ENERGY TRANSITION PARTNERSHIP FOR EU FISHERIES & AQUACULTURE

Navigating the future of EU Fisheries through energy transition – Large-Scale Fisheries and Distant Water Fleet

Organised by the Energy Transition Partnership, with DG MARE (European Commission)

WORKSHOP REPORT, April 7 2025

Background

Drawing on insights from the initial round of working groups and previous workshops conducted under the Energy Transition Partnership (ETP) for EU fisheries and aquaculture, a set of recommendations has been formulated to navigate the sector's energy transition. These recommendations are designed to tackle significant challenges, outline essential support mechanisms, and propose solutions to facilitate the energy transition within the sector.

During the workshop held on April 7, both online and in-person participants had the opportunity to evaluate and clarify the proposed recommendations. The participants ranked the recommendations according to their importance using Slido (Table reflecting the results from Slido can be found in Annex 1). Through discussions, they aimed to refine the implementation process by identifying key stakeholders, barriers, dependencies, and the support required to realise these recommendations. Participants were also encouraged to suggest new recommendations.

The present report focuses on the workshop specifically dedicated to large-scale fisheries and distant water fleet, which aimed to:

1. **Present the current state of the Working Group's (WG) efforts on the energy transition roadmap.**
2. **Discuss preliminary results and identify synergies to refine recommendations and develop practical solutions for the fishery sector.**
3. **Showcase innovations and best practices**

Key outcomes

Common barriers across recommendations

1. **Potential of production**: The feasibility of producing alternative fuels like methanol and hydrogen at scale is uncertain, hindering investment and development.
2. **Energy availability at ports:** Questions regarding the cost-effectiveness of providing diverse alternative fuels at every port may hinder infrastructure investment.
3. **Lack of pilot projects:** The absence of successful pilot projects in the fisheries sector limits practical examples for collaboration and best practices.
4. **No access to funding:** Larger vessels face challenges in accessing funding, restricting their ability to invest in energy-efficient technologies.

5. **Complexity of regulatory frameworks:** Existing regulations can overwhelm small enterprises, complicating compliance and threatening financial viability.
6. **Technological uncertainty**: Lack of clarity on synthetic fuels' performance creates hesitation among stakeholders to invest in these technologies.
7. **Regulatory and political challenges:** Political sensitivity around fossil fuel subsidies complicates the implementation of tax incentives for alternative fuels.

Common needs across recommendations

1. **Improvement of communication:** Robust communication channels among fisheries and shipping stakeholders are essential for sharing successful strategies.
2. **Access facilitation:** Streamlining application processes for funding mechanisms will enhance accessibility for stakeholders in the fisheries sector.
3. **Modernisation of the regulatory framework:** Updating regulatory frameworks is crucial to create a more adaptable environment for the fishing sector.
4. **Specific research for fuels:** Targeted research on synthetic fuels and low-emission technologies is essential for informed decision-making.
5. **Harmonised skills:** Standardised training programs across countries will ensure consistent competencies among fishers and fleet operators.
6. **Dedicated funding:** Establishing dedicated funding schemes is necessary to support retrofitting costs and facilitate the transition to energy-efficient technologies.
7. **Regulatory alignment:** Establishing clear guidelines for handling alternative fuels in ports will enhance operational efficiency and safety.

Common stakeholders across recommendations

1. **Member States:** Critical for implementing policies and regulations that support the transition to alternative fuels.
2. **Private sector:** Essential for investment and innovation in alternative fuel technologies and infrastructure.
3. **EU institutions:** Key in establishing regulatory frameworks and funding mechanisms to support the transition.
4. **Experts/Technicians:** Provide the necessary knowledge and skills to implement new technologies and practices in the sector.
5. **Fishing industry representatives:** Vital for ensuring that the needs and challenges of the sector are adequately addressed in policy discussions.

Common dependencies across recommendations

1. **Funding mechanisms:** Access to dedicated funding sources, such as grants and low-interest loans, is crucial for supporting the transition to alternative fuels and energy-efficient technologies.
2. **Regulatory frameworks:** The simplification and modernisation of existing regulations are essential to facilitate compliance, encourage investment, and enable stakeholders to adapt to new sustainable practices without undue burdens.
3. **Collaboration across sectors:** Effective partnerships between the fisheries, shipping, technology developers, and financial institutions are necessary to drive innovation, share best practices, and ensure a cohesive approach to the energy transition.

4. **Training and skills development:** Implementing standardised training programs is vital to equip stakeholders with the necessary skills and competencies to operate and maintain new technologies, ensuring a smooth transition to low-emission vessels and systems.

What did we discuss?

The workshop began with a series of opening questions presented to participants via Slido, where they were asked to evaluate the feasibility of various aspects of energy transition within the Large-Scale Fisheries (LSF) and Distant Water Fleet (DWF) on a scale of 1 to 5, with 1 indicating low feasibility and 5 representing the highest level. The question regarding the technical feasibility of retrofitting and enhancing energy efficiency measures received an average rating of 2.3, indicating notable concerns. In terms of economic viability, the average rating was lower at 1.8, reflecting scepticism about the financial feasibility of transitioning the current fleet. Conversely, when asked about the importance of fleet renewal for achieving energy transition goals by 2050, participants rated its necessity at 4.3, highlighting a strong consensus on the need for modernisation to facilitate sustainable practices in the sector.

Onsite as well as online participants were divided into breakout rooms to discuss the recommendations provided by the working group. Each group had 4-5 recommendations to discuss and identify main barriers, needs, dependencies, stakeholders, and assess the scalability. To promote an interactive and collaborative atmosphere, the platform MIRO was used to facilitate dynamic session for online participants.

Breakout room 1

Recommendation 1: Invest in the development of infrastructure and refuelling stations for a range of alternative fuels, including LNG and hydrogen, to enable large-scale adoption.

Barriers:

- **Potential of production:** The feasibility of producing alternative fuels like methanol and hydrogen at scale is uncertain, as it depends on technological advancements, resource availability, and economic viability, which can hinder investment and development.
- **Competition for fuel access:** As multiple sectors compete for limited alternative fuel resources, large-scale fisheries and distant water fleets may face challenges in securing reliable access to these fuels, potentially leading to increased costs and operational disruptions.
- **Transport of energy:** The logistics of transporting alternative fuels to refuelling stations can be complex and costly, especially for remote or less accessible ports, which may limit the availability and efficiency of fuel distribution.
- **Energy availability at ports:** The decision to provide a comprehensive range of alternative fuels at every port raises questions about cost-effectiveness, infrastructure investment, and the practicality of meeting diverse energy needs across different locations.

Needs:

- **New type of skills:** The transition to alternative fuels requires a workforce equipped with specialised skills in handling, maintaining, and operating new technologies, necessitating targeted training and education programs within the maritime industry.

- **No duplication:** Maximise efficiency and reduce costs, there is a need to leverage existing technologies and innovations from other maritime sectors, ensuring that resources are utilised effectively without redundant development efforts.
- **Preferred solutions in alternative fuels:** Understanding the current landscape of alternative fuels, including their advantages, limitations, and market readiness, is essential for stakeholders to make informed decisions and prioritise investments in the most viable solutions.

Key stakeholders:

- **Member States**
- **Private sector**
- **EU institutions**
- **Experts/technicians**

Dependencies:

- **Recommendation 11:** Promote energy-efficient on-board refrigeration technologies and optimise cold chain logistics to lower the carbon footprint of processed seafood.

Recommendation 2: Promote collaboration between the fisheries and shipping industries to adapt best practices from commercial shipping decarbonisation efforts, and support platforms such as the ETP for fishers, shipowners, and policymakers to share lessons learned and accelerate energy transition solutions

Barrier:

- **Lack of pilot projects to share:** The absence of successful pilot projects in the fisheries sector limits the availability of practical examples and case studies that can demonstrate effective decarbonisation strategies, hindering collaboration and the adoption of best practices.

Needs:

- **Improvement of communication:** Establishing robust communication channels among fisheries and shipping stakeholders is essential for sharing successful strategies and experiences, fostering a culture of collaboration that can drive collective progress in decarbonisation efforts.
- **Involvement of other sectors:** The ETP should actively engage with industries that are further along in their energy transition journey, allowing fisheries to benefit from their insights and experiences, which can accelerate the adoption of effective solutions.
- **Opening collaboration:** Expanding collaboration beyond the maritime industry to include sectors like public transport and automotive can facilitate the sharing of innovative technologies and practices, creating a more comprehensive approach to energy transition that leverages diverse expertise and resources.

Key stakeholders:

No specific inputs for key stakeholders were provided by participants.

Dependencies:

No specific inputs for dependencies were provided by participants.

Recommendation 3: Increase access to grants, low-interest loans, and co-financing mechanisms (e.g., EMFAF, State aid, or other funding sources) to support the transition to energy-efficient technologies in LSF and DWF vessels. Establish an EU-led financial framework that provides long-term investment stability for fleet renewal and retrofitting.

Barriers:

- **No access to funding:** Larger vessels, particularly those exceeding 24 meters in length, often face challenges in accessing funding opportunities, which can limit their ability to invest in energy-efficient technologies and hinder the overall transition.
- **Missing taxonomy and tax directives:** The absence of clear taxonomy and tax directives related to energy transition investments creates uncertainty for stakeholders, making it difficult to navigate funding options and discouraging investment in energy-efficient technologies for fishing fleets.

Needs:

- **Access facilitation:** Streamlining the application processes and requirements for grants, loans, and co-financing mechanisms is essential to enhance accessibility for stakeholders in the fisheries sector, ensuring that they can effectively secure the necessary funding for energy-efficient technology transitions.
- **Diverse range of funding options:** Establishing a diverse range of funding options tailored to various types of innovations and stages of implementation will enable stakeholders to pursue suitable financial support that aligns with their specific energy transition needs and capabilities.

Key stakeholders:

No specific inputs for key stakeholders were provided by participants.

Dependencies:

No specific inputs for dependencies were provided by participants.

Recommendation 4: Implement regulatory milestones to phase out fossil fuel reliance in the fishing sector, aligning with the EU Green Deal and international climate commitments. This includes exploring the potential inclusion of fishing vessels in the FuelEU Maritime framework or similar regulatory structures, while carefully considering the specific needs and implications for the sector.

Barrier:

- **Complexity of regulatory frameworks:** The complexity and lack of flexibility of existing regulatory frameworks can overwhelm small and medium-sized enterprises in the fishing sector, making it difficult for them to comply with numerous requirements, which may lead to financial strain and potential bankruptcies as they struggle to adapt to new regulations.

Needs:

- **Modernisation of the regulatory framework:** Updating and simplifying the regulatory framework is essential to create a more adaptable environment for the fishing sector, enabling stakeholders to transition away from fossil fuels without facing undue burdens that could threaten their viability.
- **Availability of solutions before milestones:** Ensuring that viable alternative solutions and technologies are accessible prior to the implementation of regulatory milestones will help the fishing sector transition smoothly, reducing the risk of disruption and enabling compliance with new requirements.
- **Climate commitments and food security:** It is crucial to integrate food security considerations into climate commitments, recognising the importance of sustainable fishing practices in maintaining food supply while pursuing environmental goals, thus ensuring that regulations support both ecological and economic stability.

Key stakeholders:

- **Member States**
- **EU**
- **Fishers**

Dependencies:

No specific inputs for dependencies were provided by participants.

Breakout room 2

Recommendation 1: Support research into synthetic fuels and other low-emission alternatives that require minimal engine modifications and are compatible with existing propulsion systems.

Barriers:

- **Technological uncertainty:** The lack of clarity regarding the performance and reliability of synthetic fuels and low-emission alternatives creates hesitation among stakeholders to invest in these technologies, as potential risks and benefits remain unclear.
- **Maturation of technologies:** Many low-emission fuel technologies are still in the developmental stage and have not yet reached maturity, which can delay their adoption in the fishing sector and hinder the transition to more sustainable practices.
- **Safe fuelling infrastructure:** The absence of established and secure fuelling infrastructure for synthetic fuels and low-emission alternatives poses a significant barrier, as stakeholders may be reluctant to adopt these fuels without the assurance of safe and reliable refuelling options.
- **Visibility on cost and availability of fuels:** A lack of transparency regarding the costs and availability of synthetic fuels and low-emission alternatives makes it challenging for stakeholders to make informed decisions, potentially leading to hesitance in transitioning from traditional fuels.

- **Lack of benchmark comparison:** The absence of standardised benchmarks for comparing the performance, emissions, and costs of various low-emission fuels complicates the decision-making process for stakeholders, as they struggle to identify the most effective and sustainable options for their operations.

Needs:

- **Specific research for specific fuels/technologies:** Targeted research efforts focused on particular synthetic fuels and low-emission technologies are essential to understand their unique characteristics, benefits, and limitations, enabling stakeholders to make informed choices that align with their operational needs.
- **Specific studies for gear types:** Conducting tailored studies that assess the effectiveness of low-emission fuels for different fishing gear types will help identify the most suitable applications and optimise fuel use across various fishing practices.
- **Synergies with shipping:** Exploring collaborative opportunities between the fishing and shipping industries can facilitate knowledge sharing and technology transfer, enhancing the development and adoption of low-emission fuels and practices that benefit both sectors.
- **Funding:** Securing adequate funding for research and development initiatives focused on low-emission fuels and technologies is crucial to support innovation, facilitate trials, and accelerate the transition to more sustainable practices within the fishing sector.

Key stakeholders:

- **Research organisations**
- **Renewable fuel providers**
- **Shipyards**

Dependencies:

- **Financing:** Adequate financing is essential for conducting research initiatives into synthetic fuels and low-emission alternatives. Sufficient funding enables the hiring of researchers, conducting experiments, and developing prototypes, facilitating progress in creating viable fuel options that require minimal engine modifications.
- **Research:** Effective research is crucial for the development of synthetic fuels and low-emission alternatives. Scientific investigation and innovation are necessary to understand the properties of these fuels, their compatibility with existing propulsion systems, and the modifications needed for implementation, ultimately supporting the transition to lower-emission technologies.

Recommendation 2: Equip fishers and fleet operators with the necessary skills to operate and maintain low-emission vessels and advanced digital management systems.

Barriers:

- **No existing ship to train on:** The lack of available low-emission vessels for training purposes limits the ability of fishers and fleet operators to gain hands-on experience, making it challenging to develop the necessary skills for operating and maintaining these advanced technologies.

- **High cost of laboratory equipment:** The high costs associated with acquiring and maintaining laboratory equipment for training and research purposes can be a significant barrier, restricting access to essential resources needed to develop the skills required for low-emission vessel operations.

Needs:

- **Harmonised skills between countries:** Establishing standardised training programs and skill requirements across countries will ensure that fishers and fleet operators possess consistent competencies, facilitating collaboration and mobility within the industry.
- **Harmonised technologies and processes:** Developing uniform technologies and operational processes across the fishing sector will promote efficiency and interoperability, making it easier for fishers to adopt low-emission vessels and advanced management systems.
- **Additional safety training:** Providing specialised safety training focused on the unique risks associated with operating low-emission vessels and advanced technologies is essential to ensure the well-being of fishers and fleet operators during the transition.
- **Technical trainings:** Offering comprehensive technical training programs that focus on the operation and maintenance of new low-emission technologies will equip fishers and fleet operators with the necessary skills to effectively manage these advancements.
- **Sustainability standards:** Implementing consistent sustainability standards across EU Member States will create a unified framework for the fishing sector, promoting responsible practices and facilitating the transition to low-emission technologies.

Dependencies:

No specific inputs for dependencies were provided by participants.

Recommendation 3: Encourage collaborations between shipowners (f.i, through a maritime industrial alliance), technology developers, and financial institutions to drive investment in sustainable fleet solutions.

Barriers:

- **Competition between shipbuilders:** Intense competition among shipbuilders can create a reluctance to collaborate, as companies may prioritise their own interests and market share over collective efforts to develop sustainable fleet solutions, hindering innovation and progress.
- **Lack of incentives to collaborate:** The absence of clear incentives or benefits for shipowners, technology developers, and financial institutions to work together can stifle collaboration, making it difficult to foster partnerships that are essential for driving investment in sustainable fleet initiatives.

Key stakeholders:

- **Ports**
- **Energy value chain**

Dependencies:

No specific inputs for dependencies were provided by participants.

Recommendation 4: Strengthen the ETP work by engaging stakeholders at all levels, from crew members to policymakers, in understanding the economic and environmental advantages of transitioning to sustainable energy solutions.

Barriers:

No specific inputs for barriers were provided by participants.

Need:

- **Tailored messaging**: Develop specific communication strategies that cater to the unique interests and concerns of different stakeholder groups, such as crew members, industry leaders, policymakers, and environmental organisations.

Key stakeholders:

- Local and well implanted people on whom the ETP communication can be built

Dependencies:

No specific inputs for dependencies were provided by participants.

Breakout room 3

Screenshots of MIRO board are attached in the Annex 4.

Recommendation 1: Establish fuel supply centres in strategic EU ports to ensure a stable and cost-effective energy transition for distant-water fleets.

Barriers:

- **Lack of alternative fuels and investment**: The absence of widely available alternative fuels, coupled with reluctance from both private and public sectors to invest in essential infrastructure, significantly hampers progress.
- **Protracted permitting and high capital costs**: Lengthy permitting processes and substantial financial investments required for infrastructure development can lead to delays in project implementation.
- **Uncertainty regarding fuel types and demand**: Ambiguity surrounding viable alternative fuels, alongside limited initial demand from vessels, introduces risks for long-term investment decisions.
- **Imbalance between ports**: Larger ports may attract a disproportionate amount of investment, leaving smaller or peripheral ports underserved, which adversely affects access for certain fleets.
- **Technological uncertainty**: Ambiguities in technology and a lack of diverse solutions impede the development of effective infrastructure.

Needs:

- **Public-private partnerships and funding**: Establishing public-private partnerships is essential to share investment risks and ensure long-term sustainability. Additionally, EU or global investment in research and development is crucial for developing a viable alternative energy system, alongside public funding mechanisms (e.g., EMFAF, Connecting Europe Facility) to de-risk early infrastructure projects.
- **Clear guidelines and integrated plans**: The formulation of clear EU-wide guidelines and standards for the handling and storage of alternative fuels in ports is necessary. Developing integrated port transition plans that align fuel centres with other logistics and safety systems will enhance operational efficiency.
- **Space and strategic planning**: Adequate space in ports for facility development is essential, complemented by feasibility studies and strategic port mapping to identify high-impact locations based on traffic, fleet patterns, and readiness.
- **Security of income**: Assurance of a stable income stream is vital to instil confidence in the necessary investments.

Key stakeholders:

- **Port authorities and users**
- **Regulators and policymakers (EU institutions and national ministries)**
- **Fishing industry**
- **Alternative fuel suppliers and technology/logistics partners**
- **Industry associations and unions**

Dependencies:

- **Recommendation 6:** Support research into synthetic fuels and other low-emission alternatives that require minimal engine modifications and are compatible with existing propulsion systems
- **Recommendation 16:** Introduce tax incentives for alternative fuels while gradually phasing out fossil fuel subsidies, ensuring that financial mechanisms support decarbonisation.

Recommendation 2: Provide funding for upgrading older vessels with hybrid engines, optimised propellers, and energy-efficient onboard systems. Support case-by-case assessments to identify the most cost-effective solutions for each vessel.

Barriers:

- **Regulatory and operational challenges**: Rigidities of the Common Fisheries Policy and operational downtime during retrofitting can hinder the process.
- **Financial uncertainties**: Unclear return on investment and high upfront retrofit costs, particularly for older vessels, may deter investment without parallel support such as fuel subsidies or port infrastructure.
- **Technical complexities**: The technical complexity of retrofitting, which is not a one-size-fits-all solution, requires vessel-specific engineering and expertise.

- **Limited resources**: A lack of available expertise, limited shipyard capacity, and technical know-how for green retrofits, especially in smaller coastal areas, can impede progress.
- **Suboptimal outcomes**: Addressing a wide range of issues - environmental, social, and energy - may lead to suboptimal outcomes if not managed effectively.

Needs:

- **Dedicated funding and targeted schemes**: Establish dedicated funding schemes or green grants (from EU, national, or private finance) to support retrofitting costs, alongside appropriately funded programmes.
- **Tailored assessments and technical guidelines**: Conduct tailored vessel assessments to determine optimal technical solutions (e.g., hybrid engines, propeller upgrades) and develop technical guidelines and best practice manuals for retrofitting various vessel types.
- **Monitoring and performance tracking**: Implement monitoring frameworks to track performance post-retrofit and ensure real impact.
- **Vessel identification and data comparison**: Identify vessel types and compare data from older vessels with new equipment to inform retrofit decisions.
- **Upskilling programmes**: Develop upskilling programmes for shipyard workers and engineers in energy-efficient technologies to enhance technical expertise.

Key stakeholders:

- **Regulators and classification societies**
- **Fleet owners, operators, and shipowners**
- **Engineers, naval architects, and technology providers**
- **Funding bodies (EU institutions, national ministries, green banks, Exchequer funders)**
- **Crew and unions**
- **NGOs**

Dependencies:

- **Exchequer funders and EU Finance:** Access to funding from government sources and EU financial programs is crucial for financing the upgrades of older vessels, ensuring that sufficient resources are available to support the transition to more energy-efficient technologies.
- **Regulations:** Establishing clear regulations that promote the adoption of hybrid engines and energy-efficient systems is important to guide the upgrade process and ensure compliance with environmental standards.
- **Return for investment:** A well-defined return on investment is necessary to attract stakeholders and justify the funding for vessel upgrades, ensuring that the financial benefits of improved efficiency and reduced emissions are clear.
- **Base line price product:** Understanding the baseline costs associated with existing vessel operations is essential for evaluating the cost-effectiveness of upgrades, helping to identify the most economically viable solutions for each vessel.

- **Financially viable operations:** Ensuring that the upgraded vessels operate in a financially viable manner is critical for the long-term sustainability of the investment, encouraging ongoing participation in the transition to hybrid and energy-efficient technologies.
- **Recommendation 5:** Invest in the development of infrastructure and refuelling stations for a range of alternative fuels, including LNG and hydrogen, to enable large-scale adoption.
- **Recommendation 16:** Introduce tax incentives for alternative fuels while gradually phasing out fossil fuel subsidies, ensuring that financial mechanisms support decarbonisation.

Recommendation 3: Introduce tax incentives for alternative fuels while gradually phasing out fossil fuel subsidies, ensuring that financial mechanisms support decarbonisation.

Barriers:

- **Regulatory and political challenges**: Regulation, political sensitivity around removing fossil fuel subsidies, and the need for cooperation among Member States complicate implementation, especially given the uneven impacts across countries.
- **Financial feasibility and competition**: Financial feasibility is hindered by initial expenditure with limited short-term returns, and phasing out subsidies may reduce revenue for new technology investments. Additionally, the risk of carbon leakage arises if EU fleets face higher taxes than non-EU competitors.
- **Public and industry resistance**: Divided public opinion and resistance from industry stakeholders, particularly those reliant on fuel tax exemptions or rebates, may impede progress.
- **Availability and adaptability of alternative fuels**: Challenges include the availability and scalability of alternative fuels, such as methanol, and the limitations of an ageing fishing fleet that is not easily adaptable to new fuel types.
- **Market uncertainty**: Uncertainty around fuel price volatility adds complexity to the transition.

Needs:

- **Technology and infrastructure readiness**: Future-proof technology needs to be established, with infrastructure present in the majority of ports to support new fuel technologies.
- **Harmonised implementation and coherence**: Coordination at the EU level is essential to ensure harmonised implementation, prevent market distortion between Member States, and establish a coherent approach with a level playing field.
- **Economic and fiscal strategies**: A comprehensive fiscal reform strategy is needed, including a clear timeline for phasing out fossil fuel subsidies and designing targeted tax incentives (e.g., reduced VAT, exemptions, or credits) for low-carbon fuels like biofuels, ammonia, or hydrogen.
- **Support for affected operators**: Mechanisms to support affected operators during the transition, such as transitional compensation, retraining, and fleet upgrades, are crucial.
- **Socioeconomic impact assessments**: Conducting socioeconomic impact assessments will help anticipate and mitigate effects on employment and coastal communities, ensuring a smoother transition.

Key stakeholders:

- **EU institutions and global trade bodies**
- **Member States' tax authorities and national ministries of finance and fisheries**
- **Alternative fuel providers and fuel suppliers**
- **Fishing industry representatives and associations**
- **Operators and third-world operators**
- **Politicians and society**
- **Environmental NGOs and think tanks**

Dependencies:

- **Acceptance in other industries:** Broad acceptance across industries reliant on fossil fuels is crucial for the successful adoption of alternative fuels. Collaboration ensures that these sectors are willing to adapt and transition.
- **Proper scientific audit of decarbonisation:** A thorough scientific evaluation is needed to assess the effectiveness of decarbonisation strategies, ensuring that alternative fuels genuinely reduce greenhouse gas emissions.
- **Equal valuation:** Fair pricing mechanisms must reflect the environmental impact of both alternative and fossil fuels, promoting a level playing field that encourages the adoption of cleaner energy sources.
- **Monetisation of carbon:** Implementing a carbon pricing system incentivises companies to reduce emissions, aligning financial interests with environmental goals and promoting investment in alternative fuels.
- **EU wide harmonised system:** A consistent regulatory framework across the EU is essential to prevent market distortions, facilitating cross-border investments and innovations in alternative fuel technologies.
- **Recommendation 5:** Invest in the development of infrastructure and refuelling stations for a range of alternative fuels, including LNG and hydrogen, to enable large-scale adoption.
- **Recommendation 6:** Support research into synthetic fuels and other low-emission alternatives that require minimal engine modifications and are compatible with existing propulsion systems.
- **Recommendation 14:** Strengthen cooperation with global regulatory bodies, such as the IMO, to ensure that EU-based fleets are not disadvantaged in international markets while transitioning to sustainable energy sources.

Recommendation 4: Strengthen cooperation with global regulatory bodies, such as the IMO, to ensure that EU-based fleets are not disadvantaged in international markets while transitioning to sustainable energy sources.

Barriers:

- **Regulatory challenges**: Availability of regulatory bodies, improvement of regulation process duration, and the need for harmonisation of regulatory systems globally.

- **Political and geopolitical factors**: Political will for cooperation is essential, but geopolitical tensions can delay consensus and create uneven commitments to sustainability goals.
- **Enforcement and compliance issues**: Lack of enforcement mechanisms in international waters complicates coordinated efforts, and the fishing sector's small size limits its influence.
- **Economic concerns**: Risk of competitiveness loss for EU fleets adopting higher-cost sustainable practices while others continue using fossil fuels.
- **Complexity of international negotiations**: The fragmented international regulatory landscape and the complexity of aligning fisheries and maritime energy rules under organisations like the IMO or RFMOs pose significant challenges.
- **Audit and measurement systems**: The need for an internationally recognised quantifiable audit system for carbon and linking tariffs and certification standards to measurable indicators.

Needs:

- **Regulatory alignment and standards**: Products from outside the EU should adhere to the same regulatory standards, and there is a need for proposals for international standards on sustainable fuels, emissions reporting, and incentives for energy-efficient fishing.
- **Trade and sustainability integration**: Alignment of trade and sustainability policies, including certification schemes that reflect energy transition commitments, is essential.
- **Global carbon systems and transparency**: Establishment of a global carbon accredited system and information-sharing platforms to ensure global data transparency on vessel emissions and fuel use.
- **Recognition and rewards for operators**: Mechanisms to recognise and reward early adopters are necessary to prevent EU fleets from being penalised for leading the transition.
- **Diplomatic engagement**: Strong diplomatic engagement by the EU with the IMO, FAO, WTO, and relevant Regional Fisheries Management Organisations is crucial for effective cooperation.
- **Global rules and sanctions**: Implementation of global rules-based approaches and effective sanctions to support compliance and accountability.

Key stakeholders:

- **Regulatory bodies and organisations**
- **EU institutions**
- **Non-EU governments**
- **Industry stakeholders**
- **Consumers and NGOs**

Dependencies:

- **Cost:** The transition to sustainable energy sources may involve significant upfront costs. Ensuring that these costs are manageable is essential for maintaining competitiveness in international markets.

- **Financial return:** Stakeholders need to see a clear financial return on investments in sustainable energy. Demonstrating profitability will encourage more companies to participate in the transition.
- **Long term support/security/confidence:** Consistent long-term support from regulatory bodies is vital for building confidence among businesses. This stability encourages investment in sustainable practices.
- **Stability of regulations:** A stable regulatory environment is crucial for businesses to plan and invest in sustainable energy sources without the fear of sudden changes that could impact their operations.
- **Legal framework and trade measures:** A robust legal framework and appropriate trade measures are necessary to protect EU-based fleets from unfair competition and ensure compliance with international standards.
- **Consumer acceptance of higher food prices:** Transitioning to sustainable energy may lead to increased costs for consumers, particularly in food prices. Gaining consumer acceptance of these changes is important for the overall success of the transition.
- **Recommendation 5:** Invest in the development of infrastructure and refuelling stations for a range of alternative fuels, including LNG and hydrogen, to enable large-scale adoption.
- **Recommendation 6:** Support research into synthetic fuels and other low-emission alternatives that require minimal engine modifications and are compatible with existing propulsion systems.
- **Recommendation 16:** Introduce tax incentives for alternative fuels while gradually phasing out fossil fuel subsidies, ensuring that financial mechanisms support decarbonisation.

Annex 1: Recommendation ranking

Participants ranked the recommendation in the following order from the most important one to the least important one via Slido.

Rank	Recommendation
1	Increase access to grants, low-interest loans, and co-financing mechanisms (e.g., EMFAF, State aid, or other funding sources) to support the transition to energy-efficient technologies in LSF and DWF vessels. Establish an EU-led financial framework that provides long-term investment stability for fleet renewal and retrofitting.
2	Conduct studies on fuel transition feasibility (cost, availability, safety, adaptability, climate impact) across LSF and DWF fleets. Set tailored short-, medium-, and long-term objectives, and establish expert-led support centres to guide operators in selecting optimal financial and technological solutions for fleet modernisation.
3	Partner with shipbuilding industries to develop vessels designed for hydrogen, ammonia, or hybrid-electric propulsion. Promote modular and scalable designs that allow for future technology upgrades.
4	Increase gross tonnage and kW capacity limits to allow for alternative propulsion technologies, ensuring that energy transition efforts are not constrained by outdated fleet size regulations.
5	Invest in the development of infrastructure and refuelling stations for a range of alternative fuels, including LNG and hydrogen, to enable large-scale adoption.
6	Support research into synthetic fuels and other low-emission alternatives that require minimal engine modifications and are compatible with existing propulsion systems.
7	Provide funding for upgrading older vessels with hybrid engines, optimised propellers, and energy-efficient onboard systems. Support case-by-case assessments to identify the most cost-effective solutions for each vessel.
8	Leverage AI-driven solutions, implement smart navigation systems, predictive maintenance tools, and real-time fuel monitoring software to optimise fuel consumption and reduce emissions.
9	Promote collaboration between the fisheries and shipping industries to adapt best practices from commercial shipping decarbonisation efforts, and support platforms such as the ETP for fishers, shipowners, and policymakers to share lessons learned and accelerate energy transition solutions
10	Offer tax breaks for early adopters of hydrogen, ammonia, or electric propulsion technologies, and support financial models that de-risk investments in cutting-edge vessel technologies by providing guarantees or state-backed insurance policies, thus reducing the financial burden of fleet transitions.
11	Promote energy-efficient on-board refrigeration technologies and optimise cold chain logistics to lower the carbon footprint of processed seafood.
12	Equip fishers and fleet operators with the necessary skills to operate and maintain low-emission vessels and advanced digital management systems.
13	Support investments in European shipyards to ensure they can meet the demand for next-generation low-emission fishing vessels.
14	Strengthen cooperation with global regulatory bodies, such as the IMO, to ensure that EU-based fleets are not disadvantaged in international markets while transitioning to sustainable energy sources.

15	Develop policies that align fisheries energy transition goals with maritime transport decarbonisation strategies, ensuring synergy with frameworks like the Sustainable Transport Investment Plan.
16	Introduce tax incentives for alternative fuels while gradually phasing out fossil fuel subsidies, ensuring that financial mechanisms support decarbonisation.
17	Expand the availability of LNG bunkering, hydrogen refuelling, and electric charging stations in major fishing ports.
18	Encourage collaborations between shipowners (f.i, through a maritime industrial alliance), technology developers, and financial institutions to drive investment in sustainable fleet solutions.
19	Establish fuel supply centres in strategic EU ports to ensure a stable and cost-effective energy transition for distant-water fleets.
20	Develop a uniform, simplified regulatory and technical framework for vessel modifications to ensure consistency in energy efficiency upgrades.
21	Encourage shipowners to pursue incremental transitions by considering the financial viability and long-term return on investment for each upgrade stage.
22	Implement regulatory milestones to phase out fossil fuel reliance in the fishing sector, aligning with the EU Green Deal and international climate commitments. This includes exploring the potential inclusion of fishing vessels in the FuelEU Maritime framework or similar regulatory structures, while carefully considering the specific needs and implications for the sector.
23	Strengthen the ETP work by engaging stakeholders at all levels, from crew members to policymakers, in understanding the economic and environmental advantages of transitioning to sustainable energy solutions.
24	Reallocate subsidies towards research, pilot projects, and infrastructure development to accelerate the decarbonisation of LSF and DWF fleets.
25	Enable the co-location of offshore wind farms and energy storage systems with fishing activities, allowing fleets to benefit from clean energy sources.

Annex 2: Workshop execution

Part 1: Welcome and introduction

Title	Name and affiliation of the speaker
Energy Transition Partnership for EU Fisheries & Aquaculture for Large-Scale Fisheries and Distant Water Fleet	**Sven Langedijk,** Head of Unit, DG MARE
The presentation provided an overview of the achievements and timeline of the Energy Transition Partnership (ETP). Participants learned about a series of workshops scheduled from November 2023 to October 2025, focusing on topics such as financing, innovation, research, and skills. Specific dates highlighted included workshops dedicated to ports on 5 November 2024, the first round of fisheries	

segment workshops on 11-12 December 2024, and the first round of aquaculture workshops on 19 February 2025. Key events highlighted also included an EMD Session on 21-22 May 2025, aimed at reviewing progress within the ETP, which would lead to the finalisation of recommendations and the publication of the Energy Transition roadmap in the first half of 2026.

Additionally, reflections were made on the ageing EU fleet, with average ages noted as 38.6 years for small-scale vessels, 35.6 years for large-scale vessels, and 26.7 years for distant water fleets. Critical questions regarding the viability of investing in retrofitting older vessels were raised, along with considerations for the future composition of the fleet. The importance of strategic planning and innovation was underscored as essential in addressing the challenges posed by an ageing fleet while facilitating a sustainable energy transition within the fisheries sector.

Part 2: Setting the scene

Title	Name and affiliation of the speaker
State of art of the discussions LSF Working Group	**Jules Danto**, Support Group Coordinator for LSF

The presentation provided a comprehensive overview of the current state of discussions within the Large-Scale Coastal Fisheries (LSF) Working Group. This working group demonstrates active participation from a small group across the EU.

Key points included the series of meetings that have taken place, starting with an introductory meeting on February 4, followed by discussions on thematic areas identified by the ETP AM on March 26. Key outcomes emphasise the importance of realism in setting goals for the roadmap and energy transition, considering what can be technologically achieved.

The presentation also highlighted critical points, including the fisheries sector's reliance on technological development, the need for mapping data due to the diversity of vessels, and the challenges associated with securing funding. Collaboration both within the sector and with external partners, particularly the Fishing shipbuilding industry, has been identified as crucial.

The working group has recognised an urgent need for transformative changes to ensure the sustainability of the fisheries sector and the energy transition partnership. Two primary approaches have been proposed: short-term actions, such as the exchange of best practices, and long-term strategies that involve regulatory reforms and investment in alternative fuels.

The presentation concluded by outlining the next steps, which include a deeper exploration of recommendations, financial landscapes, regulatory frameworks, and collaborative efforts related to skills development and social considerations.

Title	Name and affiliation of the speaker

State of art of the discussions DWF Working Group	**Mati Sarevet**, Support Group Coordinator for DWF

The presentation provided a comprehensive overview of the current state of discussions within the Distant Water Fleet (DWF) Working Group. It highlighted a series of meetings that have taken place, starting with an introductory meeting on February 10, followed by discussions on thematic areas identified by the ETP AM on March 27.

Key points included the complexity of vessels, which incorporate various onboard systems such as fishing gear, freezing equipment, and cargo holds, making retrofitting both costly and challenging. The necessity for modern, appealing working environments on vessels was emphasised, as crew members often endure extended periods in harsh conditions.

The long-distance fleet faces challenges similar to those of small-scale fisheries, albeit on a larger scale, particularly concerning significant energy consumption driven by processing and operational needs. While the transition to more energy-efficient practices is recognised, questions remain about implementation and stakeholder responsibilities.

The working group has underscored the importance of pilot projects, skills and development. Additionally, the need for market analysis, financial incentives, and support for vessel owners to adopt new technologies was highlighted.

The presentation concluded with concerns regarding the feasibility of retrofitting older vessels, particularly in terms of costs and potential return on investment. Challenges associated with alternative fuels, such as methanol and ammonia, were also discussed, as they require additional space and pose safety risks.

Part 3: Innovative solutions for energy transition in LSF and DWF

Title	Name and affiliation of the speaker
Energy consumption monitoring and alternative fuels	**Lancelot Bloondel,** Researcher, ILVO

Mr. Blondeel introduced a project focused on reducing fuel consumption and optimising vessel operations through personalised reports. ILVO aims to assist vessel owners in navigating various challenges, particularly those arising from offshore windfarms, no-take zones, Brexit, and climate change, which necessitate vessel relocation and contribute to increased fuel consumption. In response, ILVO has developed tools like VISTools to provide real-time information on fishing activities.

VISTools is operational on numerous Belgian fishing vessels, utilising equipment such as GPS, fuel sensors, weighing scales, and traction sensors to generate relevant data every few seconds. This previously uncentralised data is now automatically collected and leveraged to enhance business

intelligence for skippers and vessel owners. The system enables skippers to monitor catches, fuel usage, and optimal fishing areas, with additional sensors like weather stations incorporated for research purposes.

The collected data is transmitted to ILVO, which has expanded its reach from five to 37 vessels, primarily within the larger fleet segment. The goal is to provide vessel owners with actionable insights to improve operations and ensure the sustainability of the initiative beyond initial funding.

The business intelligence tool, VISTools analytics, integrates catch and GPS data to deliver near real-time insights into revenue generated from different species and the efficiency of fishing grounds. By analysing fuel consumption during fishing versus steaming, ILVO seeks to identify factors affecting fuel efficiency, including weather, tides, and optimal towing speeds.

In the "Fishing Vessel of the Future" project, more detailed data on gear configurations and engine parameters is collected to correlate with fuel consumption. The installation of speed logs and torque sensors aims to enhance the understanding of engine efficiency and explore the feasibility of transitioning to alternative fuels, such as methanol.

Title	Name and affiliation of the speaker
Augmented Wind Propulsion system to decarbonise the fishing vessels, ADD Technologies	**Antoine Debled,** Founder of ADD Technologies

Mr. Debled discussed the primary objective of the initiative, which is to propose a sustainable long-term solution for shipowners that effectively addresses the challenges posed by volatile fuel prices and the evolving carbon market. The aim is to develop an economically viable alternative for the existing maritime fleet over the next two decades.

The enterprise focuses on the development of auxiliary sail propulsion systems for maritime transport and fishing. It was emphasised that harnessing wind energy is both free and does not require onboard storage. Advances in technology now enable the accurate identification of wind patterns across global seas, with the expectation that wind energy will remain untaxed in the long term.

To enhance the performance and durability of the sails, the speaker outlined plans to increase their thickness by integrating flexible sails with polymer panels, supported by vertical inflatable structures. It was noted that these panels could also function as solar panels, ensuring that the propulsion system is energy autonomous during inflation and deflation.

A successful project to equip cranes with sails was highlighted, demonstrating the potential for standardisation of the system across existing fishing vessels. The approach is described as highly adaptable, with durability tests conducted on fishing boats while maintaining clear working surfaces for fishermen. The thick sails proposed require minimal adjustments due to their inherent design,

resulting in enhanced performance and stability at sea. This translates to reduced fuel consumption and improved propeller efficiency.

Additionally, the system offers superior trajectory control during fishing operations, leading to decreased fuel usage and improved operational efficiency. In summary, the innovative sail propulsion technology discussed promises enhanced performance while contributing to significant reductions in fuel consumption, aligning with a commitment to sustainable maritime practices.

Title	Name and affiliation of the speaker
Hybrid Vessel VENTURA, Clean Energy, Cutting-Edge Technology, and Women Leading the Way	**Mª José de Pazo,** Veraguas

The speaker shared that the fishing sector faces significant obstacles, particularly in implementing European legislation aimed at sustainability. The introduction of long-distance fishing vessels requires designated storage facilities for catch, which are currently lacking. Improved living conditions for crew members are also essential, as they often work and reside in confined spaces without adequate social areas.

The presentation emphasised the need for green projects to facilitate the transition to lower emissions. Despite the potential of hybrid engines and other technologies, many industrial companies have not adequately tested prototypes for the fishing sector, which has been excluded from decarbonisation funding and incentives. This exclusion has led to a lack of investment in fishing vessels, perpetuating reliance on outdated practices.

Challenges outlined by the speaker include a lack of generational turnover and disparities in regulations between EU and non-EU vessels. The importance of prioritising low-emission fishing practices and providing financial incentives to support sustainability was stressed.

The project Hybrid Vessel VENTURA aims to enhance onboard living conditions and introduce higher environmental sustainability standards. However, frustration exists regarding the lack of support for these initiatives compared to other sectors that receive substantial assistance.

Additionally, the inclusion of women in fishing crews presents challenges due to shared living conditions and multicultural dynamics. There is a call for increased cabin availability and improved social parameters to ensure safe working conditions for women in the fishing industry.

Annex 3: Agenda

7 April 2025, 9:30-13:30 CET – workshop dedicated to LSF and DWF

Brussels and Online

Thon Hotel Bristol Stephanie - Brussels (interpretation available) or online (transcription in all EU languages available)

Registration of the participants on site

Opening

Welcome and context of the workshop (DG MARE)

Setting the scene

LSF Support Group progress (**Jules Danto**, Support Group Coordinator for LSF)

DWF Support Group progress (**Mati Sarevet**, Support Group Coordinator for DWF)

Innovative solutions for energy transition in SSCF

Energy consumption monitoring and alternative fuels **(Lancelot Bloondel, ILVO**)

Augmented Wind Propulsion system to decarbonise the fishing vessels (**Antoine Debled,** ADD Technologies)

Hybrid Vessel VENTURA, Clean Energy, Cutting-Edge Technology, and Women Leading the Way (**Mª José de Pazo, Veraguas**)

SLIDO will be used to support gathering the feedback and Q&A

Coffee break

Navigating together the LSF&DWF energy transition

(Participants will be divided into groups, each focusing on a set of proposed recommendations relevant for the energy transition for LSF and DWF. Using interactions and role-playing, groups will refine and improve the actionable recommendations tailored to LSF and DWF. Each team will present their findings and proposed solutions in a dynamic discussion format)

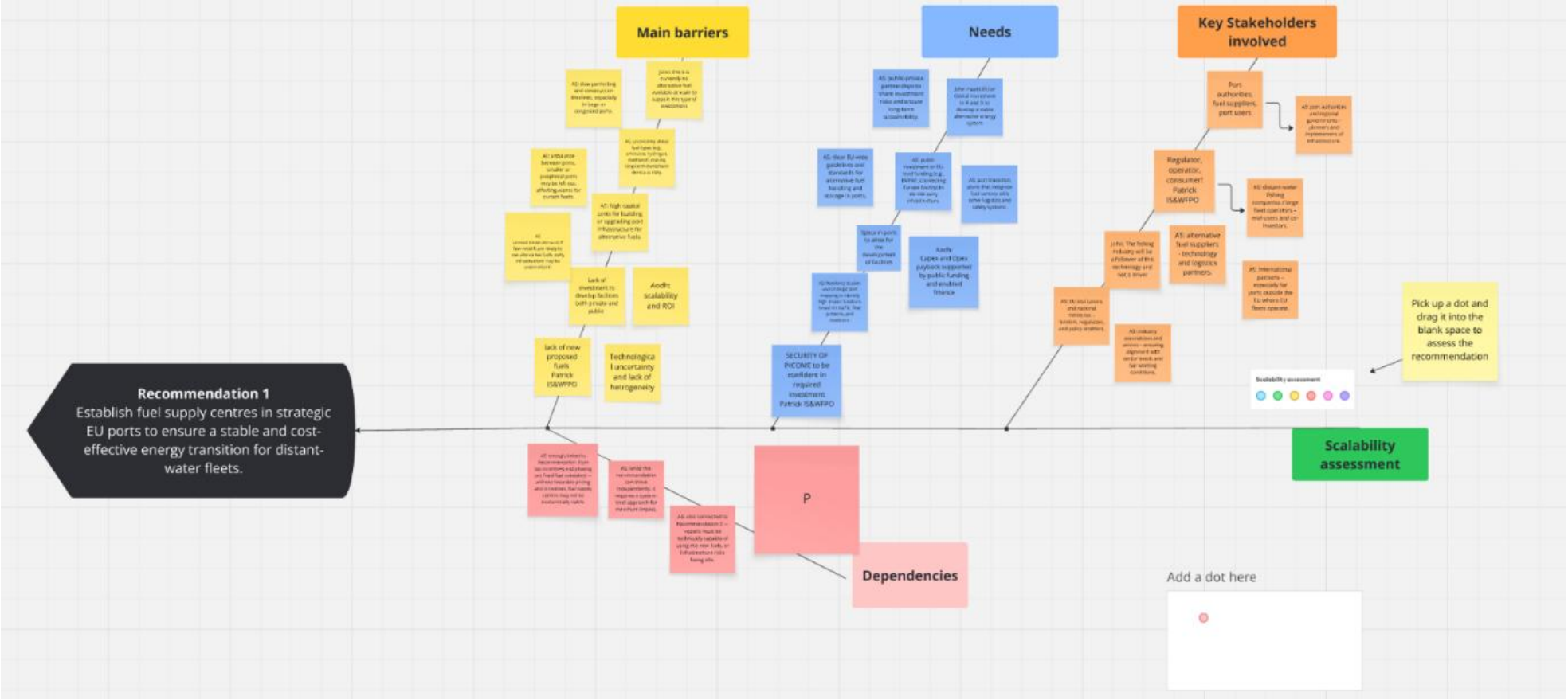
Summary of the outcomes

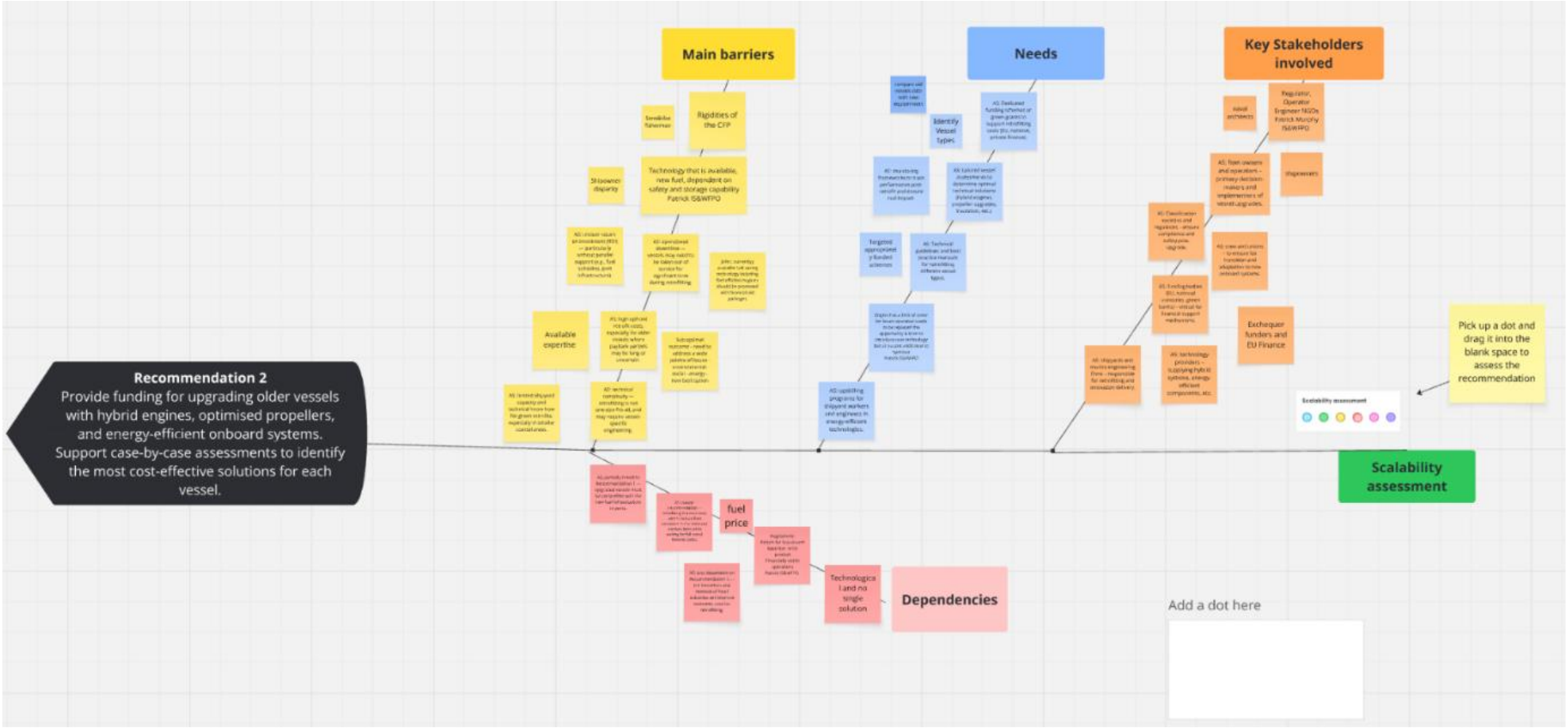
Each group will have maximum 5 minutes to present the results.

Closing

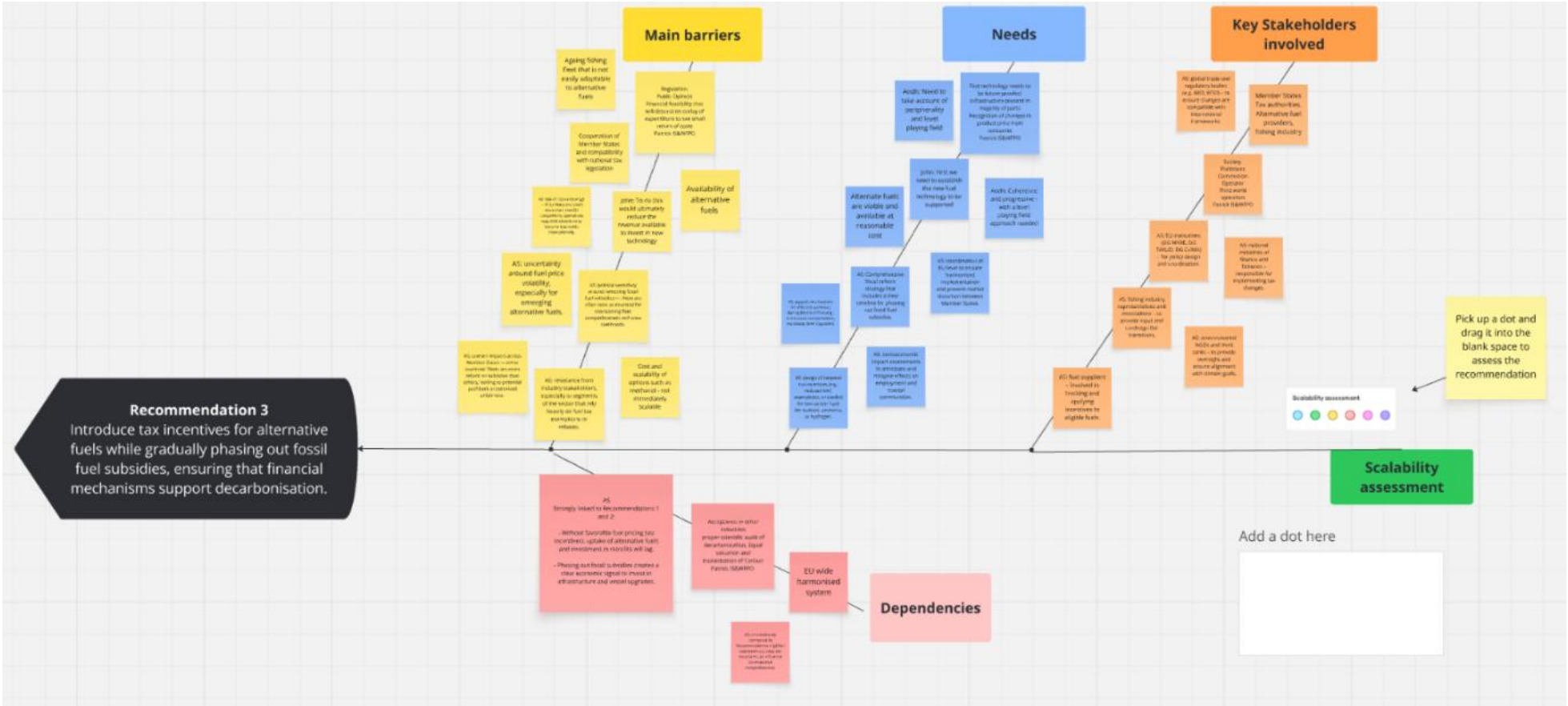
(**DG MARE**, **LSF Support Group Coordinator)**

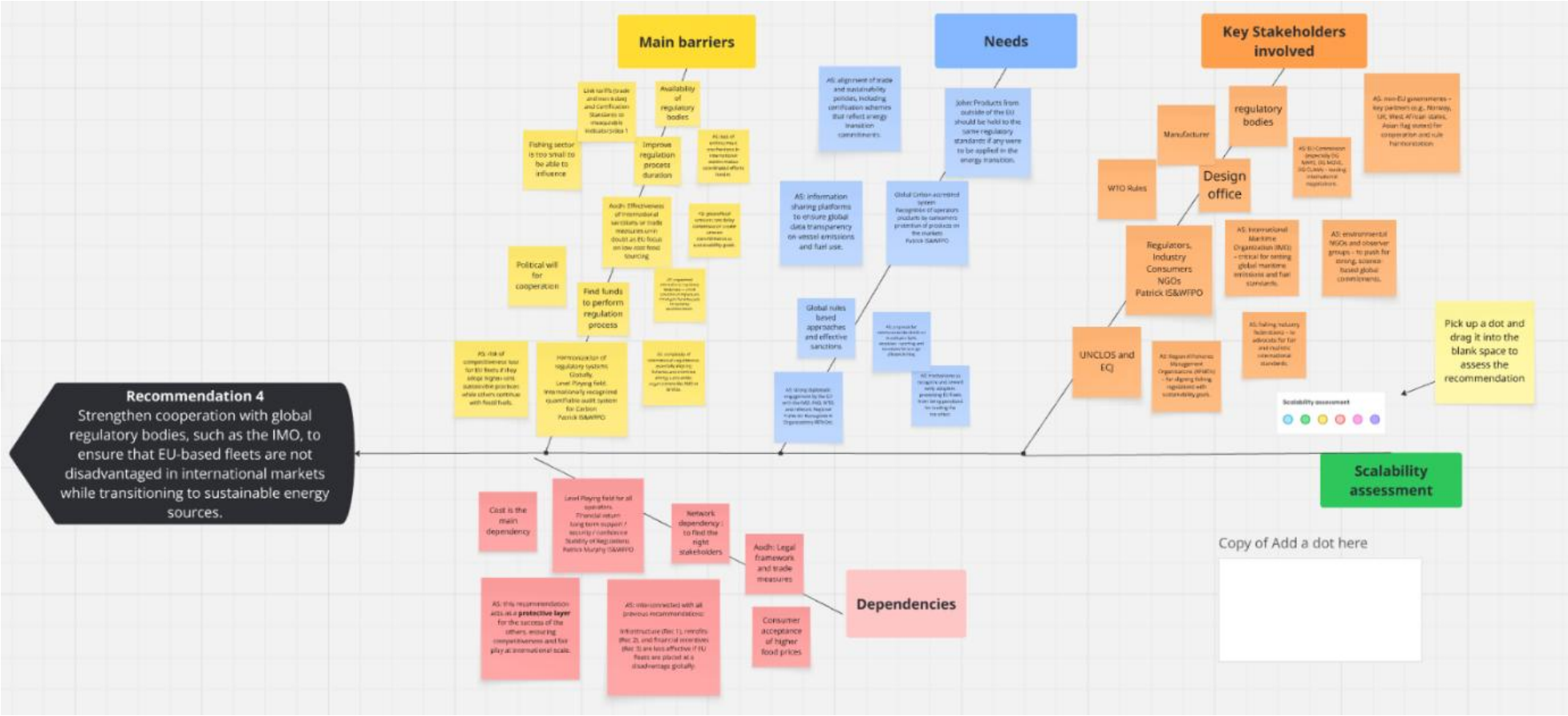
Annex 4: MIRO board from breakout room 3




Main barriers
Needs
Key Stakeholders involved
Rigidities of the CFP
Technology that is available, new fuel, dependent on safety and storage capability Patrick ISB/WPO
Available expertise
Identify Vessel Type
Recommendation 2
Provide funding for upgrading older vessels with hybrid engines, optimised propellers, and energy-efficient onboard systems. Support case-by-case assessments to identify the most cost-effective solutions for each vessel.
Exchequer funders and EU Finance
Pick up a dot and drag it into the blank space to assess the recommendation
Scalability assessment
fuel price
Technological and no single solution
Dependencies
Add a dot here

ENERGY TRANSITION PARTNERSHIP FOR EU
FISHERIES & AQUACULTURE




Main barriers
Needs
Key Stakeholders involved
Availability of regulatory bodies
Improve regulation process duration
Fishing sector is too small to be able to influence
Political will for cooperation
Find funds to perform regulation process
Harmonization of regulatory systems Globally
Level Playing Field
Internationally recognized quantitative audit system for Carbon
Patrick IS&WFPO
AS: alignment of trade and sustainability periods, including certification schemes that reflect energy transition commitments
John: Products from outside of the EU should be held to the same regulatory standards if any were to be applied in the energy transition.
AS: information sharing platforms to ensure global data transparency on vessel emissions and fuel use.
Global Carbon-accredited system
Recognition of operators products to consumers protection of products on the markets
Patrick IS&WFPO
Global rules based approaches and effective sanctions
regulatory bodies
Manufacturer
WTO Rules
Design office
Regulators, Industry Consumers NGOs Patrick IS&WFPO
UNCLOS and EEJ
AS: International Maritime Organization (IMO) – critical for setting global maritime emissions and fuel standards.
AS: environmental NGOs and observer groups – to push for strong, science-based global commitments.
Pick up a dot and drag it into the blank space to assess the recommendation
Scalability assessment
Recommendation 4
Strengthen cooperation with global regulatory bodies, such as the IMO, to ensure that EU-based fleets are not disadvantaged in international markets while transitioning to sustainable energy sources.
Scalability assessment
Cost is the main dependency
Level Playing field for all operators
Network dependency : to find the right stakeholders
Audh: Legal framework and trade measures
Consumer acceptance of higher food prices
Dependencies
Copy of Add a dot here