Joint SURIMI - Advisory Councils workshop report

18.12.2025 | Version 1

Ana Rodriguez, NWWAC Secretariat

Visibility: Public

Funded by the European Union

Funded by the European Union under the Horizon Europe Program, Grant Agreement No. 101157456 (SURIMI). Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.

UK Research and Innovation

UK participants in SURIMI are funded by the UK Research and Innovation (UKRI) under the UK government's Horizon Europe funding Guarantee [grant number 10132993].

DOCUMENT INFORMATION

Grant Agreement	101157456
Project Acronym	SURIMI
Project Title	Integration of innovative and reliable socio-ecological models and user-driven solutions into the Digital Twin Ocean, to facilitate what-if scenarios and decision support, under a co-creation approach.
Deliverable Number	NA
Work Package Number	WP1
Deliverable Title	Joint SURIMI - Advisory Councils workshop report
Lead Partner	EMB
Authors	Ana Rodriguez (EMB), NWWAC Secretariat
Due Date	NA
Submission Date	NA
Dissemination Level	Public
Type of Deliverable	Report

Version	Summary of Changes
Version 1	18.12.2025
Version 2	14.01.2026

AI Disclaimer: AI powered tools were used in this report: The Zoom AI Companion was used to assist in writing the minutes of the workshop (chapter 2) and ChatGPT was used to check if we missed any relevant insights while analysing the answers of participants to the Mural questions (chapter 3).

SUMMARY

The Advisory Councils (ACs) workshop was an additional workshop held after the first SURIMI stakeholder co-design workshop, aimed to increase the awareness and involvement of European fishers for whom English was a barrier to participate in the first workshop.

After the first co-design workshop, representatives from the ACs contacted the SURIMI consortium to enquiry whether we would be willing to hold an additional dedicated AC workshop with simultaneous translations to increase participation of fishers. The SURIMI Consortium agreed to do this and the 'joint SURIMI – AC workshop' was held on 14 November 2025. The SURIMI Consortium organised the content of the workshop, while the North Western Waters AC coordinated ACs' members' participation as well as language support via simultaneous interpretation.

In total, 49 individuals participated in the workshop, including 39 Advisory Council members and 10 SURIMI Consortium members. Simultaneous interpretation into Spanish, French and English was available throughout the workshop. The objectives of the workshop were to introduce the SURIMI project and the scientific models to participants, to collect their input to support the development and design of the online tool, and to answer any questions. The workshop was held as a half-day online event and consisted of the following sessions:

1. An opening session, including welcomes, objectives, agenda and an introduction to SURIMI;
2. A modelling session, including a deeper dive into the SURIMI models;
3. An online tool and feedback session, including an interactive feedback session and a plenary discussion; and
4. A closing and next steps session, including key take-aways.

The workshop was very fruitful and the SURIMI team obtained valuable feedback that will guide the future design of the tools. The following key insights were gathered:

- Participants considered the tool to be useful and relevant for their work and most indicated that they could imagine using the SURIMI Toolbox in the future. AC Members identified a range of strategic and advisory decisions that could be informed by the tool, including: assessment of management measures and regulatory impacts; support for advisory and negotiation processes; evaluation of socio-economic impacts over time; and guidance for fleet and fisheries management choices.
- Across all discussions, data quality, timeliness, and transparency emerged as critical prerequisites. AC Members repeatedly stressed that up-to-date data is essential to trust the results and participants raised concerns that current decisions are being made with data from two years ago. Several conditions were identified as essential trust-building requirements, including: up-to-date and relevant data; transparency on used data and metadata; clear communication on model assumptions and performance; full coverage of the fisheries fleets in an area; relevance and demonstrated alignment with real-world fisheries dynamics; and capacity building and shared understanding.

- Some participants expressed doubts regarding the accuracy and realism of the results. They noted that the socio-ecological complexities and the assumptions made by these models mean that the results can only be used for comparing scenarios and anticipating consequences of management measures, rather than as prescriptive decision-making systems. It was also noted that trust in the results of the models might increase if the models include baseline scenarios that align with the experience of users.
- Participants expressed strong support for interactive, flexible tools, allowing users to compare scenarios across years, regions, fleet segments, and fishing methods; adjust key variables; and download or reuse data and visual outputs. A mixed presentation of results—combining graphs, maps, numbers, and short explanatory text—was preferred, ideally through integrated dashboards that bring together environmental, economic, and social indicators. Different levels of detail should be available to accommodate diverse user types.
- Key expectations regarding how the results should be presented were that the limits of the results and the underlying assumptions should be clearly noted, and the underlaying data sources should be clearly communicated. AC Members unanimously agreed that information on uncertainty is essential, and most participated favoured a mixture of a simple easy-to-read indication of uncertainty, with the possibility to go into details.

CONTENT

1. INTRODUCTION AND BACKGROUND

This additional workshop was held to increase participation of fishers and other Advisory Council (AC) members, for whom the English language was a barrier impeding their attendance to the first SURIMI stakeholder workshop. After the first co-design workshop held on the 11th of February 2025, representatives from the ACs contacted the SURIMI consortium to enquire whether we would be willing to hold an additional AC-dedicated workshop with simultaneous interpretation to increase participation of fishers. The SURIMI Consortium agreed to do this and the 'joint SURIMI – AC workshop' was held on 14th of November 2025. The SURIMI Consortium organised the content of the workshop, while the North Western Waters AC coordinated language support via simultaneous interpretation and participation of the following AC Members:

- Baltic Sea AC
- Black Sea AC
- Long Distance AC
- Market AC
- Mediterranean Sea AC
- North Sea AC
- North Western Waters AC
- Pelagic Stocks AC

In total, 49 individuals participated in the workshop, including 39 Advisory Council members, representing mostly fishers and the AC Secretariats, but also NGOs and other interest groups (see Fig.1), as well as 10 SURIMI Consortium members. Simultaneous interpretation into Spanish, French and English were available throughout the workshop.

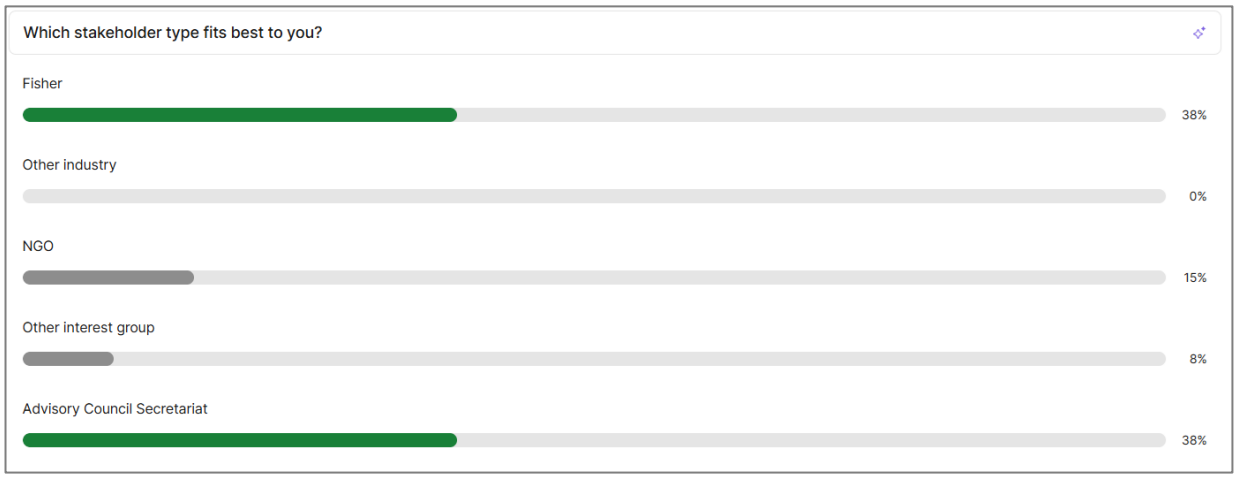


Figure 1: Slido poll answers to the question: "Which stakeholder type fits best to you?"

2. WORKSHOP METHODOLOGY

The 'Joint Advisory Councils – SURIMI workshop' was held online on 14th of November 2025 as a half day event (9:30-12:30 CET) and consisted of the following sessions (see Annex I for full agenda):

1. An opening session, including welcomes, objectives, agenda and an introduction to SURIMI;
2. A modelling session, including a deeper dive into the SURIMI models;
3. An online tool and feedback session, including an interactive feedback session and a plenary discussion; and
4. A closing and next steps session, including key take-aways.

During the first two sessions, videos (which were mostly created for the first stakeholder workshop) were shown as a means of introducing the SURIMI project and its models. The following videos were presented:

- Official SURIMI video;
- Introduction to the SURIMI models: a short introduction to the models SURIMI will use;
- POSEIDON: a short video explaining POSEIDON;
- CMSY++ : a short video explaining the CMSY++ model;
- Ecopath with Ecosim: a short video explaining Ecopath with Ecosim (or EwE);
- Value Chain: a short video explaining the value chain; and
- System Dynamics model: a short video explaining the system dynamics model.

For the online tool and feedback session, a collaborative online whiteboard was designed in Mural (Fig. 2) to collect feedback from participants on key questions that would guide the future design of the tools. The Mural was created in English and translated into Spanish and French.

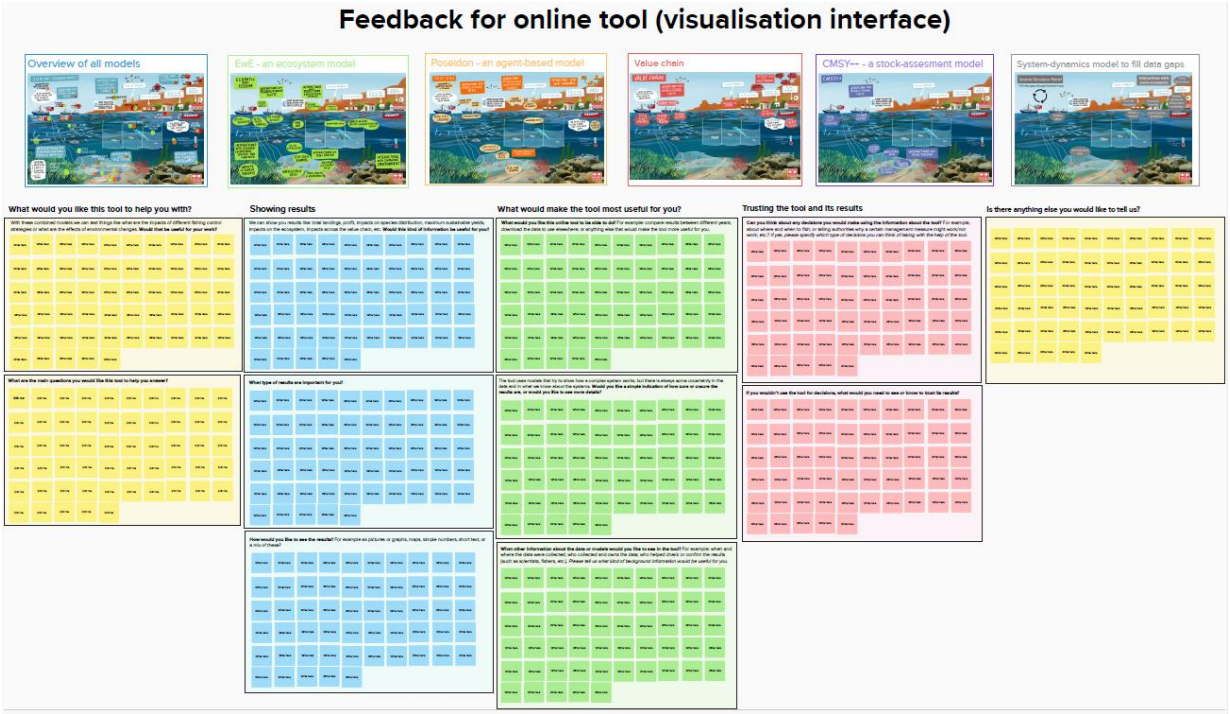


Figure 2: Mural template used to collect feedback from participants during the online tool and feedback session.

The following eleven questions, divided into five blocks, were asked:

1. **What would you like this tool to help you with?**

- With these combined models we can test things like what are the impacts of different fishing control strategies or what are the effects of environmental changes. Would that be useful for your work?
- What are the main questions you would like this tool to help you answer?

2. **Showing results**

- We can show you results like: total landings, profit, impacts on species distribution, maximum sustainable yields, impacts on the ecosystem, impacts across the value chain, etc. Would this kind of information be useful for you?
- What type of results are most important for your work?
- How would you like to see the results? For example, as pictures or graphs, maps, simple numbers, short text, or a mix of these?

3. **What would make the tool most useful for you?**

- What would you like this online tool to be able to do? For example: compare results between different years; download the data to use elsewhere; or anything else that would make the tool more useful for you.
- The tool uses models that try to show how a complex system works, but there is always some uncertainty in the data and in what we know about the systems. Would you like a simple indication of how sure or unsure the results are, or would you like to see more details?
- What other information about the data or models would you like to see in the tool? For example: when and where the data were collected; who collected and owns the data; who helped check or confirm the results (such as scientists, fishers, etc.). *Please tell us what kind of background information would be useful for you.*

4. **Trusting the tool and its results**

- Can you think about any decisions you would make using the information about the tool? For example, about where and when to fish; or telling authorities why a certain management measure might work/not work; etc.? *If yes, please specify which type of decisions you can think of taking with the help of the tool.*
- If you wouldn't use the tool for decisions, what would you need to see or know to trust its results?

5. **Is there anything else you would like to tell us?**

2. WORKSHOP MINUTES

2.1. OPENING SESSION

2.1.1. WELCOME, OBJECTIVES AND AGENDA

The workshop was opened by the Executive Secretary of the North Western Waters Advisory Councils, Mo Mathies, who welcomed all participants and thanked them for their engagement, highlighting the importance of Advisory Councils' members' expertise in guiding the project. She emphasised that this workshop offers not only an update on the project's progress, but also a valuable opportunity to share knowledge and ensure that the models under development accurately reflect the real-world challenges and priorities of the industry.

Ana Rodriguez (EMB), lead for the stakeholder engagement work package of SURIMI, also welcomed participants on behalf of all project partners and expressed appreciation for the strong attendance. She noted the importance of having more Advisory Councils' representation, which is now easier thanks to the availability of interpreters. She then presented the agenda (Annex I) and objectives of the workshop: to introduce the SURIMI project and the scientific models the project will integrate, to collect input from participants to support the development and design of the online tool, and to answer any questions.

2.1.2. INTRODUCTION TO SURIMI AND ITS MODELS

Patrycja Antosz, coordinator of the SURIMI project, gave a short presentation on the SURIMI project. She explained that the project focuses on implementing socio-ecological models into the European Digital Twin of the Ocean to support real-world problem solving and policy development.

She outlined that SURIMI is a Horizon Europe Mission Ocean and Waters research and innovation action, which aims to reach a relatively high technology readiness level by demonstrating the usability of the tools being developed. The project began in May of 2024, is now at its halfway point, and will run until April 2027.

Patrycja explained that the primary goal is to develop the SURIMI toolbox, a set of socio-ecological models relevant to understanding fisheries activities. These models will cover both ecological and social aspects and will be accompanied by assessment and policy modules, enabling users to retrieve information and simulate the likely outcomes of different "what-if" scenarios. The toolbox will be available as an online, user-friendly interface that packages all models and data in an interactive environment.

The project brings together several existing and scientifically accepted models, supplemented by some new ones, in order to create an integrated picture of the dynamics of fisheries as a complex socio-ecological system. She briefly outlined the purpose of each primary model: Ecopath with Ecosim for representing marine ecology and species interactions; CMSY++ for estimating maximum sustainable yield and stock productivity; the POSEIDON model for representing individual fishers' behaviours and consequences across different types of fisheries; and models representing market prices and the broader value chain from catch to consumer. By combining these, the project aims to support the exploration of management interventions that benefit both ecosystems and the various actors involved.

Patrycja further explained that the combined models will be made available through the European Digital Twin of the Ocean, an advanced virtual infrastructure developed by the European Commission. She provided an overview of digital twins as tools for simulating "what-if" scenarios in complex systems. The Digital Twin of the Ocean integrates observations, data, AI tools, and high-performance modelling in a single environment, enabling users to explore evidence-based decisions. By onboarding SURIMI's

models to this platform, the project hopes to reach a wide range of stakeholders beyond those directly involved in fisheries.

She summarised the project's planned value chain: integrating marine monitoring data, combining socio-ecological models, adding predictive "what-if" modelling, and using these tools to support more sustainable fisheries management. This, in turn, is expected to contribute to a healthier Ocean, more stable and profitable fisheries, and more sustainable consumer behaviour.

She concluded by thanking participants for attending, stressing the project's strong interest in stakeholder engagement. She encouraged participants to provide honest feedback so that the tools can be tailored to users' needs while development is still ongoing.

To conclude the introduction to the SURIMI project session, the official SURIMI and the intro to SURIMI models videos were shown.

QUESTIONS FROM PARTICIPANTS

A question was raised concerning the integration of the different models. The participant noted that the models appeared to function quite separately and asked how the project team ensured that the underlying hypotheses of the models were compatible. The participant highlighted that although each model individually had been validated, combining four or five of them could be challenging, and clarification was sought on what work had been undertaken to verify that the merged system would accurately reflect real ocean dynamics.

Jeroen Steenbeek (one of the SURIMI modellers), explained that, while a detailed technical discussion would be lengthy, the team had built an interconnected modelling system in which the ecological, fisheries, and value chain components run sequentially and are linked through information exchange. He emphasised that considerable effort had gone into ensuring that the models align and that their assumptions fit together properly. He further noted that the project remains partly experimental, as this is the first time such a combination has been attempted, and that the European Digital Twin of the Ocean infrastructure is being used as a flexible environment for model interoperability, describing it as "a kind of Lego box." Early indications suggest that the approach is working well. Jeroen noted that more detailed explanations could be provided later in the meeting if needed and that a later slide in the workshop would provide further clarification on how the models interact.

2.2. MODELLING SESSION

2.2.1 INTRO TO THE MODELLING SESSION

Ana Rodriguez explained that the models used in SURIMI are established expert fisheries models that have been implemented individually worldwide to support fisheries management. She highlighted that the novelty of SURIMI lies in combining these models so that they can exchange information and be used together. She noted that the current case study area is the Western Mediterranean, but that in the future the modelling approach could be applied to other areas.

Ana then outlined the next steps in the session, explaining that for each model, a short video of a few minutes would be shown to provide more details, including strengths and weaknesses, examples of where the models have been used and advantages of combining the models. Each model video would be followed by a short Q&A.

2.2.2 POSEIDON

After watching the POSEIDON model video, a question was raised about the source and type of economic data used. The participant wondered whether the model relies on existing data, such as from the EU Data Collection Framework, and whether any additional data processing or refinement would be undertaken.

Nicolas Payette (one of the SURIMI modellers) explained that data collection for the Western Mediterranean case study is still ongoing. The economic data required concern mainly vessel operating costs. Although he had not yet collected the data, it was confirmed that such data exist at the European level and the plan is to use them largely as-is, without extensive additional processing.

Clarification was also sought on whether the operational data would be available at the individual vessel level or aggregated by fleet segments, as fleet-segment data are typically more useful for analysing trends and regional economic performance. Nicolas replied that individual vessel data are unlikely to be available, so the data will need to be aggregated, with individual costs inferred from that aggregation. It was noted that if individual vessel data were available, it would be useful to integrate that into POSEIDON.

A participant then asked whether the models treat different fisheries (e.g. pelagic, artisanal, industrial) differently, given the variability in data quality and availability. Jeroen Steenbeek responded that all fleets are represented in Ecopath with Ecosim, but two fleets (Spanish purse seiners and bottom trawlers) are modelled individually in Poseidon to capture vessel-specific behaviour. Other fleets are represented more generally in EwE. It was explained that the aim is to combine models to leverage the strengths of each: EwE captures ecological dynamics, while Poseidon models individual fisher behaviour and the models communicate with each other during simulations.

A participant highlighted the importance of accurate socio-economic data but also noted the complexity of the Western Mediterranean fleet and port diversity, noting challenges in socio-economic data and practical application. Jeroen and Nicolas acknowledged these challenges, emphasising that Western Mediterranean is relatively data-rich but still complex. They added that the modelling framework allows for local models to behave differently by fleet or area, embracing system diversity and complexity rather than forcing a single high-level representation.

Participants raised concerns that currently decisions are being made with data from two years ago and that having up-to-date data is critical. Athanassios Tsikliras (one of the SURIMI modellers) agreed that the time-lag is an issue, but noted that the framework is ready and can be used with more up-to-date data when available. Patrycja Antosz suggested that the project could run “what-if” scenarios to look into the effects of data uncertainty due to delayed or incomplete data, and see how variations in data influence outcomes.

2.2.3 CMSY++

Participants had no questions after watching the CMSY++ video.

2.2.4 ECOPATH WITH ECOSIM (EWE)

Participants asked no questions after watching the EwE video.

2.2.5 VALUE CHAIN

After watching the Value Chain video, a participant asked how the economic data for the value chain model are obtained. Jeroen Steenbeek explained that the study for the Western Mediterranean is based on an extensive socioeconomic study, including interviews and reports from Catalonia and France, particularly referencing to the paper: Ortega Cerdà, M., Coll, M. and Guijarro, B., 2023. Fish value chains in the Spanish Mediterranean Sea. The process involved obtaining data from official reports, landings data, and internal statistics. It was emphasised that the value chain model is necessarily a simplification, intended to provide an indicative picture of value distribution along the chain, and the SURIMI representative offered to circulate the paper as a reference if anyone wanted it.

A question was then asked whether recreational fisheries data are incorporated into any of the models, noting that recreational fishing has distinct economic and ecological characteristics compared to commercial fishing. Nicolas Payette responded that, for the Catalan area, recreational fisheries data are scarce and were not included in the current value chain model. Jeroen clarified that recreational fishing can be incorporated into Ecopath with Ecosim, depending on data availability. Athanassios Tsikliras added that recreational fisheries can also be included in stock assessment models if catch data per species are available, although the effect is usually on catch magnitude rather than trends. Nicolas noted that POSEIDON has not been used to model recreational fisheries at the individual agent level, although it could theoretically be done. He highlighted that including recreational fisheries is desirable, but data limitations create uncertainties that the project will aim to quantify in scenario modelling.

A participant explained that, from January, all recreational fishers in EU coastal countries are required to report catches electronically via an app and that this system will provide more robust data for models. Athanassios confirmed that recreational fisheries are now officially included in the EU fisheries data collection framework, with member states reporting catch data, though the collection method varies. It was added that roughly half of the coastal states use the EU app, while the others develop their own systems, but all must submit monthly accumulated data to the Commission, which checks compliance with minimum criteria.

2.2.6 SYSTEM DYNAMICS MODEL

After watching the System Dynamics model video, a participant asked whether data gaps in the model are filled with collected real data or if the model “hallucinates” missing data. Sheila Heymans (from the SURIMI team) clarified that the model does not generate data on its own; any trends applied to fill gaps are a deliberate choice by the modeller, not automatic. Timo Szczepanska (one of the SURIMI modellers) added a practical example from the Western Mediterranean: fish market prices are based on historical

data, if available, and on supply–demand dynamics where data are missing, which are then fed back into the models.

2.3. ONLINE TOOL AND FEEDBACK SESSION

2.3.1 INTRODUCTION TO THE ONLINE TOOL

Aristea Zafeiropoulou, the SURIMI partner in charge of developing the online interface, explained that the online tool, which users will be able to use to interact with the models, is an interactive, web-based platform designed to connect science and policy, allowing users to test "what-if" scenarios. It translates complex model outputs into visual dashboards, including maps and charts, and is designed to be user-friendly for different types of users while promoting collaboration among participants from different domains.

Ana Rodriguez emphasised that the main goal of the SURIMI project is to combine well-established models, previously used in isolation, so that they can communicate with each other (Fig. 3) and provide indications of future trends, despite data limitations or model complexity.

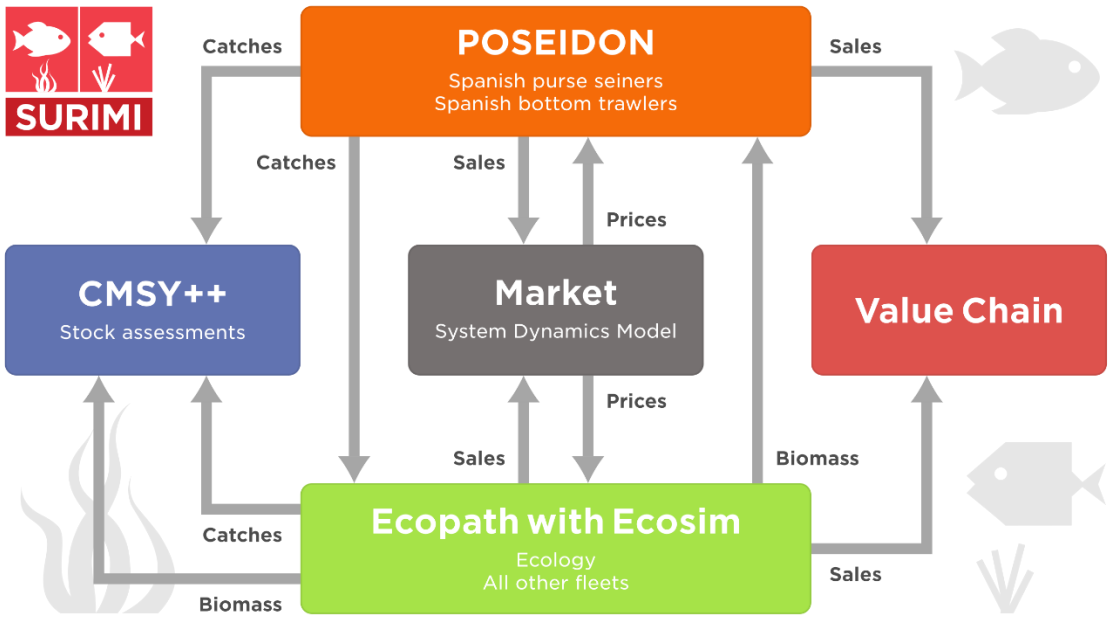


Figure 3: Graphic illustrating how the SURIMI models will communicate and exchange information with each other.

2.3.2 WORKING ON QUESTIONS IN MURAL

Participants were given 30 minutes to work individually on the 11 questions in the Mural (see Section 2). This part of the session was focused on obtaining structured feedback from participants to guide the future development of the tools. The questions were provided in English, French and Spanish.

2.3.3 PLENARY DISCUSSION

Ana Rodriguez invited participants to raise any open questions, concerns, or verbal comments related to any aspect of the project or their Mural contributions.

One participant stressed the importance of transparency regarding the data used in the models, particularly for sensitive areas such as discards at sea or mesh sizes. It was highlighted that fishers often question the source and accuracy of data, making transparency a critical point.

Another participant reflected on his experience as a user, noting that for long-distance fisheries in international waters, it is essential to include data on non-EU fleets to capture the full picture. Jeroen Steenbeek clarified that the current case study focuses on the Western Mediterranean, so this issue is not immediately relevant, but it would be important for future applications.

The need of training addressed to the administrators, who might use the tool was also emphasized. Patrycja Antonsz acknowledged this, noting that the purpose of the project is to create a tool that is usable and useful for stakeholders, with proper training and tutorials planned to ensure appropriate use. It was also highlighted the challenge of integrating the models with existing infrastructures like the European Digital Twin Ocean, over which the project has limited control.

The same participant highlighted the need to clearly communicate assumptions and uncertainties to users. It was emphasised that for management decisions, such as quota recommendations, the tool should explicitly indicate the assumptions behind outcomes, including fleet behaviour, climate scenarios, and recruitment, and clarify that alternative outcomes are possible depending on these factors. The same participant also highlighted the challenge of assessing the impact of regulations on the fishing sector, noting that formal impact assessments by the Commission take significant time. Patrycja noted that there are many possibilities for scenarios and that the tested ones will be co-designed with users. The participant also mentioned that while the uncertainty of model outputs would be high, the tool could still serve as a useful exploratory approach, including assessing potential impacts under different IPCC climate scenarios. Patrycja agreed that the ensemble of models would be well-suited for exploring the impacts of decisions, although this would require coordination with the DTO infrastructure.

A participant added that in Ireland, there is an increasing need to predict impacts on stocks and dependent communities in advance, rather than only reviewing effects retrospectively, highlighting the value of a tool that could guide decision-making even if it cannot provide definitive answers. Patrycja suggested using potential advice to test scenarios in addition to predicting advice from scenarios, emphasising the complexity of ecosystem modelling and the ultimate goal of the European Digital Twin Ocean (EDITO) to improve prediction based on environmental variation.

Another participant asked about the regularity of updates in the data used in the models, reflecting the interest in keeping the tool aligned with new scientific evidence. Jeroen explained that the models themselves would not change frequently, but updates to climate and fisheries data through the EDITO infrastructure would keep the outputs current. This approach allows the models to remain relevant without constant redevelopment, while pioneering the integration of ecological modelling with planning tools.

Another participant returned to the topic of uncertainty, asking how it could be communicated to users without overcomplicating the outputs. It was suggested to have a dedicated page or panel within the

SURIMI tool that explains uncertainties in detail, separating modelled versus collected data uncertainty, so the main outputs remain clear while users still have access to the underlying uncertainty. It was also noted that if the tool is used for initial exploratory insights, end users would need to actively engage with the uncertainties themselves.

Jeroen responded that limited uncertainty assessments would be included for the most sensitive parameters, leveraging the EDITO framework to run multiple simulations efficiently. The challenge of conveying and enabling user interaction with these uncertainties would be addressed gradually, informed by stakeholder feedback. Ana Rodriguez added that previous workshops confirmed that uncertainty is a key concern for stakeholders, and that the balance between accessibility in understanding uncertainty and statistical complexity is central to the project.

When the SURIMI project team asked participants if they would trust and use the models, one participant said he/she would, especially if baseline scenarios were included for users to compare with their own expertise, which would help build trust and facilitate exploration of the tool for management measures. It was also noted that many of the models are already widely used and familiar, which supports user confidence. Another participant added that the tool could serve as a strong basis for discussions and decisions on quota and non-quota stocks, providing long-term forecasts under different catch scenarios. While that participant had initially been cautious about potential misuse by the Commission, the tool's potential usefulness for professional representatives was recognised.

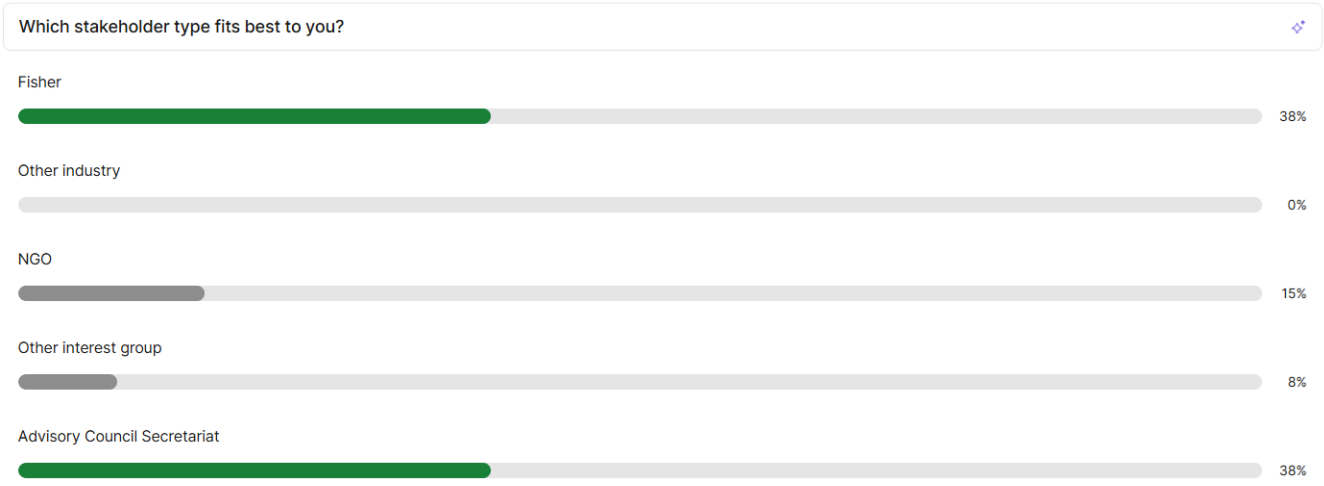
In the closing part of the session, Patrycja highlighted that a key benefit of the tool on the EDITO platform is that stakeholders can interact with it themselves, testing the impacts of decisions directly. Jeroen emphasised the trade-offs and priorities inherent in the project, acknowledging that not all pressures on ecosystems (e.g., recreational fisheries, non-EU fishing, environmental pressures) could be included at this stage. The responsibility to communicate clearly which factors are included and which are not was stressed.

A participant raised concerns about broader environmental and economic pressures beyond fishing, including shipping, tourism, and non-EU catches, and how these might affect markets and ecosystem impacts. Jeroen responded that while the project starts with a limited set of factors (climate change, fisheries, ecosystem dynamics, and market dynamics), the framework is modular and extendable to include additional pressures in the future. Patrycja added that transparency about limitations is a priority.

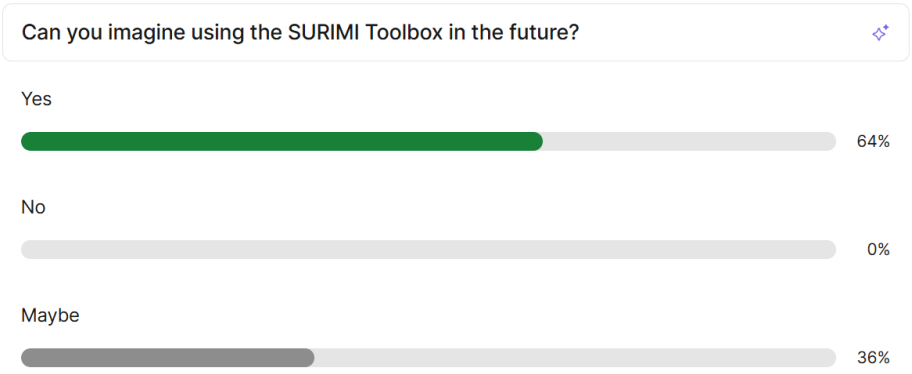
2.3.3 SLIDO QUIZ

To conclude the online tool and feedback session, Ana Rodriguez introduced a quick interactive quiz via Slido to capture stakeholder types and interest in using the SURIMI Toolbox.

Question 1: Which stakeholder type fits best to you?



Question 2: Can you imagine using the SURIMI Toolbox in the future?



2.4. CLOSING AND NEXT STEPS

Patrycja Antosz summarised key takeaways: stakeholders see value in the exercise, emphasised the importance of using real-time and clearly labelled data, combining data types, assessing impacts across multiple dimensions, and effectively communicating trade-offs.

Ana Rodriguez then outlined next steps, including keeping stakeholders engaged through an online forum, and planned workshops in Spring 2026 (prototype presentation) and Spring 2027 (final toolbox), noting that translation support would be explored where needed. Patrycja also reminded participants that examples of user interfaces and indicators would be presented at the next SURIMI stakeholder workshop in 2026.

In the final remarks, Mo Mathies thanked Ana Rodriguez, the interpretation team, and all presenters for organising the workshop and facilitating engagement with stakeholders directly involved in fisheries. She highlighted the importance of connecting with on-the-ground stakeholders rather than just administrations or other interested parties. Mo also offered support for future workshops or training sessions, emphasising the need for language interpretation to ensure all members can fully participate.

3. MURAL QUESTIONS RESULTS

Key insights obtained from the participants' answers to the Mural questions are provided in this section. For a full compilation of all original answers see Annex II.

3.1. WHAT WOULD YOU LIKE THIS TOOL TO HELP YOU WITH?

3.1.1 QUESTION 1: WITH THESE COMBINED MODELS WE CAN TEST THINGS LIKE WHAT ARE THE IMPACTS OF DIFFERENT FISHING CONTROL STRATEGIES OR WHAT ARE THE EFFECTS OF ENVIRONMENTAL CHANGES. **WOULD THAT BE USEFUL FOR YOUR WORK?**

Overall, participants considered the tool to be useful and relevant for their work, provided the quality of the input data is appropriate and the data is up to date.

The participants highlighted the potential of such models to:

- Assess the role of individual species in the food web and their biomass thresholds to ensure a sustainable environment and fisheries.
- Explore environmental change scenarios, notably the impact of the different IPCC scenarios on fish stocks and fisheries.
- Support strategic decision-making, such as defining objectives during end-of-year negotiations and comparing alternative management scenarios.
- Test management strategies, including fishing control measures, fleet-segment strategies, and management of both quota and non-quota stocks (e.g. seabass).
- Show the importance of combining different types and data and information for a better fisheries management.

At the same time, several conditions and caveats were raised:

- The usefulness of the models depends strongly on the quality, timeliness, and spatial scale of input data, with repeated concerns expressed about reliance on outdated datasets.
- Respondents stressed the need to better integrate socio-economic data and local knowledge alongside biological and environmental information.
- The complexity of socio-ecological interactions in the real world and the ability of models to simulate this accurately was a concern.
- Due to uncertainties in the results, there was a view that such tools should be used primarily for scenario comparison and decision support, rather than as prescriptive or final decision-making instruments.

Participants emphasized that continuous interaction with end users will be key to ensure understanding and uptake of the tools.

3.1.2 QUESTION 2: **WHAT ARE THE MAIN QUESTIONS YOU WOULD LIKE THIS TOOL TO HELP YOU ANSWER?**

Participants saw the tool as a means to analyse trends, compare different scenarios and inform decision-making, such as:

- Assessing the impacts of new fisheries management regulations, such as the impact of temporary closures of specific fleet segments, on the environment, fisheries and fishers;
- Assessing the effects of different fishing strategies and developing long-term exploitation strategies for stocks;
- Assessing how stock and socio-economic conditions are developing; and
- Assessing the impacts of climate change on stocks, for instance on migratory stocks and possible fall-back options.

Respondents also emphasised the need for robust socio-economic indicators to describe trends and complement biological reference points such as MSY. They also noted that a link with a real economic tool is essential if the aim is to truly integrate socio-economic aspects.

3.2. SHOWING RESULTS

3.2.1 QUESTION 1: WE CAN SHOW YOU RESULTS LIKE: TOTAL LANDINGS, PROFIT, IMPACTS ON SPECIES DISTRIBUTION, MAXIMUM SUSTAINABLE YIELDS, IMPACTS ON THE ECOSYSTEM, IMPACTS ACROSS THE VALUE CHAIN, ETC. **WOULD THIS KIND OF INFORMATION BE USEFUL FOR YOU?**

Most participants agreed that this information would be useful for them. They noted that it is important to have results broken down into clear categories, such as fishing techniques and areas, to be able to compare them. However, they highlighted that:

- The link between socio-economics and fish stocks is essential to assess opportunities.
- It is important to include up-to-date data, accurately represent socio-economic aspects and have an approach that is as tailored as possible.
- Concepts such as 'ecosystem impacts' and 'acceptable thresholds' must be clearly defined in consultation with professionals so that all actors understand them.

Key expectations regarding how the results should be presented to elicit trust were that:

- The limits of the results and the underlying assumptions should be clearly noted.
- The underlaying data sources should be clearly communicated, so the results can be critically assessed.

However, some participants expressed doubts in the accurateness and realism of the results. They noted that the assumptions made by these models mean that the results can only be used for comparative purposes because:

- Based on experience with the POSEIDON model in RFMOs, the results do not manage to reproduce the fishery dynamics, and therefore specific results, such as profits, will not be realistic.

- Comparisons of profits by fleet segments and countries can be misleading due to structural differences regarding employment costs, social charges, salaries, how profits are reported (including contributions in kind or not), as well as different subsidies and support measures.

3.2.2 QUESTION 2: **WHAT TYPE OF RESULTS ARE MOST IMPORTANT FOR YOUR WORK?**

The most important results for participants were related to socio-economics, different management scenarios and future environmental changes and species distribution. They specifically mentioned the following results:

Socio-economic:

- Assessing the value of an area or fishery to local economies.
- Expected evolution of total landings and socio-economic impacts across the entire value chain, particularly for production.
- Socio-economic impacts of quota closures, fishing bans, area closures, etc.
- Periods when species have the highest market value.

Management scenarios:

- Comparison of different management scenarios in global terms. Not focusing on a specific result that will not accurately characterise reality, but using the results to compare scenarios.
- Assessing impacts in the short-, medium- and long-term.
- Identifying scenarios that help optimise fishing strategies, while respecting regulatory constraints.
- Better understanding the impacts of increases/decreases in Total Allowable Catches.

Ecological:

- Identification of periods when catch overruns are most likely.
- Understanding how mobility, behavioural change (including trophic chain interactions) and future environmental changes affect species distribution to optimise exploitation.

Respondents also re-iterated that an indicator to describe environmental trends and define socio-economic sustainability is needed, similar to the MSY indicator for biological sustainability.

3.2.3 QUESTION 3: **HOW WOULD YOU LIKE TO SEE THE RESULTS?** FOR EXAMPLE, AS PICTURES OR GRAPHS, MAPS, SIMPLE NUMBERS, SHORT TEXT, OR A MIX OF THESE?

Most respondents said they would like a mixture of the above mentioned. They noted that this mixture should allow for a clear understanding of where the results come from, in order to interpret them correctly. They also noted that different visualisations for the same type of information would be helpful and that it is important to keep in mind that different types of users with different levels of

understanding might check the results, and that they should hence be understandable to a wide public.

Specific requests were to have:

- A single dashboard with economic, environmental and social panels, all with graphs to see the impact of each scenario;
- Graphs of the biomass of all species in the ecosystem; and
- Graphs with the main economic indicators.

3.3. WHAT WOULD MAKE THE TOOL MOST USEFUL FOR YOU?

3.3.1 QUESTION 1: **WHAT WOULD YOU LIKE THIS ONLINE TOOL TO BE ABLE TO DO?** FOR EXAMPLE: COMPARE RESULTS BETWEEN DIFFERENT YEARS; DOWNLOAD THE DATA TO USE ELSEWHERE; OR ANYTHING ELSE THAT WOULD MAKE THE TOOL MORE USEFUL FOR YOU.

AC Members expressed a strong preference for an online tool that is interactive, transparent and flexible, enabling users to explore, compare, and reuse results according to their specific needs. Key functionalities identified include:

Scenario comparison and temporal analysis:

- Being able to compare future scenarios to a baseline;
- Compare results across different years, regions and fishing methods; and
- Create historical data series and graphical comparisons between fisheries in different areas (such as cod or hake).

Interactivity and exploratory analysis:

- An interactive graphical system, including interactive maps, were variables and results (e.g. years, climate scenarios, etc.) can be adjusted; and
- A question-and-answer system for scenarios and corresponding model responses;

Data access, download and reuse:

- Being able to download the data and extract data in table formats, to re-use it in other applications and export graphs to commonly used formats (e.g. MS Office); and
- Making the underlying data available, including the environmental and socio-economic ones.

Transparency of data sources and limitations:

- Showing all data sources model used to model the results; and
- Communicating the limitations and appropriate use of the tool, in order to avoid misinterpretation or overconfidence in the results.

User engagement and accessibility:

- AC Members emphasized the importance of showing the results in a format that is accessible to a wide range of users, including fishers; and
- They suggested having a forum where users can ask questions to the developers behind the tools.

Clear, accessible outputs

- Suggestions included providing summary sheets by species or fleet segment, overviews of applicable regulations by region, gear, or species.

3.3.2 QUESTION 2: THE TOOL USES MODELS THAT TRY TO SHOW HOW A COMPLEX SYSTEM WORKS, BUT THERE IS ALWAYS SOME UNCERTAINTY IN THE DATA AND IN WHAT WE KNOW ABOUT THE SYSTEMS. **WOULD YOU LIKE A SIMPLE INDICATION OF HOW SURE OR UNSURE THE RESULTS ARE, OR WOULD YOU LIKE TO SEE MORE DETAILS?**

The AC Members unanimously agreed that information on uncertainty is essential. Most participated favoured a mixture of a simple easy-to-read indication of uncertainty, with the possibility to go into details. They noted that a simple explanation might satisfy some users, while others might need more details to inform their work. One participant suggested to have the uncertainty in a separate panel to avoid the increased complexity of having so much data. Another participant suggested to include an option to contact someone who can explain the details of the uncertainty if needed.

3.3.2 QUESTION 3: **WHAT OTHER INFORMATION ABOUT THE DATA OR MODELS WOULD YOU LIKE TO SEE IN THE TOOL?** FOR EXAMPLE: WHEN AND WHERE THE DATA WERE COLLECTED; WHO COLLECTED AND OWNS THE DATA; WHO HELPED CHECK OR CONFIRM THE RESULTS (SUCH AS SCIENTISTS, FISHERS, ETC.). *PLEASE TELL US WHAT KIND OF BACKGROUND INFORMATION WOULD BE USEFUL FOR YOU.*

All participants overwhelmingly agreed that having abundant metadata is essential. They specifically requested the following information to be disclosed as metadata:

- Data sources (including whether it comes from public administrations, scientific institutes, industrial or artisanal fishing organisations, traditional knowledge or scientific sources);
- Date of data collection and frequency of data updates (e.g. for price indices: weekly, monthly, annually);
- Method of data collection (e.g. for socio-economics, whether it was based only on official statistics or also on interviews with fishers and other users);
- Types of segmentation (e.g. by individual vessels, fleet segments or metiers, flags, etc.);
- A clear indication of whether the data shown is the modelled or collected data; and
- Indicating assumptions behind the models.

3.4. TRUSTING THE TOOL AND ITS RESULTS

3.4.1 QUESTION 1: **CAN YOU THINK ABOUT ANY DECISIONS YOU WOULD MAKE USING THE INFORMATION ABOUT THE TOOL?** FOR EXAMPLE, ABOUT WHERE AND WHEN TO FISH; OR TELLING AUTHORITIES WHY A CERTAIN MANAGEMENT MEASURE MIGHT WORK/NOT WORK; ETC.? *IF YES, PLEASE SPECIFY WHICH TYPE OF DECISIONS YOU CAN THINK OF TAKING WITH THE HELP OF THE TOOL.*

The AC Members identified a range of strategic and advisory decisions that could be informed by the tool including:

Assessment of management measures and regulatory impacts:

- Illustrate and anticipate the impacts of management measures, including TAC, new technical regulations, spatial-temporal closures, and setting up new MPAs or offshore windfarm.
- Understanding whether measures are likely to achieve their intended outcomes and create unintended socio-economic impacts was seen as particularly valuable.

Support for advisory and negotiation processes:

- The tool could guide AC Members positions during the end-of-year TAC and quota negotiations; and
- Help in drafting recommendations, as it brings together diverse data.

Evaluation of socio-economic impacts over time:

- Assessing medium- to long-term socio-economic impacts of management strategies (e.g. Management Strategy Evaluation – Harvest Control Rules) and technical measures, affecting fleet behaviour or selectivity.
- Assessing basic variations in yearly fishing opportunities (TACs and quotas) in future profitability.

Guidance for fleet and fisheries management choices

- The tool could help partly guide or encourage certain fleet segments towards other resources depending on the annual TACs.
- It could also support national management of non-quota species, if the scale is appropriate and the results match real-world observations; and help in proposing changes in fisheries management measures.
- It was highlighted that fishers have more precise data when it comes to where to fish, but that the tool could be used to illustrate the impact of new measures.

Participants cautioned that decisions with the tool can only be taken if the data are really up to date, because of the fast-changing landscape (e.g. the Multiannual plan measures). They saw the tool as promising decision-support tool, but some were concerned about biases and the realism of the results.

3.4.2 QUESTION 2: **IF YOU WOULDN'T USE THE TOOL FOR DECISIONS, WHAT WOULD YOU NEED TO SEE OR KNOW TO TRUST ITS RESULTS?**

Advisory Council members indicated that trust in the tool depends on transparency, relevance and demonstrated alignment with real-world fisheries dynamics. Several conditions were identified as essential before results could be confidently used to inform decisions. Key trust-building requirements include:

Up-to-date and relevant data:

- Respondents consistently noted that up-to-date data is essential to trust the results, particularly in the context where management measures (e.g. the Multiannual Management Plans) and fisheries conditions change rapidly.

Transparency on used data and metadata:

- AC Members emphasised the need for detailed information on all data behind the models, including: data sources; quantity, quality and degree of certainty of the data; possible data gaps; and access to the underlying datasets where possible.

Clear communication on model assumptions and performance:

- Respondents noted that knowing all assumptions behind the models would elicit trust, for example: assumptions regarding discards for certain stocks; species interaction assumptions; assumptions concerning the impact of management measures on fleets; assumptions on product selling prices; etc. They further cautioned that professionals will not trust the tool if it is perceived as a black box.
- Respondents also noted that they would like to have clear communication on where the model is strong and where it is weak.

Examples of use:

- The respondents noted that having a few examples and results of decisions taken using the tool would elicit trust.

Capacity building and shared understanding:

- AC Members noted that EU and national administrators must be well trained to use the results of the modelling correctly in their work and that broad understanding and acceptance of the tool among Member States, producer organisations, committees, scientists, fishers, and other stakeholders would lead to trust.

3.5. IS THERE ANYTHING ELSE YOU WOULD LIKE TO TELL US?

Final points raised include:

Use of case studies:

- Participants recommended that stakeholder presentations start with a concrete case study to help see how the different models work together and to what result. They also recommended

creating relevant and diverse case studies geographically (North and South Atlantic, Mediterranean, West Africa) and by activity (e.g. artisanal, offshore, distant-water).

Ensure practical relevance for operators:

- AC Members questioned how the tool would be directly and practically useful for fishing operators in their daily work, stressing that stakeholder engagement will depend on perceived usefulness and clear socio-economic relevance.

Model accuracy and scepticism:

- Some participants voiced concerns about the precision of the results. They noted that many factors come into play, not all fishing activities are included (e.g. recreational and illegal fishing) and that given the complexity of the tool, many professional representatives will be critical of the results. They also noted that bio-economic models, such as POSEIDON, tend to use money maximising functions, but that fleet dynamics involve more complex decisions than simply maximising revenue.

Data quality, timeliness and coverage:

- Respondents repeatedly emphasised that up-to-date data are crucial; running complex models with outdated information was seen as potentially worse than not using the tool at all.
- AC Members also repeatedly stressed that scenarios should consider the entire set of fisheries operating in an area for the results to be realistic. For international fisheries, they recommended using regional and international databases (e.g. FAO, RFMOs). Participants also called to include by-catch and vulnerable species interactions.
- Participants stressed that socio-economic data on fleets are indispensable. They called for comprehensive integration, including jobs, large-scale economic impacts, wellbeing dimensions and contribution to food sovereignty.

Caution against wrong use:

- Warnings were expressed against politicisation of certain impacts, such as bottom-towed gears. Assumptions should always be based on robust, validated figures and methods. A fear was expressed that the results of the models could be used by politicians to impose unbearable constraints on fishers.

4. KEY TAKE AWAYS

Overall, participants considered the tool to be useful and relevant for their work and most indicated that they could imagine using the SURIMI Toolbox in the future. AC Members identified a range of strategic and advisory decisions that could be informed by the tool, including: assessment of management measures and regulatory impacts; support for advisory and negotiation processes; evaluation of socio-economic impacts over time; and guidance for fleet and fisheries management choices.

Across all discussions, data quality, timeliness, and transparency emerged as critical prerequisites. Advisory Council members repeatedly stressed that up-to-date data are essential to trust the results and participants raised concerns that current decisions are being made with data from two years ago. Several conditions were identified as essential trust-building requirements, including:

- Up-to-date and relevant data;
- Transparency on used data and metadata;
- Clear communication on model assumptions and performance;
- Full coverage of the fisheries fleets in an area;
- Relevance and demonstrated alignment with real-world fisheries dynamics; and
- Capacity building and shared understanding.

Key expectations regarding how the results should be presented were that:

- The limits of the results and the underlying assumptions should be clearly noted; and
- The underlaying data sources should be clearly communicated, so the results can be critically assessed.

Some participants expressed doubts in the accurateness and realism of the results. They noted that the socio-ecological complexities and the assumptions made by these models mean that the results can only be used for comparing scenarios and anticipating consequences of management measures, rather than as prescriptive decision-making systems. It was also noted that if the models include baseline scenarios that align with the experience of users, this might increase trust in the results.

Participants expressed strong support for interactive, flexible tools, allowing users to compare scenarios across years, regions, fleet segments, and fishing methods; adjust key variables; and download or reuse data and visual outputs. A mixed presentation of results—combining graphs, maps, numbers, and short explanatory text—was preferred, ideally through integrated dashboards that bring together environmental, economic, and social indicators. Different levels of detail should be available to accommodate diverse user types. Finally, the AC Members unanimously agreed that information on uncertainty is essential. Most participated favoured a mixture of a simple easy-to-read indication of uncertainty, with the possibility to go into details.

The workshop was very fruitful and the SURIMI team obtained very valuable feedback that will guide the future design of the tools. The workshop also highlighted the importance of considering barriers, such as language barriers for connecting with on-the-ground stakeholders, when devising stakeholder engagement strategies.

ANNEX I: AGENDA

Joint AC – SURIMI Workshop

Online via Zoom

Friday 14 November 2025

9:30 – 12:30 CET

Time	Agenda point	Details
9:30-9:55	**Opening session**	- Welcome & introductions - Objectives - Introduction to SURIMI and the scientific models
9:50-10:40	**Modelling session**	- Diving deeper into the models - Short video of each model - Q&A
10:40-10:55	**Coffee break**	
10:55-12:20	**Online tool and feedback session**	- Introduction to the online tool - Providing feedback on key questions which will guide the future design - Plenary discussion
12:20-12:30	**Closing and next steps**	- Summary and key take-aways - Next steps

ANNEX II: LIST OF PARTICIPANTS

Name	Organisation
Nekane Alzorriz	ANABAC
Margot Angibaud	Europeche
Patrycja Antosz	SURIMI Consortium
Gentilia Balaban	BlSAC Secretariat
Fernanda Bayo	SURIMI Consortium
Ilaria Bellomo	NWWAC Secretariat
Jose Beltran	OPP-7 Burela
Claudia Benassi	Coldiretti
Rosa Caggiano	MEDAC Secretariat
María Estalayo	
Francisco Fernandez	Opromar
Emma Gomez	SURIMI Consortium
Sheila Heymans	SURIMI Consortium
Jan Kappel	EAA
Rik Kreeftenberg	SURIMI Consortium
Angela Larivain	CDPMEM29
Sergio Lopez	OPP BURELA
Suso Lourido	OPP77
John Lynch	ISEFPO
Anna Marcout	CNPMEM
Llibori Martinez	IFSUA
Rafel Mas	
Mo Mathies	NWWAC Secretariat
Antonis Mygiakis	SURIMI Consortium
Fabiana Nogueira	CCRUP Secretariat
Nicolas Payette	SURIMI Consortium
Raquel Pereira	Sciaena
Paula Pérez	
Alexandra Philippe	EBCD
Marzia Piron	MEDAC Secretariat
Chloé Pocheau	CCSUD Secretariat
Solène Prévalet	FROM Nord
Alex Rodriguez	LDAC Secretariat
Ana Rodriguez	SURIMI Consortium
Alice Sbrana	SURIMI Consortium
Emanuele Sciacovelli	Federpesca
Jeroen Steenbeek	SURIMI Consortium
Pauline Stephan	CNPMEM
Timo Szczepanska	SURIMI Consortium
Tamara Talevska	NSAC Secrerariat

Dominique Thomas	OP CME MMN
Paul Thomas	Pelagic AC Secretariat
Athanassios Tsikliras	SURIMI Consortium
Isabel Vázquez	Region Bretagne
Bertrand Wendling	SATHOAN
Linda Zanki Duvnjak	RZ FRIŠKA RIBA P.O.
Aristea Zafeiropoulou	SURIMI Consortium
Marina	

ANNEX III: MURAL SESSION: QUESTIONS AND ANSWERS

The questions below were asked and answered in English, French, Spanish. All answers – translated into English - are integrated in this Annex.

1. What would you like this tool to help you with?

With these combined models we can test things like what are the impacts of different fishing control strategies or what are the effects of environmental changes. **Would that be useful for your work?**

- Assessing the role of individual species in the food chain and the biomass levels needed to have a sustainable environment and fisheries
- Assessing the impact of the different IPCC scenarios on the different fish stocks and their subsequent fisheries
- It would be useful to pay particular attention to up-to-date data, socio-economic aspects and an approach that is as tailored as possible.
- Yes, a holistic approach that considers the various aspects and challenges of the fishing sector - integrating local knowledge - would be a valuable tool for making more effective decisions on European fisheries management
- To contribute to show the importance of combining different types of data and information for a better fisheries management
- In an ideal scenario, with the proper data and up to date, might contribute for a "real time management" having in to consideration recent fluctuations
- To have more socio-economic data into consideration
- Yes, it would be very useful for defining the objectives during end-of-year negotiations and for managing non-quota stocks such as seabass.
- Yes, provided that it is adapted to the appropriate working scale.
- Yes, very useful, but the usefulness must be assessed given the regulatory complexity.
- What is the time needed to obtain management guidance with such complex models?
- 1/2 The notion of “decision-making support” needs clarification — what does it mean?
- 2/2 And “evaluation of marine management strategies in EU waters” sounds very ambitious and still vague when phrased like this.
- Yes, it is useful for testing different strategies for fleet segments and seeing the impact.

- The idea of having an intuitive tool for bioeconomic scenario analysis with reliable and appropriate assessment models is positive. The problem lies in the details and understanding issues such as the quality of available data, uncertainties, and the complexity of interactions between different parameters.
- Yes, of course, it can be useful. But as always happens with models, they depend on the quality of the data, and there is a risk of using data that is several years out of date.
- A tool that integrates all bio-economic aspects of fisheries is useful. However, given the complexity of simulation and the degree of error that integrating different models can generate, its final use must be for comparing scenarios and not as a final decision-making tool.
- Interaction with end users (including managers and stakeholders) will be key to the success of this project. If potential users do not understand the tool, they will not use it.

What are the main questions you would like this tool to help you answer?

- What would be the impact of a new Fisheries management regulation on the environment and on fisheries and fishers?
- It is needed an indicator to describe socioeconomic trends and define sustainability objective such as MSY for biological sustainability
- Maybe the impact of some regulations or even fisheries management of certain fisheries on the ecosystem
- How are the different conditions (either stocks and socio economics) developing?
- Why do we need so many regulations?
- Why do we have such complicated control regulations?
- Long-term exploitation strategies for stocks, taking into account all socio-economic and environmental factors.
- A global model integrating efficient socio-economic data and not based solely on environmental models — the link with a real, tangible economic tool is essential if the aim is truly to integrate real socio-economic aspects.
- Measuring different fishing strategies.
- Impact of temporary closures on specific fleet segments.
- Representativeness of the various gears/vessels and exploited fisheries.
- Impact of climate change on migratory stocks and possible fall-back options.
- Comparison of different scenarios.
- Being able to decide between different regulatory scenarios.

2. Showing results

We can show you results like: total landings, profit, impacts on species distribution, maximum sustainable yields, impacts on the ecosystem, impacts across the value chain, etc. **Would this kind of information be useful for you?**

- It would be useful to pay particular attention to up-to-date data, socio-economic aspects and an approach that is as tailored as possible.

- yes, it's always useful to have platform where different type of information can be checked
- yes, but if diversified by fishing techniques, areas and other relevant factors
- The link between socio economics and fish stocks is essential to assess opportunities
- Yes, provided that the limits of the exercise and the underlying assumptions are clearly known.
- Yes, as long as we know which data the analyses are based on, so that the results can be critically assessed.
- Concepts such as "ecosystem impacts" and acceptable thresholds must be clearly defined so that all actors understand them — they must be defined in consultation with professionals.
- Yes — the answer is often yes, but what are the real questions behind this?
- Where do the data come from? Are they complete? Who should they be referred to?
- Will this scatter tools and especially increase data requests?
- It is so complex that I doubt the precision of the results.
- Yes, of course.
- No, the assumptions made by these models mean that the results they produce can only be used for comparative purposes. Based on experience—for example, with the POSEIDON model in RFMOs—the results do not manage to reproduce fishery dynamics. Therefore, specific results such as profits will not be realistic.
- Comparisons between profits (gross and net) by fleet segments and countries can be misleading due to structural differences regarding employment costs, social charges, salaries, as well as how profits are reported (including contributions in kind or not), plus subsidies and support measures.
- It is good to have results broken down into clear categories and to be able to compare them using graphs, etc.

What type of results are most important for your work?

- It is needed an indicator to describe socioeconomic trends and define sustainability objective such as MSY for biological sustainability
- To assess the value of an area or fishery to local economies
- The evolution of total landings and the socio-economic impacts to be expected across the entire value chain, particularly for production.
- The aspect of mobility and behavioural change (trophic chain, interactions) of fishery resources seems innovative here and allows anticipation of future environmental changes and the resulting exploitation.
- Results that help optimise fishing strategies while respecting regulatory constraints.
- Applied management tools for the short, medium, and long term.
- Better understanding of stock assessments: translating scientific language into a form everyone can understand regarding TAC increases/decreases.
- Socio-economic impacts of quota closures, fishing bans, area closures, etc.

- Comparison of different management scenarios in global terms. Not focusing on a specific result that will not accurately characterise reality, but using the results to compare scenarios.
- In international fisheries, it would be necessary to have information on non-EU fleets operating in the same fishing grounds to have a complete view of the status of resources and economic yields.
- All those related to recreational fishing.
- Those related to industrial long-distance fishing (in waters outside the EU).

How would you like to see the results? For example, as pictures or graphs, maps, simple numbers, short text, or a mix of these?

- Graphs of the biomass of all species in the ecosystem
- Interactive data visualisations with maps and charts
- Mixed, depending on the data
- Important to have in consideration that different types of public (either from the field or not) might be interest in checking the results
- Graphs with the main economic indicators
- I think I would like to see a single dashboard with an economic, environmental and social panel, all with graphs to see the impact of each scenario
- A mixture would be best
- A mix that allows a clear understanding of where the results come from, in order to interpret them correctly.
- Graphical visualisations are easier to understand than text, which can be more static. If scenarios change, graphs change more automatically than text.
- A mix of elements.
- A combination with the possibility of different visualisation modes for the same type of information.
- A combination of all of these.

3. What would make the tool most useful for you?

What would you like this online tool to be able to do? For example: compare results between different years; download the data to use elsewhere; or anything else that would make the tool more useful for you.

- being able to download the data to use in other applications would be useful
- Being able to compare different scenarios in the future to a baseline scenario would be useful
- all of those; also showing the data sources
- Compare results across different years, regions, and fishing methods
- It would be useful to pay particular attention to up-to-date data, socio-economic aspects and an approach that is as tailored as possible.
- A question-and-answer system with scenarios and corresponding model responses.

- An interactive graphical system where variables and results can be adjusted (e.g., years, climate scenario, etc.).
- The ability to extract data in table format to examine details.
- A kind of forum where users can ask questions to the developers behind the tool.
- Clearly highlight the sources used to model the results (data, models, etc.).
- Clearly highlight the limitations of the tool to avoid overly quick or definitive interpretations (e.g., by managers without scientific backgrounds).
- Make available the data used.
- Model outputs by year, by fleet, by region…
- Availability of interactive maps.
- Environmental data sources used.
- Have some examples of typical result presentations.
- Have access to the questions that were asked to stakeholders in the sector.
- Accessibility for fishers as well, in a format they can understand and contribute to with feedback.
- These proposals seem correct to me.
- Create historical data series and comparisons between fisheries in different areas (e.g., cod or hake); download data offline; export graphs to MS Office formats.

The tool uses models that try to show how a complex system works, but there is always some uncertainty in the data and in what we know about the systems. **Would you like a simple indication of how sure or unsure the results are, or would you like to see more details?**

- I think both would be useful in that a simple explanation might satisfy some users while others may need more detail to inform their own work
- I think the uncertainty should be included in a separate panel to avoid the increased complexity of having so much data. this tool should be for stakeholders and not researchers, so the uncertainty levels are not essential.
- yes, I think that should be clear. Since it can interfere with how and where the results are used
- Yes, and it would be helpful to include a link to the source
- As many details as possible
- To have accurate data available to assess the effects of an impact on a fishery or fisheries
- Both — simplification + the ability to go into details or contact someone who can explain them.
- Both — a simple, easy-to-read indication of uncertainty, with a longer explanation for those who want the details.
- It is useful to calculate the degree of uncertainty.
- Yes, I consider it essential to know the level of uncertainty of the models and the data that supports them.

- It seems essential to provide the system with a certainty indicator, and if possible, with an explanation of it.

What other information about the data or models would you like to see in the tool? For example: when and where the data were collected; who collected and owns the data; who helped check or confirm the results (such as scientists, fishers, etc.). *Please tell us what kind of background information would be useful for you.*

- all of the above is useful plus any additional useful links that were encountered during the project
- the sources of data should be included, as well as whether this is modelled or collected data.
- the source of data, date, and amount and so on (I think most of the info about the sources should be clear)
- Yes, the source and when data were collected are needed
- How was collected (example on socio-economics - just based on official statistics or also interviews to fishers and users)
- All those mentioned in the examples.
- Data are at the heart of the tool, and full metadata for all datasets used must be provided — this is fundamental for understanding.
- For the models: the same — understanding results requires understanding all assumptions and approximations behind them.
- Origin of the data.
- Periods when species have the highest market value.
- Identification of periods when catch overruns are most likely.
- Sources of data, types of segmentation (by individual vessels, fleet segments or metiers, flags...), type of source (public administration, scientific institutes, industrial or artisanal fishing organisations, traditional knowledge, scientific sources).
- Frequency of data updates, e.g., price indices (weekly, monthly, annually…).
- It is always useful to know the origin of the data, along with the year in which it was collected.

4. Trusting the tool and its results

Can you think about any decisions you would make using the information about the tool? For example, about where and when to fish; or telling authorities why a certain management measure might work/not work; etc.? *If yes, please specify which type of decisions you can think of taking with the help of the tool.*

- I think the fishers have more precise data when it comes to where to fish. I think this tool could be use to illustrate the impact measures may have. Such measures may be on setting up windfarms or MPAs, new technical measures etc...
- It would be useful for drafting recommendations, as it provides a foundational tool that brings together diverse aspects and collected data.
- Decisions based on the tool results can be taken only if the processed data are really updated because the MAPs measures are significantly changing fast.

- Propose more changes in fisheries management having more clear results to show
- The tool would have multiple uses in informing decisions: 1 Management, 2 assessing new impacts, 3 to value an activity
- A general decision-support tool — but many biases likely due to its complexity.
- The tool could guide our positions during end-of-year TAC & Quota negotiations.
- The tool could help with national management of non-quota species, if the scale is appropriate and results match real-world observations.
- Partly guide or encourage certain fleet segments toward other resources depending on available annual TACs.
- How many EwE (Ecopath with Ecosim) models are needed to reliably represent ecosystems?
- Analyse the socioeconomic impact of adopting management measures in the medium and long term (MSE-HCR…), as well as technical measures (e.g., spatial-temporal closures, modifications to fishing gear to improve selectivity).
- The basic one, I think, would be to anticipate the possible effects of regulations. Considering that in many cases measures are being prescribed that may kill the patient rather than cure them, knowing this in advance can be very useful.
- Basic variations in yearly fishing opportunities (TACs and quotas) in future profitability.

If you wouldn't use the tool for decisions, what would you need to see or know to trust its results?

- Up to date data
- Decisions based on the tool results can be taken only if the processed data are really updated because the MAPs measures are significantly changing fast.
- Knowing the amount of data used and sources
- All initial assumptions and how the variables relate to each other — in a way that managers can understand.
- As mentioned earlier: all information about the data used (precise metadata), and ideally access to the data.
- All information about the assumptions behind the model, for example: assumptions regarding discards for certain stocks; species interaction assumptions; assumptions concerning the impact of management measures on fleets; assumptions on product selling prices; etc.
- Professionals will not trust the tool if it appears to be a "black box" disconnected from the reality of their profession.
- EU and national administrations must be well trained to use the results correctly in their work.
- Summary sheets for species/segments to access key information.
- Integration of the tool and understanding by everyone (Member States, producer organisations, committees, scientists, fishers, and possibly buyers).
- Sheets on regulations by region/gear/species.
- A few examples and results of decisions taken using this tool.

- The origin of the data and its degree of certainty, possible data gaps, and an indication of where the model is strong and where it is weak.

5. Is there anything else you would like to tell us?

- Coming back to the presentation, I think that for stakeholder presentations, starting with a concrete case study could help see how the different models work together and to what result.
- If you are having in mind the future amount of data that will be available in the future regarding the new changes in the control regulation (example - VMS data and more info available from tracking the seafood products)
- how can this tool be practically useful and directly applied by fishing operators in their daily work?
- How to have SSF data well fed in the models, since is the part of the sector that usually is more difficult to track but it's really important
- I am very sceptical about the precision — so many factors come into play, and recreational and illegal fishing are not included.
- Given the complexity of the tool, professional representatives will be very critical of the results.
- Be careful of blind use — for instance by the European Commission, which already proposes measures (e.g., mesh sizes) completely unsuited to the reality of the profession.
- Fear that management will slip even further out of our hands, and that the Commission will hide behind the results to impose unbearable constraints on fishers.
- Beware of the politicisation of certain impacts, such as those of bottom-towed gears — always base assumptions on robust, validated figures and methods.
- Do not lose sight of the weak points of the system: data quality, and not only in terms of accuracy but also timeliness. Running a model with outdated data may be worse than not using it. Also, do not lose sight of the fact that the model should reflect reality, and not the other way around.
- It is very important that the data be as up to date as possible. If not, the tool loses effectiveness.
- Socioeconomic data on fleets must be taken into account. If there are no fishers, there is no fishing. Stakeholders will only engage if they believe the tool is useful.
- In international fisheries, without a level playing field there is no reliability or truthfulness. If the basic activity of ALL fleets operating in the same fishing ground is not reflected, the full picture cannot be seen (e.g., total removals from the sea, catches, effort, number of vessels...). From that, economic extrapolations can be made, but without basic biological information, the tool cannot be used.
- Use regional databases for international fisheries (FAO, RFMOs...).
- Any scenario tested must consider the entire set of fisheries to assess relative impacts; that is, not isolating a single fishery without considering ecosystem interactions.
- Create relevant and diverse case studies geographically (North and South Atlantic, Mediterranean, West Africa) and by activity (artisanal, offshore, distant-water).

- When integrating recreational fishing data, do it fully—not only catches but also economic aspects (equipment manufacturers, tax payments, travel expenses), and wellbeing aspects (studies show a link between recreational fishing and health), as well as its contribution to European food sovereignty.
- Bio-economic models—for example POSEIDON—tend to use “where is the money” functions. Fleet dynamics involve more complex decisions than simply maximising revenue.
- Other variables such as jobs, large-scale economic impacts, bycatch issues, and vulnerable species interactions must also be considered to have a global view when using the tool for decision-making.

Scientific Coordinator

Patrycja Antosz | paan@norceresearch.no

Project Management

Anne Dorthea Mæland | PMO-SURIMI@norceresearch.no

Press and Communications

Pamela Cardillo | pamela@erinn.eu

Emma Bello Gomez | emma@erinn.eu

More Information

Website | surimi-project.eu

X | @surimi_project

LinkedIn | SURIMI Project

Bluesky | @surimi-project.bsky.social

Funded by the European Union

Funded by the European Union under the Horizon Europe Program, Grant Agreement No. 101157456 (SURIMI). Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.

UK Research and Innovation

UK participants in SURIMI are funded by the UK Research and Innovation (UKRI) under the UK government's Horizon Europe funding Guarantee [grant number 10132993].