



From the High Seas to New Frontiers

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Marine Fuels 360 Conference, Singapore

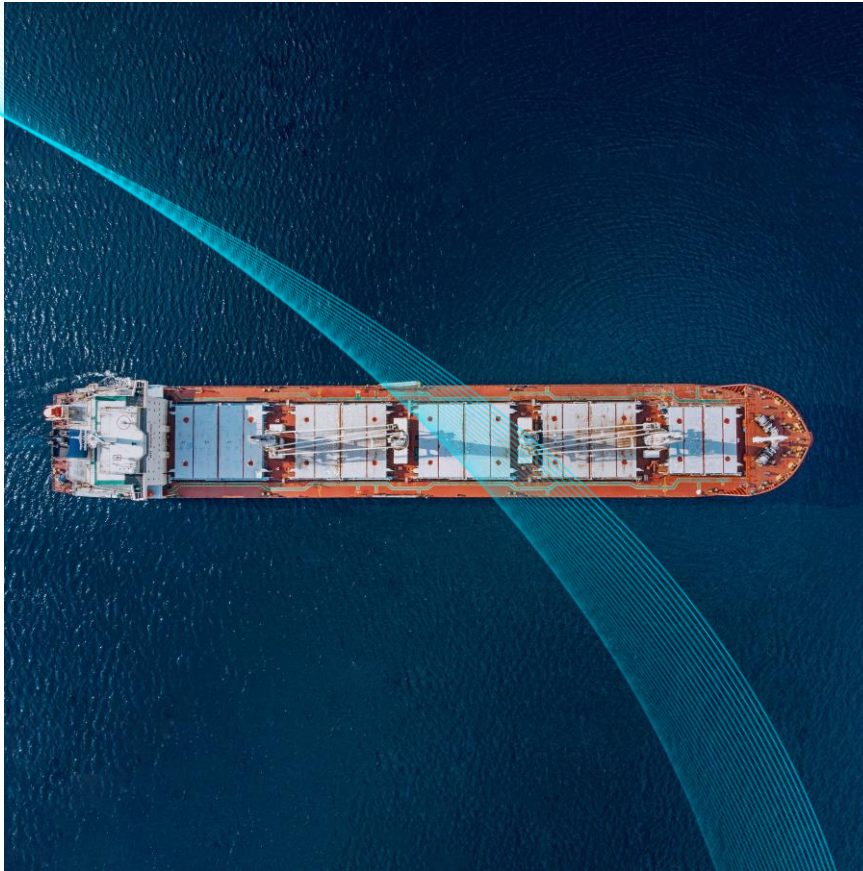
28 NOVEMBER 2023



**International shipping consume
around 300 million tonnes of
fuel annually**

**70,000
oceangoing
merchant vessels**

**Ships carry 80% of global trade by
volume, around 11 bn tonnes**



**3% of
global
CO2
emissions**

Why this transition is difficult

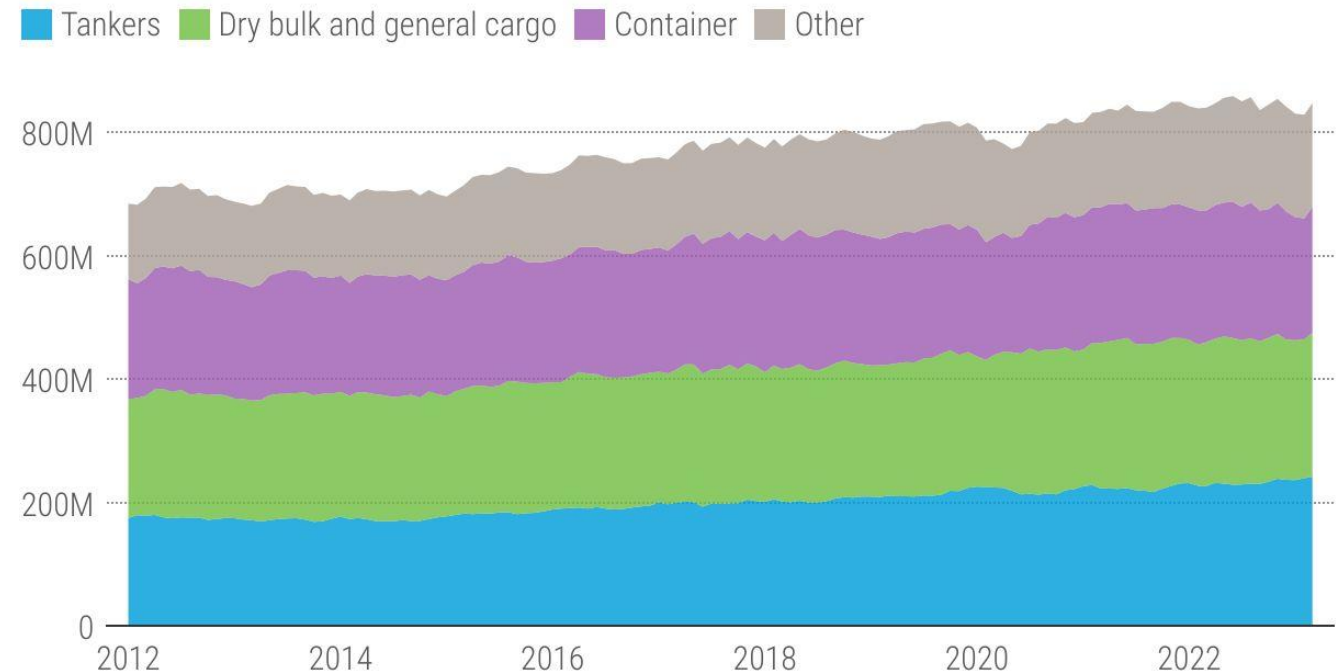
The decarbonization challenge is significant

- IMO: Strive for well-to wake GHG reductions of 30% by 2030 and 80% by 2040
- Equivalent to approx. 60% and 90% reduction in GHG intensity for the average ship
- Low-hanging fruit of energy efficiency (e.g. slow-steaming) has already been picked – approx. 30 – 40% reduction in GHG intensity since 2008 base year
- How do we move towards Zero Emission Fuels (ZEF)?



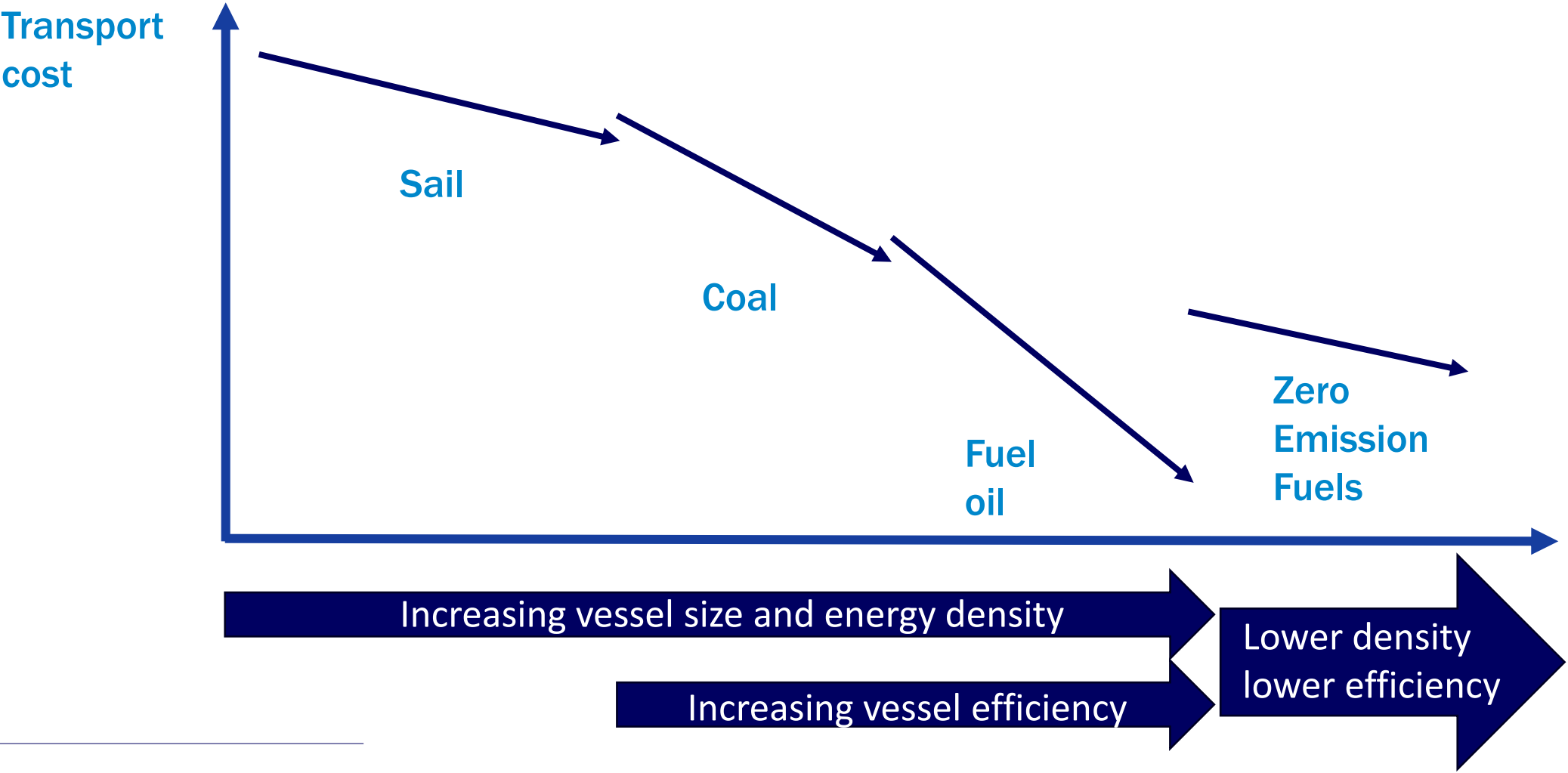
Shipping emissions are headed in the wrong direction

Carbon dioxide emissions by main vessel types, tons, 2012–2023



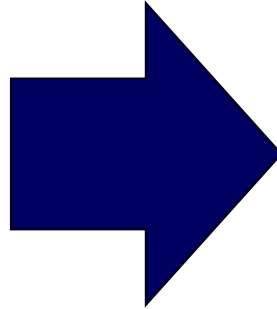
Source: UNCTAD

Economic incentives are lacking



Moving from a single-fuel to a multi-fuel world

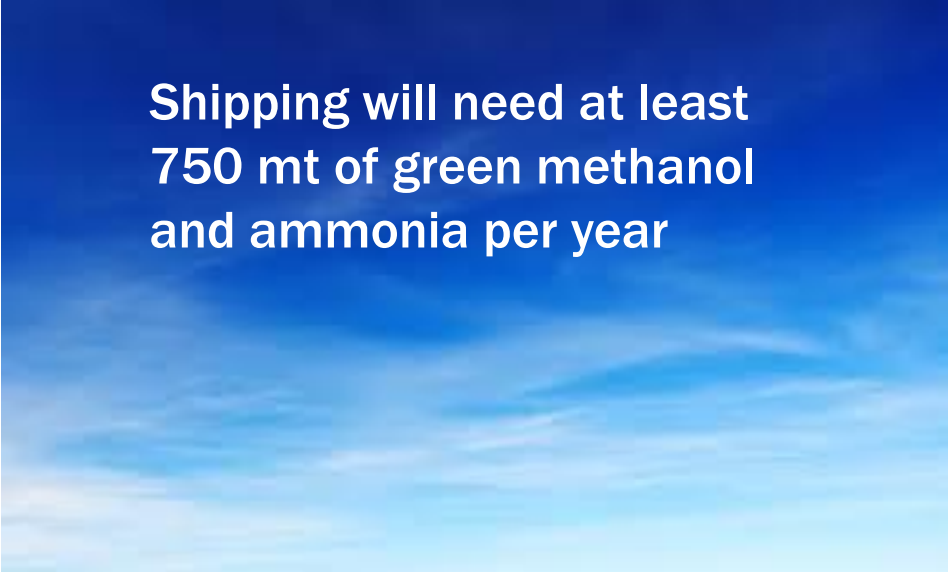
- A common global fuel oil standard
- A globally integrated fuel market
- Transparent pricing



- Multiple sets of infrastructure for production, storage and distribution – high cost
- Lower relative availability of each fuel in a location affects ability to price competitively
- High chance of stranded assets once a ZEF winner emerges
- Stricter safety regulations in bunkering ports, higher costs
- Will we allow bunkering operations in populated areas?
- Different skillsets of seafarers, workers

A simultaneous global energy transition

- The world will be zero-emission energy constrained for decades
- There is urgency but no plan or prioritization
- Left to market economics – highest bidder wins
- Shipping's energy and resource use will cannibalize other (potentially more efficient) pathways to global decarbonization
- Just transition: How do we shield poor island states that will be much worse off?

A solid blue background with a subtle, wispy white cloud pattern, serving as a backdrop for the text.

**Shipping will need at least
750 mt of green methanol
and ammonia per year**

A close-up photograph of a wheat field with golden stalks and green leaves, slightly out of focus in the background.

**The world produces 150 mt
of grey ammonia – mostly
for fertilizers**

CO2 emissions from transporting a 170,000 tonne cargo of coal from Newcastle to Hong Kong:

**6,000
tonnes**

CO2 emissions from burning that same cargo in the coal-fired power plant:

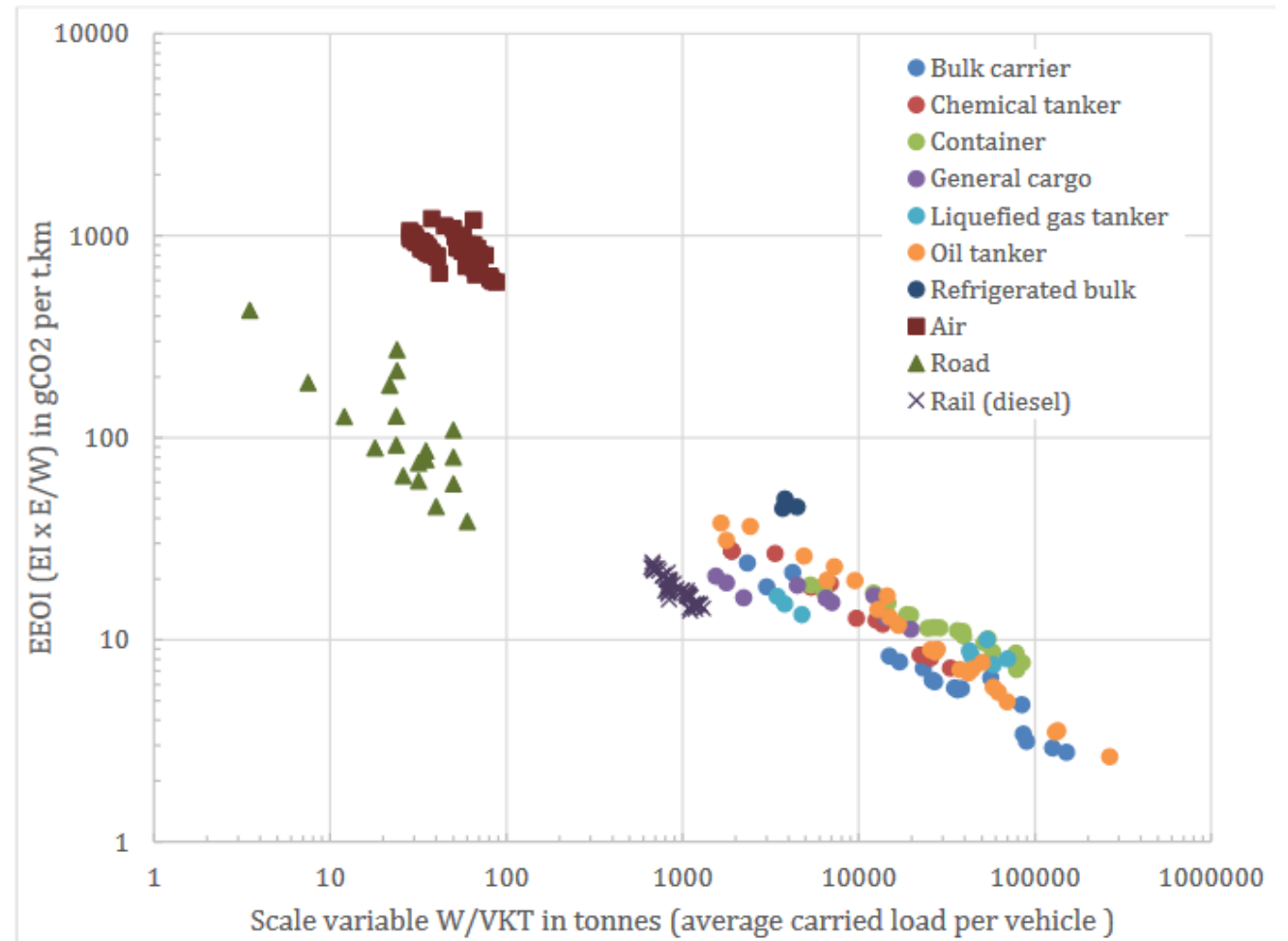
**500,000
tonnes**



Shipping decarbonization and seaborne trade

Shipping is generally the most efficient transport mode

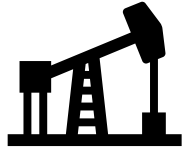
- Both economically and environmentally
- But there is not usually any competing transport mode



Source: UCL Energy Institute for MEPC 68

Inelastic demand viz. freight cost

Ocean freight cost as a % of commodity price (FOB) over the past decade



	<u>Brent crude</u>	<u>Rotterdam gasoline</u>	<u>Newcastle coal</u>	<u>US gulf soybeans</u>
Average	2.5%	3.3%	14%	8%
Minimum	1%	1%	3%	3%
Maximum	13%	28%	32%	18%
Currently	2.6%	4%	13%	9%

There is capacity to absorb the additional cost from decarbonization!

Impact of shipping decarbonization on global trade

- Transportation costs will increase initially
 - Domestic resources more competitive
 - Long-distance producers become less competitive (s.t. relative production costs)
 - Incentive to refine raw materials into intermediate goods before shipping
 - Less sea transport = indirect shipping decarbonization
 - BUT: Reduced international trade means production is less economically efficient
-
- New and growing markets for ZEF fuel transport!



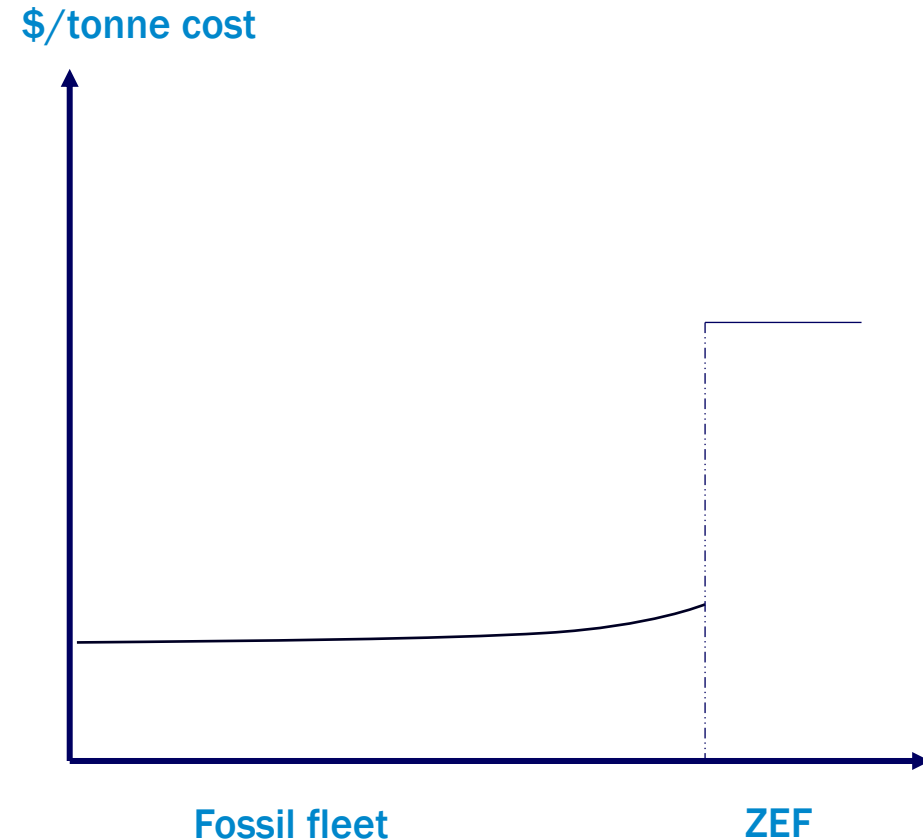
How can we speed up the
process?

“We build the ammonia vessels just in case there are charterers out there who will pay up”

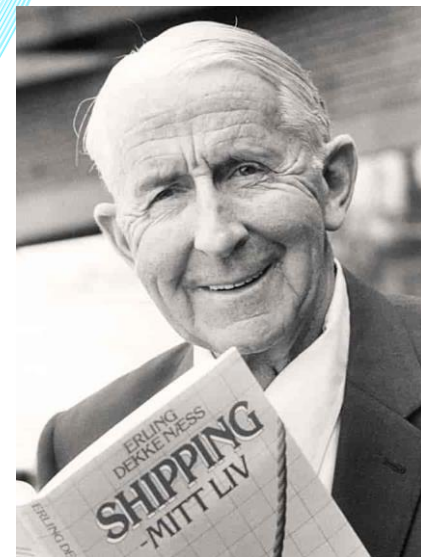


Shipping finance and global regulation

- Play with “Other people’s money”
- Flow of money towards “green shipping finance” is enabling some very attractive leasing terms for dual-fuel ammonia vessels
- IMO must agree to implement a sufficiently high global carbon levy
- Allowing ZEF vessels to compete on a level economic playing field



“God must have been a shipowner.
He placed the raw materials far from
where they were needed and covered
two thirds of the earth with water”



Erling Dekke Næss



Experience Matters.