Additional documents
						<p>measures (e.g., is the plan still relevant after these years?, are we on the right track to fulfil the objectives?). Finally, evaluating the outcomes of the plan will determine if observed effects match expectations or if additional changes to the plan are necessary (e.g., indicate spatial zones or requirements that are obsolete, and update the plan based on lessons learned). Uncertainty must be assessed in all cases and acknowledged in decision-making.</p> <p>In UNESCO-IOC/EC (2021), the main criteria for evaluating each of these aspects and questions for guiding your evaluation process can be consulted. In Piet. et al. (2021) a list of questions for evaluating the coherence, adaptation and results of the plan can be found, as well as questions for organizing the MSP process, incorporating relevant human activities and socio-economic considerations and capturing environmental issues.</p>	



Stage	Code	Action/task	Short	Topic	Description	Guidance and recommendations	Additional documents
Stage 5	5.2.07	The process is adaptive and allows for the uptake of new information and knowledge to launch management recommendations	Adaptive process	Monitoring and evaluation	A dynamic and flexible MSP that accounts for uncertainty and can adapt to unforeseen changes relies on adaptive management practices. These practices facilitate the integration of new data and knowledge acquired through effective monitoring and evaluation, enabling the formulation of management recommendations to improve the subsequent planning cycle.	An effective evaluation process relies on distinct mechanisms (e.g., decision-making processes and fora to integrate local and/or scientific knowledge) alongside environmental, social, economic and governance indicators for detecting changes induced by the plan, as well as natural fluctuations, thereby enabling the determination of the success or failure of established management measures and fostering adaptive management. MSP is inherently a continuous process and therefore must have an adaptive approach to deal with uncertainties and incorporate different changes throughout its lifetime. Over the years that the plan remains in effect, environmental, social, political, technological, and governance shifts will occur, requiring the plan to be updated to prevent obsolescence and ensure its continued responsiveness to the management area. Therefore, planning must be sufficiently flexible to accommodate these changes and to adapt the plan accordingly.	<p>Frazão Santos, C., T. Agardy, L. B. Crowder, J. C. Day, M. L. Pinsky, A. Himes-Cornell, J. M. Reimer, S. García-Morales, N. J. Bennett, A. T. Lombard, H. Calado, M. Scherer, W. Flannery, L. M. Wedding, E. Gissi, 2024. Key components of sustainable climate-smart ocean planning. <i>npj Ocean Sustainability</i>, 3: 10 <a href="https://doi.org/10.1038/s44183-024-00045-x">https://doi.org/10.1038/s44183-024-00045-x</a></p> <p>UNESCO-IOC/EC, 2021. MSPglobal International Guide on Marine/Maritime Spatial Planning. Paris, UNESCO. (IOC Manuals and Guides no 89), 152 pp. <a href="https://unesdoc.unesco.org/ark:/48223/pf0000379196">https://unesdoc.unesco.org/ark:/48223/pf0000379196</a></p> <p>Vieira da Silva et al. 2024. General Guidelines for Monitoring and Evaluating Maritime Spatial Planning in the Outermost Regions. MSP-OR project, European Climate, Infrastructure and Environment Executive Agency, 171 pp. <a href="https://msp-or.eu/resultados/msp-monitoring-and-evaluation/">https://msp-or.eu/resultados/msp-monitoring-and-evaluation/</a></p> <p>de Vries, J. W., R. C. Spijkerboer, C. Zuidema, 2024. Making knowledge matter: Understanding and improving knowledge-integration in Dutch marine spatial planning policy. <i>Ocean &amp; Coastal Management</i>, 248: 106928 <a href="https://doi.org/10.1016/j.ocecoaman.2023.106928">https://doi.org/10.1016/j.ocecoaman.2023.106928</a></p>

## D1.2 A BEST PRACTICE GUIDE FOR THE IMPLEMENTATION OF EB-MSP IN EUROPEAN SEAS

Stage	Code	Action/task	Short	Topic	Description	Guidance and recommendations	Additional documents
Stage 5	5.2.08	The evaluation reports state if previously identified knowledge gaps have been effectively addressed	Evaluation report	Monitoring and evaluation	Evaluation reports should present performance data in comparison to earlier data or baselines, indicate identified knowledge gaps, detail the results of the evaluation process, and outline proposed actions to improve the plan.	The primary purpose of periodic reports is to inform all interested parties about the results and conclusions derived from the collection, analysis, and interpretation of monitoring and evaluation data. The monitoring and evaluation of the plan should address distinct phases of the planning process (i.e., the planning process, the plan's relevance, the implementation, and the outcomes), and therefore evaluation results will be communicated through reports at various stages. These periodic reports, which will be shared with stakeholders and the general public, must detail both the positive effects of management measures and any negative or unintended impacts, alongside uncertainties and information gaps. Such reports can serve as early warning signals of deficiencies in the marine spatial plan's performance and can be instrumental in initiating corrective measures for the plan's improvement and refinement through adaptive management (review phase).	<p>UNESCO-IOC/EC, 2021. MSPglobal International Guide on Marine/Maritime Spatial Planning. Paris, UNESCO. (IOC Manuals and Guides no 89), 152 pp. <a href="https://unesdoc.unesco.org/ark:/48223/pf0000379196">https://unesdoc.unesco.org/ark:/48223/pf0000379196</a></p> <p>Vieira da Silva et al. 2024. General Guidelines for Monitoring and Evaluating Maritime Spatial Planning in the Outermost Regions. MSP-OR project, European Climate, Infrastructure and Environment Executive Agency, 171 pp. <a href="https://msp-or.eu/resultados/msp-monitoring-and-evaluation/">https://msp-or.eu/resultados/msp-monitoring-and-evaluation/</a></p>
Stage 5	5.2.09	Then plan demonstrates a significant positive impact on the overarching contribution to human well-being	Positive impact	Monitoring and evaluation	The plan should demonstrate a significant positive impact on human well-being by ensuring the sustainable development of the management area, thereby enhancing livelihoods, promoting equitable access, and supporting community resilience.	The equitable use of marine resources and the maintenance of healthy and sustainable marine activities are essential for fostering global well-being. During the monitoring and evaluation stage, it should be demonstrated that positive progress has been made towards fulfilling the established social, ecological, and economic objectives. Furthermore, it must be evident that equitable governance processes and policies are in place, and that all types of stakeholders have been empowered in decision-making processes and in the co-development of management strategies for the area (i.e., promotion of social justice).	<p>Chen, M., Y. Wang, Z. Xu, 2024. A framework for assessing the blue equity of social-ocean systems in marine governance transformation. Frontiers in Marine Science, Volume 11 - 2024: <a href="https://doi.org/10.3389/fmars.2024.1403194">https://doi.org/10.3389/fmars.2024.1403194</a></p> <p>van den Burg, S. W. K., M. Skirtun, O. van der Valk, W. R. Cervi, T. Selnes, T. Neumann, J. Steinmann, G. Arora, P. Roebeling, 2023. Monitoring and evaluation of maritime spatial planning – A review of accumulated practices and guidance for future action. Marine Policy, 150: 105529 <a href="https://doi.org/10.1016/j.marpol.2023.105529">https://doi.org/10.1016/j.marpol.2023.105529</a></p> <p>UNESCO-IOC/EC, 2021. MSPglobal International Guide on Marine/Maritime Spatial Planning. Paris, UNESCO. (IOC Manuals and Guides no 89), 152 pp. <a href="https://unesdoc.unesco.org/ark:/48223/pf0000379196">https://unesdoc.unesco.org/ark:/48223/pf0000379196</a></p>

Stage	Code	Action/task	Short	Topic	Description	Guidance and recommendations	Additional documents
Stage 5	5.2.10	Stakeholders have been informed about the results of the evaluation and their comments have been considered for adaptive management	Stakeholders informed on evaluation	Stakeholder engagement	Stakeholders should also participate in the plan's evaluation phase, evaluating its overall performance in achieving the plan's objectives and targets and the suitability of the measures implemented. The opinions expressed by stakeholders will be considered for the launching of adaptive management measures. To ensure a fair process, as in other stages, it is necessary to secure the participation of minority groups, including NGOs, municipalities, relevant local businesses, citizens, etc.	Stakeholders can participate in the evaluation of the plan at various levels. For examples of effective stakeholder involvement in the evaluation stage, refer to Schultz-Zehden (2021): (i) systematic data collection on selected indicators can be carried out and presented to stakeholders at events/conferences, or via web-based tools (e.g., publicly available monitoring system), to inform them about the progress toward objectives and gather their opinions about the achievement of objectives; (iii) enable stakeholders to propose new indicators, if they consider them necessary, and then evaluate their potential inclusion in the plan; (iii) conduct regular surveys (every 1-2 years) to gather feedback from stakeholders previously involved in the MSP; (iv) organize participatory events, similar to those held during the plan's development, to discuss specific issues relevant to the evaluation; (v) form a scientific committee to evaluate previously collected environmental data, assess the impacts of marine activities, and evaluate socio-economic parameters.	Schultz-Zehden, A, 2021. Implementation and M&E Mechanisms for MSPs in the Baltic Sea Region. <a href="https://vasab.org/wp-content/uploads/2022/01/04-Report-on-Implementation-20.01.2022.pdf">https://vasab.org/wp-content/uploads/2022/01/04-Report-on-Implementation-20.01.2022.pdf</a>

## 6 CONCLUSIONS

---

The EB-MSP assessment framework and tool, developed through the MarinePlan project, has proven valuable for evaluating the incorporation of ecosystem-based approach principles into marine spatial planning. This has been demonstrated by its application across 12 planning units (PUs), encompassing 11 European countries and the Western Mediterranean.

The assessment results underline the diversity and complexity of MSP across the EU. However, the developed EB-MSP framework developed offers a structured and systematic approach, ensuring that each phase contributes meaningfully to the overall success and sustainability of MSP initiatives. According to users' responses, it is perceived as a useful tool for evaluating progress, identifying gaps, and enhancing the effectiveness of marine ecosystem management. These assessments not only provided clarity on the current state but also paved the way for future revisions and improvements, making them an invaluable part of the planning process.

The results of this assessment across different sites highlighted several important challenges that Europe faces in the implementation of EB-MSP. Firstly, the assessment underscores the need for continuous monitoring and adaptive management to address gaps and improve the existing framework. The incorporation of feedback and new insights will play a pivotal role in refining strategies and achieving a higher degree of implementation and relevance in MSP.

The wide variety of data sources and the extent of available knowledge underscore the challenges faced in the planning process. Moving forward, it is crucial to enhance the quality and consistency of the data employed, and to bridge identified knowledge gaps. By doing so, the effectiveness of EB-MSP can be significantly improved, leading to more informed and sustainable management decisions. Additionally, the assessment results emphasise the necessity for continuous refinement and adaptation of the planning process to ensure that all actions are appropriately addressed.

This best practice guide for the implementation of ecosystem-based maritime spatial planning (EB-MSP) in European Seas has been developed to assist MSP practitioners and national authorities in the operationalisation of EB-MSP. By focusing on areas requiring further attention and enhancing the relevance and implementation degree of critical actions, stakeholders can strive towards achieving a more comprehensive and effective marine management system. This approach not only promotes the sustainable use of marine resources but also ensures the protection of marine ecosystems for future generations. One of the strengths of this guidance is the explicit consideration of marine restoration, which supports the implementation of nature restoration obligations.

## 7 BIBLIOGRAPHY

---

- Directive 2014/89/EU, Directive 2014/89/EU of the European Parliament and of the Council of 23 July 2014 establishing a framework for maritime spatial planning. Official Journal of the European Union L 257/135.
- European Commission, 2022. REPORT FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT AND THE COUNCIL outlining the progress made in implementing Directive 2014/89/EU establishing a framework for maritime spatial planning. Brussels, 3.5.2022. COM(2022) 185 final.
- Galparsoro, I., N. Montero, G. Mandiola, I. Menchaca, Á. Borja, W. Flannery, S. Katsanevakis, S. Fraschetti, E. Fabbri, M. Elliott, M. Bas, S. Barnard, G. Piet, S. Giakoumi, M. Kruse, B. McAteer, R. M. Runya, O. Lukyanova, T. Morato, A. Van Gerven, S. Degraer, S. Neuenfeldt, V. Stelzenmüller, 2025. Assessment tool addresses implementation challenges of ecosystem-based management principles in marine spatial planning processes. *Communications Earth & Environment*, 6: 55 <https://doi.org/10.1038/s43247-024-01975-7>
- UNEP/CBD/COP/4/Inf.9, 1998. Conference of the Parties to the Convention on Biological Diversity. Report of the Workshop on the Ecosystem Approach.