

The economics of shipping decarbonisation

This research adopts a wholly financial perspective to explore how well the shipping industry is balancing environmental goals with economic performance.

A range of economic, financial, and emissions data from 2021-2024 were appraised for “allocation efficiency”. This measure looks at the allocation of resources to maximise output or benefits in monetary terms. Carbon, production output, cost, and financial factor (capital, operation, and fuel) allocation efficiencies of 594 ships and 14 key vessel types were investigated.

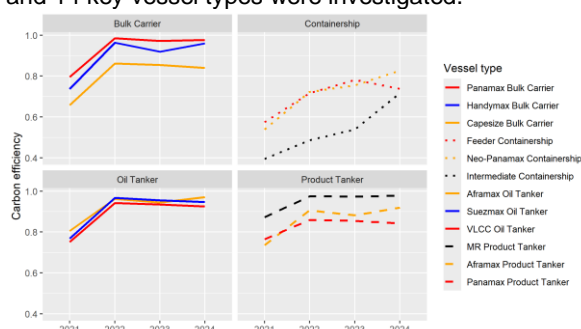


Fig.1: Example carbon efficiency by vessel type & year

NB: VLCC = Very large Crude Carrier; MR = Medium Range

FINDINGS

- The average vessel (2021-2024 data) transported 72 thousand ton-miles of cargo per ton of carbon dioxide (CO₂) emitted earning USD 295.1 per ton of CO₂ emitted.
- Carbon efficiency has increased over time. That is, there is lower CO₂ emissions for the same level of goods transported, capital invested, and earnings.
- It has become more expensive to facilitate the same level of seaborne trade.
- Appraisal of financial factors (capital, operation costs and earnings) indicate that the average vessel has potential to reduce carbon emissions by 10%.
- Larger vessels are overall more carbon efficient in transporting goods while smaller ones are more carbon efficient in generating revenue.
- Technical and operational inefficiencies increased total costs by 7%, and market price changes increased costs by 29% in the period of 2021-2024.
- High interest rates are a concern for green investment in newbuilding vessels.
- Fuel is relatively cheap compared to its contribution to seaborne trade, and up to 38% increase in fuel

price will not severely influence the global supply of shipping services.

POLICY RECOMMENDATIONS

Policy suggestions to account for economic and financial aspects include:

- Introduce stricter regulations to further improve vessel carbon efficiency, such as carbon prices or emission trading schemes.
- The analysis on carbon efficiency and revenue generation finding differences between larger and smaller vessels suggests policy measures might need to differ by vessel type and by size.
- Provide financial incentives to encourage widespread adoption of greener fuels. Consideration needs to be given not only to short term but longer term too to provide the appropriate signals to investors.
- Enhance investors' access to capital via more attractive interest rates for green investments.

RESEARCH PUBLICATION

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