Energy Transition of Fishing Fleets:

Opportunities and Challenges for Developing Countries

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David Vivas Eugui, Chief of Section a.i. TEDB
Regina Asariotis, Chief of Section, TLB
UNCTAD

The context

The Fishing Sector plays a Vital Role:

- food security, jobs & livelihoods, especially in developing nations (+40 millions jobs)

Urgent Need for a Just Energy Transition

- All sectors need to contribute to Paris agreement objectives
- With agriculture and tourism, the fisheries is one of the most vulnerable sectors to climate change.
- Motorized vessels depend today in its entirely on marine diesel and other fossil fuels

Challenges for Artisanal Fishers

- Unmotorized vessels face climate change effects, lack support, and technological limitations.

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Fisheries and CO2 emissions

Global fisheries trade is significant ($179 billion in 2021)

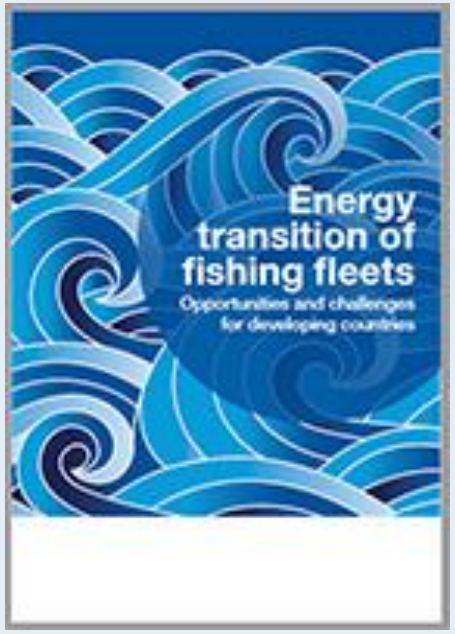
Fishing vessels contribute to between 0.1 % and 0.5 % of global GHG emissions, representing about 4 % of GHG emissions from global food production.

Emissions estimates range between CO2 40 to 179 million tonnes annually

- IMO Bottom-up: 37.8 to 40 million tonnes of CO2 (2012-2018)
- Under Annex I Kyoto protocol notifications: 21.3 to 12.9 million tonnes (1990-2021)
- Academic sources on global estimates (Greer et Al): 179 million tonnes annually (2019)

Fisheries subsidies for fuel:

- At least $2.1 billion was given in fuel subsidies by 30 OECD Members and ten emerging economies during the period 2018 to 2020 (OECD, 2022).



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Some challenges to consider

Economic

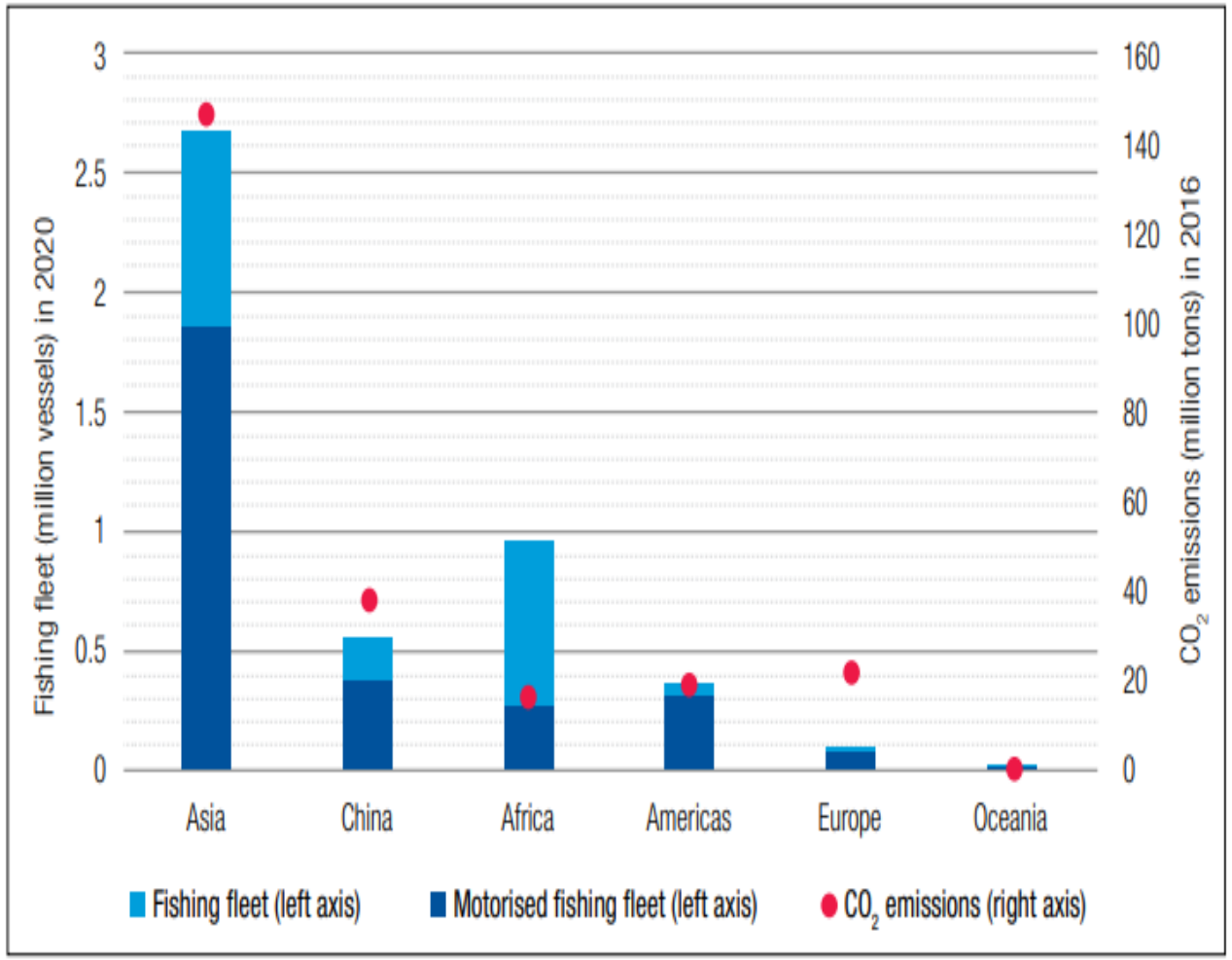
- **Asia** has the largest fishing fleet, producing most CO2 emissions, followed by **Europe** & **Africa**
- **Technological solutions are not mature enough**

Environmental

- All CO2 emissions measuring systems for the fisheries sector **only cover a partial view of the reality**
- Increasing energy efficiency may not improve fuel efficiency vs ton of catch if **overfishing** continues

Regulation

- No specify decarbonization plan for the fisheries sector globally but an IMO Revised GHG Strategy for shipping (2023)
- Subsidies to fossil fuels by fishing vessels are not regulated



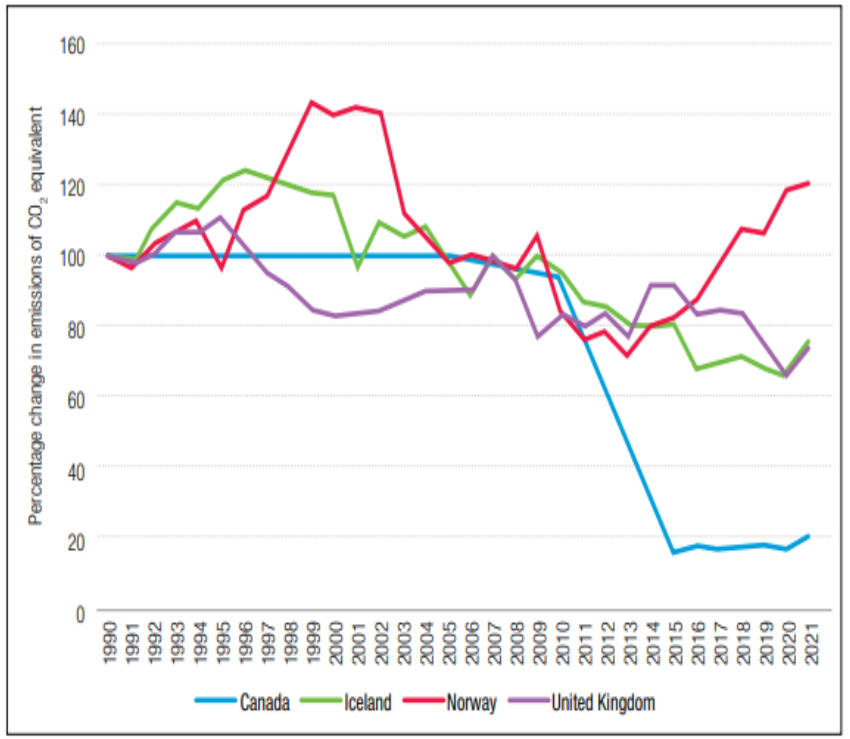
Source: UNCTAD based on data from FAO (2022a) and Greer (2019).

Fisheries CO2 emissions by Annex I Kyoto Protocol Parties (1990-2021)

Figure 1. Carbon dioxide emissions (in million tons) of the fishing fleets of the European Union and Japan (1990–2021)

Source: UNCTAD based on data from UNFCCC (2023).

Figure 2. Percentage change in the carbon dioxide emissions of the fishing fleets of selected countries (1990–2021)



Source: UNCTAD based on data from UNFCCC (2023).

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NDCs by main seafood traders

Direct (energy-saving & emission reduction) measures

China: **Energy-saving and emission-reduction technology** and equipment in **fishery** .

Vietnam: **Improve energy efficiency and conversion in fisheries**.

Ecuador : National Climate Change Strategy (2012-2025) lists **fisheries and aquaculture as a priority**

(In)direct (ocean-prioritizing) measures

The Russian Federation: adapt economic sectors to climate change including in **fishing, nature management and activities in the Arctic zone**.

Chile: **Adaptation Plans for the Fisheries and Aquaculture sectors** (2022 & 2027).

Canada: protecting **25% of their oceans** by 2025 and working towards 30% of each by 2030.

Absence of ocean-related commitments

Thailand: **First National Adaptation Plan** provides a framework for a climate-resilient society with focus on **water management, agriculture and food security**.

Others, showing **no specific reference**, include:

India, the Netherlands, and Norway.

Regulatory Frameworks

IMO Revised GHG Strategy (2023)	• **The IMO recently adopted a revised GHG strategy for global shipping (2023)** that seeks to reach net-zero GHG emissions from international shipping close to 2050 and a commitment to ensure an uptake of alternative zero and near-zero GHG fuels by 2030. • Their **application to fishing vessels is rather limited as the IMO policies mainly apply to vessels with very large tonnage (+500GT) and engaging in international shipping routes**.
The European Union	• The inclusion of **shipping activities in the monitoring, reporting and verification of CO2 emissions from maritime transport (MRV) Regulation** and the **EU Emission Trading System (ETS)** may have some implications for the fishing industry, albeit **indirectly**.
WTO's Fisheries Subsidies Agreement (2022)	• **It prohibits** subsidies that contribute to **illegal unregulated and unreported (IUU) fishing, and fishing on overfished stocks**. • Negotiations are still ongoing for additional provisions on **overcapacity and overfishing** under a comprehensive agreement including specific fuel subsidies in the illustrative list of prohibitions. Non-specific fuel subsidies would need to be notified. We need a balance between sustainability of stocks and climate goals. Current text should include the term **"fossil" fuels** to allow support for a just energy transition.

Alternative fuels and engines

- **Green biofuels and energy efficient measures** stands out as the most readily available and mature fuel option for fishing vessels
- **Green methanol and LNG** still face challenges in terms of retrofitting, storage capacity, safety and limited potential to fully decarbonize.
- **Green hydrogen and green ammonia** show promise but require further R&D to address safety, scalability, **cost-effectiveness**, storage capabilities & delivery
- **Alternative engines** such as electric and hybrid ones and wind propulsion offer potential solutions to reduce GHG emissions for fishing only in prototype phase
- **Port infrastructure for alternative fuel storage and delivery** will be key for a smooth and just transition
- **Each alternative has its challenges and limitations, requiring continuous R&D to fully realize their potential in the fishing industry.**

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Policy considerations

1) Develop **specific & measurable global emission reduction goal** for fishing fleets & Include objectives for emission reduction and adaptation goals for the fisheries sector in next NDC iteration (2025)
2) Establish a **globally harmonized data collection system for fishing fleet emissions**, accommodating the needs of artisanal fisheries
3) Explore and adopt **energy efficiency measures and sustainable fuel options.** Products from non-motorized vessels need to be considered as **zero carbon.**
4) Introduce **available technological options** for retrofits, new engines, vessel design, efficient fishing practices, and adequate port infrastructure
5) Phase out **fossil fuel-based subsidies** to the fisheries sector & shift public support to accelerating the energy transition of fishing fleets, particularly to support small scale fisheries
6) **Avoid decoupling** decarbonization efforts from current actions to improve stock management.

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Thank you!

LINKS:

Energy transition of fishing fleets: Opportunities and challenges for developing countries | UNCTAD

Oceans Economy and Fisheries | UNCTAD