LP 14/2025 MEPC 83 Framework: Strategic Choices and Development Trends for the Shipping Industry

The IMO MEPC 83 addressed a variety of issues concerning the protection of the marine environment from the impacts of shipping activities. Based on the key outcomes of MEPC 83, this article aims to analyse the current situation and challenges confronting the industry, while also examining the critical decisions that shipping enterprises must navigate at this pivotal stage of transformation.

I. MEPC 83 Mid-term GHG Measures

1. Highlights

- Fuel Intensity and Pricing Mechanism

The amendments to MARPOL Annex VI approved at the MEPC 83 meeting provided a foundational framework for the regulatory structure based on GHG Fuel Intensity (GFI), and the compliance is assessed by comparing the Direct Compliance Targets (DCT) and Base Targets (BT). Vessels failing to meet these targets will have to take actions to receive certification. This has undoubtedly placed constraints on the shipping industry towards green transformation.

- Update of CII Reduction Factors

The meeting adopted amendments to update the EEDI and CII reduction factors through to 2030. The newly defined CII reduction factors have prompted more investments on energy efficiency to meet the increasingly stringent regulatory requirements.

2. Significance for the Industry

The IMO framework has pointed a direction for decarbonization of the shipping industry, marking its official entry into a new era centred on emission reduction. It acts as a powerful driving force directly affecting ship operating costs and technological upgrading. The entire supply chain is likely to experience a wave of transformations, including fuel suppliers, shipyards, and ports, all in need of adaptions and adjustments in their strategies to keep up with the trend.

II. Current Situation and Challenges

1. Current Situation

Some progress has been made with large shipping enterprises taking proactive measures, for instance, Maersk has ordered methanol dual-fuel container ships, and COSCO Shipping is also making strides in its methanol-powered fleets while exploring new emission reduction technologies. Some ports are also strengthening infrastructure construction to support ships in using clean energy. However, most ships still rely on traditional fossil fuels and infrastructure is lagging behind. There is still a long way to go towards the large-scale emission reduction goals.

2. Challenges

- Fuel Supply

The supply of clean energy fuels represents a major challenge. Currently, the production of green methanol, green ammonia, green hydrogen, and other fuels is severely insufficient, far from meeting the demands of the shipping industry. Moreover, the production relies heavily on substantial renewable energy and water resources, the sustainability of which requires further evaluation. The transportation and storage of these fuels require specific infrastructure and technologies, which would cost significant money and time.

- Technology gap

Although new emission reduction technologies hold great potential, there are numerous challenges in practice. Carbon capture and storage (CCS) equipment are large in size, high in energy consumption and costs, limiting large-scale use. For ammonia-fueled engines, the storage, transportation, and combustion of ammonia are still challenging. Hydrogen fuel cells need higher energy density and stability, with further cost reductions. All these challenges require further efforts in research and development.

- Cost Pressures

Shipping enterprises will need to invest heavily in ships, equipment, and fuels to achieve emission reduction goals. This can be especially difficult for small enterprises, placing them at an increasing disadvantage in market competition. Furthermore, the research, development, testing, and promotion of new technologies and fuels all require substantial financial support, creating pressures on the entire industry.

- Uncertainty of Regulations

Although MEPC 83 has established a framework of emission reduction, details of implementation are still being continuously improved and amended, creating uncertainty for shipping enterprises in strategy planning and decision-making process. As different policies and standards may be introduced in different countries and regions, shipping enterprises need to cope with these differences to ensure compliance.

III. Choices for Shipping Enterprises

- Fuel Selection

Some enterprises have opted for relatively mature transitional fuels such as LNG, which can reduce carbon emissions to a certain extent and is highly compatible with current engines. LNG dual-fuel engines are hence a choice for many enterprises when ordering newbuilds. Some other enterprises have demonstrated a more long-term strategic vision, preferring clean energy fuels with zero-emission potential, such as green methanol, green ammonia, and green hydrogen. Despite above-mentioned challenges, these fuels are undoubtedly crucial in the long run. Maersk, for example, has firmly advocated the use of green methanol, who not only ordered multiple methanol dual-fuel container ships but also invested in green methanol production, setting a benchmark for the industry.

- Technology Upgrade

Some enterprises have chosen to upgrade technology to improve energy efficiency and to reduce carbon emissions. Measures can cover various aspects, such as improving hull design to reduce navigation resistance, improving power systems to enhance energy conversion efficiency, installing energy-saving equipment to reduce consumption, and exploring ways to optimize ship operation by leveraging big data and artificial intelligence.

- Cooperation and Synergy

Some shipping enterprises have strengthened cooperation and worked together to overcome difficulties. By sharing technologies, resources, and experiences, enterprises can effectively reduce costs and enhance effectiveness. Some have chosen to make joint investments on clean fuel production and supply facilities, and others have jointly carried out research and development of innovative technologies. Such cooperation not only enhances enterprise competitiveness but also injects strong impetus into the green transformation of the industry.

IV. Decarbonization Strategies of Leading Shipping Enterprises

1. Maersk's Decarbonization Initiatives

Maersk has decisively selected green methanol as the alternative fuel and ordered multiple dual-fuel container ships, which once put into operation, will drive Maersk closer towards its ambition to achieve net zero by 2040. Furthermore, Maersk has heavily invested in green methanol production, collaborating with suppliers to provide a stable source and leading to enhance sustainability of global supply chains.

In line with Maersk's commitment to decarbonization, Maersk fleet will be dual-fuel with the intent to operate them on low emissions fuel. To ensure the long-term competitiveness of the fleet and its ability to deliver on the decarbonization goals, Maersk has elected a mix of methanol and liquified gas dual-fuel propulsion systems. By diversifying its fleet and fuel options, it will gain flexibility, knowledge and experience to cater to a future with multiple fuel paths.

In 2024, Maersk announced the placement of orders and chartered contracts of 800,000 TEU dual-fuel vessels, which ensures a steady flow of needed capacity for its network for 2026-2030 while building a competitive toolkit. To reach its mid-term targets, Maersk has anticipated a need for between 10-20% green fuels by 2030, which de-risks its plan compared to the 25% green fuels expectation earlier.

Furthermore, Maersk has been collaborating with research institutions and enterprises to study and test innovative CCS technology and its application on ships. It has also actively engaged with other shipping companies, fuel suppliers, and ports to share resources, forming a powerful synergy to jointly promote the industry towards green and sustainable development.

2. CMA CGM's Diversified Energy Mix

CMA CGM is convinced that the transition of the shipping sector will be driven by multiple energy solutions with methanol and LNG both reckoned as alternatives. While it has e-methane ready vessels running on LNG, it has ordered more than 40 containerships that are capable of using bio-methanol/ e-methanol.

According to a report commissioned by CMA CGM from the consultancy Energie Nouvelles, bio-methanol can reduce greenhouse gas emissions from ships by up to 80%, while e-methanol can reduce them by 60-80%. Against this backdrop, on March 20, 2025, CMA CGM signed a Green Methanol Long Term Supply Cooperation Agreement with Shanghai International Port Group (SIPG) and Shanghai Electric Group. Under this agreement, green methanol will be transported via land-sea combined logistics from the Taonan production base to Shanghai Port for CMA CGM in the medium to long term.

3. MOL's Shape Tomorrow Strategy

MOL is aligning its strategy toward a multifuel future, identifying LNG, methanol and biodiesel as short-term alternatives, while positioning ammonia and hydrogen as long-term solutions to achieve net-zero by 2050. The company is actively participating in research and development for ammonia and hydrogen fuels, collaborating with global partners to conduct tests and demonstration on ammonia-fueled engines, supporting sustainable decarbonisation across the shipping industry.

V. Future Outlook

Technological innovation will drive major breakthroughs in emissions reduction. Emerging technologies like carbon capture, hydrogen fuel cells, and ammonia engines are expected to achieve qualitative leaps, offering more effective solutions. Meanwhile, intelligent shipping technologies will deeply empower operational management, accelerating the industry's shift toward green development through digitalization.

Clean energy fuels will become mainstream as production capacity expands, and costs decline. Near-zero or zero-emission options such as green methanol, ammonia, and hydrogen will gain scale across the sector. Fuel suppliers are also working to optimize the network and enhance fuel supply stability.

Industry collaboration will grow stronger in addressing emissions challenges. Shipping companies, fuel suppliers, shipyards, ports, and other stakeholders will form closer partnerships to drive collective action.

Policy support will continue to strengthen globally. Governments will introduce more incentives and regulatory measures, using fiscal subsidies and tax breaks to encourage adoption of new technologies and clean fuels. Stricter supervision of carbon emissions with significantly higher penalties for violations is expected to push enterprises to take responsibilities and foster green development.

VI. Conclusion

The net-zero emission framework draft approved at IMO MEPC 83 marks a milestone for both sustainable development and multilateral climate governance. This landmark document introduces the shipping sector's first legally binding net-zero targets, alongside clear technical pathways and market-based economic measures. While MEPC 83's framework provides definitive direction for global shipping decarbonization, implementation presents significant industry-wide challenges. Shipping enterprises must make strategic choices aligned with their operational realities, while all stakeholders should strengthen collaborative efforts to drive progress.

For more information, please contact Managers of the Association.