





Maritime Fuel Value Chain Demystified

Import Refining Import, Storage & Blending **Crude Oil Imported Imported Fuel Oil Blending Terminals** Components **Fuel Oil** Crude Marine Components Oil **Fuel Oil** Port Authority Local HSE Port Authority **Entities** Local HSE Inspection Port State Control Inspection **Customs** customs **Operational** Sampling and Sampling and Testing Quality Certificate Quantity Measurement

- **Tasks**
- **Testing**
- Quantity Measurement
- Oil Accounting
- **Audits**
- Documentation
- Sampling and **Testing**

- Oil Accounting
- Documentation
- Safety Checklist





Bunker Loading

Bunker Delivery

90% of the world's cargo is transported by sea



- Harbor Master
- Port State Control **Customs**
- Sampling and **Testing**
- Quantity **Measurement**
- Oil Accounting
- Documentation
- ADN



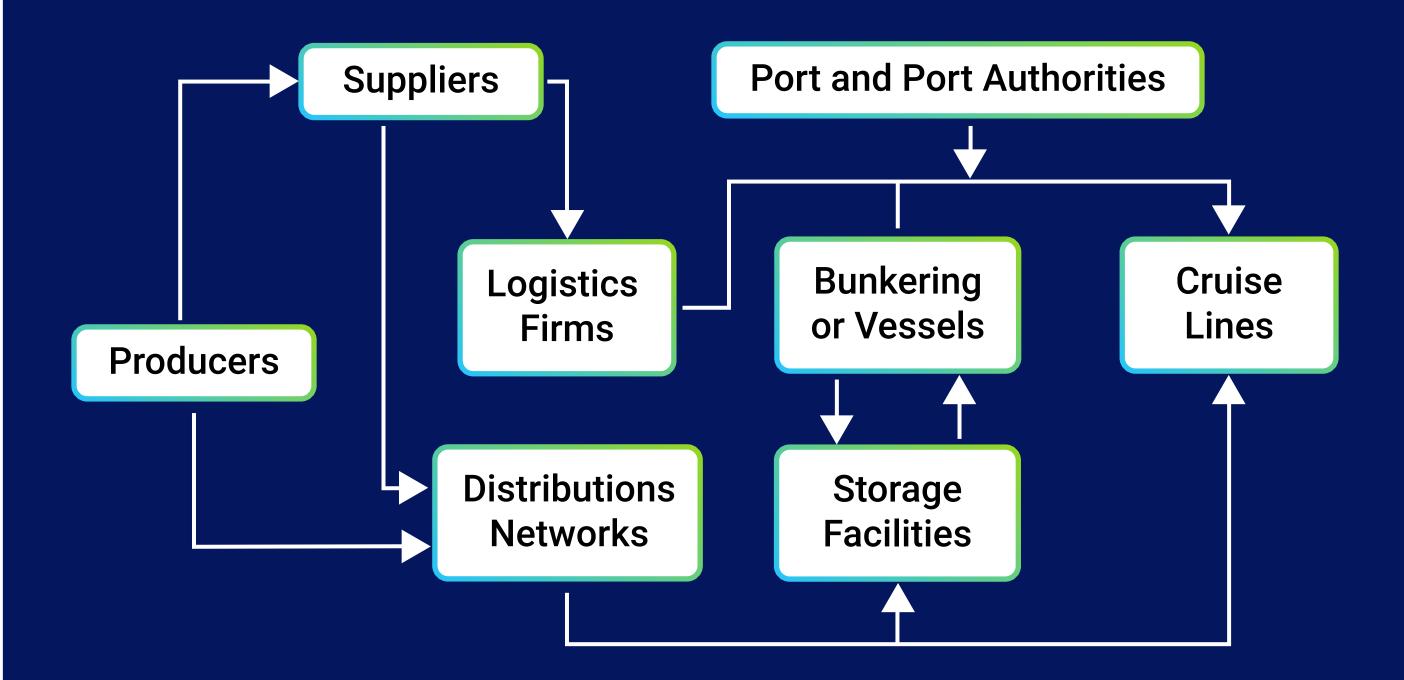
- Harbor Master
- Port State Control
- Sampling and **Testing**
- Quantity Measurement
- Oil Accounting
- Documentation
- Prenotification
- Bunker Checklist
- IMO Safety **Checklist**







Redefining Fuel Supply Chain Efficiency through Business Models



leB Insights

Key players in the renewable maritime fuel industry should establish long-term contracts with suppliers to streamline operations & enhance efficiency, ensuring a reliable and sustainable fuel supply chain.





Current Status & Future Expectations

Regions

North America and Europe significantly contributed to the Renewable Maritime Fuel market, driven by technological advancements, R&D initiatives, regulations, and strong consumer demand.

Strategic partnerships between end-users and players ready for long-term contracts in renewable fuels can propel the renewable maritime fuel sector, especially in Europe, driven by regulatory incentives and resource availability.

Production capacities

Renewable maritime fuel production, including methanol, is limited, creating a supply-demand gap and offering opportunities for investment and scaling to meet growing demand and sustainability goals.

By 2050, the maritime industry will shift to renewable fuels like renewable methanol, e-LNG, synthetic methane, and hydrogen, driven by emissions regulations and sustainability goals, with advancements in technology and infrastructure making zero-emission vessels mainstream.





Pricing Scenario

Renewable maritime fuel prices are higher due to low production and limited demand, driven by uneven global focus on sustainability, with regions like Europe and North America leading the effort.

Fuel Adoption

While renewable fuels are gaining ground in maritime, limited production and infrastructure present ongoing challenges.

The maritime industry will be transiting towards sustainability with renewable fuels like methanol, e-LNG, synthetic methane, and hydrogen. Stricter emissions regulations, along with technological and infrastructure advancements, will lower costs, making these fuels more accessible and competitive.

Driven by emissions regulations and tech improvements, alternative fuels will see broad adoption. Zero-emission vessels powered by renewables will soon be standard, leading the maritime sector toward sustainability.





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