

IMO Technical Seminar on Marine Biofuels, 12 February 2026

Biofuels for maritime: the context

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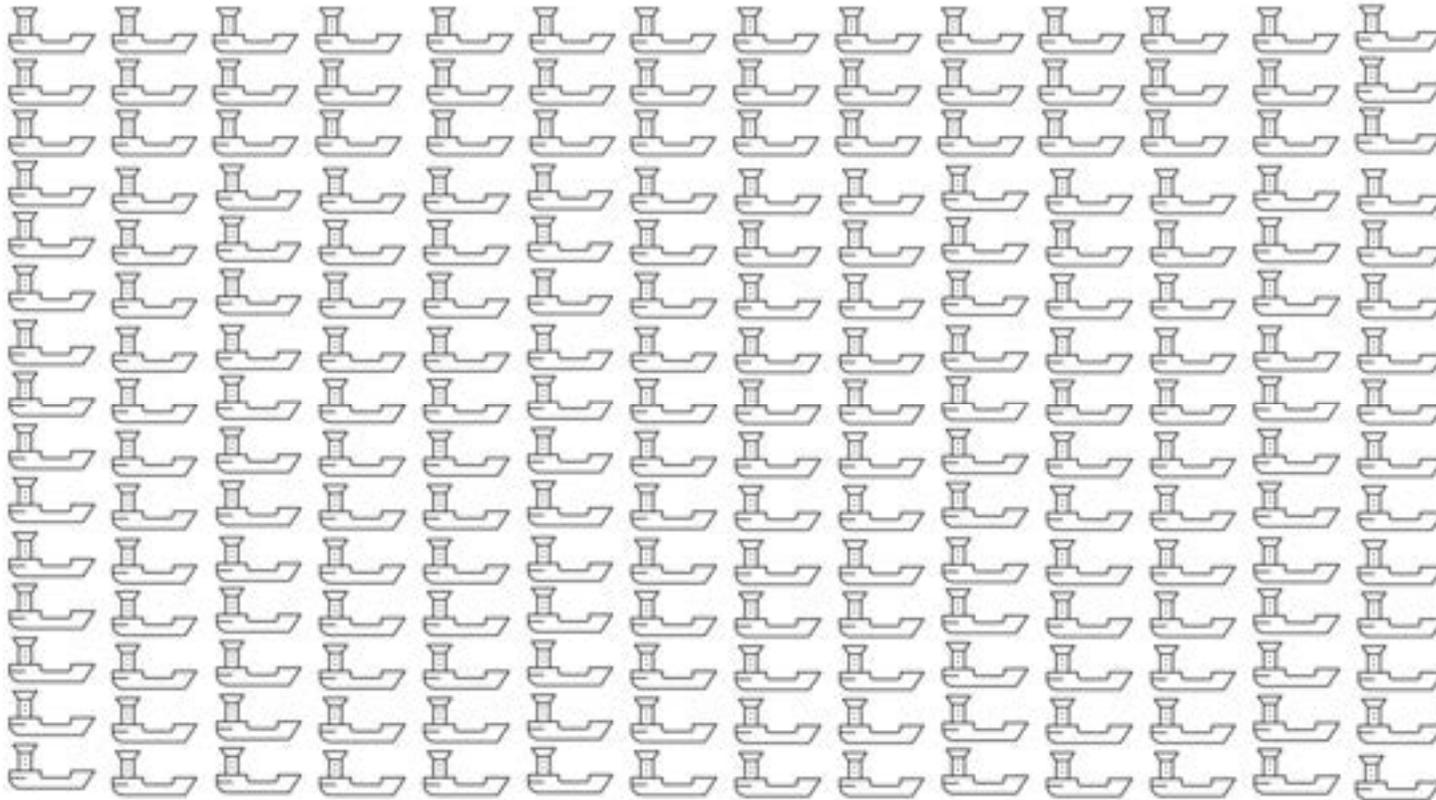
Share of global CO₂
emissions from
maritime transport

3%



Marine fuels - a snapshot from the 2024 IMO DCS

Conventional
~210 MT



LNG
~15 MT



Methanol
~0.1 MT



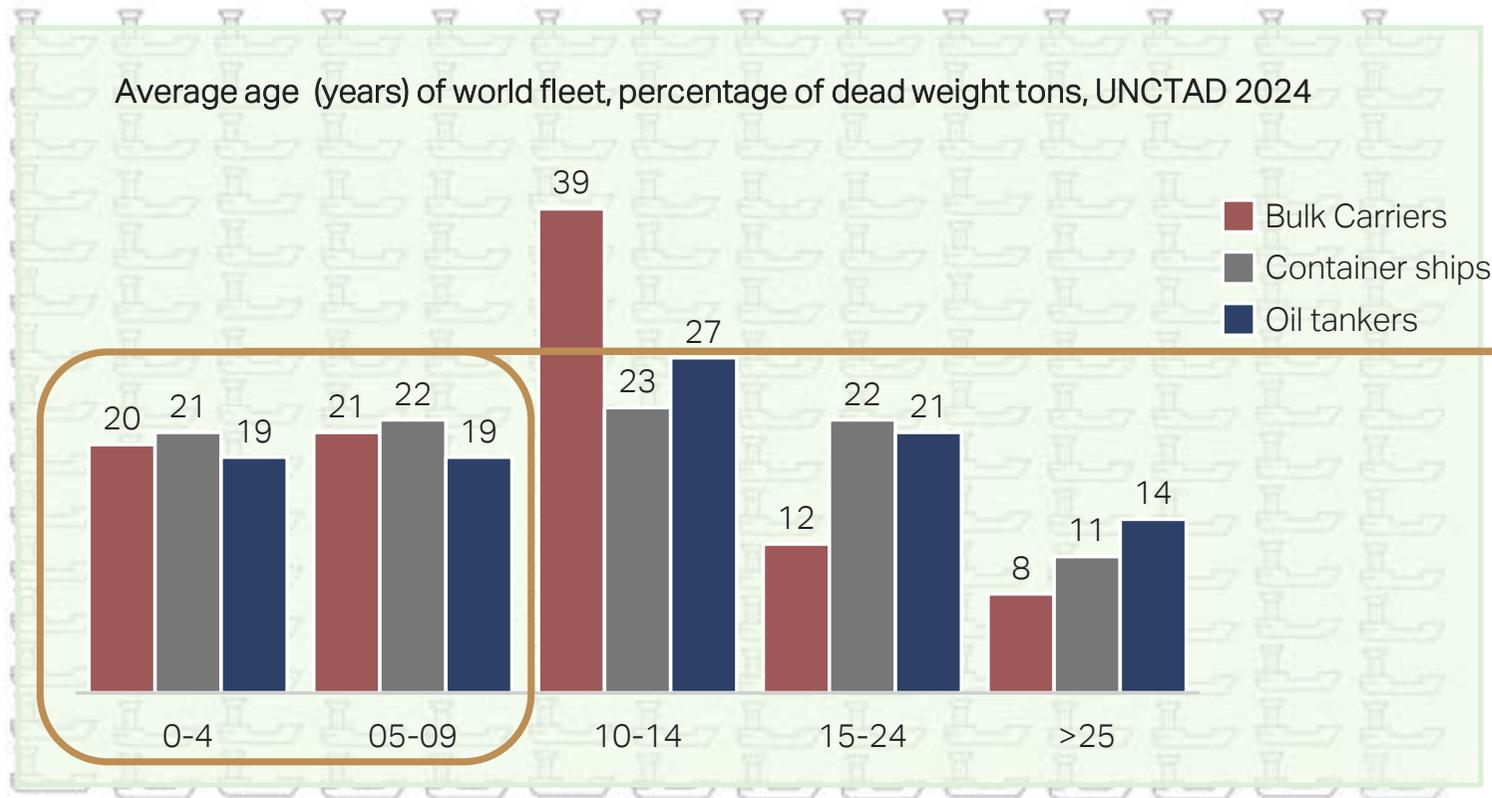
Young ships may retrofit – but not the old ones

**Conventional
~210 MT**

**LNG
~15 MT**

**Methanol
~0.1 MT**

Average age (years) of world fleet, percentage of dead weight tons, UNCTAD 2024



Eligible for retrofit (<7 y)

~10,000 ships

Yard capacity for retrofit

~400-500 ships / y



Decarbonization options for marine fuels: conventional vessels

Conventional
~210 MT

LNG
~15 MT

Methanol
~0.1 MT

For ships older than 5-7 years: no retrofits. Drop-ins are the only option



FAME biodiesel & HVO



- Industry standard for drop-in decarbonization

- Limited availability of waste & residues as feedstock
- Crop based feedstock raises LUC concerns
- HVO price



Bio-oils (pyrolysis, HTL, etc.)



- Large availability of waste feedstock

- Immature manufacturing technology
- Uncertain performance in fuel system, LCA, regulatory aspects



Decarbonization options for marine fuels: LNG vessels

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LNG ~15 MT

Bio-LNG



- TRL = 9
- CRL ~ 9



- CH₄ em.
- Certification

Methanol ~0.1 MT



Decarbonization options for marine fuels: methanol vessels

Conventional ~210 MT

For ships older than 5-7 years: no retrofits. Drop-ins are the only option



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Bio-LNG



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- CH₄ em.
- Certification

Methanol ~0.1 MT

Bio-Methanol



- Tested and approved



- Price
- Availability



Decarbonization options for marine fuels: methanol vessels

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For ships older than 5-7 years: no retrofits. Drop-ins are the only option



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LNG ~15 MT

Bio-LNG



- TRL = 9
- CRL ~ 9



- CH₄ em.
- Mass balance

Methanol ~0.1 MT

Bio-Methanol



- Tested and approved



- Price
- Availability

Ethanol



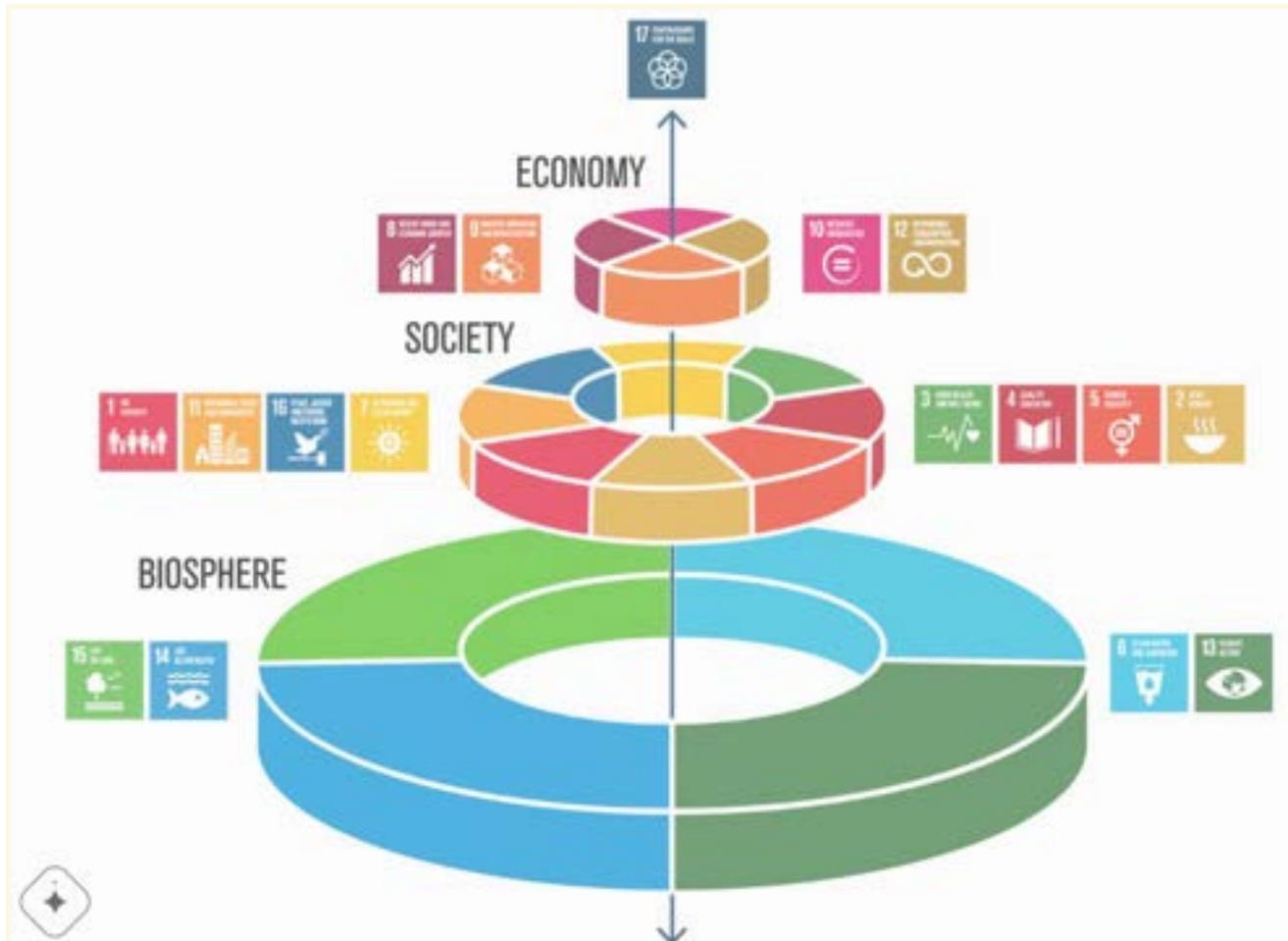
- Price
- Availability (crops)



- Availability (residues)
- Early tests



Biofuels offer synergies and trade-offs for global sustainability challenges



Synergies

- Potential for large GHG emissions reduction vs. fossil
- Use of waste and residues
- Use and recovery of degraded land
- Fuel *and* food
- Farming jobs
- Upskilling
- Affordability of freighted goods
- Energy security and diversification
- Regional and international cooperation
-

Trade offs

- Land-Use Change, incl. deforestation
- Monoculture / biodiversity
- Fertilizer, pesticides
- Water demand
- Diversion of food to fuel
- Land-grabbing / Price squeeze
-

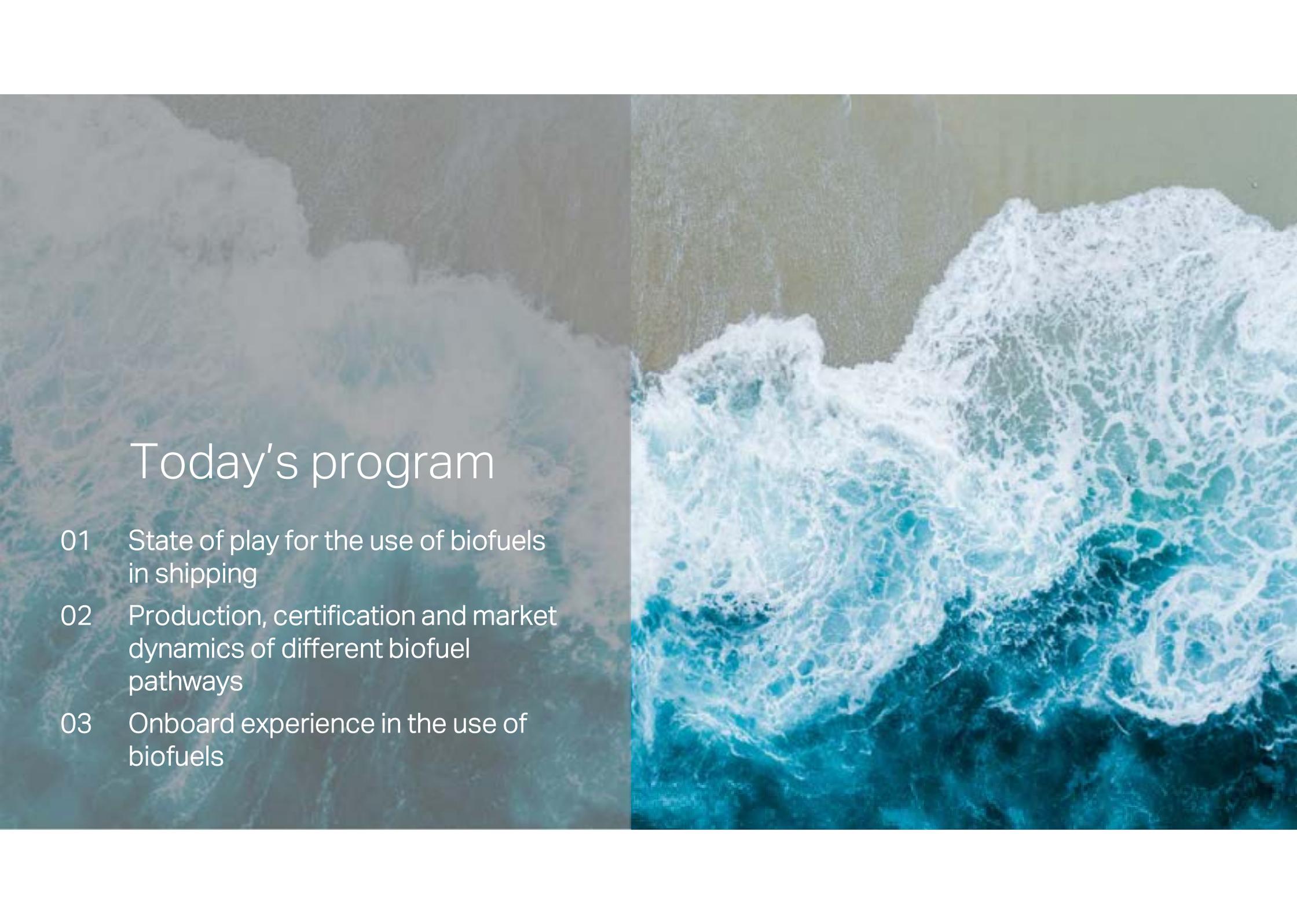
Highlights of current activities at MMMCZCS relating to biofuels



Various platforms to share and establish knowledge

- Certification
- On-board experience
 - Sustainability
- Opportunities for J & E





Today's program

- 01 State of play for the use of biofuels in shipping
- 02 Production, certification and market dynamics of different biofuel pathways
- 03 Onboard experience in the use of biofuels

Thank you for listening in
and giving your input!

