WP 1	Milestone No. 12.1

MARBEFES Project

Title: MARBEFES WP1: Stakeholder involvement
Milestone 12.1: Results of the Third Stakeholder Consultations in Dublin, Ireland

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1. Introduction

This report, prepared under Milestone 12.1 of the MARBEFES project, presents the outcomes of the third round of stakeholder consultations conducted in Dublin, Ireland as part of Work Package 1 (WP1). These consultations are a core element of WP1, which is dedicated to ensuring inclusive and effective stakeholder engagement across the project's Broad Belt Transact (BBT) case studies.

In the first round of stakeholder engagement, WP1 focused on identifying the "priority components" of the coastal and marine environments within each BBT, as perceived by a diverse range of local stakeholders. The insights gained during this initial consultation phase have provided valuable input to several other project WPs. In the previous milestones, this process has been reported for the visits to Svalbard and Porsanger in the "Arctic region"; the Bay of Gdańsk, the Curonian lagoon and the Finnish archipelago in the "Baltic region"; Dublin & Liverpool, Belgium (Doggerbank) and Santander in the "Atlantic region"; and Mallorca, Sardinia and Crete in the "Mediterranean region".

The second phase marked a continuation of that participatory approach, with follow-up consultations being held in each of the BBTs. The key objectives of this round were to review and validate the outcomes of the first consultations, and to gather input from the stakeholders on the conceptual scenarios, tools, and transition pathways under development with other work packages, with the aim to co-design these further. The findings of these engagements have been documented in Milestones 6 to 10.2.

The insights gained from the second round of consultations provide a robust foundation for the third and final phase of the project, in which the further refinement of the MARBEFES tools is the focal point, to be carried out in collaboration with project researchers across the WPs. In this co-design process, the focus will shift from gathering inputs to testing and reviewing the near-final prototypes of the tools developed within the project.

The appendices include a full list of participating stakeholders, a detailed program outline, the flyers distributed in advance of the workshops, the GDPR and IPR protocol (including informed consent document used in MARBEFES), all PowerPoint slides presented, and the complete results from the Mentimeter sessions conducted during the workshops.

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2. Materials and Methods

2.1 Preparation

Leading up to the third series of consultations, WP1 conducted extensive preparatory work to ensure the workshops would be well-structured and impactful. In this chapter a chronological overview of this preparatory phase and beyond is given.

June – August 2025

- Contact Persons and stakeholders in all BBTs were informed about the upcoming third round of consultations and asked about their availability.
- Initial discussions addressed preliminary ideas regarding timing, stakeholder selection, methods, and formats.
- WP- and Task leads were requested to provide the most up-to-date input on their work (i.e. an 'almost finalized' version or prototype of their tool, models, or frameworks, including a stakeholder-friendly manual), to describe the type of input or feedback required from stakeholders, and to indicate their preferred format of engagement.

September 2025

- Logistic arrangements, including location, technical requirements, catering, and other practical matters, were made through online correspondence with the local Contact Persons.
- In parallel, discussions with WP- and Task leads focused on refining their contributions to ensure that tools, models, and frameworks would be effectively presentable and testable by stakeholders (i.e. 'stakeholder-proof'). The interactive parts of the sessions were further discussed and streamlined, including the design of Mentimeter sessions and the content of surveys.

October and November 2025

- During the project's General Assembly (GA) in Sevilla that took place from 7 to 9 October 2025, discussions with WP- and Task leads were held to finalize the content and format of the interactive sessions for the stakeholder consultations. In the weeks following the GA, all input was compiled and integrated into one coherent and logical story-line that would make sense to the stakeholders and that would remain engaging them throughout the upcoming half-day workshops.
- An additional preparatory meeting was hosted by Klaipėda University in Klaipėda, Lithuania on 11 and 12 November 2025. The aim of this meeting was to review feedback from the GA and earlier stakeholder consultations, and to define priorities for further tool development as well as an action plan for the upcoming period.
- Practical details, such as timing and location, were further refined in coordination with the local Contact Persons.
- The first consultation workshop for the third round was held in the outscaling (WP6) research location Martinique on the 20th of November 2025.

December 2025 onward

- From December 2025 onward, workshops have been conducted across the various territories within the regular BBTs. In Norway, workshops were held in Svalbard (9 December 2025) and Porsangerfjord (11 December 2025).
- After the workshop in Dublin (this report) the upcoming workshops are scheduled in Crete, Sardinia, Curonian Lagoon, Bay of Gdańsk, Finnish archipelago, Belgian Dogger Bank, and the Bay of Biscay.

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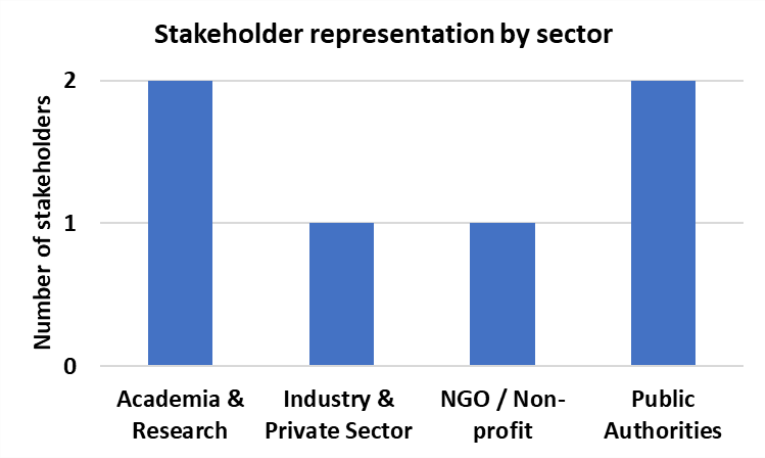
2.2 Content and Format of Consultations

As in the second round of consultations, this workshop reported in this Milestone was conducted in Dublin, Ireland. Stakeholder invitations were managed by the local Contact Persons through the distribution of flyers (Appendix 3). This process resulted in the participation of 6 stakeholders (Appendix 1).

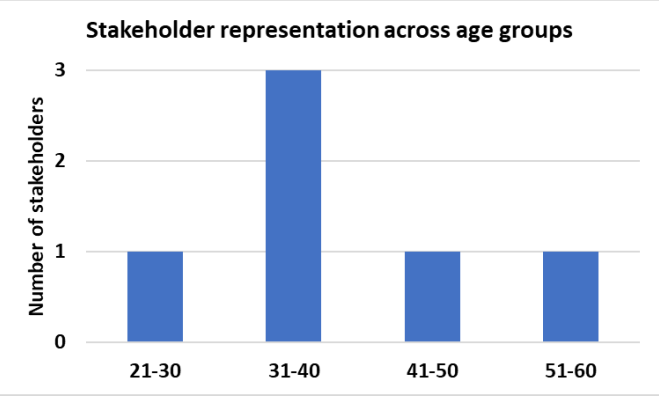
The composition of the stakeholders shows a varied image, with differences in professional affiliation, age, and gender, that may influence the range of perspectives in the consultation outcomes.

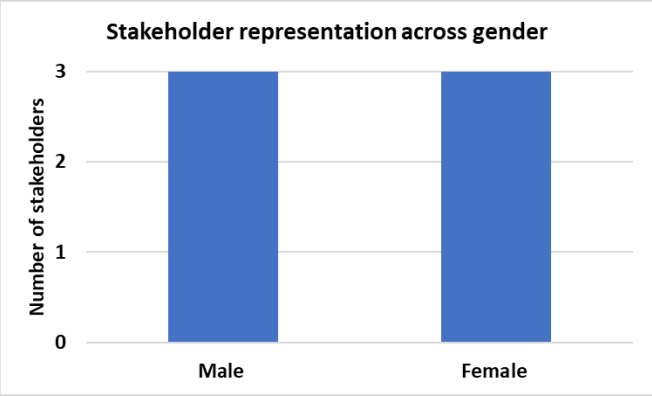
All of the stakeholders were participating for the first time in this consultation round. Since the focus of this workshop was on testing the tools' usefulness and usability for different stakeholder groups, and not any result nor the tools themselves had been shown before to any stakeholder, the high proportion of new participants does not affect the interpretation of the results. On the contrary, it might be considered that new participants also bring fresh perspectives and are not influenced by insights from previous consultations.



Stakeholders represented a range of sectors (Fig. 1). Academia & Research and Public Authorities were most represented (both n=2), followed by Industry & Private sector (n=1) and NGO/Non-profit (n=1).

Figure 1. Professional sectors of the stakeholders present at the workshop.





Figures 2 (left) and 3 (right). Age and gender distribution of participating stakeholders.

Participating stakeholders were distributed across several age groups (Fig. 2). The largest representation was in the 31-40 age category (n = 3). Furthermore, participating stakeholders were equally distributed across gender (Fig. 3), with an equal number (n= 3 each) of male and female participants.

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All participating stakeholders provided informed consent through signed consent forms (Appendix 4). In addition, HuFoSS, acting as workshop chair, verbally informed participants that all workshop outputs would be anonymized. During the interactive sessions, in which stakeholder feedback and input were collected, participants' professional categories, age and gender were recorded. The provision of personal data was entirely voluntary, and participants were free to skip these questions during the Mentimeter sessions. Individual responses in the Mentimeter sessions, as well as the identities of participants and their affiliated organizations, remain non-identifiable. These procedures are fully compliant with the projects' GDPR and IPR requirements, as outlined in the Informed Consent documentation.

The workshop had a duration of approximately half a day, commencing at 14:00 and concluding around 17:30. The program (Appendix 2) began with a general welcome, followed by an introduction to the MARBEFES project and the specific objectives of the workshop (Appendix 5.1). Participants were informed about the potential benefits of their involvement in the consultation process.

The workshop focused on three tools: the Toolbox website (Appendix 5.2), the Bow Tie (Appendix 5.3), the Simple Social-Ecological System and Decision Support System (sSES-DSS) tool (Appendix 5.4), and the Governance tool (Appendix 5.5). Each tool was briefly introduced, including an overview of its objectives, functionality, target users, and added value.

Following the introduction of the tools, participants were provided with access links to start exploring the tools. Simultaneously, the presenter opened each tool and demonstrated the most important buttons and features, guiding participants while allowing them to follow along in real time. Independent exploration and testing by each individual stakeholder was thereafter encouraged. In earlier workshops, it became evident that a fully guided interactive demonstration – particularly the sSES-DSS tool – required a considerable amount of time. Therefore, a less intensive guided approach was adopted to improve efficiency. Workshop leaders circulated throughout the session to provide individual support as needed.

Feedback was subsequently collected using Mentimeter (Appendix 6), complemented by verbal feedback that was documented by the workshop facilitators during the testing activities.

The Mentimeter questions comprised open-ended, multiple choice or rating-scale formats. For the open-ended questions, participants were able to provide free-text responses. Multiple-choice questions required participants to select one or more options from a pre-defined list, while rating-scale questions required participants to indicate their level of agreement or intensity of opinion on a scale from 1 to 5.

To further inform stakeholders about some of the tools under development in the sister project Marine SABRES, an overview of the sSES-DSS tool and its content was also included in the program. The links between the sister projects MARBEFES and Marine SABRES are quite tight, since several tools in both projects have been calibrated and finetuned on basis of the stakeholder input from the earlier consultations. It therefore makes sense to inform the stakeholders from both projects on the mutual developments and upcoming products.

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3. Results

This section presents selected initial insights derived from the interactive sessions—primarily conducted via Mentimeter—during the third round of stakeholder consultations held in Dublin, Ireland.

Each Mentimeter session began with the same introductory questions: *"Which professional sector do you represent?"*; "*What is your age?*"; and "*What is your gender?*". As the responses to these questions have already been included in section 2.2, they are not repeated in this section. The figures included here relate exclusively to the multiple-choice and rating-scale questions related to the tools. While the open-ended questions included in Appendix 6 are not repeated here specifically, the answers are discussed narratively, as they are often particularly informative for interpreting the quantitative results presented in the figures.

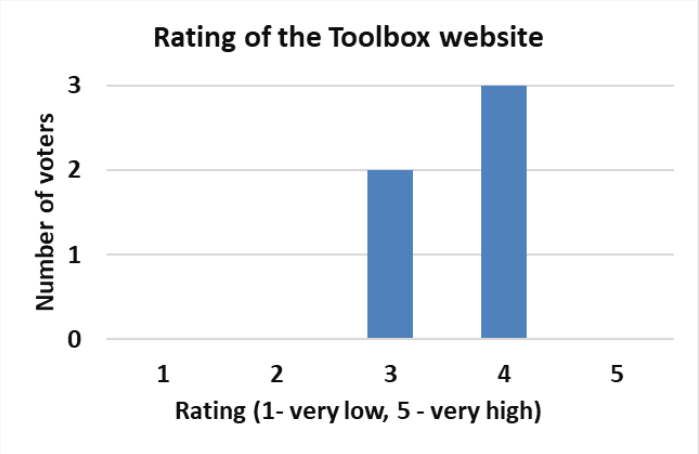
It is important to note that the stakeholder workshops conducted as part of this milestone involved a relatively small number of participants. Consequently, the findings presented in this report should not be interpreted as representative conclusions or generalizable insights applicable to the broader stakeholder population. Rather, they provide a reflection of the ideas, perspectives, and viewpoints of the specific group of stakeholders who were present at the workshops. While these insights offer valuable quantitative input into discussions on marine governance and management priorities, they should be viewed as indicative rather than definitive. Further engagement with a broader range of stakeholders would be required to validate and expand upon these perspectives for the local scale, whereas at larger scale, in combination with the results of the other BBTs, and of similar consultations at locations of the sister-project Marine SABRES, even stronger funded conclusions may be drawn.

The presentations used to inform stakeholders, and frame the interactive testing activities, are included in Appendix 5. A complete account of the raw results from the Mentimeter sessions is provided in Appendix 6.

3.1. The MARBEFES Toolbox website

The first interactive session focused on the MARBEFES Toolbox website for stakeholders (Appendices 5.2 and 6.1). The objective of this session was to introduce the website and its benefits, and allow participants to develop an understanding of the toolbox through individual exploration. Following a brief on-screen demonstration and individual hands-on testing, feedback was collected by a group discussion and a Mentimeter survey.

Q: How do you rate this tool?



All participants gave the website a score between 3 and 4, reflecting a positive evaluation (Fig. 4). Three participants assigned a high rating (4), and two gave a neutral score (3). No low ratings (1-2) were recorded, indicating overall favourable perceptions of the Toolbox.

Figure 4. Rating of the Toolbox website by stakeholders.

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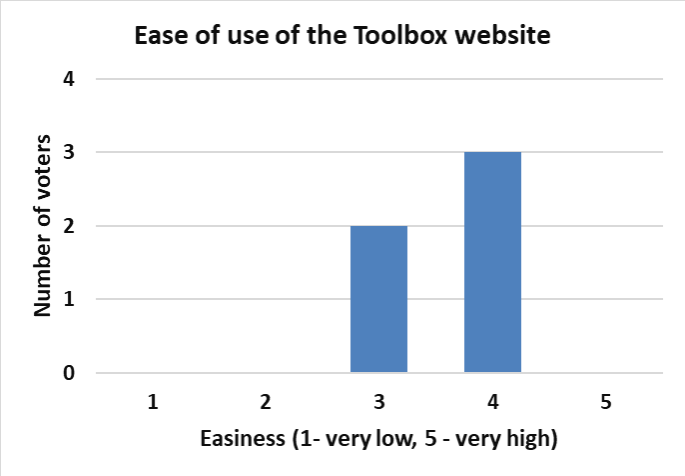
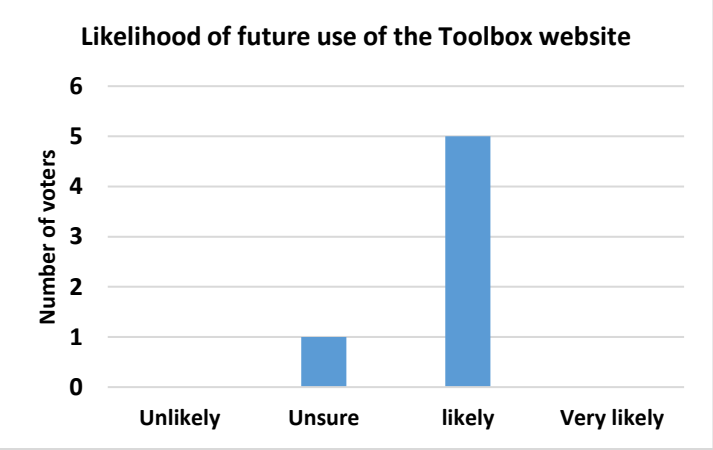


Q: What is the ease of use of the Toolbox website?

Most participants rated the ease of use of the Toolbox positively (4)(Fig. 5). Less participants rated it neutral (3). This indicates that, overall, the Toolbox is perceived as reasonably user-friendly, though not all participants considered it highly intuitive. Several stakeholders noted that the tools could benefit from further explanatory information on the website. This feedback is valuable and can be communicated to the developers to inform further refinement of the Toolbox and enhance its overall usability.

Figure 5. The ease in which the stakeholders found the Toolbox website to use.

Q: How likely are you to use the Toolbox website in future projects?



Stakeholders indicated to likely use the Toolbox website in future projects (Fig. 6). Only one respondent was unsure about future use.

Figure 6. The likelihood of stakeholders using the Toolbox website in future projects.

Stakeholders indicated that the website could serve as a useful entry point for identifying relevant tools and supporting research and decision-making processes. Several respondents highlighted its value for accessing data and information on managed areas, supporting Environmental Impact Assessments, and strengthening marine habitat data. Others noted the potential to improve “comparability in approach taken across organisations” and to “identify tools to help with research.” The platform was also seen as useful for community-related activities, such as prioritising projects with local groups or supporting beach award assessments. Additionally, stakeholders appreciated that the resource is freely accessible.

On the other hand, some stakeholders indicated that they might not use the website if they already rely on other established tools or platforms. Concerns were also raised about potential overlap with outputs from other EU-funded projects. Respondents noted that the usefulness of the website would depend on the depth, quality, and reliability of the data provided, emphasising that information should be well-supported

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by “citations/sources” and regularly updated. Others mentioned that they would need to further explore whether the platform is sufficiently relevant to their work or applicable for community-level use.

Stakeholders suggested several improvements to enhance the platform’s usability and accessibility. Key recommendations included improving the structure and navigation of the tool catalogue, for example by providing clearer categories, short descriptions or “executive summaries” for each tool, and better explanations of terminology to make the platform more accessible to non-scientists and practitioners. Participants also suggested adding practical support materials such as explanatory videos, test cases, and clearer information on the limitations of each tool. Additional usability suggestions included improving the visibility of tools further down the page, adding features such as a “most recently accessed” tab, enabling offline access in areas with limited internet connectivity, and making minor interface adjustments such as increasing the default font size.

Furthermore, stakeholders emphasised the importance of ensuring that the platform remains accessible to non-experts. Some also suggested conducting a “trial run” using a real-world environmental management decision to better demonstrate the platform’s practical value.

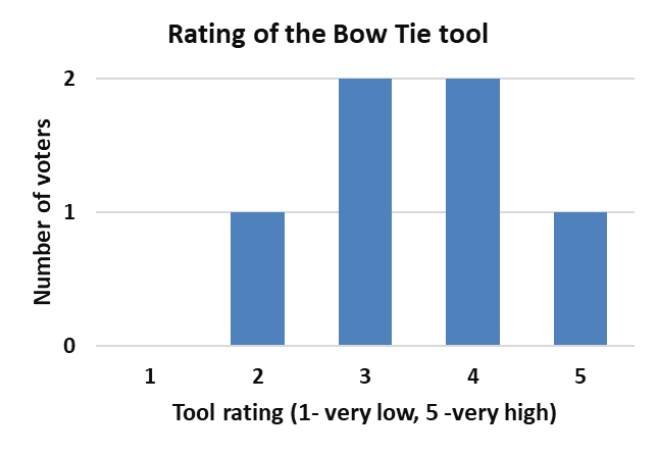
Q: For what questions in your daily work would you use this website to answer?

Stakeholders indicated that the website could function as a “first stop” for identifying suitable tools and information relevant to their projects. Potential applications included ecosystem service valuations, spatial environmental assessments, identifying ecological sensitivities in proposed coastal developments, and detecting data gaps. Respondents also noted possible uses for community engagement activities, citizen information sharing, and environmental initiatives such as Blue Flag or Green Coast assessments. Overall, the platform was seen as potentially useful for understanding “important ecological elements present within a study area” and identifying key threats and pressures.

3.2. The Bow Tie tool

The second practical session of the workshop (Appendices 5.3 and 6.2) was dedicated to shortly explain to the stakeholders what a Bow Tie is, the benefits of this tool, to explain how the tool operates, and mainly to let the stakeholders interact with the tool in practice as a test. After a short demonstration and testing phase, feedback on this subject was gathered through a group discussion and a Mentimeter survey.

Q. How do you rate this tool?



Stakeholders rated the BowTie tool moderately overall, with scores ranging from 2 to 5 (average ≈ 3.5) (Fig. 7). This suggests that while the tool shows clear potential, some participants experienced difficulties when using it during the workshop.

Figure 7. Rating of the Bow Tie tool by stakeholders.

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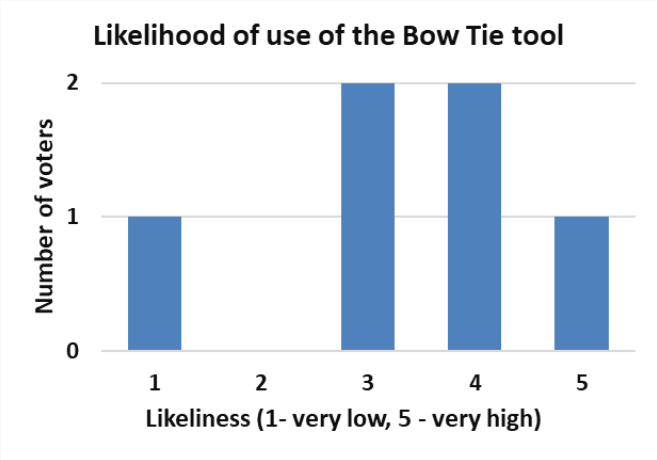
Q: What is the likelihood of you using this tool?



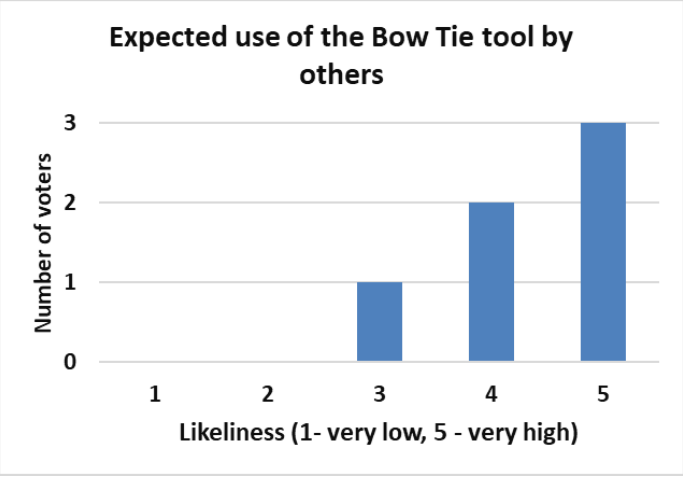
Responses regarding stakeholders' intention to use the BowTie tool varied, with ratings between 1 and 5 (average ≈ 3.3)(Fig. 8). While several participants indicated they would likely use the tool in future work, others were more hesitant, suggesting that further improvements in usability and clarity may increase adoption.

Figure 8. The likelihood of stakeholders using the Bow Tie tool in future projects.

Stakeholders indicated that the BowTie tool could support structured thinking around environmental problems and decision-making processes. Several participants highlighted its usefulness for "mentally mapping out a situation with other parties" and for analysing "impacts of activities (wind farms, dredging) on habitats". Others noted that it could help explain complex environmental relationships, serving as an "introductory guide to cause and effects" or as a visual tool for presentations to non-experts. The tool was also considered potentially valuable in environmental impact assessments (EIAs), nature restoration planning, and stakeholder workshops, although some respondents suggested that simplification may be necessary for broader use.

Several stakeholders noted that similar results could sometimes be achieved through simpler approaches, such as creating a basic mind map on a whiteboard, without requiring a dedicated digital tool. Others highlighted concerns regarding transparency and reliability, including the need for "full transparency on how risks are ranked" and assurances that outputs cannot be biased by subjective inputs. Some participants also indicated that the tool currently appears somewhat complex, suggesting that improved visualisation and clearer explanations could increase usability.

Q: What is the likelihood of others using this tool?



Participants were generally more positive about the potential use of the BowTie tool by others (Fig. 9). Most respondents indicated that it was likely (4–5) that other stakeholders would use the tool, although one participant reported a more neutral expectation (3). Overall, the responses suggest that stakeholders perceive the tool as potentially useful for a wider audience, particularly in collaborative settings.

Figure 9. Intended use of Bow Tie tool among participants.

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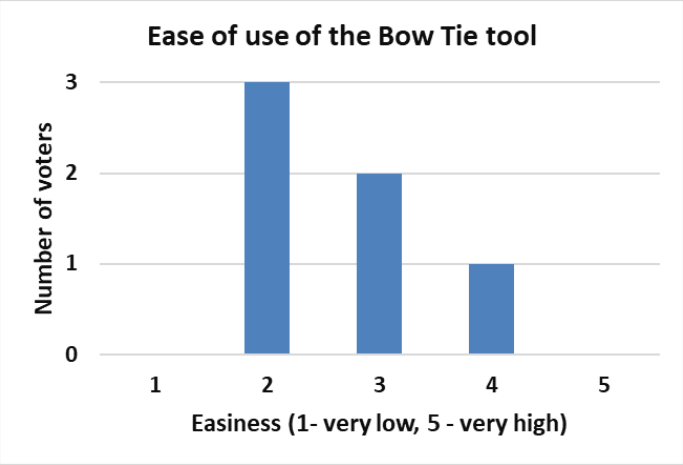
Q. The BowTie is easy to use

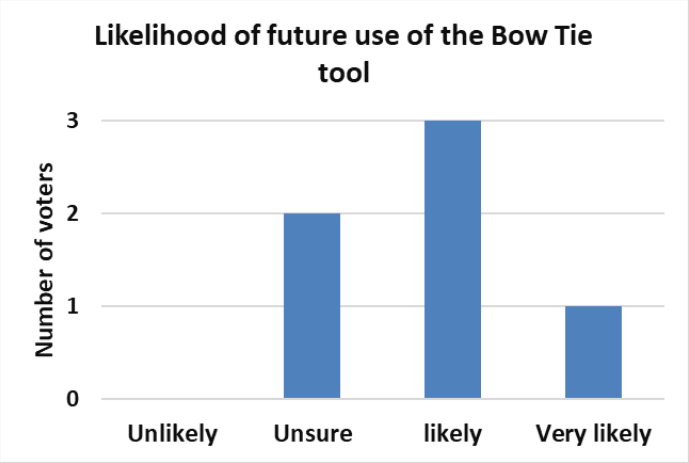


Stakeholders reported relatively limited ease of use of the BowTie tool (Fig. 10). Most respondents rated the ease of use as low to neutral (2–3), while only one participant rated the tool as easy to use (4). No stakeholders provided the highest rating. These results suggest that participants experienced some difficulties when navigating or understanding the tool during the session.

Figure 10. The ease in which the stakeholders found the Bow Tie tool to use.

Qualitative feedback indicated that several aspects of the interface and structure could be improved. Stakeholders noted that the final output was sometimes “clunky and hard to read”, that dropdown menus were “hard to work through”, and that the overall workflow could be difficult to follow without a clear overview of the process. Participants suggested that simplification of the layout, clearer categorisation of inputs, and improved visualisation of outputs would help enhance usability.

Q. How likely are you to use the BowTie in future projects?



Participants expressed moderate interest in using the tool in future work, with responses ranging from “Unsure” to “Very likely (Fig. 11).” While some stakeholders indicated clear interest in applying the tool in future projects, others suggested that further refinement and simplification would increase their likelihood of using it.

Figure 11. The likelihood of stakeholders using the Bow Tie tool in future projects.

Stakeholders suggested that the BowTie tool could support scenario planning and environmental risk analysis in marine contexts. Potential applications included identifying threats and pressures to species and habitats, supporting Habitats Directive Article 17 reporting, and assessing mitigation measures for marine developments and activities. Participants also highlighted its usefulness in understanding environmental problems, identifying knowledge gaps, and supporting nature restoration or environmental management planning. Some respondents suggested that the tool could also be used in stakeholder workshops, provided the interface is simplified.

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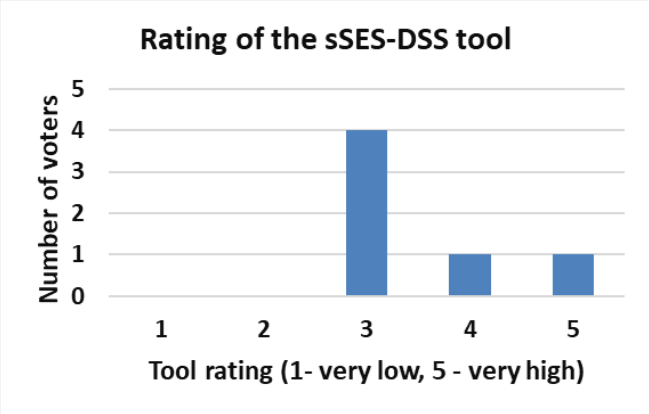
3.3. The sSES-DSS tool

The third practical session of the workshop (Appendices 5.3 and 6.2) was dedicated to shortly explain to the stakeholders what a Simple SES and DSS are, how we came to the sSES-DSS tool, the benefits of this tool in managing complex marine systems, to explain how the tool operates, and mainly to let the stakeholders interact with the tools in practice as a test. After a short demonstration and testing phase, feedback on this subject was gathered through a group discussion and a Mentimeter survey.

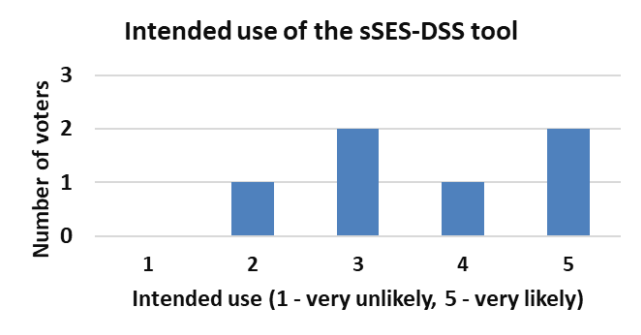
Q: How do you rate this tool?



Stakeholders rated the tool moderately positively, with scores ranging from 3 to 5 and an average rating of 3.5 (Fig. 12). Most respondents gave a rating of 3, indicating a generally neutral to moderately positive perception, while one participant rated the tool very highly (5). Overall, the results suggest that stakeholders see value in the tool but also perceive room for improvement.

Figure 12. Rating of the sSES-DSS tool by stakeholders.

Q: What is the likelihood of you using this tool?



The likelihood of participants using the sSES-DSS tool in their daily work shows a mixed distribution (Fig. 13). Two participants indicated a strong likelihood of using the tool (rating 5), while most others gave moderate ratings (3–4). Only one respondent indicated a relatively low likelihood of use (2). This suggests a moderate level of interest among stakeholders in applying the tool in their own work.

Figure 13. Intended use of the sSES-DSS tool among participants.

Participants indicated several potential applications of the tool in their professional activities. A key benefit identified was its ability to visualise complex socio-ecological systems and interactions, making it useful for analysing environmental impacts and understanding system dynamics. Respondents also noted that the tool could support research activities, report writing, and the development of environmental management strategies, as well as help communicate complex systems to non-technical audiences and stakeholders. Some participants highlighted its usefulness for identifying potential impacts of developments or activities and exploring possible mitigation measures.

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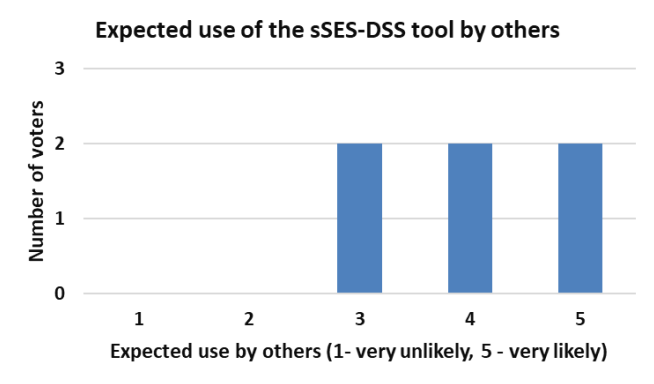
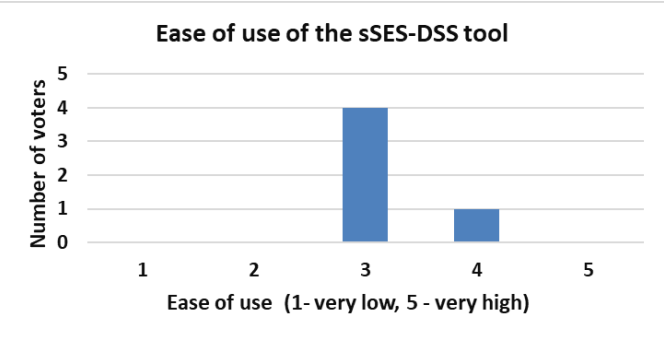
Q: What is the likelihood of others using this tool?



Stakeholders perceived slightly higher potential for broader uptake by others, with ratings ranging from 3 to 5 and an average score of 4 (Fig. 14). Four respondents indicated that the tool could be widely useful (ratings 4–5), suggesting that participants recognise its potential value for other practitioners and researchers.

Figure 14. Expected use of the sSES-DSS tool by others.

Q: What is the ease of use of the sSES-DSS tool?



The ease of use of the tool was rated moderately, with scores ranging from 3 to 4 and an average of approximately 3.2 (Fig. 15). This suggests that stakeholders generally found the tool manageable to use but identified some usability challenges.

Figure 15. The ease in which the stakeholders found the sSES-DSS tool to use

Several respondents noted that the tool may be perceived as complex or difficult to navigate, particularly when validating connections between elements. Some participants also mentioned that interpreting outputs and integrating them into reports could be challenging, while others felt that the tool might be too generic or insufficiently location-specific. Additionally, usability issues such as a clunky interface or lack of clear guidance were mentioned as potential barriers to adoption.

Stakeholders suggested several improvements focusing primarily on usability and guidance. These included clearer instructions for validating connections, better highlighting of next steps in the workflow, and improvements to the user interface to make it simpler and easier to navigate. Participants also recommended improving summary outputs, for example by listing key input decisions and highlighting deviations from literature-based values. Some respondents also mentioned the need to resolve technical glitches and improve system stability.

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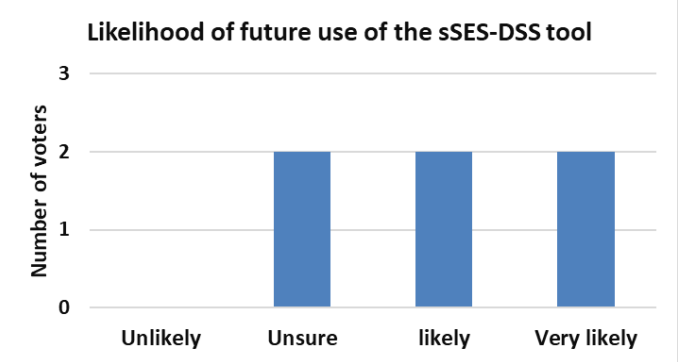
Q: How likely are you to use the sSES-DSS tool in future projects?



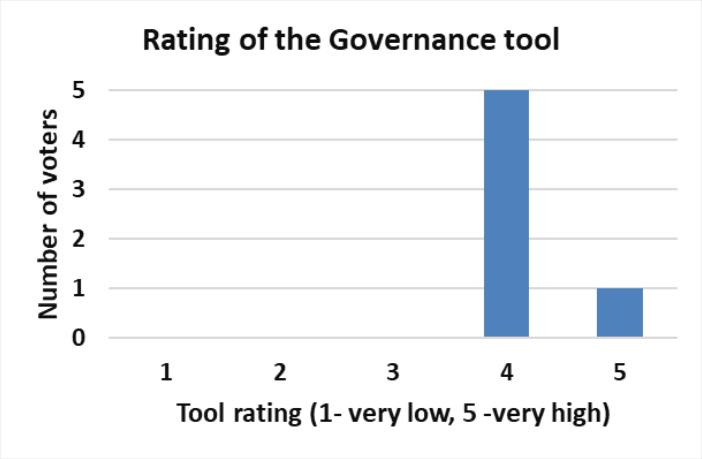
Participants were divided between being unsure (3, n = 5) and likely (4, n = 7) to use the sSES-DSS tool in future projects (Fig. 16). This indicates a generally moderate expectation of future use.

Figure 16. The likelihood of stakeholders using the sSES-DSS tool in future projects.

3.4. The Governance tool

The final practical session focused on the Governance tool (Appendices 5.4 and 6.3). Stakeholders were first introduced to the development of the tool, its benefits for managing complex marine systems, and its operational principles. Following a brief on-screen demonstration and individual hands-on testing by participants, feedback was collected through a group discussion and a Mentimeter survey.

Q: How do you rate this tool?



Stakeholders rated the Governance tool very positively (Fig. 17). The majority of respondents rated the tool highly (4), while one stakeholder gave the highest possible rating (5). No neutral or negative ratings were recorded. Overall, the responses indicate a consistently positive reception of the tool among participants.

Figure 17. Stakeholders' ratings of the likeability of the Governance tool.

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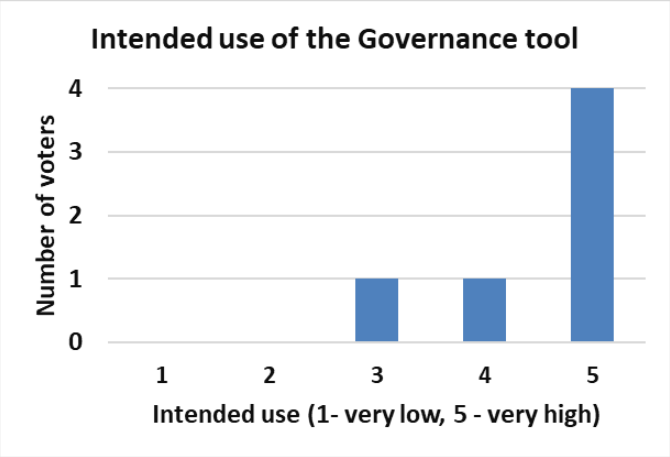
Q: What is the likelihood of you using this tool?

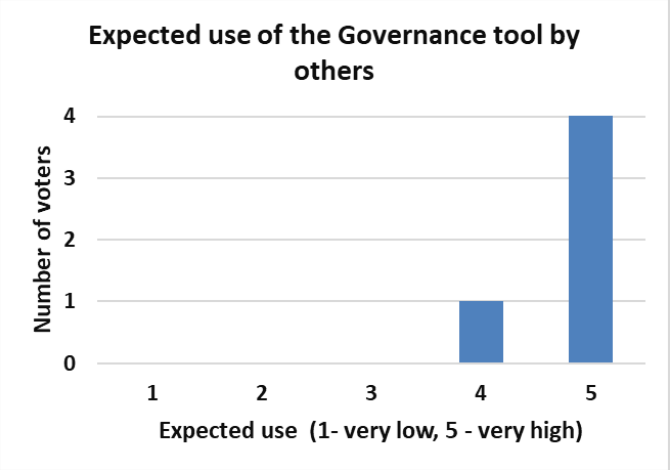


Participants indicated a high likelihood of using the Governance tool in their daily work (Fig. 18). Most stakeholders rated their likelihood of use as very high (5), while one respondent reported a moderate likelihood (4) and one expressed a neutral position (3). Overall, the responses suggest strong intentions among stakeholders to use the tool in practice.

Figure 18. Intended use of the Governance tool among participants.

Stakeholders highlighted several practical applications for the tool. These included navigating complex regulatory frameworks, identifying relevant legislation and authorities, supporting reporting activities, and informing discussions on policy implications in research. The tool was also considered valuable for stakeholder engagement and environmental impact assessments by helping users identify which policies and regulations need to be considered for specific activities or developments.

Q: What is the likelihood of others using this tool?



Participants expressed very positive expectations regarding the use of the Governance tool by others (Fig. 19). Most stakeholders indicated that it is very likely (5) that other users would adopt the tool, while one respondent rated the likelihood as high (4). No neutral or negative responses were recorded.

Figure 19. Expected use of the Governance tool by others.

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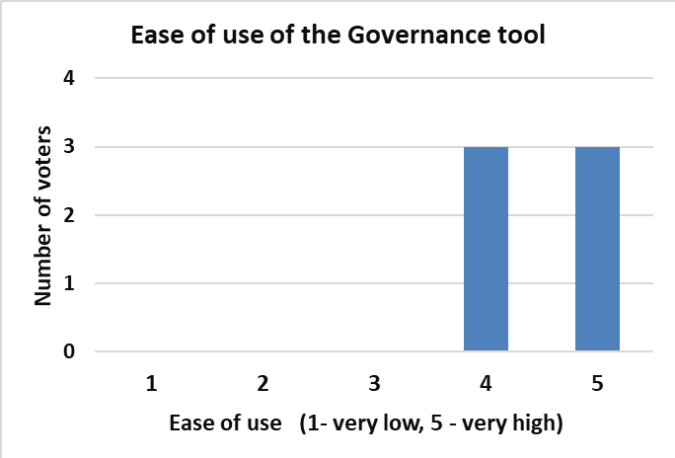
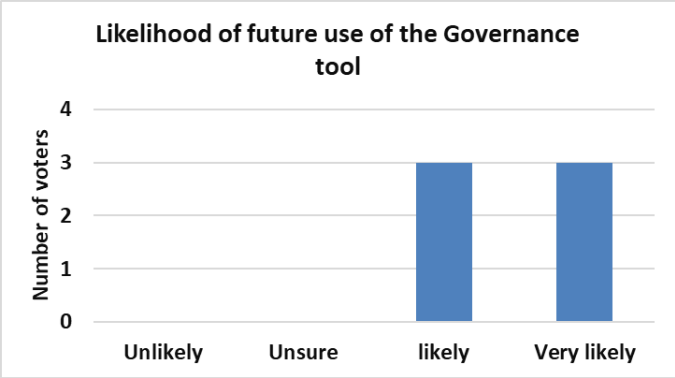
Q: What is the ease of use of the Governance tool?



Stakeholders generally reported that the Governance tool was easy to use (Fig. 20). Most respondents rated the ease of use as high (4) or very high (5), indicating that participants found the interface straightforward and intuitive. Participants also confirmed that the terminology used within the tool was clear and understandable.

Figure 20. The ease in which the stakeholders found the Governance tool to use.

Q: How likely are you to use the Governance tool in future projects?



Participants reported a high likelihood of using the Governance tool in future projects (Fig. 21). Half of the respondents indicated that they would be very likely (5) to use the tool, while the remaining participants reported a high likelihood (4). No neutral or negative responses were recorded.

Figure 21. The likelihood of stakeholders using the Governance tool in future projects.

Stakeholders emphasised that the tool could be particularly useful for identifying relevant legislation, understanding policy responsibilities, and determining which authorities or organisations should be consulted in environmental assessments or marine management processes. The consistently positive ratings suggest that the Governance tool has strong potential for practical application in both research and policy-related contexts

Although feedback on the Governance tool was largely positive, several suggestions for improvement were provided. Participants emphasised the importance of keeping the information up to date, as the usefulness of the tool depends on the accuracy and currency of the policy data. Some stakeholders also suggested adding country-specific information and clearer indicators of the origin of legislation (e.g., EU, national, or regional level).

Additional suggestions included providing tabulated summaries alongside the visual representation of governance structures and adding information about temporal changes, such as when regulations were introduced or updated. Minor interface improvements, such as adjustments to the visual design and clearer indications of when elements were last updated, were also mentioned.

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3.5 Comparing the tools

This section provides a comparative overview on the appreciation of the tools, drawing on the previously discussed stakeholder responses to assess their perceived rating, intended use by stakeholders, expected use by others, ease of use, and likelihood of use in future work.

Overall, all four tools – the sSES-DSS, the Governance tool, the Toolbox website, and the BowTie tool – received moderately to highly positive valuations (Fig. 22). The mean values remained steadily above a valuation of three to almost five on a five-point scale across all categories, reflecting a generally optimistic reception and perceived utility.

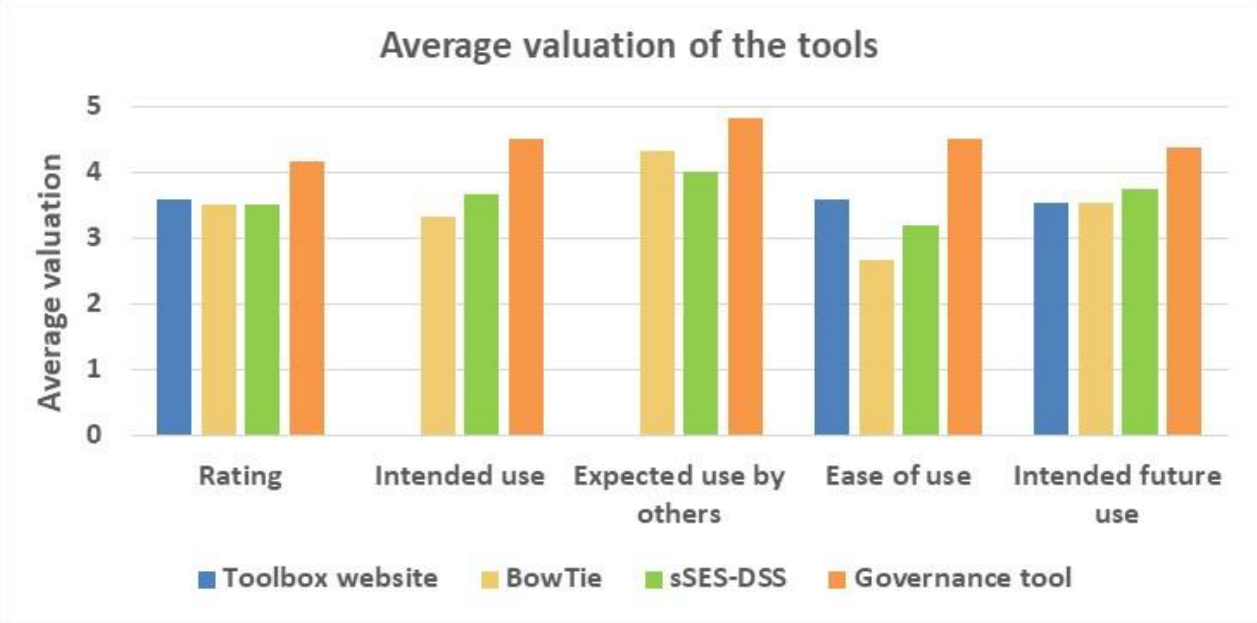

Figure 22. Comparison of the average valuation of each tool

Among the evaluated resources, the Governance tool achieved the highest overall scores. It received for all variables a score higher than four, indicating this tool has a high utility and effectively fills a gap in current knowledge and analytical capabilities.
The lower rating for the ease of use of the BowTie can be linked to the stakeholder's opinion that it was rather complex to navigate and that simpler approaches are available (ch. 3.2), indicating this tool does not yet provide a sufficiently comprehensive user experience. Consequently, future efforts may focus on fostering a simpler outline of the tool to encourage broader stakeholder appreciation.

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4. Discussion and Conclusion

The workshop in Dublin, Ireland as part of the "3rd round of Stakeholder Consultations," made a valuable positive contribution to advancing the overarching goals of the MARBEFES project.

The stakeholders in Dublin expressed overall favourable perceptions of the MARBEFES Toolbox, being reasonably user-friendly, though some further explanatory information on the website would be welcome. The Governance tool was appreciated the most, the tool being easy to use, and going to be used very likely by themselves and by others. Nevertheless, the stakeholders marked that it may be difficult to keep the embedded information up to date.

The stakeholders report a moderate use of the BowTie and the sSES-DSS by themselves, and indicate also a limited ease of use. This indicates that participants experienced some difficulties when navigating or understanding these tools, because the overall workflow could be complex and difficult to follow without a clear overview of the process. In general, the participants suggested that simplification of the layout, clearer categorisation of inputs, and improved visualisation of outputs would enhance their usability. These refinements of the tools may happen in this last year of the project.

Nevertheless, the participants appreciated for all tools the ability to visualise complex socio-ecological systems and interactions or complex regulatory frameworks. Thereby they considered the tools valuable for recognising environmental problems, understand system dynamics, identify knowledge gaps, support nature restoration or environmental management planning, and even to use them for community engagement activities, and citizen information sharing.

Thereby, the general consensus from the event is that the workshop played an instrumental role in furthering the key objectives of MARBEFES.
Firstly, through active and meaningful stakeholder engagement using interactive tools such as Mentimeter surveys, the workshop directly supported MARBEFES' core objective of increasing understanding of biodiversity and, in a co-design and bottom-up fashion together with stakeholders, develop further the prototypes of the tools. The input by the stakeholders helps to ensure that future outputs remain credible, relevant, and actionable.
Secondly, by integrating stakeholder experiences and feedback from this BBT, the workshop supported the progression of the project's tools from Technology Readiness Level (TRL) 5 to TRL 6, where prototypes are demonstrated as fully functional in a relevant environment. This validation extended beyond the scientific community, confirming the applicability and usefulness of the frameworks for a broad range of stakeholders and reinforcing their relevance across diverse perspectives.

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5. Acknowledgements

This report, developed under Milestone 12.1 of the MARBEFES project, would not have been possible without the invaluable contributions of many individuals and organizations. We would like to express our sincere gratitude to the stakeholders who participated in the third round of consultations held in Dublin, Ireland. Their thoughtful insights and active engagement have played a crucial role in the success of this initiative.

In particular, we would like to thank the following individuals for their active participation: Eimear O'Keeffe National Parks & Wildlife Service, George Hoppit- University College Dublin, Darragh Corcoran – University of Galway, John Brophy, Martina O'Brien - Dún Laoghaire-Rathdown County Council, The Clean Coasts Programme, An Taisce, - Environmental Education Unit.

We also extend our thanks to the local contact person, Dorota Kolbuk, who facilitated the stakeholder outreach and invitations, ensuring the successful participation of a diverse group of stakeholders. Her efforts in coordinating the consultations were essential to the overall process.

We are also grateful to the members of the MARBEFES project team for their tireless efforts in developing and finetuning the tested tools. Their collaboration has been instrumental in advancing our understanding of the socio-ecological systems and the governance challenges faced by coastal communities.

Finally, we acknowledge the funding support for the MARBEFES project by the European Commission, which has made this important work possible. MARBEFES is funded by the European Union's Horizon Europe programme under grant agreement No. 101060937.

Without the dedication and hard work of all involved, this report would not have been achievable.

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6. Appendices

The following pages contain appendices:
Appendix 1 provides a list of all stakeholders who participated in the workshops held in Dublin
Appendix 2 includes a detailed meeting agenda of the workshop
Appendix 3 includes the information flyer used to inform stakeholders
Appendix 4 GDPR and IPR protocol, and Informed Consent form
Appendix 5 (sections 5.1 – 5.5) presents the PowerPoint slides
Appendix 6 (Sections 6.1 – 6.4) contains, in chronological order, the results of the Mentimeter sessions

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Appendix 1. Stakeholder participation list

Name	Organisation name	Category	Gender	Date	Consent project partners	Consent third parties	Representative HuFoSS	Representative UCD
Eimear O'Keeffe	National Parks & Wildlife Service (NPWS)	Public Authorities	F	07/01/2026	Yes	Yes	Dominga van der Vliet, Veronika Poskute, Alissa Lotzkes, Herman Hummel	Dorota Kolbuk
George Hoppit	University College Dublin	Academia & Research	M	07/01/2026	Yes	Yes	Dominga van der Vliet, Veronika Poskute, Alissa Lotzkes, Herman Hummel	Dorota Kolbuk
Darragh Corcoran	University of Galway	Academia & Research	M	07/01/2026	Yes	Yes	Dominga van der Vliet, Veronika Poskute, Alissa Lotzkes, Herman Hummel	Dorota Kolbuk
John Brophy ^	BEC Consultants Ltd	Industry & Private Sector	M	07/01/2026	Yes	Yes	Dominga van der Vliet, Veronika Poskute, Alissa Lotzkes, Herman Hummel	Dorota Kolbuk
Martina O'Brien	Dún Laoghaire-Rathdown County Council (DLRCC)	Public Authorities	F	07/01/2026	Yes	Yes	Dominga van der Vliet, Veronika Poskute, Alissa Lotzkes, Herman Hummel	Dorota Kolbuk
Liane Costello ^	The Clean Coasts Programme, An Taisce – Environmental Education Unit	NGO / Non-profit	F	07/01/2026	Yes	Yes	Dominga van der Vliet, Veronika Poskute, Alissa Lotzkes, Herman Hummel	Dorota Kolbuk

^ = Stakeholder acts as an overarching stakeholder

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Appendix 2: Detailed Meeting Agenda

Date: 7 January 2026
Location: Dublin, Ireland

14:00- Welcome and introduction to the project
14:15: MARBEFES Toolbox
- -Presentation
- -Hands-on testing
- -Collecting feedback

15:00: Coffee break
15:15: Bow Tie tool
- -Presentation
- -Hands-on testing
- -Collecting feedback

16:00: sSES-DSS tool
- -Presentation
- -Hands-on testing
- -Collecting feedback

17:00: Governance Organogram
- -Presentation
- -Hands-on testing
- -Collecting feedback

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Appendix 3. Stakeholder information flyers

Get involved!

In the first two rounds, you helped identify priorities and shape the tools that help to understand your environment and manage it.

Now, in this third round, your feedback will help us fine-tune and validate them — making sure they are practical, user-friendly, and ready for real-world application.

Together, we ensure these tools truly work for you, your community, and the marine environment.

Meeting agenda

14:00	Welcome and introduction to the project
14:15	Presentation of the MARBEFES tools
14:30	Hands-on testing
15:30	**COFFEE BREAK**
16:00	Further testing and short discussion
17:15	Collecting your feedback
17:30	**END**

If you have any questions, please contact Dorota Kolbuk (dorota.kolbuk@ucd.ie)

Appendix 4. GDPR and IPR protocol, and Informed Consent form

At the start of the workshops, stakeholders are requested to give consent for sharing the data resulting from the sessions. The partners within MARBEFES respect the privacy of all participants and ensure that all provided personal information, will be dealt with following the rules below:

- Contact details and personal data will never be provided to third parties without the stakeholders' explicit unambiguous consent.
- Although eventually all research-data produced in MARBEFES will be available for open access, personal data will be excluded from publication in case the stakeholder does not agree on sharing those data.
- At the start of the workshops we ask stakeholders, by means of a printed Document of Informed Consent, to indicate which option they want to follow regarding data protection and privacy.
- At any moment the stakeholder can request to remove their personal data out of any of the files.
- If, during the workshop, third parties (persons or institutions) are mentioned by name, these will be generalized in non-traceable terms in the result section of any report or publication.

The Document of Informed consent for this project follows below.

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Funded by
the European Union

DOCUMENT OF INFORMED CONSENT

Project Title: MARBEFES: MARine Biodiversity and Ecosystem Functioning leading to Ecosystem Services
EU Horizon Europe Grant Agreement No.: 101060937
Start date of the project: 1 September 2022
End date of the project: 31 August 2026
Project Website: https://www.marbefes.eu/

You have been invited to voluntarily participate in research under the MARBEFES project in the form of an event, a survey, or an interview.
Before participating, please read the information below carefully.
Views and opinions are only those of the author(s) and do not necessarily reflect those of the European Union. Neither the European Union nor the granting authority can be held responsible. If statements in the document are unclear, do not hesitate to ask the contact researcher or coordinator for clarification.

1. Project summary

MARBEFES is a 4-year EUprojectthat researches how marine biodiversity is linked with goods and services provided by marine ecosystems, in order to create policy and management tools that support informed decision-making. MARBEFES will progress substantially beyond the current state-of-the-art understanding of the causes and consequences of the maintenance, loss and gain of biodiversity and ecological and economic value and the repercussions of this for the management and governance of European seas. Healthy marine ecosystems provide goods and benefits which support our economy and society. Yet, seas and coastal areas are affected by various human pressures and related changes. Therefore, the input of local communities is vital in charting the way forward.

2. Purpose of data collection

Inthe MARBEFESproject, stakeholders are asked to give their views on the functioning of the marine ecosystem, its biodiversity, the ecosystem services, and benefits derived from it and the socio-cultural and economic activities based on it. In addition, stakeholders are asked to help co-design and co-produce the research and outcomes developed in MARBEFES. All stakeholders are given the possibility to provide feedback on the development of models and tools. Therefore, it is necessary to collect contact details from stakeholders who want to participate in the feedback process and/or co-design and co-production of the project. Resulting data will be specifically used to support the successful completion of the MARBEFES project.

3. Benefit of participation

Participation is on an entirely voluntarybasis, and you might not directly benefit. Nevertheless, by participating you will substantially contribute to the MARBEFES project's aims in composing tools and instruments to optimize the use, governance, and management of marine coastal areas while safeguarding the health of marine ecosystems and biodiversity. You will ultimately benefit from a healthy and sustainable environment you are living in and that is based on the joint participation in the project’s activities by you and your community.

4. Risks of participation

There are no risks foreseen in participation.

5. Compliance with ethical and legal regulations

Wecomply withEUandnational ethicaland legal regulations,includingthelatest GDPR (General Data Protection Regulation 2016/680) framework of the EU.

Funded by
the European Union

6. Privacy and data protection

MARBEFESandits partnersrespect theprivacy of participants in the survey and ensure that all contact details provided, will be dealt with following the rules below:

- Without the stakeholders' explicit, unambiguous consent, contact details will never be provided to third parties.
- Although eventually, all results and raw data produced in MARBEFES will be available for open access, these results and data will not be traceable to a person or institute. They will be anonymised.
- Contact details will be excluded from the acknowledgements in publication if the stakeholder disagrees with sharing those data. On the other hand, all participants can be included in the acknowledgements or added as co-author in case of a major contribution to future publications.
- If third parties (persons or institutions) are mentioned by name during the interview, these will be generalised in non-traceable terms in the result section of any report or publication.
- Data from surveys and interviews will be recorded and stored on secure servers.
- Data might be processed and analysed for publication in reports, scientific journals and other project outputs, only anonymously. The retention time of the original research data is the same as the project duration. However, the anonymised resultant data may be stored longer for future research. The data controller keeps a copy of informed consent for up to 3 years after project closure, and the research participant can request access.
- MARBEFES project partners and project management team reserve the right to use any photograph/video taken at any MARBEFES activity. Project partners and project management team may use the photograph/video in publications or other media material produced, used or contracted by MARBEFES, including but not limited to: brochures, invitations, books, newspapers, magazines, television, websites, etc.

7. Disclaimer

The content ofthissurvey has been compiled with the utmost care in the frame of the MARBEFES project. The responsible partner is Hummel Foundation for Sustainable Solutions (HuFoSS), Roosendaal, the Netherlands (contact Prof.Dr. Herman Hummel, herman.hummel@hufoss.nl). If you need to revoke or change provided information or withdraw your participation in the event, survey or interview, this can be done by contacting herman.hummel@hufoss.nl. MARBEFES and the responsible partners aim to keep the contact details in its repositories permanently as accurate and up-to-date as possible. Therefore, changes in contact details are always reserved. MARBEFES and its partners are in no way responsible and shall not be liable for any claims or damages that are the direct or indirect consequence of or in connection with the use of the information made available in this survey.

8. Researcher contact

Incaseofanyissuesorquestions,you can contact Prof. Dr. Herman Hummel, herman.hummel@hufoss.nl.

9. Copyright

10. Consent statement

Please indicate which option you want to follow regarding data protection and privacy.

MARBEFES partners may use provided data (anonymised answers)		Third parties outside MARBEFES (e.g. EU, UNESCO) may use provided data (anonymised answers)		Acknowledgements in resulting publication e.g. research reports, articles (Personal name and institute name can both be mentioned)			
Yes ☐	No ☐	Yes ☐	No ☐	Personal name included as data provider ☐	Institutional name included as data provider ☐	Personal and Institutional name included as data provider ☐	Anonymous (no mentioning in the acknowledgements) ☐
What is your gender? (you may also self-describe at the remarks)					Do you allow for collected footage (photo/video) being shared in online sources (website/social media)?		
M ☐	F ☐	X ☐	Prefer not to say ☐	… … … . .	Yes ☐		No ☐
Remarks: In case you want to be informed on the progress of the project and the reports stemming from the surveys and interviews, then please write here your **e-mail address**:							

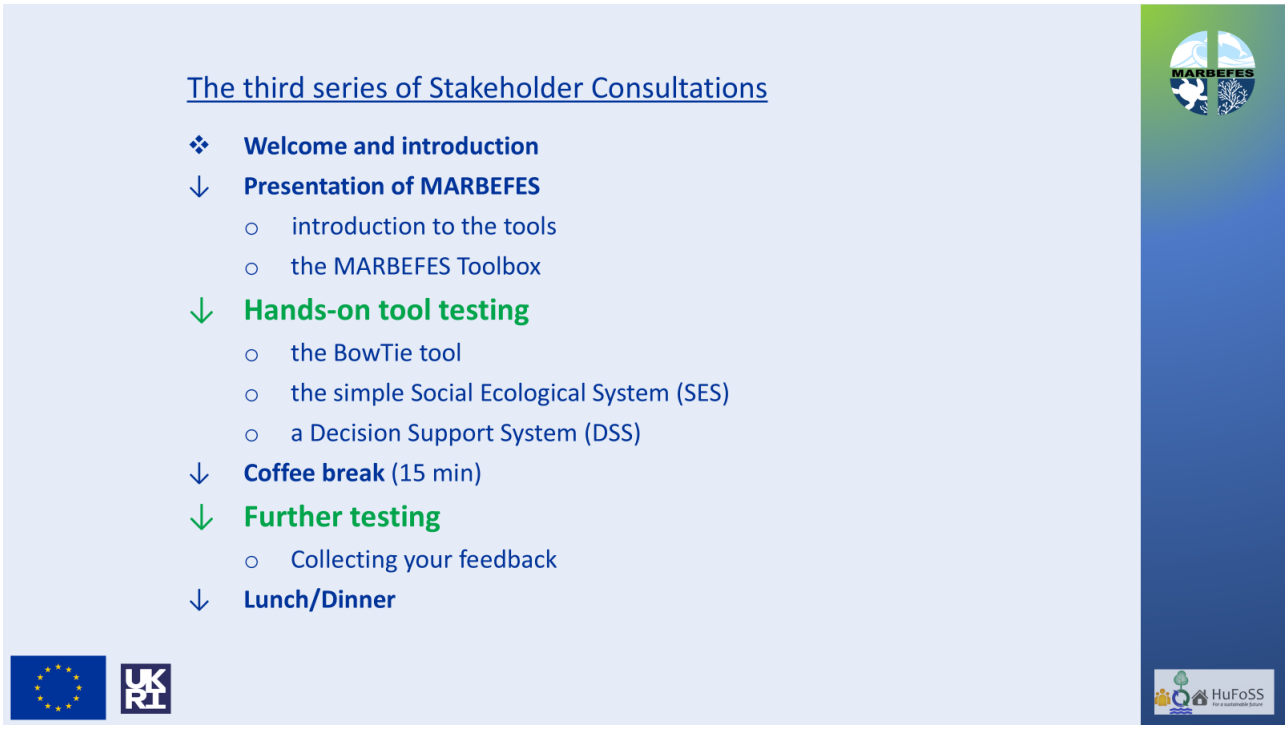
☐ I have read and understood the consent terms and agree to participate in this study, including the processing of my responses by HuFoSS.

Participant name:_____ Date:_____ Participant signature:_____

Appendix 5. Presentation PowerPoint slides

Appendix 5.1. General introduction

The MARBEFES Project has received funding from the European Union's Horizon Europe research and innovation programme under grant agreement no 101060937, and UKRI under Grant Agreements 10040216, 10048815 and 10041354



Welcome to the MARBEFES workshop for Stakeholders

MARBEFES aims to:

- understand the link between biodiversity, ecosystem functions, and services
- show how coastal ecosystems provide essential benefits to society
- assess these benefits through different methods of valuation
- recommend strategies to enhance ecological and economic value

Together with YOU:

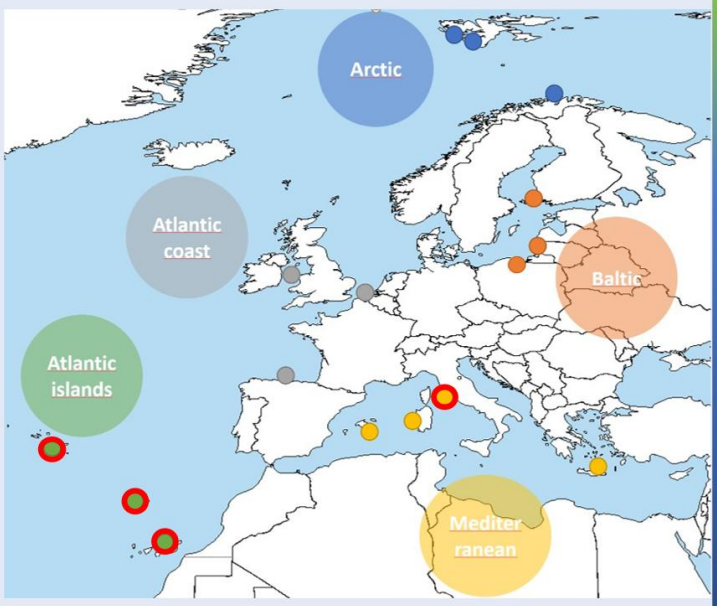
- We have selected key priorities in your coastal marine environment
  - for ecological, social, and economic challenges
- We develop practical tools for research and policy
  - and compose an easy-to-use management- and decision support system

Benefits of engaging with MARBEFES

- Explore a **holistic approach** to environmental challenges.
- Embed **your local knowledge** in the consultation process
- Voice **your priorities and concerns**, to be included
- Compose together **a practical tool** that is useable and useful, for YOU

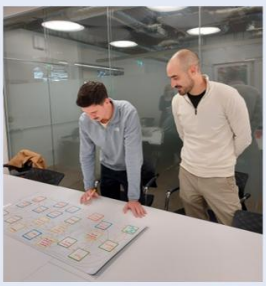
To collect the basic data we have performed many **Stakeholder surveys & Stakeholder interviews** with you all over Europe.

Together in the sister-projects MARBEFES and Marine SABRES we interviewed more then 300 stakeholders



In the first year (2023) we collected all your viewpoints and concerns through interviews and surveys.

- the main question was:
What are the most important elements in the balance between the ecology (nature), economy, and society in your coastal area, and what are the influences and pressures on this balance?

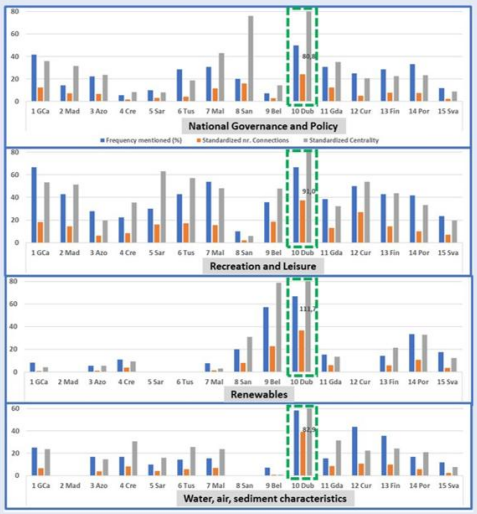


Dublin, Ireland , July 2023

Most important elements in Irish Sea – the Top 25 %

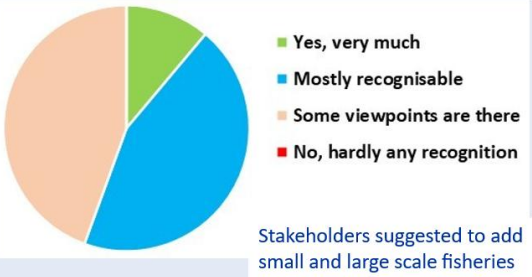
Elements (72 in 12 interviews)	Times mentioned (%)	Total connections	Power of connections
Biodiversity	83	35	110
Nature	83	35	102
Renewables	67	45	167
Recreation...Leisure	67	45	147
Pollution	67	21	75
Water..air..sediment..characteristics	58	50	158
National.governance.and.policy	58	37	127
Awareness...Knowledge	58	25	75
Habitats	58	24	68
Large.scale.fisheries	58	22	72
Climate.change	50	29	82
Economy	50	28	83
Infrastructure...Transport	50	18	67
Research	42	28	92
Society	42	27	75
Protected.Areas	33	30	111
Urbanisation...Coastal.development	33	26	81
NGOs.and.Museums	17	24	109
Elements for which Dublin has among highest European scores			

Regarding the importance of **various environmental variables**



Irish Sea scores among the top Nr. 1 in Europe for:
- **National Governance and Policy**
- **Recreation and Leisure**
- **Renewables**
- **Water, air, sediment characteristics**

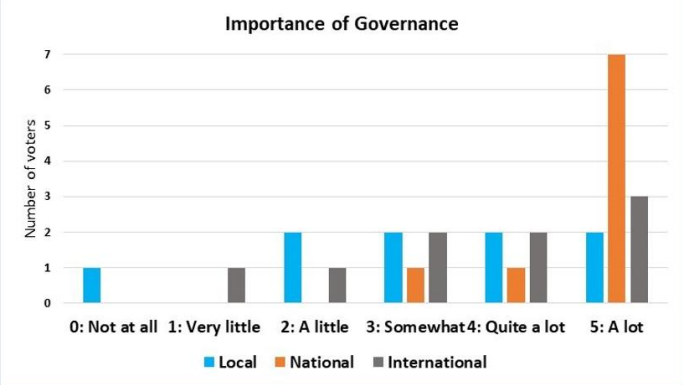
We asked the Stakeholders in the second round (2024-25):
Are your viewpoints reflected in the results of the first round ?



Stakeholders suggested to add small and large scale fisheries

Regarding the importance of different **levels of Governance**

National governance is felt most important,
i.e. more important than local or international governance



Most important relationships between elements in Irish Sea

Mind -map

Sending elements	Receiving elements	Frequency	Strength
Recreation...Leisure	Health...Quality.of.life	3	15
Climate.change	Renewables	3	12
Water..air..sediment..characteristics	Habitats	3	11
Recreation...Leisure	Awareness...Knowledge	4	9
Renewables	Economy	3	9
Water..air..sediment..characteristics	Biodiversity	4	8
Water..air..sediment..characteristics	Nature	3	4
Renewables	Large.scale.fisheries	3	-5
Recreation...Leisure	Biodiversity	3	-9
Pollution	Water..air..sediment..characteristics	5	-23

Most important relationships of elements in Irish Sea

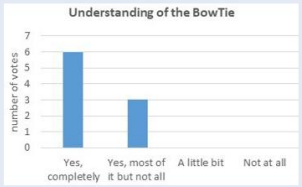
- sorted as a cascade of logical connections

Sending elements >>> Receiving elements							Frequency	Strength
Climate.change		Renewables					3	12
	Research	Renewables					2	9
	NGOs.and.Museums	Renewables					2	9
		Renewables	Economy				3	9
		Renewables		Disturbance			2	8
		Renewables			Large.scale.fisheries		3	-5
					Large.scale.fisheries	Marine.resources	2	-10

On basis of these results several management Tools could be further developed,

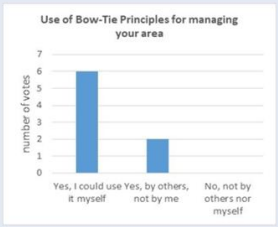
of which you can test the prototypes today

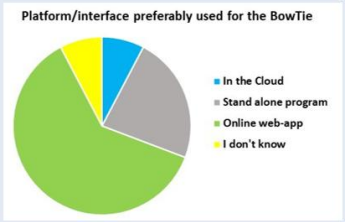
In the Second series of consultations (2024-25) we showed the concepts of some tools, and we collected feedback whether the tools were thought to be usable and useful



For example we asked whether one of the tools (the **BowTies**):

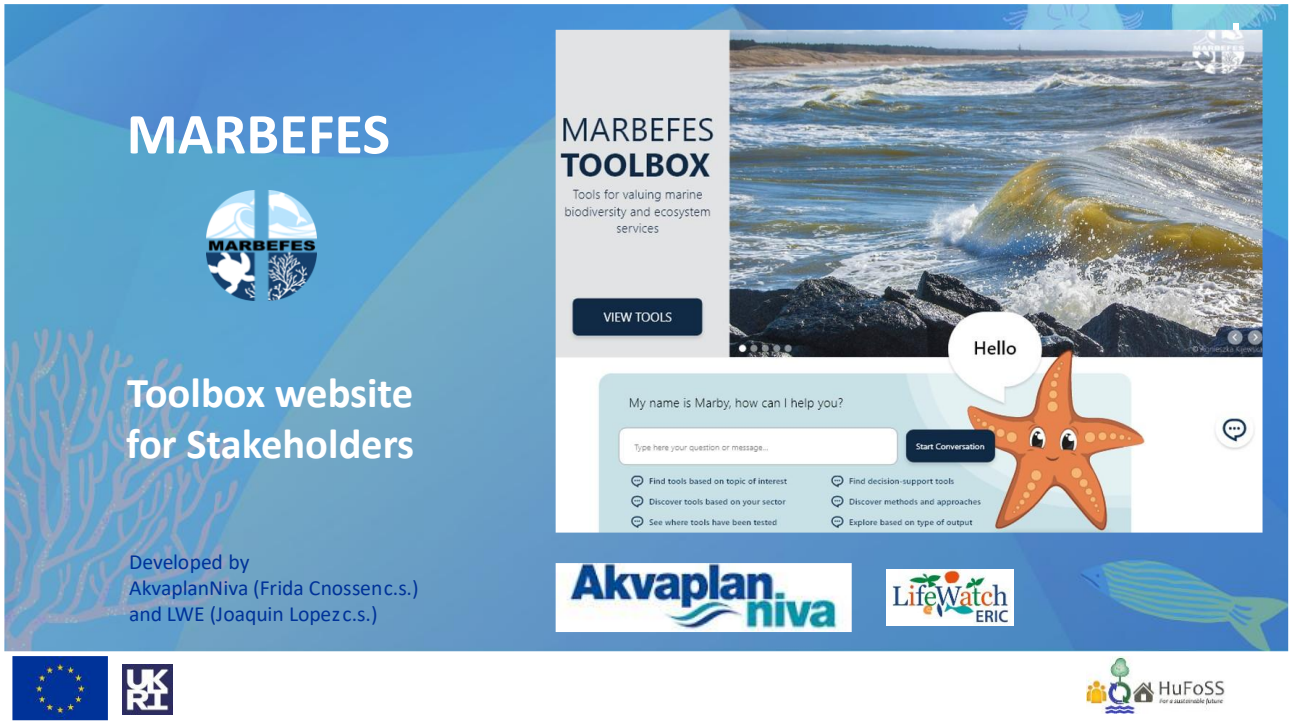
- was **understandable - Yes**
- if they would **use it themselves – Yes**
- and **how to use it** - preferably **in an Online web-app**





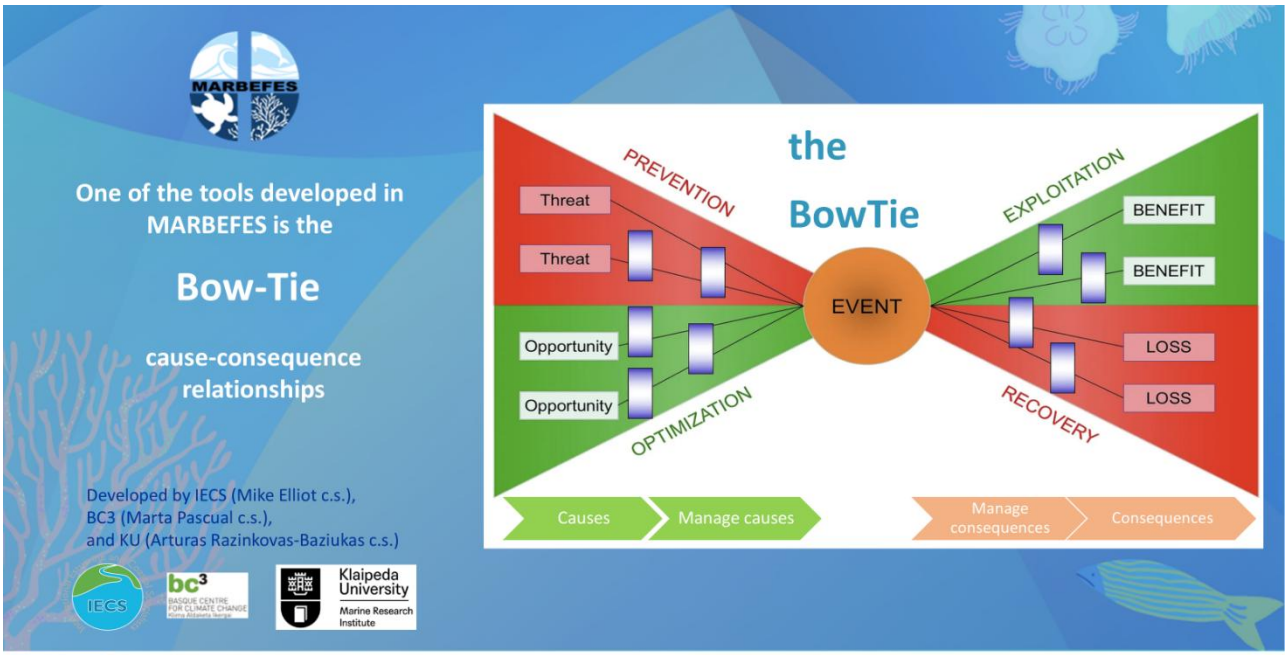
On basis of this input the tools were further finetuned, and **assembled in a Toolbox**

Appendix 5.2. Introduction to the MARBEFES Toolbox



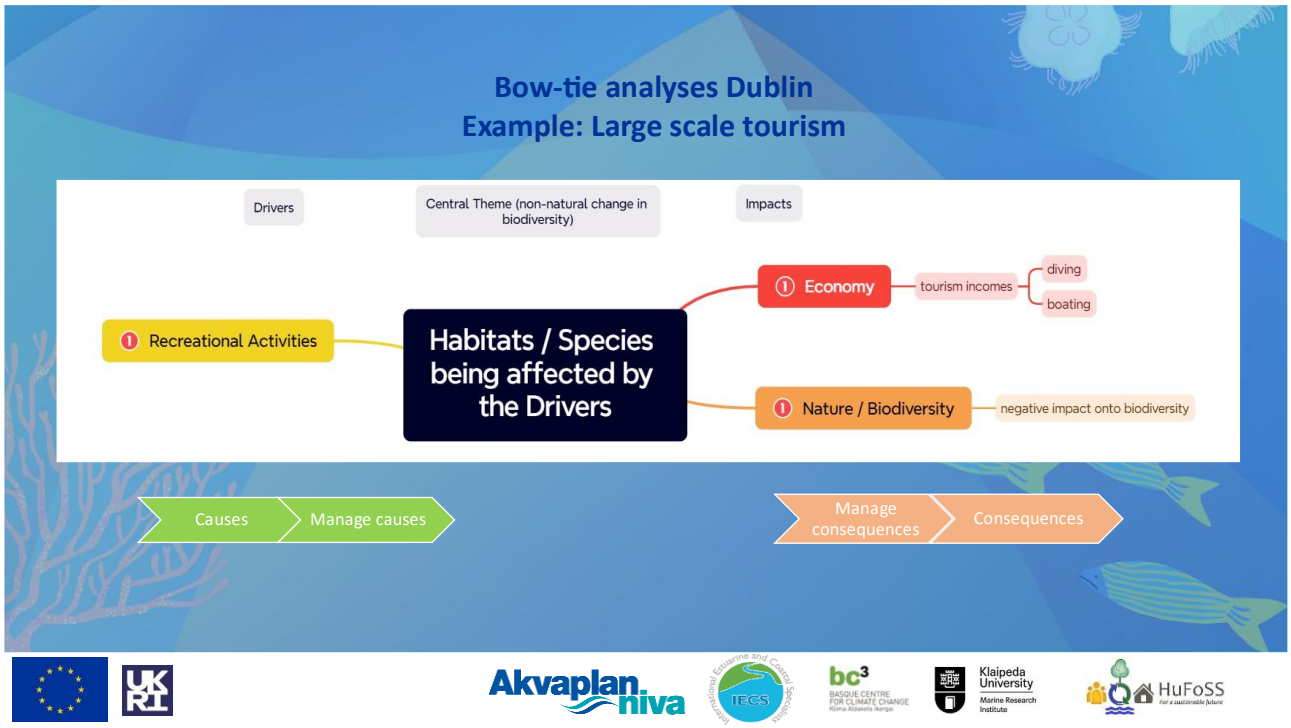

Toolbox Website - Review
• Mentimeter link:
• Or scan ->
MARBEFES
UKRI
Akvaplan niva
LifeWatch ERIC
HuFoSS

Appendix 5.3 Introduction to the Bow Tie Tool



MARBEFES Project has received funding from the European Union's Horizon Europe research and innovation programme under grant agreement no 101060937 and UKRI under Grant Agreements 10040216, 10048815 and 10041354

HuFoSS



Akvaplan niva · IECS · bc3 · Klaipeda University Marine Research Institute · HuFoSS

Bow-Tie Shiny App – Now you try!

- Go to: http://laguna.ku.lt:3838/bowtie_app/
- Or scan ->

Bow-Tie Shiny App - Review

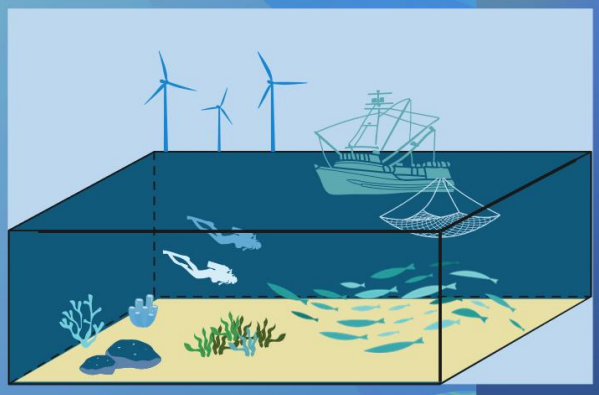
- Mentimeter link:
- Or scan ->

Appendix 5.4. Introduction to the sSES-DSS tool

In cooperation with MarineSABRES the available information has been used to build a **Social-Ecological System (SES)** and a **Decision Support System** to better understand also the interactions in our coastal and marine environment

What is a Social-Ecological System:

An area where human and natural elements exist together and impact each other.

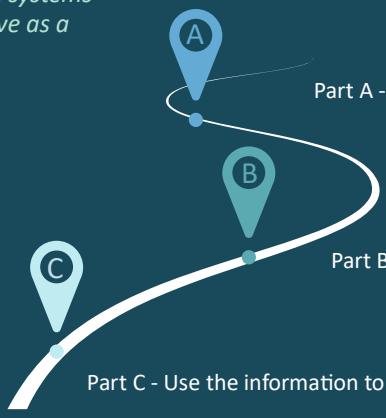


The SES approach is developed by the team of
Michael Elliott & Gemma Smith (IECS Ltd)
The DSS ShinyApp is developed by the team of
Arturas Razinkovas-Baziukas (KU)

The simple SES Approach

Helps to manage complex marine systems by understanding how they behave as a whole

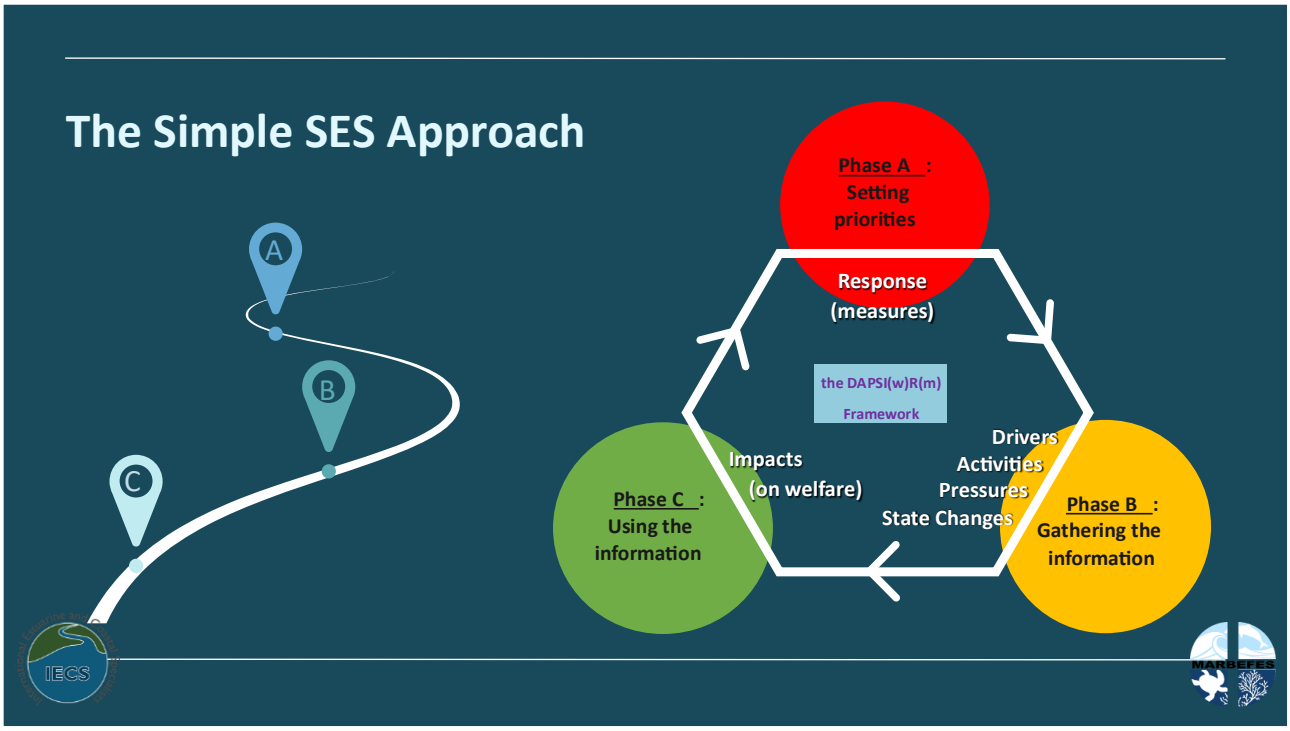
It is as 'simple' as A, B, C...

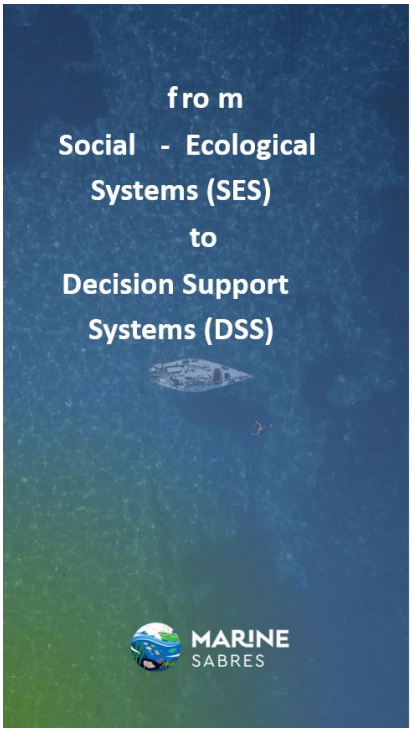


Part A - **Understand the Priorities** and what do we want to improve

Part B - **Gather information** on the system

Part C - Use the information to **design management measures**





MARBEFES

In Marine SABRES the information for the Social -Ecological Systems has been integrated in a Decision Support System – the ShinyApp DSS

- The overarching aim of a Decision -Support System is to **support and enable informed decision -making**
- A DSS can support decision -makers in balancing or understanding challenges, such :
  - risks, uncertainties .... and find alternatives
  - differing interests among the public .... and find solutions

Developed by KU
(Arturas Razinkovas-Baziukas c.s.)

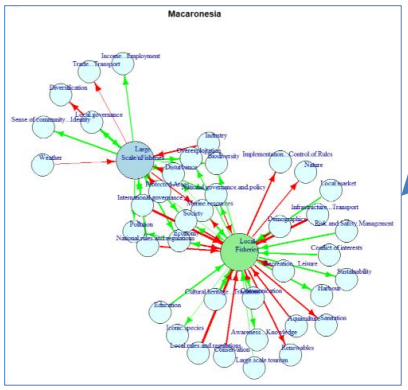
Klaipeda University
Marine Research Institute

HuFoSS

https://www.umassd.edu/fycm/decision-making/process

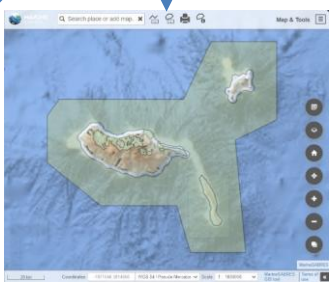
Klaipeda University Marine Research Institute

The Marine SABRES DSS will consist of some components to help and guide you to assess specific user needs



Local SES analysis tool based on your input

Ready for testing



Geographic Information (GIS) spatial data tool

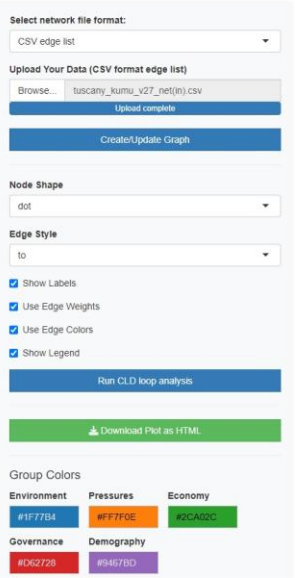
SES related governance

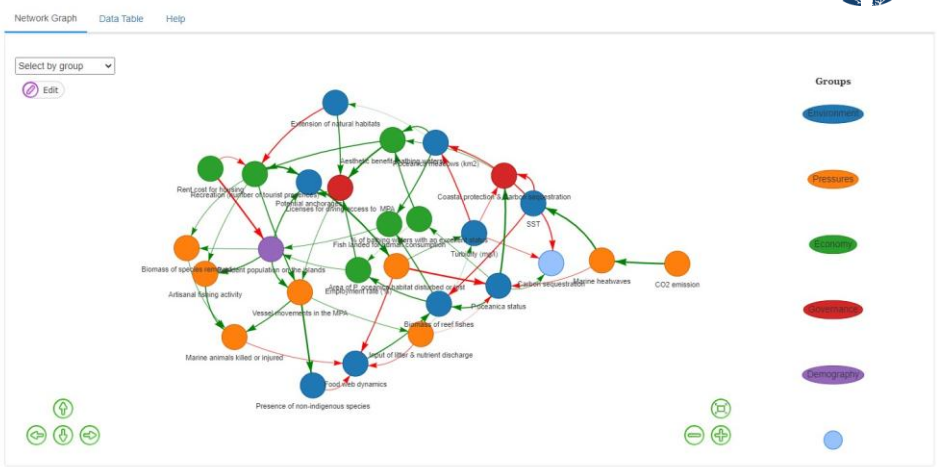
Ready for testing

Benefits of a DSS

- Simplifying a complex system of human activities and marine ecosystems
- Co-develop a system with scientists and stakeholders together, based on shared understanding of the system
- Provide clear visualizations of social and ecological interactions
- Allow practitioners to identify points in the system where management measures will be effective
- Enabling the implementation of Ecosystem -Based Management
- Provide information of main environmental legislation sources relevant to your needs (e.g. placement of Offshore Wind Parks in the coastal zone)

You can now build and test your own local simple -SES and DSS tool





Decision Support System

- Go to: http://193.219.76.93:3838/marinesabres

http://laguna.ku.lt:3838/marinesabres/?user_level=beginner

Decision Support System - Review

- Mentimeter link:

Appendix 5.5. Introduction to the Governance tool

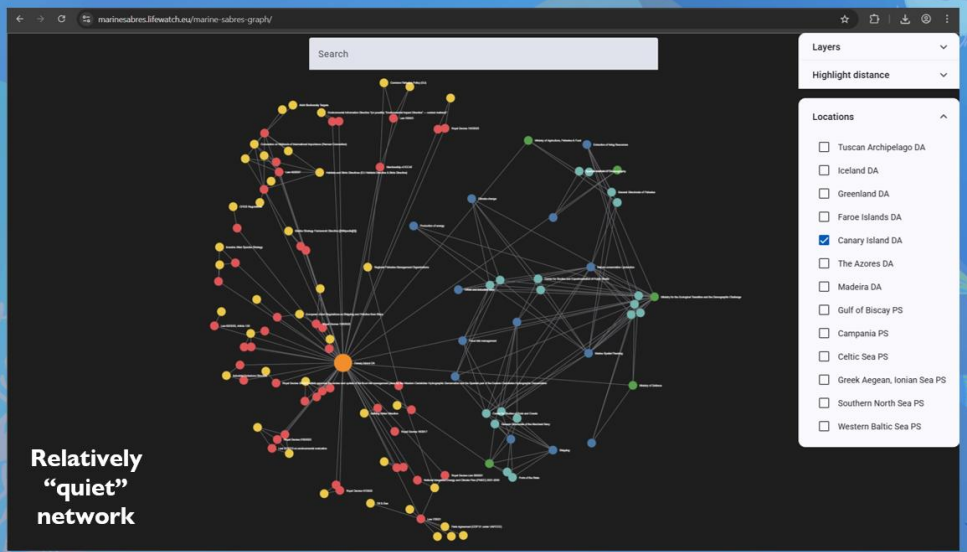
MARBEFES

The
Governance tool

Developed by LWE (Joaquin Lopez c.s.)
and IECS (Mike Elliot c.s.)

MARBEFES Project has received funding from the European Union's Horizon Europe research and innovation programme under grant agreement no 101060937 and UKRI under Grant Agreements 10040216, 10048815 and 10041354

Governance tool



Governance tool – Now you can try!

- Go to: http://marinesabres.lifewatch.eu
- Or scan ->

Governance tool - Review

- Mentimeter link: http://marinesabres.lifewatch.eu
-

MARBEFES Project has received funding from the European Union's Horizon Europe research and innovation programme under grant agreement no 101060937 and UKRI under Grant Agreements 10040216, 10048815 and 10041354

Appendix 6. Results of Mentimeter Sessions

Appendix 6.1. The MARBEFES Toolbox website

Number of SH	Q1. What professional sector are you representing?
1	Academia / Research
2	Academia / Research
3	Authorities (governance / policy)
4	NGO / Non-profit
5	Private sector / SME
6	Authorities (governance / policy)

Number of SH	Q2. What is your age?
1	32
2	28
3	36
4	36
5	46
6	51

Number of SH	Q3. What is your gender?
1	Male
2	Male
3	Female
4	Female
5	Male
6	Female

Number of SH	Q4. I like this website: (1-5)
1	4
2	3
3	4
4	4
5	3

Number of SH	Q5. Why will you use this website?
1	For identifiying tools to help with research, and to direct intrested parties to where to find these tools/ the conditions to use the tools
2	Comparability in approach taken across organisations. Replicability.
3	To access data/information on areas we manage/are responsible for and support decision making.
3	To potential upload and strengthen the quality of marine habitat data
4	To define what projects we might prioritise with community groups and for oyr beach awards
5	To look for information relevant to Environmental Impact Assessments or Appropriate Assessments.
6	Connections between different marine sectors
6	It's free!

Number of SH	Q6. What could be a possible reason why you will not use this website?
1	I might have a different tool already in mind that is found in a different place

1	Potential overlap with other similar EU projects creating similar outputs for tool websites
2	If the tools are not in depth enough or if they are not updated with advancements
3	Data realiability/quality would need to be demonstrated in order for it to be a strong decision making tool.
4	Would have to look into it more to see if it is relevant for communities
5	If the data supporting it is not sufficiently supported by citations/sources.

Number of SH	Q7. Is there anything you think could be improved in the website setup?
1	A better way to navigate the tools in the context of wider marine spatial management?
1	Potential options for offline use in cases with poor internet connections
1	Scrolling down through the tools could mean some parties just stop before they read through them all, meaning tools at the end get less attention
1	Test cases?
2	List tool limitations. What they are designed NOT to be used for so individuals with less knowledge in an area dont use something in a way that exceeds its limits
3	A breif description of the tool should appear on the main page
3	Maybe a note on the limitations should be included
3	Most recently accessed tab
4	Perhaps a video to explain it on home page
5	The native font size is a bit small.

Number of SH	Q8. Did any words or phrases in the website confuse you?
1	Having more detailed descriptions of each category could help stop confusion
2	Executive summaries under each tool so you know at a glance what the tool does
3	Some of the title under the tools dont really explain what they are
3	Some terms might be a bit confusing for non-scientists eg telomers
4	Communications, disseminating informatio to local community groups, developing workshops.

Number of SH	Q9. For what questions in your daily work would you use this website to answer?
1	I would use it as a 'first stop' in working out what tools might be relevant to my current projects, using the information to navigate to the best avaibale option, or identify if there is no suitable
2	Ecosystem service valuations. Spatially explicit condition assessments.
3	If a proposed development is planned for a coastal area and we have strong data from the tool to say this is an important or ecologically senstive site
3	Identify data gaps
3	Developing content for community engagement
3	Signposting for citizens to acces information
4	There could be potential to use it during blue flag and green coast award assessment but would need to look into it
5	What are the important ecological elements present within a study area and what are the main existing threats and pressures.

Number of SH	Q10. The toolbox-website is easy to use
1	4
2	3
3	3
4	4
5	4

Number of SH	Q11. How likely are you to use the website in future projects?:

1	likely
2	likely
3	likely
4	Unsure
5	likely
6	likely

Number of SH	Q12. Describe your experience with the website in two words
1	Good resource
2	Accesible potential
3	Great potential
4	Good resource
4	It would be great to have examples of how different stakeholders use it. Might make it more enticing to use. Especially for those not in research
5	Quite technical

Number of SH	Q13. Any comments...?
2	If it is made accessible to people who are not experts (which is a good thing) it should include clear to understand limits and explanations of what not to use the tools for
3	It would be great to a trial run with it with a real world decision for an environmental manager to really understand its usefulness, potential and limitation.
5	At the moment a '+ Quick view' button appears when you hover over a tool image and then you have to click it to get the tool description. Perhaps better if it auto-appears after a few seconds.

Appendix 6.2. The Bow-Tie Tool

Number of SH	Q1. What professional sector are you representing?
1	Academia / Research
2	Private sector / SME
3	Authorities (governance / policy)
4	Academia / Research
5	Authorities (governance / policy)
6	NGO / Non-profit

Number of SH	Q2. What is your age? If you do not wish to answer this question you can skip it.
1	32
2	46
3	51
4	28
5	36
6	36

Number of SH	Q3. What is your gender?
1	Male
2	Male
3	Female
4	Male
5	Female
6	Female

Number of SH	Q4. I rate this tool (1-5)
1	2
2	4
3	3
4	5
5	3
6	4

Number of SH	Q5. I will use this tool (1-5)
1	1
2	4
3	3
4	4
5	3
6	5

Number of SH	Q6. Others will use this tool (1-5)
1	4
2	5
3	5
4	5
5	3

6	4

Number of SH	Q7. Why will you use this tool?
1	To help with mentally mapping out a situation with other parties
2	May be useful in working through potential impacts related to marine developments and activities as part of EIAs.
3	To investigate the impacts of activities (wind farms, dredging) on habitats and the connections between the the different sectors
3	Very useful as an introductory guide to cause and effects.
4	Presentations to non academics/non experts. Simplifying overly complex concepts
5	To think through complex decisions and think about possible solutions
5	It could be useful in workshops but I think it might need to be simplified
6	Planning nature restoration projects, environmental campaigns and community education

Number of SH	Q8. What could be a possible reason why you will not use this tool?
1	You could acheive a very similar result (of a more basic output) with creating a mind map on a white board. It does not necessarly require the extra computatinal element
2	
3	Full transparency on how risks are ranked
4	Potential to misrepresent reality as the user has a lot of control over inputs. There are some technical fixes to be made to drop down menus.
5	It is a bit complicated and probably needs to be visualised a little better to explain it on the homepage.
6	If the data was unreliable.

Number of SH	Q9. What should we improve in the next version of the tool?
1	The final output was clunky, and hard to read
2	If the output could show (perhaps by different coloured text) which bits were user inputs and which were produced by the tool.
3	Full transparency on how risks are ranked
4	Drop down menus should be simplified with subcategories or replace with simple tables where you tick the box next to the relevant input
5	A video describing the process of using the tool would be useful.
5	It felt repetitive without a clear understanding why there were so many sections. A map of the process at the beginning would be helpful
6	Preventive and protective controls were quite similar but I think it confused me because I was racing through it.

Number of SH	Q10. Did any words or phrases in the tool confuse you?
1	Not specific words or phrases, but it was hard to see where in the process I was. A roadmap would be useful
2	
3	Some categories are vague others are very specific
4	There is an odd mix of very simplistic descriptors and highly technical. nesting them inside each other would help.
5	It wasn't clear why the dropdown menu had specific options, some were repetitive or very similar. It made it a little confusing

Number of SH	Q11. What questions in your daily work would you use this tool to answer?
1	General senario planning in marine settings

2	May be useful in identifying threats and pressures for species and habitats as part of Article 17 reporting under the Habitats Directive, as well as conservation measures.
2	Identify potential protective/mitigation measures for developments and activities.
3	A helpful tool in understanding environmental problems
4	Identifying study areas, highlighting knowledge gaps
5	Developing solutions to environmental management problems
5	Understanding problems more clearly.
5	It could be used as part of a stakeholder workshop but it would need to be simplified
6	Nature restoration project development. Assessing the impact of increased tourism. Relating to marine litter surveys.

Number of SH	Q12. The BowTie is easy to use
1	2
2	3
3	3
4	2
5	2
6	4

Number of SH	Q13. How likely are you to use the BowTie in future projects?:
1	Unsure
2	likely
3	Unsure
4	likely
5	likely
6	Very likely

Number of SH	Q14. Describe your experience with the tool in two words:
1	Network connection
2	Potentially useful
3	
4	easily misused
5	It was a little difficult to work through but it has a lot of potential
6	Cool visualisation

Number of SH	Q15. Any comments...?:
1	
2	Is there potential to tie the pressures and protective measures with EU legislation such as Habitats Directive and Water Framework Directive?
3	Maybe send material before workshop to ensure everything opens for people and that people get the chance to familiarise themselves with it
4	Citations to corroborate the end product outputs. ensure there are sufficient guardrails to prevent biased inputs generating outputs which could downplay or overstate effects
5	I think the drop down menus are hard to work through. The design and layout needs to be simplified if it is going to be used by decision makers in their general work.
6	Examples of how different stakeholders use it would be useful to encourage a variety of people to try it out. Thanks

Appendix 6.3. The sSES-DSS Tool

Number of SH	Q1.What professional sector are you representing?:
1	Academia / Research
2	Private sector / SME
3	Authorities (governance / policy)
4	Academia / Research
5	Authorities (governance / policy)
6	NGO / Non-profit

Number of SH	Q2. What is your age? If you do not wish to answer this question you can skip it.
1	32
2	46
3	51
4	28
5	36
6	36

Number of SH	Q3. What is your gender?
1	Male
2	Male
3	Female
4	Male
5	Female
6	Female

Number of SH	Q4. I rate this tool (1-5)
1	5
2	3
3	3
4	4
5	3
6	3

Number of SH	Q5. I will use this tool (1-5)
1	5
2	2
3	3
4	5
5	3
6	4

Number of SH	Q6. Others will use this tool (1-5)
1	4
2	4
3	3
4	5
5	3
6	5

Number of SH	Q7. Why will you use this tool?:
1	I would use it to support planned research on climate change impacts across EU marine SESs. complementing approaches like projecting habitat shifts driven by climate change
2	To highlight what potential effects a development or activity may have and what various actions may change.
3	As an assist to report writing
4	Illustrate complex systems to non technical audiences
4	Standardisation. It is an output generated of the users opinions and inputs rather than standardised in a way that an independent body could replicate it
5	Understanding problems and finding solutions. Visualising information for stakeholders. Understanding different stakeholder points of view.
6	Developing information campaigns

Number of SH	Q8. What could be a possible reason you wil not use this tool?
1	Might be overly complex to go through validating the connections, but that can be overcome through other means
1	Better guidance on the connection validation section as to what is specifically required. Better hightlighing of boxes for plus/ negative
2	It may be difficult to interpret the data in a way that would be easy to incorporate into an easily understood report.
3	May be too generic… not location specific
4	
5	Like other tools its a little clunky and hard to use. It could be simplified further and made more user friendly
6	I can't think of any

Number of SH	Q9. What should we improve in the next version of the tool?:
1	Better guidance for vailidation of connections, and highlighting the next steps for users. E.g. ticking boxes for positive and negative
2	Discover the source of the glitch that prevents the tool from fully running.
3	Less loops!
4	the summary outputs should list the input decisions made and highlight cases where the input severity and confidence deviate from mean values from the literature.
5	The user interface could be improved to make it easier to work through.
6	Quite a busy interface. Perhaps simplify so it is easier for users.

Number of SH	Q10. Did any words or phrases in the tool confuse you?
1	The AI generated suggestions could create redundandcy/ repetition
2	
3	
4	Much simpler than the other tools but still, executive summaries of what each input is to ensure the user is picking what they mean to
5	Not particularly - it was straight forward. Maybe when it came to the analysis understanding the meaning of loops could be better explained
6	Not that I can think of

Number of SH	Q11. For what questions in your daily work would you use this tool to answer?

1	Better visualising the complex interactions in SESs, to complement other methods
2	It may be useful to identify the most effective measures to mitigate against pressures related to a development or potentially damaging activity
3	Would use as an aid to help find an answer , or use the graphics in a report
4	logic chains for environmental impacts
5	Development management, engaging with stakeholders on key problems and demonstrating different points of view.
6	Pollution projects. Impacts of tourism on awarded beaches. Coastal erosion strategy.

Number of SH	Q12. The SES-DSS tool is easy to use
1	3
2	4
3	3
4	
5	3
6	3

Number of SH	Q13. How likely are you to use the SES-DSS tool in future projects?:
1	Very likely
2	Unsure
3	Unsure
4	likely
5	likely
6	Very likely

Number of SH	Q14. Describe your experience with the tool in two words
1	Very intresting
2	Usefully illustrative
3	Impressive, overwhelming
4	input dependent
5	Great potential
6	This version was a bit sensitive and crashed a few times on me. Overall, I think it has great potential.

Number of SH	Q15. Any comments...?
1	Lots of potential, would require lots of collaborative input to fully realise outputs
2	
3	Need to test with own data. Interesting to see how it matches with existing reports and their recommendations and findings and advice
4	guardrails are vital to ensure quality outputs, important that outputs flag deviations from the literature that may be in the inputs
5	I think this tool has a lot of potential but the user interface feels quite overwhelming. It needs to be simplified a lot to ensure that it will actually be used by stakeholders
6	Great potential. It was very interesting to use. Definitely needed the bit of guidance to navigate through the process.

Appendix 6.4. The Governance Tool

Number of SH	Q10. Did any words or phrases in the tool confuse you?
1	No, very straight forward
2	No
3	no
4	No
5	No
6	No

Number of SH	Q11. What questions in your daily work would you use this tool to answer?
1	What stuff do i need to pay attention to, and who do i need to go to
2	Who to contact/what are the relevant policies
3	How research fits into the policy narrative
4	Understanding the range of legislation, policy, key governmental bodies involved in environmental protection and management
5	Who is responsible for policies
6	What pieces of legislation or policy need to be considered in preparing an EIA on a particular development.

Number of SH	Q12. The Governance tool is easy to use
1	5
2	5
3	4
4	4
5	5
6	4

Number of SH	Q13. How likely are you to use the Governance tool in future projects?:
1	Very likely
2	likely
3	likely
4	likely
5	Very likely
6	Very likely

Number of SH	Q14. Describe your experience with the tool in two words
1	Time saving
2	Glasses required
3	visually simple
4	Informative and useful
5	Great resource
6	Time saving

Number of SH	Q15. Any comments...?
1	
2	Please keep it updated
3	very useful

While relates to spatial information and a little jarring to be on a black background. It might be
4 worth playing around with graphics a bit more to make it a little better
5 Really great to have everything in one place
6 Notice saying when a particular element was last updated.