

# Environmental Day – Maritime

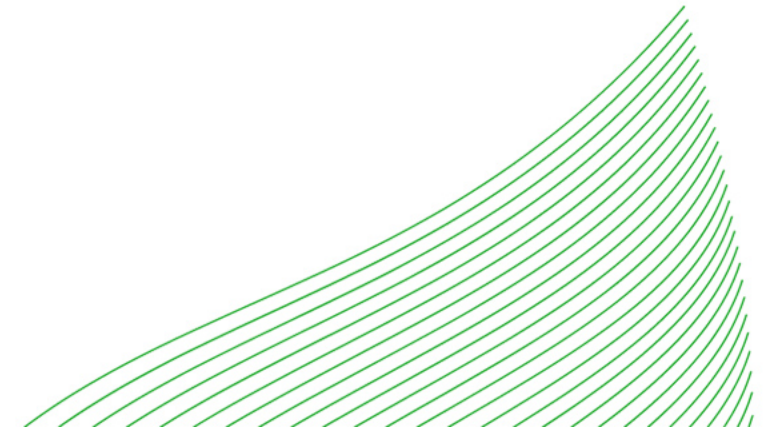
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Tallinn



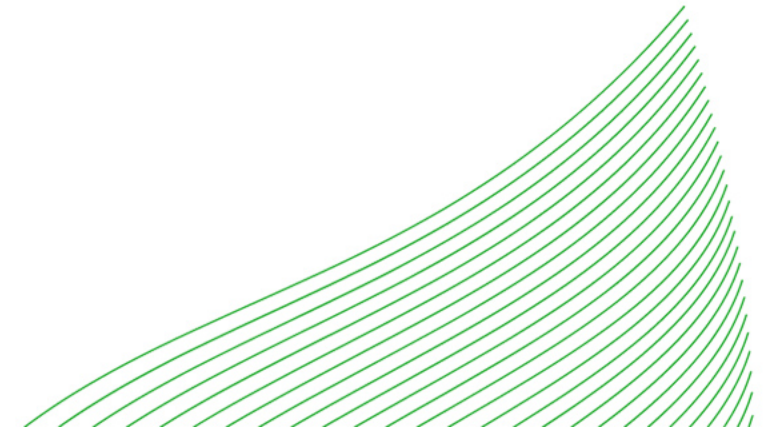
# Introduction

- Over 25 years in the petroleum industry
- Licensed Master Mariner, Unlimited Tonnage Oceans
- Energy Procurement Manager for Euronav
  - Energy Transition Planning
  - Fuel Procurement
  - Risk Management

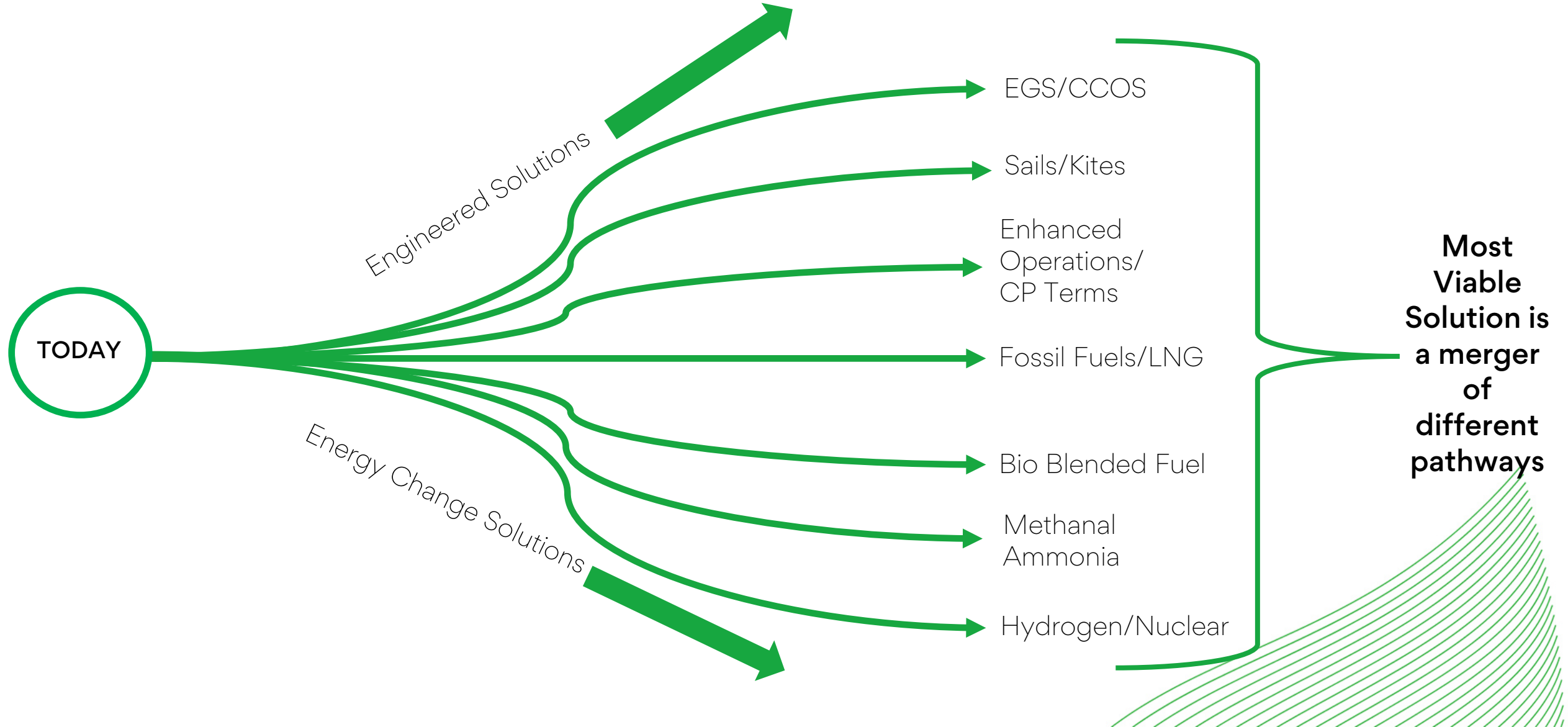


# Where we are today.....

- Regulatory Framework on Decarbonization of Maritime Industry
  - IMO
  - European Union
  - Rest of the World
- Adoption of New Fuels
  - LNG
  - Bioblends
  - Methanal/Ammonia



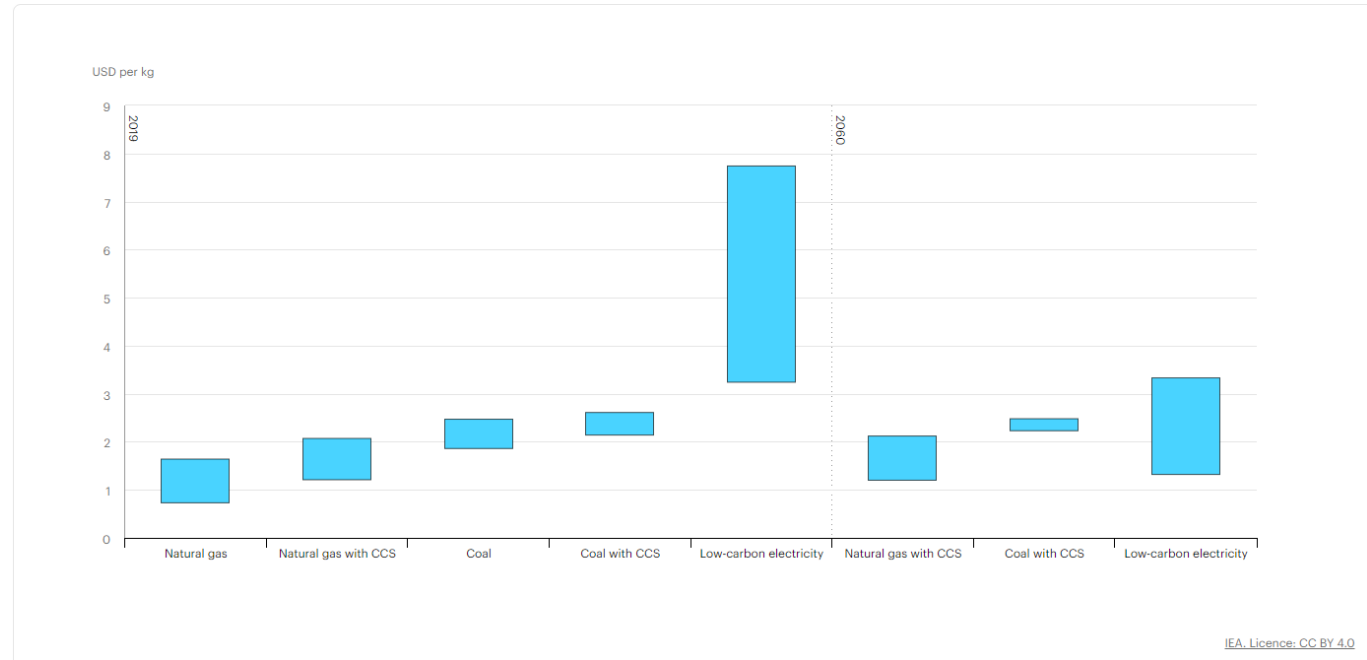
# Emissions Reduction Pathways



# Critical Path – Green Hydrogen

Hydrogen is the critical path element to achieve most green fuels.

- Both green Methanol and Green Ammonia will require Green Hydrogen.
- Cost is expected to go down, but more investment is needed.
- China is leading the way forward on investment.



Green Ammonia - \$1,000 USD/MT in ARA – S&P Platts

Energy density on Ammonia to fuel – 2.23 ratio

Overall cost for same energy equivalent - \$2,230 USD/MT

# Supply Chain on Green Fuels

Investment in the green supply chain is lacking, resulting in limited uptake on green investment in shipping.

Green transition in infrastructure alone roughly 2 Trillion USD up to 10 Trillion USD globally.

Competition for Green fuels will be Great with methanol and ammonia having a well-established global market which will need to decarbonize along with maritime.

Certification and Compliance of green fuels will be essential for a successful transition.

Estimated supply of carbon-neutral fuels to all sectors

Units: Million tonnes of oil equivalent (Mtoe)

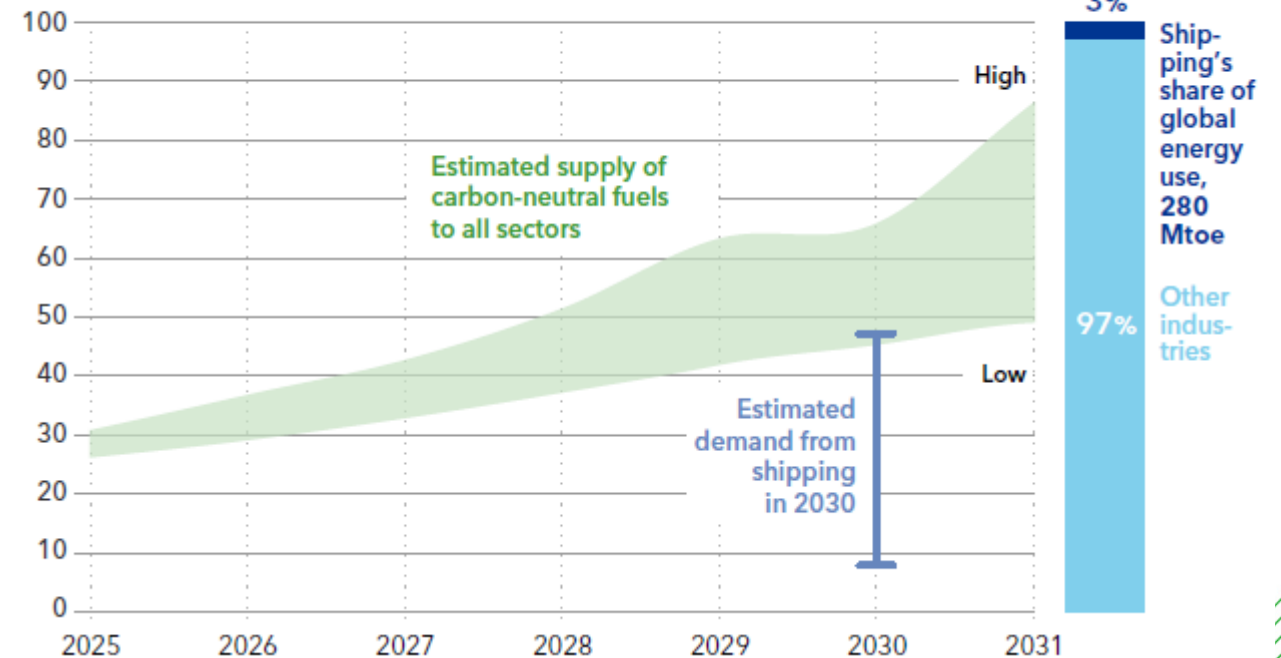


Chart provided from DNV Maritime Forecast to 2050

# ....Where will we go from here.

We are in an energy transition not a cancelation....

92.6% of the global fleet tonnage in operation currently relies on conventional fuels (HSFO/VLSFO/Gasoil) for energy. 6.7% of the fleet relies on LNG as the main source of energy.

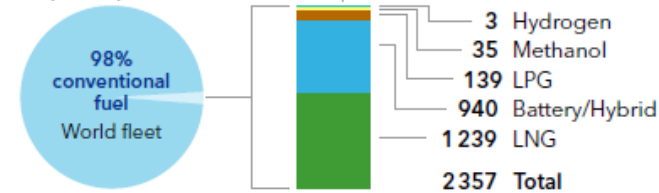
- 36% of the new order book is LNG powered.
- 9.68% is Methanol.

Vessel orders require 4 to 5 years from order to completion....Meaning that maritime is behind the curve in vessel replacement.

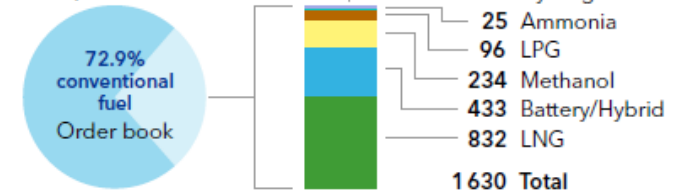
Alternative fuel uptake in the world fleet in number of ships (upper) and gross tonnage (lower), as of June 2024

## NUMBER OF SHIPS

Ships in operation

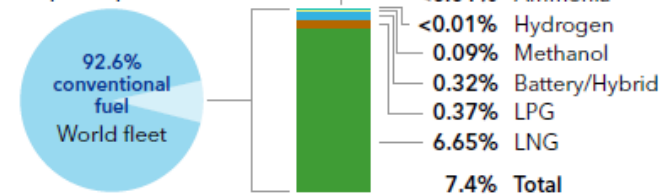


Ships on order

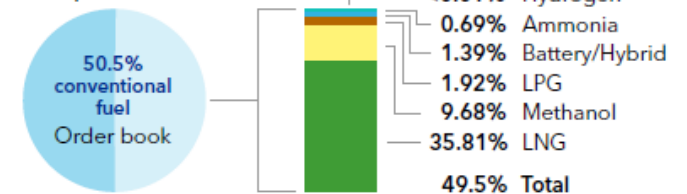


## GROSS TONNAGE

Ships in operation



Ships on order



Sources: IHSMarkit (ihsmarkit.com) and DNV's Alternative Fuels Insights for the shipping industry - AFI platform (afi.dnv.com)

# ....Where will we go from here.

In order to meet the goals of the IMO a combination of things must take place:

- More efficient vessel operations – Ongoing and impacting operations today!
- Engineered solutions
  - From Coatings to on board emissions abatement – ongoing and impacting operations today...
- Machinery upgrades – Ongoing and impacting operations today
- Alternative fuels – in development....

The factors of development in the alternative fuels market will keep petroleum as part of the overall fuel mix into 2040 and beyond...

....Petroleum based fuels, such as Estonian Shale, will be used during the transition up to 2050 and potentially beyond.





# Bunker Markets and Shale

Global bunker fuel consumption is 220 Million Metric Tons annually

- HSFO makes up over 1/3<sup>rd</sup> of the Energy Matrix
- VLSFO still widely used across the globe

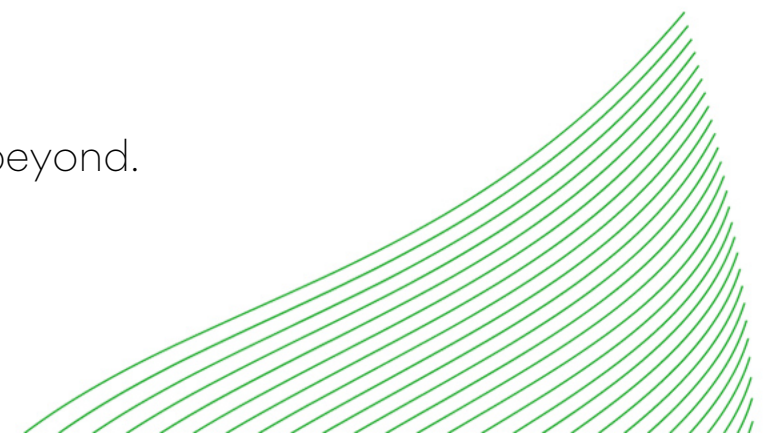
Estonian Shale oil is a global blend component for VLSFO...

Market wise:

- 24% Exported directly to Singapore for blending into the Bunker Fuel pool
- 58% Exported into Europe's ARA bunker hub for blending into Bunker Fuel pool
- 18% Exported to other European markets for Utility and Bunker Fuel consumption.

Quality Wise:

- Low sulfur, High Density material needed in today's bunker fuel market, and beyond.



Thank you!  
Questions?

