



Processing Industry - Climate Change Issues and Challenges

**Alex Olsen
December 2021**

Key messages

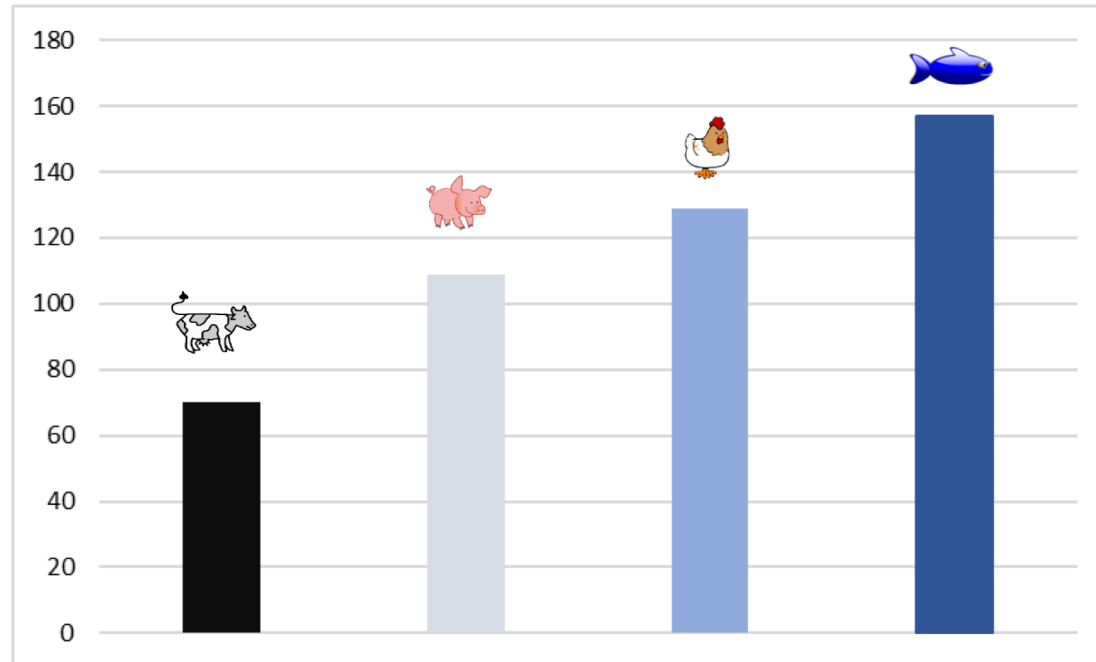
We have a good story to tell.

Still room for improvements

Cooperation and transparency is essential

Estimated animal protein consumption worldwide by source

Million metric tons







Source: Statista (2020 data)

Why fish is important for the future!

For the people



... and for the environment!

	Carbon Footprint* (kg CO2/kg product)	Water Consumption** (litre/kg edible meat)
	3,2	2,000 litre
	5,4	4,300 litre
	6,1	6,000 litre
	67,6	15,400 litre

* Source: Tackling climate change through livestock – A global assessment of emissions and mitigation opportunities; FAO 2013. Cattle is for beef production.

** Source: Mekonnen & Hockstra 2010 from Animal Society of Animal Science

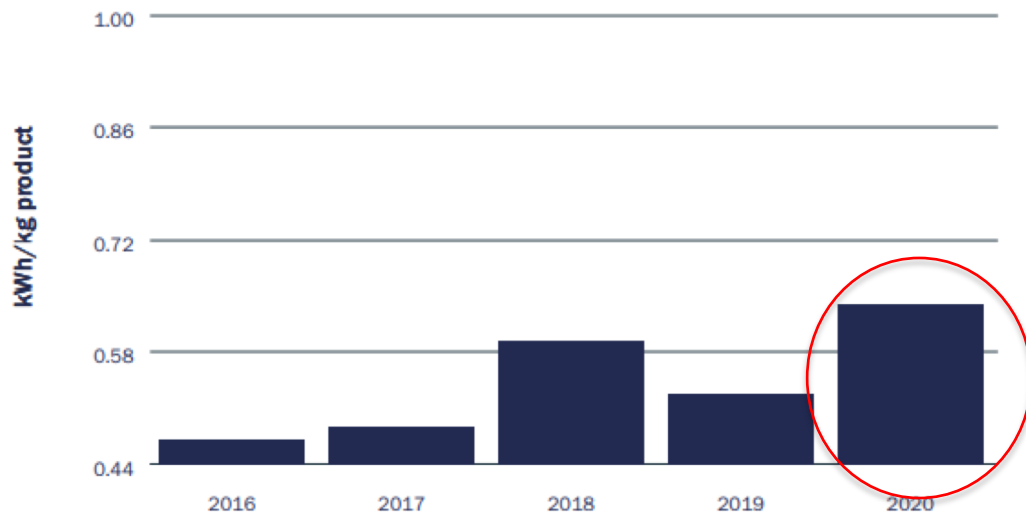
Production - the challenges

1. Reduction of CO₂ emissions as well as water usage & food waste.
2. Availability of raw material (seafood).

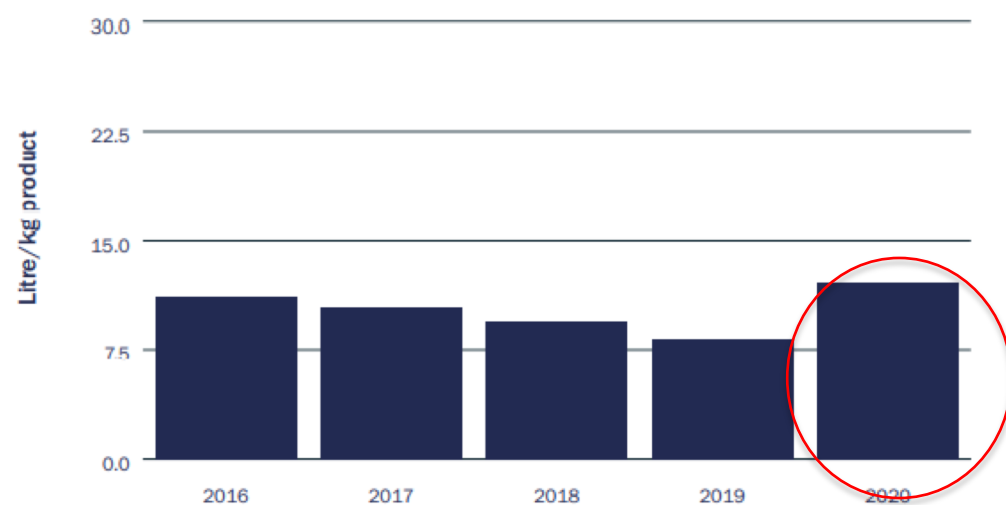


Electricity & Water usage

Energy



Water

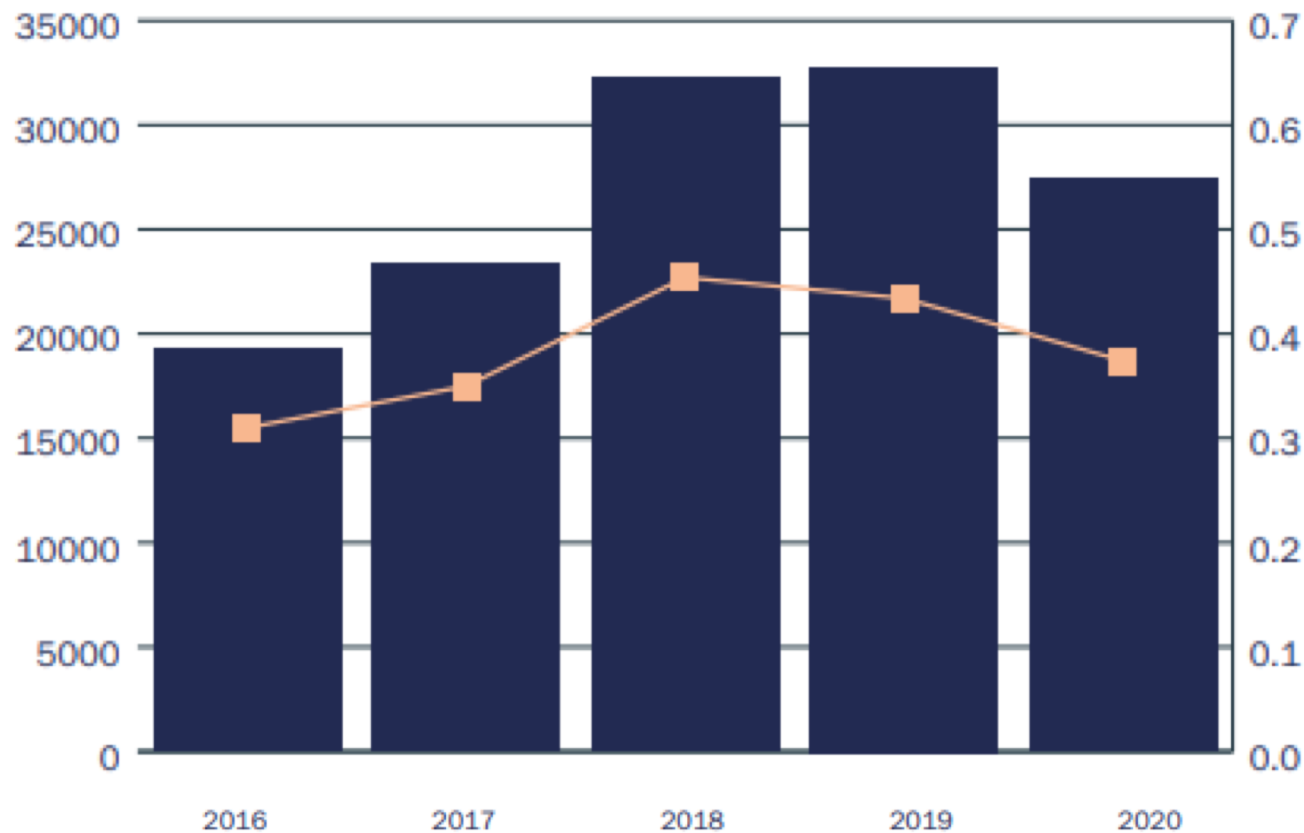


Decouple energy and water use from production

CO₂ equivalent emissions

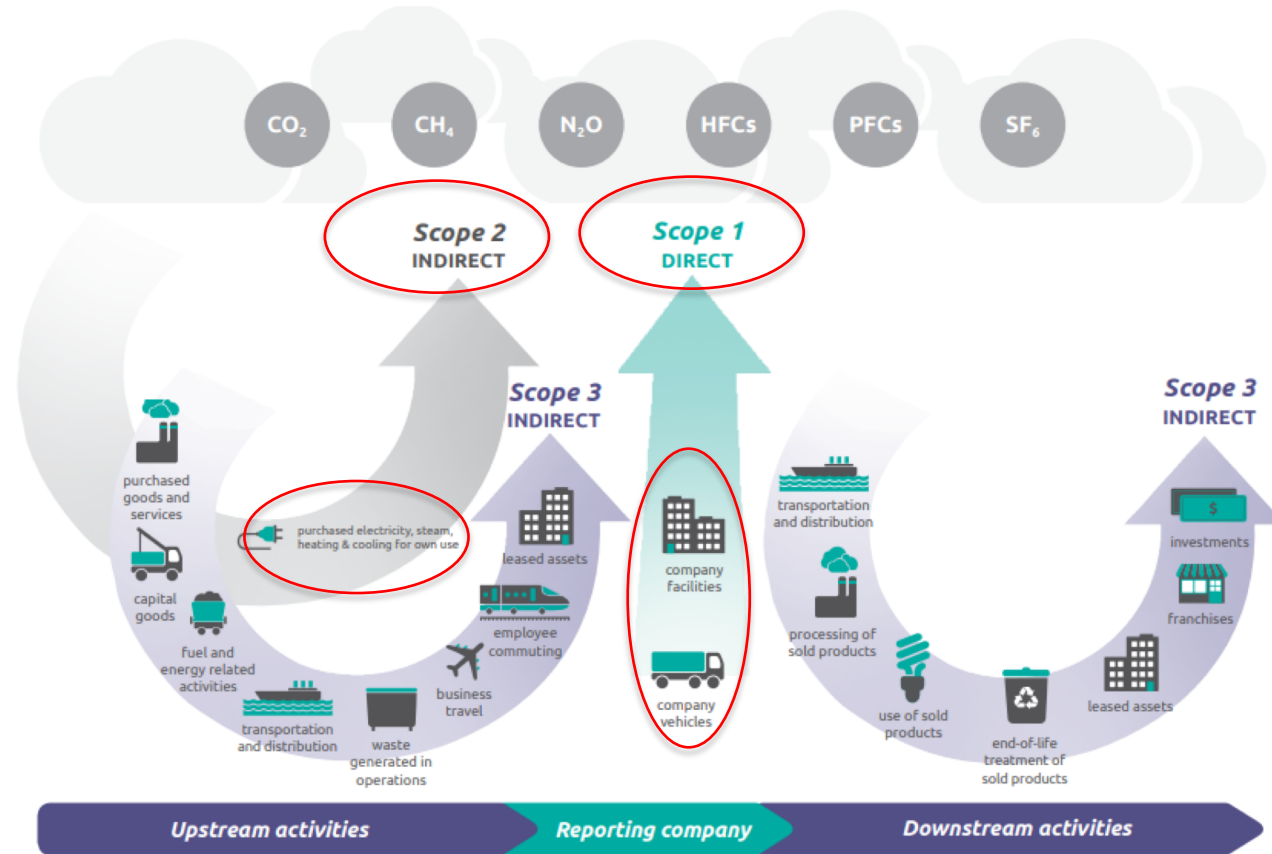
Tons

Kg per kg product



Source: Espersen Sustainability Report 2020

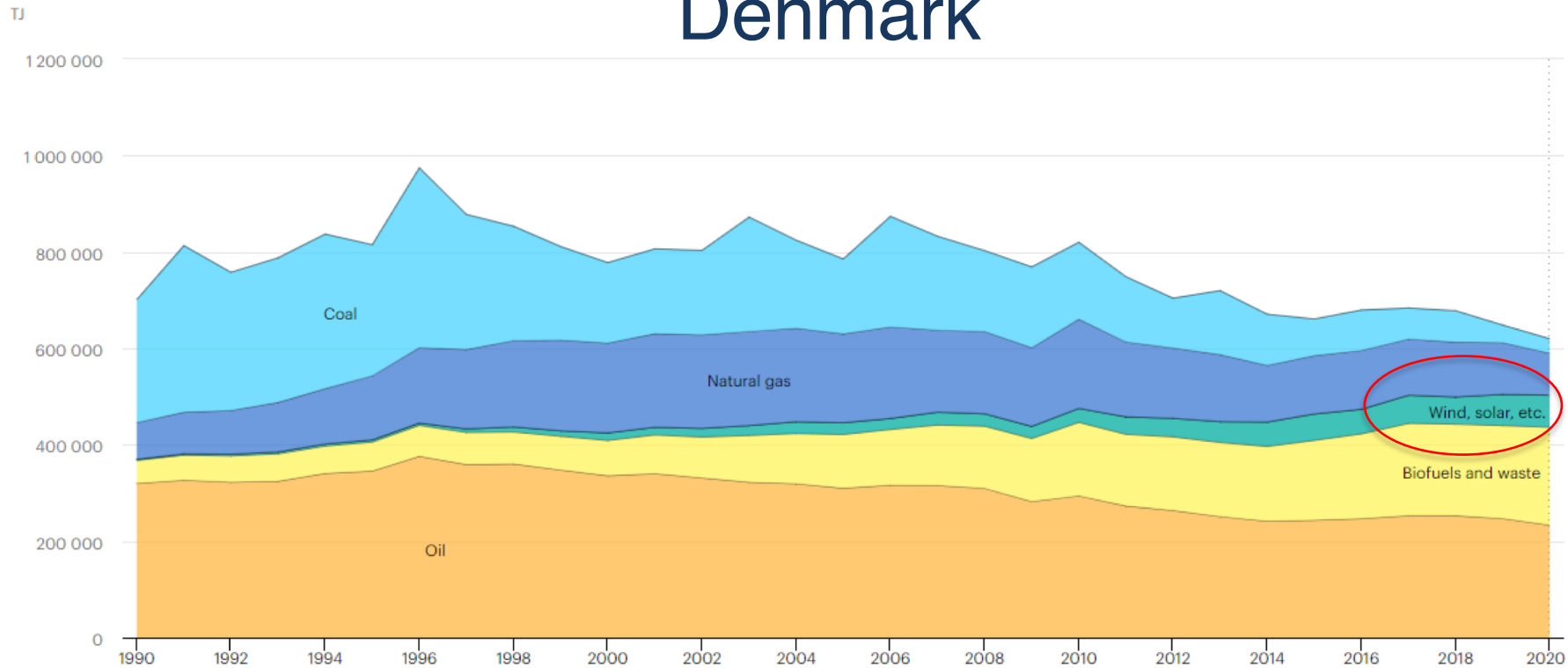
Overview of GHG Protocol scopes and emissions across the value chain



Source: Green Housegas Protocol (WRI)

Total Energy Supply (TJ) by source 1990 - 2020

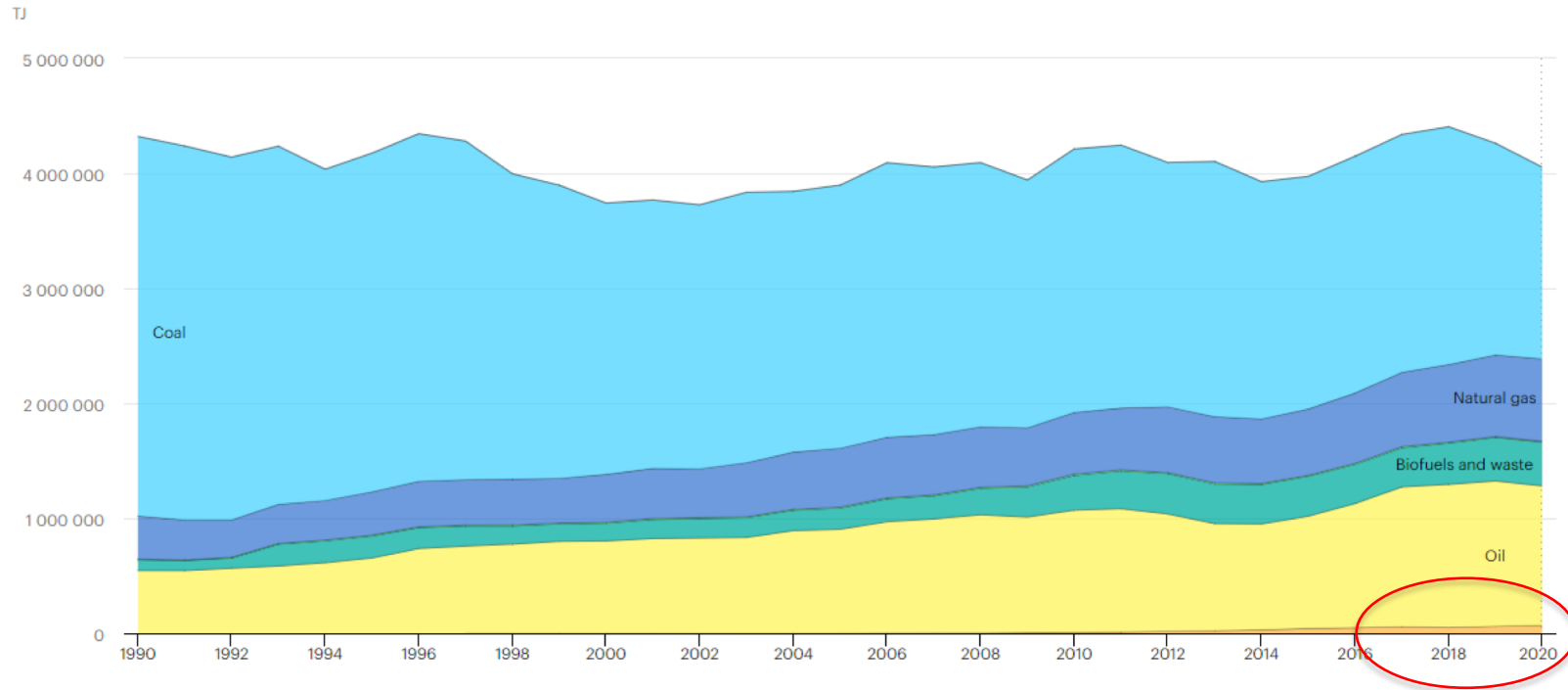
Denmark



IEA. All rights reserved.

Total Energy Supply (TJ) by source 1990 - 2020

Poland

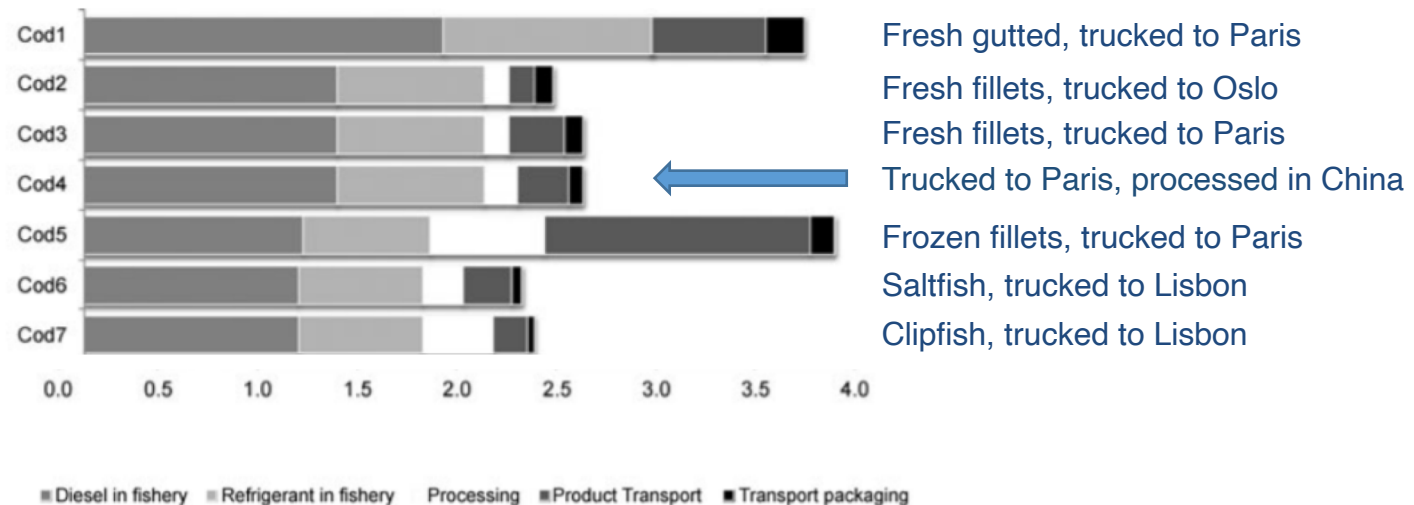


IEA. All rights reserved.

Cod Fillets Carbon Footprint 2015

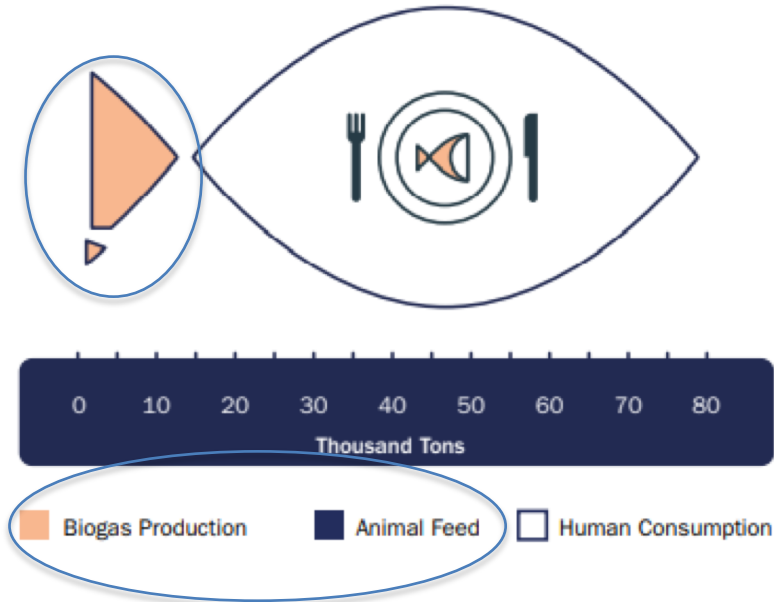
	Emissions per ton Cod H&G		
Fisheries	970	47,8%	Scope 3
Sea Transport	71	3,5%	
Container Transport Truck	590	29,1%	
Filleting Operation	398	19,6%	Scope 1 & 2
Totale	2.029	100%	
Emission per kg cod fillet	2,03		

Footprint - cod processed in China ?



Carbon footprint for seafood products from capture fisheries
(kg GHG/ kg edible product)

Reduce Food Waste



In 2020 77% of foodstuffs was used for human consumption

Raw material sourcing

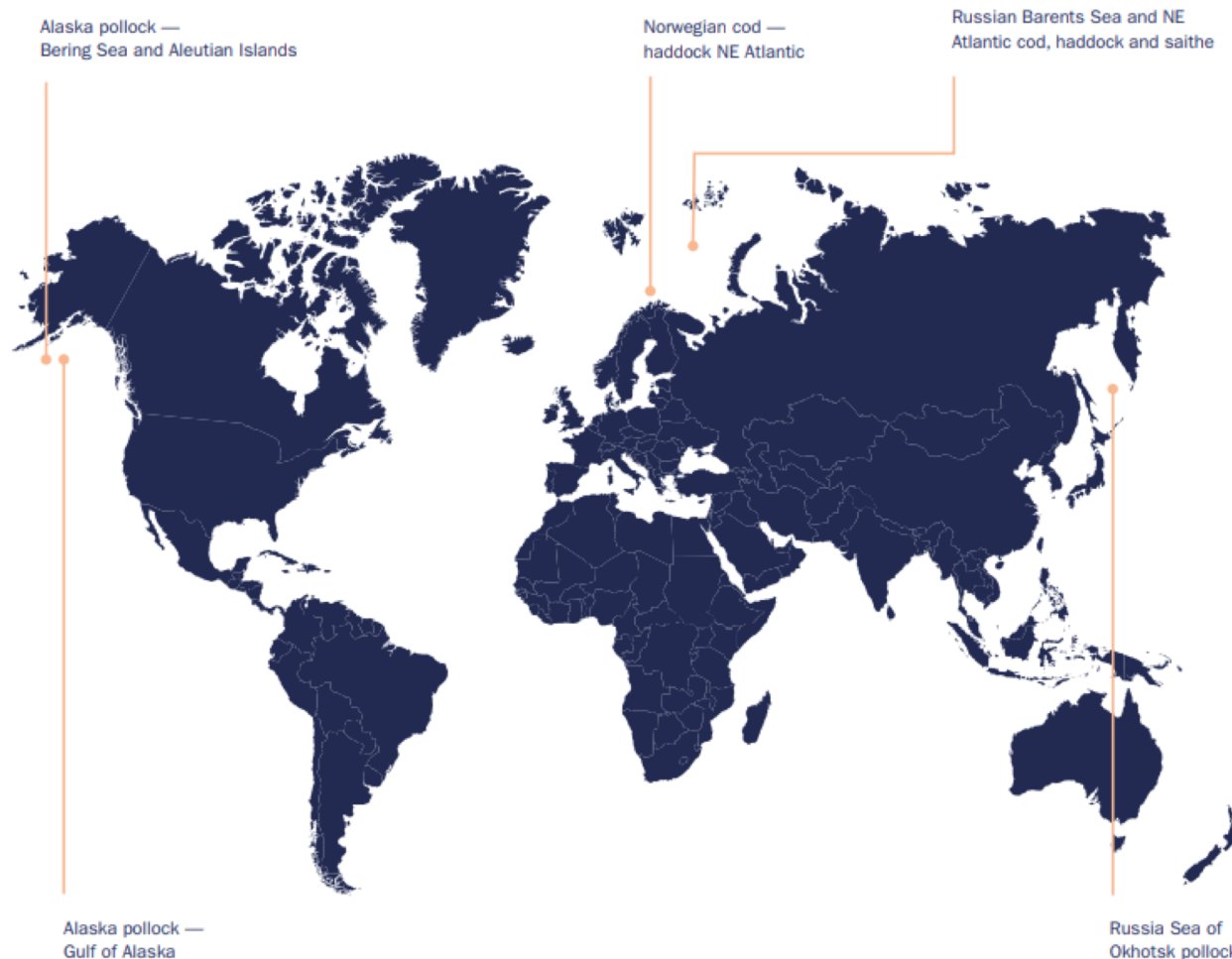




Photo: Per Stale Bugjerde

As Barents Sea temperatures rise, so do cod concerns

Sea water temperature could make some parts of the water inhospitable for the fish.

IntraFish Media

Published: 08.05.2015 10:03 Updated: 08.05.2015 09:57

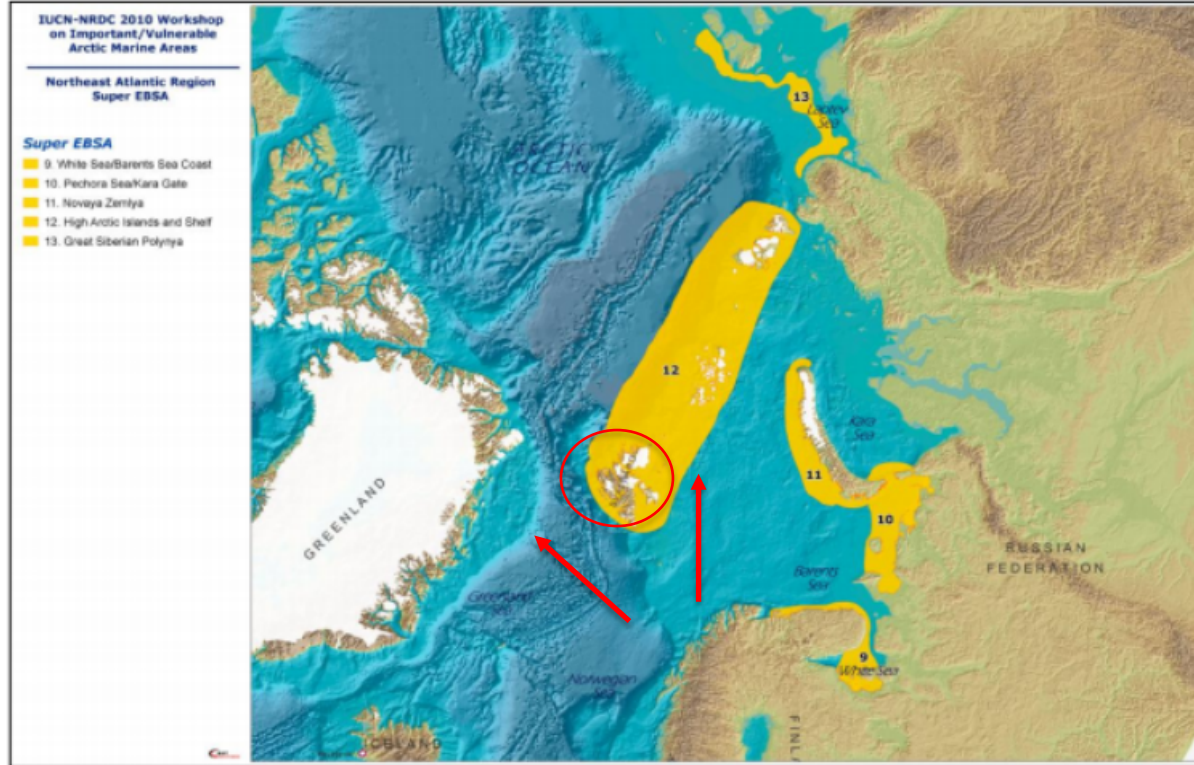
A recent report from Norway's Institute of Marine Research shows Barents Sea temperatures continue to rise and claims a nine-degree increase could make it unlivable for several fish populations, including the Barents Sea's most important fishery -- cod, according to a local paper.

The report is based on temperature projections from the most recent Intergovernmental Panel on Climate Change (IPCC) report, which states average global temperature will rise up to 40.1 degrees Fahrenheit and arctic temperatures may double the global average due to the melting of thin ice sheets.

Associated Articles

- Norway's Barents Sea capelin season ends with 80% higher harvest
- Norwegian cod exports reach all-time high
- Norway ups minimum landing prices for cod, haddock

Vulnerability in the Arctic Marine Environment (Super EBSAs)



Map from IUCN/NRDC Workshop November 2010



Published 27th March 2010

Partners

Catching Sector:



Processors and Manufacturers:



Retailers and Food Service:



We have agreed that from the 2016 season the catching sector will not expand their Cod fishing activities with trawl gear into those areas where regular fishing has not taken place before. This is a precautionary measure *until* through initiatives such as those mentioned below the fishing activity in future years will be determined by improved knowledge replacing the need for this precautionary approach.

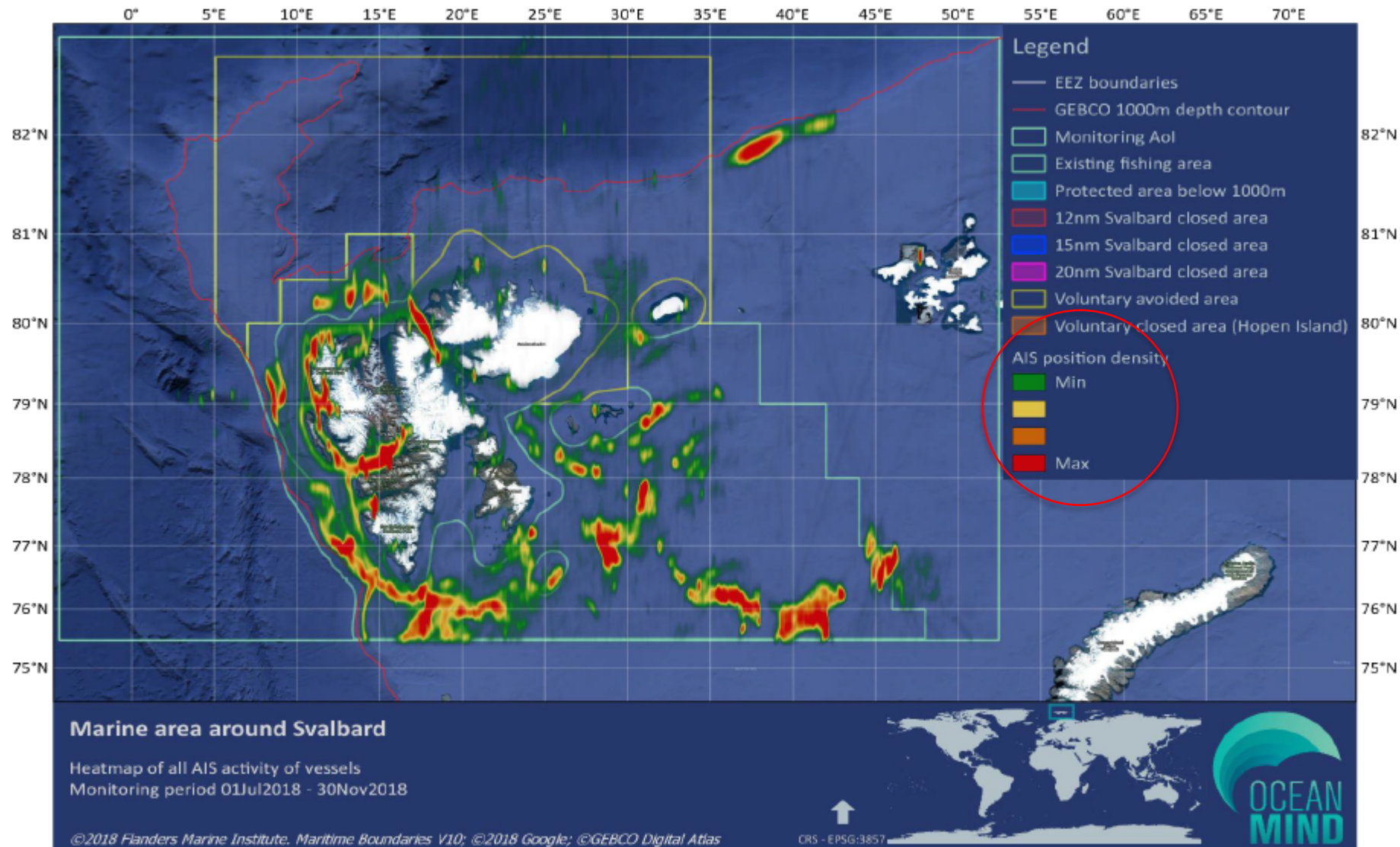
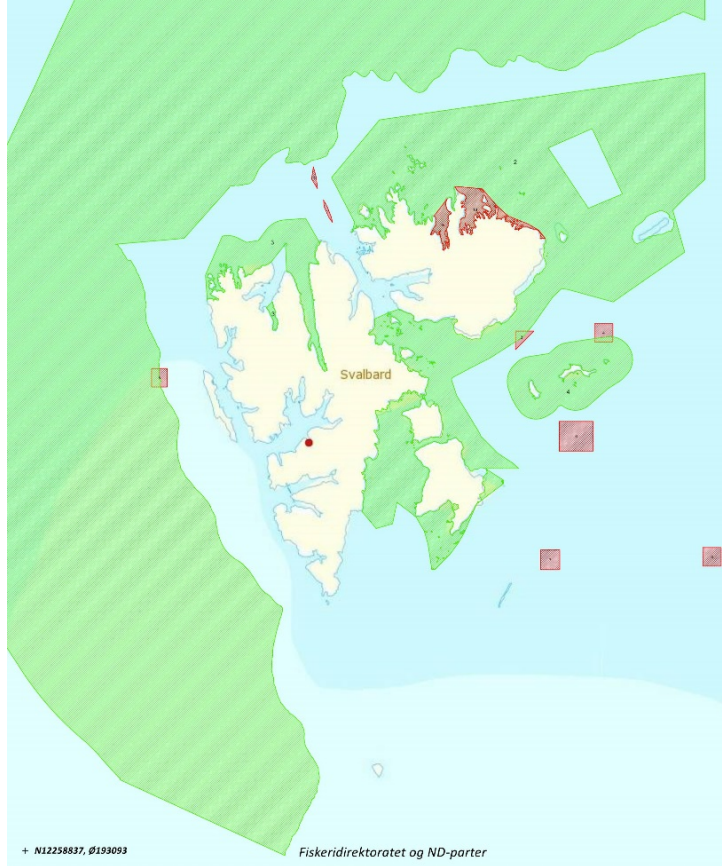


Figure 7 - Heatmap of all AIS activity of vessels at all speeds between July to November 2018

New Norwegian Legislation 2019



Enters into force July 1st

Establishes 10 closed areas



Photo: Espersen

Tesco, Espersen, McDonald's-backed Arctic marine project nabs nomination for coveted award

Project aims to help secure a healthy marine ecosystem for the Northeast Atlantic.

Intrafish November 2017

VICTORY! Bottom trawling scuttled

The end of bottom trawling in the South Pacific is in sight

Feature story - May 14, 2007

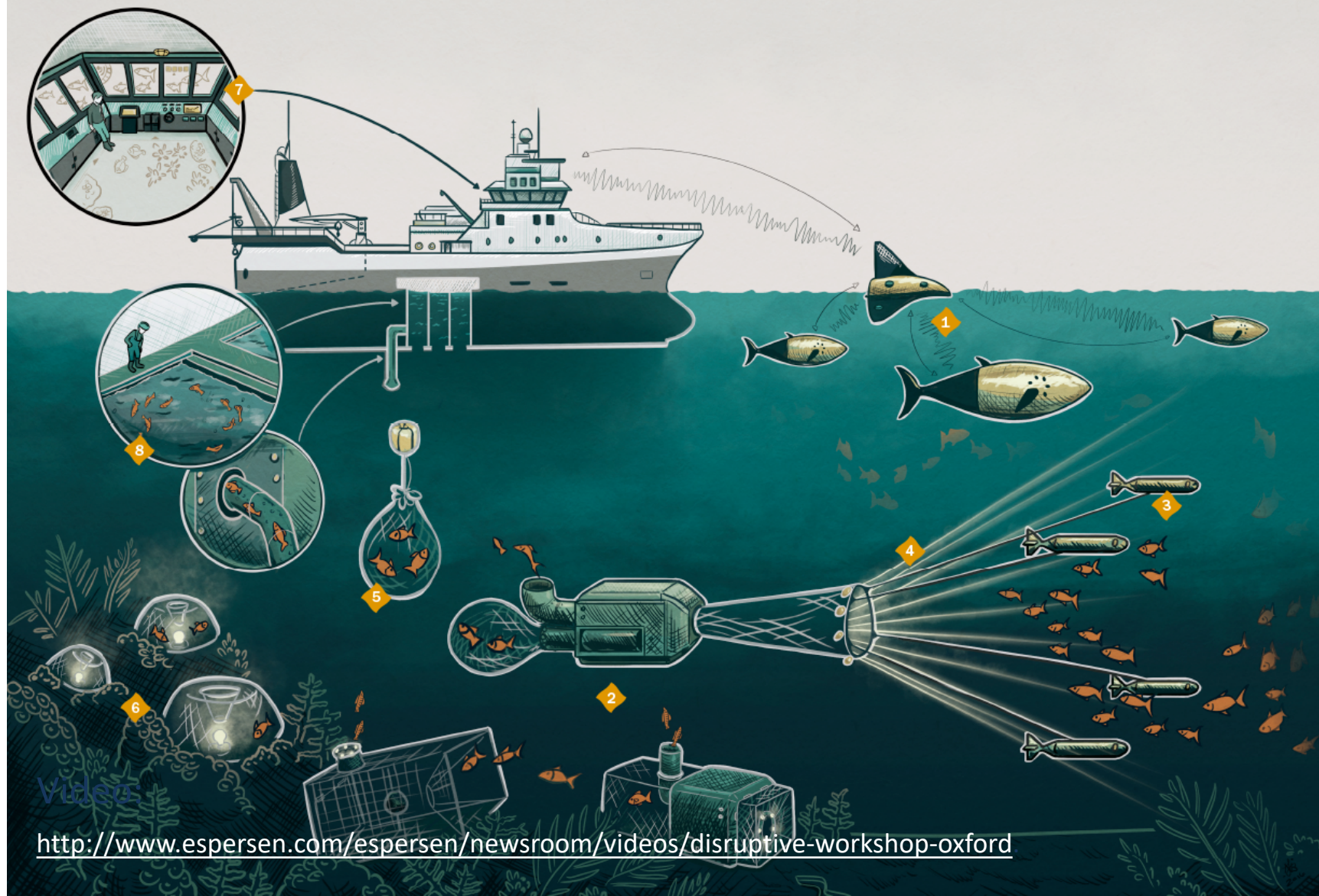
Sustainable fishing gear of tomorrow

Drive international collaboration to invent innovative fishing gear

Minimize the impact on the environment of harvesting whilst providing the benefit of marine fish as a high-quality protein source in the human diet.



Usage of laser beams to create 'virtual nets' at the front of smaller fish catching devices



Videos

<http://www.espersen.com/espersen/newsroom/videos/disruptive-workshop-oxford>



We have a good story to tell.

Still room for improvements

Cooperation and transparency is
essential

Thank you!

Contact: aeolsen2003@yahoo.dk