ZERO-EMISSION SHIPPING MISSION

Zero-Emission Shipping Mission

IEA workshop
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Public-Private International Partnership

ZERO-EMISSION SHIPPING MISSION

Co-leads

Denmark
Ministry of Industry, Business and Financial Affairs, Ministry of Climate, Energy and Utilities

Norway
Ministry of Climate and Environment

The United States
U.S. Department of Energy

Global Maritime Forum

GLOBAL MARITIME FORUM

Mærsk Mc-Kinney Møller Center for Zero Carbon Shipping

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Core Mission Members

The United Kingdom
Department for Transport

Morocco
Ministry of Energy Transition & Sustainable Development

India
Ministry of Science and Technology

Singapore
Maritime and Ports Authority

Australia
Ministry for Climate Change and Energy

Support Mission Members

France
Ministry of the Sea

Ghana
Ghana Maritime Authority

South Korea
Ministry of Trade, Industry and Energy

European Commission
Directorate-General for Research and Innovation

Canada
Transport Canada

Germany
Federal Ministry for Economics and Climate Action

2030-goals

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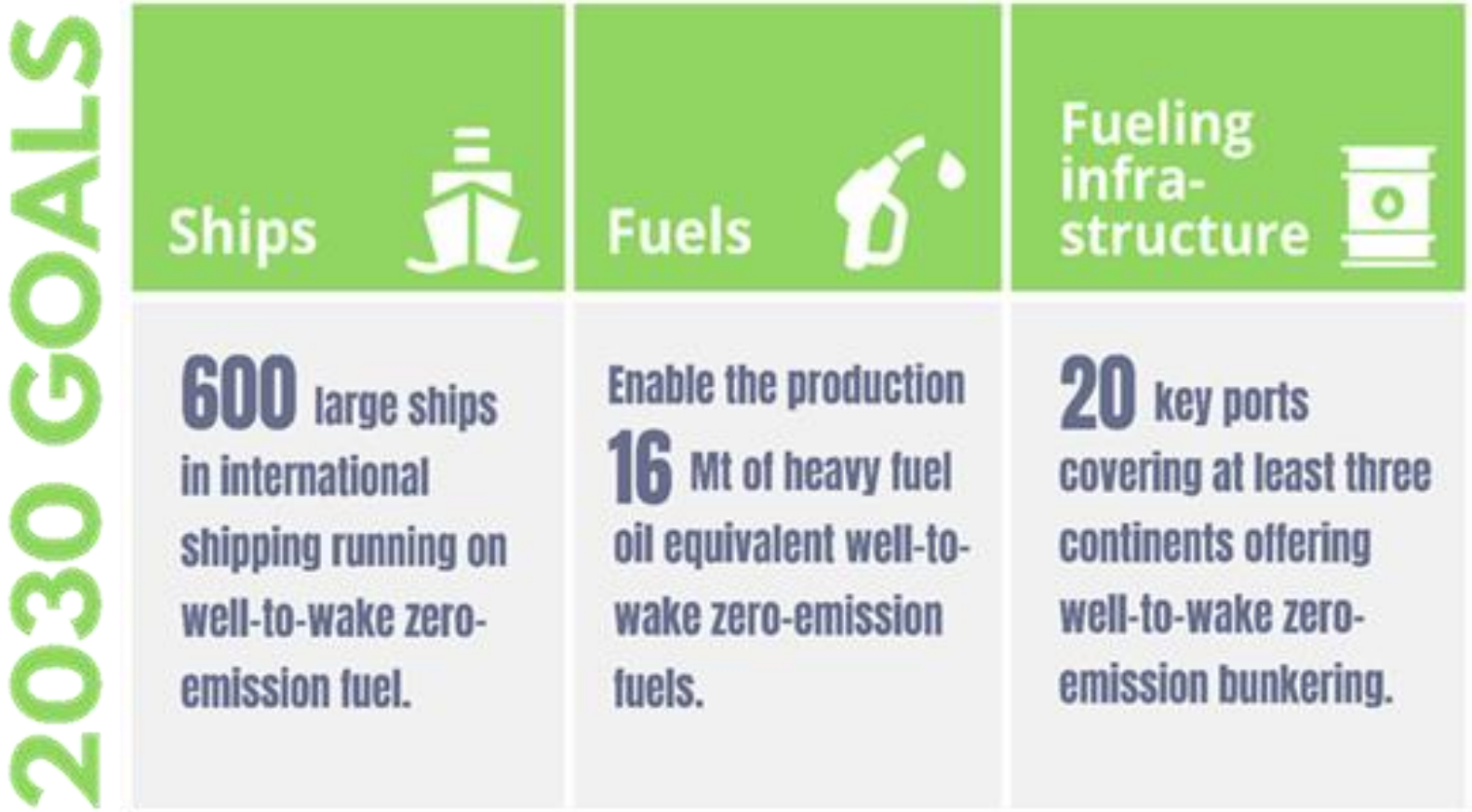

Focus Fuel Definitions

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- **Green methanol**: E- and bio-methanol
- **Green ammonia**: E-ammonia
- **Green hydrogen:** E-hydrogen
- **Advanced biofuels**: Waste, residue, and algal feedstock-based biofuels

Current Industry Progress

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Some Key Points:

- Over 340 zero-emission pilot projects in 2024; methanol nearing commercial use
- 60+ green shipping corridor initiatives – but only 6 near implementation.
- 5% zero-emission fuel (ZEF) by 2030 goal off track; demand remains limited.
- Regulatory progress (e.g., MEPC 83, EU ETS), but adoption and industry impact still lagging.
- Shift from pilot to scaling phase now critical across fuels, infrastructure, and technology.

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Key Industry Gaps

- **Fuel Cost Gap:** SZEFs remain expensive without strong incentives.
- **Weak Demand Signals:** Dual-fuel vessel orders cover only ~25% of 2030 needs.
- **Policy Uncertainty:** Mid-term IMO measures still under review; fuels not yet standardized
- **Financing Constraints:** Landside infrastructure needs $1.6T by 2050; funding is scarce
- **Unequal Progress:** Regional disparities.

ZESM Strategic Priorities 2025–2030

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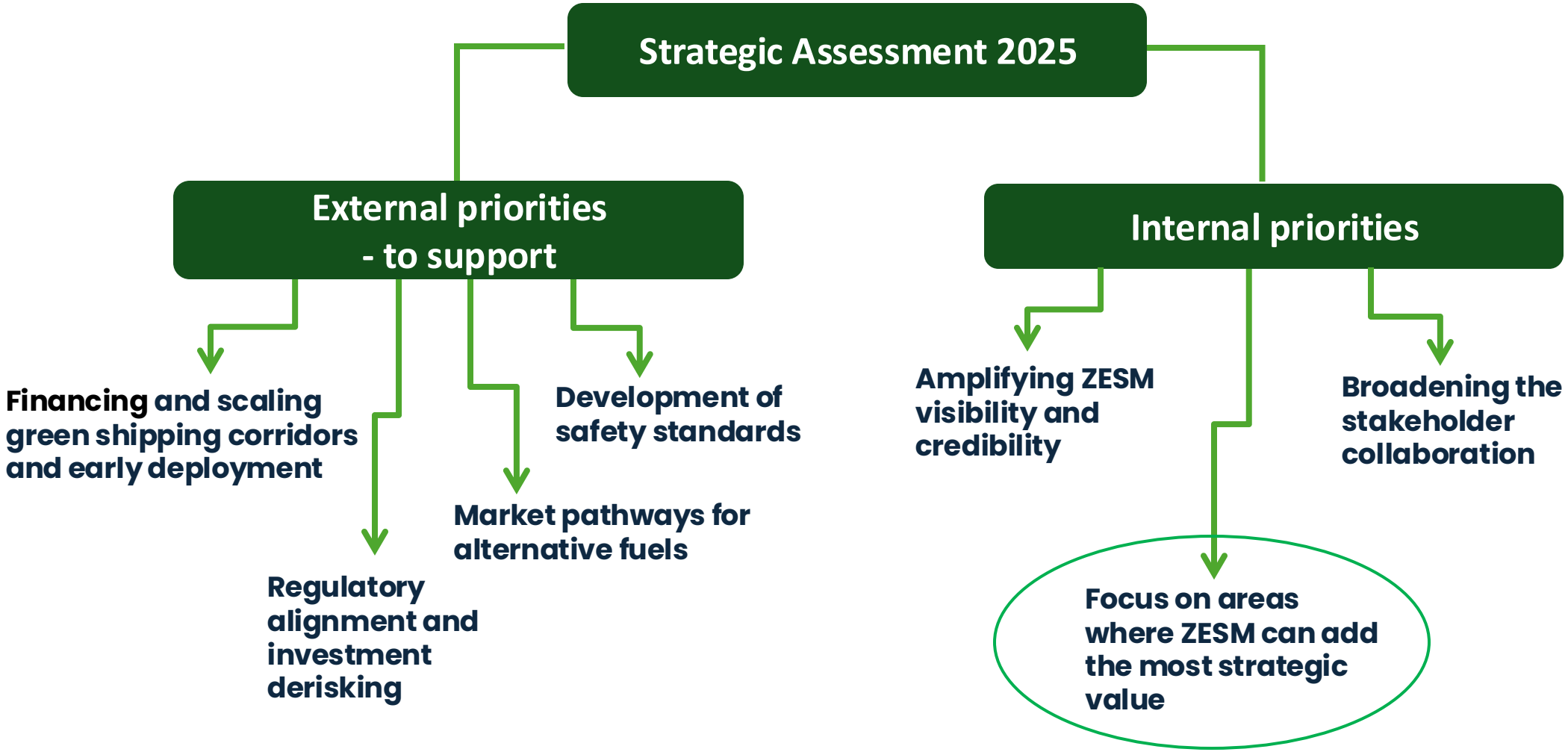

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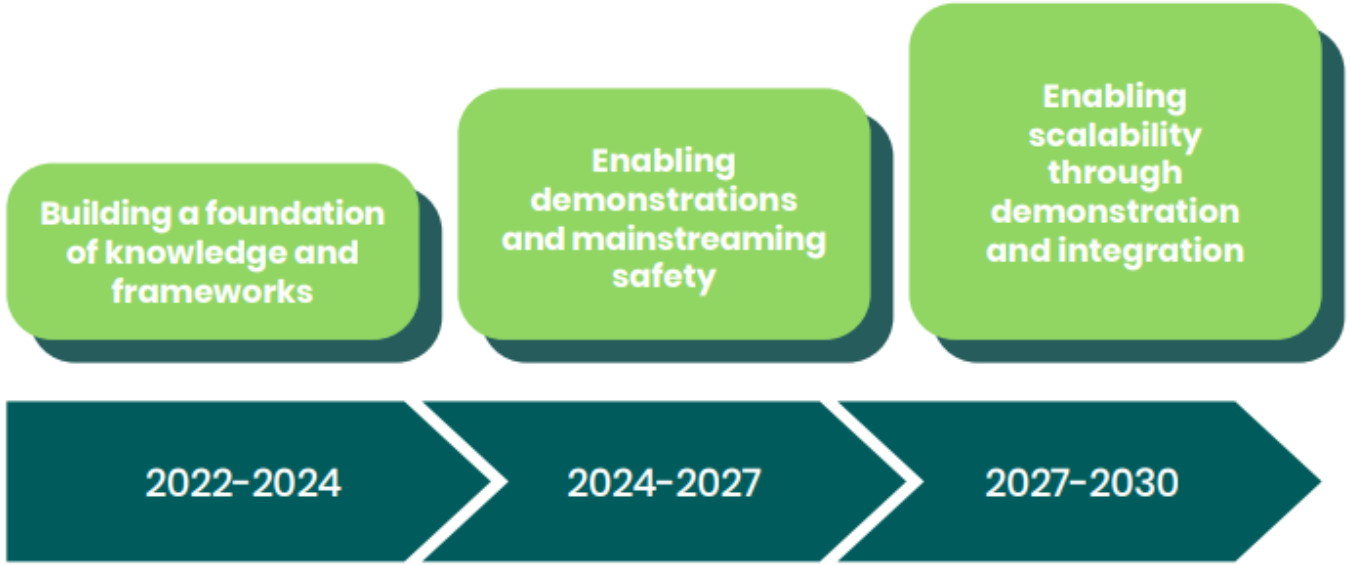
ZESM Action Plan

- Sets an ambition to support dialogues across Mission members & industry stakeholders.
- Identifies key agents for change to help deliver on the Mission's 2030 goals.
- The actions in the Action Plan were identified through extensive analysis and data collection from industry.
- 43 were prioritized by the Mission with timescales between 2022 and 2030.



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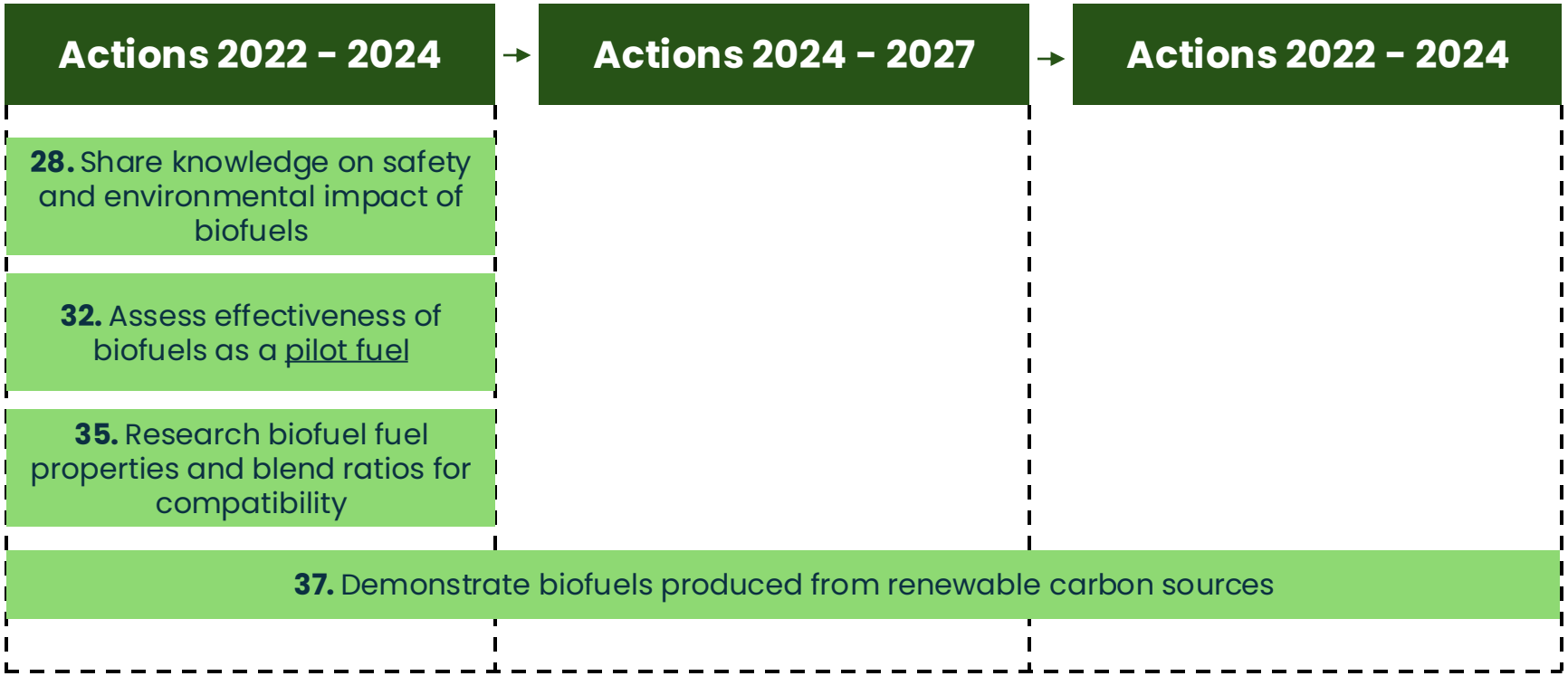
Zero Emission Shipping Mission Action Plan

Prioritized Actions for the Mission to Support Development of Advanced Marine Biofuels



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Zero Emission Shipping Mission Action Plan Appendix

Non-prioritized Actions of Relevance to the Mission and Marine Biofuel Development

Cross-Pillar Actions for Marine Biofuel Applications

2022 - 2024

D.28. Facilitate a dialogue with engine producers, share knowledge on approval procedures for the different kinds of biofuels to secure guidance and investment certainty for industry actors, and mitigate commercial losses

D.29. Collect and share knowledge as well as promote further research into testing and assessment of the implications of increased fuel tanks size in regards to methane only (not applicable to other biofuels)

D.35. Assess the seasonality in feedstocks and how it affects fuel availability, particularly with biomethanol and biofuels

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Non-prioritized Actions of Relevance to the Mission and Marine Biofuel Development

Cross-Pillar Actions for Marine Biofuel Applications

2024 - 2027

D.26. Facilitate and promote further research and development of net-zero pilot fuels (such as biofuels) to enable true net-zero emissions

D.50. Establishment of a clear global methodology for assessment of biomass availability and biofuel carbon intensity measure

D.64. Further research and testing into a broader range of biofuel feedstocks, including a shift from edible feedstocks to non-edible feedstocks, also the focus of the production being able to handle various feeds with various contents of sulfur, chloride etc.

D.72. Innovation and demonstration with the aims of maturing and scaling up of biofuel feedstocks and production facilities.

Biofuels for shipping

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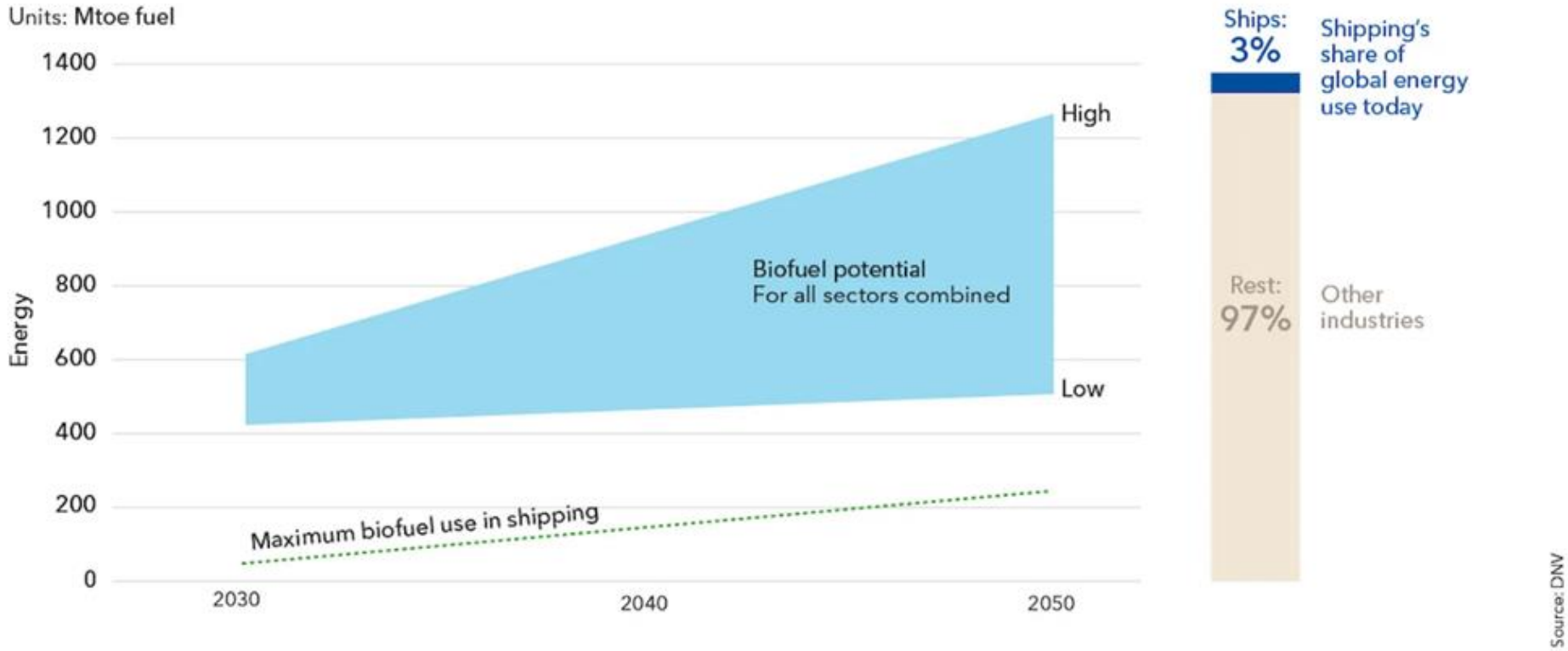
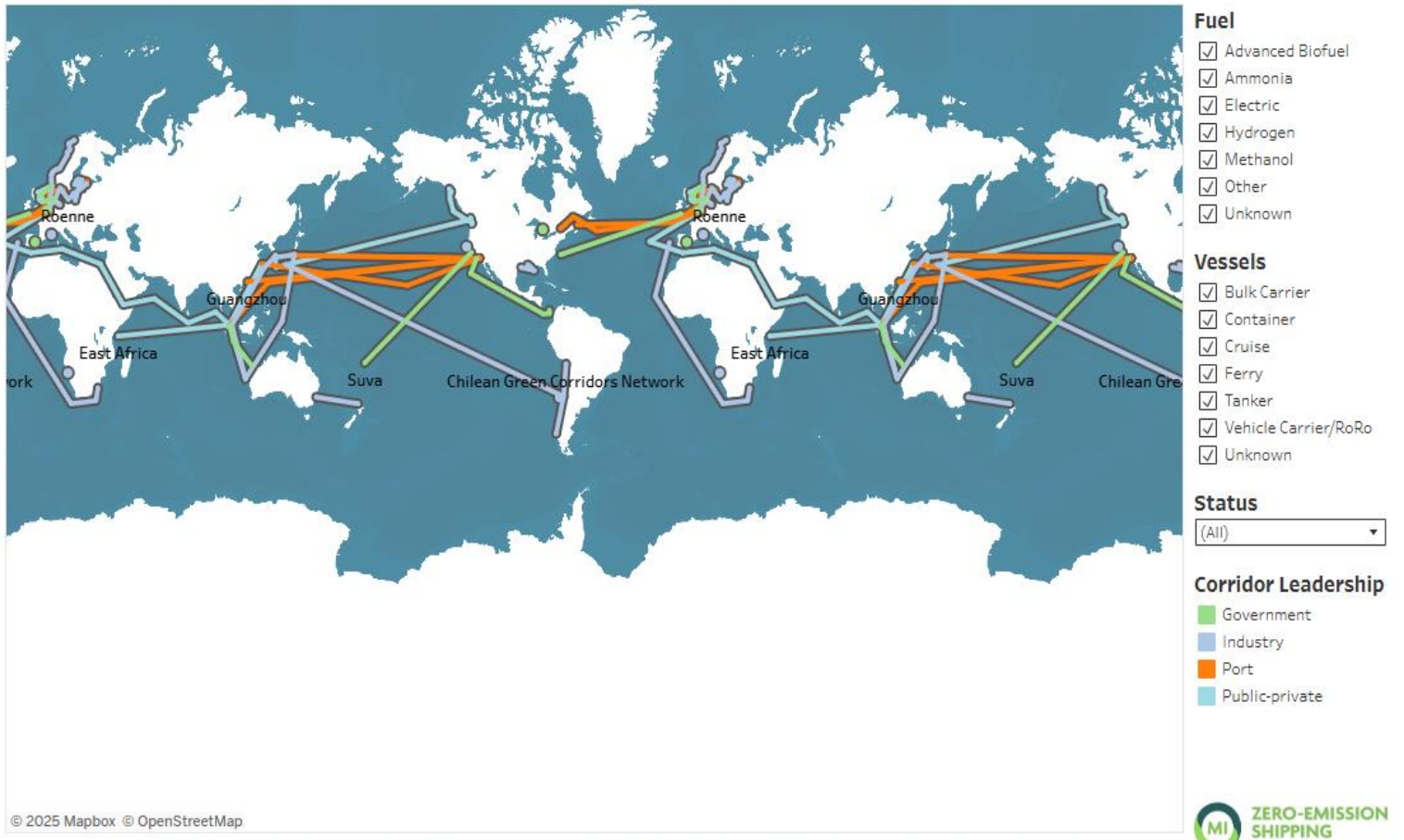
Potential of global supply for sustainable biofuel compared to maximum simulated demand from shipping 2030 - 2050 (left), and shipping's share of global energy use today (right).



Source: https://www.dnv.com/expert-story/maritime-impact/Exploring-the-potential-of-biofuels-in-shipping/

Green Shipping Corridor HUB



Preliminary Net-Zero Roadmap for Brazil-Norway Corridor

The Research Council of Norway

Decarbonized Corridor → **Green Corridor**

Immediate to Short-Term

- Develop and identify viable conditions for use of «drop in» biofuels (**FAME B24 – B30, HVO**) in line with bulk stakeholders' current price premium threshold and immediate compliance strategies.
- Determining and resolve initial barriers for operational value chain.
- Scrubber- and efficiency retrofits on existing fleets.

Short to Medium-Term

- Invest in **LNG-ready vessels** as market matures with transition to **bio-LNG**.
- Collaborate on bio-LNG supply chain development in transatlantic key ports assessed by Project.
- Explore alternative hybrid solutions and fuel flexibility.
- Leveraging connectivity of **2nd gen ethanol** and **biomethanol/e-methanol** uptake value chains.

Medium to Long-Term

- Accelerated **green methanol** (and **green ammonia**) uptake in Brazil-Europe maritime trade in bulk segment in line with regulatory demand drivers and facilitated fleet renewals.
- Enable early adoption of upscaled and market accessible zero-emission segments between Brazil and Europe by providing mechanisms and frameworks set into motion by initial bilateral Project pathways and joint R&D&D financing.

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Thank you

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More information
https://mission-innovation.net/missions/shipping/
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