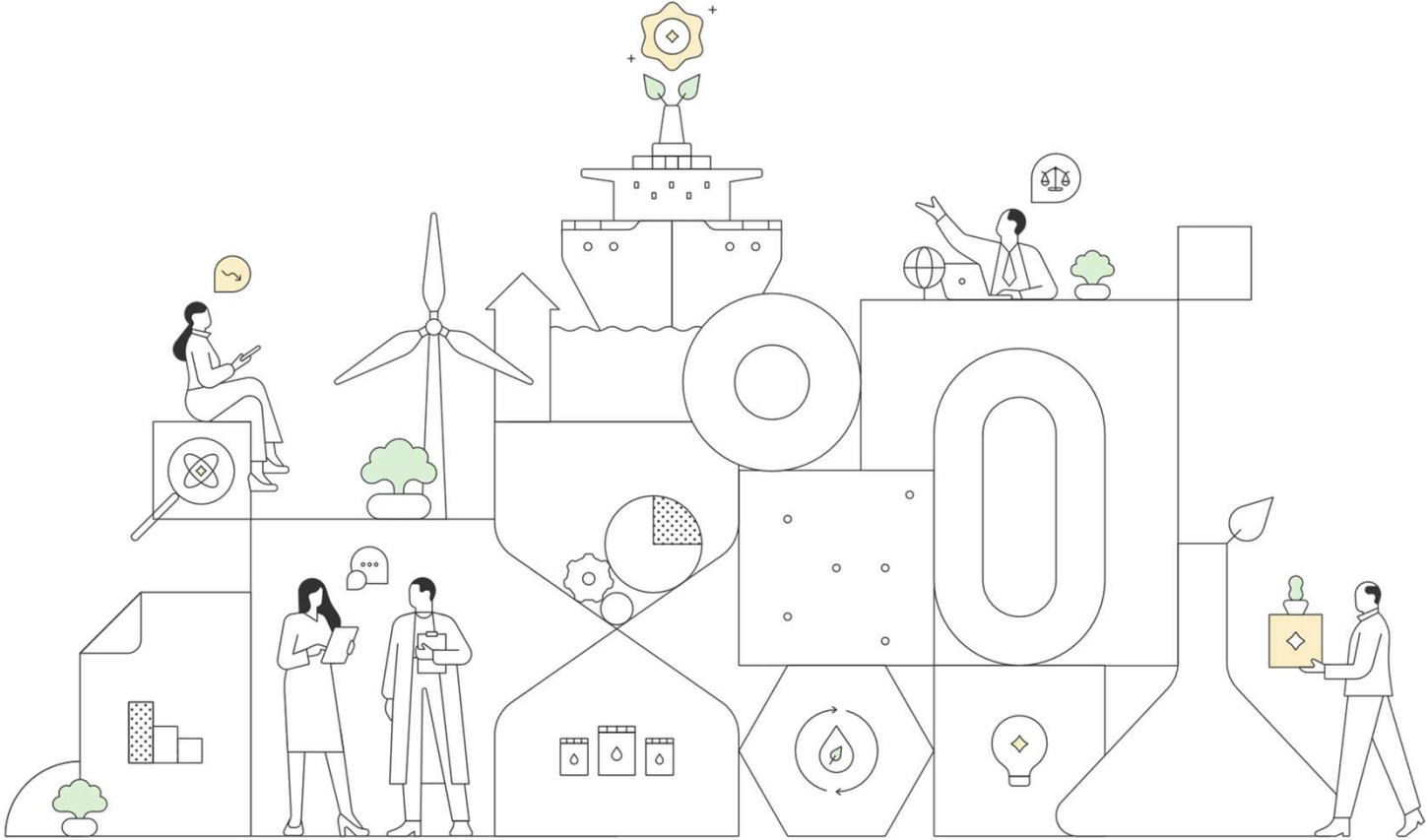


We show the world it is possible

Torben Nørgaard, Head of Energy & Fuels

ARPAE RCC Workshop
2 February 2022



The Mærsk Mc-Kinney Møller Center for Zero Carbon Shipping

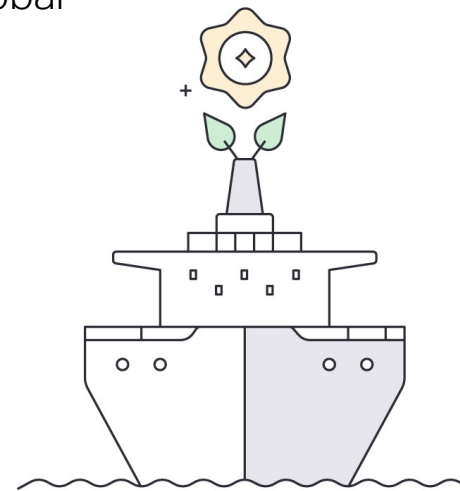
- we show the world it is possible

Our vision

A decarbonization of the global maritime industry by 2050

Our mission

To be a visible and significant driving force in the global maritime decarbonization journey



Not-for-profit

Money earned by or donated to the Center is used in pursuing our mission

Independent

We operate in a pre-competitive environment bringing together key players across the value chain

Science-based

We explore viable decarbonization pathways by assessing available data and developing own energy and technology solutions



Our Partners share the zero-carbon vision and are committed to collaborative climate action

19 Strategic Partners

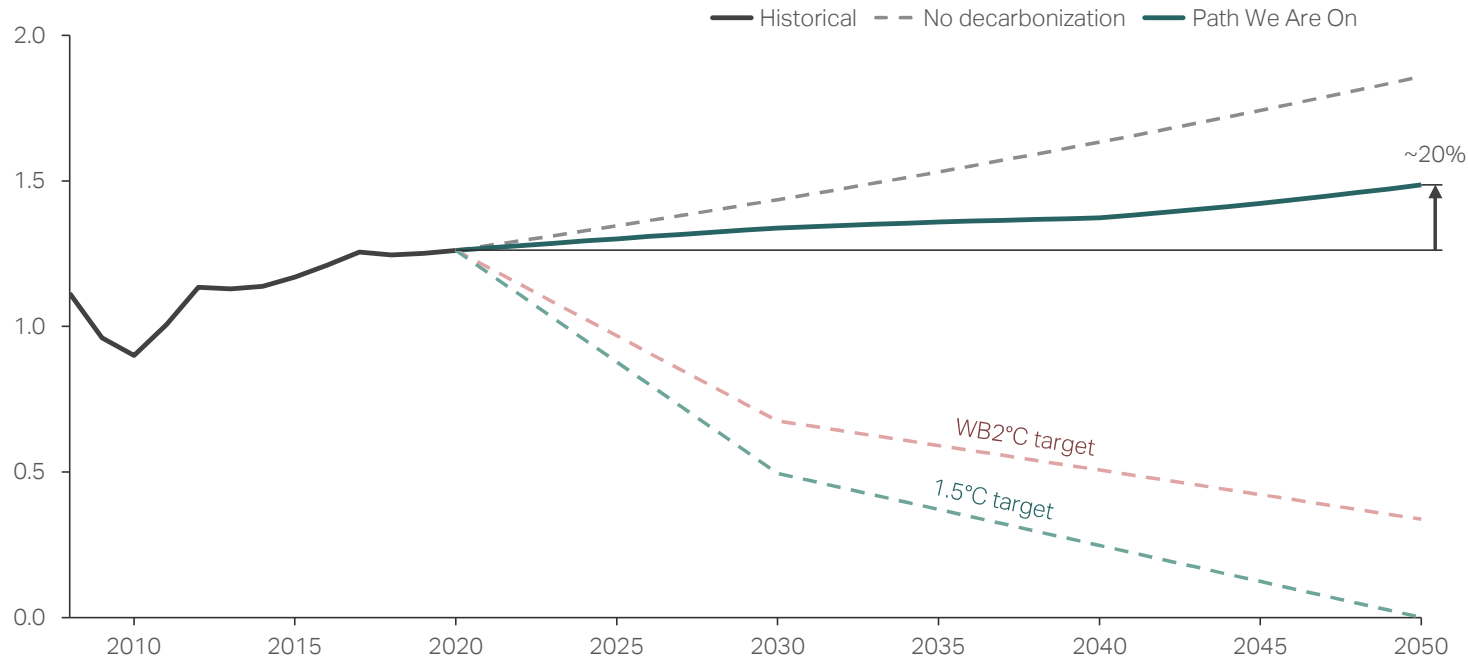


7 Knowledge Partners



The path we are on leads to increased GHG emissions

WTW Maritime emission pathways¹
GtCO₂-eq/year



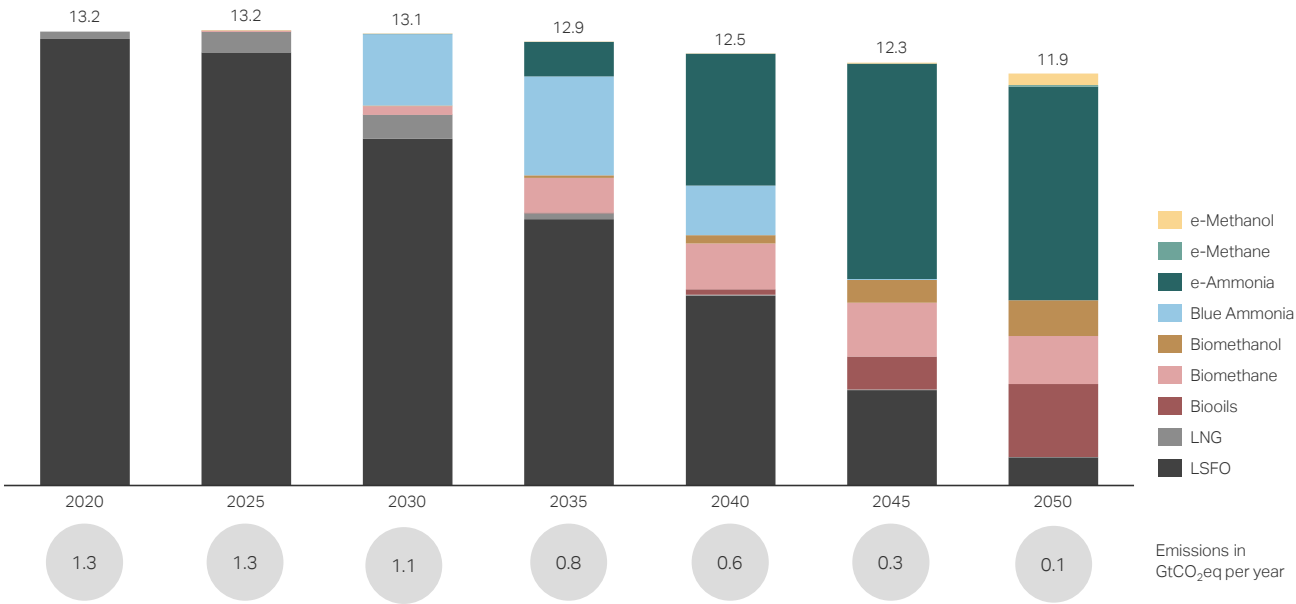
- The path we are on may lead to more GHG emissions in 2050 compared to today
- Industry leadership on its own cannot drive the transition and must be supported by regulation



Sources: IMO, IEA, Clarksons and Techno-economic model MMM Center for Zero Carbon Shipping
1 WTW = well to wake.

Decarbonizing shipping – fuel mix scenarios

Fuel composition & energy demand in the "a Path to Zero" in EJ/year

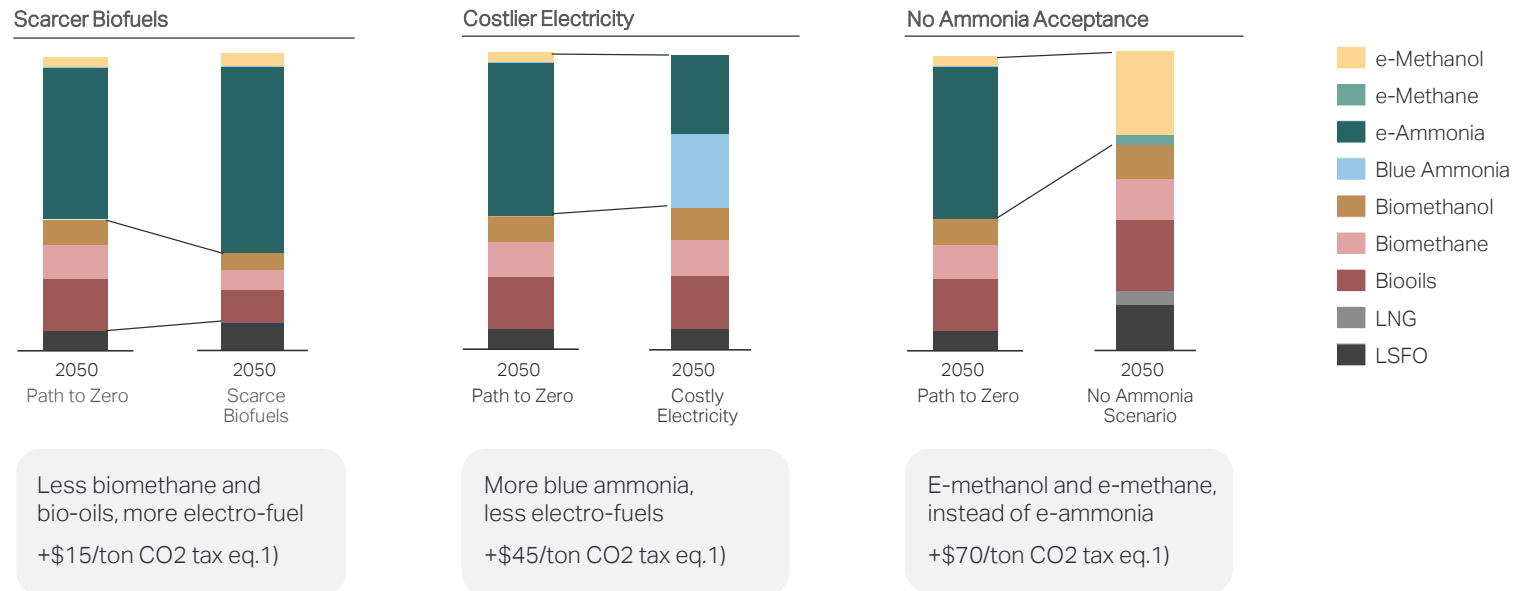


- Ammonia plays a central role, first as blue ammonia and later as green ammonia (assuming safety issues are mitigated)
- Biofuels play a role: bio-methane with a primary role from 2030s, and bio-methanol and bio-oils impacting the fleet mix from 2040s
- Fossil fuels would be nearly phased out by 2050



Full list of critical levers provided in the appendix. Critical levers are fully described in the Industry Transition Strategy. 2) Refer to section titled Scenarios altering the Path to Zero fuel blend.

There are multiple viable pathways to decarbonize by 2050, and several fuel blend combinations could deliver the solution



1) Additional CO2 tax required to achieve the same emissions level as in Path to Zero, while still enabling uptake of more costly alternatively fuels in the respective scenarios where constraints on scarcity of biofuels, more costly electricity, and no uptake of ammonia are applied.

Time for questions

Learn more on www.zerocarbonshipping.com

