



POTENTIAL OF BIOLNG AS A FUEL FOR DECARBONIZATION OF SEA SHIPPING

January 2024



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TITAN

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TITAN AT GLANCE

INDEPENDENT, EXPERIENCED AND FLEXIBLE CLEAN-FUEL SUPPLIER

We are a LNG and Bio-LNG leading supplier based in Amsterdam and with more than 10 years in the market.

We have a strong committed customer base in shipping and industry.

Active in Europe, with regular operations from Asia to the Caribbean.

TITAN'S MISSION & VISION

- ✓ Titan mission is to contribute to decarbonize marine fuels by supplying LNG and Bio-LNG today, and E-Fuels in the future.
- ✓ Commitment to keep local emissions: SOx, NOx, PMs, close to zero.
- ✓ 40+ FTE employed.

Over 300 000 tons of LNG delivered since 2012

Developing Liquefied biomethane (LBM) plant

Towards a carbon neutral shipping sector

WHAT WE OFFER



SHIP-to-SHIP

SHIP-to-SHIP (in port)

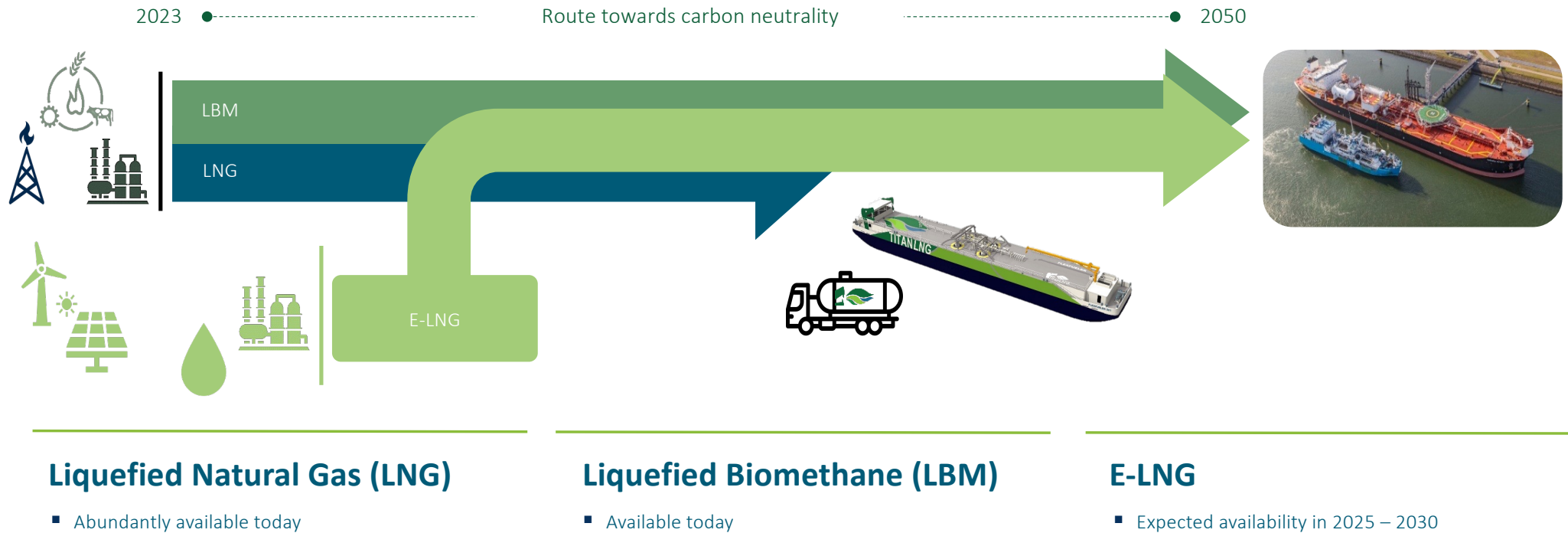
TRUCK-to-SHIP

INDUSTRIAL

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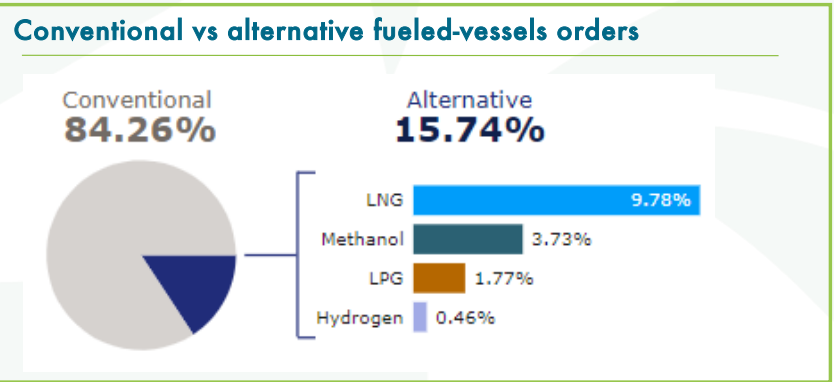
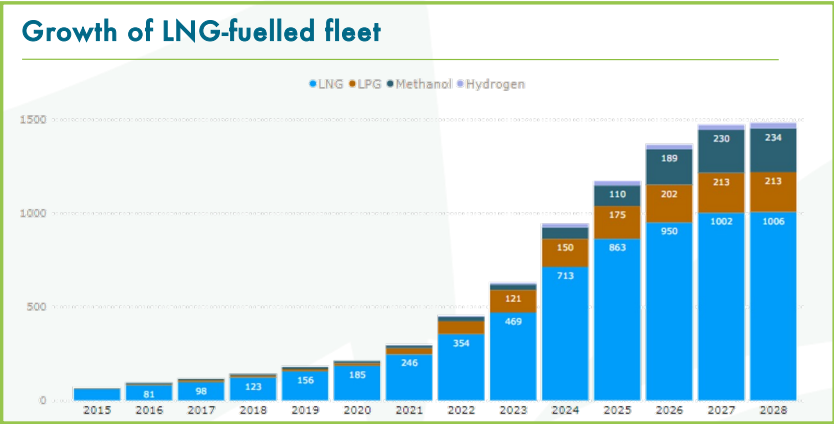


TOWARDS CARBON NEUTRAL SHIPPING



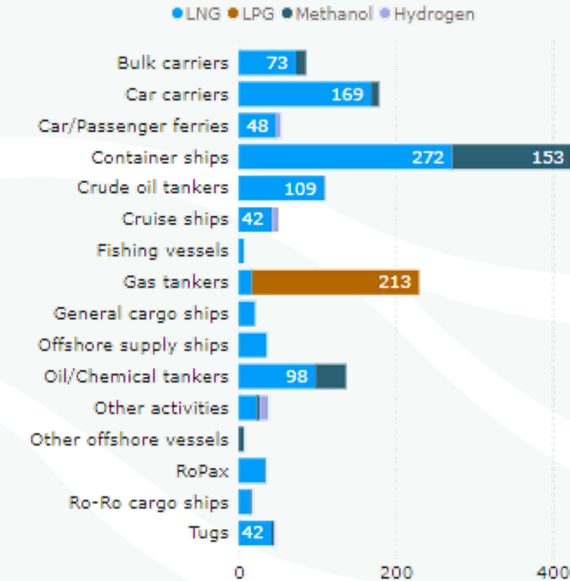
TITAN COURSE TOWARDS DECARBONISATION

CONTINUED UPTAKE OF GAS IN TRANSPORT



Distribution of LNG fueled fleet

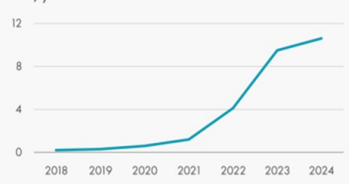
Alternative fuel uptake by ship type



Europe heavy-duty road transport

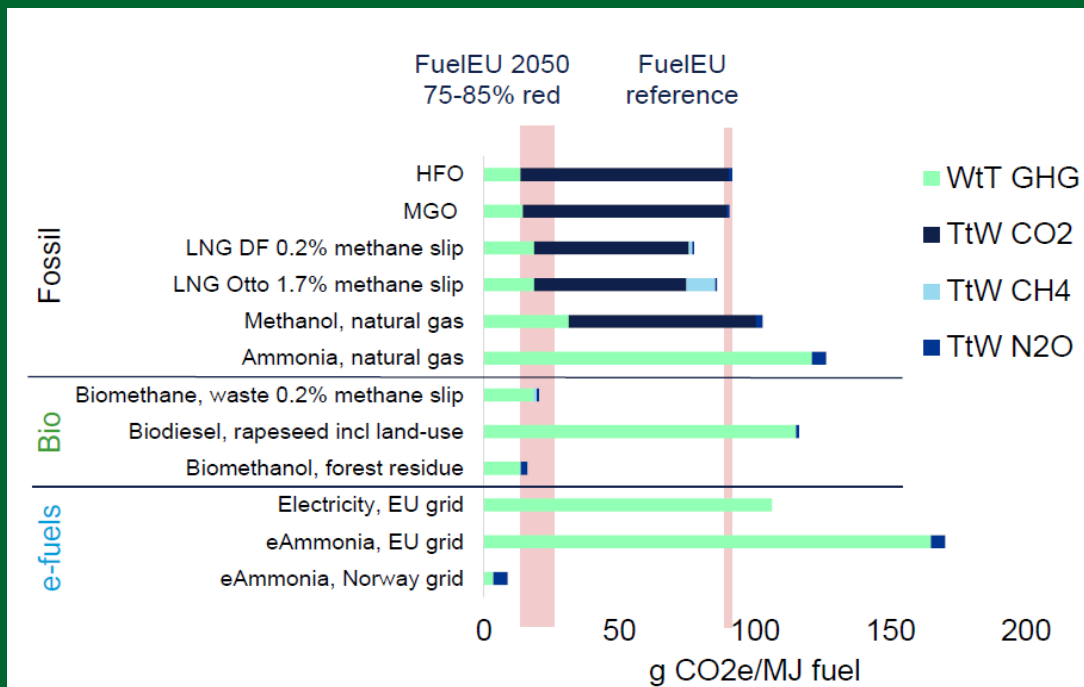


BioLNG production capacity



LOWEST CARBON FUELS

Well-to-Wake GHG conversion factors
Estimates



There is no clear winner, there are pros and cons to every fuel

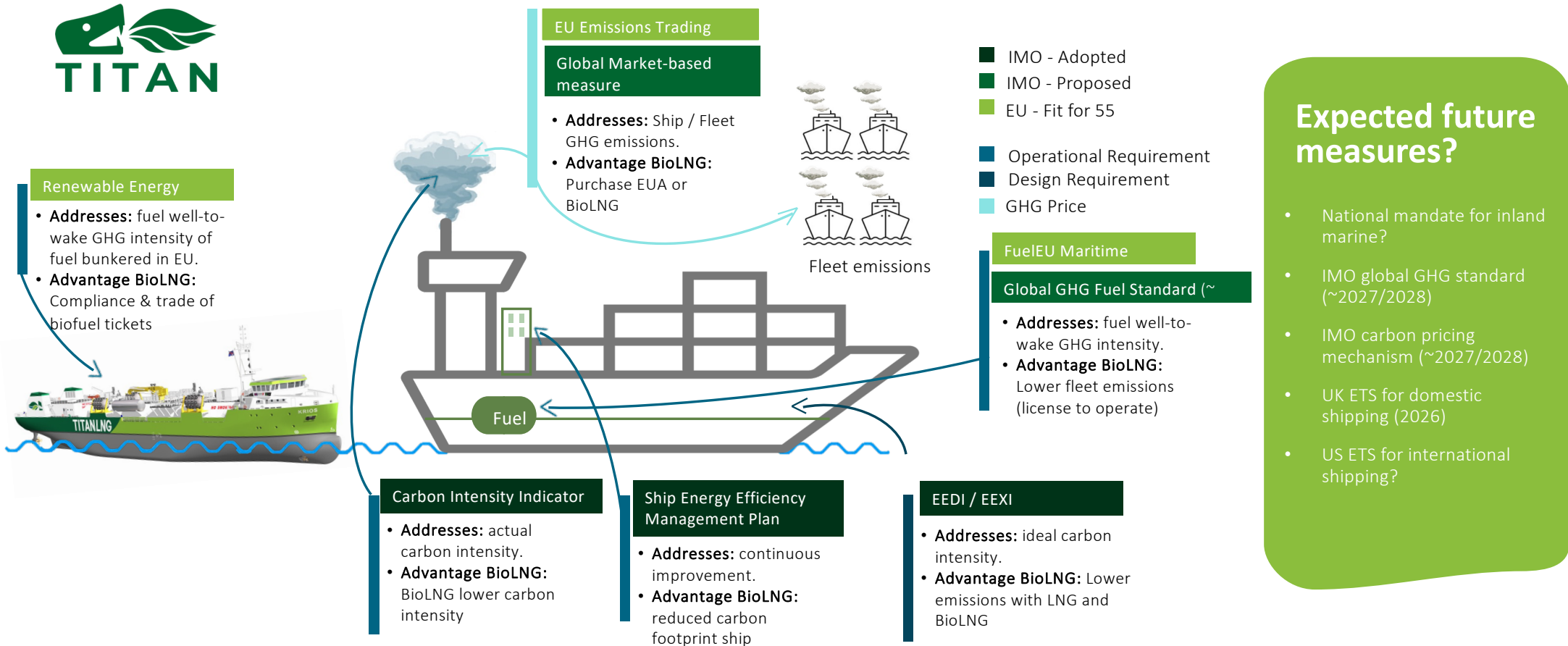
LNG is the lowest carbon fossil fuel

Biofuels must be sustainable without significant land-use emissions -> waste/algae

Electro-fuels must be produced by renewable electricity

Source: DNV: 'The Fuels of the Future' 2023

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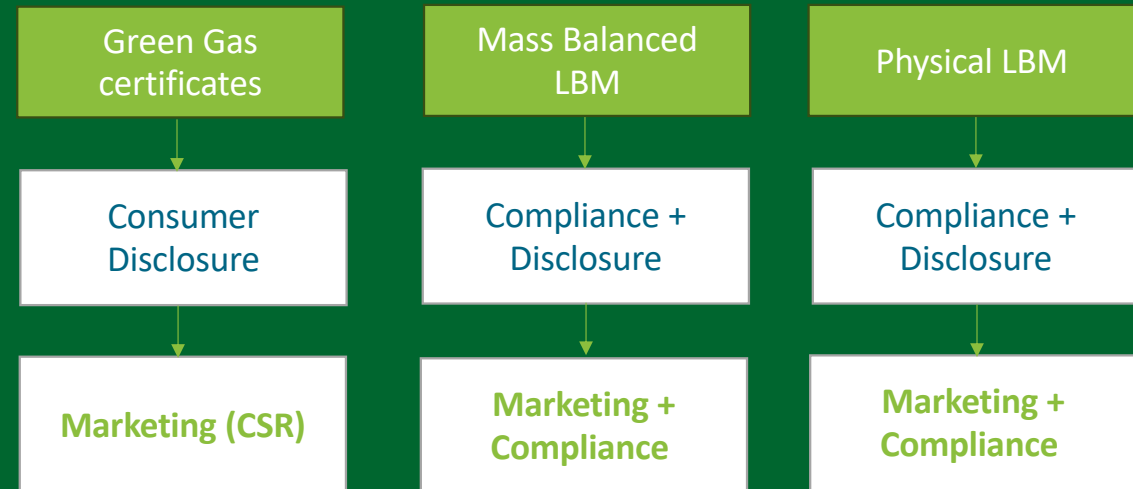


LEGISLATION ENHANCING UPTAKE OF BIOLNG IN MARINE MARKETS

LIQUEFIED BIOMETHANE (LBM) OPTIONS:



- 3 green options offered
- For all options, the GHG reduction potential of more than 100%
- Any Bio blend 0-100% possible
- Approved compliance with EU/IMO regulation
- Any blend delivered by truck, barge, or bunker vessel



LBM PROJECT WILP

BIO2 SHIPPING WILP

- First onsite bio-LNG production plant for maritime transport.
- 6 million Nm3/year biogas.
- 2,400 tons/year bio-LNG.
- 5,000 tons/year bio-CO2.
- Planned date of operation: Q2 2024



Amsterdam LBM location in Port of Amsterdam



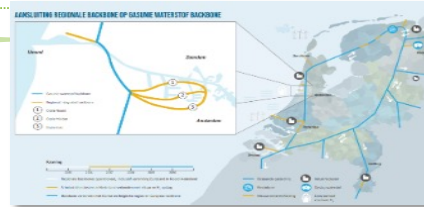
Site Lay-out Amsterdam LBM



Features:

- Hybrid LBM plant
- ISCC certified & REDII compliant
- On site biogas production + physical sourcing
- Planned operation: 2025

(Renewable) Hydrogen Ready:
E-methane as an energy carrier & future fuel



Amsterdam LBM Production capacity (ktpa)



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TITAN LBM PLANT : THE LARGEST IN THE WORLD



THANK YOU!

Caspar Gooren

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TITAN IS A LEADING, INDEPENDENT AND
PHYSICAL LNG AND BIOLNG (LBM) SUPPLIER.
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