PROMOTING THE ENERGY TRANSITION OF THE EU FISHING AND AQUACULTURE SECTORS, WITH EXAMPLES

by Stephen Davies, DG MARE, European Commission

MEDAC – WG3 Green Deal
18 October 2022

Image Source: Wind Europe

Context

"*These emergency crisis measures should not in any way impede our* ***long-term efforts towards structural energy transition*** *of the fishery and aquaculture sectors to achieve the objectives of the European Green Deal.*" Commissioner Sinkevičius

European Commission

Opportunities

- Possibilities for developing **tailor-made advice and support**.
- **Much scope** to do this by**:**
  - **applying** more **scientific knowledge** and utilising **technological advances**, including from other sectors;
  - **facilitating technology transfer** and **adapting practices,** using also **EU funds**;
  - **dialogue and communual co-operation** with EU fishing & aquaculture sectors, governments, scientific and shipbuilding community, civil society, etc.; and
  - **compiling what's out there** already (contributions welcome!)
- **Innovations** could cover **not only changes** to the **propulsion** and/or **energy sources,** but **also hull modifications** and to **fishing practices.**
- **More energy efficient** and **reduced emission** fishing and aquaculture **contributes** also to **Sustainable Blue Economy** & **European Green Deal.**

Electric (for aquaculture)

François Cadoret (FR)

Two 70 kW electric motors with **two 40 kWh batteries** powered via **solar panels** and two small **wind turbines**. Later, it will be able to receive a **hydrogen kit**.

https://lemarin.ouest-france.fr/secteurs-activites/peche/44219-mise-leau-dune-barge-electrique-pour-les-ostreiculteurs-bretons

Astrid Helene (NO)

Battery power of **340 kWh**, **no** emissions, engine noise or fumes. Estimated **annual savings** are **80%** on maintenance costs, **33.700 litres** of diesel/year saved with **90 tons CO_2** emission reduction.

https://corvusenergy.com/projects/astrid-helene/

In IT, the **Horus Project** is developing battery-based vessels, which could also be developed for aquaculture. [http://www.binav.it/progetto_horus_category.php]

European Commission

Hybrid diesel-electric

MDV-1 Immanuel (NL)

The **special shape** of the ship and the **diesel electric propulsion** provide **60% fuel and CO_2 savings** compared to comparable fishing vessels.

https://masterplanduurzamevisserij.nl/

Karoline (NO)

Equipped with **two battery packs** of **195kWh** plus **500-litre diesel engine**. Diesel is used to and from the fishing grounds, then electric for fishing, loading and unloading.

https://corvusenergy.com/projects/karoline-2/

European Commission

Alternative fuels

Loran (NO)

This 70m Norwegian longliner will have two **185-kW hydrogen fuel cells** and a **2,000-kWh battery bank**, as well as conventional diesel engines.

https://www.nationalfisherman.com/boats-gear/-we-are-the-pioneers-building-a-hydrogen-powered-fishing-vessel

Endeavour (NZ)

Constructed to run on **biofuel**. It is claimed that, for **every tonne of cooking oil** used to produce the biofuel, there is a corresponding **two tonne reduction in CO_2** emissions.

https://www.rina.org.uk/biofuel.html

European Commission

Wind Power

As a complementary propulsion / power source

Project Sailfish, M. Penna Engineering
Catalonia, Spain

https://mpeng.eu/projects/sailfish-1700/

Balueiro Segundo with eSAIL® system, co-funded via EU Aspiring Wingsails project
Vigo, Spain

https://bound4blue.com

European Commission

Changing fishing gear

Chioggia port trawl fleet (IT)

Some now use **otter doors with a metal frame and wood panels**. The lighter equipment **reduces** seabed **friction** and **fuel consumption.**

DG MARE meeting with Chioggia fleet, July 2022

Resolute (UK)

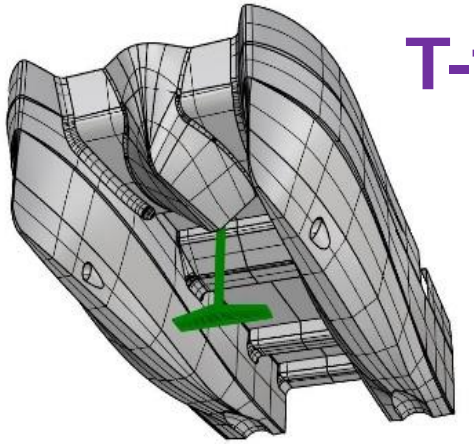
Trawl doors made partly from **recycled plastic** (weight 95kg), **reduction** in **fuel** consumption by as much as **30%**.

https://mag.hookandnet.com/2022/09/06/2022-09plutoeng/content.html

Mazara Fleet (IT): **Lighter fishing gear material in trawlers** (e.g. polypropylene instead of nylon), with **decreased fuel consumption**, from 1,2T daily to 0,8T

Pers. Comm. IRBIM CNR

Hull modifications



T-foil in longliners and purse seiners

↘ -25% of fuel consumption

Martinez Constructions Navales

Sète, France

https://martinez-constructions-navales.fr/foil-navire-de-peche

Retrofitting bulbous bow

Reduces total resistance or required power, also helps to increase speed, decrease fuel consumption, improve stability.

http://www.commodoresboats.com/past-projects/mystic-era-new-bulbous-bow-and-paint/

Air Lubrication

Reduces ship drag, acts also as a barrier between water and hull thereby reducing fuel consumption.

https://www.marineinsight.com/tech/7-technologies-to-reduce-fuel-consumption-of-ships/

European Commission

Some other innovations

- ***Propellor and/or Rudder adaptations***

  like **Controllable Pitch propeller** system (e.g. https://www.wartsila.com/docs/default-source/marine-documents/segment/brochure-fishing-vessels.pdf) and/or **Gate Rudder System** (https://cordis.europa.eu/project/id/860337).

- ***Amarrée programme (https://amarree.fr)***

  fuel economy observatory; **econometers**; and **training** in energy-efficient vessels. **Savings** are **at least 5%, up to 15%** in the best cases.

- ***Using Apps***

  to **optimise** arrival and delivery **to market**, e.g. Rooser (Rooser.eu) & Irish iFISH (https://www.i-fish.org/) and/or **Route Optimisation**, see, e.g. https://www.inmarsat.com/en/insights/maritime/2022/optimal-route.html.

- ***Eco-Friendly Fishing Vessel (ECOFIVE)***

  To **utilise 100%** of the **catch**, **minimise** quality **losses** during handling and **reduce energy** consumption, https://ulstein.com/news/the-ecofive-concept-for-sustainable-fishing

Concluding reflections

- The **challenges today for the** EU's fishing and aquaculture sector put at **risk** its **overall profitability**, **sustainability** and **resilience**.
- We **need, together, to transition and move away** as soon as possible **from fossil fuels** and to **be more energy efficient**.
- This is **consistent** with the objectives for a **Sustainable Blue Economy** and in turn the **European Green Deal**.
- **To this aim**, an **action plan** is under consideration for the (medium- to long-term) **energy transition** of the **EU's Fishing Fleet** and **Aquaculture**.
- **Comprising dialogue** plus **practical technological suggestions on how** vessels; their operations; and fisheries resources management **might be adapted**.
- Plus **how EMFAF**, and **other funding** sources, can **support this transition**.

Thank you

EU Funding possibilities: EMFAF

➢ Development of low-carbon and energy efficient technology

- ❖ energy efficiency **audits**
- ❖ **feasibility studies** on new technology
- ❖ **test and trial** of new technology (e.g. demonstrators, prototypes)
- ❖ **dissemination and transfer** of technology and innovation

➢ Investment in mature technology

- ❖ improving **energy efficiency and reducing the carbon footprint** (e.g. hydrodynamic optimization, gear efficiency, alternative fuels, bridge systems for engine control)
- ❖ **replacement/modernisation of engines** (only for vessels smaller than 24m, and under conditions to prevent an increase in power)
- ❖ **increase in volume** of vessels to **install energy-efficient engines** (only for vessels smaller than 24m, and under conditions to prevent an increase in fishing capacity of the fleet).

https://oceans-and-fisheries.ec.europa.eu/funding/emfaf_en

European Commission

EU Funding possibilities: Horizon Europe

- ***Partnership on Zero Emission Waterborne Transport:***

  provide and demonstrate zero-emission solutions for all main ship types and services before 2030.

  https://www.waterborne.eu/

- ***Mission Ocean objective #3:* Making the blue economy sustainable, carbon neutral and circular, includes *to "decarbonise the blue economy"***

  can provide funding opportunities in the future for higher technology readiness level (TRL) research and innovation.

  https://europa.eu/!jvHjx9 and for Work Programme, https://europa.eu/!8Jmx8p.

European Commission

EU Funding possibilities: Innovation Fund

- Provides support to **commercial demonstration** of **innovative low-carbon technologies**.
- Aims to **bring industrial solutions to the market** to **decarbonise Europe** and support its **transition** to **climate neutrality**.
- Comprises both **Large-scale projects** (above EUR 7.5 million) and **Small-scale projects** (below EUR 7.5 million).
- Total budget for 2020-2030: **EUR 10 billion.**

https://ec.europa.eu/clima/eu-action/funding-climate-action/innovation-fund_en

European Commission