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Sustainability in Ship Design Conference 2022

Financing Shipping Decarbonisation

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Financing shipping decarbonisation

Decarbonisation of shipping is necessary and achievable. It is also an attractive investment:

- >$1 trillion market
- Supply and demand factors making shipping less volatile

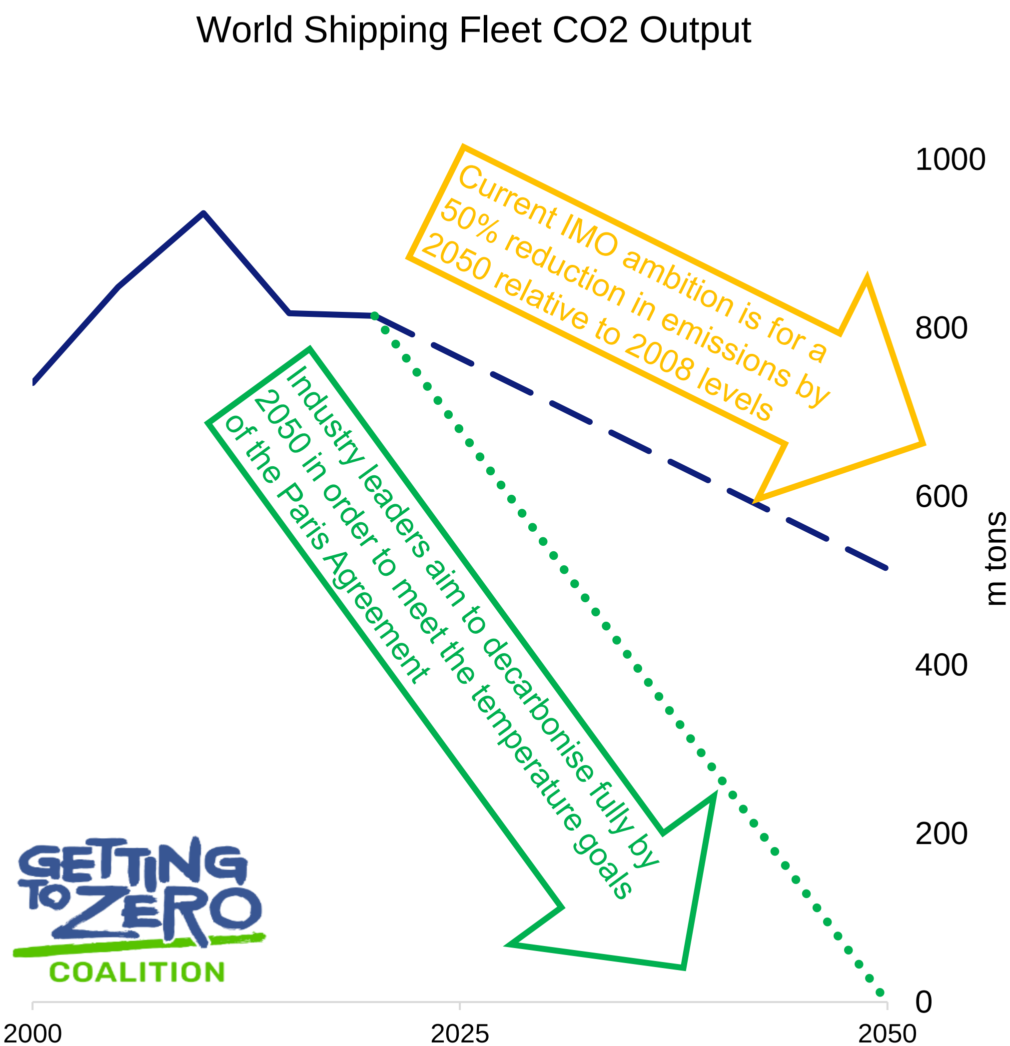
Institutional investors:

- **want** to drive decarbonisation,
- especially in hard-to-abate sectors,
- **appreciate** (recently if not always) shipping is essential,
- and **seek** diversification and inflation hedges

Taking action

- Medium-term: Investment in commercialised as well as new types of Energy Saving Devices ("ESDs") and increasing the use of sustainable biofuel
- Before 2030: Investment in zero carbon capable shipping

Decarbonisation in shipping



- Despite being the most environmentally efficient form of commercial transport and responsible for only c.3% of global CO2 emissions, shipping must decarbonise
- IMO ambitions presently are not so ambitious
- To decarbonise fully by 2050, which would align shipping to the Paris Agreement, zero emission vessels should be >5% of the global fleet by 2030
- Decarbonisation will be a challenge for a significant part of the fragmented shipping industry which is >75% unlisted
- Tufton was one of the first 20 shipping industry leaders to commit to:
  - invest in zero carbon capable vessels by 2030
  - decarbonise its portfolio by 2050
- As a hard-to-abate sector with improving characteristics, shipping should benefit from institutional investment to accelerate decarbonisation

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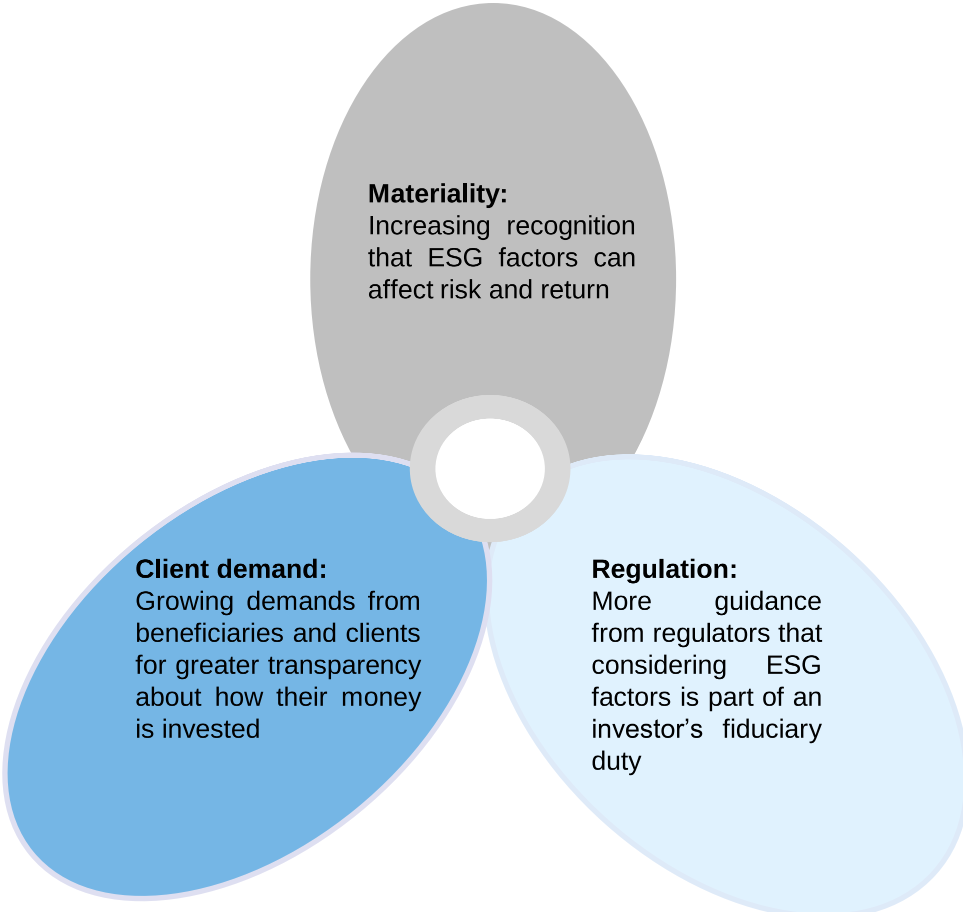
Responsible Investment

Initially focused on Risk Reduction but increasingly focused on Enabling Decarbonisation



> "Climate change is a systemic issue which affects all asset types and sectors. As such, it will impact the portfolio returns, asset valuations and asset allocation processes of asset owners with diversified, global portfolios.
>
> It will provide new investment opportunities."

Since December 2018, Tufton is a signatory of the UN PRI

Source: PRI Principles for Responsible Investment

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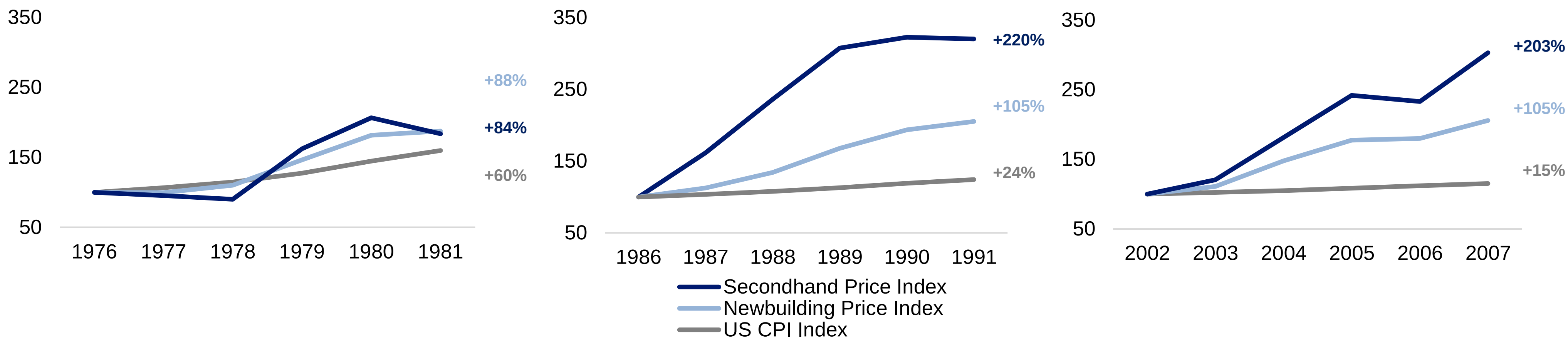
Shipping as inflation protection

- The shipping industry and specifically ship values tend to perform well in periods of higher inflation. The Clarksons newbuilding index rose c.29% since the end of 2020, driven by:
    - Endogenous factors: Yard capacity rationalisation and tightening environmental regulations; and
    - Exogenous factors: Higher commodity prices and (Asian) labour costs feed directly into higher costs/prices for newbuild vessels
- Higher newbuild prices driven by inflation would exacerbate the effects of industry specific factors (primarily decarbonisation and reduced availability of capital) that are already expected to increase secondhand values as new ship deliveries slow
- Historic data from inflationary periods show significant ship value appreciation
- In these periods, secondhand values have tended to increase more than newbuilding prices



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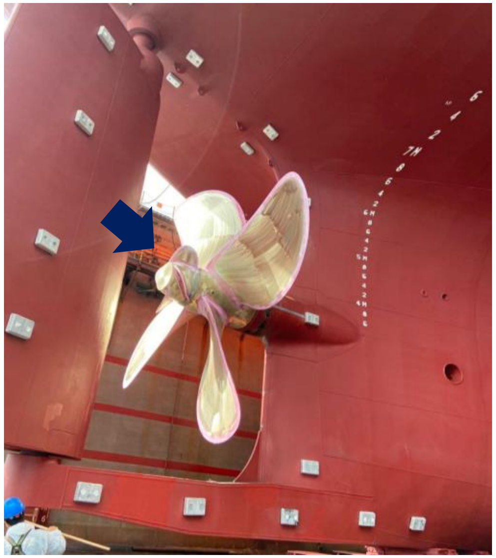
Medium Term: ESD retrofits



A high-performance hull coating was applied to Octonaut and a PBCF was retrofitted in June 2022. Other ESDs will be retrofitted on the vessel whilst in service

Visualisation of Rotor Sails on the TR Lady. Please see the Tufton website here for details

- Tufton is retrofitting ESDs on portfolio vessels. The retrofits are expected to reduce fuel consumption and emissions by c.10% on each vessel

Standard ESDs

- The ESD investments on a Chemical Tanker, Octonaut, include a Propeller Boss Cap Fin (“PBCF”), a Schneekluth duct, variable frequency drives, LED lighting and high-performance hull coating. They will result in annual fuel savings of c.400 tons
- Our estimated annual fuel savings at current fuel prices will result in a c.3.5-year payback period. Actual savings will vary with market conditions
- Annual reduction of c.1,200 tons of CO2 equivalent (“CO2e”)

Flettner Rotors

- Tufton is retrofitting “Flettner Rotor” sails on TR Lady, a Kamsarmax bulker
- Rotor Sails harness the renewable power of the wind to provide additional forward thrust and deliver significant fuel and emission savings. The expected annual reduction in fuel consumption from the installation is above 10%. This equates to annual fuel savings of c.600 tonnes and an annual reduction of c.1,900 tonnes CO2e. The returns from the retrofit will be positively correlated to fuel and carbon prices
- The retrofit has received the International Windship Association’s Wind Propulsion Innovation Award

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Successful biofuel voyages

ESDs on Glen Cove include a PBCF, stator fins and high-performance hull coating

- Sustainable biofuel is expected to be part of the long-term fuel mix on the path to decarbonisation
- Glen Cove successfully completed a voyage powered by a blend of 30% sustainable biofuel and fossil fuel. The biofuel component was derived from feedstocks such as used cooking oil. The blend delivers a well-to-exhaust CO2e reduction of nearly 30% compared to fossil fuel equivalents without requiring modifications to the engine
- Another chemical tanker, Monax, successfully completed a voyage powered by 100% sustainable biofuel
- Following the successful voyages, Tufton and Stolt Tankers plan to increase our use of sustainable biofuel

Transition to Zero Carbon Fuels

- The shipping industry has a history of self-organisation to reduce its environmental impact
- Industry leaders have started investing in decarbonisation. The early investments will de-risk the technology and catalyse growth in the infrastructure required to support industry-wide transformation in coming years

2020 ✓	2020-2030	2030-2040	2040-2050

Heavy Fuel Oil → Very Low Sulphur Fuel Oil

2020: Transition from heavy fuel oil (containing c.3.5% Sulphur) to Very Low Sulphur Fuel Oil (containing maximum 0.5% Sulphur) despite significant technical, logistical and commercial challenges

Transition Fuels
LNG
LPG

Lower Carbon (e.g. "Blue") Fuels
Ammonia
Methanol (some forms)
Sustainable Biofuel
Hydrogen

Zero Carbon Fuels
Green Ammonia
Green Methanol
Green Biofuel
Green Hydrogen

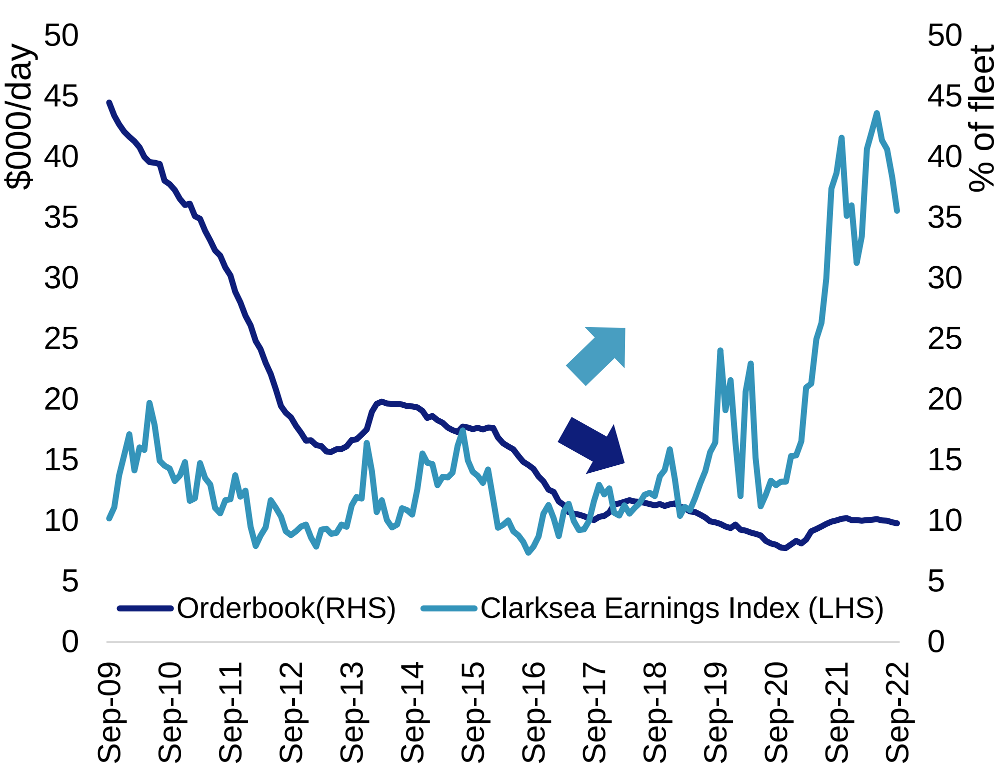
Vessels powered by transition fuels result in significant reduction in GHG emissions

Flexible engine designs can also utilise zero carbon fuels with limited modification.

Lower carbon "blue" fuels minimise on board emissions and are a step further towards total decarbonisation

The large scale production of zero carbon fuels using renewable energy sources will result in a sustainable, zero carbon industry on a "well to wake" basis

Supply side adjustment supports stronger outlook



The Clarksea earnings index (Clarksons Research) tracks average vessel earnings across the major shipping segments. The ongoing supply side adjustment will contribute to higher profitability in coming years compared to the past decade

- A combination of factors including uncertainty over environmental regulations and a lack of capital from traditional sources has led to a reduction in new orders with the resulting shipping orderbook close to multi-decade lows of c.9% of fleet
- The low orderbook and lack of new orders is leading to a reduction in fleet growth. The resulting mismatch between the supply and demand for shipping capacity is leading to higher profitability
- Tufton expects the ongoing supply side adjustment is likely to support structurally higher industry profitability relative to the past decade, leading to stronger yields and better residual values
- Carbon taxes/ higher fuel prices incentivise slow steaming, further aid the supply side adjustment

Source: Clarksons Research, Tufton

Supply and Demand factors

Supply Factors

Lower availability of capital from "traditional" sources

- European banks are much less active, especially for non-recourse lending
- European limited partnership equity even more reduced
- Chinese leasing finance focused on ships built in China and the largest vessel sizes
- Financiers increasingly under pressure to tie in capital availability to environmental metrics

Majority of shipowners not participating in decarbonisation

- "Traditional" shipowners not (yet?) willing or able to order zero carbon capable vessels, preferring to focus on traditional vessels
- This is not unreasonable / irrational

Zero carbon capable ships offer:

- Yield
- Diversification
- Inflation hedge
- *+ Decarbonisation*

Demand Factors

Container lines

Consolidated: Share of top 10 operators grew from c.70% to c.85% over the last five years

- Committed to decarbonisation: Under pressure from high-profile customers, e.g. IKEA, top operators will commit to charter zero carbon capable vessels in the long term and take much of the fuel availability / transition risk
- Long-term contracts with high-profile customers enable container lines to pass on the cost of decarbonisation, making them better credits

Trading houses and energy majors

- Increasingly committed to decarbonisation: shifting to lower carbon fuels and reducing emissions across their supply chain e.g., shipping
- Long-term charters on zero carbon capable ships provide capacity at a defined cost, while allowing them to focus on their core business

"London Greeks pick holes in shipping's lofty green ambitions" *

TradeWinds
The Global Shipping News Source

26 January 2022

** For illustrative purposes only. NB: I love London, Greeks and London Greeks*

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Support for decarbonisation across the value chain

Consumers

The cost of decarbonisation will ultimately be borne by consumers although container lines and retailers may mitigate part of the cost increases through efficiency gains

Research by Maersk and the Energy Transitions Commission shows that the price increases from net zero emission shipping for final consumers will be small (0-5%). Consumers are willing to pay slightly higher to support decarbonisation

Retailers

Leading retail giants such as Amazon, Unilever, Zara, and IKEA have recently committed to using only zero carbon emission ships to transport their cargo by 2040

Retailers are looking to accelerate the pace of decarbonisation and yet maintain security of their supply chains which will be possible through long-term contracts

amazon

IKEA

Container lines

Industry leaders such as Maersk and CMA CGM have made public commitments to decarbonisation and de-risked the technology through early investment

They will look to industry partnerships with asset owners like Tufton to accelerate decarbonisation

Long-term contracts with their high-profile customers make the container lines better credits and enables them to pass on the cost of decarbonisation

MAERSK LINE

CMA CGM

Asset owners

Asset owners can play a vital role by sharing the risk-reward of the transition with the container lines

Asset owners can supply capital and facilitate speedy decarbonisation by sharing the commercial risk of the investment with container lines who will welcome additional zero carbon capable shipping capacity at a defined cost

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Risks distributed across the supply chain

Consumers will bear the higher cost of decarbonisation: Estimated 0-5% higher retail prices on a basket of consumer goods	Retailers ready to commit to long-term contracts at slightly higher cost (partly absorbed) to ensure security of supply with low carbon-footprint	In partnership with asset owners, container lines will bear fuel availability and utilisation risk in longer-term charters	Asset owners will bear residual value risk which is mitigated by long-term charters and zero carbon capability

Q&A and Thank you!

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Getting to Zero Coalition

PRI Principles for Responsible Investment

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