GLOBAL MARITIME FORUM

FRAMING PAPER

Industry action on decarbonisation

What zero-emission shipping needs to break through

The shipping industry's early action on decarbonisation is complementary to the development of policy at the International Maritime Organization (IMO). The last 12 months have seen tangible progress in zero-emission vessel orders, announcements of future fuel production and bunkering initiatives, interest from cargo buyers in green services, and the development of green shipping corridors. There has also been encouraging efforts from national governments that can support industry leadership. Many uncertainties remain, and if these early initiatives are to build the necessary bridge to a future IMO policy framework, industry and governments will have to take more innovative approaches to sharing risks and costs.

A year of progress and continuing uncertainty

Over the past 12 months, shipowners' vessel orders have received considerable attention, with an eye towards their decarbonisation strategies. The news has been difficult to parse, with a continuing increase in orders of dual-fuel and ammonia- and methanol-ready vessels alongside orders of vessels powered by conventional bunker fuel and liquified natural gas (LNG).

Looking into the overall fleet transition, the trend in vessel orders is not following the trajectory required to meet the 2030 ambitions set out in the IMO's revised greenhouse gas strategy. Orders to date suggest that the share of zero-emission-capable and zero-emission-ready vessels in the overall fleet will fall short of an aligned pathway in 2025. While these orders may accelerate, the volume of conventional-fuelled and LNG vessel orders seen in the past year suggests the possibility of stranded assets if IMO targets are to be met.

Concerns about the potential supply of future fuels appear to be a primary factor holding back zero-emission vessel orders. The largest uncertainties relate to e-fuel pathways, namely synthetic fuels based on electrolytic hydrogen, such as e-ammonia, e-methanol, and e-methane. Announcements of projects seeking to produce e-ammonia and e-methanol have been relatively robust, and in the aggregate, these projects appear more than sufficient to supply 5% of shipping fuel by 2030. However, final investment decisions for many projects hinge on securing offtake agreements, reflecting the persistent chicken-and-egg problem that has characterised the early days of the industry's transition. Some developers have also warned of higher costs than expected, in part driven by the post-pandemic spike in interest rates and teething problems in technological performance.

On the infrastructure side, many large ports have accelerated their planning for and development of bunkering capacity for these fuels. Several demonstrations of bunkering for methanol and ammonia have been completed or are underway, and ports have begun exploring the market appetite for these services. Notably, the extensive work undertaken by the Maritime Port Authority of Singapore indicated significant interest on both the supply and demand sides.

There is an expectation that early use of these fuels will be supported in part by a green premium from cargo owners looking to reduce Scope 3 emissions and stimulate the e-fuels market in shipping. In early 2024, the Zero-Emission Maritime Buyers' Alliance (ZEMBA) completed its first tender, through which it aggregated demand from participating cargo owners to purchase low-carbon shipping of containerised

goods. The winning bid for the tender, from Hapag-Lloyd, was an offering based on bio-methane bunkered in Rotterdam for shipping to Asia.[1] The tender served as a demonstration of the demand for green shipping services and the potential to aggregate said demand.

An important enabling tool for cargo owner demand is a book and claim system that allows the environmental credits for green shipping to be separated from the physical delivery of the service by tracking the chain of custody of the fuel and cargo. The past year saw major developments in guidance for credible and robust book and claim-based accounting from the Smart Freight Centre, as well as the piloting of a maritime-specific system by the Maersk Mc-Kinney Møller Center for Zero Carbon Shipping and the Rocky Mountain Institute. A major issue identified through this work has been the need to ensure that voluntary actions enabled by book and claim systems can be shown to be "additional" – that is that they represent action that goes beyond what is required by regulations. A set of guidance on "additionality" related to book and claim approaches is currently under joint development by the Global Maritime Forum and the Maersk Mc-Kinney Møller Center.

One of the breakthrough ideas of the past two years was the development of green shipping corridors as arenas for demonstrating, concentrating, and scaling the supply and use of new fuels. The past year saw interest in green corridors continue to expand, with nine initiatives announced in the first half of 2024, bringing the total to 59 announcements since 2022. Many of these remain in the early stages of partnership development, but some have shown signs of meaningful progress, with feasibility studies completed and progression towards planning for deployment. While progress has been uneven, these corridors are likely to remain essential tools for mobilising first movers in the coming few years, overcoming the chicken-and-egg problem, and delivering on the IMO's ambition of 5% (striving for 10%) zero- and near-zero-emission fuel use by 2030.

Aside from the development of new fuel value chains, another key tool for delivering on the IMO's interim targets will be a rapid uptick in the efficiency of shipping. Some of this will come through technical efficiency measures such as hull coating and wind assistance, but there remains a significant opportunity to reduce fuel use by operating vessels more efficiently. Inefficient sail-fast-then-wait operations have long persisted for multiple reasons, including split incentives embedded in contracts and a lack of data sharing across the value chain.

Eliminating sail-fast-then-wait practices and implementing operational efficiencies are immediate actions that shipowners and operators can take to save money on fuel while improving their vessels' Carbon Intensity Indicator (CII) rating and move the industry closer to the IMO's overall decarbonisation trajectory. There has been significant progress on this front, including the Blue Visby Solution's successful pilots using a new contractual structure that demonstrated the potential to reduce emissions during operations at sea. Extending these proof points to the full journey, including near-port operations, is a crucial remaining challenge.

The way forward

Governments have also begun to revisit the role of international shipping in their climate, energy, and industrial strategies. National policy will be essential in stimulating first-mover action across the value chain and is particularly important in its potential to reduce the fuel cost gap for first movers (see accompanying brief, "Critical window for setting the course to net zero").

Of course, all these first-mover initiatives and national policies will need to be absorbed into a global policy framework adopted by the IMO. One of the many important tasks ahead of negotiators at the IMO is to ensure that mid-term measures continue to incentivize the actions taken by first movers, particularly those higher-risk actions related to e-fuel value chains.

In the interim, several uncertainties remain around the competitiveness of various fuel pathways. In the last year, new questions have emerged about the current and future availability of clean methanol,

1 The ZEMBA initiative had interest in e-fuels bids, and the result may be an indication of the lack of current availability

the safe handling and risks of planet-warming N2O emissions from ammonia combustion, and the costs associated with all zero-emission fuel pathways. Answering these questions must remain the top priority of the industry. Green corridor initiatives, thanks to their participation from the full value chain, will allow learnings to be disseminated rapidly and trialled at scale.

A fundamental goal of green corridors is to enable risk-taking around new fuel pathways, and as such bespoke commercial structures that share risks will be needed – whether these be joint ventures, pooling mechanisms, public-private partnerships, or innovative charterparties and project finance vehicles. Likewise, new approaches will be needed to unlock the potential in operational efficiency, particularly approaches that integrate vessel operations in contracting and data sharing across the full value chain, from commodity owner to terminal operator.

Maritime decarbonisation: A community in action

Recent years have seen a number of players throughout the maritime value chain launch initiatives to advance the industry's decarbonisation goals. In addition to the aggregated demand efforts of ZEMBA, these include leading container customers launching the Cargo Owners for Zero Emission Vessels (co-ZEV) initiative with a commitment to only use zero-emission shipping by 2040 and the First Movers Coalition that leverages its members' collective purchasing power to create demand signals and accelerate the adoption of decarbonisation technologies in shipping and six other hard-to-abate sectors.

As conveners of the Australia-East Asia Iron Ore Green Corridor and as partners of the Singapore-Rotterdam Green & Digital Shipping Corridor, the Global Maritime Forum and the Getting to Zero Coalition have been working for the past 12 months to co-create new solutions that will help accelerate industry action on these routes. Both corridors have developed policy recommendations for national governments and initiated discussions with policymakers, while at the same time elaborating the designs for alternative commercial structures and the aggregation of fuel demand.

Much of the action taken by member companies of the Getting to Zero Coalition occurs outside the scope of green corridor initiatives. For the last two years, the Coalition – in collaboration with UMAS and Race to Zero – has taken a detailed look at the industry's progress towards the breakthrough target of having scalable zero-emission fuels account for 5% of international shipping fuels by 2030. The 2023 report found that while that goal remains within reach, the window of opportunity will soon close and rapid action is required from the industry. The newest edition of this report is scheduled to be released at the COP29 international climate negotiations in November.

In 2024, the Global Maritime Forum initiated the first attempt to evaluate the actions being taken by the Coalition's members on the aggregate, to determine how much the Coalition is contributing to the sector's decarbonisation goals, to identify opportunities to share best practices and to find areas where the Coalition can do more. The first report on the Getting to Zero Coalition's Action Framework will be published in early 2025, and it is hoped that the report can inspire the industry to do more – and policymakers to better understand how much more progress will be possible with the right policies in place.

Key questions

- What will unlock the acceleration of zero-emission vessel orders and zero-emission shipping services?
- How can shipowners, charterers, and third parties such as ports and governments help to stimulate the supply of e-fuels for shipping?
- What activities should green corridor participants undertake to share risks and costs on these routes?

- How can the industry best convey what it can and can't do to enable effective policymaking?
- What new thinking can shipping bring on board from the successes and setbacks of other hard-to-abate sectors?

Further reading

- **Aggregating demand for zero-emission fuels** (Global Maritime Forum, 2024)
- **Oceans of opportunity: Supplying green methanol and ammonia at ports** (Global Maritime Forum, 2024)
- **Annual progress report on green shipping corridors** (Global Maritime Forum, 2023)
- **Low-carbon industrial hubs: Driving deep decarbonisation for industry** (Deloitte, 2022)
- **The Maritime Resilience Breakthroughs** (UN High-Level Climate Champions, 2022)
- **Mapping of zero-emission pilots and demonstration projects, fifth edition** (Global Maritime Forum, 2024)
- **Implications of the Revised IMO GHG Strategy for national, regional and corporate action** (UMAS, 2023)
- **Fuelling the Future of Shipping: Key Barriers to Scaling Zero-Emission Fuel Supply** (World Economic Forum, 2023)