MARINE MONEY

2023 Marine Money Week Asia

Sep. 26th - 27th, 2023

Investing in Duals

22nd Annual Marine Money Week Asia (Sep 2023)

MSI

Market Health Check

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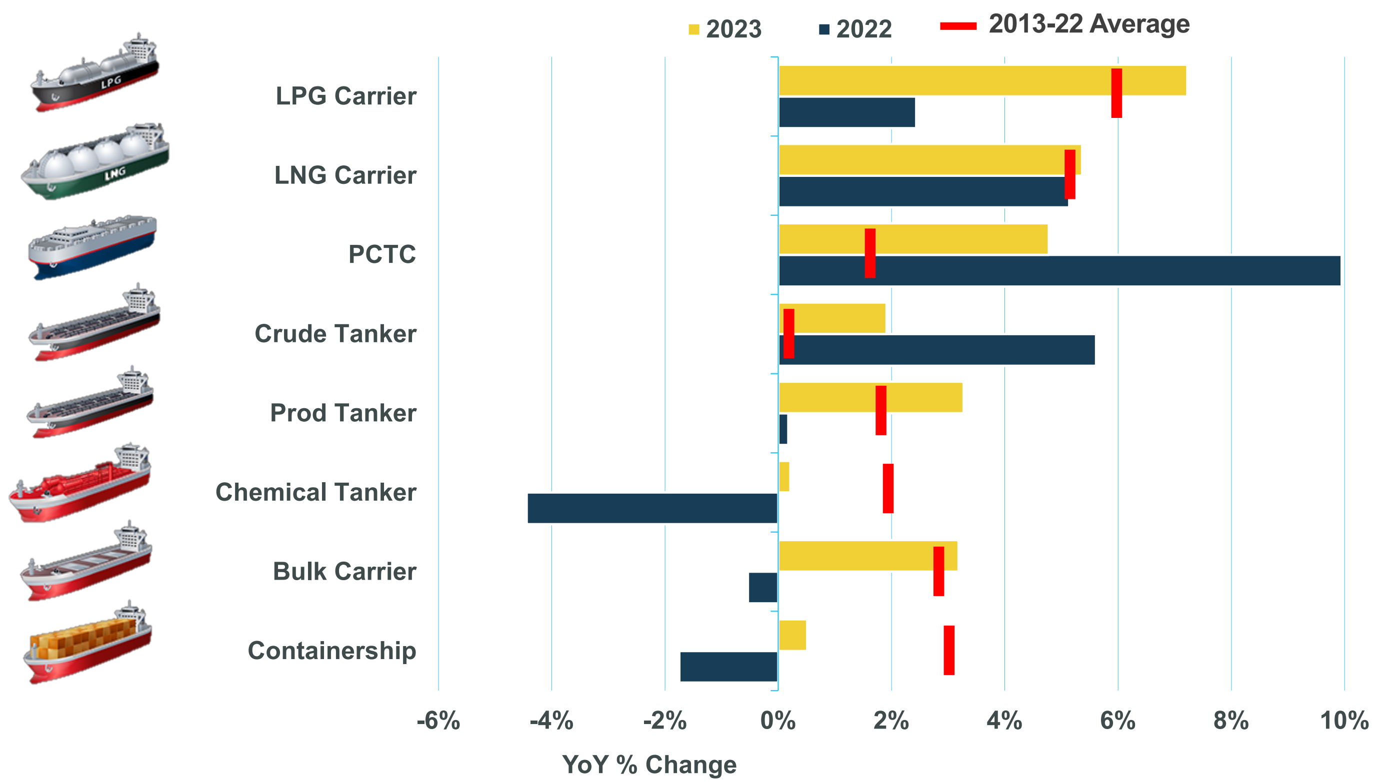
Cargo Growth

2023 a better year for most sectors

- **[Health Check]**
- Update on Dual Fuel Adoption
- The Evolution of Dual Fuel Ship Values



Fleet Growth

In most cases it's been manageable

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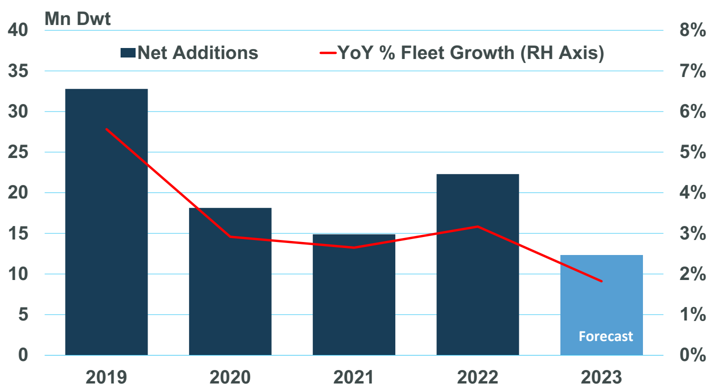
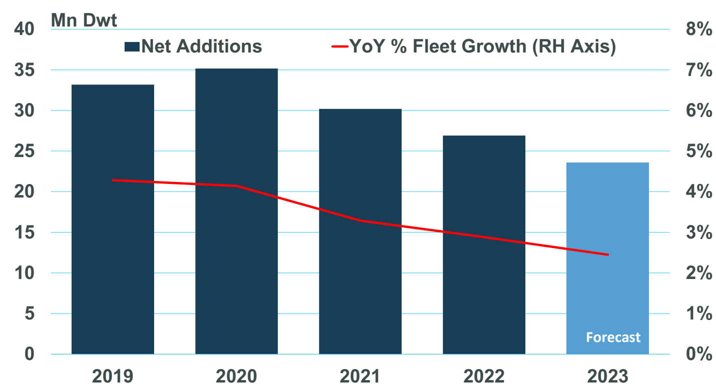
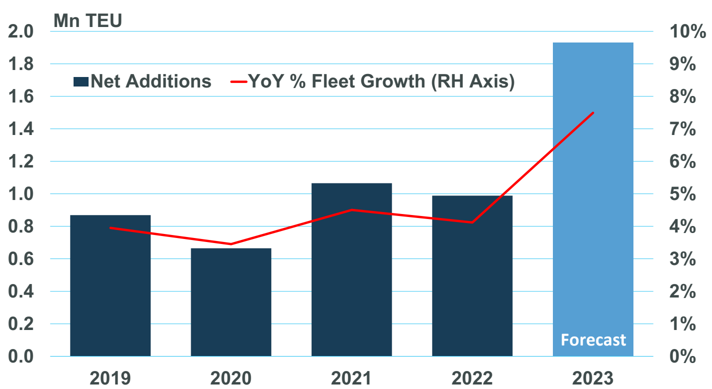
Tankers



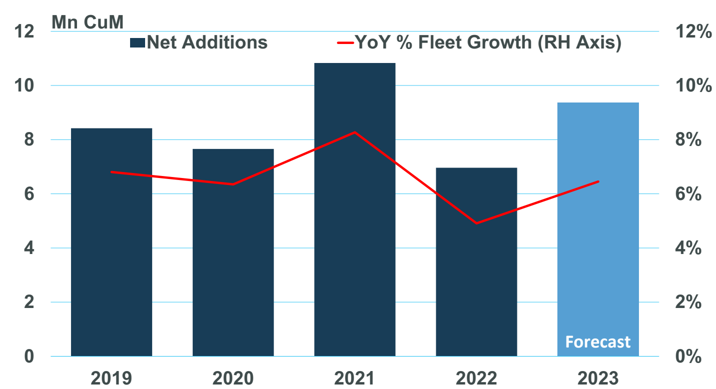
Bulkers



Containers



Gas Carriers



Fleet Orderbook and Age Profile

Some sectors exposed

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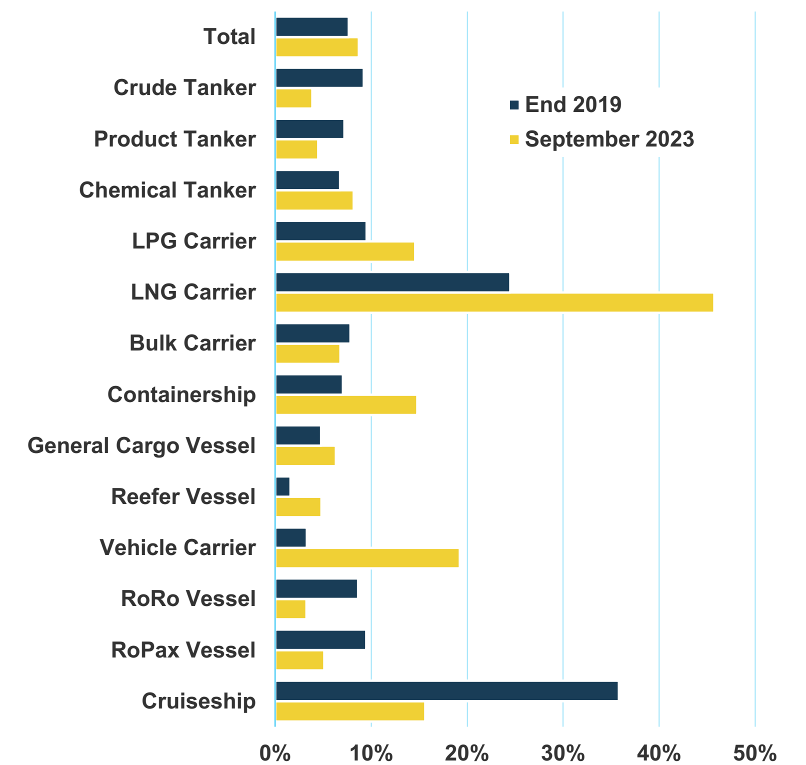
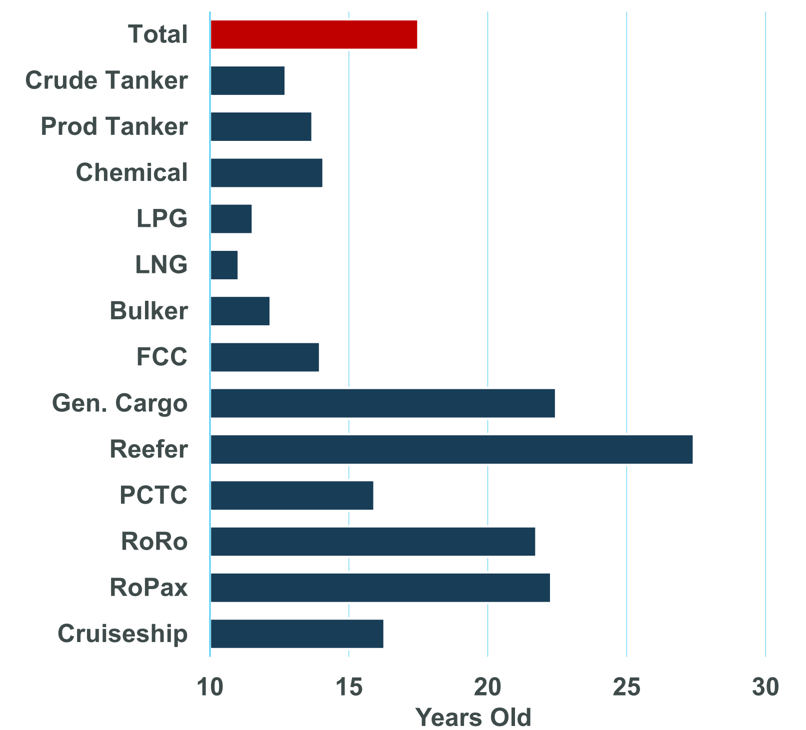
Orderbook as % of Fleet, End 2019 vs Current



Fleet Average Age by Ship Type



Current Earnings

Where are we on the cycle?

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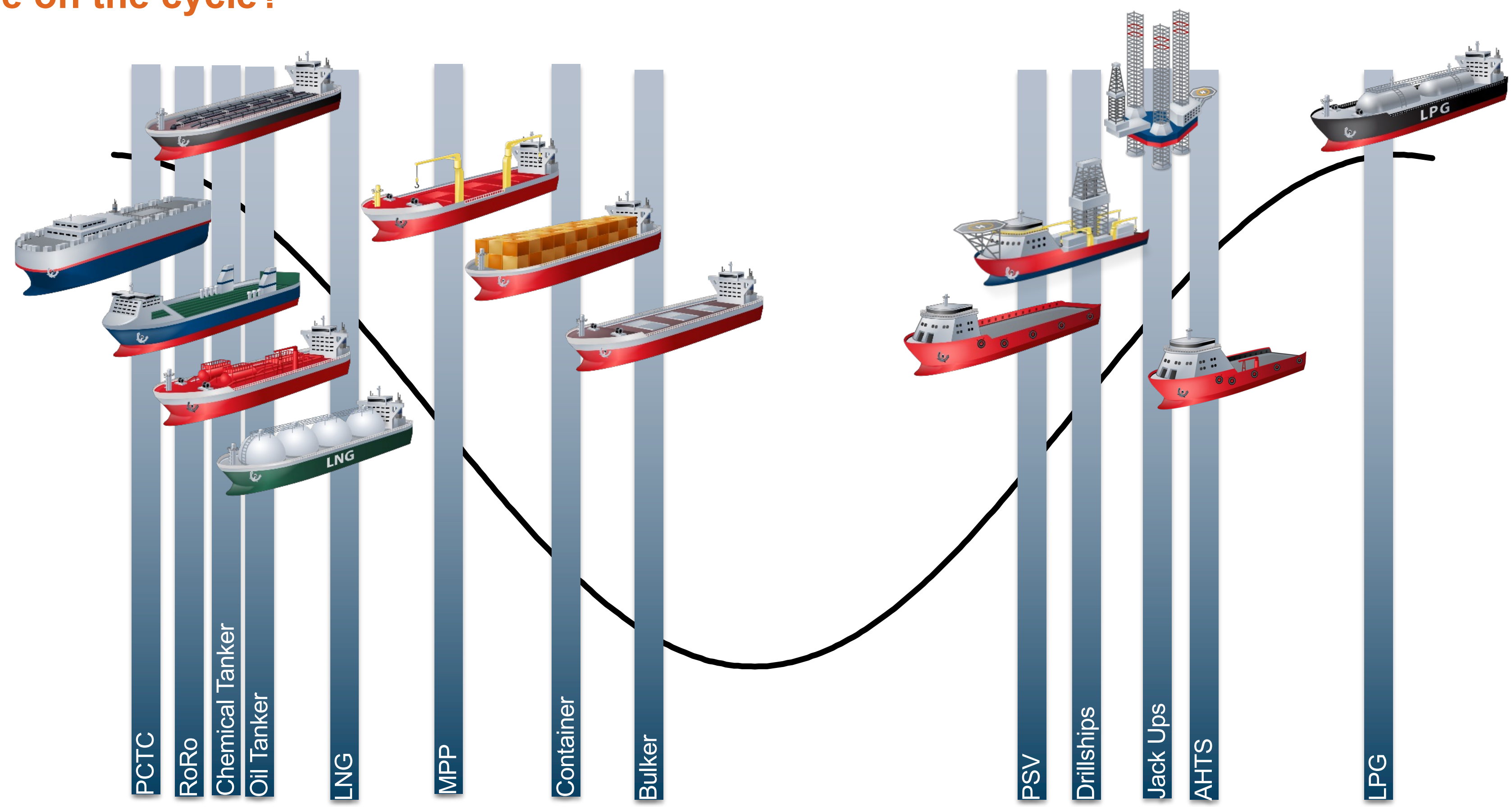
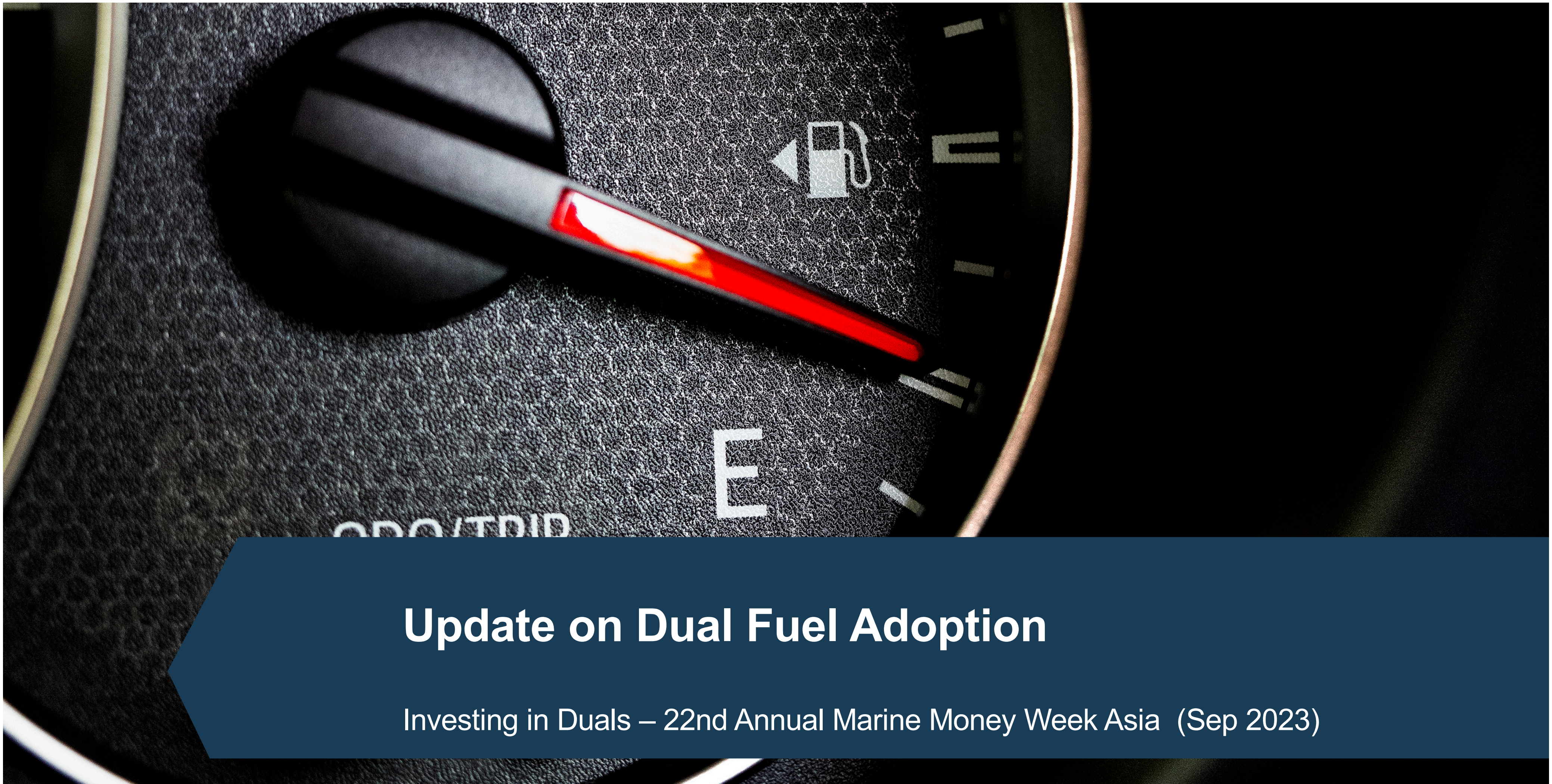


Note: Schematic for illustrative purposes only!



Update on Dual Fuel Adoption

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Decarbonisation and its Impact on Shipbuilding

A lot of work still must be done to reduce international shipping's overall emissions

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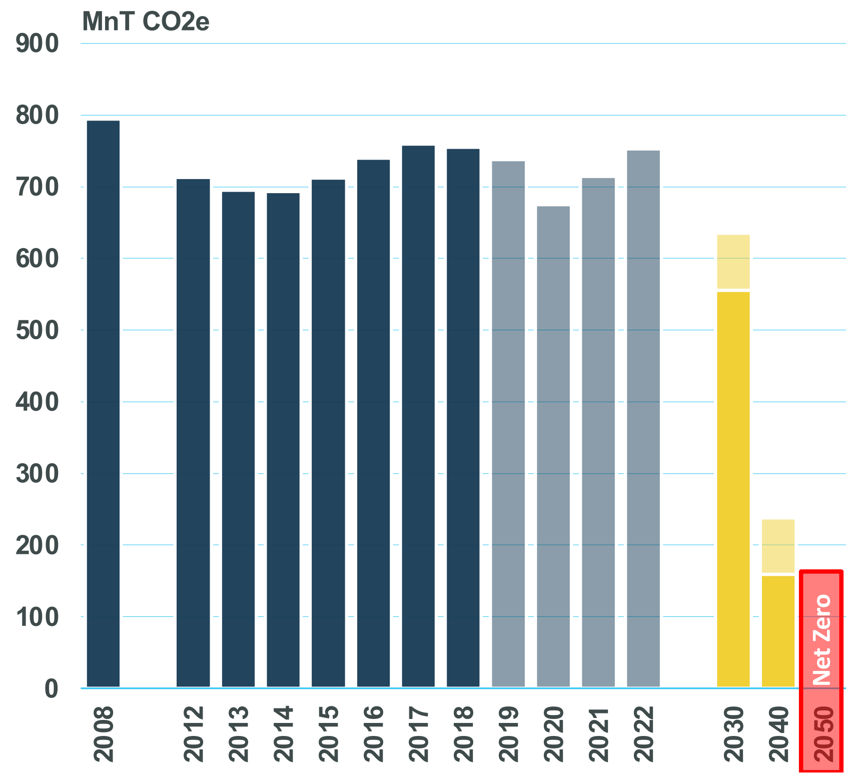
Main Tenants of IMO GHG Strategy

2018 Initial Strategy		2023 Strategy
CO_2: At least 40% below 2008 average CO_2 emissions per transport work.	2030	**CO_2**: At least 40% below 2008 average CO_2 emissions per transport work. **GHG**: Reduce total emissions by at least 20%, striving for 30% compared to 2008 **Technology**: Uptake of (near) zero GHG emission technologies to represent at least 5%, striving for 10%, of energy used.
	2040	**GHG**: Reduce total emissions by at least 70%, striving for 80% compared to 2008
CO_2: 70% below 2008 average CO_2 emissions per transport work. **GHG**: At least 50% below 2008 levels and "pursuing efforts to phase them out."	2050	**GHG**: Peak emissions as soon as possible and reach net-zero GHG emissions by or around 2050, taking into account different national circumstances.

International Shipping's GHG Emissions (Voyage Based)



Fuel Adoption Timeline

MSI expecting a cascade of technology, but timings difficult to predict

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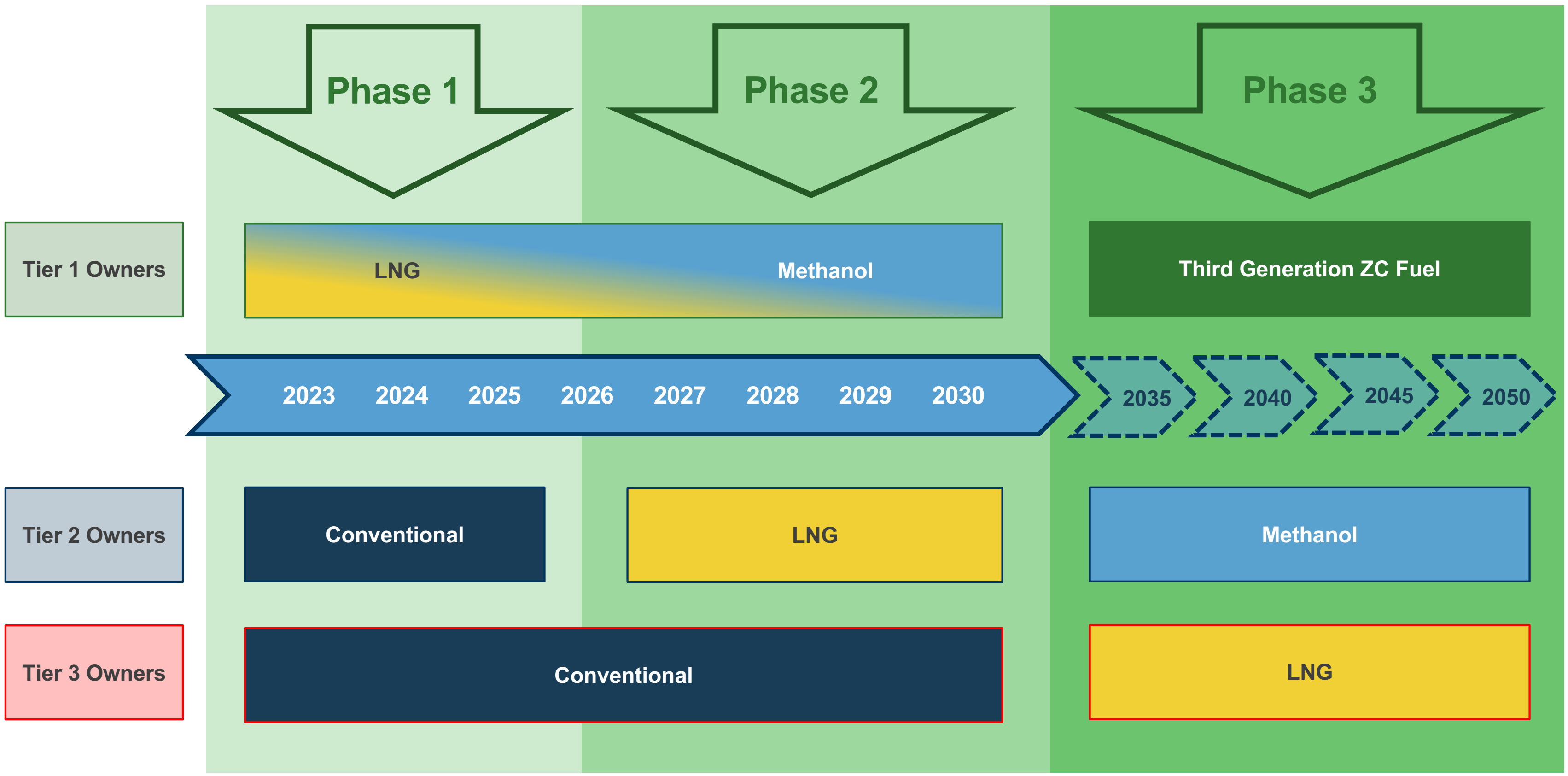

Contracting over the Past 18 Months

Increasing interest in LNG Dual-Fuel, and Methanol for Containerships

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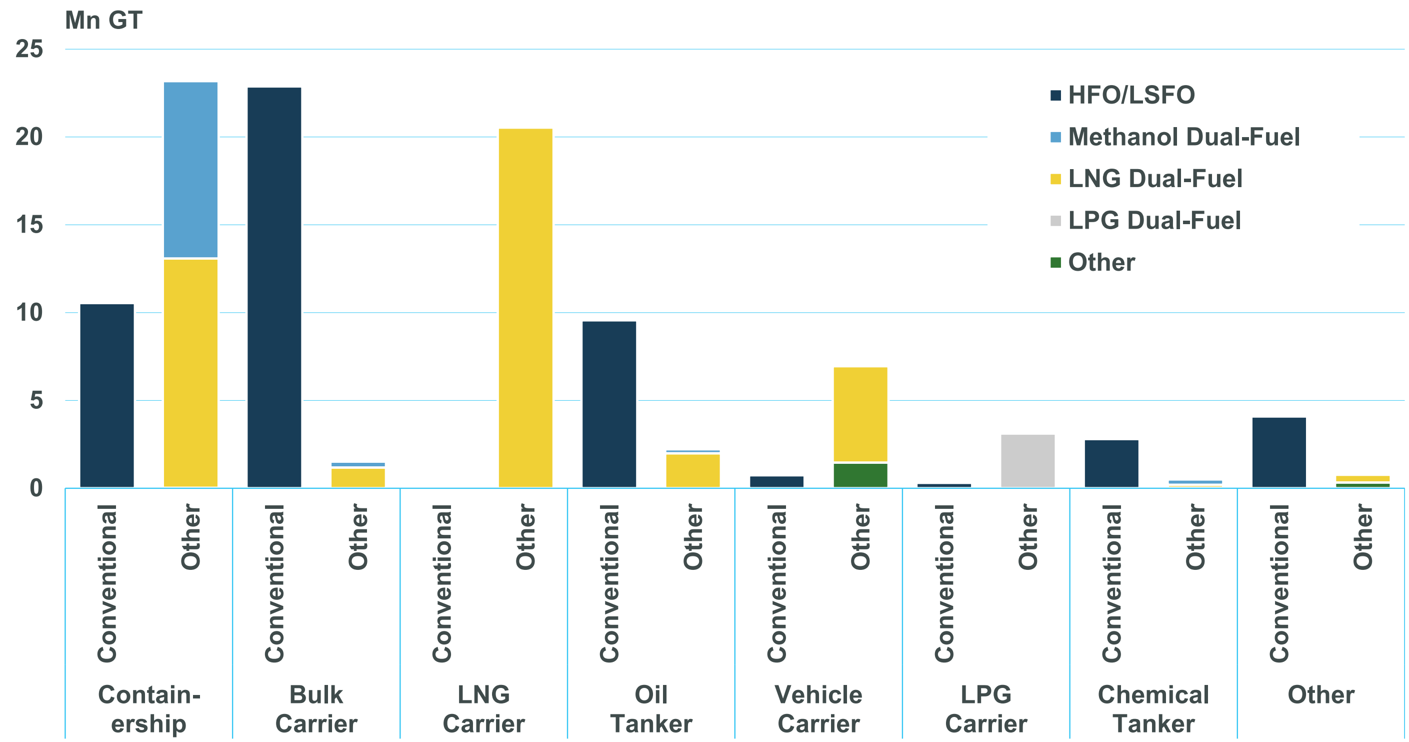

Global Fleet Development by Fuel Type

Share of Dual Fuel vessels gathers pace 2030+, but a lot of conventional ships to displace

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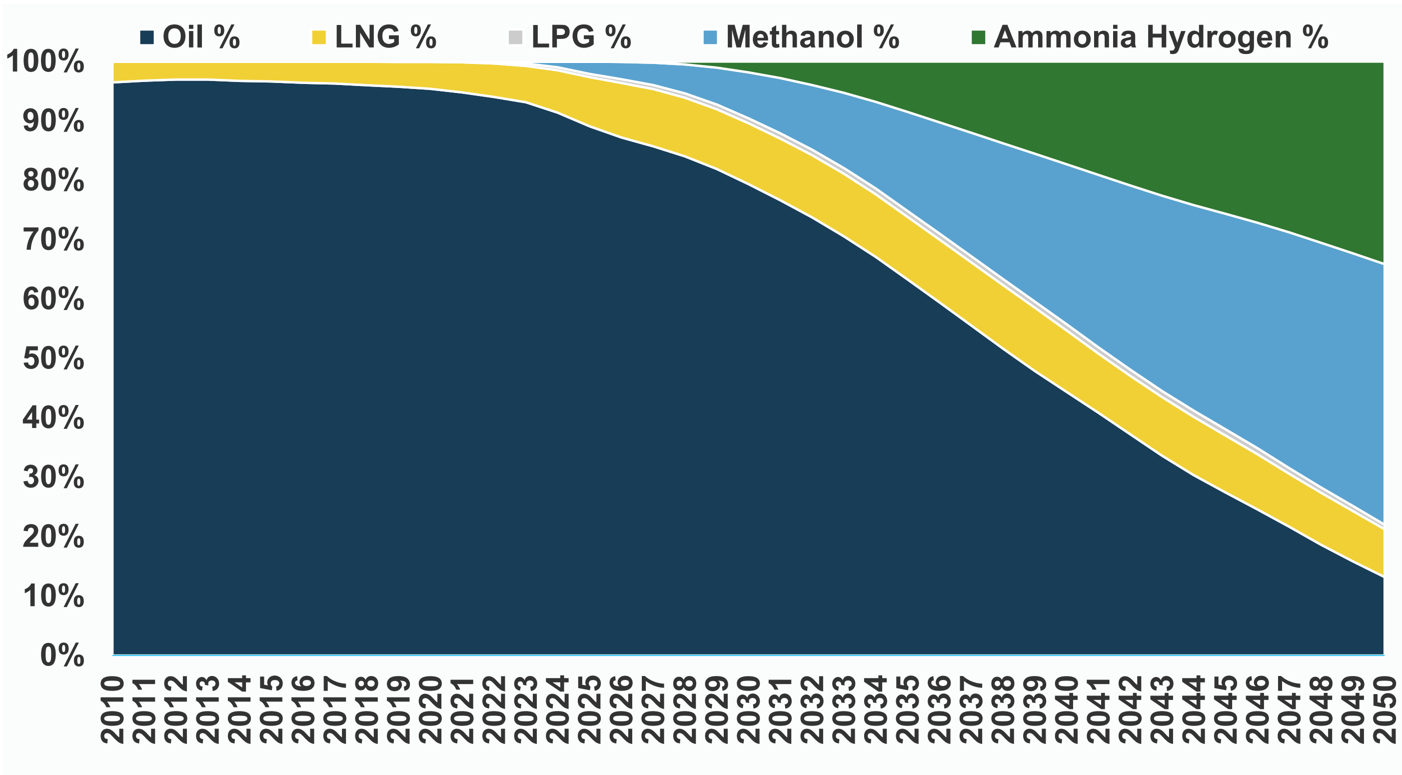

Will IMO Targets be Met?

Slowing fleet growth and dual fuel contracting takes us a long way… but not to zero alone…

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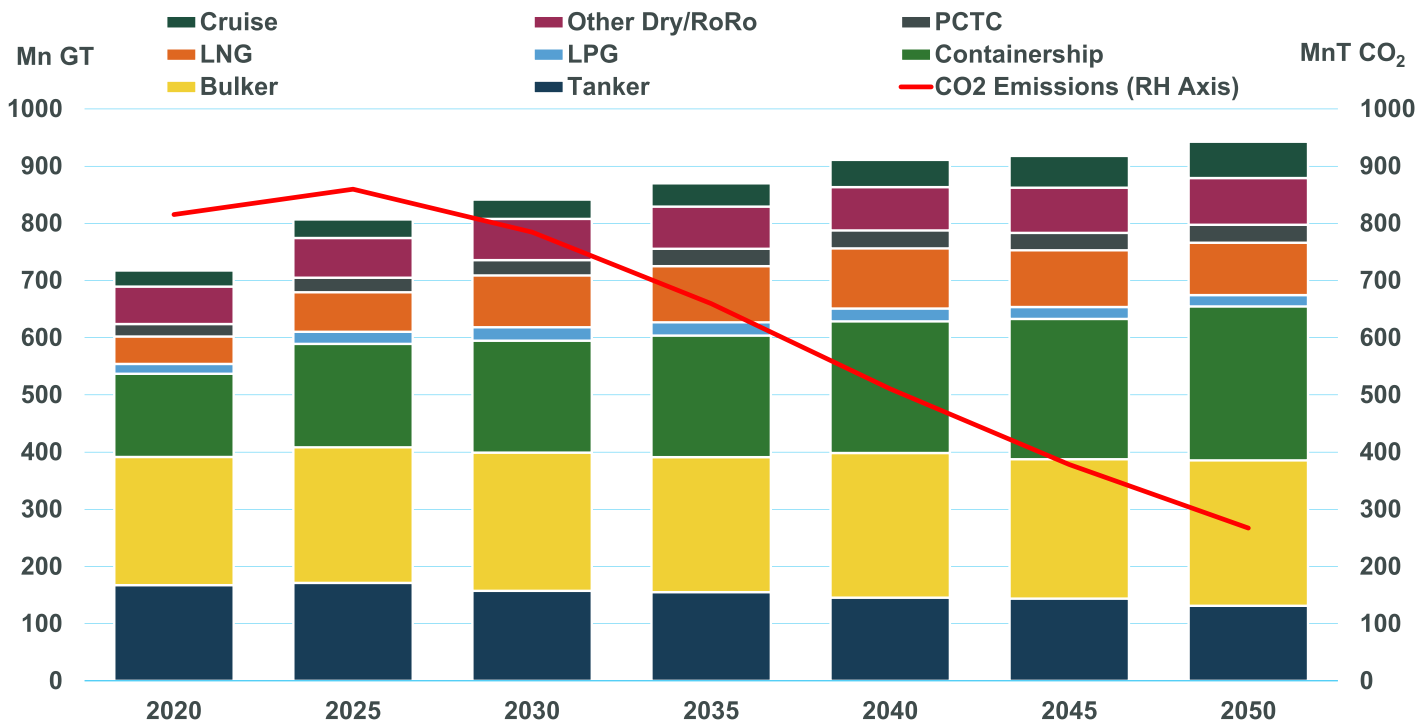

NB: Major Commercial Shipping Sectors Only

The Evolution of Dual Fuel Ship Values

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Determining Secondhand Asset Values With No Transaction Data

Back to Basics

- Health Check
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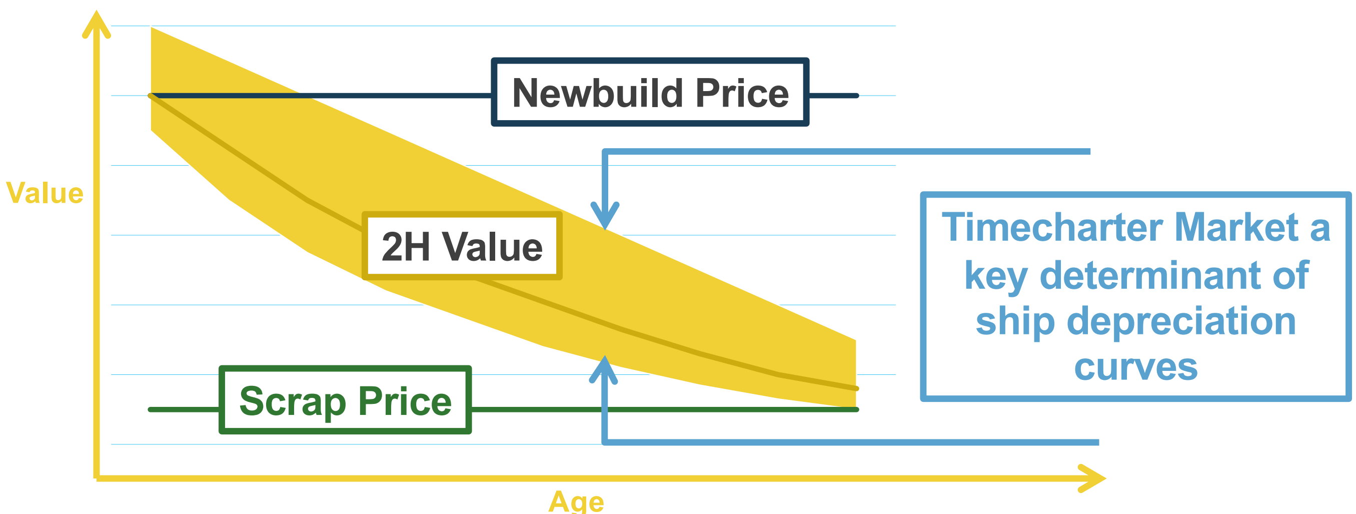
- The value of an asset is closely tied to the net present value of *expected* future cash flows
- **BUT** *expectations* vary!
- How does MSI place a value on a secondhand asset?



Newbuild and Scrap Prices for Dual Fuel Vessels

Upsurge in reported contract prices, but scrap values will remain theoretical

- Health Check
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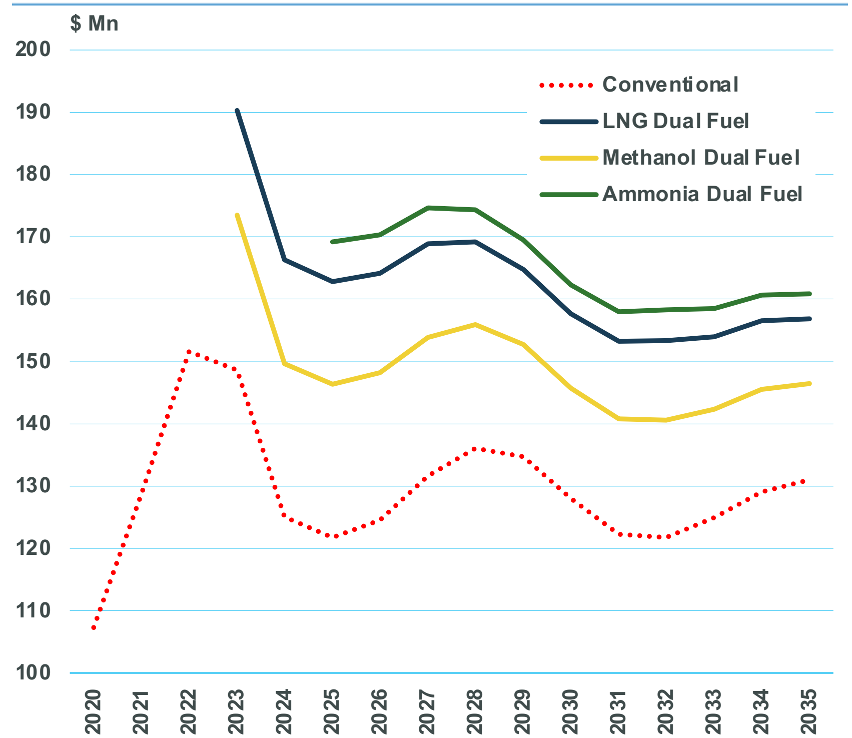
NB Contract Prices:

- MSI has constructed a database of Dual Fuel NB prices.
- The additional cost to install Methanol DF is less than LNG and Ammonia.
- Differentials with conventional ships are expected to narrow but will remain a significant premium.

Scrap Values:

- DF equipment unlikely to find alternative use, so is priced at scrap metal value

Example: 13/14 k TEU Containership Alternative Fuel Newbuild Prices



Assessing Dual Fuel Timecharter Markets With No Reported Charter Data…

Fuel prices and carbon costs are key to a theoretical assessment

- Health Check
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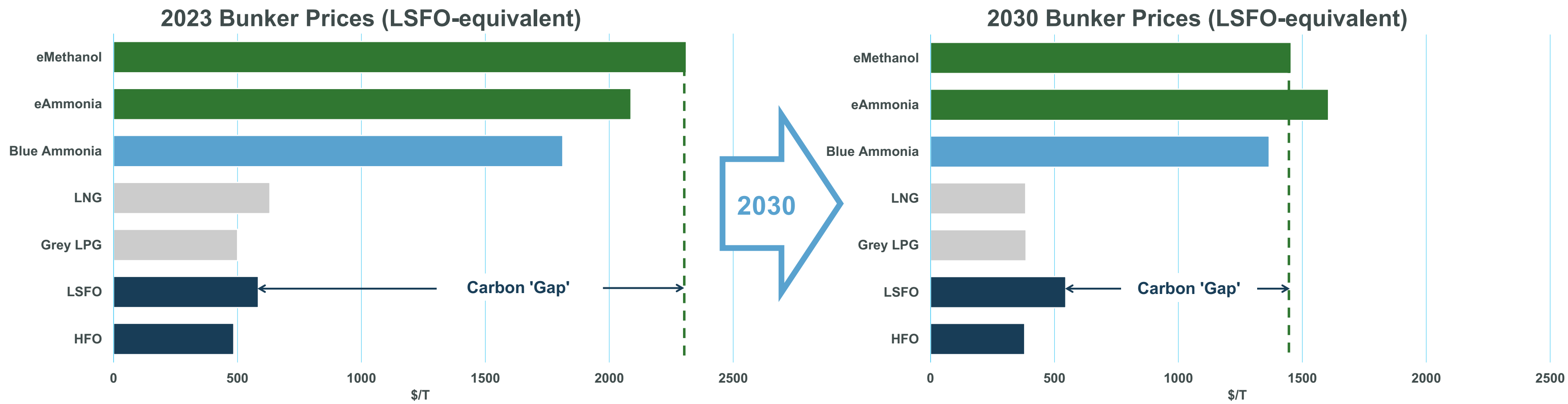
- Intangible benefits of low carbon fuels (ESG) are… Intangible! Unless a company has an internal cost of carbon, is committed to voluntary offsets or sells low carbon freight…
- Tangible benefit assessed via fuel cost differentials and an ***enforced cost of carbon***.
- Significant changes to fuel prices expected to support Dual Fuel (DF) take up.
- **Note**: LNG/LPG bunker prices cheaper than LSFO, without additional carbon costs.



The Cost of Carbon – What to Expect?

Far from Clear!

- Health Check
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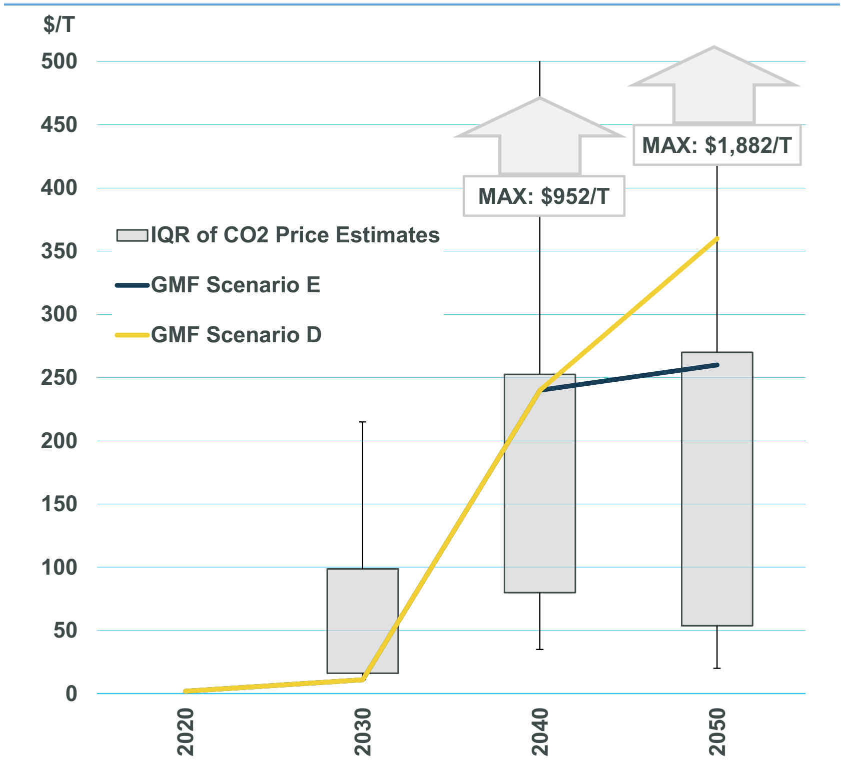
- The price of carbon should converge at a level that promotes a manageable and least-disruptive transition to low carbon fuels within the confines of emissions targets.

- It should therefore **depend on the cost of alternative fuels for shipping** (including the cost of installation and maintenance of machinery to use them).

- Since the price of carbon tax can be controlled (either as a tax or via carbon credits) then we would expect the carbon price to adjust accordingly…

Carbon Price Estimates – No Consensus Yet



Impact of DF Operating Costs and Capital Costs

Higher costs for DF ships mean a potential step-up in T/C rates

- Health Check
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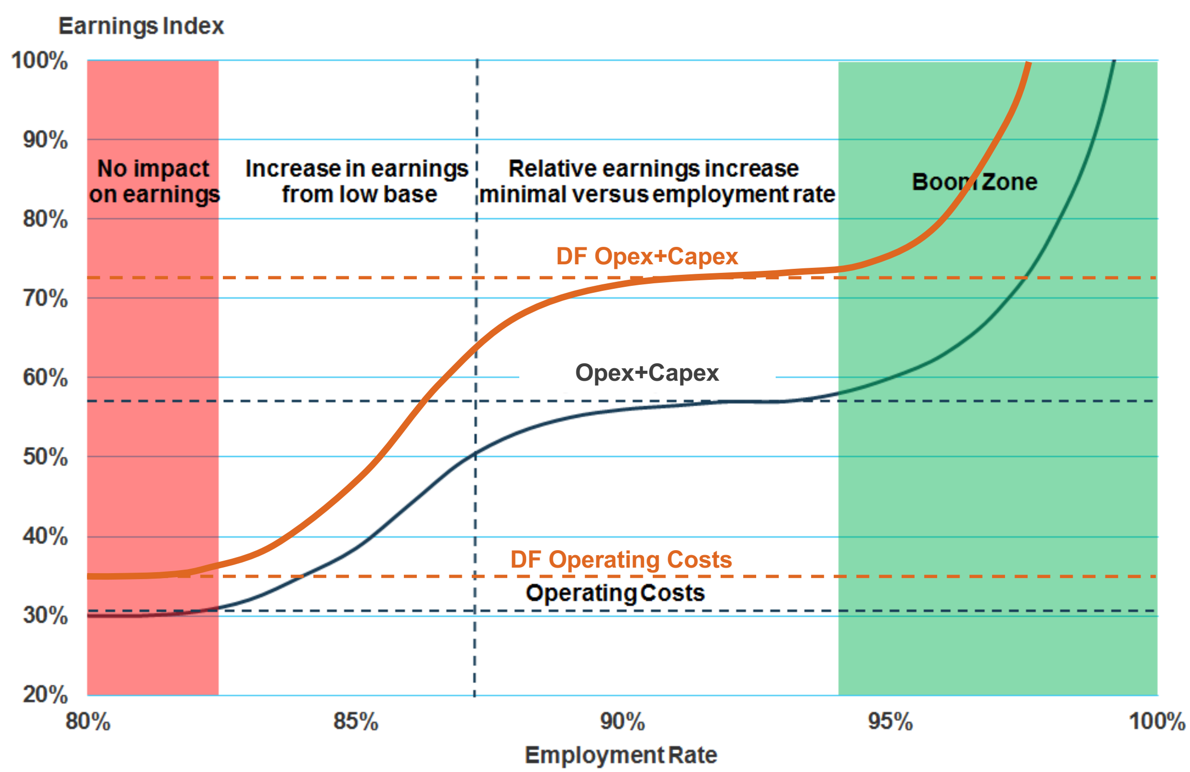
- DF T/C market is yet to be established
- MSI assumes **same principles apply** as for conventional assets:
  - Floor defined by operating costs
  - Capital cost pressures provide a strong impetus to T/C rates as fleet employment rates improve
  - Unpredictable upsides in very tight markets

MSI Timecharter Model: A Different Path For DF vs Conventional Timecharter Earnings



Accounting for a Fleet with Multiple Vessel Fuel Types

Timecharter market will also depend on the rate of DF uptake, by type

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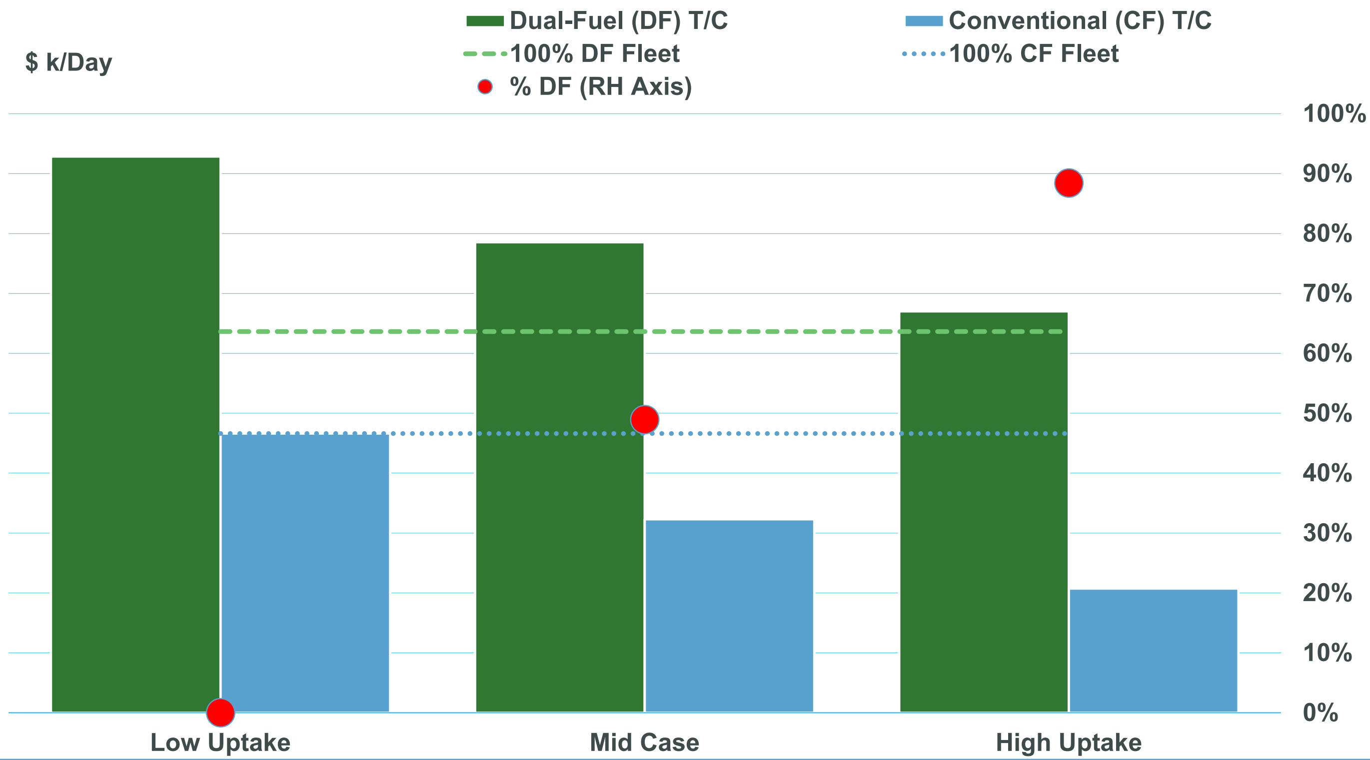

Paradoxically, a faster uptake of dual fuels could mean downwards pressure on T/C earnings, since the $ impact of opex/capex is less than impact of fuel/carbon cost

Dual Fuel Ship Valuations on MSI's Online Platform

Interactive modelling of DF asset value forecasts and risks

- Health Check
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- **The Evolution of Dual Fuel Ship Values**

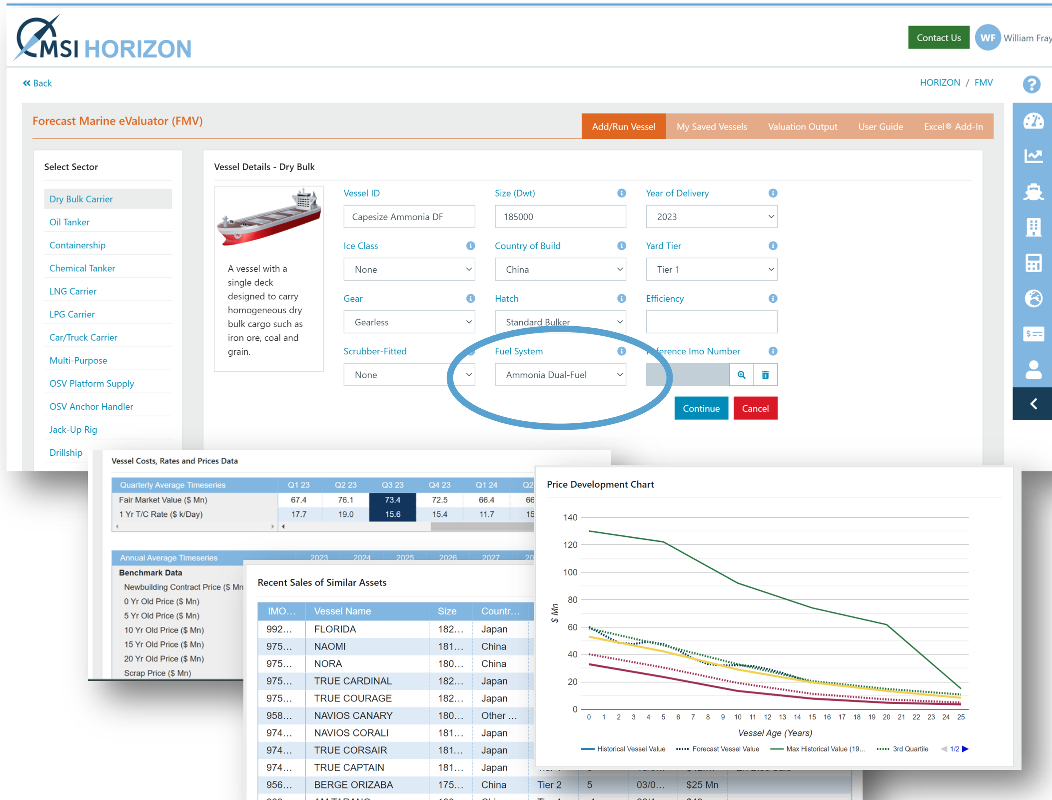
- Dual Fuel pricing dynamics are all accounted for in MSI's online ship valuation and cash flow forecasting tool FMV, hosted on our online platform **MSI HORIZON**.

  https://horizon.msiltd.com

- In addition to existing assets (including those on the orderbook), calculations can be run for theoretical assets with different fuel types for comparison and further analysis.

- The impact of different fuel prices and carbon costs on ship earnings and values can also be quantified through scenario analysis.

MSI HORIZON Screenshots: Forecast Marine eValuator (FMV)



Summary Analysis Example – 5 Yr Old Capesize Dry Bulk Vessel

Impact of values, timecharter earnings and costs on investment performance

- Health Check
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- **LNG DF** T/C premiums will be significant over conventional in the near-medium term.
- **BUT** the cost of installing LNG DF technology on ships means IRRs still favour conventional ships for 5-year investments until 2025 at least.
- If consensus fuel price forecasts and cost of technology estimates are reliable, then carbon prices will need to exceed **$300/T** to support zero carbon fuel technologies.

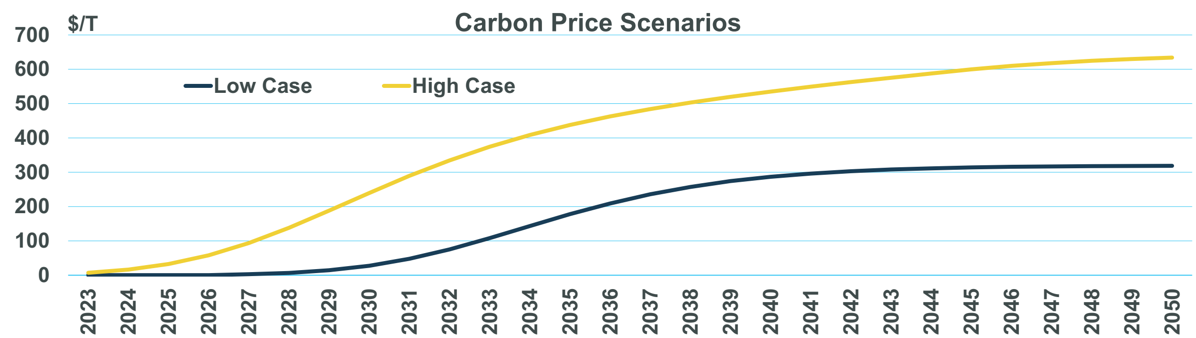
Equity IRR Ranking by DF Fuel Type – 5-Year Investments in 5-Yr Old Capesize (60% LTV)

Low Case

	2023	2024	2025	2026	2027	2028	2029	2030	2035	2040	2045
1	Conv	Conv	Conv	Conv	LNG DF	LNG DF	LNG DF	LNG DF	LNG DF	LNG DF	LNG DF
2	LNG DF	LNG DF	LNG DF	LNG DF	Conv	Conv	Conv	Conv	Conv	Meth DF	Meth DF
3	Meth DF	Meth DF	Meth DF	Meth DF	Meth DF	Meth DF	Meth DF	Meth DF	Meth DF	Conv	Amm DF
4	Amm DF	Amm DF	Amm DF	Amm DF	Amm DF	Amm DF	Amm DF	Amm DF	Amm DF	Amm DF	Conv

High Case

	2023	2024	2025	2026	2027	2028	2029	2030	2035	2040	2045
1	Conv	Conv	Conv	LNG DF	LNG DF	LNG DF	LNG DF	LNG DF	Meth DF	Meth DF	Meth DF
2	LNG DF	LNG DF	LNG DF	Conv	Conv	Conv	Meth DF	Meth DF	LNG DF	Amm DF	Amm DF
3	Meth DF	Meth DF	Meth DF	Meth DF	Meth DF	Meth DF	Conv	Conv	Amm DF	LNG DF	LNG DF
4	Amm DF	Amm DF	Amm DF	Amm DF	Amm DF	Amm DF	Amm DF	Amm DF	Conv	Conv	Conv



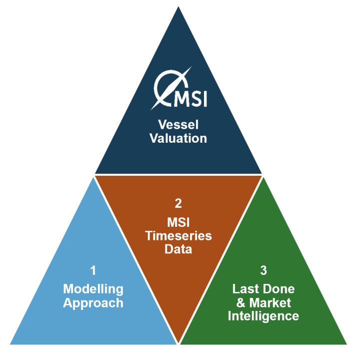
Introduction to MSI

Maritime consultancy offering modelling, data, asset valuation and strategic advisory services

MSI's Strategic Advantage

Approach	MSI specialises in model-based forecasting of shipping, offshore and allied industries and offers structured quantitative analysis to support business decisions.
Expertise	MSI's team is comprised of professionals with extensive academic credentials, deep industry knowledge and many years experience of delivering successful client projects.
Coverage	MSI's depth and quality of market coverage is unparalleled, providing reports, models, valuations and consultancy across all commercial shipping and offshore sectors.
Independence	MSI provides unbiased, independent market forecasting and business advisory services.
Network	MSI can draw upon a number of corporate partners and our extensive network of industry contacts to offer a broad range of consulting and analytical services.

Current and Forecast Asset Valuations



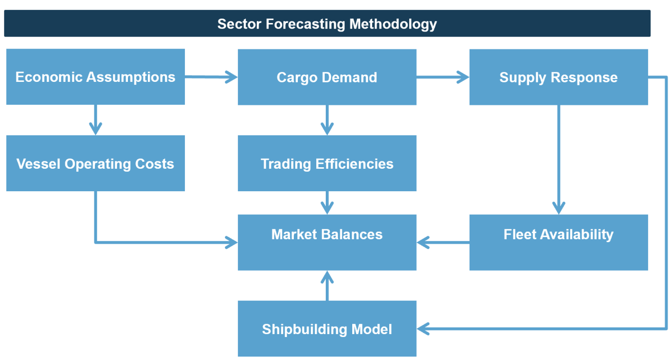
MSI independent valuations are derived by applying a meta analysis approach using:

1. MSI's proprietary econometric modelling processes and algorithms developed over the last 25+ years
2. Vessel benchmarked and analysed in relation to MSI published timeseries data
3. Vessel directly compared to last done sales and current market intelligence on likely sale candidates and prices.

MSI's valuation services include:

- Certificated spot valuations
- Vessel forecasts (value, earnings, nb price and opex)
- Charter attached valuations
- Option price valuations
- Forecast value sensitivity and stress testing
- RVI support including soft value, forced value, recessionary value, cautious plausible value, 1 in 100 value etc.
- Valuation briefing notes
- Valuation reports
- Expert witness/Expert testimony

Forecasting Models (All Marine Markets) & Market Reports



Advisory Services

- Is there a clear strategic vision for the development of the business?
- Does the market, customer and competitor analysis in the BP align with MSI's assessment contained in Stages 1 and 2?
- What external stakeholders will influence the business plan's success or failure
- Are the financial projections realistic in light of MSI's forecasts contained in Stage 1?
- What are the key enablers for success?

- Based on the results of the analysis performed in Stages 1 and 2, MSI will review the companies existing business plan (BP) to assess:
  - Viability relative to external market conditions
  - Feasibility based on the companies likely ability to deliver upon it
- The review will focus on the following factors
  - market-related
  - financial
  - organisational structure
  - Office locations
  - Operating cost benchmarking
  - Overhead costs
  - Management team experience
  - Business development processes

MSI Background and Disclaimer

For over 35 years, MSI has developed integrated relationships with a diverse client base of financial institutions, ship owners, shipyards, brokers, investors, insurers and equipment and service providers.

MSI's expertise covers a broad range of shipping sectors, providing clients with a combination of sector reports, forecasting models, vessel valuations and bespoke consultancy services.

MSI's team is comprised of professionals with extensive academic credentials, deep industry knowledge and many years experience of delivering successful client projects.

MSI balances analytical power with service flexibility, offering a comprehensive support structure and a sound foundation on which to build investment strategies and monitor/assess exposure to market risks.

While this document has been prepared, and is presented, in good faith, MSI assumes no responsibility for errors of fact, opinion or market changes, and cannot be held responsible for any losses incurred or action arising as a result of information contained in this document. Although any forecasts contained in this document are based on MSI's assumptions, there can be no assurance that these forecasts will prove to be accurate, as future events could differ significantly. Any forward statements, forecasts or trends contained in this presentation are not guarantees of the future and therefore no reliance should be placed on them. The copyright and other intellectual property rights in data, information or advice contained in this document are and will at all times remain the property of MSI.

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