Ship bunkering – future threats and opportunities

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INTERNATIONAL BUNKER INDUSTRY ASSOCIATION

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Bunkering of ships

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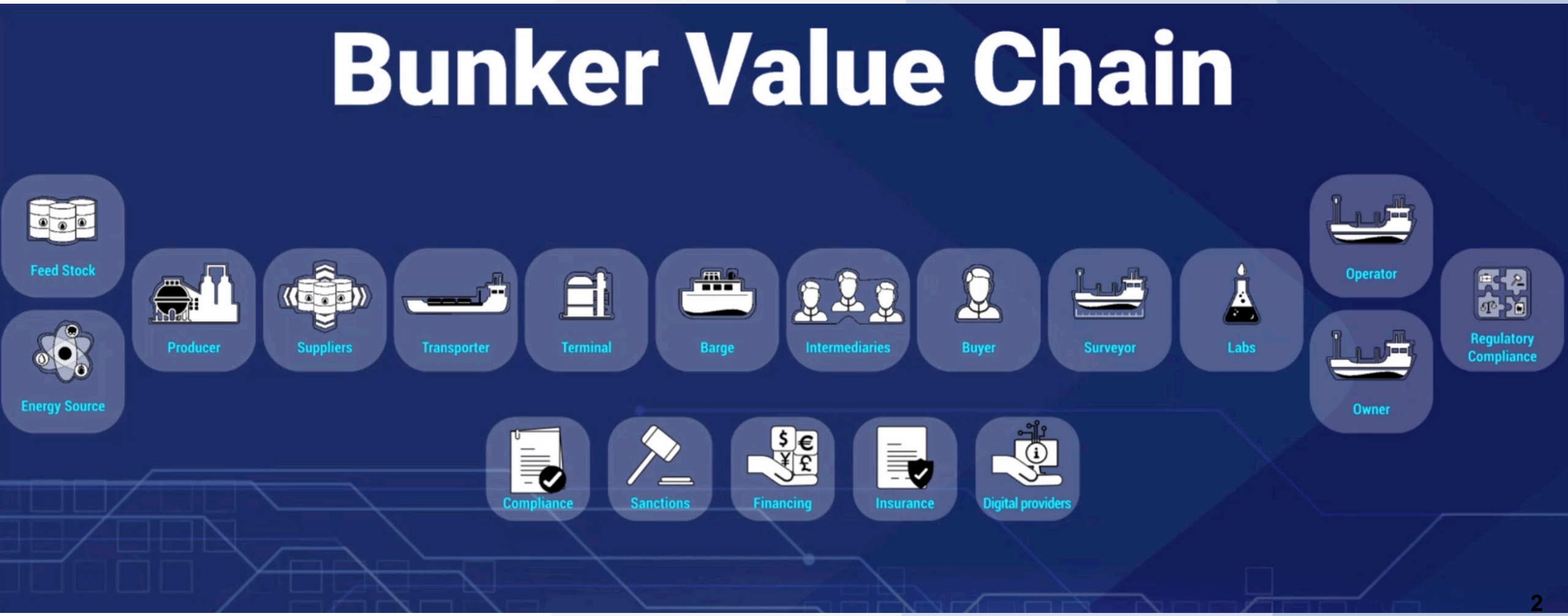


IBIA represents the bunker sector at IMO

- Consultative status at IMO (active engagement in MSC, MEPC, etc.)
- IBIA documents submitted to recent IMO meetings:
  - MEPC 82 (CII of bunker vessels, emission factors for EGCS)
  - ESPH 30 (carriage of biofuels by bunker vessels)
- IBIA has a focus on standards and training: globally recognised courses and works with regulators and other bodies to develop e.g. Singapore MPA for methanol bunkering
- IBIA Working Groups
  - Technical – fuel standards and quality
  - Future Fuels e.g. developed alternative fuels FAQs for membership and is currently updating
  - Digitalisation – eBDN, considering input to FAL agenda item on “Development of a comprehensive strategy on maritime digitalization” underpinning ‘Single Maritime Window’
  - Mass Flow Metering (MFM) & Bunker licensing

2023 Strategy on Reduction of GHG emission from ships ('IMO Net Zero Framework')

- net zero 'by or around, ie., close to, 2050'
- "to reduce CO_2 emissions per transport work, as an average across international shipping, by at least 40% by 2030, compared to 2008" (carbon intensity of shipping to decline)
- "uptake of zero or near-zero GHG emission technologies, fuels and/or energy sources to represent at least 5%, striving for 10%, of the energy used by international shipping by 2030"
- "should take into account the well-to-wake GHG emissions of marine fuels"
  - MEPC.391(81) Life-cycle GHG intensity of marine fuels
  - CO_{2e} ? WtW or TtW with categorisation of "energy" consumed by ship on WtT and/or sustainability criteria (Proof of Sustainability)

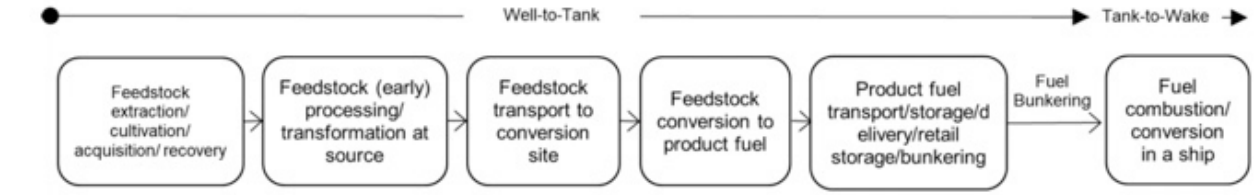


Figure 1: Generic well-to-wake supply chain

EU Fit for 55 – impact on marine fuel

- EU Emission Trading Scheme (EU-ETS) – emissions calculated on a TTW basis
- Fuel EU Maritime – GHG intensity of marine fuel on a WTW basis
- Renewable Energy Directive (RED) III – implications for production and supply of energy with a focus on Renewable Fuels of Non-Biological Origin (RFNBO) i.e., synthetic fuels/e-fuels
- Alternative Fuels Infrastructure Directive
  - infrastructure in EU ports to supply LNG and shore-side electricity
  - national policy frameworks: hydrogen, ammonia, methanol and electricity

Impact of ECA on marine fuel used in Mediterranean Sea

From 1 May 2025 maximum sulphur content of fuel oil used or carried for use on board a ship is 0.10% m/m (currently 0.50%)

- Huge increase in demand for 0.10% bunkers – MGO or ULSFO – significant cross Mediterranean trade which needs to comply with limit
- Immediate drop in 0.5% demand – loss of cross Med demand and some Med transit volumes
- Small rise in HSFO/EGCS demand (assumes owners likely to reposition of vessels)
- Opportunity for alternative fuel supplies to develop
  - Biofuels and LNG become immediate compliant fuels (also compliant with FuelEU)
  - But challenged by lack of infrastructure: storage shortage and appropriate bunker vessels

(source: 2050 Marine Energy, IBIA Convention, Athens, 6 November 2024)

EU emissions policy impacting fuels for shipping

Draghi Report, *The future of European competitiveness*, September 2024

- Hydrogen production and imports will need to play a specific role in decarbonising hard-to-abate sectors, such as transport, chemicals and metal industries, as well as to enable industry to source hydrogen from renewable-rich regions.

- The investment needs to decarbonise the most internationally exposed transport sectors (aviation and maritime) lie in the region of EUR 61 billion a year (for the aviation sector) and EUR 39 billion each year (for the international maritime sector) from 2031 to 2050…..there is a risk of business diversion from transport hubs in the EU to those in the EU's neighbourhood, unless effective solutions for ensuring a level playing field are found at the international level (in the context of the International Maritime Organization (IMO) and in the International Civil Aviation Organization (ICAO)).

- Sustainable renewable and low-carbon fuels are essential for the decarbonisation of aviation and maritime transport in the medium term

Possible opportunities

- Design, construction and retrofitting of green ships
- Production and supply of green fuels
  - “the green hydrogen molecule” from green sustainable energy
- Development and deployment of ‘net-zero’ carbon technologies e.g., onboard carbon capture and storage
- Innovation in energy sources for ships e.g. solar, wind, fuel cells
- Digitalization
- Services to support all the above e.g. sustainable marine fuel verification and certification
- Ship recycling

Possible threats

Regulatory

- Failure to develop global regulations to provide a credible path to ‘net-zero’ will lead to a patchwork of regional and national regulations for shipping presenting barriers to shipping services and therefore potentially increasing cost of trade
- Development of global regulations that cannot be implemented uniformly and effective i.e., leading to uneven enforcement and so distortion of the shipping market
- Further ECA’s and extension of MEDECA to NOx & PM?

Business

- Companies trying to develop their business making the wrong investment decisions
- For investors: Stranded assets either current tonnage or new tonnage that is found not to be compliant in the near future
- Lack of global availability and cost of green marine fuels and competition from other sectors
- Producers of fuels and technologies – when will the demand come? When shall I start to produce the fuel? Lead time for provision?

Opportunity – production and supply of green marine fuels

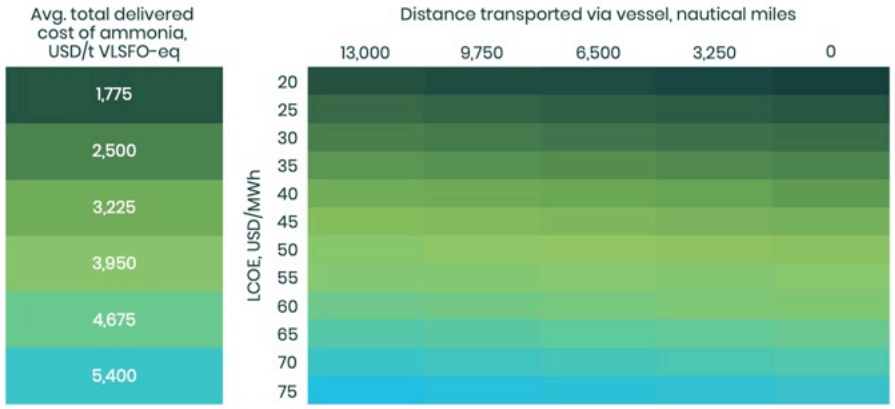
Recommended actions ports and the bunkering ecosystem should take to seize their green bunkering opportunity especially relevant to each archetype

	Importing Incumbents	Producing Incumbents	Future Exporters	Bespoke Players
Establish partnerships with low-cost regions to earmark low-cost fuel volumes	■			■
Participate in **hydrogen import/ export corridors**	■			
Coordinate green methanol and ammonia bunkering standards with other ports	■	■		
Engage first mover customers within shipping to activate green methanol and ammonia fuel demand	■	■	■	■
Set up **export routes** for the supply of green methanol and ammonia to other ports to scale infrastructure and production		■	■	
Consider focusing efforts on **establishing bunkering for one zero-emission fuel** in the near-term			■	■
Implement **incentives**, such as discounted harbor dues and preferential berthing **for zero-emission ships**			■	■
Consider setting a **target of 10% zero-emission fuel sales** by 2030			■	■
Explore the availability of **capital grants** or **preferential loans for methanol and ammonia bunkering infrastructure**			■	■
Explore **collaborative offtake opportunities**			■	■

Source: Zero-Emission Shipping Mission (2024) Oceans of opportunity: Supplying green methanol and ammonia at ports. Rocky Mountain Institute & Global Maritime Forum

The cost of renewables impacts the total delivered cost of green fuel more than the distance fuel is transported

Relative impact on delivered cost of e-ammonia of LCOE (y-axis) compared to seaborne transport (x-axis)
USD per metric ton VLSFO equivalent



Source: RMI analysis.

The low cost of transporting green methanol and ammonia, which are produced from green hydrogen, will lead to extensive trade linking low-cost production regions to key ports. Policy support for green shipping fuels has the potential to significantly impact a country or region's position in this burgeoning hydrogen economy.

Increasing complexity in the bunker fuel chain is bringing increased risk

- Multi-fuel future: Hydrocarbons (HFO, MGO, LNG), biofuels, methanol (ammonia, hydrogen)
  - For bunkering new ship tonnage required to supply new fuels and effectively manage risks
  - Storage of multiple fuels - investment in port infrastructure to supply and store new fuels but as they have a lower energy density likely to mean more storage required
  - Safety & training implications – risks need to be identified and managed for both ship & shore
- **But**: Green hydrogen (e-fuels) is the biggest bottleneck to 'net-zero' goal for international shipping
- Increased risk will bring both threats and opportunities – however, uncertainty remains and investments will only follow when a business case can be made which requires regulation at the global level

Thank you.

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