



Webinar on the Decarbonization of Shipping – A German-Korean Perspective

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Korea's decarbonization policy in shipping sector

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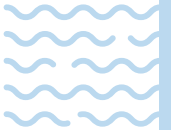
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Introduction



- 01 Global environmental regulation in the shipping industry
- 02 Korea's response to environmental regulation



1. Global environmental regulation in the shipping industry

☑ Adoption of Initial IMO GHG Strategy

- Initial strategy envisages a reduction in carbon intensity for full decarbonization
 - To reduce GHG emissions by at least 50% by 2050 compared to 2008
 - Current discussion further pushing towards higher emission reduction target set for 2050 to 100% (“net zero”)
- To achieve reduction target, the initial strategy includes short-term(2018-2023), mid-term(2023-2030), long-term(2030-) measures
 - Short term measure: new EEDI&SEEMP, existing fleet improvement program, speed reduction, measures to address methane and VOC emissions
 - Mid-term measure: alternative low carbon and zero carbon fuels implementation program, further operational efficiency measures, market based measures
 - Long term measure: development and provision of zero carbon and fossil-free fuels, new innovative mechanism to cut the carbon intensity

2. Korea's response to environmental regulation

☑ Korea's shipping policy to comply with the international environmental regulation

■ Act on the Promotion of the Development and Distribution of Environment-friendly Ships (established in 2018, entered into force in 2020)

- Purpose: To comply with the international regulation to protect the air and marine environment, and to nurture a new business
- Diverse policy measures can be introduced by expanding the policy target focused on cargo ships to coastal ships, passenger ships, fishing vessels etc.

■ Establishment of “The First National Plan for the Development and popularization of green ship (2021-2030)”

- Purpose: To pursue sustainable development of the shipbuilding and shipping industry and clean ocean environment by establishing and implementing a comprehensive plan on developing and distributing green ships
- Main contents: Development of leading technologies for future green ships (to reduce GHG emissions by 70%), establishment of testbeds to distribute new technologies, development of empirical projects, promotion of green ships, improvement of infrastructure for green fuel supply, new ecosystem for green ships etc.

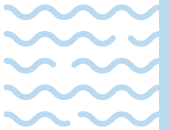
CHAPTER

II

Korea's decarbonization policy in shipping sector

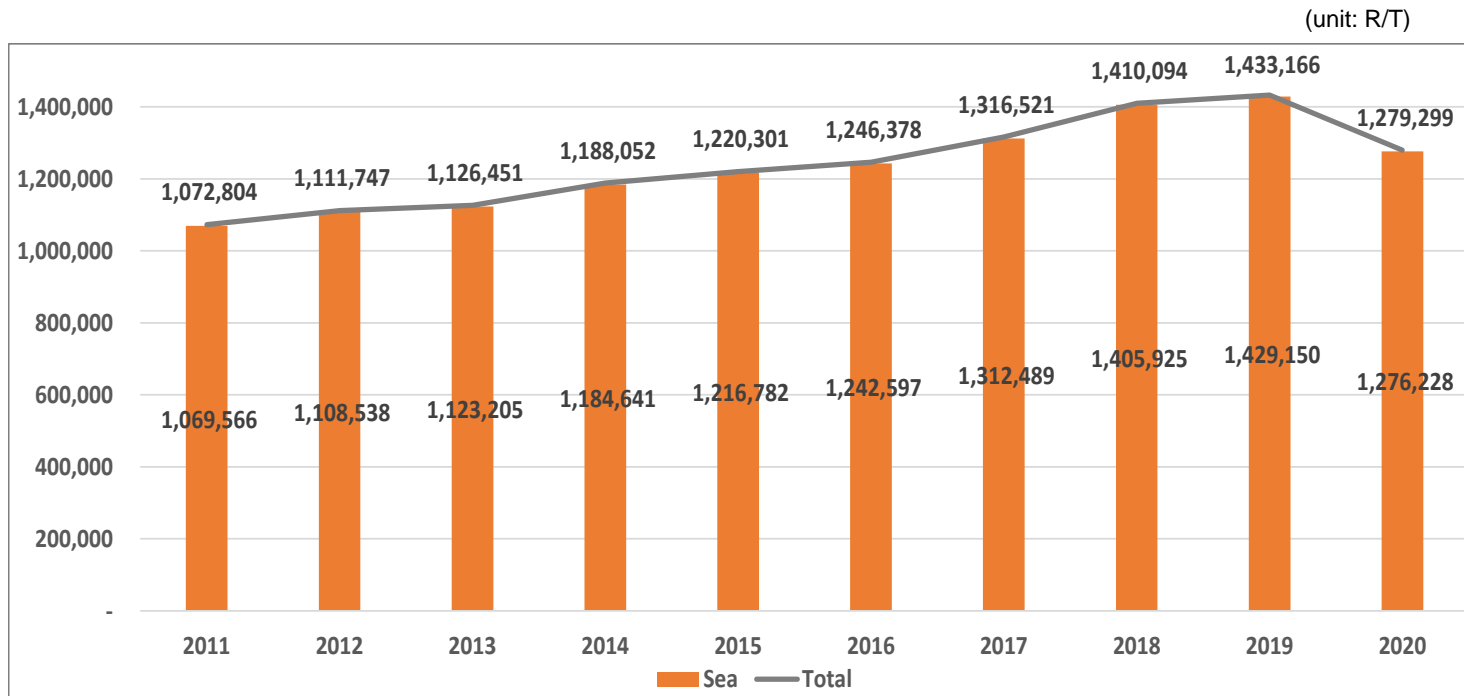


- 01 Introduction of Korea's shipping industry
- 02 Promotion of green ships
- 03 Certification system of green ships



1. Introduction of Korea's shipping industry

- ☑ 99.8% of Korea's cargo volume for import and export is by sea(2020)
- As of 2020, Korea's import/export cargo volume amounted to 1,279,299 thousand tons(R/T), which consists of 1,276,228 thousand tons(R/T) by sea and 3,071 thousand tons(R/T) by air respectively



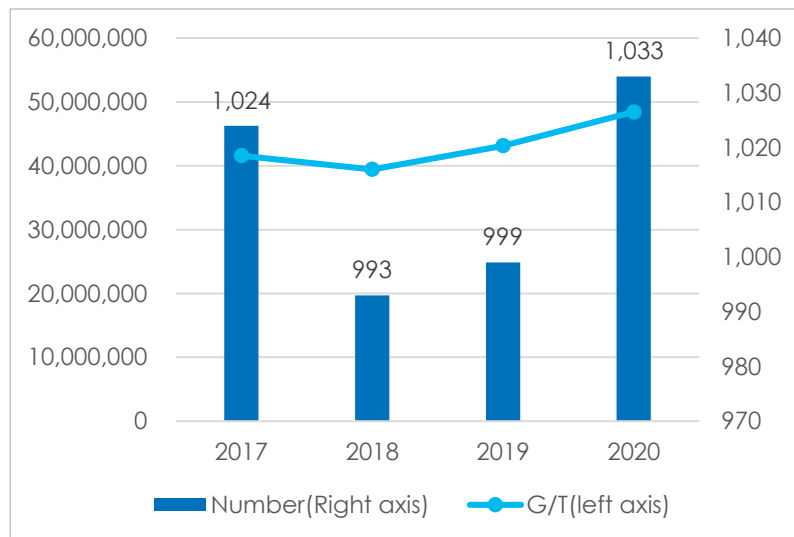
Source: Ministry of Oceans and Fisheries

1. Introduction of Korea's shipping industry

☑ Korean-flag overseas merchant fleet

- As the end of 2020, Korean-flag merchant fleet numbered 1,033 ships of about 48.5million gross tons
- Ships less than 10 years of age accounted for 61% of the total

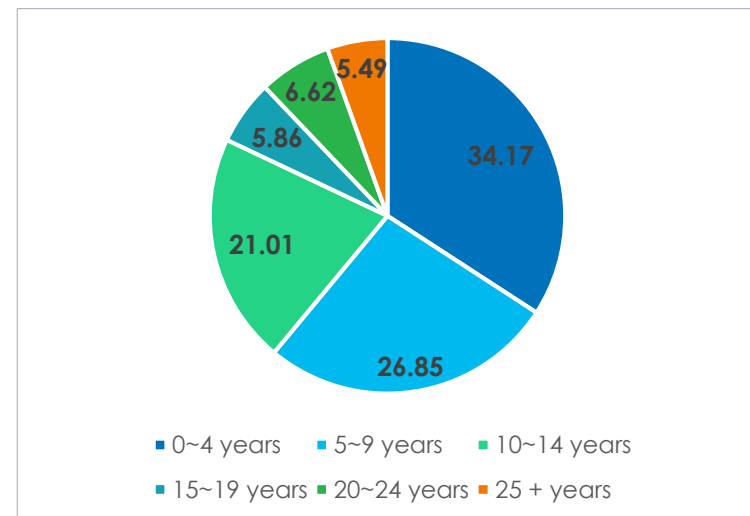
Korean-flag ocean going merchant fleet



Source: Ministry of Oceans and Fisheries

ocean going merchant fleet by age

(unit : %)



2. Promotion of green ships

1) Priority conversion to green ships in the public sector

- ☑ Public sector leads green shipping initiatives by constructing green government or municipal ships and remodeling of existing ships
- As of 2022, constructing new 43 green ships and remodeling of 30 existing ships in progress
 - New green ships: 28 government ships from Ministry of Oceans and Fisheries, 5 government ships from other ministries, 14 government ships from local governments and public institutions
 - Remodeling of existing ships: installed DPF(Diesel Particulate Filter) for 30 government ships
- Various types of government ships: fishing guard ships, training ships, patrol ships, icebreaker and research ships etc.
- Green shipping technologies: LNG, hybrid, scrubber, SCR(Selective Catalyst Reduction), DPF (Diesel Particulate Filter), electrical power etc.
 - Hybrid : Diesel engine + Battery
 - Scrubber : De-SOx scrubber system
 - SCR(Selective Catalytic Reduction): NOx reduction system
 - DPF(Diesel Particulate Filter): Diesel particulate matter or soot filtration system

2. Promotion of green ships

2) Project for supporting green and highly energy efficient ships

1

Background

- In order to comply with international environmental regulations and improve the performance of national vessels, government support is provided to scrap old ships(20 years or more) and newly upgrade to green and highly energy efficient ships

2

Summary

- Who is eligible? Provider of overseas cargo transportation services
- Policy target: newly constructing 50 ships by 2022
- Selection criteria: age of ships, the eco-friendliness of the new ships, financial health of the company, growth potential, contribution to the related industries etc.
- Benefits: 130,000 Korean won per GT (within 10% of the new shipbuilding price)
- Project period: 5-year project, 2018-2022 (Similar project can be introduced after 2022)
- Conditions of eligibility: support provided after confirmation of the decommissioning (including sales) of existing ships and contracting the construction of green ships

2. Promotion of green ships

2) Project for supporting green and highly energy efficient ships

3

Outcomes

- 7 ships(from 5 companies) in 2018, 8 ships(from 8 companies) in 2019, 6 ships(from 6 companies) in 2020, 13 ships(from 10 companies) in 2021, a total of 34 ships were supported, and 16 more ships are expected in 2022
 - On average, 3.7% of the shipbuilding cost are covered

	2018	2019	2020	2021	2022	합 계
Target (Number of ships)	7	6	8	13	16	50
Result (Number of ships)	7	8	6	13	16 (expected)	50

- Expected benefits: Estimated annual GHG reduction effects of 218,000 tons
 - Approximately 25 tons (daily fuel consumption of 2,500 TEU) X 280 days (annual operating days) X 0.2 (fuel saving ratio for new ships) X 3.114 (GHG emissions per ton) X 50 ships = 218,000 tons(subject to change depending on the type of vessels, operating days etc.)

2. Promotion of green ships

3) Project for supporting low and zero carbon ships

1

Background

- In response to the IMO initial strategy revision discussion (Nov. 2021), government supports green shipbuilding cost (less than 10% of the total budget) for overseas cargo shipping companies to introduce more green ships
- Requirements for green ships are strengthened to reduced emission or zero emission ships
 - Previously, requirements were limited to energy-efficient ships that can operate a long-distance with less fuel

2

Summary

- Who is eligible? Provider of overseas cargo transportation services
- Selection criteria: less than 10% of the total shipbuilding budget, low emission ships, high efficiency ships etc. (graded support depending on the emission reduction rates)
- Project period: 2023-2027

2. Promotion of green ships

4) Project for supporting green certified coastal ships

1

Background

- Inducing voluntary participation through government support for private coastal shipping companies who are passive in switching to green ship
- Providing government support for new construction of green ships or replacement by applying nationally certified new technologies

2

Summary

- Who is eligible? Coastal shipping companies (passenger and cargo etc.)
- Selection criteria: the eco-friendliness of the new ships, financial health of the company, growth potential etc.
- Conditions of eligibility: ships with an (preliminary) issuance of green ship certification
- Policy target in 2022: 5 coastal ships (including passenger ship, cargo ship, excursion ships and ferries etc.)

3. Certification system of green ships

- ☑ Granting certification to green ships and equipments to which new technologies are applied (Introduced in 2021)
- Certification grades vary from grade 1 to 5 comprehensively considering the degree of difficulty in green shipbuilding technology(fuel consumption rate), reduction rate of air pollutants, energy efficiency design index etc.
 - According to Article 13 of the Act on the Promotion of the Development and Distribution of Environment-friendly Ships, state government, local government, public institutions and local public entities are obliged to buy certified green ships when procuring ships
 - Currently zero emission ships are not yet feasible, so obtaining certification like grade 4 and 5 is a good start

Grade	Score	Note
Grade 1	≥ 65	Zero emission ship
Grade 2	≥ 50	Zero emission ship
Grade 3	≥ 35	Low emission ship (LNG, hybrid etc.)
Grade 4	≥ 15	High efficiency ship (high energy efficient design)
Grade 5	≥ 7	Installation of emission reduction system (SOx scrubber etc.)

4. National Strategy for Net Zero Shipping by 2050

- ☑ MOF(Ministry of Oceans and Fisheries) reported “**National Strategy for Net Zero Shipping by 2050**” for the implementation of global carbon neutrality to the “Presidential Commission on Carbon Neutrality and Green Growth”(Feb 14th 2023)
- ‘**National Strategy for Net Zero Shipping by 2050**’ consists of 4 promotion strategies and 12 action plans, aiming for carbon neutrality in the shipping sector by 2050
- **Vision** : Realization of a Carbon-Neutral Country through Net Zero Shipping by 2050
- **(3 Major) Objective**
 - ① Reduction of GHG emissions from shipping(compared with '08) : ('30) 60% → ('40) 80% → **(‘50) 100%**
 - ② (current) 4th country in total fleet → (future) 1st country in green-ship ratio : green-ship ('40) 70% → **(‘50) 100%**
 - ③ Backward and Forward Linkage Effects on production : ('30) 17 trillion won → **(‘50) 158 trillion won**

4 Strategy	12 Action Plan	4 Strategy	12 Action Plan
1. Switching to an green-ship fleet	① Reorganization of green-ship fleet with national flags ② Support for ship modification and facility improvement in operation ③ Reduction and management of carbon emissions of operating vessels	3. Expansion of green-ship technology and alternative fuel infrastructure	① Development and commercialization of green-ship technology ② Future alternative fuel supply chain and infrastructure construction ③ Deregulation of private sector to preempt the market
2. Improvement of investment conditions in the shipping industry	① Package support for green-ship taxation and finance ② Green-ship transition support plan for small and medium-sized companies ③ Establishment of an green-ship transformation model in which shippers and shippers cooperate	4. Green-ship corridors construction and international cooperation	① Promotion of global green-ship corridors projects ② Establishment of Korea-led international green-ship governance ③ Formation of industry-university-association-government international shipping decarbonization council



Danke !