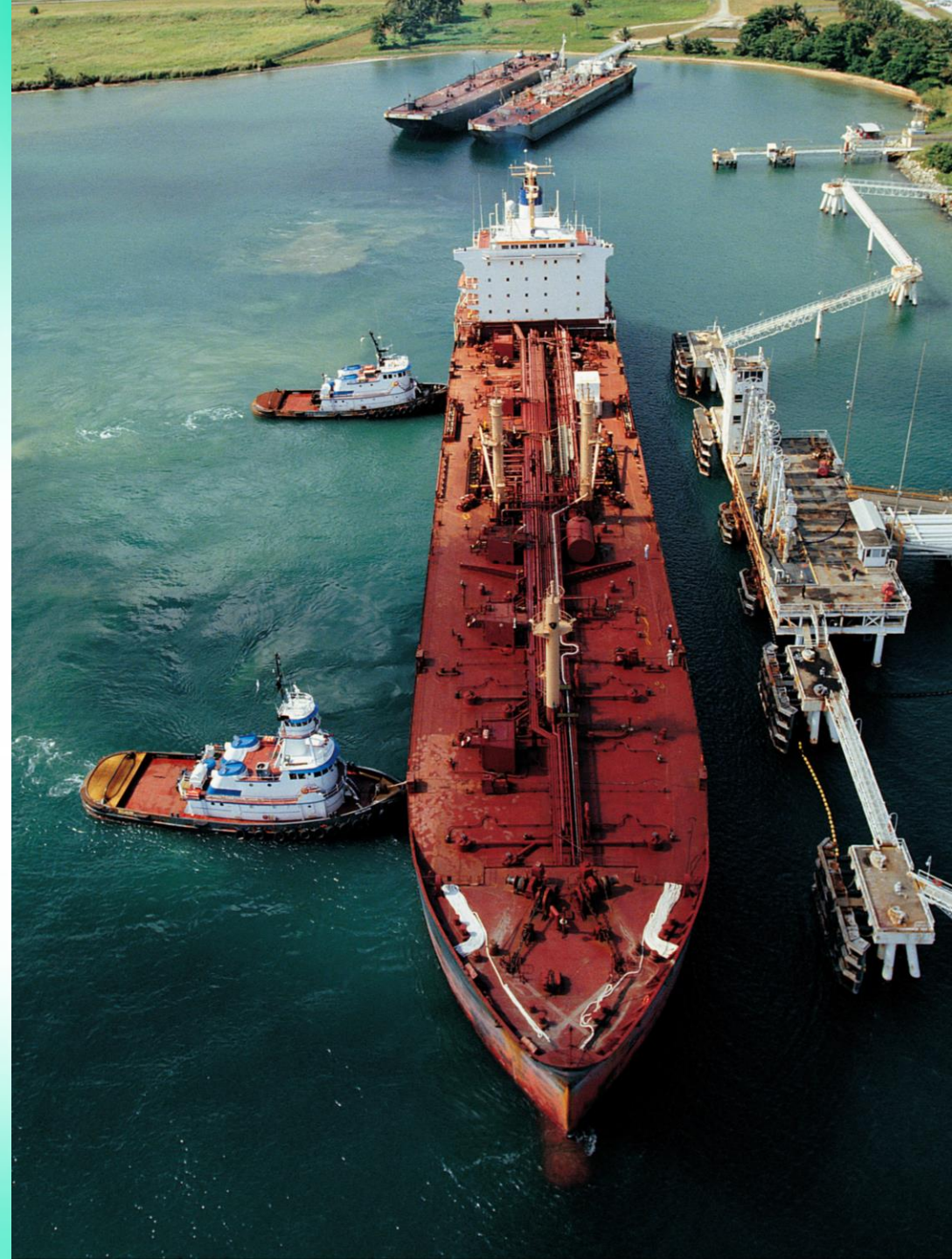




Moving Towards Decarbonisation: First-order Implications of IMO NZF

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THE NEXT WAVE OF REGULATION

What are the first order impacts of IMO GFI on the levelised cost of fuels and how does it compare to FuelEU?

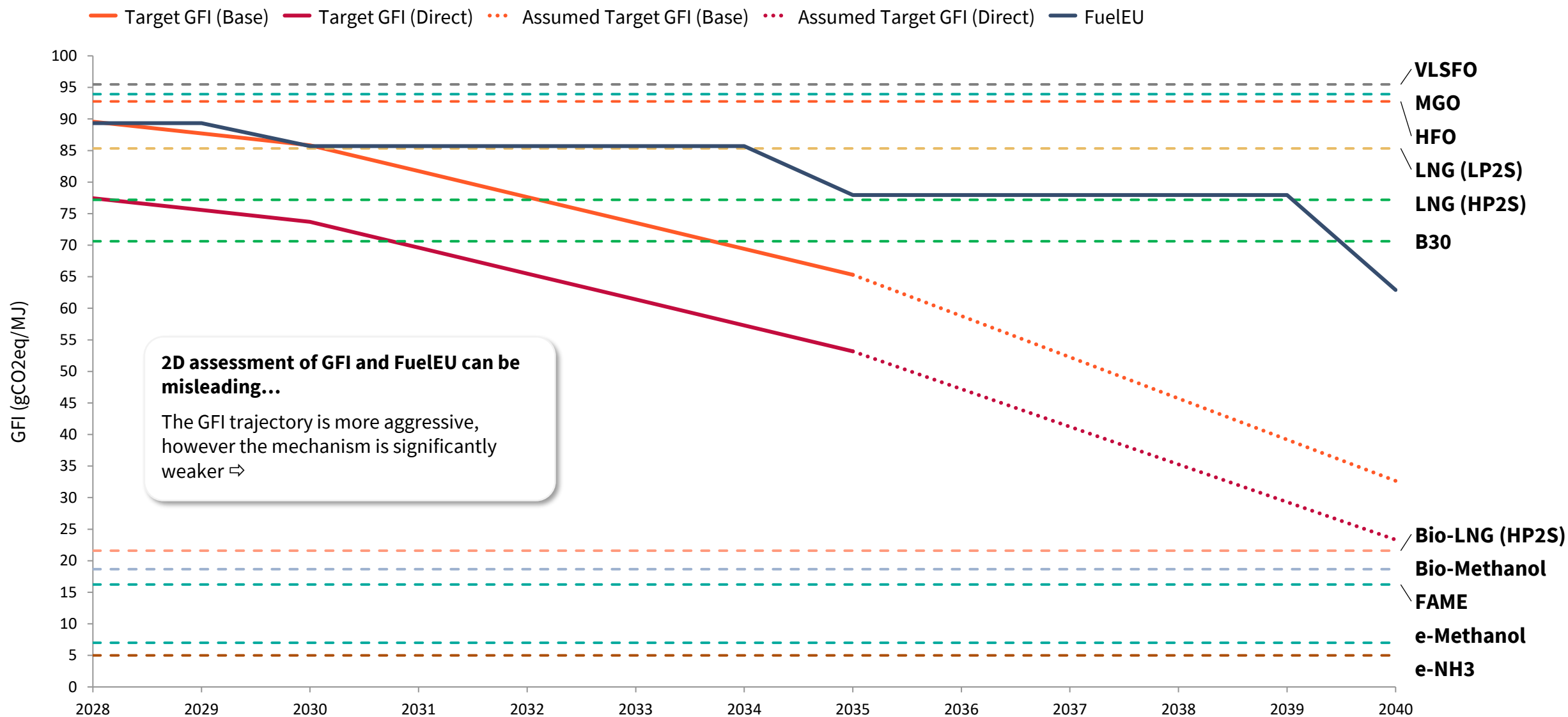


CARGOS UNDER PRESSURE

How will GFI impact cargoes and what are the potential unit costs across commodities?

Evolution of Compliance Balance by Fuel (1/4)

How fuels will be treated under the IMO GFI framework (numbers after 2035 are estimated)



Evolution of Compliance Balance by Fuel (2/4)

GFI is expected to **add approximately 140 USD/tFuel** to the price of HFO ($0.1 < S \leq 0.5\%$) in 2028

REMEDIAL UNIT COST, TIER 1 & 2 (USD/THFOEQ)

FuelEU comparison: 227 USD/tHFO

← 2036-40 GFI Reduction Factors are assumed →

Fuel (WtW, gCO2eq/MJ)		2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040
VLSFO	95.48	-139.13	-167.64	-196.14	-258.85	-321.56	-384.28	-446.99	-509.70	-607.21	-704.73	-802.25	-899.77	-997.28
HFO	92.78	-97.89	-126.39	-154.90	-217.61	-280.32	-343.03	-405.74	-468.45	-565.97	-663.49	-761.00	-858.52	-956.04
MGO/MDO	93.93	-115.42	-143.93	-172.43	-235.14	-297.85	-360.56	-423.27	-485.99	-583.50	-681.02	-778.54	-876.05	-973.57
LNG (LP2S)	85.33	-31.73	-39.23	-46.73	-103.76	-166.47	-229.18	-291.89	-354.60	-452.12	-549.64	-647.16	-744.67	-842.19
LNG (HP2S)	77.19	0.00	-6.49	-13.99	-30.49	-47.00	-104.77	-167.48	-230.19	-327.71	-425.23	-522.74	-620.26	-717.78
FAME	16.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bio-LNG (HP2S)	21.59	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bio-Methanol	18.66	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
e-LNG (MEGI)	8.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
e-Methanol	7.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
e-NH3	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

RU costs only ~1% of fuel price in 2029

GFI trajectory more aggressive, but the penalties are lower than FuelEU

LNG becomes non-compliant but costs are marginal up to the mid-2030s

FAME, bio-methanol and e-fuels (e-ammonia, e-LNG, etc) all compliant until 2040

Evolution of Compliance Balance by Fuel (3/4)

Fossil fuels are expected to remain the cheapest pathway for vessels, unless we see a high ZNZ reward factor

FULLY LOADED COST, FUEL COST + RU - SURPLUS (USD/MJ)

← 2036-40 GFI Reduction Factors are assumed →

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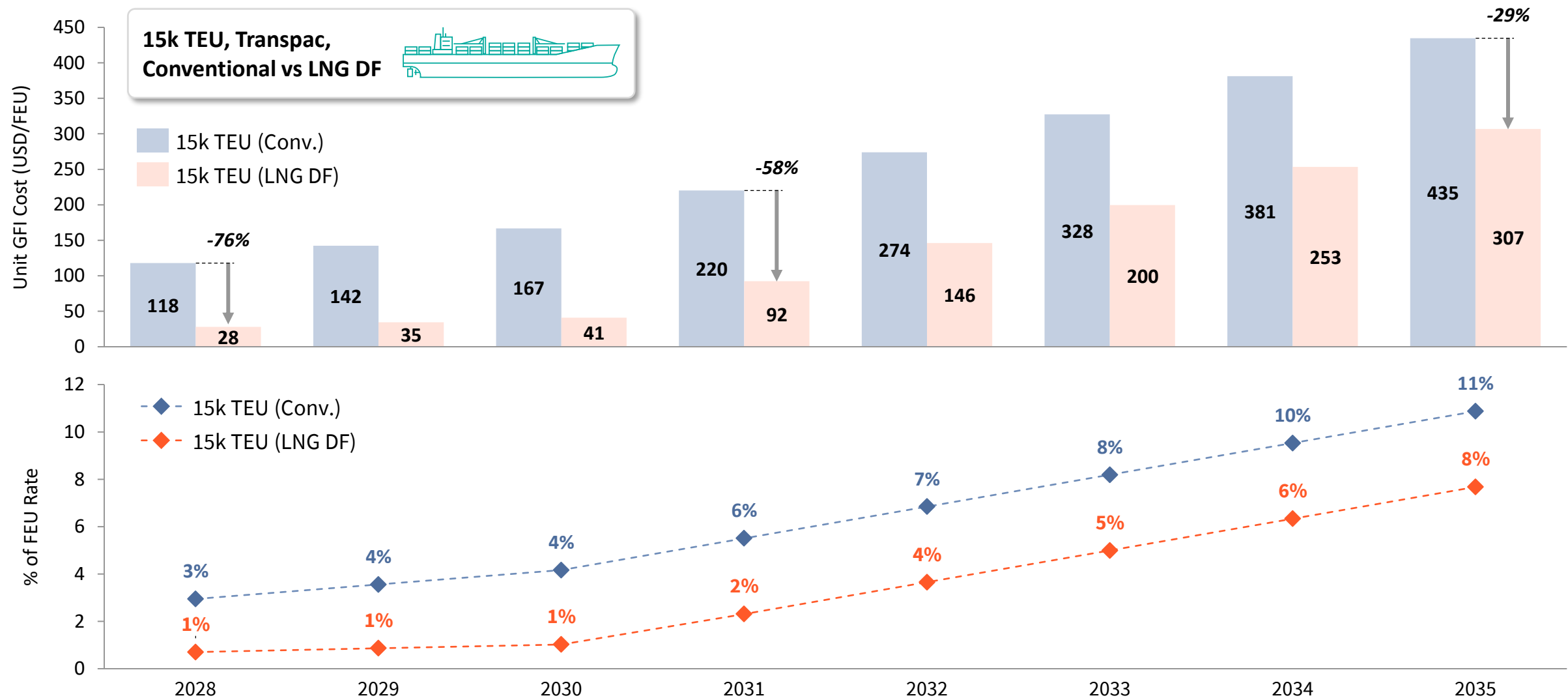
Most expensive fuel
(USD/MJ)

FUEL COST + PENALTIES

Least expensive fuel
(USD/MJ)

Cargos Under Pressure: Containers

GFI costs are expected to bite cargoes, especially from 2031 onwards where premiums will exceed 5% per FEU for Transpac container trade – thus, a “pay-to-comply” approach will not be viable



Key Conclusions

PENALTIES VS INCENTIVES

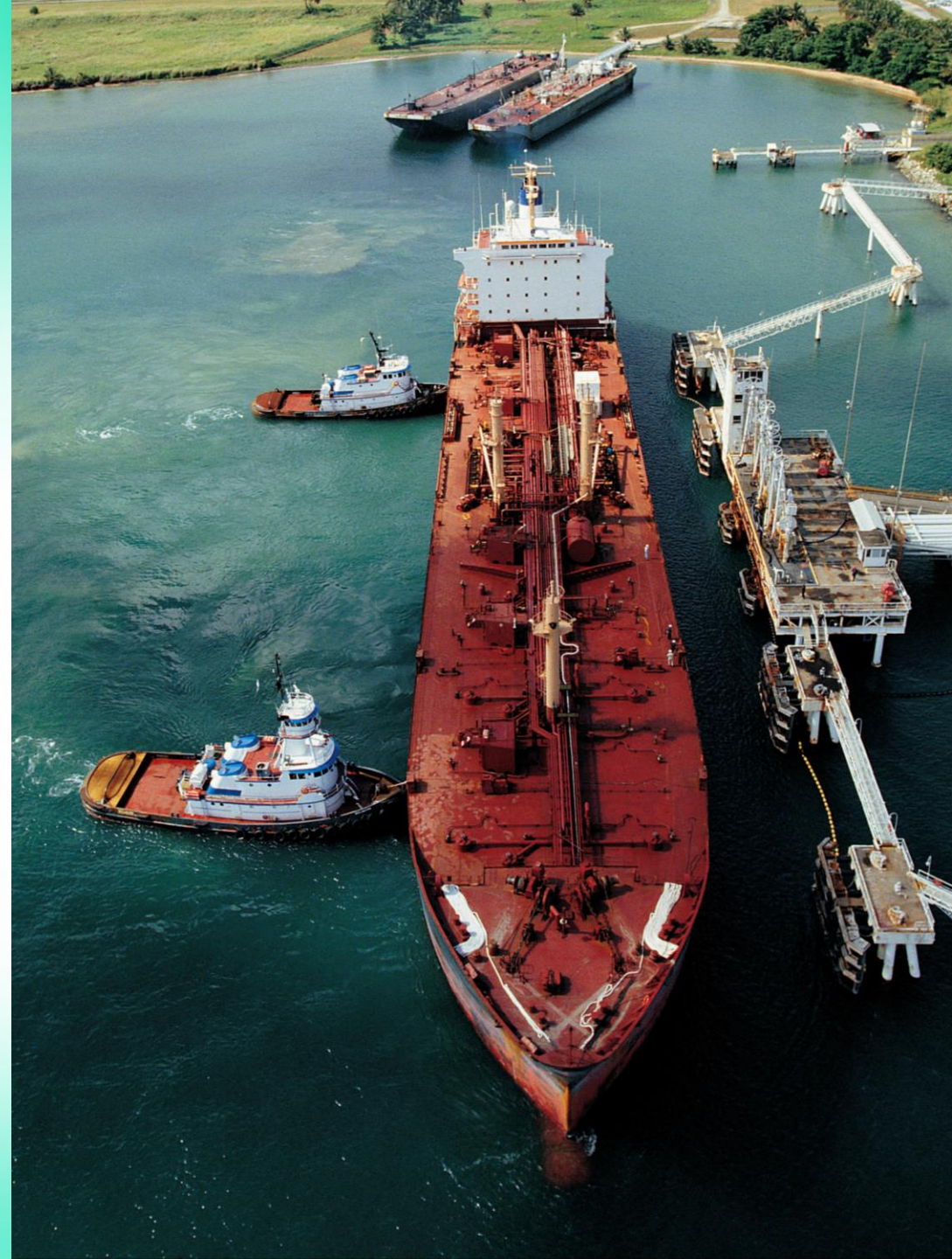
IMO GFI will not drive major fuel switching to alternative fuels, but the payback on ESDs is down by 60% with energy costs now at \$1500/mt HFOeq

CARGO IMPACTS

Unit GFI Costs will be material – LR estimates approx. >5% on Transpac FEU and >1% on C5 iron ore by 2031 – requiring active optimisation to avoid margin erosion

FUTURE FUEL PATHWAYS

Fuel pathways – such as from fossil to bio to e-LNG – remain important but this will need to be on a fleet basis and take advantage of other regulatory regimes (FuelEU)





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Thank you

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