

Assessing compliance strategies under the MTMs

Countdown Newsletter Slides
2025



Mærsk Mc-Kinney Møller Center
for Zero Carbon Shipping

2/11/2025

A note on this slide deck

The following slides are from [our sixth Countdown newsletter on the IMO mid-term measures \(MTM\)](#) which was published on 12 February 2025.

These slides are derived from our internal understanding and analysis of the status of the mid-term measures and do not represent an official IMO position or the views of our partners.

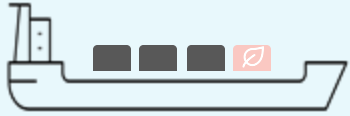
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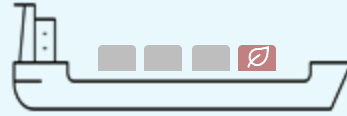
Four MTM compliance strategies

1 LSFO + bio-diesel (base case)



- Conventional vessel primarily using low sulfur fuel oil (LSFO).
- The vessel opts for the most cost-effective approach between blending bio-diesel and purchasing remedial units (RUs).
- LSFO price projections based on our Fuel Cost Calculator¹ and incorporates an average bio-diesel price forecast² which anticipates limited supply and growing demand.

2 LNG + bio-methane



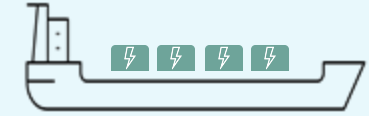
- Vessel capable of operating on LNG and liquified bio-methane.
- The vessel opts for the lowest-cost compliance between blending bio-methane and purchasing RUs.
- Costs are from our Fuel Cost Calculator¹ (biomethane costs from an upcoming revision).
- We assume a low-pressure engine with an 11% emissions reduction compared to LSFO.
- When it achieves a compliance surplus, we assume trading at a market price set at the lowest cost between RU, bio-diesel, and bio-methane.

3 LSFO + ZNZ



- Vessel uses the minimum required zero- and near-zero-emissions (ZNZ) fuel to meet GFS-mandated reductions in fuel emissions intensity.
- While ZNZs are not yet defined, they are outlined in the 2023 IMO Strategy as capable of achieving the 2050 target of net-zero emissions.
- We assume a representative ZNZ fuel with a 90% emissions reduction, in line with proposed thresholds for eligible fuels.
- We assume a fuel cost of 1,700 USD per tonne LSFO equivalent based on the lower end of our 2027 e-fuel production cost.¹ We fix the price to mimic a long-term offtake agreement.

4 100% ZNZ

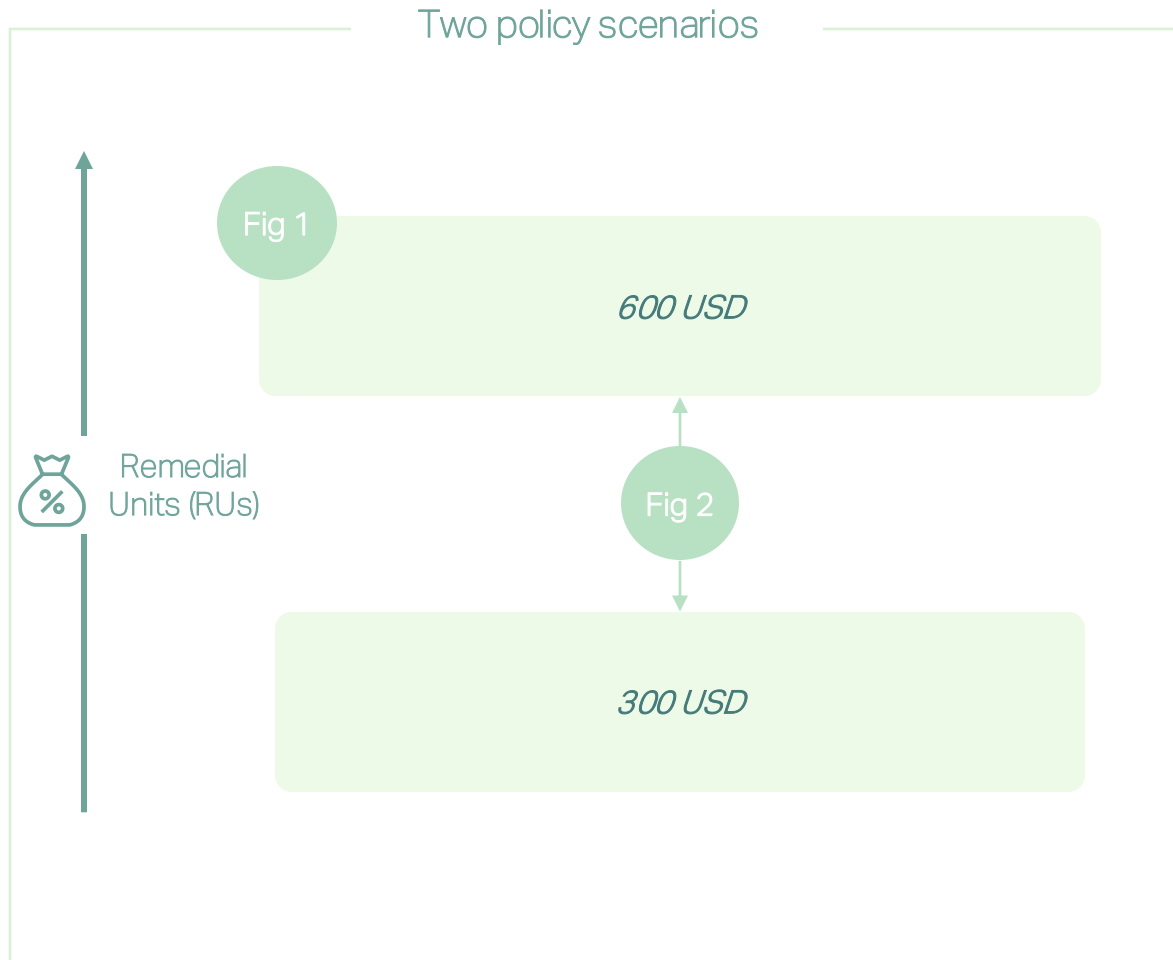


- Dual-fuel vessel that operates fully on ZNZs and trades surplus compliance at the market price.
- As with Strategy 2, the market price of surplus is assumed to be the lowest between RU, bio-diesel, and bio-methane.
- To simplify the analysis, we do not include a pilot fuel, reflecting a scenario in which the pilot fuel is bio-diesel or another low-emissions alternative.



1. MMMCZCS Fuel Cost Calculator <https://www.zero-carbonshipping.com/cost-calculator/>
2. LR & UMAS, 2020 <https://www.lr.org/en/knowledge/research-reports/2020/techno-economic-assessment-of-zero-carbon-fuels/>

Policy parameters



Consistent across scenarios



Well-to-wake scope & reference value of 94.31 gCO₂eq/MJ (VLSFO)
IMO: 2024 LCA Guidelines (MEPC 81/16/Add.1)



Global Fuel Standard (GFS) mandating decreasing intensity of emissions
IMO Working Paper: MEPC 82.WP9



'Base' Z-factors that set annual limits on GHG intensity
IMO Working Paper: MEPC 82.WP9



Trading of surplus units is permitted
IMO Working Paper: MEPC 82.WP9

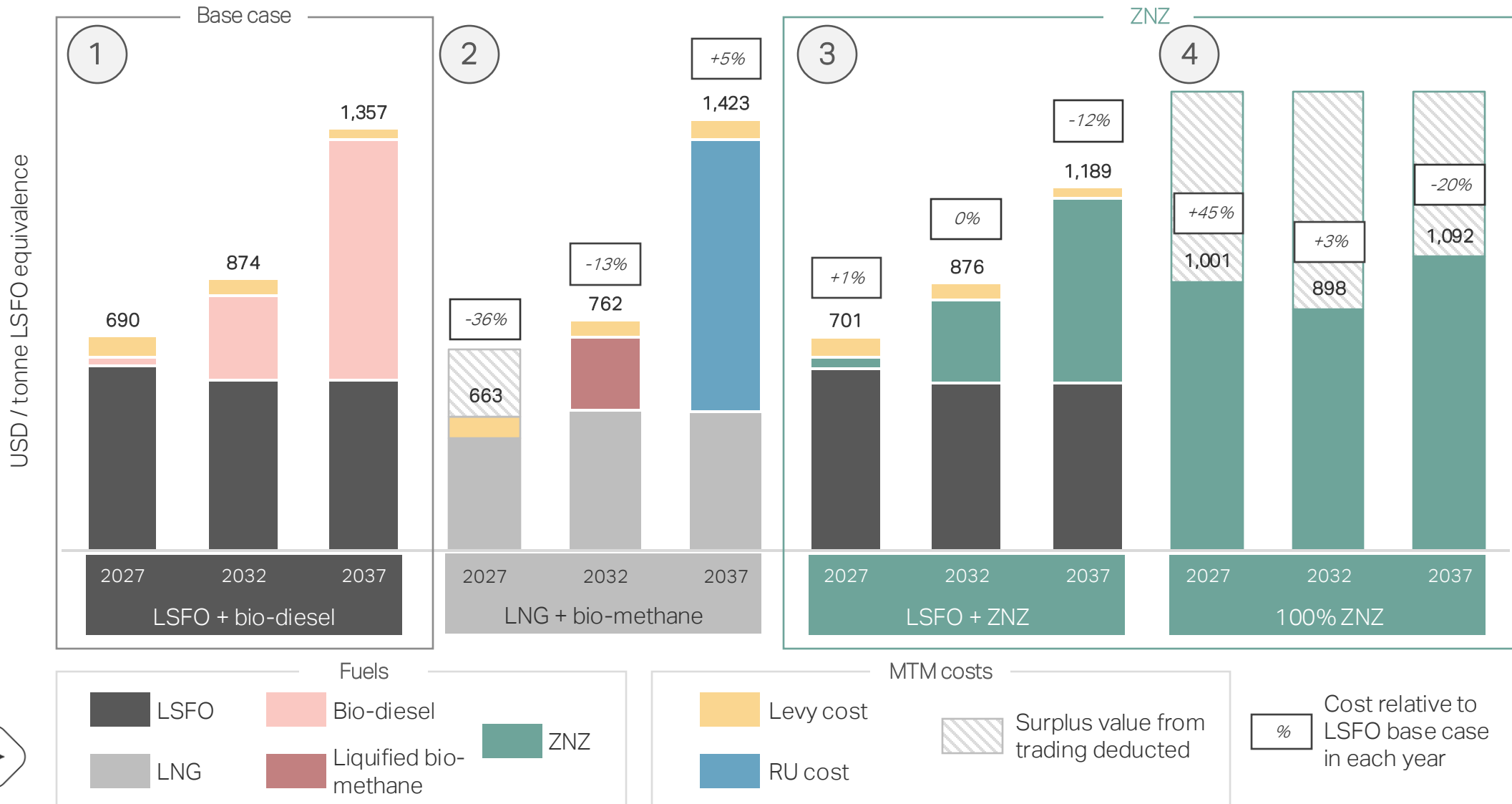


To better isolate the GFS, we use the lowest proposed GHG pricing or levy of \$18.75 USD/tCO₂e
IMO Submission: 17-2-5 (Bahamas, Liberia, and ICS)



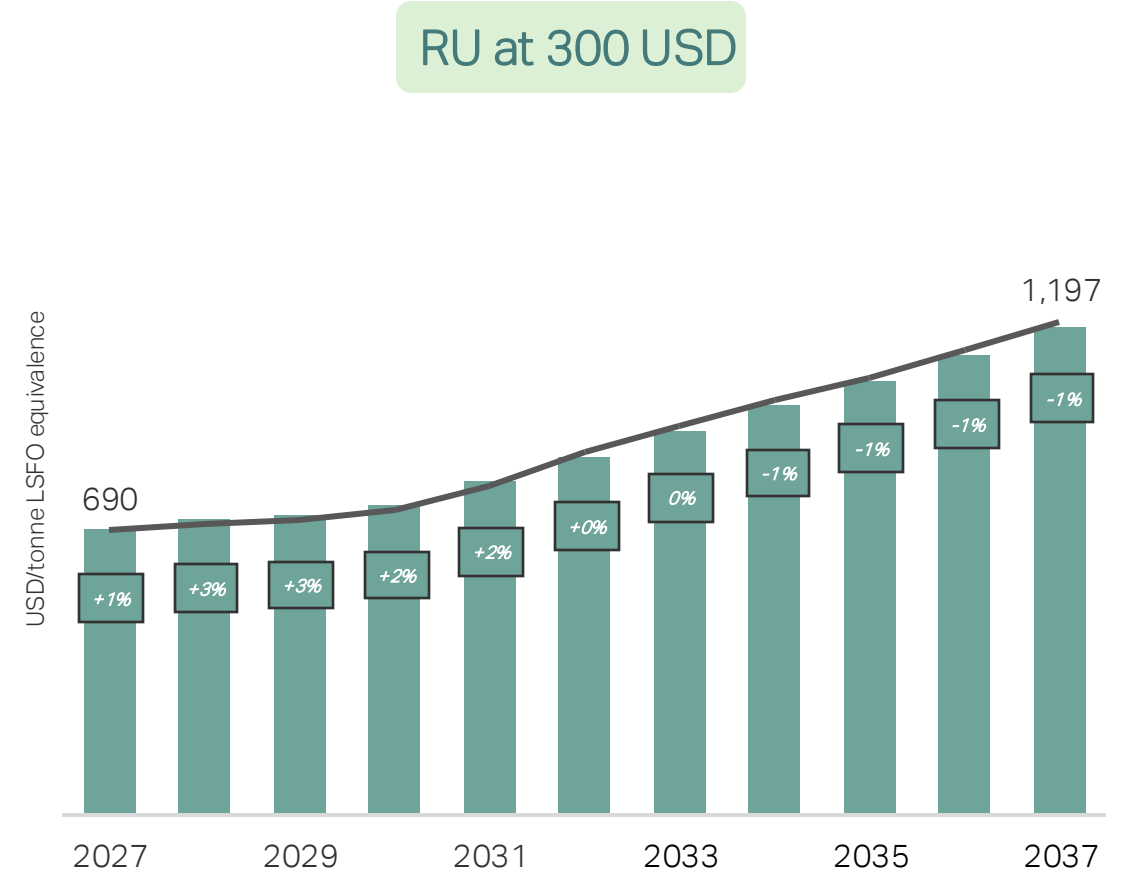
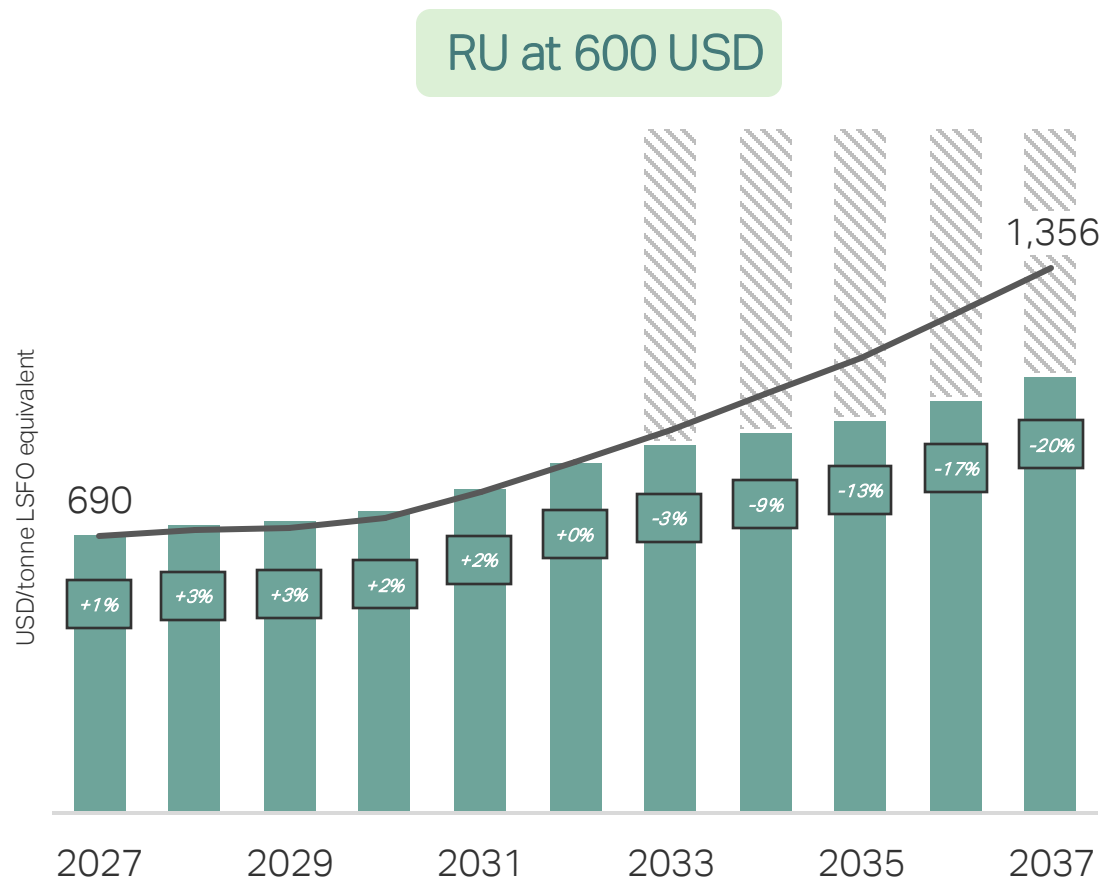
Comparing costs across four compliance strategies (RU at 600 USD)

Fig 1



Comparing the base case and ZNZs with two values of the RU

Fig 2



- LSFO + bio-diesel base case
- Dual-fuel ZNZ vessel that follows the lowest-cost compliance strategy
- Surplus value from trading deducted
- % Cost relative to LSFO + bio-diesel base case

Key meetings leading up to MEPC 83

GHG-EW 6

13 February

The Greenhouse Gas Expert Workshop (GHG-EW) will discuss the possible impacts of the basket of proposed MTMs on food security.

ISWG-GHG 18

17 to 21 February

The Intersessional Working Group on Reduction of GHG Emissions from Ships (ISWG-GHG) will further consider the development of a basket of candidate MTM(s), using Annex 1 to document MEPC 82/WP.9 as the basis, and will also focus on the development of the IMO Life Cycle GHG Assessment (LCA) framework.

ISWG-GHG 19

31 March to 1 April

ISWG-GHG will further consider the development of the basket of candidate MTM(s), using Annex 1 to document MEPC 82/WP.9 as the basis.

ISWG-APEE 1

2 to 4 April

The Intersessional Working Group on Air Pollution and Energy Efficiency (ISWG-APEE) will continue work to address the identified challenges/gaps in the short-term GHG reduction measure and develop draft amendments to existing instruments and/or develop new instruments.

MEPC 83

7 to 11 April

Marine Environment Protection Committee (MEPC) members are expected to approve the basket of MTMs ahead of their formal adoption in October 2025.



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