

REPORT

Meeting: **Energy Transition Partnership workshop – Research and Innovation**

Parties: **DG MARE, ACs, stakeholders**

Date: **28 February 2024**

Location: **Brussels/online**

Chair: **Stephen Davies, DG MARE**

Rapporteur: **Tamara Talevska, NSAC Secretariat**

Research and innovation are the key enablers of energy transition (ET) in fisheries. Some of the challenges already identified were insufficient knowledge transfer between academia, research, and the sector, lack of trust, and risk-averseness towards taking up new technologies. This workshop aimed to determine the state of play, bottlenecks, and solutions to existing barriers in ET. Based on this information, roadmaps will be developed.

Four main areas to accelerate the transition, as identified in the [European Commission Communication on the Energy Transition of the EU Fisheries and Aquaculture sector](#) are governance, financing, research and innovation, and people and skill to become carbon neutral through energy efficiency and energy transition by 2050.

There is a notable reluctance of the market to take up new technologies. Many solutions are in the prototype phase and not in the full implementation phase. Alternative fuel and propelling innovation, shipbuilding and design innovation are needed, in addition to the adaptation of port infrastructure.

The previous workshop explored different funding opportunities through EU innovation programs, such as Horizon Europe, Interreg etc. NSAC report can be found [here](#).

Deliverables on knowledge and innovation are as follows:

- Online platform: [ETP page](#) within the EU blue economy observatory website;
- Compendium published together with Communication on 21 February;
- Tool relaying the impact of fuel prices;
- Opportunities to build synergies with networks and programmes to develop living labs;
- EP pilot call launched (closes June 2024), info day on 18 March;
- Techno-economic analysis for the energy transition of the EU fisheries and aquaculture sector.

Techno-economic analysis for the energy transition of the fisheries and aquaculture sector

The report of the study is available here: [Techno-economic analysis for the ET of the fisheries and aquaculture sector](#).

Techno-economic analysis is a study on baseline of energy costs and carbon-equivalent emissions. The objective was to map the low-carbon energy innovations and EE solutions within EU fisheries and aquaculture sectors by

1. Determining the energy costs and related CO₂ emissions of the current status of EU fisheries sector
2. Developing a techno-economic analysis of the innovative low-carbo technologies and EE solutions in fisheries
3. Defining the main barriers and bottlenecks, as well as the possibilities of synergies by design for an efficient transition path.

For fisheries, this means:

- a) Baseline energy costs and related CO₂e emissions
- b) Identify group currently known innovations that can reduce CO₂ emissions
- c) Estimate readiness levels, required capex, required opex associated with innovations
- d) Generate Marginal Abatement Cost Curves for short and long term
- e) CashFlow analysis to assess payback, net present value

Fisheries baseline was marked by volatility in fuel prices, negatively affecting income in the sector. Fisheries emissions are only 3-4% of the EU maritime emissions.

In total, 45 innovations were identified on:

- a) Engine and propulsion (focus on enhancing EE)
- b) Vessel design and operations (modifications to reduce vessel resistance)
- c) Alternative propulsion (use of biofuels, electrification and other non-fossil fuel sources)
- d) Assisted propulsion (wind-assisted technologies)
- e) Fishing gear (modify nets and trawling methods)
- f) On-board processing operations (efficient ice pumps and refrigerators for fish freezing)
- g) Facilitating processes (smart steaming, route planning, energy monitoring)

All innovations are currently loss-making, financial gap varies between up to 500.000 EUR (diesel electric) and up to 1400 EUR (energy audits). Biodiesel is the most promising for decarbonisation in the short term. In longer terms, substituting trawlers with outriggers and sumswings offer the best returns and most CO₂ reductions.

European Network of Living Labs (ENoLL)

Living labs (LL) are open innovation ecosystems in real-life environments based on systemic user co-creation approach, involving all stakeholders (academia, government, sectors, citizens). Particularly applicable to solving wicked problems through inter-disciplinary multistakeholder approach. Open innovation environment allows user driven innovation to effectively trickle down to users and consumers.

LL are a modern tool/infrastructure for research. Through the use of ICT tools, living labs engage with all relevant stakeholders. LL work in real-life environments, where people/users are the main actors, together with academics and researchers to test and validate solutions.

LL are integrative process, starting with identifying problems, developing solutions, and engaging further with deployment and scaling up, involving all stakeholders in the right moment. Trust was considered the most important attribute, where users are seen as Actors and not Factors.

LL work to derisk innovation, bridge research/market gap, bring insights into the adoption, faster innovation cycle etc.

Existing challenges are theoretical and technological, governance and process, actors' motivations, needs, and expectations, and ethical challenges.

A case study of [ILVO Marine Living Lab](#) was referred to.

All projects and activities under LL get certified.

Waterborne Technology Platform

WATERBORNE has been set up as an industry-oriented Technology Platform to establish a continuous dialogue between all waterborne stakeholders, such as classification societies, shipbuilders, shipowners, maritime equipment manufacturers, infrastructure and service providers, universities or research institutes, and with the EU Institutions, including Member States. Also works on the Strategic Research and Innovation agenda (SRIA) for the European Waterborne sector.

A basket of measures was proposed in decarbonising waterborne transport.

Partnerships between the EU, sectors and MS are complemented with deployment mechanisms to make viable business cases.

EU partnership is a collaboration between the EU Commission services and the waterborne sector, developing roadmaps, co-programming calls for proposals, managing spin-offs etc.

Zero-emission waterborne transport partnership aims to develop and demonstrate zero-emission solutions for all main ship types and services by 2030, which will enable zero emission waterborne transport by 2050.

Main areas of work are in eliminating GHG emissions, cutting coastal and inland pollution to air, elimination of pollution to water (including noise).

In terms of implementation pathways, a break-down of fleets into six ship types was performed: long distance, cruise ships, ferries, inland vessels, short-sea vessels, offshore ships, but also differentiating between liner vs tramp services, and newbuilt and retrofitting. By 2030, crucial technologies need to be ready for deployment.

Examples where demonstrations are ongoing:

- Ammonia-based engine in an existing vessel
- Retrofit a bulk carrier with highly innovative technology on e-fuels
- Capsized vessels using hydrogen

Sustainable Blue Economy Partnership

The Sustainable [Blue Economy Partnership](#) represents an unprecedented effort of 60 Partner institutions from 25 countries and the European Commission to pool research and innovation investments and align national programmes at pan-European scale. As a Horizon Europe co-funded partnership, its strategy takes into consideration the R&I agendas of the sea basins (Mediterranean, Black Sea, Baltic and North Sea) and the Atlantic Ocean and builds on lessons learned from previous initiatives.

Catering for new R&D projects in five priority areas:

- Planning and managing sea-uses at regional level,
- Development of offshore marine multi-use infrastructures,
- Climate neutral, environmentally sustainable and resource-efficient blue food and feed,
- Green transition of blue food production,
- Digital twins of the ocean test use cases at EU sea-basin level.

SBEP Joint transnational call was mentioned with selected projects: BLUEWAYSE (CO₂ cuts in food and feed sectors), CIIN-BlueFeed (low-CO₂ smart autonomous multiplatform system), FOODIMAR (new industry-relevant solutions from fisheries side-streams).

AZTI: Decarbonisation of fishing fleet

Fishing vessels are diverse, different dimensions, types, fishing grounds, areas, gears, fuel consumption. A mix of solutions is needed to improve onboard strategy (i.e. energy audits,

energy monitoring devices, slow steaming, route optimisation). Solutions linked to fishing gears (lighter gears, floating trawls sweeps)

Knowledge (monitoring) on fuel consumption and operational patterns are crucial to optimise energy use, as is the used of adequate equipment and development of energy audits. Evaluation of different fuel saving strategies is also important.

Some applied projects were presented on gathering data on operational activity for different metiers, fuel consumption, duration of the trip, vessel speed, distance etc., electrification and smart grids installation for renewable energy charging stations. Through operational optimisation and electrification they achieved 10-12% in fuel savings in long trips and 5-7% in short trips. The main take-away message was that communicating results to and feedback from fishers' communities was extremely important. The sector was quite receptive to these initiatives due to short-term ROI.

Conclusions:

- EE is profitable
- Monitoring is crucial
- Mix of solutions is needed
- Fishers need to be incentivised and motivated
- Better communication
- ET funding should be simpler, more flexible and inclusive
- Barriers: the definition of fishing capacity needs to be adjusted for ET.

Breakout session

The breakout session focussed on challenges and solutions in technology and innovation.

Identified **challenges** were:

- Lack of uptake of available technologies
- Lack of consideration of SSF
- Lack of funding and incentives
- Risk-aversion of the sector
- Lack of maturity and market-readiness of some technologies
- Suboptimal fisheries management
- High initial costs of technology
- Definition of fishing capacity hampering innovation/technology deployment
- Fishing sector not first-movers when it comes to technology due to its size
- Safety concerns of new technologies
- Missing holistic view of value chains
- Port infrastructure is limiting and centralised
- High costs of alternative fuels

- NGO communication campaigns tend to damage sector's reputation with discouraging effect on innovation
- Lack of political endorsement of the sector does not provide the necessary certainty
- Harmful subsidies
- Changing legislative environment
- Changing technologies adding to uncertainty
- Aging fleet and crew

Proposed **solutions**:

- Coordination between fisheries, aquaculture, other maritime users, upstream, downstream
- Transparency and openness of the sector to include society,
- cooperation with business angels and companies to support R&D,
- Sufficient funding and incentives for technological solutions
- long term legislative changes,
- create awareness and skill development,
- adapt future training and education,
- capacity building and attracting different experts,
- transregional collaboration and sharing of experience
- Risk free environment ensured by the legislators
- Collaboration between blue and green sector (in i.e. bioeconomy, side streams and waste), smart specialisation strategies etc.
- Ensure regulatory certainty
- Develop the necessary skills through trainings
- Create synergies between aquaculture and fisheries, seafood processing and other value chain actors, land-based aquaculture and agriculture (feed, fertilisers from fish waste).
- Need for differentiated approach to decarbonisation
- Move to more selective fishing and end overfishing
- Investments provided to most vulnerable sectors (SSF)
- Shared vision – stakeholders must be consulted (through i.e. Advisory Councils)
- Use of Article 17 of CFP – quota allocation to more sustainable fisheries
- Redefine gross tonnage rules
- Real time data gathering,
- more regional knowledge groups and involvement of stakeholders
- inter-regional and cross-sectoral collaboration

Closing

The **next workshop** is planned on **19 April**, dedicated to **Skills** needed in energy transition.

Additionally, MARE and CINEA are working on **demonstrator pilot project to foster the energy transition in the fisheries sector**. The call for proposals is funded under the EU Pilot Project Funds with a budget of EUR 2.2 million. It will be open **from 20 February until 11 June 2024**. The call seeks to finance a pilot project on a demonstrator fishing vessel that will be retrofitted with alternative propulsion technologies and other solutions to improve energy performance, cut emissions and reduce underwater noise. You can find more information here: [A new Pilot Project call for proposals will foster energy transition in fisheries \(europa.eu\)](https://europa.eu/a-new-pilot-project-call-for-proposals-will-foster-energy-transition-in-fisheries).

A virtual Info Day will be organised by CINEA, on **Monday, 18 March 2024, from 14:30 - 16:30 (CET)**. Please register before 14 March to take part in the info day through the following link: [Info Day on Call for proposals on Pilot Project: Fostering energy transition in the fisheries sector - European Commission \(europa.eu\)](https://europa.eu/info-day-on-call-for-proposals-on-pilot-project-fostering-energy-transition-in-the-fisheries-sector)