

"Oceans in climate negotiations: What role for **blue foods**?"

"**Decarbonizing** the fishing industry – barriers ahead and how to overcome them"

Daniel Voces, Managing Director of Europêche
17 November 2022

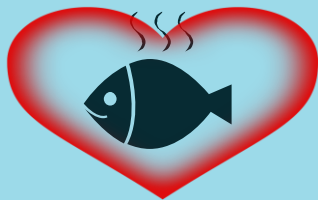


Keep eating wild-caught fish: It's the best way to feed the world

PERFECT PROTEIN

Fish live freely and does not require feeding, use of water supply, antibiotics or pesticides

Healthiest animal protein

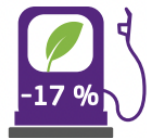


CLIMATE PROTECTION

By far the animal protein with the **lowest carbon footprint** thus the best option in terms of **food security**



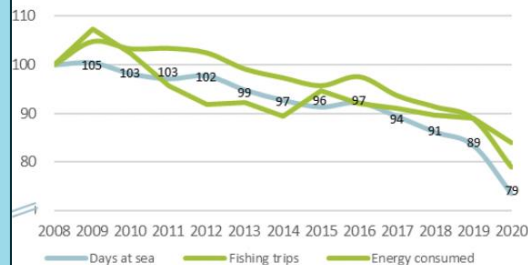
Energy consumption (in millions of litres of fuel)



Fuel consumption decrease from 2009 to 2017 (in green)

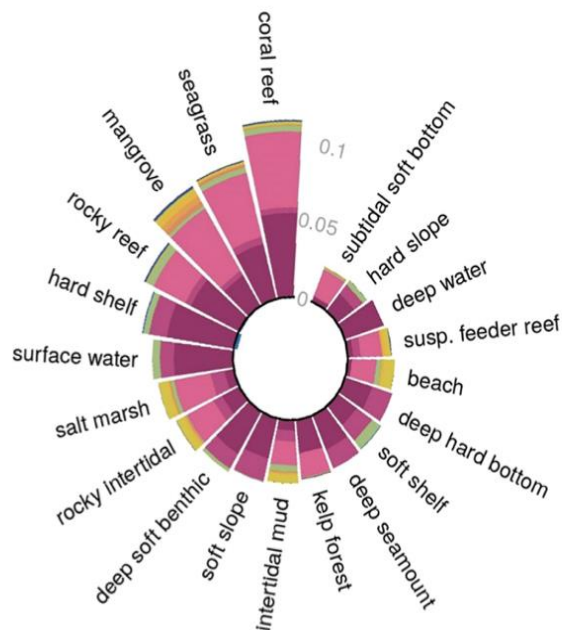
CO₂ emissions from fishing are down by 48 % (if compared to 90's levels)

2022 Annual Economic Report on the EU Fishing Fleet



Recent pace of change in human impact on the world's ocean

Benjamin S. Halpern^{1,2}, Melanie Frazier¹, Jamie Afflerbach¹, Julia S. Lowndes¹, Fiorenza Micheli^{1,3,4}, Casey O'Hara², Courtney Scarborough¹ & Kimberly A. Selkoe^{1,2}

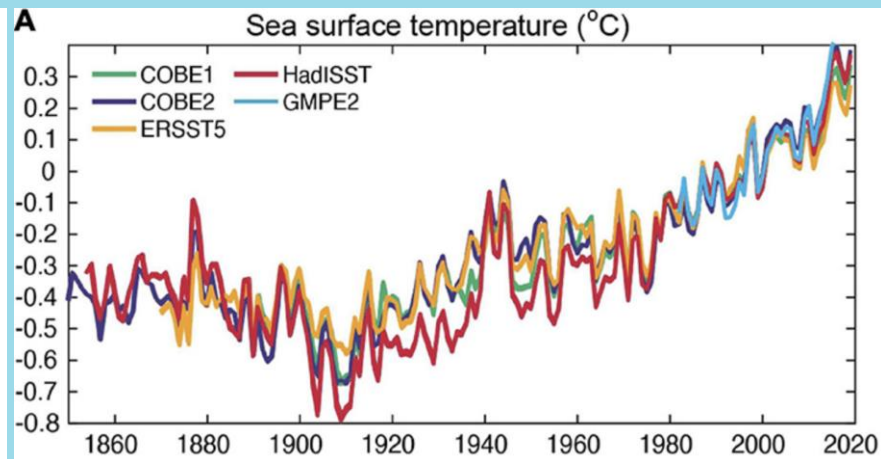


Annual change

- artisanal fishing
- comm fish: dem nondest lb
- comm fish: dem nondest hb
- comm fish: dem dest
- comm fish: pel lb
- comm fish: pel hb
- light pollution
- direct human
- organic pollution
- nutrient pollution
- shipping
- slr
- oa
- sst

SST: Sea Surface Temperature
OA: Ocean Acidification
SLR: Sea level rise

OCEAN threats



Carbon emission challenges for fishing

Fuel (fossil fuel) consumption to catch fish

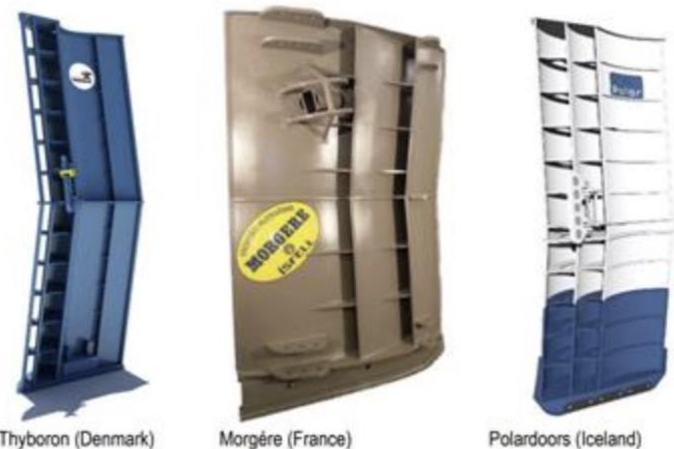
Transition

- Zero emission energy sources
- Improve vessel design
- Improve gear design, reduce drag
- Reduce the time spent at sea (e.g. healthy stocks, improve efficiency)
- Understand trade-offs in energy consumption per unit landings

Technical Progress

Innovations to increase selectivity, reduce seabed contact, GHG emissions

Annex		
Table A1 Short description of the terms of innovative gears. The Ref. column refers to the factsheet number as reported by WKING (ICES, 2020a).		
Ref.	Term	Description
6.1.1	FlexSelect	A counter-herding device for demersal trawls to reduce catch of unwanted fish by scaring or directing unwanted fish away from the path of the trawl
6.1.2	Brown shrimp sorting grid	Size-sorting grid to reduce undersized shrimps
6.1.3	Netgrid	Inclined net grid comprised of a four-panel box section inserted into a standard two-panel trawl, into which an inclined net panel of 80 mm netting is laced
6.1.4	SepNep	Combination of an inclined U-shaped tapered net panel, a grid, and double codends to improve selectivity of <i>Nephrops</i> , plaice, dab, and whiting
6.1.5	Combination grid	Combination grid system made of a species-selective upper half grid and a size-selective lower half grid to improve selectivity of <i>Pandalus</i> and <i>Nephrops</i>
6.1.6	Grid and double codend	Grid system with two codends to separate flatfish from roundfish and improve species and size selectivity
6.1.7	Shrimp pulse	Shrimp pulse trawl; the mechanical stimulation to catch shrimp replaced by an electrical stimulus
6.1.8	Flying drone	Flying drone with scientific echosounder to improve individual and school-size selectivity before the net is deployed
6.1.9	PingMe	Acoustic device to locate ghost-fishing nets and equipment, as well as active fishing gear underwater
6.2.1	Controllable doors	Remote controllable trawl doors made from highly efficient aerodynamic designed wings
6.2.2	Floating sweeps	Floating sweeps between the trawl doors and trawl wing ends
6.2.3	Scaring ropes	Fish scaring ropes ahead of a <i>Nephrops</i> trawl's mouth
6.2.4	Electro-razor	Razor clam dredge with a collecting basket, located behind electrodes to improve razor clam selectivity and to reduce impact
6.2.5	Echo-sensor detector	Acoustic sensor installed on a grid to quantify <i>Nephrops</i> catches
6.2.6	Flemish panel	A flatfish beam trawl with a large mesh panel in the rear part of the lower belly
6.3.1	Crustacean BRDs	Three different grid systems experimented in the Portuguese fisheries to improve size and species selectivity of <i>Nephrops</i> and shrimps
6.3.5	Hookpod	Hook pod that keeps a hook's barb covered during deployment to avoid seabird bycatch
6.4.1	Mini Danish seine	Mini Danish seine as an alternative to gillnet to reduce seal bycatch
6.4.2	Pontoon trap	Large trawnet fishery in coastal waters as an alternative to gillnet fisheries for the reduction of seal bycatch
6.4.3	Pearl-nets	Small acrylic glass spheres for standard gillnets to improve the acoustic visibility for small-toothed whales
6.4.4	Nemos + Roofless	Selectivity device to reduce cod bycatch, while maintaining the catch efficiency for flatfish; the device consists of a square net section (four-panel extension) mounted between the belly of the trawl and the codend and an escape window in the top panel
6.4.5	Alternative pots	New pot fishery for cod in areas where traditionally trawl and net fishery is carried out; the aim is to reduce marine mammal bycatch
6.4.6	ADD	Devices added on the gillnet, producing acoustic sound that keep animals away from the gear
6.4.7	Boat seine	Alternative gear to replace gillnet impact on the seal population
6.5.1	Dual codend	Dual codend with the uppermost codend, manufactured with larger meshes; fish and shrimps can pass through cuttings on the uppermost netting panel of the lower codend
6.5.2	Semi-pelagic doors	High efficient hydrodynamic shaped trawl doors with proven higher spreading force in low angle of attack to work off the seabed
6.5.3	Recycled plastic doors	Highly efficient aerodynamic shaped fishing doors made from recycled plastic
6.5.5	High-strength materials	New material for trawl manufacture (Dyneema)
6.5.6	Flex-TED	Turtle-excluding device (TED) to reduce sea turtle bycatch
6.5.7	Guardian-net	Trammelnet provided with "guarding net" to reduce unwanted bycatch
6.5.8	Detached groundgear	Modified groundgear by cutting the rigging between fishing line and footrope in the central part and reduce physical impact
6.5.9	JTED	Juvenile and trash excluder device; sorting grids with different bar spacing to improve target species selectivity
6.5.11	Lionfish trap	Bottom fish trap for long-term immersion and target invasive species (lionfish)



An example of innovative fishing gear: New semi-pelagic otterboards have been developed in the last years by different door manufactures (e.g. Thyborøn, Denmark; Polar fishing gear, Iceland; Morgère, France). These semi-pelagic otterboards can eliminate seabed contact by operating 2-5 m off the seafloor while keeping the trawl on the ground, thus maintaining the same harvesting and catch efficiency. As a result, there is significantly less damage to benthic ecosystems, and decreased bycatch of sedentary benthic animals, as well as lower fuel consumption, pollution and GHG emissions.

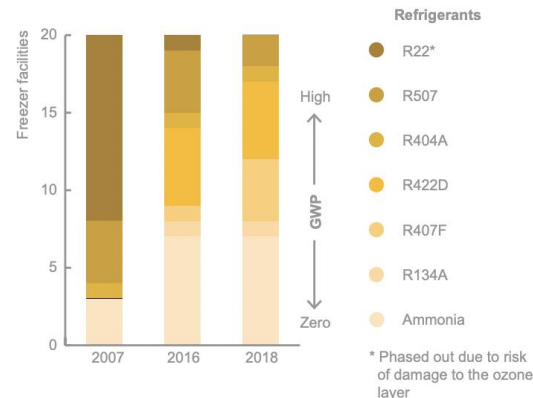
Energy Efficiency



TRAWLERS IN SCHEVENINGEN USING SHORE POWER

March 2017 saw the official commissioning of shore power connections for large seagoing vessels (including our trawlers) in the first and third harbours in the port of Scheveningen. The shore power is procured entirely from green sources. Using these electrical supplies means vessels no longer have to generate electricity themselves by running their auxiliary engine while they are in port. This saves on diesel.

USE OF REFRIGERANTS IN COLD STORES ON SHORE AND ON OUR TRAWLERS



<https://archive.damen.com/news/2019/11/innovati...>

Innovative fishing trawler named at Damen Maaskant ...

05 Nov 2019 — The newly-developed **fishing vessel**, constructed at **Damen Maaskant** ... for a diesel-electric **hybrid** system in addition to a battery bank.



Circular Economy

MSFD descriptor 10:
Marine litter does not cause harm

Who will collect the litter from
The bottom of the ocean?



Port of Scheveningen, Netherlands. Foto: KIMO

– Raises awareness

According to Michael Mannaart, who is the international Liaison Officer at KIMO International, and has been involved in the scheme of the Netherlands since 2014, Fishing for Litter has removed more than 5000 tonnes of marine litter from our oceans the past years.

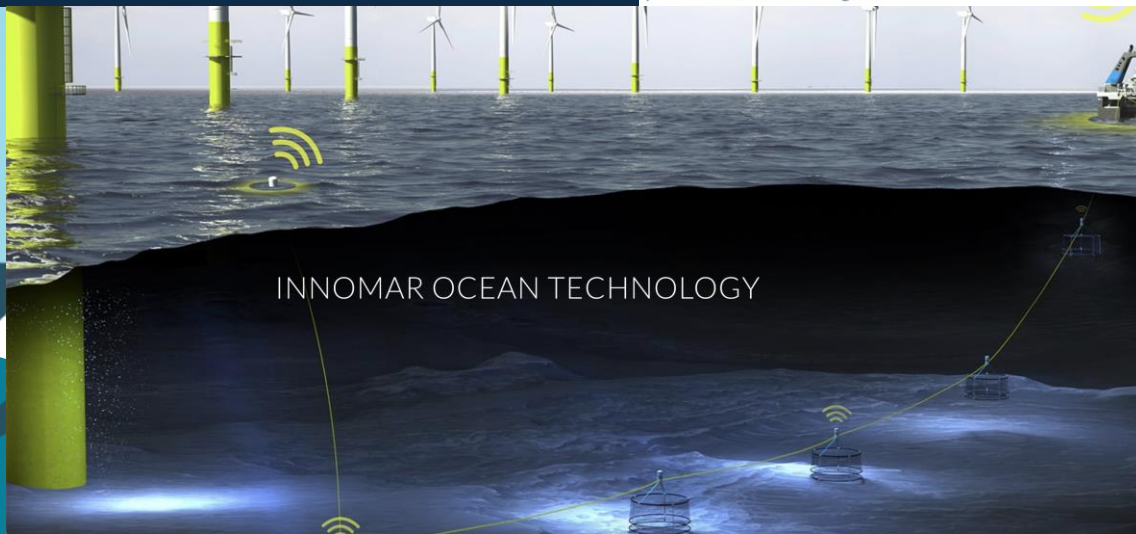
Blue economy & Climate change & Innovation

STATIONAIRY TRAPS

Our stationary trap concept is a new high tech fishing technology that will work passively and autonomously. The traps may be placed near fish farms, offshore wind power installations or other vulnerable areas. This technology is an important contribution to make fisheries and fish farms more sustainable.

SMART BUOYS

The smart buoys gives the fishermen an opportunity to survey the position of his fishing gear. In combination with our software, Digicatch, the buoys are “smart” and have lots of useful features. One of these features will send a push warning to the fisherman's mobile phone or his onboard navigation system if there is something to be aware of. For example, if it is overdue for the gear to be harvested or simply that it is moving out of position. This way, the fisherman can take actions to prevent the loss of his gear.



Alternatives to fuel oil ?

GENERAL PROPERTIES OF FUEL TYPES



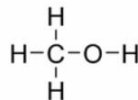
1 m³
of fuel
oil

- Easy storage
- Carbon emissions
- Local Emissions
- If produced as bio fuel only local emissions.
- Challenge to mix



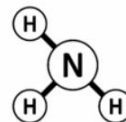
1,75 m³
of CH₄ /
LNG

- Storage -153 deg
- ≈ 20% lower carbon emissions as fuel oil
- Hardly local emissions
- As bio-fuel or synthetic fuel no Carbon emission.
- Easy mixing



2,63 m³ of
METHANOL
/ CH₃OH

- Storage 20 deg
- As bio-fuel or synthetic fuel no Carbon emission.
- Toxic.
- Still local emissions.
- High price (as green fuel
- Availability



3,0 m³ of
AMMONIA /
NH₃

- Storage -33 deg
- No carbon emissions when produced as synthetic fuel
- Highly toxic.
- Still local emissions.
- Availability

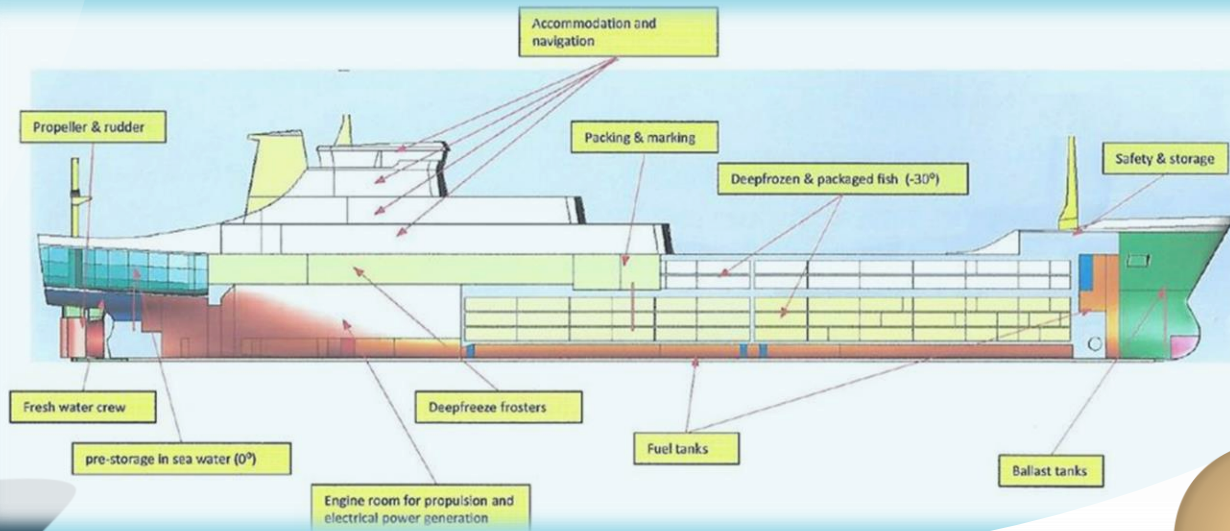


4,6 m³ of
HYDROGEN / H₂
(liquid)

- Liquid storage -253 deg
- As synthetic fuel no Carbon emission.
- Storage and handling
- Availability



Fishing Capacity



Kitchen, cabins, toilets and recreational areas are considered as part of the fishing capacity

- Alternative measurement formulas needed -

Carbon emission challenges for fishing

Fuel (fossil fuel) consumption to catch fish

Challenges – Policies and Technology

- EU Fit for 55 – Taxation of Fuel
- IMO carbon levy and local green policies
- Chicken-and-egg situation: demand & supply net-zero-carbon fuels & port infrastructures
- Limited funding under EMFAF
- Difficult to apply new decarbonizing technologies to small-scale fishing vessels

Carbon emission challenges for fishing

Fuel (fossil fuel) consumption to catch fish

Way Forward

- Specific Fund – Action Plan on decarbonisation
- Invest in science, biofuels, innovation and port infrastructures
- Enhance circular economy / Energy efficiency
- Revise definition of fishing capacity
- Cater for the specificities of small-scale fishing vessels
- No taxation of fuel

THANKS!

Do you have any questions?

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**Committed to responsible fishing,
nature, science and seafood supply
now and for future generations**

