

2030 GreenShip-K Promotion Strategy

The 1st National Plan for the Development and Popularization of Green Ship

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01 Background

- According to *‘the Act on Development and Popularization of Green Ship (Promulgation No. 16167),’*
 - *“Minister of Trade, Industry and Energy and Minister of Oceans and Fisheries formulate the national plan per five years.”*
 - *“The national plan shall have the R&D roadmap, long-term objectives, infrastructure for power sources, etc.”*



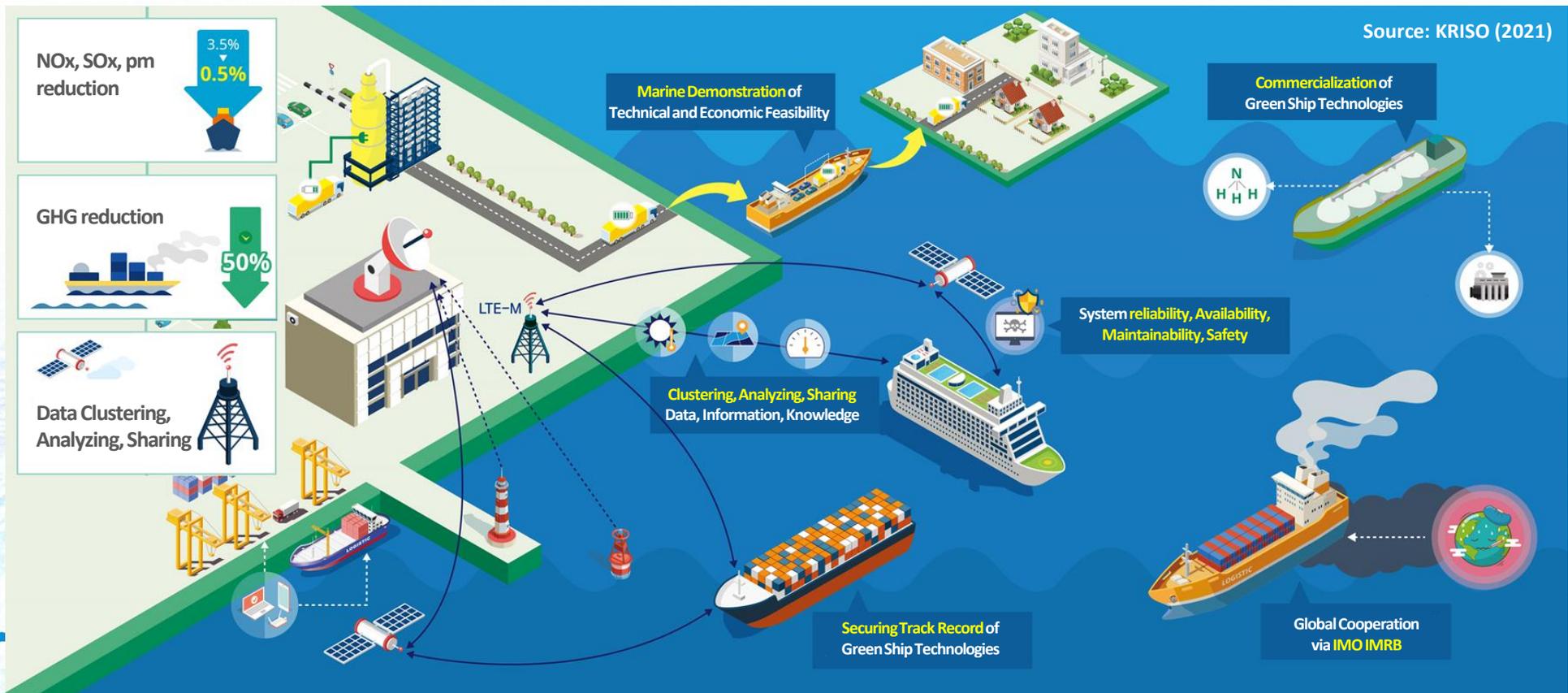
Ministry of Oceans
and Fisheries



Ministry of Trade,
Industry and Energy

01 Background

- **Based on the Act,**
 - 'The 1st National Plan for the Development and Popularization of Green Ship' is publicly released in December 2020.
 - The Government of the Republic of Korea plans to invest \$870 million (2022 - 2031) for the innovative R&D program of green ships considering life-cycle.



01 Background

- The Government of the Republic of Korea has established *'the Green New Deal'* to achieve net-zero emissions and accelerates the transition towards a low-carbon and green economy.



Green Transition of Infrastructure

- Zero-energy building
- The ecosystems
- Clean and safe water

Low-carbon and Decentralized Energy

- Efficient energy management
- Renewables and Fair transition
- **Hydrogen vehicles, etc.**

Innovation in the Green Industry

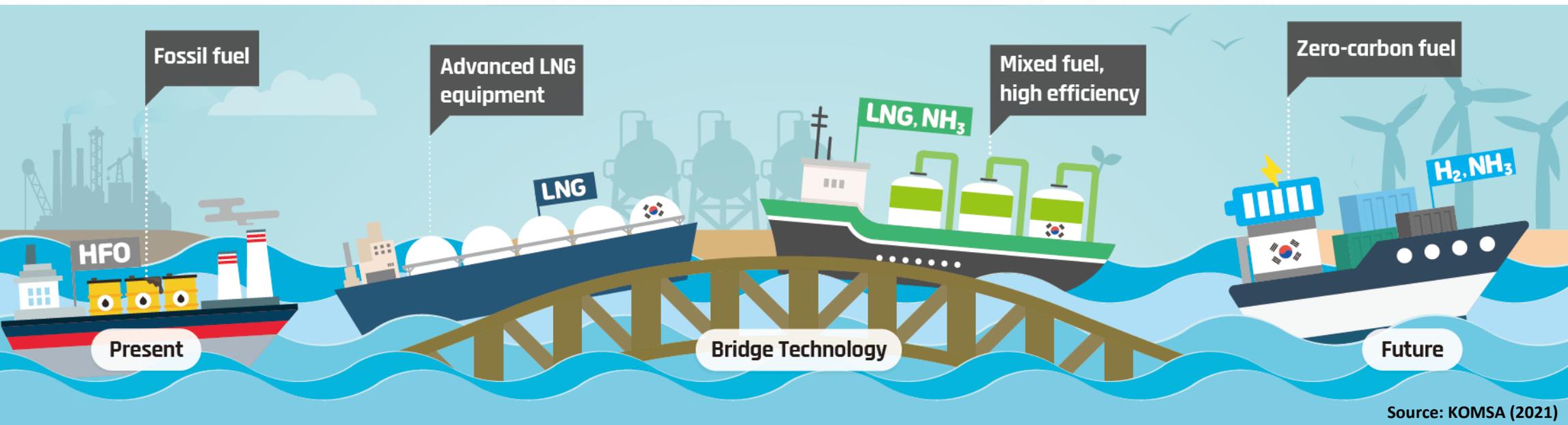
- Low-carbon industrial complexes
- Foundation for green innovation



Source: Korean New Deal (2020)

02 Technology Development

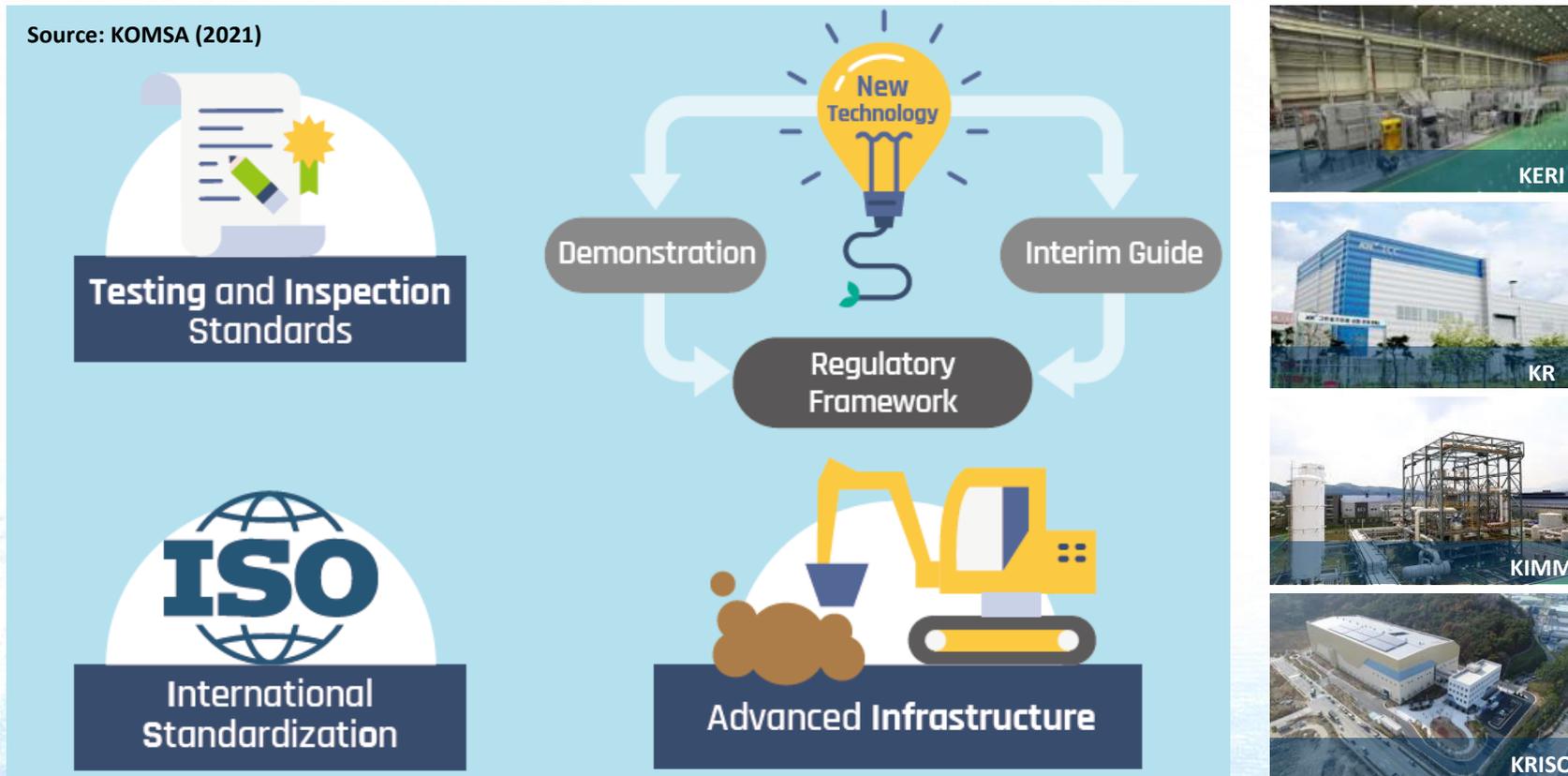
- There are three goals to secure the future green ships:
 - Carbon-free technology with hydrogen, ammonia, etc.
 - Low-carbon technology with fuel mixture, energy-saving device, etc.
 - Localisation of the core technology about LNG, electrification, and hybridisation.



Source: KOMSA (2021)

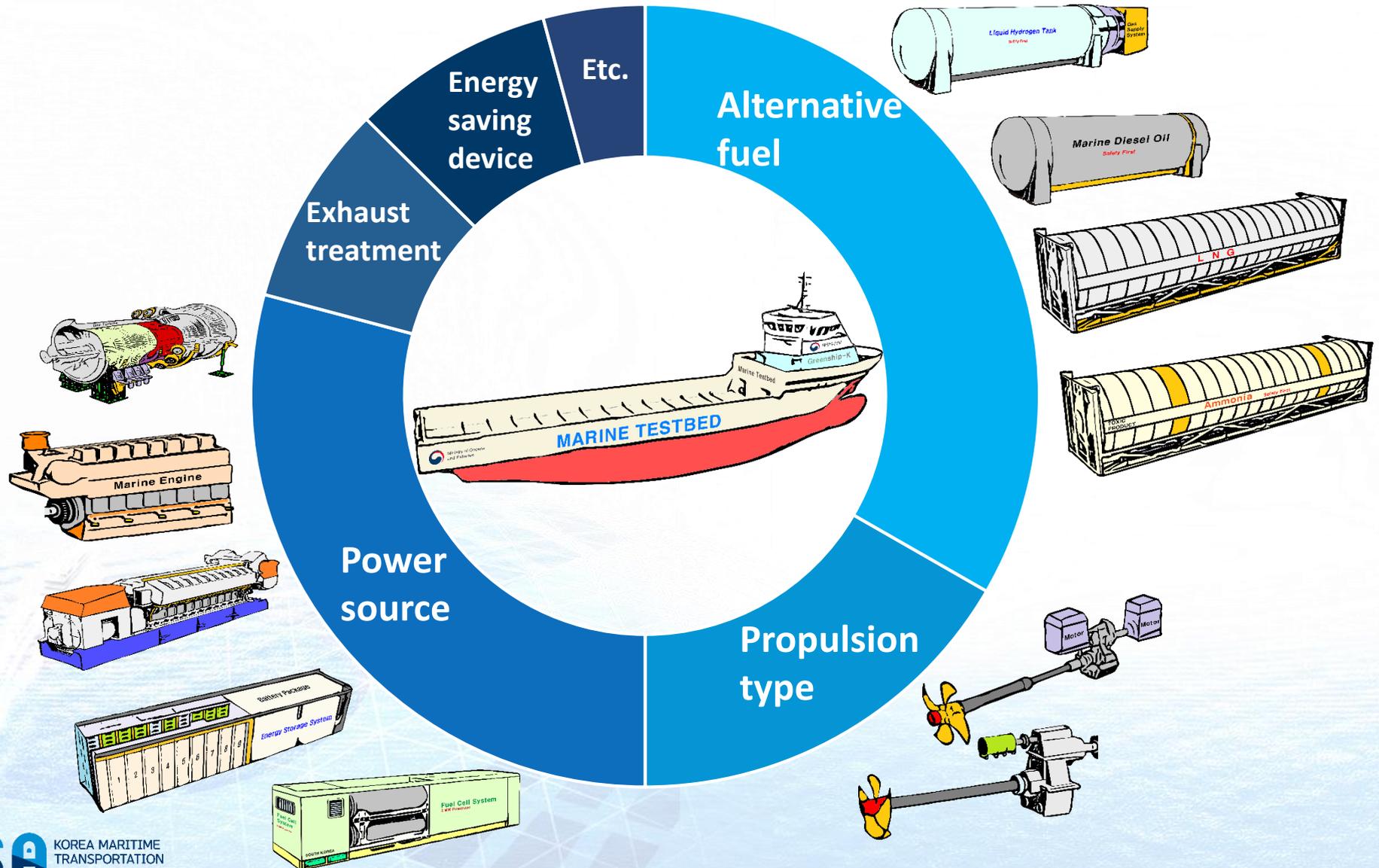
03 Test Infrastructure

- The R&D results will be the basis of testing and inspection standards.
- New technology will be verified by onshore facilities before a marine application.



04 GreenShip-K Project

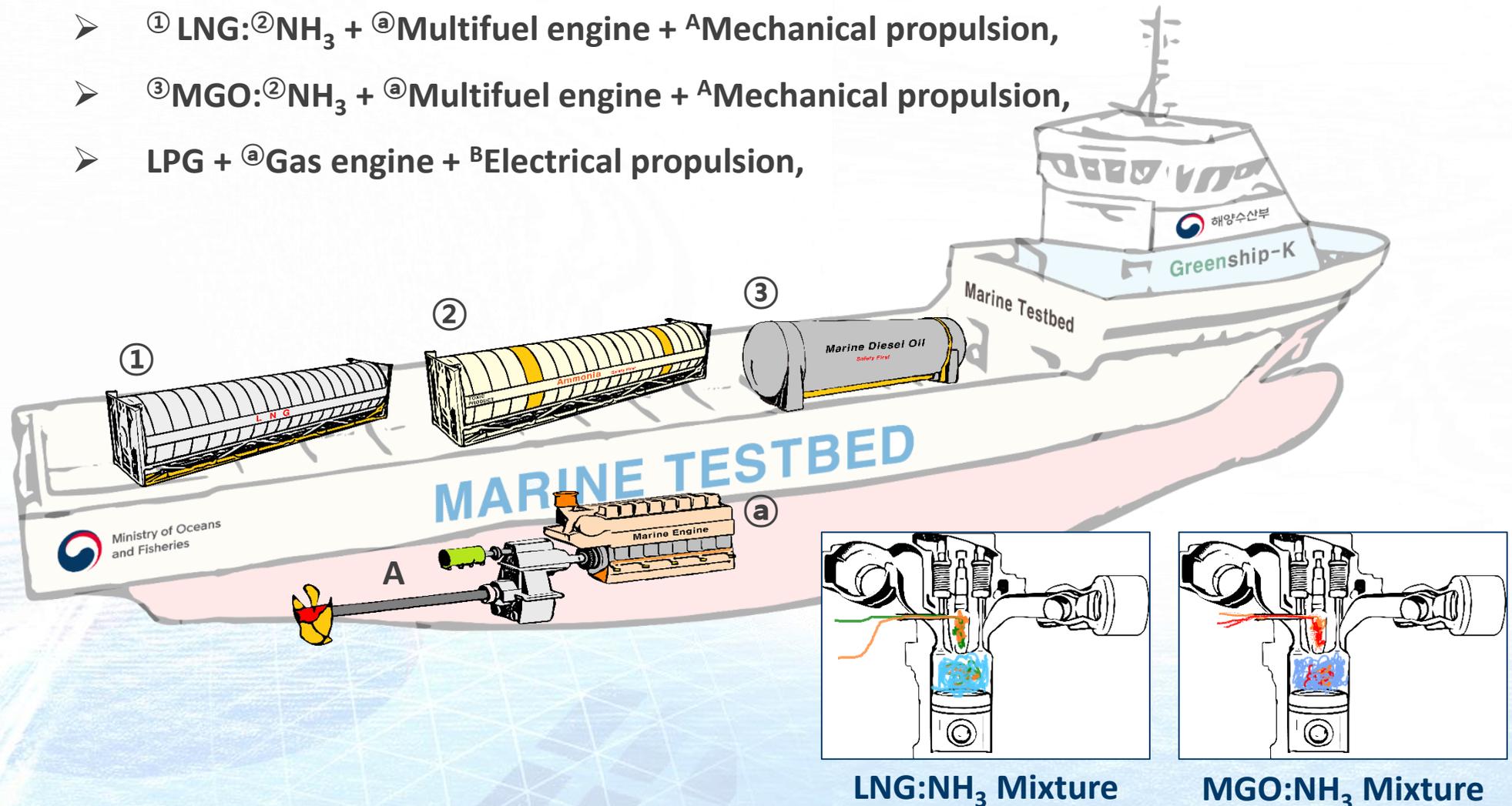
- A marine testbed tests the technology developed to prove the feasibility.



04 GreenShip-K Project

Low-carbon technology may have the following cases:

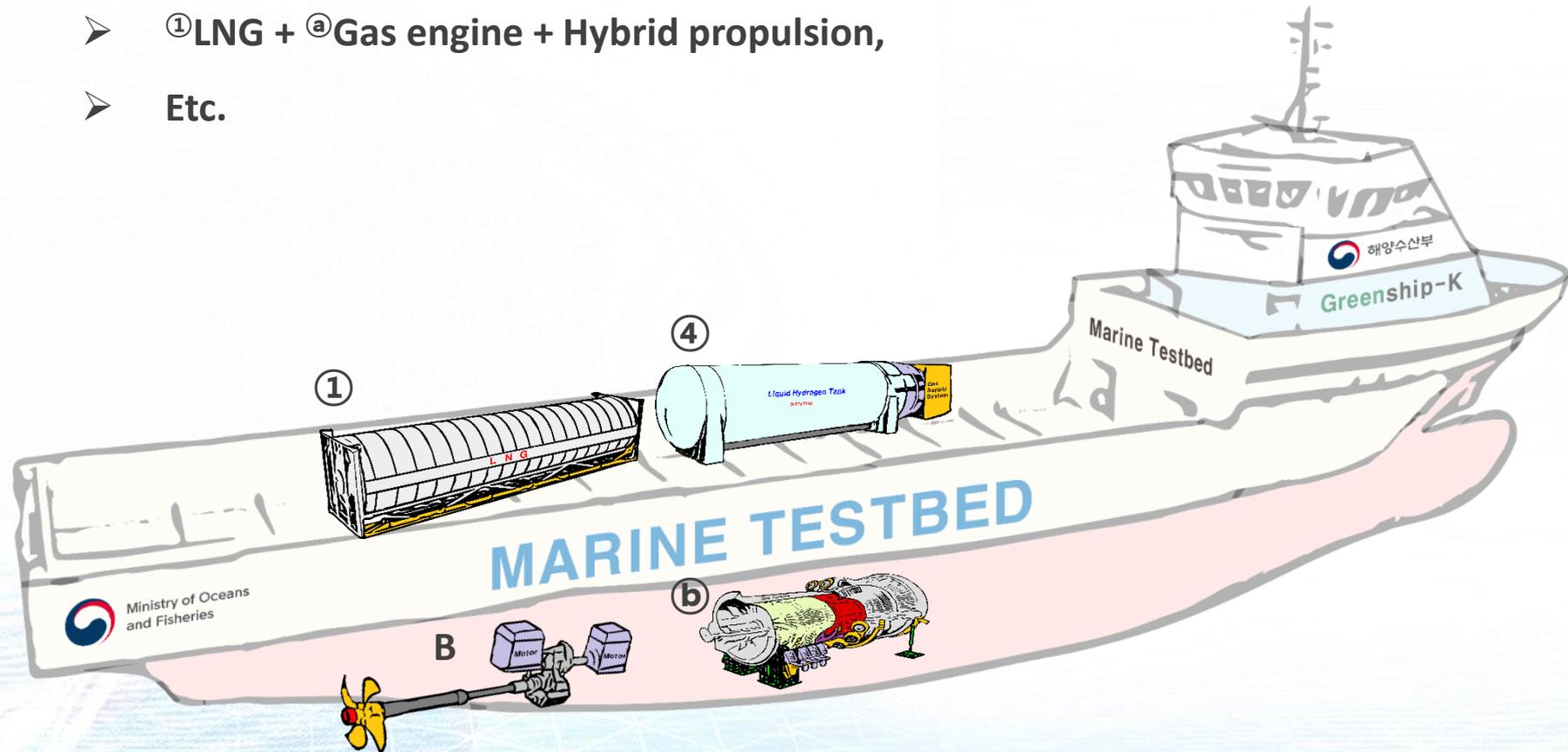
- ① LNG + ^aGas engine + ^BElectrical propulsion,
- ① LNG:②NH₃ + ^aMultifuel engine + ^AMechanical propulsion,
- ③MGO:②NH₃ + ^aMultifuel engine + ^AMechanical propulsion,
- LPG + ^aGas engine + ^BElectrical propulsion,



04 GreenShip-K Project

Low-carbon technology may have the following cases:

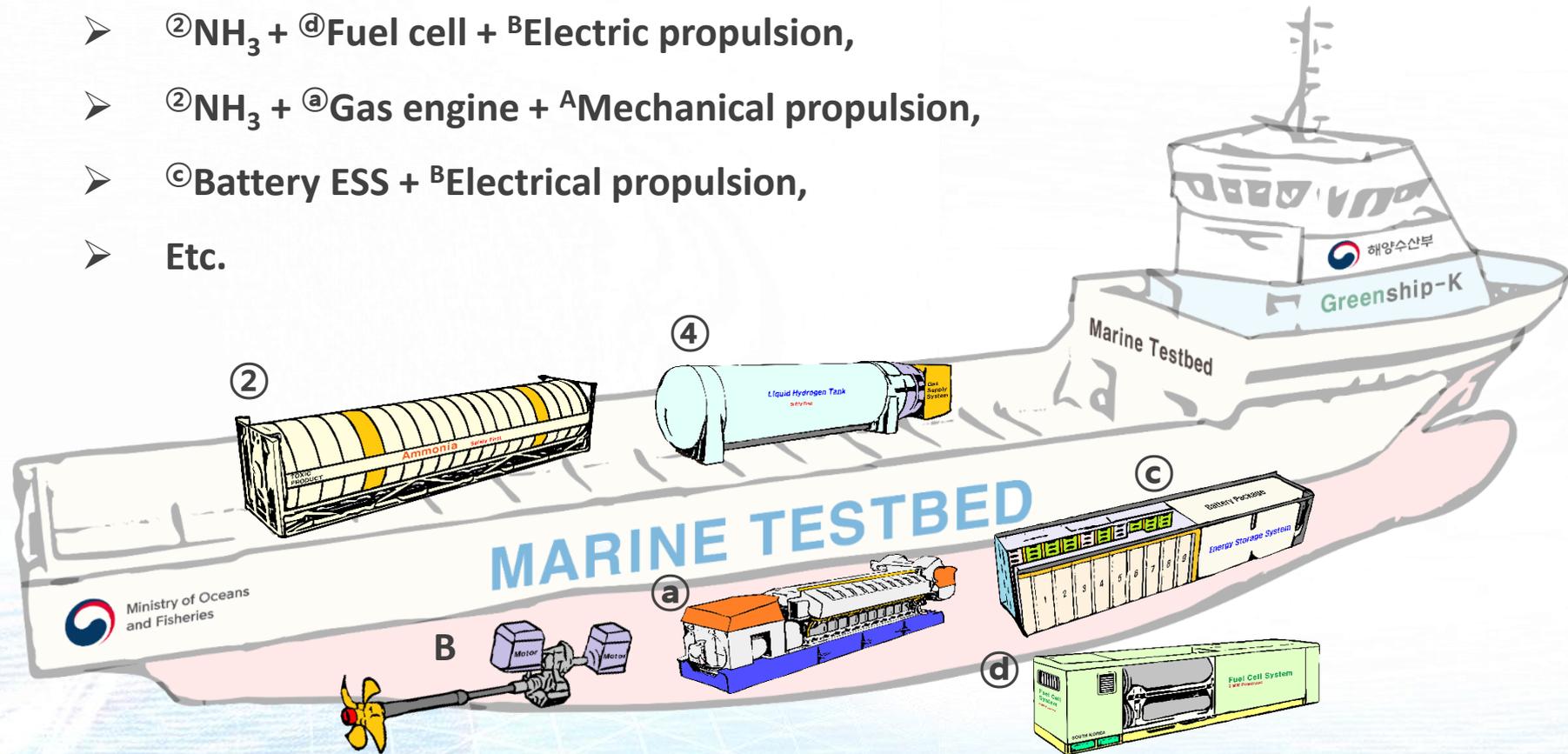
- ①LNG:④H₂ + ③Gas turbine + ②Electrical propulsion,
- ①LNG + ③Gas engine + Hybrid propulsion,
- Etc.



04 GreenShip-K Project

Carbon-free technology may have the following cases:

- ④ Hydrogen + ④ Fuel cell + ^BElectric propulsion,
- ② NH₃ + ④ Fuel cell + ^BElectric propulsion,
- ② NH₃ + ③ Gas engine + ^AMechanical propulsion,
- ③ Battery ESS + ^BElectrical propulsion,
- Etc.

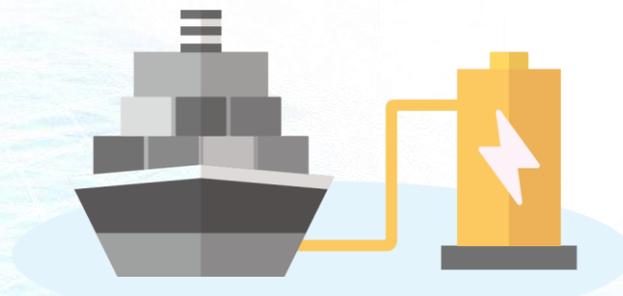


05 Green-fuel Supply Chain

- **LNG bunkering capability grows up to 1,400,000 tons per year in 2030.**
 - The small-scale bunkering vessel (500 m³) supplies LNG fuel to coastal ships.
 - The major ports (Busan, Ulsan, etc.) will have onshore facilities for LNG bunkering.
- **Alternative maritime power supplies the ship`s hotel loads as well as will charge the battery of a fully-electric ship.**
- **A testing facility of H₂ (or NH₃) will be the basis of a large-scale bunkering service.**



LNG Bunkering



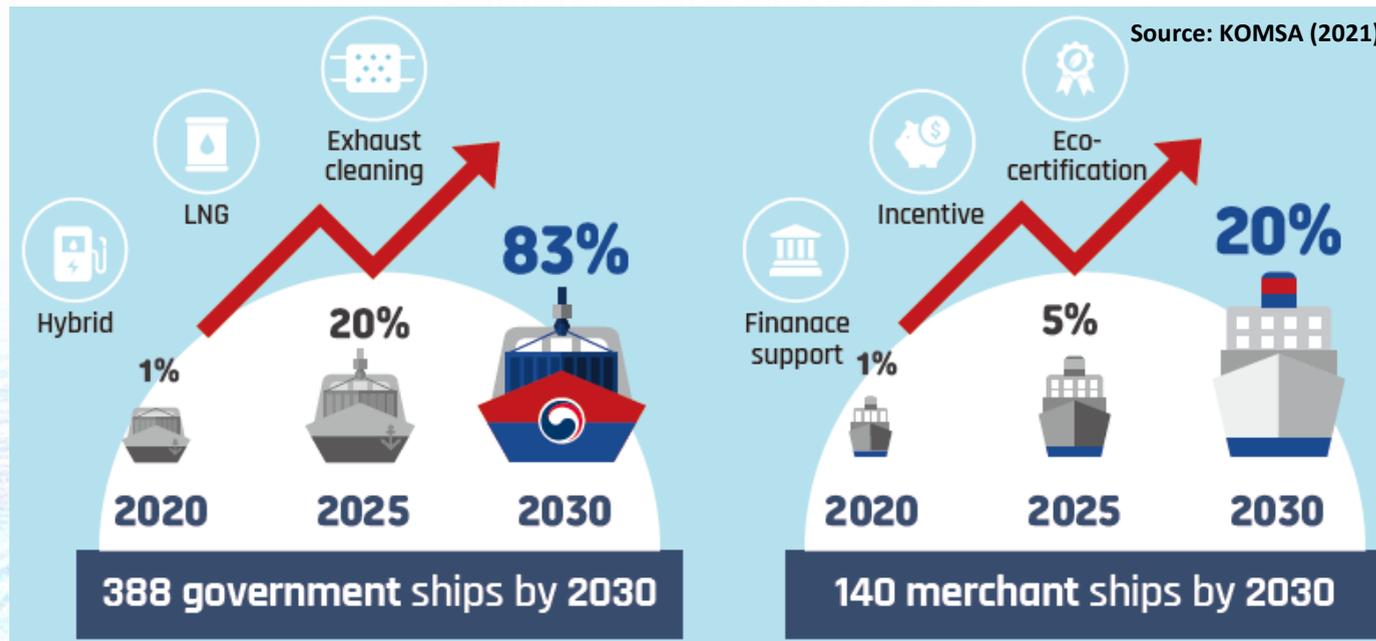
Alternative Maritime Power



Carbon-free Fuel Bunkering

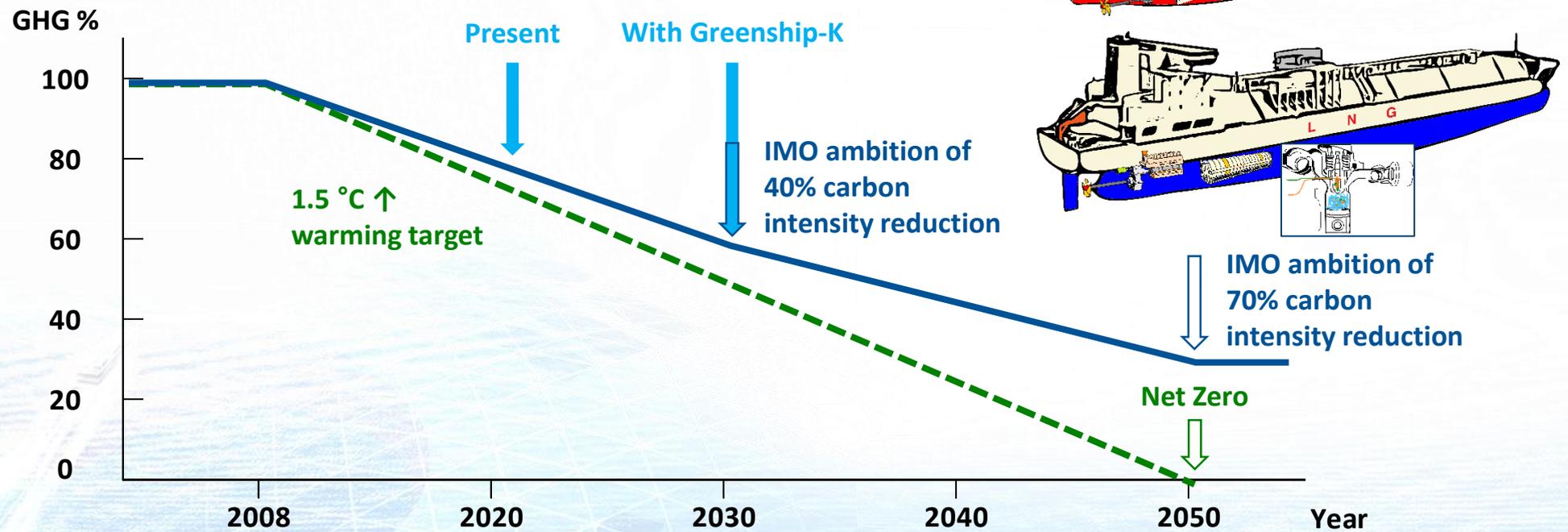
06 Market Activation

- **Ships that the Government-owned should take eco-friendly technology;**
 - Newbuilt green ships replace the old-fashioned ships (over 26 years),
 - Ships in service will take exhaust treatment equipment (SCR, DPF, etc.).
- **Merchant ships can have the benefits:**
 - New Deal Fund, Financial Incentive, and Tax Reduction.



07 Expected Effect

- The global marine sector shall halve the absolute GHG emissions by 2050 compared to 2008 (baseline).
 - The international shipping GHG reduction should be achieved based on decarbonised fuel, ship efficiency, carbon market, etc.



Thank you for your attention.

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