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Fuel consumption monitoring in fishing vessels and its potential for different stakeholders

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EUROPEAN FISHERIES FUND

EUSKO JAURLARITZA
GOBIERNO VASCO

FUEL CONSUMPTION BY THE BASQUE FISHING FLEET

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COASTAL (<15 m)

20-30 t/y (vessel)
1,400 tn/y (fleet)

TROLLER (20-25 m)

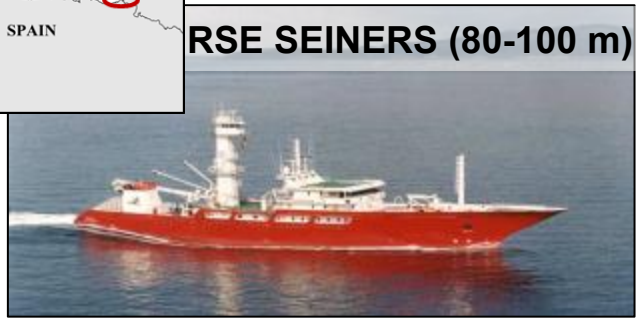
PURSE SEINERS (30-35 m)

250-300 t/y (vessel)
13,000 t/y (fleet)

TRAWLERS (35-40 r

1,000 – 1,250 t/y (vessel)
24,000 t/y (fleet)

RSE SEINERS (80-100 m)



3,000 – 5,000 t/y (vessel)
82,000 t/y (fleet)

1 Fuel consumption monitoring in fishing vessels

REQUIREMENTS FOR A GOOD MONITORING PLATFORM

- ✓ GPS data
(date, time, position, speed and course)
- ✓ High data quality
- ✓ High signal coverage
- ✓ Data sampling – configurable
- ✓ Transmission system – data transferring in near real time
- ✓ Persistent storage (data safe/logging even without communications)
- ✓ Broad monitoring possibilities → signal acquisition capability

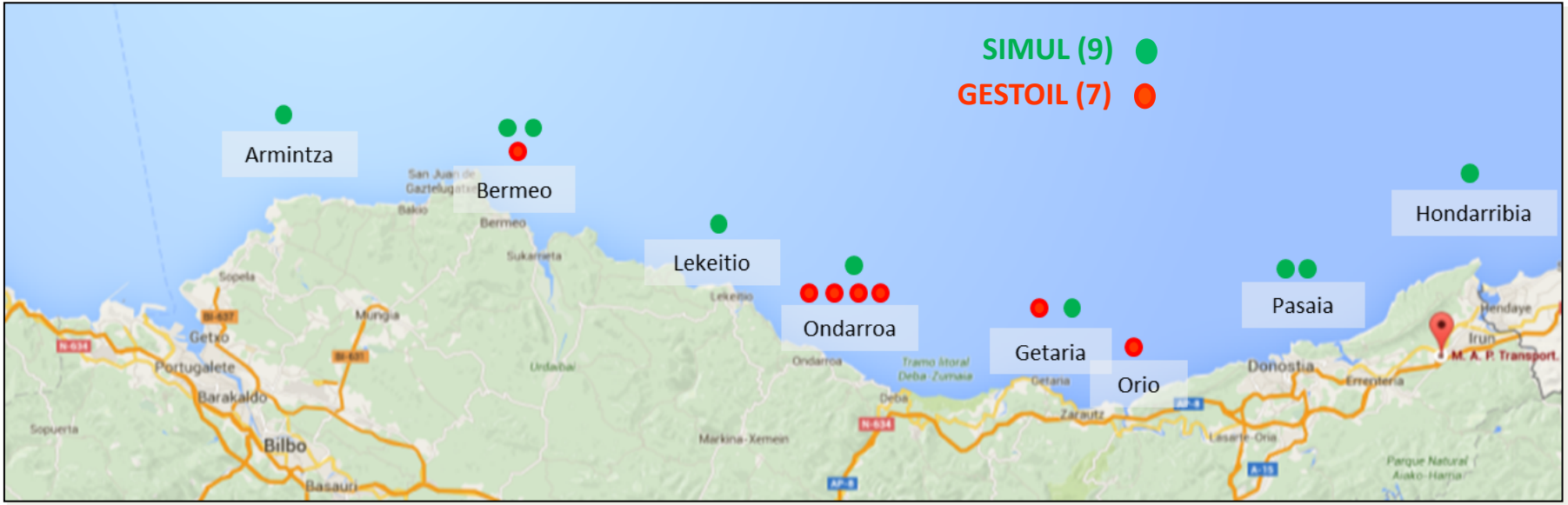
FUEL CONSUMPTION MONITORING DEVICES

GESTOIL

SIMUL

FUEL CONSUMPTION MONITORING
Devices installed

Devices are installed onboard16 vessels



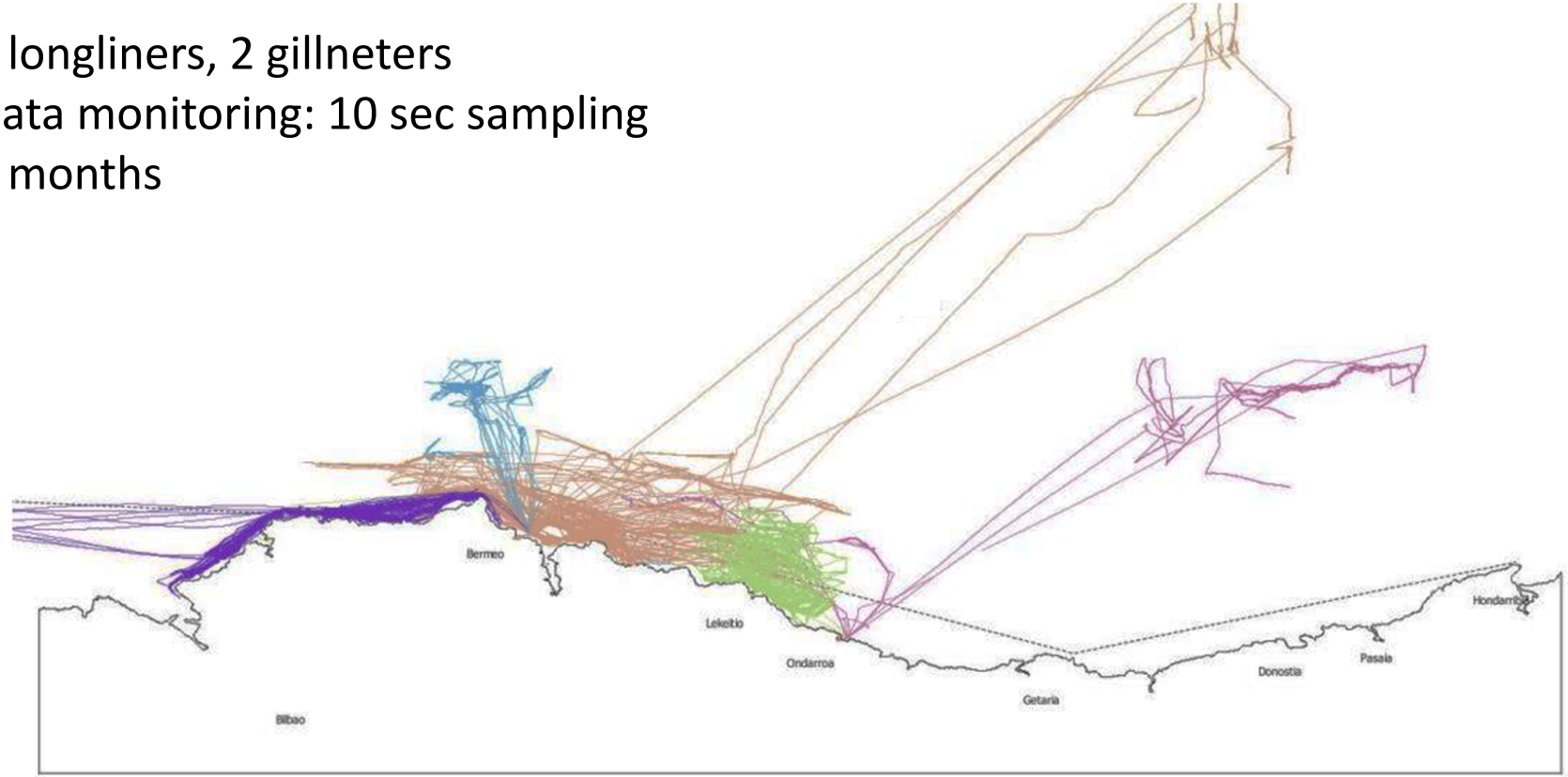
FUEL CONSUMPTION MONITORING
Example of tracks registered by the SIMUL

9 vessels, 1 year track

Getxo
Barakaldo
Fruiz
Gernika Lumo
Cuerrica
Orduña
Lekeitio
Hendaye
Irun
Tarnos
Les Barthes
Anglet

FUEL CONSUMPTION MONITORING
Example of tracks registered by the SIMUL

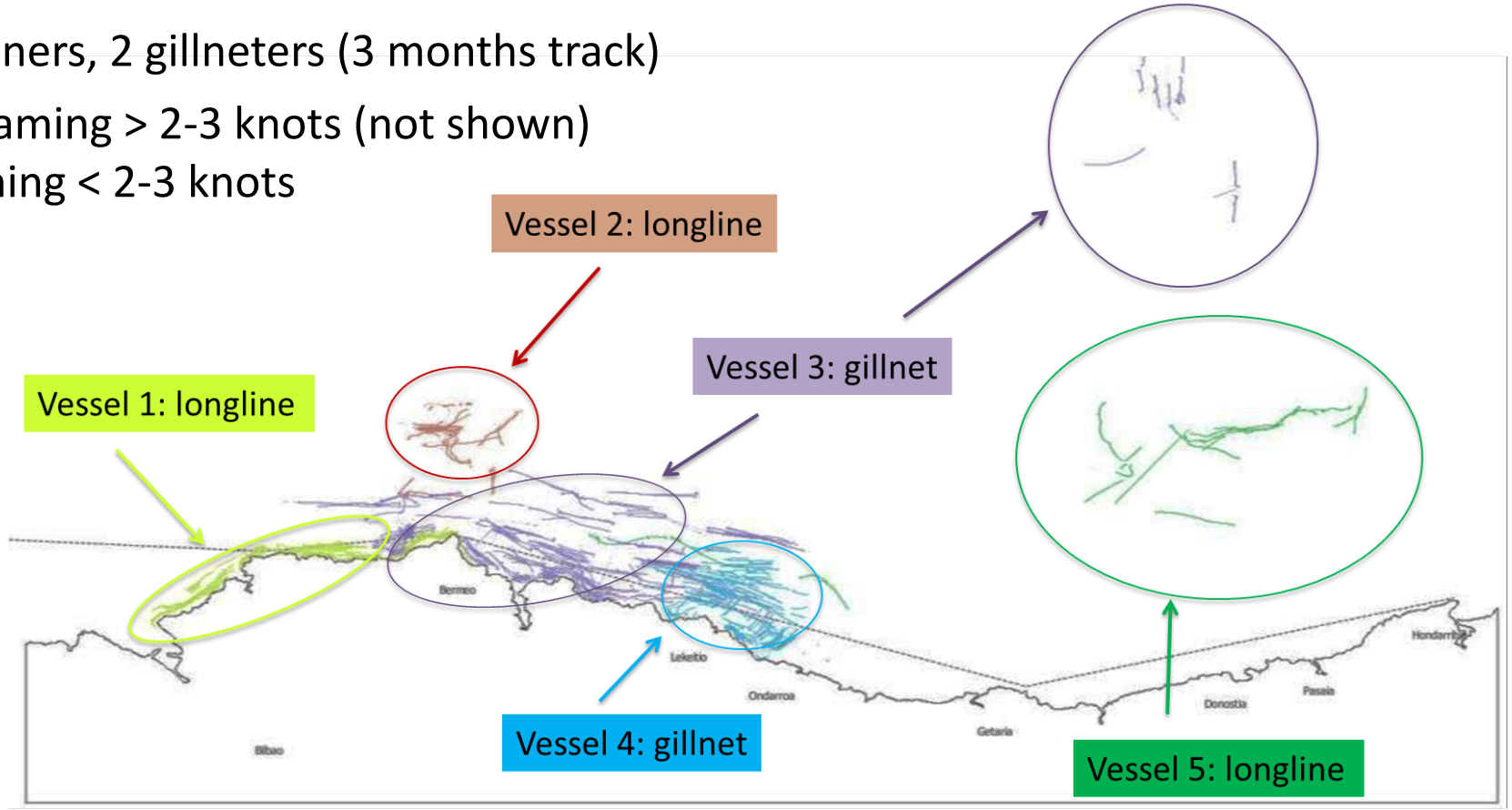
- 3 longliners, 2 gillneters
- Data monitoring: 10 sec sampling
- 3 months



FUEL CONSUMPTION MONITORING
Example of tracks registered by the SIMUL – FISHING EVENTS

3 longliners, 2 gillneters (3 months track)

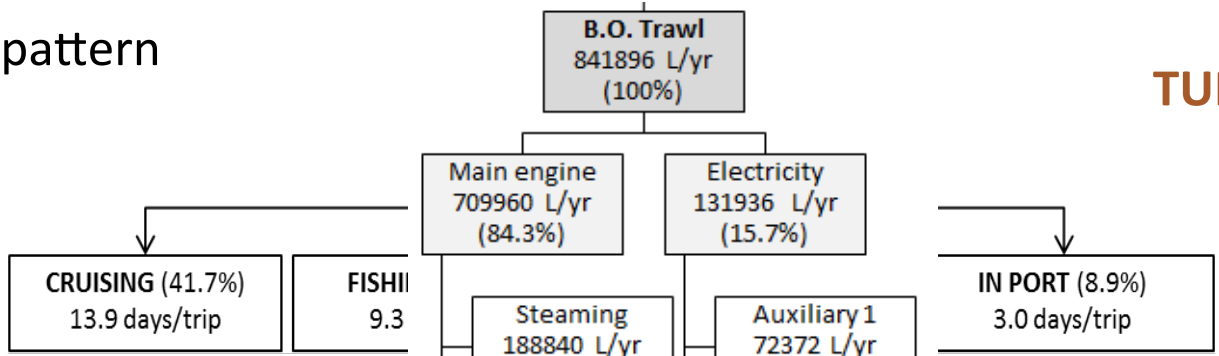
- Steaming > 2-3 knots (not shown)
- Fishing < 2-3 knots



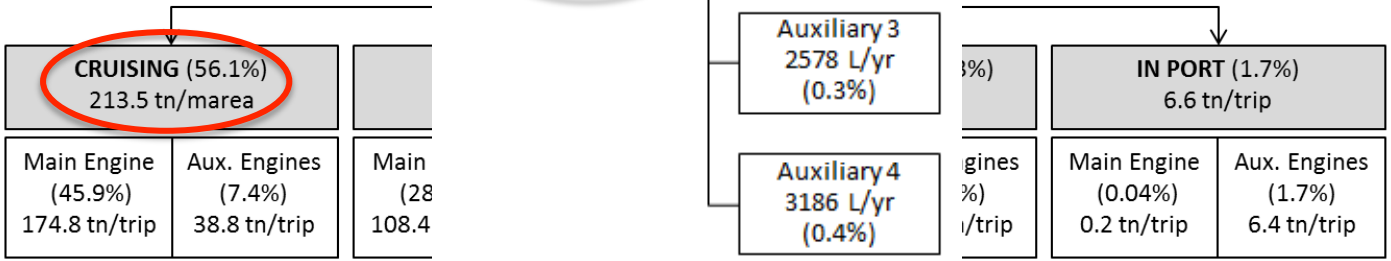
FUEL CONSUMPTION MONITORING
Activity and energy patterns

STERN TRAWLER
TUNA PURSE SEINER

Activity pattern



Energy pattern

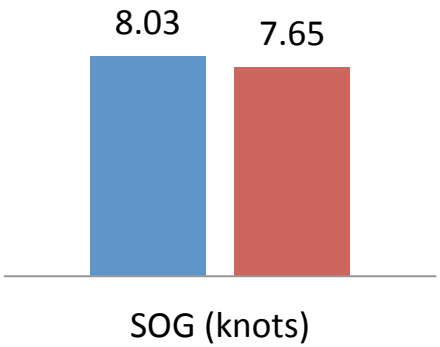


FUEL CONSUMPTION MONITORING
The effect of knowing the real consumption

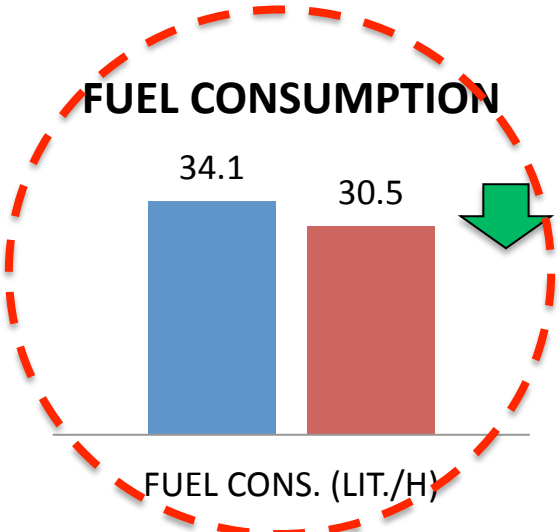
BEFORE AFTER

ENGINE REGIME

VESSEL SPEED



FUEL CONSUMPTION



FUEL CONSUMPTION MONITORING
Energy savings

GESTOIL	SIMUL

- ✓ Annual energy savings of 10-25% by only adjusting the speed during steaming, mainly in vessels with shipowners as skippers/crew members.
- ✓ 7% in coastal vessels with short cruising periods.
- ✓ Fuel consumption monitoring devices are valued by the sector
- ✓ Fuel consumption monitoring devices have been used to assess the real potential savings of products in the market.

2 Potential for different stakeholders

POTENTIAL of FUEL CONSUMPTION MONITORING AND INDICES FOR DIFFERENT STAKEHOLDERS

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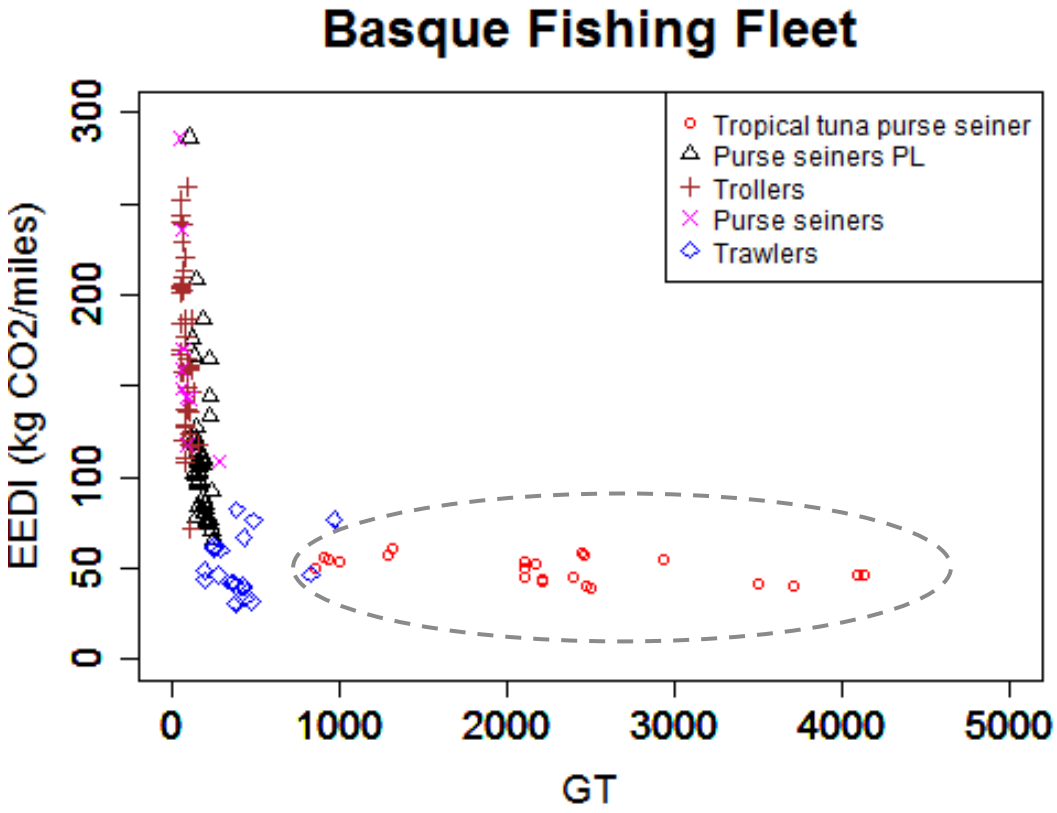
Stakeholder	Capability
Skipper	• Real time information regarding vessel performance • Energy and activity patterns • Possibility for reducing fuel bill
Shipowner	• Historical data of a vessel's fuel consumption and performance • Historical registry of fishing grounds
Administrations	• Fishing effort / incentives • Good for spatial planning
Scientists / Researchers	• Energy and activity patterns • Energy audits • Energy efficiency indices • Carbon footprint studies • Energy saving measures

3 Energy efficiency indicators (EEDI and EEOI) for fishing vessels

Estimated EEDI for the fleet

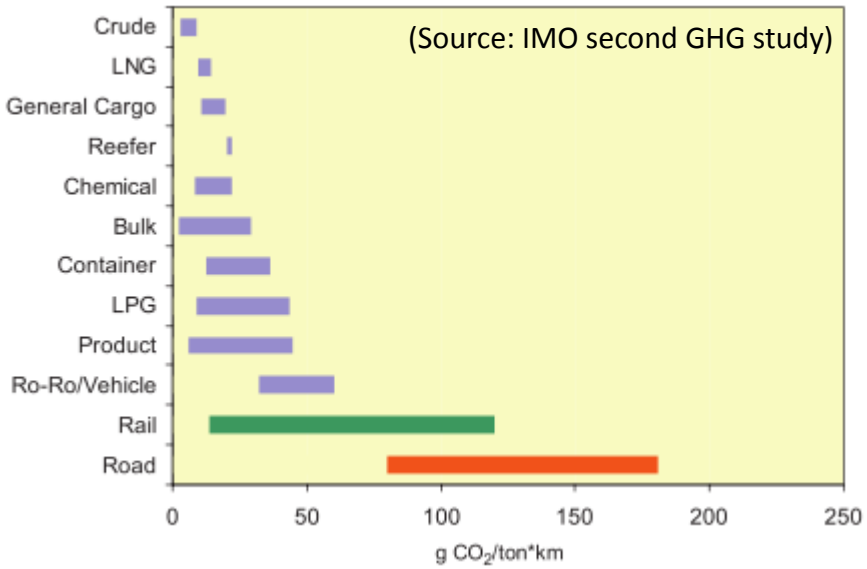


Shipping

EEOI of SEVERAL FISHING VESSELS

Fishing gear	EEOI (g CO_2/tnm)	Fuel Use Intensity, FUI (L/t)
Pole and liner	166 (90)	90 (=)
Tuna purse seiner	330 (179)	492 (↑)
Stern trawler	883 (477)	1646 (↑)
Hand liner	1585 (856)	60 (↓)
Troller	1753 (947)	1131 (~)
Gillnetter	2775 (1498)	677 (↓)

In (g CO_2 / tkm)



CONCLUSIONS

Energy efficiency indicators

- Fishing sector needs a standard energy efficiency indicator
- Unclear regulatory framework for fishing vessels

Fuel consumption monitoring for fishing vessels

- 16 vessels with fuel monitoring devices
- Energy and activity pattern essential for energy efficiency
- A win to win model: wide range of possibilities in addition to fuel monitoring
- Good coverage (no data missing even without communications)
- Non-stop use: fishermen don't switch off the system → Fuel indicator incentive
- Good testing ground for energy saving measures.

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Many thanks for your attention.
Any questions?

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