Climate change, carbon neutrality and the future direction of shipping and ports

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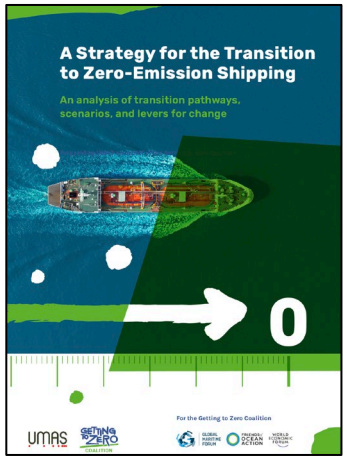
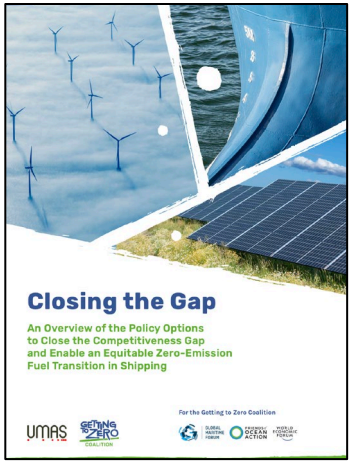
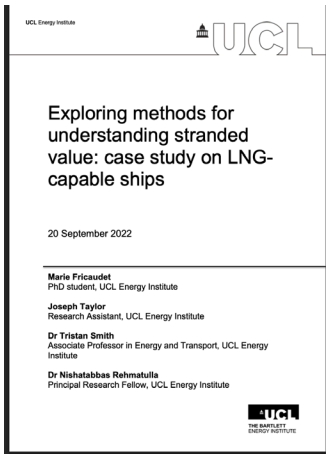
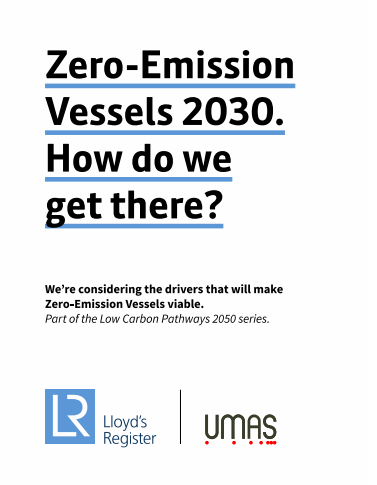
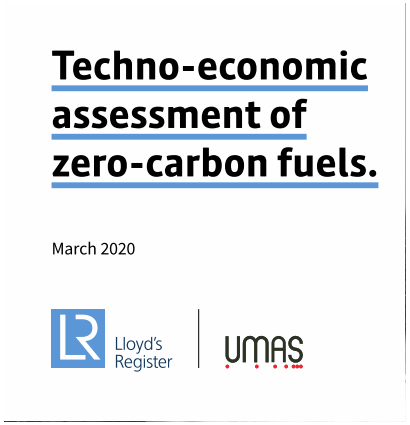
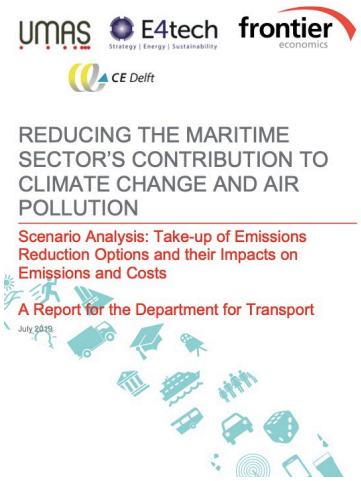










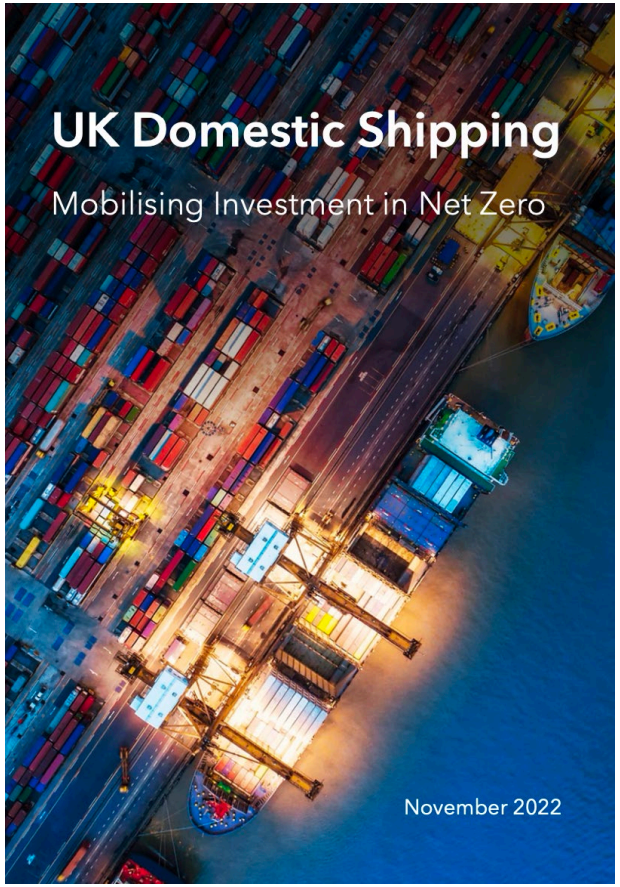


National strategy (and industrial strategy)

Department for Transport

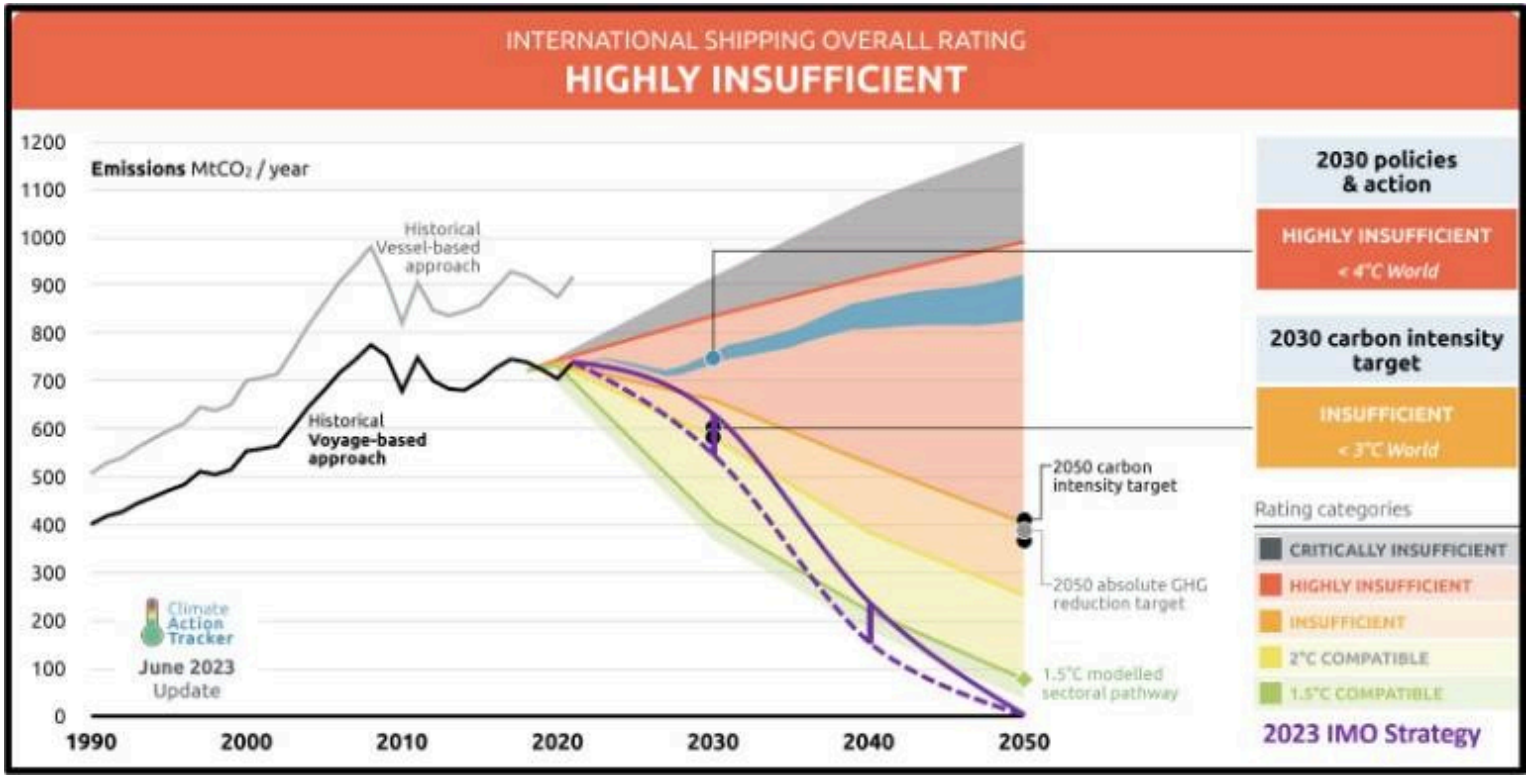
Clean Maritime Plan

maritime 2050
NAVIGATING THE FUTURE

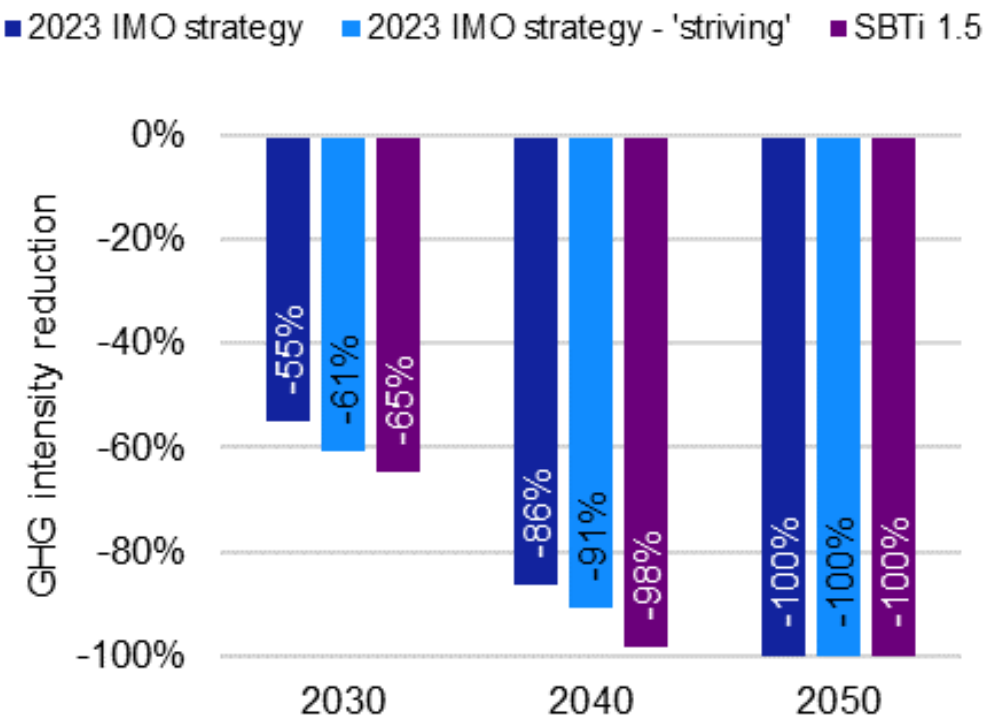


- Commitment on fleet decarbonization
- Commitments on ports/supply chain for fuels/bunkering
- Commitments on finance

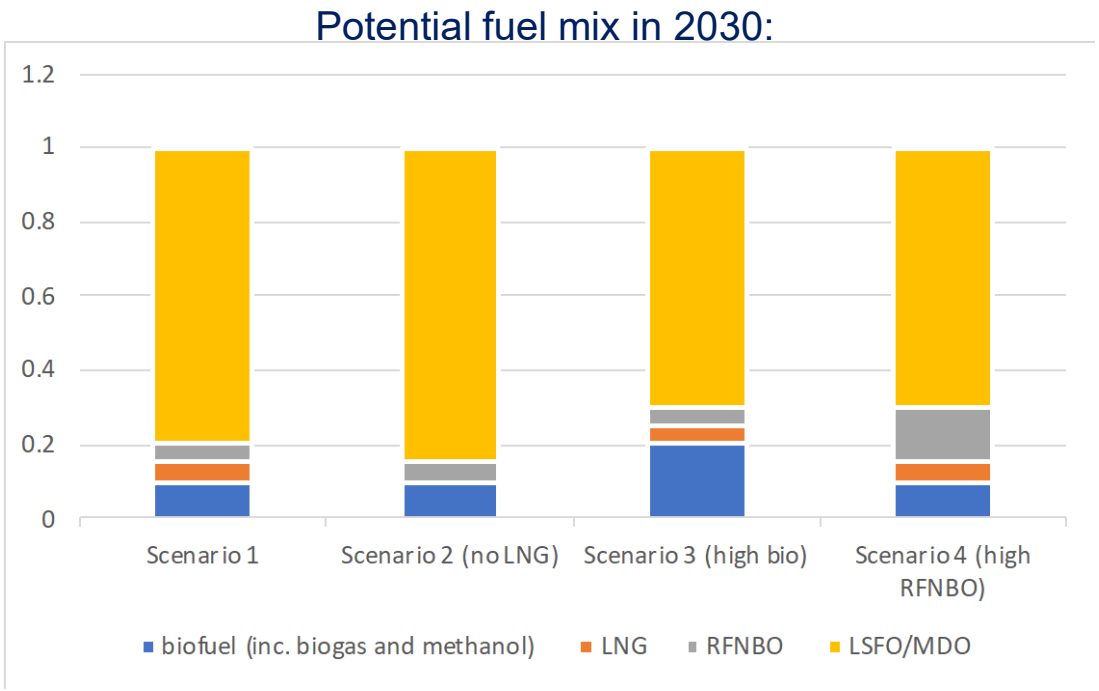
Quantum leap at the IMO



2023 - Public and private stated ambitions align close to 1.5



2030 GHG reduction is primarily about efficiency:



73% increase in tnm 2008-2030 (UNCTAD RMT 2022)

Depending on the fuel mix:

- for at least 20% reduction – 42-48% efficiency improvement 2008-2030
- for 'striving for' 30% reduction – 50-55% efficiency improvement 2008-2030

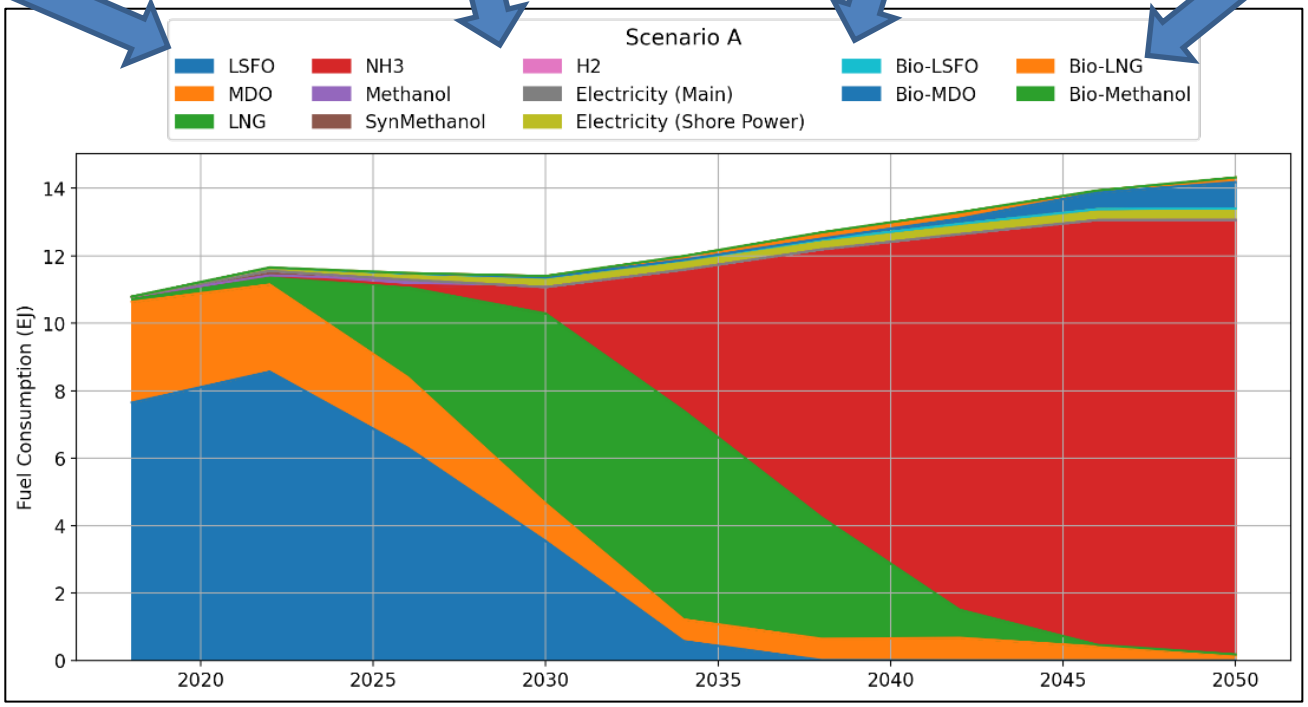
Modelling applies those CO2 pathways and solves to find least cost mix of efficiency and fuels

4th IMO GHG Study transport demand

Technology and fuel cost projections produced in collaboration with LR and GMF/GtZ

MARPOL Annex VI, CII/EEXI, SOx, NOx

CO2 constraints (applied as carbon price)



Builds on work originally published in ISWG GHG 1 - INF.2, Belgium et al. "scientific study on possible reduction targets and their associated pathways"

MEPC 79/INF.29

Newbuildings, scrappage and (fuel) retrofits

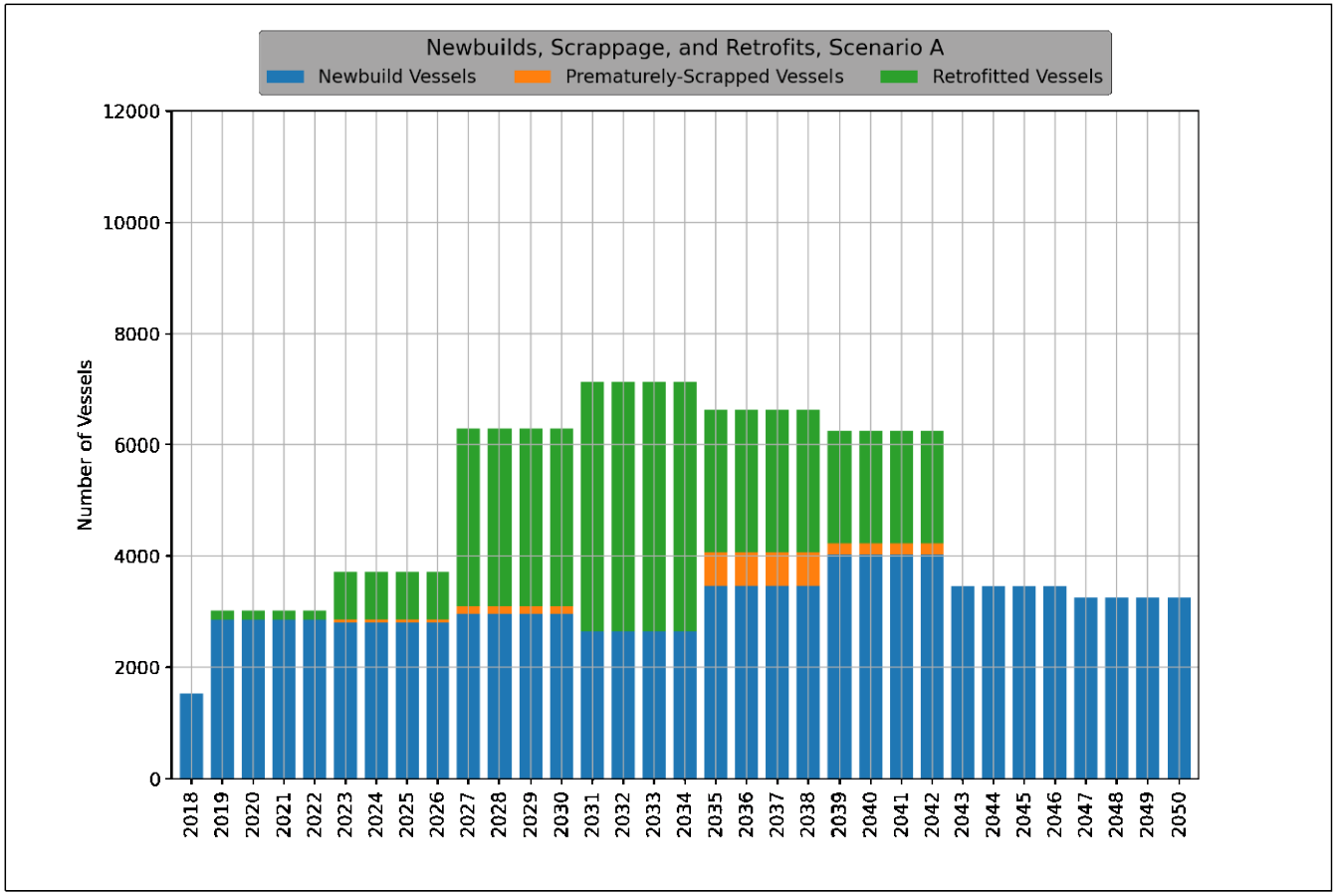
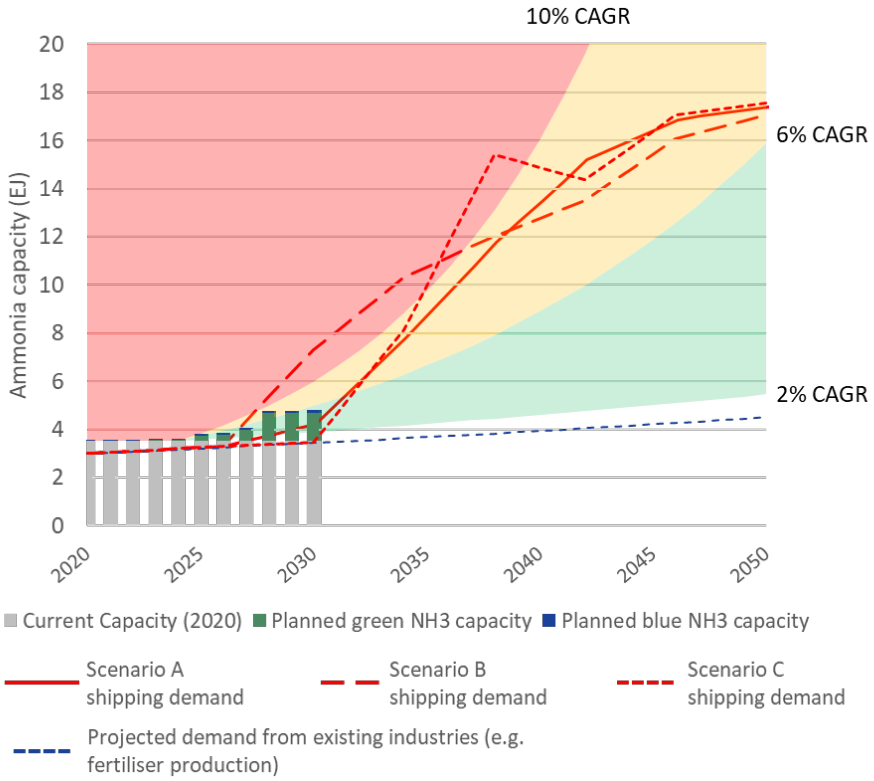


Figure 3.22 – Numbers of new-builds, prematurely scrapped vessels and retrofits for Scenario A (retroactively applied)

There is currently 4x the volume of hydrogen-derived fuel needed in 2030. Majority of projects are green not blue. Growth rates consistent with historical trends



https://climatechampions.unfccc.int/green-hydrogen-and-green-shipping/

Signatories:

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Getting to Zero Coalition

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Aspen Shipping Decarbonization Initiative facilitator of Cargo Owners for Zero Emission Vessels (coZEV)

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CWP Global

Uwe Lauber
Man Energy Solutions

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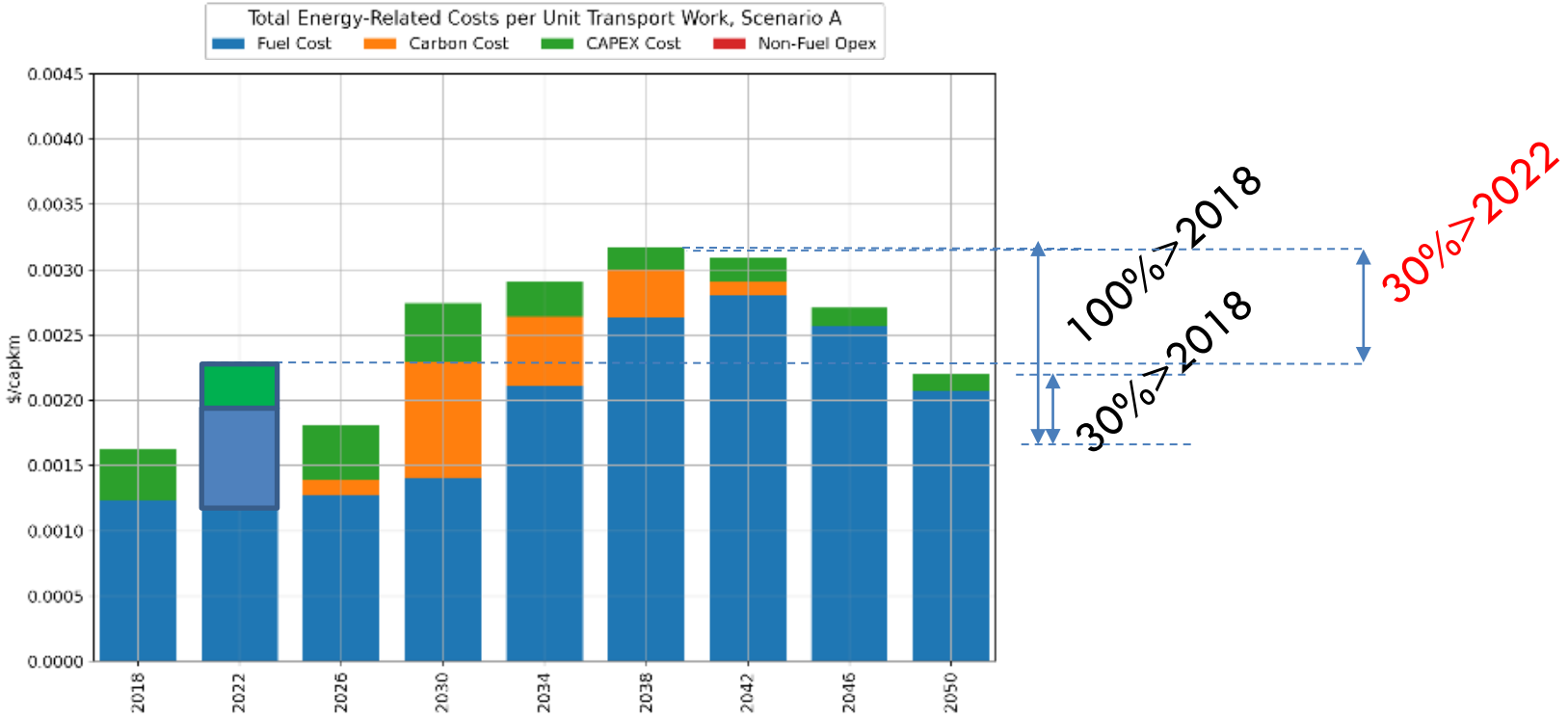
Green Hydrogen Organisation (GH2)

Figure 0.4 – Comparison between possible industry growth rates (starting 2025, shaded regions), current and planned capacity (bars), and projected demand for the ammonia industry (dotted lines)

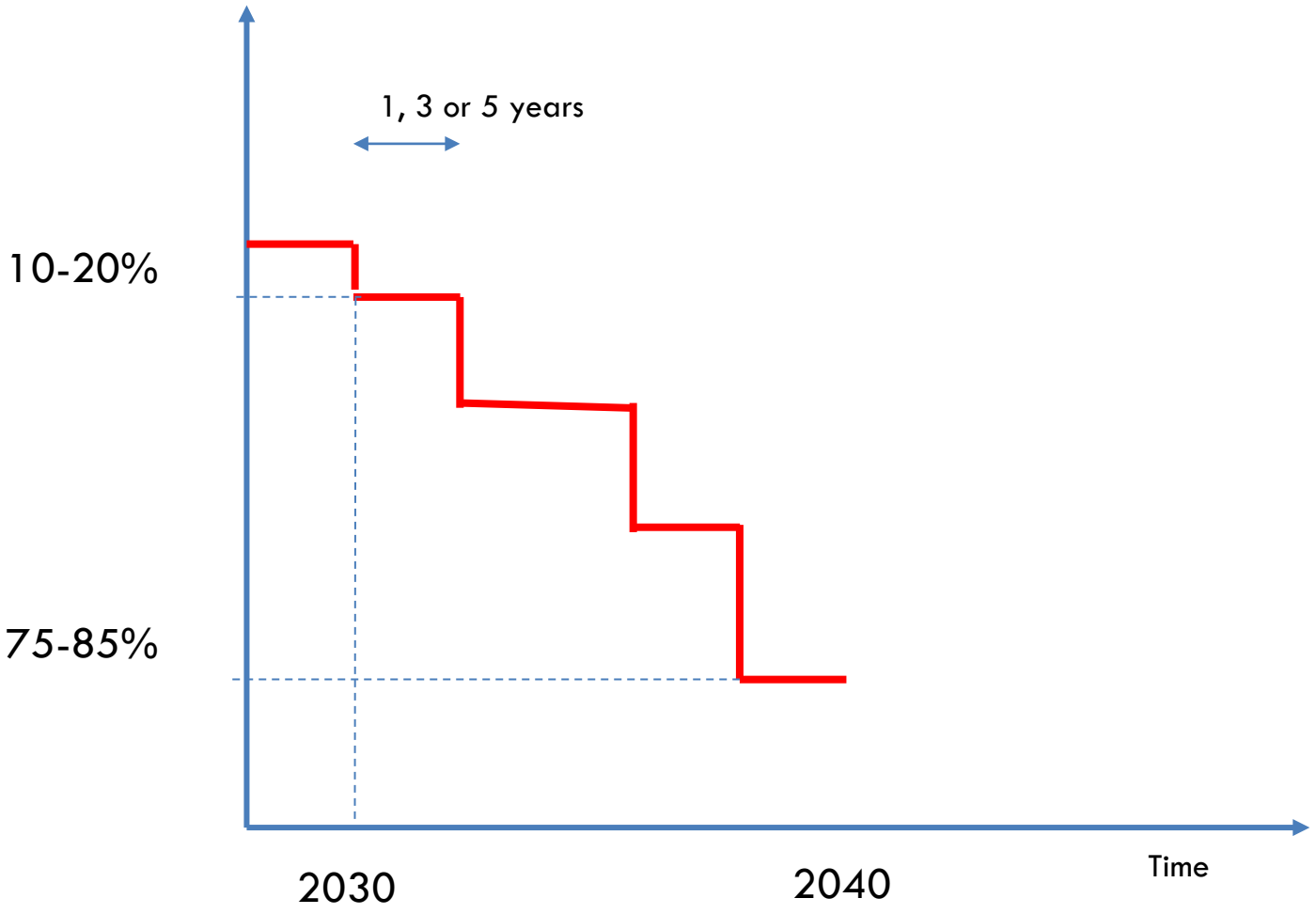
Shipping's energy related costs per tnm increase and decline. Peak is a modest increase on today's costs, long-run is lower cost.



Energy related transport costs, assumes 50% of carbon revenues spent out of sector

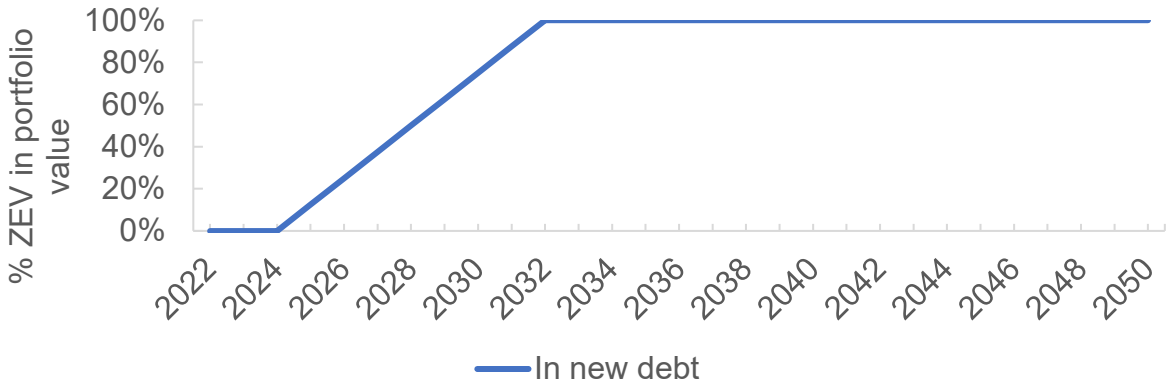
Expected GFS trajectory

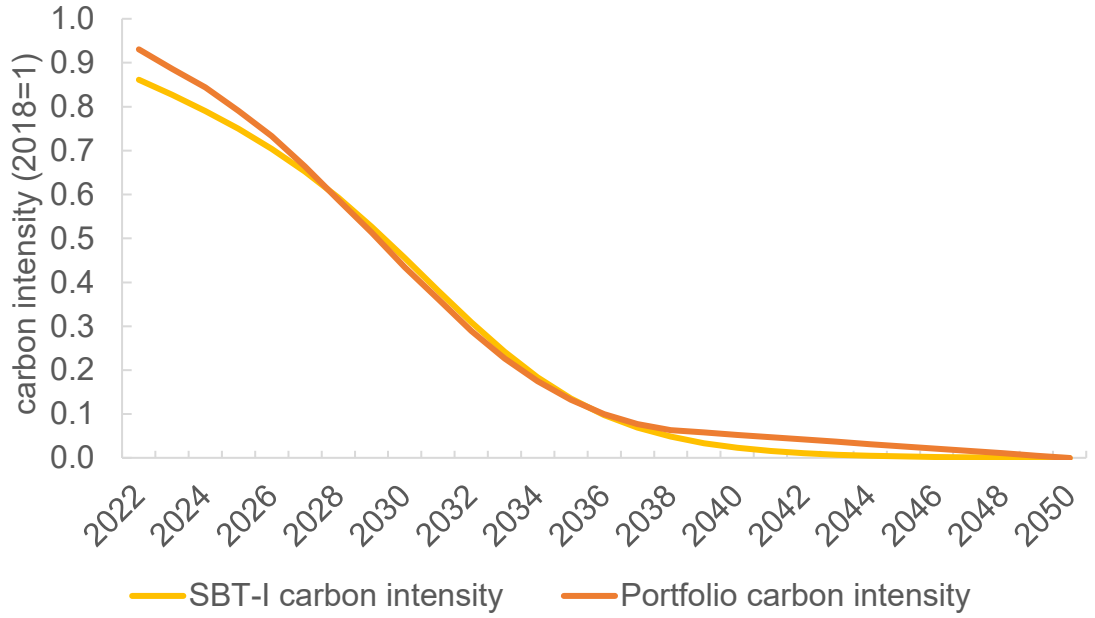
Maximum GHG Fuel Intensity (GFI) - gCO_{2e}/J



SBTi compliant financier/owner 1

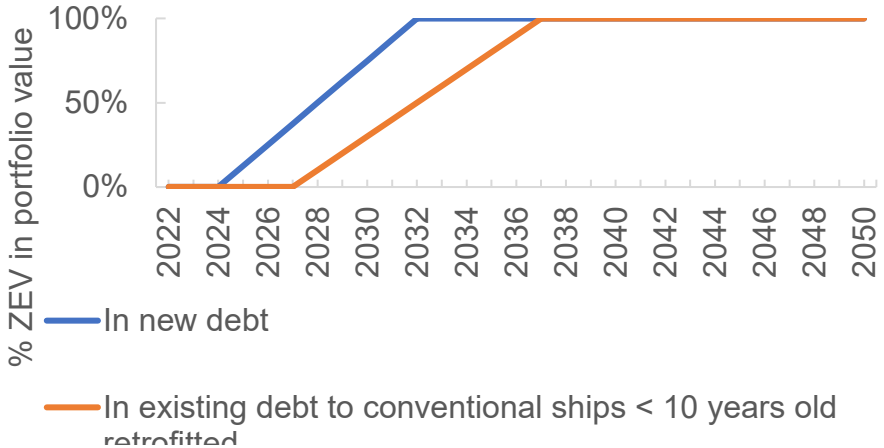
- It is easy for a bank or owner that owns only 0-7year old tonnage to achieve a steep rate of decarbonisation
- Share of ZEV in new debt needs to increase from 0 to 100% between 2025 and 2032 for the portfolio to be aligned to 1.5°C portfolio carbon intensity

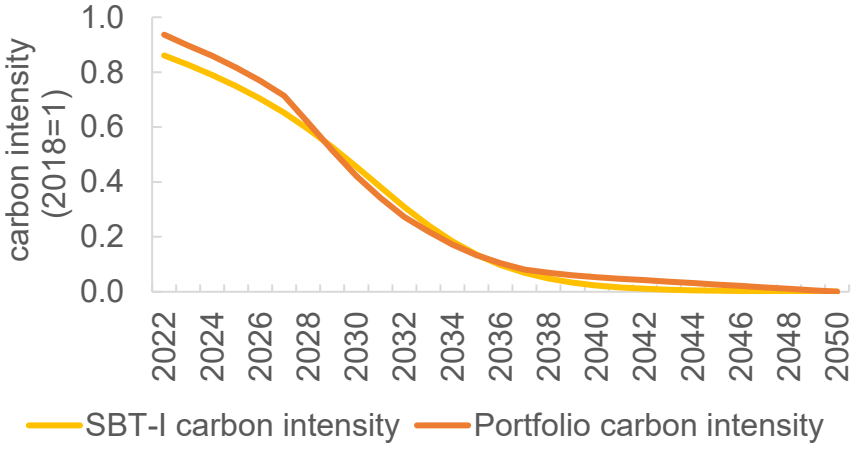


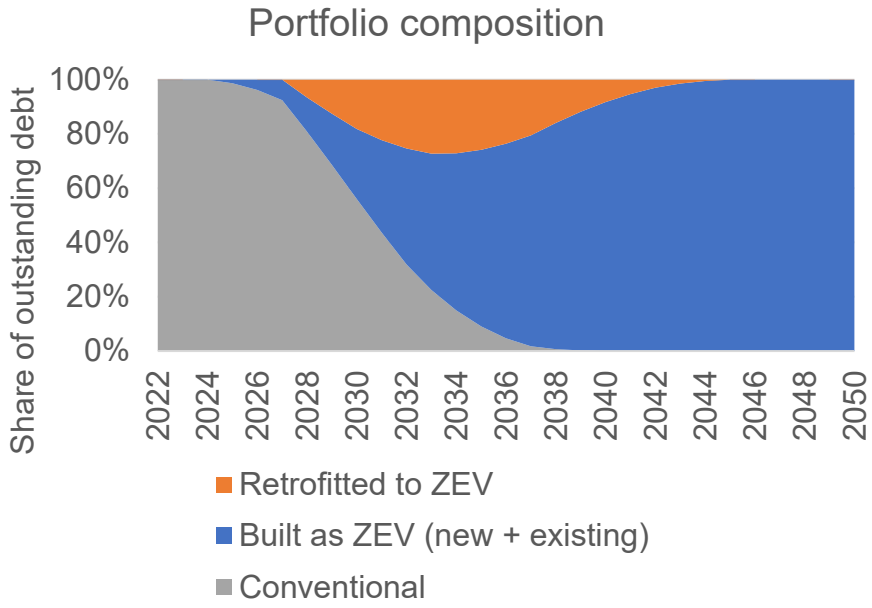


SBTi compliant financier/owner 2

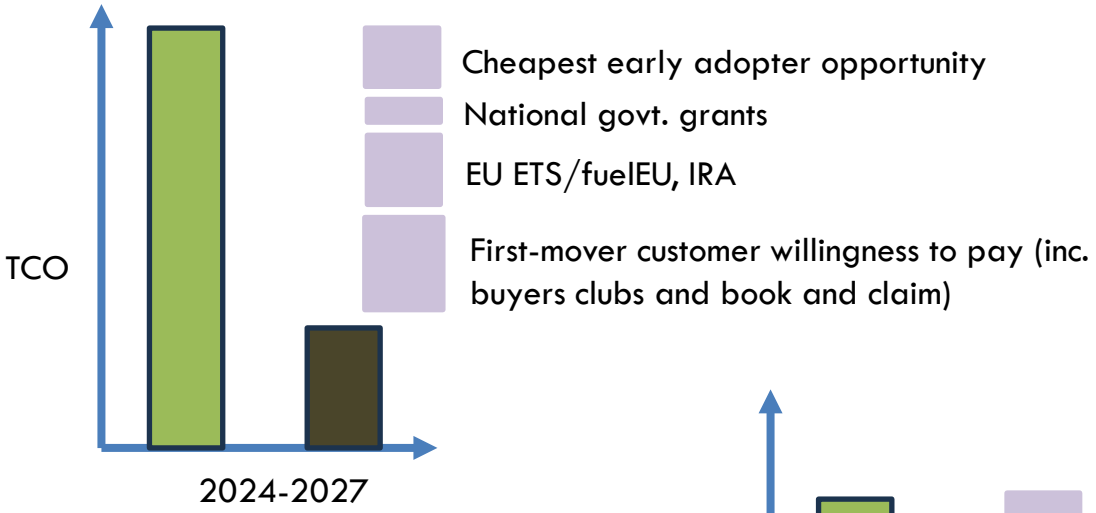
- If retaining assets until ~14 years
- Gradual uptake of ZEV in newbuilds and retrofits
- Several possible strategies (newbuilds/retrofits) to fit into alignment

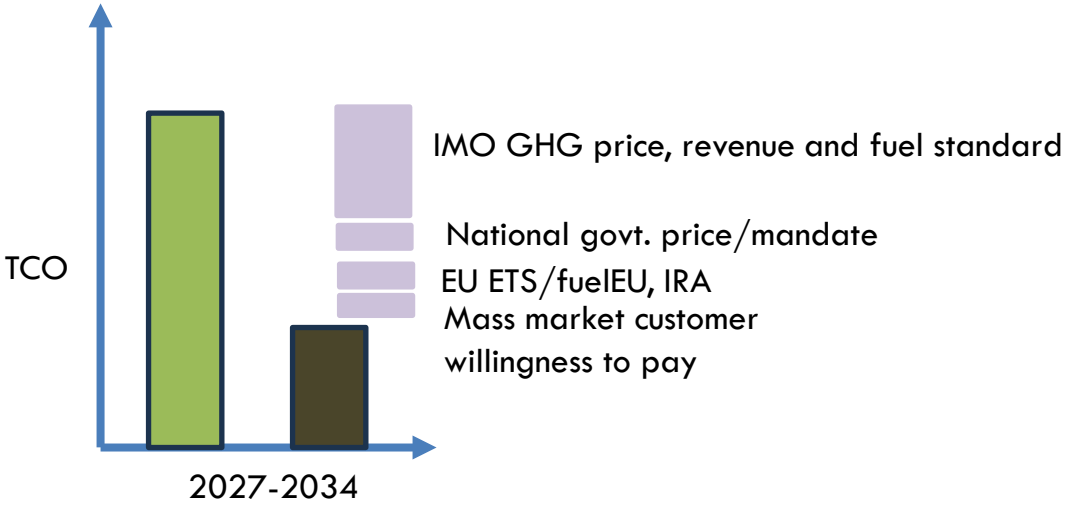






Early mover business case for near-zero GHG fuels





Concluding remarks

- MEPC 80 represented a quantum leap of ambition by the regulator and signals a rapid IMO-led fuel transition through the 2030s
- Hydrogen-derived fuels e.g. ammonia are critical and will need to scale fast - but not in an unprecedent way
- Fleet transition looks likely to occur through newbuilding and large volumes of retrofit
- Policy will likely be reinforced with voluntary actions as stakeholders manage their climate (transition) risk
- Early adopters in the transition have a number of levers that can be used to enable early use of long-run solutions