2030 Greenship-K Promotion Strategy
The 1\textsuperscript{st} National Plan for the Development and Popularization of Green Ship

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1. Background
2. Technology Development
3. Test Infrastructure
4. Greenship-K Project
5. Green-fuel Supply Chain
6. Market Activation
7. Expected Effect
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.”
Based on the Act,


➢ 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.
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)
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)
- 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.

Source: KOMSA (2021)
A marine testbed tests the technology developed to prove the feasibility.
Low-carbon technology may have the following cases:

- ① LNG + Gas engine + Electrical propulsion,
- ② LNG: NH₃ + Multifuel engine + Mechanical propulsion,
- ③ MGO: NH₃ + Multifuel engine + Mechanical propulsion,
- ④ LPG + Gas engine + Electrical propulsion,
Low-carbon technology may have the following cases:

- LNG\(^4\)H\(_2\) + Gas turbine + Electrical propulsion,
- LNG + Gas engine + Hybrid propulsion,
- Etc.
Carbon-free technology may have the following cases:

- Hydrogen + Fuel cell + Electric propulsion,
- \(\text{NH}_3\) + Fuel cell + Electric propulsion,
- \(\text{NH}_3\) + Gas engine + Mechanical propulsion,
- Battery ESS + Electrical propulsion,
- Etc.
- 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.
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.

Source: KOMSA (2021)
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.

<table>
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<th>Year</th>
<th>2008</th>
<th>2020</th>
<th>2030</th>
<th>2040</th>
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<td>GHG %</td>
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<td>60</td>
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1.5 °C warming target

IMO ambition of 40% carbon intensity reduction

IMO ambition of 70% carbon intensity reduction

Net Zero
Thank you for your attention.

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