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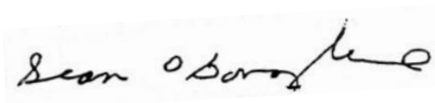
Dear Ms. Charlina Vitcheva,

I am pleased to submit in Annex I the Pelagic Advisory Council (PelAC) recommendation on the energy transition in pelagic fisheries. This recommendation has been unanimously endorsed by the Executive Committee.

The PelAC takes this opportunity to once more underline its willingness to take part in the Energy Transition Partnership (ETP) moving forward.

In case you have any questions, please do not hesitate to contact the Secretariat. Thanking you in advance for your kind consideration and looking forward to your response.

Kind regards,



Sean O'Donoghue  
Chairman Pelagic AC





# Annex I

## Recommendation on the Energy transition in pelagic fisheries

October 2023

### Background

The Commission launched an Initiative on the Energy Transition in the fisheries and aquaculture sectors in February 2023, in order to accelerate the transition of the sectors to zero carbon emissions. In an effort to meet the reduction targets as set by the EU Green Deal launched in 2019, and further triggered by the Russian aggression against Ukraine in 2022 and the resulting fuel crisis, which again made evident the sectors' vulnerability to soaring fuel prices, there was a strong driver to reduce the sector's dependency on fossil fuels and move towards the use of sustainable alternatives. The Initiative on Energy Transition sets out the Commission's aspirations for decarbonising the entire EU fisheries and aquaculture sectors, and its vision for a climate neutral sector by 2050.

The Pelagic Advisory Council (PelAC) has been committed to achieve sustainable fishing levels and healthy marine ecosystems, and this all the more important, taking into account the vital role the ocean plays in the climate regulation. Thus, the PelAC welcomes the communication on the Energy Transition and commends the Commission for taking this initiative. The PelAC shares the Commission aspirations and the sense of urgency to accelerate this transition. Therefore, the PelAC is committed to engaging with the Commission on this topic moving forward, and to being at the forefront of developments in this arena in the fisheries context. To this end, the PelAC has organised a virtual workshop on 20 April 2023 to bring together the Commission, stakeholders and relevant experts for a first discussion on what would be needed to make this transition happen in the pelagic sector. The workshop sought to identify the needs as well as the gaps in R&D that need to be addressed for this transition to become a reality.

Separately, the PelAC submitted a preliminary reaction to the Initiative as part of its advice on the CFP Package, where it limited its contribution to macro issues such as the lack of financial resources. This recommendation was submitted to Member States in July 2023.

The workshop exchange has set the scene and paved the way for future discussions at the PelAC on this topic moving forward. It resulted in the development of this first advice piece to the Commission and Member States dedicated to energy transition, from the specific perspective of the fishery segment on small pelagic fish. These recommendations are the result of reflections following the material presented at the workshop and the subsequent discussions in the PelAC Ecosystem Focus Group and outline the PelAC's views on how this transition could take form, under what conditions and what barriers would need to be addressed. We see this as a first contribution to the knowledge base and the reflections on this key new topic, with more to follow. Finally, the PelAC takes this opportunity to underline once more its willingness to form part of the new stakeholder forum, the Energy Transition Partnership (ETP).





## PelAC workshop on Energy transition in the pelagic fleet

To take stock of ongoing developments and innovations, and help shape the PelAC views on what is needed to implement the energy transition in pelagic fisheries, the PelAC held a workshop on energy transition in April 2023, to which different stakeholders, as well as ICES and the Commission, were invited for an exchange on the state of play.

The workshop opened with a presentation on the Commission Initiative on Energy transition, followed by views from the NGO, industry and scientific communities. The workshop subsequently covered an extensive contribution from the shipping industry to offer an outsider's perspective on what adaptations and developments are already in use in shipping and could be explored further for fishing vessels. Finally, PelAC member UAPF outlined its vision on energy transition on behalf of the fisheries industry and proposed a way forward to the PelAC in these discussions.

A [detailed report](#) of the workshop can be found on the PelAC website.

## Small pelagic fisheries & seafood emission impact

When discussing the transition to zero emissions, understanding the emission impact of the fisheries and aquaculture sectors is an important starting point.

Figures from the UN Climate Change conferences from 2022, indicate that seafood is a low carbon emitter relative to the maritime, agricultural and forestry sectors<sup>1</sup>. Small pelagic species in particular can generally be considered 'low carbon' food, outperforming other land-based animal protein footprints per kg of food produced<sup>2</sup>.

It should be noted that the fishing sector overall, has stepped up efficiency and decarbonising efforts since the 1990s resulting in emissions cuts by at least 55% since the 1990s. Most of the emissions from the sector are attributed to the use of marine diesel. When looking at CO<sub>2</sub> emissions, there are differences among the fishing techniques. Studies that collected data on fuel use, reveal differences in fuel consumption within a trip sequence depending on the type of fisheries. In pelagic trawlers and purse seiners, most fuel consumption takes place when searching for fish. Analysis also shows that small pelagic fisheries, which land large volumes of fish, use less fuel per kg of landed fish than other fisheries. Generally, small pelagic fisheries have a relatively low energy intensity and therefore contribute relatively little to overall GHG emissions compared to other fisheries. Pelagic fisheries are therefore considered 'best in the class' in terms of carbon footprint<sup>3</sup>.

The PelAC feels that this emission performance by no means excludes the pelagic sector from playing its part in the continued and already existing efforts by several of its industry members to reduce emissions and contribute to decarbonisation<sup>4</sup>.

## Decarbonisation of the pelagic fleet – solutions

In order to identify appropriate solutions for decarbonising the pelagic fleet, it is important to understand key features of this fleet segment.

Generally, pelagic vessels are relatively large and target large volumes of schooling fish in the water column. Pelagic gear has no bottom contact, and most fuel is consumed while searching for the

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<sup>1</sup> [Presentation UAPF exploring energy transition in pelagic sector \(2023\)](#)

<sup>2</sup> <https://bim.ie/wp-content/uploads/2023/02/BIM-Carbon-footprint-report-of-the-Irish-Seafood-Sector-1.pdf>

<sup>3</sup> [Presentation Bastardie A pathway to decarbonize the EU fisheries sector by 2050 \(2023\)](#)

<sup>4</sup> [DPPO 0 CO2 Emissions by 2040 https://fiskerbladet.dk/magasin/ p. 42-43](#)





schools. The most common pelagic vessels in the EU are Refrigerated Seawater (RSW) vessels or freezer-tractlers. Freezer-tractlers integrate all aspects of the fisheries supply chain onboard, from catching and processing, to packing and transport. These vessels are therefore larger than other pelagic vessels to account for the required freezing storage (which makes up 70% of the vessel's size)<sup>5</sup>. Generally, the typology in terms of size of the vessels may find parallels in the shipping industry.

Decarbonisation of the pelagic sector needs to focus on vessel design and construction, electrification, efficient power generation (including cooling and processing), continued innovation in gear design, fishing operations and alternative fuels.

Continuous innovation of sonar technology onboard used to locate and discriminate schooling fish, has been a focus for many years. Improvements in this area will help reduce searching time and unnecessary fuel consumption, to catch as efficiently as possible. In addition, optimising speed during time spent reaching fishing grounds or searching for fish and adopting intelligent route optimisation technology onboard vessels, can expect to translate in fuel savings<sup>6</sup>, as would be the case with harbour adaptations that allow connection to land grid. Although it may not be seen as a direct measure towards decarbonisation, the general approach by PelAC, in line with the Common Fisheries Policy objective of recovering and maintaining stocks above healthy biomass levels, would also contribute positively in this regard, as more abundant stocks would mean vessels would spend less time and fuel searching for their catch. Similarly, targeting species at the appropriate time can make a significant difference. An example is targeting mackerel in late Q4 and Q1 when they are in dense shoals and easily caught, a practice not necessarily reflected by some (non-EU) fleets that trawl in surface waters for long periods which results in high fuel consumption for low yield of low-quality fish. In this regard, improvements in gear selectivity through innovation could also contribute to the recovery and maintaining stocks above healthy biomass levels.

Moreover, there has been development in pelagic trawl design to reduce the drag of the net and increase the flow, to use fuel more efficiently. Innovations such as steerable doors allow for more control of the net in the water helping to target fish more accurately and improve efficiency<sup>7</sup>. Vessels can be retrofitted with optimal hull shapes, inverted bow or anti fouling: shapes that are more energy efficient<sup>8</sup>. Alternative propulsion systems can be considered, such as electrification for small vessels and hybrid or even wind powered propulsion for larger vessels. There is potential for wind energy in transit phases of fishing operations.

It should be noted that there is no one solution for all vessel types. Adaptations need to be designed based on a vessel's specific operation<sup>9</sup>, and therefore the PelAC encourages the development and further consolidation of more scientific studies within the small pelagic fleet.

Since the pelagic sector's impact is dominated by fuel use, it follows that the use of alternative fuels is an important way forward. Alternative fuels which emit less GHGs are available, each with their pros and cons. The development of research and development pathways for the sector to uptake sustainable renewable fuels, including biofuels, hydrogen, and others would be an important step forward.

For all these solutions, upscaling their implementation onboard fisheries vessels will require significant adaptations on vessels, with associated challenges. The PelAC recommends these should be carefully considered and weighed against their benefits, including environmental impacts.

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<sup>5</sup> <https://www.pelagicfish.eu/>

<sup>6</sup> <https://www.sciencedirect.com/science/article/abs/pii/S0959652621028602>

<sup>7</sup> [Presentation BIM energy transition pelagic vessels state of play \(2023\)](#)

<sup>8</sup> [Presentation Bastardie A pathway to decarbonize the EU fisheries sector by 2050 \(2023\)](#)

<sup>9</sup> [Presentation MARIN sustainable alternative power for shipping and waterborne operations \(2023\)](#)



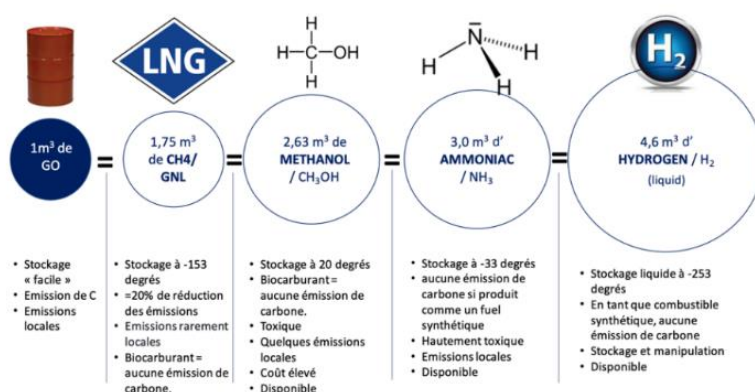


## Energy Transition in pelagic sector: Challenges and opportunities

As mentioned, the PelAC is committed to being at the forefront of accelerating the transition of fisheries to renewable sources. But in order to take these developments forwards realistically in the and meet the 2050 targets, some key constraints need consideration and further discussion.

- Regulatory constraints

As was explained in the presentation by MARIN at the PelAC workshop, most sustainable alternative energy carriers have a lower energy density than diesel. Figure 1, a diagram by Wärtsilä, illustrates the volume required from alternatives to obtain the same energy that is generated from diesel.



Source: Decarbonising the EU Fishing Sector, Market Innovation, Wärtsilä.

Figure 1. Comparisons of required onboard storage volumes for alternative propulsion technologies.

Figure 1 shows that, for the same volume onboard, less will be powered. Therefore, alternative power systems that run on the above-mentioned alternative fuels, will require additional space and weight onboard vessels to keep sufficient autonomy<sup>10</sup>. It should be noted that wind and electric are not included in this comparison.

However, the capacity ceilings in the CFP limit the storage capacity onboard vessels and thus may form a barrier to implement technologies running on alternative fuels<sup>11</sup>. The PelAC is of the view of that if the Commission is committed to reaching zero emissions by 2050, it needs to re-examine the CFP capacity framework, including the pelagic sector. The PelAC believes a key starting point for this would be to develop and implement a methodology to adequately assess capacity, and that clearly distinguishes between the capacity of single vessels and the bulk capacity of an entire sector. It is also important to ensure that measures adopted to promote the energy transition do not jeopardize the CFP aims in terms of sustainable management of fisheries resources. Another pre-requisite would be to have clarity on the effectiveness of the enforcement of the landing obligation, once the new control regulation is implemented.

- Financial constraints

Alternative renewable technologies are scarce and expensive. Reconstruction of vessels to fit efficiency adaptations is costly as well. There currently is no market demand for carbon neutral vessels, so there is no real incentive for fishermen to invest in vessel renewal, especially considering the risks involved for vessel owners.

<sup>10</sup> [Presentation MARIN sustainable alternative power for shipping and waterborne operations \(2023\)](#)

<sup>11</sup> [Presentation UAPF exploring energy transition in pelagic sector \(2023\)](#)





In the Initiative on Energy Transition, the PelAC notes no quantification of the needed investment efforts to finance the transition in the fisheries sector has been carried out by the Commission. The lack thereof suggests the Commission Initiative does not fully recognize the financial magnitude the energy transition of the entire fisheries and aquaculture sectors would entail. The PelAC considers the cost estimation an essential first step in the discussion, to understand the implications.

Considering the costs associated with building a new vessel (from €100k to €160k per meter of length; up to €500k for large/complex vessels that process or freeze fish onboard), and the fact that the EU currently counts over 56.000 fishing vessels, the UAPF estimates that the necessary costs of renewing the entire European fishing fleet to achieve carbon neutrality for vessels above 12 meters (counting 11,073 active vessels in 2019 with an average length of 20.2 metres, AER 2022), lies at least between €22 - 36 billion. These projections do not include implementation costs for new technologies nor the investment risk taken by the vessel owner. The Commission aspires this investment effort to be made by 2050, so over 30 years, while the annual turnover of the vessels concerned is approx. €5.4 billion, with EBITDA rates between 10-20%, which means annual operating cash flow (to be compared with the investment effort to judge its economic profitability) of between €550 million and €1 billion.

Considering these costs, enterprises will not be able to fund decarbonisation without public support. However, the current financial instruments such as the EMFAF are either not fit for purpose to carry these costs, or heavily constrained.

The EMFAF is a limited fund that cannot finance the entire transition. Moreover, EMFAF lacks the appropriate scope. It is limited to repowering (under certain conditions) of fishing vessels below 24 meters. While refitting vessels with alternative engines could reduce carbon emissions, this benefit may be counter balanced if other ship components of the vessel are not modernised for efficiency in parallel, as appropriate.

Most EU grants (H2020, RepowerUE) are destined for research or pilot/prototype projects. The State Aid framework which may be eligible for fishing companies does not permit any funding for the construction and modernisation of vessels. Aid ceilings that can be granted to fishing companies extend to max. €30.000 for a three-year period, per company. Moreover, fishing companies are excluded from eligibility from aid to innovate in light of decarbonisation outside of the EMFAF funds<sup>12</sup>. The Commission plans to prepare a guiding document on the financing possibilities, and we welcome the initiative and emphasize that it would be necessary to redirect some subsidies to be able to finance decarbonisation or find new additional funds to redirect towards decarbonation.

- Logistical constraints

In order to power a vessel with alternative technologies, the port infrastructure needs to be ready. Electrification must be available with the needed facilities.

In addition, upscaling new technologies requires adapted qualified crew, marine engineers, mechanics and education schemes following requirements and complexities for alternative power sources. This will entail additional costs for training and certification, separate from construction<sup>13</sup>. Other funds such as regional development funds (structural funds) should be used at Member State level to ensure the transition.

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<sup>12</sup> [Presentation UAPF exploring energy transition in pelagic sector \(2023\)](#)

<sup>13</sup> [Presentation UAPF exploring energy transition in pelagic sector \(2023\)](#)





- Maturity of available alternatives

To date, there has been limited pilot or prototype of alternative technologies implemented on a fishing vessel<sup>141516</sup>. There is also a lack of dedicated R&D for research on innovations in the context of fishing vessels. Until this changes, the fishing sector is therefore dependent on the innovations and technologies developed in other sectors, such as the commercial shipping sector.

There is no breakthrough technology available that is adapted to the size and diversity of fishing vessels. There is no single solution to meet all needs<sup>17</sup>.

## Knowledge Gaps

There currently are no pilot projects available for a small pelagic fishing vessel.

There is also a lack of R&D dedicated to technologies on fishing vessels which exploring the potential of alternative fuels as well as the potential of renewables such as wind, and possible vessel adaptations to improve efficiency. It is important to develop a 'Community Strategy' that integrates development with the entire sector, including ports and logistics, and the EU should improve discussions between policymakers, engine manufacturers and fisheries industries. There is a real need for further investigation of the degree of maturity of new technologies as well as their degree of adaptation<sup>18</sup>.

These two constitute the main gaps to address moving forward.

## Recommendations

Based on the above commentary and the challenges identified, the PelAC makes the following recommendations to the Commission:

- The PelAC asks the Commission to engage in dialogue with stakeholders to identify how the CFP capacity limits can allow the upscaling of sustainable alternatives for decarbonizing fishing vessels. The PelAC encourages the Commission to re-assess the current CFP capacity framework against the full implementation of the new control regulation, and to develop and implement a methodology that adequately assesses capacity, and clearly distinguishes between the capacity of single vessels and the bulk capacity of an entire sector. Nevertheless, measures proposed to achieve decarbonization must not jeopardize the CFP aims for the sustainable management of fisheries resources.
- The PelAC recommends the Commission to quantify costs estimates for different segments of the fishing fleet and aquaculture sectors to better understand the magnitude of the required financing and to set a realistic timeframe for the transition. The PelAC also encourages the Commission to explore adaptive economic tools that can support the decarbonisation of fleet.
- If this transition is to take place realistically in the foreseeable term, the PelAC stresses the need for more flexibility in existing funding mechanisms, to allocate funding across Member States more efficiently.

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<sup>14</sup> [Presentation MARIN sustainable alternative power for shipping and waterborne operations \(2023\)](#)

<sup>15</sup> [https://oceans-and-fisheries.ec.europa.eu/news/going-wind-2022-12-21\\_en](https://oceans-and-fisheries.ec.europa.eu/news/going-wind-2022-12-21_en)

<sup>16</sup> <https://corvusenergy.com/corvus-energy-powers-the-worlds-first-electric-commercial-fishing-vessel-karoline-designed-and-built-by-selva-arctic-as/>

<sup>17</sup> [Presentation UAPF exploring energy transition in pelagic sector \(2023\)](#)

<sup>18</sup> [Presentation UAPF exploring energy transition in pelagic sector \(2023\)](#)





- While the Commission has noted that there are other funding sources available to promote decarbonisation, the PelAC underlines the limitations and inadequacy of the EMFAF to provide funding for the transition of the entire EU fishing fleet to zero-low carbon emissions envisaged by 2050. The PelAC recommends the Commission to maximise the EMFAF's operability to better support research and innovation, and supporting operators in decarbonising fishing fleets. The PelAC also welcomes the initiative of the Commission to prepare a financing guide on decarbonisation.
- The PelAC recommends the Commission to develop a more strategic vision of European fisheries and give real direction to support the sector if it is expected to deliver to other EU objectives. This includes improving the direct access for operators to EU investment opportunities as well as identifying and establishing links with other existing eligible Union funds to maximise investment opportunities the fishing sector can tap into.
- Recognising existing opportunities for pilot projects targeting specific areas<sup>19</sup> the PelAC recommends the Commission to establish dedicated R&D for decarbonising the fisheries fleet and to initiate a pilot research programme using a range of representative pelagic vessels from the EU fleet and actively promote and identify pathways for the accelerated uptake of existing solutions to improve energy efficiency and reduce environmental impact. These measures should include testing of alternative non-fossil and renewable fuels, changes to fishing structures, gear and fishing operations to increase energy efficiency, selectivity, reduced ecosystem impacts and the transition to renewable propulsion.
- In the short term, cuts to carbon emissions could be made by using sustainable renewable fuels, including biofuels, hydrogen, and others. A research and development program to incentivise the uptake by the sector should be initiated, in order to support the creation of a legislative framework that includes adequate taxation and financial aid.
- The PelAC recommends the Commission to develop Community Strategy on decarbonising fisheries that is integrated with other sectors, such as ports and logistics, and recommends to involve these sectors as new technologies are being developed.
- The PelAC recommends the Commission to quantify the financial and social implications of the transition to develop a work force (crew, mechanics, engineers) that is adapted to the transition.
- While the PelAC acknowledges that the 2050 deadlines allow for the timely development of technical, administrative and other solutions to successfully decarbonize the EU's fishing fleet, we recommend that the Commission urgently develops a clear roadmap for the transition, that effectively mitigates the carbon footprint of fishing, with targeted measures, milestones and associated timelines in which progress can be tracked against.

We hope you find these recommendations useful and remain at your disposal for a continued dialogue with the Commission on the progress of transitioning the pelagic sector to zero carbon emissions. We look forward to an opportunity in the future to engage with the Commission further on this very important topic.

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<sup>19</sup> [https://blue-economy-observatory.ec.europa.eu/calls-proposals/lighthouse-baltic-and-north-sea-basins-green-and-energy-efficient-small-scale-fishing-fleets-horizon\\_en](https://blue-economy-observatory.ec.europa.eu/calls-proposals/lighthouse-baltic-and-north-sea-basins-green-and-energy-efficient-small-scale-fishing-fleets-horizon_en)

