

# KORMARINE

International Maritime & Energy Exhibition

## Shipping Companies' Strategy for Eco-friendly Ships

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R&D Team



# I Decarbonization Pressures

## ○ Regulatory Pressures

IMO GHG Roadmap (2018)	IMO GHG Strategy I(2023)
Reduction of total emissions(50%), Carbon intensity(70%) by 2050, compared to 2008	Net-Zero by or around, i.e. close to, 2050

Regulation	Organization	Effectuated year	Management Point	GHG	Emission Account
EEDI	IMO	2012	Energy Efficiency (Design)	CO2	Tank To Wake
EEXI	IMO	2023	Energy Efficiency (Design)	CO2	Tank To Wake
CII	IMO	2023	Energy Efficiency (Actual)	CO2	Tank To Wake
EU-ETS	EU	2024	Energy Consumption	CO2, N2O, CH4	Tank To Wake
Fuel EU Maritime	EU	2025	Carbon Intensity	CO2, N2O, CH4	Well To Wake
GHG Fuel Standard	IMO	After 2026	Carbon Intensity	CO2 + (?)	Well To Wake (?)
Market Based Measures	IMO	After2026	Energy Consumption	CO2 + (?)	Tank To Wake (?)

# I Decarbonization Pressures

## ○ Pressure through the Global Initiatives

### Getting To Zero Coalition

- Development / deployment of commercially viable deep sea zero emission vessels by 2030
- Powerful alliance of more than 200 organizations (including 160 companies)
- Supported by the necessary infrastructure for scalable net zero-carbon energy source

### Green Shipping Challenge

- Production of zero-emission fuels; demonstration / development of zero-emission bunkering and recharging capabilities; development of renewable energy infrastructure
- Deployment of low- or zero-emission vessels on the Busan-Tacoma route

### Clydebank Declaration

- Establishment of at least 6 green corridors by the middle of this decade
- Signatories are to facilitate partnerships to establish green shipping corridors
- 24 countries has signed

### First Mover Coalition

- Coalition of companies using their purchasing power to create early markets for innovative clean technologies
- Commitments for the four sectors (Aviation, Shipping, Steel and Trucking) were launched

# I Decarbonization Pressures

## ○ Pressure from the Market

### CDP(Carbon Disclosure Project)

- A global disclosure framework that assesses companies on their GHG emissions, as well as their plans for reducing those emissions
- Investors and corporate clients to evaluate the risk of GHG-related issues for a company

### Poseidon Principles

- A framework for integrating climate considerations into lending decisions to promote international shipping's decarbonization
- Signatories will measure the carbon intensity of their shipping portfolios on an annual basis

### Clean Cargo

- Clean Cargo is a collaborative partnership between ocean container carriers, freight forwarders, and cargo owners.
- Annual base benchmarking carrier's CO2 performance

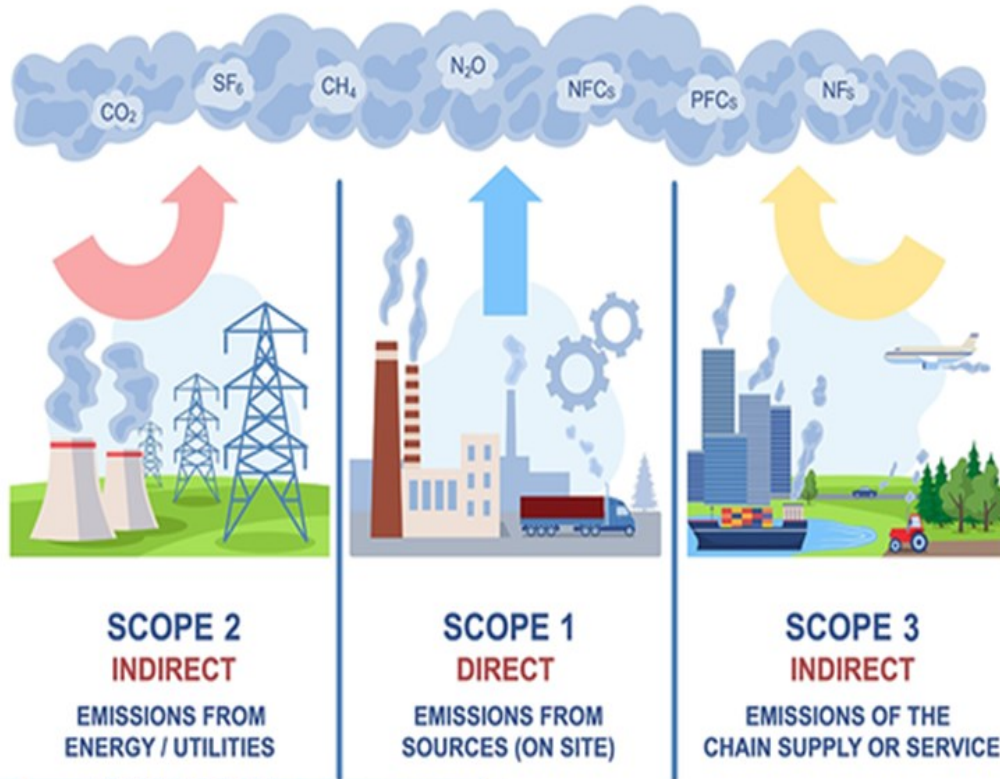
### Rightship GHG Rating

- Evaluate the safety, efficiency, historical base quality of each individual vessel and provide information to charterers and shippers
- GHG Rating(A,B,C,D,E,F,G) for each ship type based on ship design efficiency

# I Decarbonization Pressures

## ○ Pressure from the Market

### SCOPES OF EMISSIONS



- DHL - Global Forwarding Environmental Survey
- RHODIA - Purchasing Logistics Questionnaire
- NTM – Environmental Evaluation of Suppliers
- DB SCHENKER - Suppliers' questionnaire
- TETRA LAVAL - HSQE Questionnaire
- Kuehne + Nagel – Environmental Questionnaire
- EPSON - CO2 Emission Report
- IKEA - Environmental Audit
- Others (AHQ, EFTEC, DANZAS AEI, RAGAS)

Shipping company have to offer several innovative solutions to support its customers with emissions insights and ways to decarbonise their supply chains (Scope 3)

## II Shipping company Activities

### ○ HMM Overview

HMM provides the best transportation service based on over 100 diverse vessels, logistics facilities, a global network of routes connecting the world like a spider's web, latest IT systems, and skilled maritime professionals.

#### Business Performance in 2023

Sales <sup>1)</sup>	No. of global service routes	TEU capacity	Bulk cargo volume	CDP Climate Change (‘Leadership’ Level)
	Over <b>48</b> routes	<b>813,015</b> TEU	<b>43.61</b> million tons	<b>A-</b>
KRW <b>8,401</b> billion	No. of very large carriers with a capacity of more than 15K	Market share in the container ship business	No. of terminals operated	EcoVadis (as of April 2024)
	<b>20</b> carriers	<b>2.7</b> %	<b>3</b> owned terminal	<b>Platinum</b>

# II Shipping company Activities

## ○ HMM Vision, Mission & Strategies

### Vision

**Global leader in creating sustainable value for the world**

No.1 in customer trust | No.1 in employee satisfaction | No.1 in green ships

### Mission

A global SCM partner that provides the most advanced solutions and sustainable transport across shipping, ports, and logistics, leading to customer success, employee growth, and green growth in all areas of economy, society, and environment

### Execution strategy



# III Shipping company Activities

## ○ Net Zero Roadmap





## II Shipping company Activities

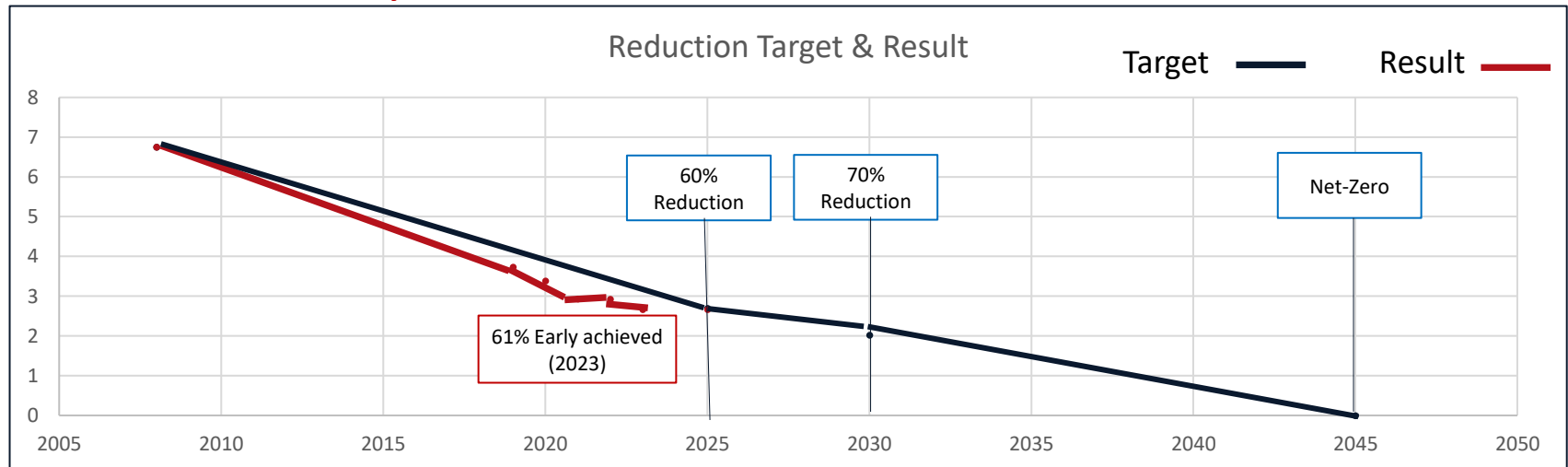
### ○ HMM GHG emission & Reduction Goals

HMM has established GHG reduction goals for overall emissions of Scope 1, 2, and 3 to achieve **Net Zero by 2045**.

■ **2023 HMM GHG Emission : 5.5 m.ton (Ship : 5.4 m.ton)**

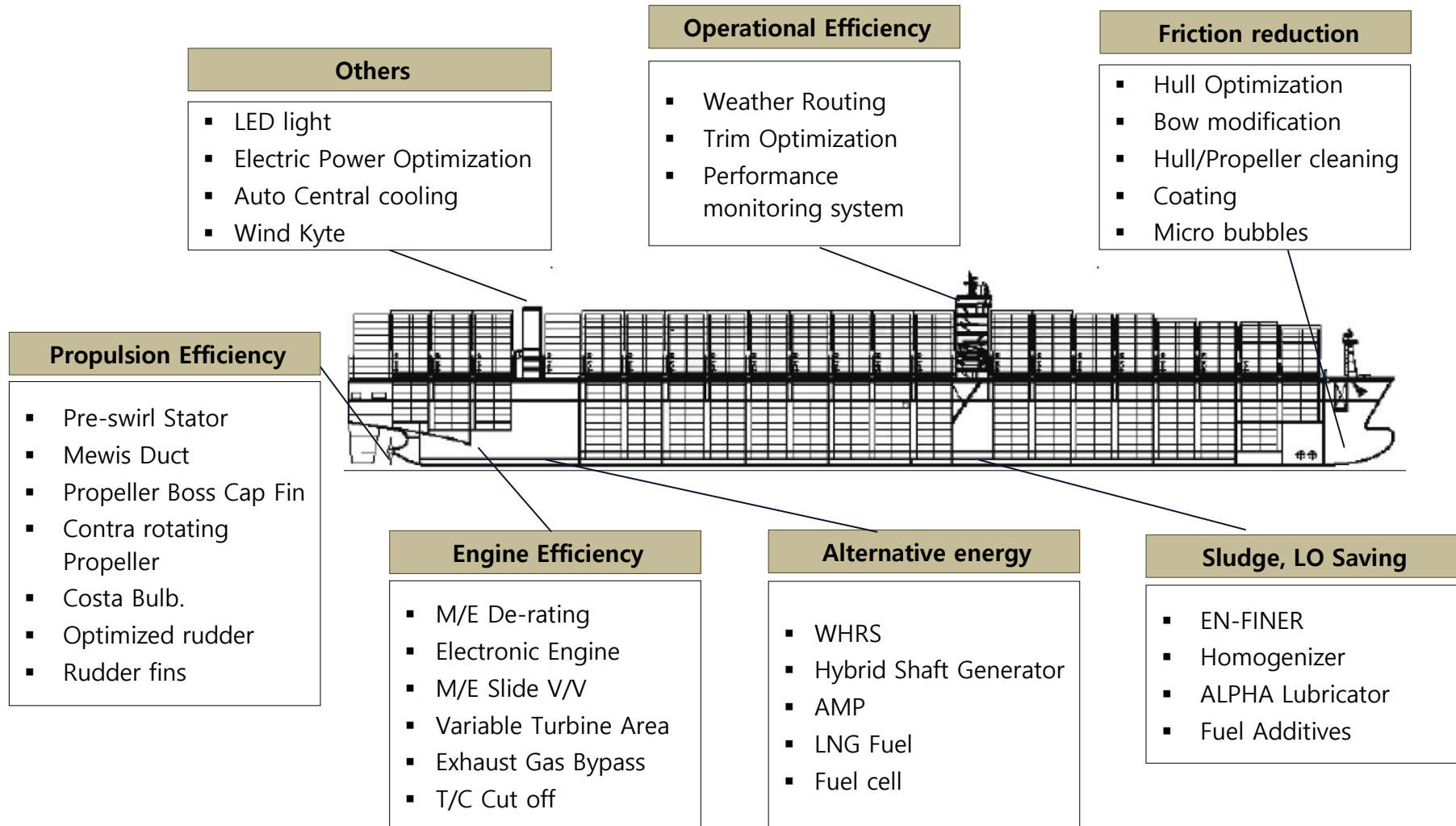
■ **Reduction Target (Carbon intensity for Container ship)**

- 60% reduction by 2025 compared to 2008 – **Early achieved (2023)**
- 70% reduction by 2030 compared to 2008
- **Carbon Neutral by 2045**



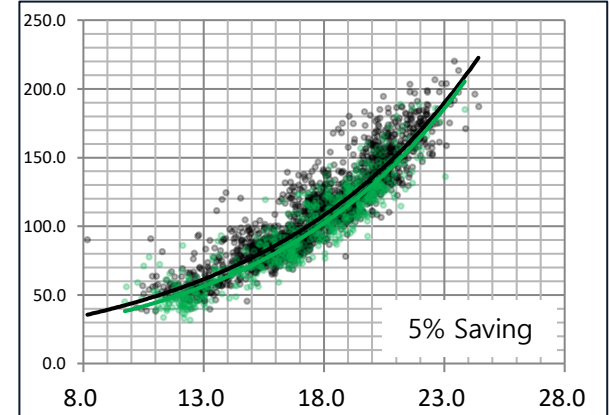
# II Shipping company Activities

## ○ Energy Saving Device

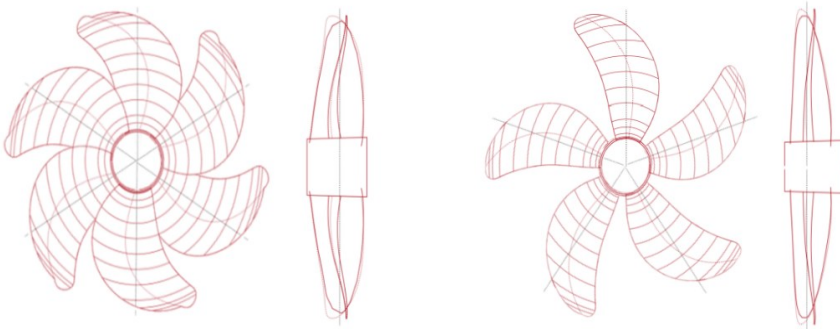


# II Shipping company Activities

## ○ Bulbous Bow Modification



## ○ Propeller Modification

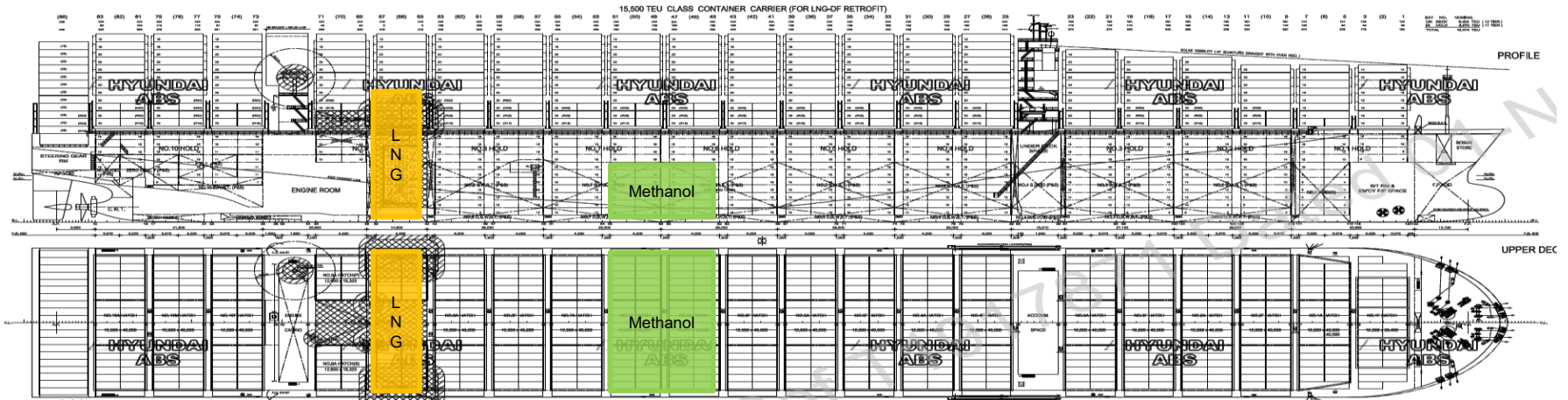


	Diameter	Blade	Weight	Power (19kts)	Remark
<b>Old Propeller</b>	9.0 M	6	91.8 Ton	18,454 kW	8.1% Saving
<b>New Propeller</b>	9.1 M	5	56.0 Ton	16,965 kW	

# II Shipping company Activities

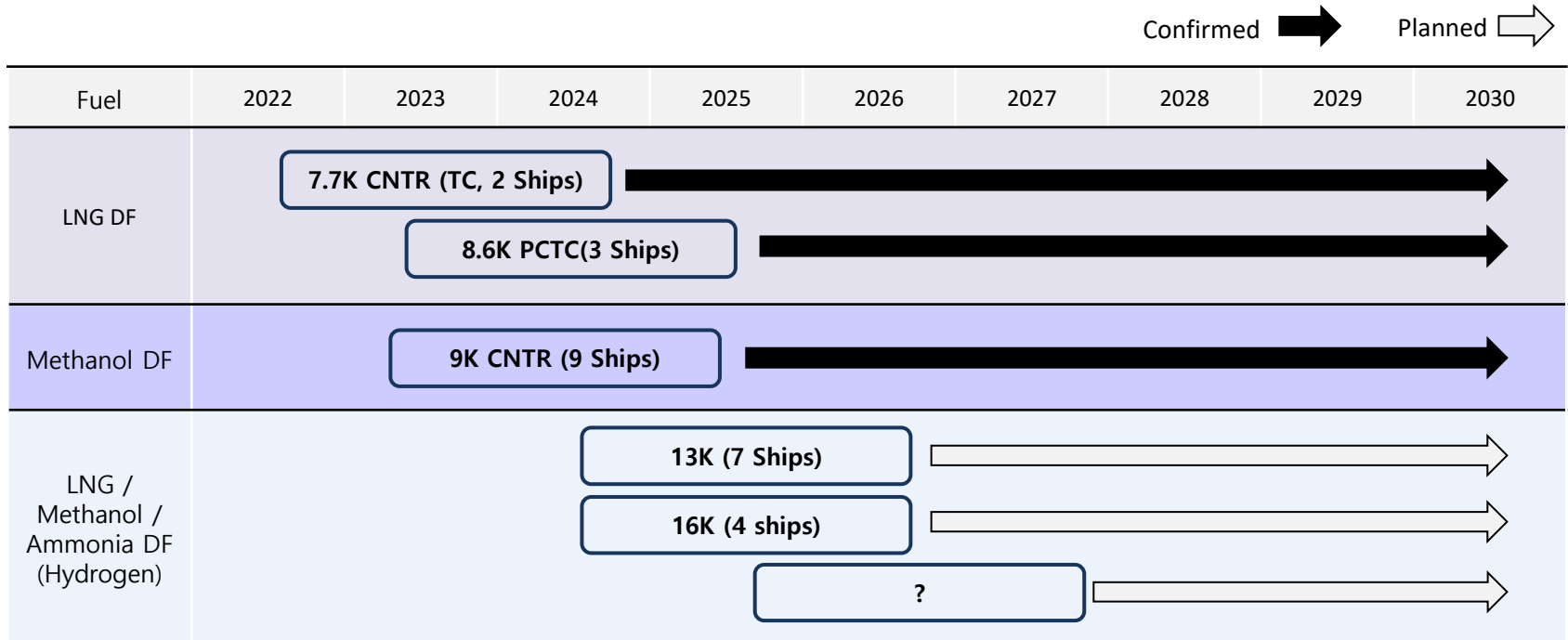
## ○ Retrofitting (Conventional Ship → Alternative fuels DF)

구분		LNG DF	Methanol DF	비고
Tank	Type	Type B (Hi-Mn)	Hull Tank (Type-B)	
	Capa.	6,350 M3 (2 Bunkering/Voy.)	16,000 M3 ( Bunkering/Voy.)	
Cargo loss		536 TEU	616 TEU	
Pre fabrication				
Retrofitting				Sea trial included
Cost				China yard



# II Shipping company Activities

## ○ New Building Status & Plan



### HMM orders nine methanol-fuelled boxships

Sam Chambers - February 14, 2023

3,163 1 minute read

## II Shipping company Activities

### ○ Fuel Supply Chain, R&D

#### ■ Build up a Fuel Supply Chain

- Seek for Strategic Partnerships with Methanol, LNG, Biofuel & Ammonia Suppliers
- To boost the Global Production Capacity of Alternative Fuels

#### ■ Strengthening National R&D and Industry Collaboration Project

- Involved 6 National R&D (ex, Onboard Hydrogen Fuel Cell)
- 10 Industry Collaboration Projects (ex, Biofuel, Ammonia Bunkering & Onboard Carbon Capture)



## II Shipping company Activities

### ○ Onboard Carbon Capture System



HMM, Samsung Heavy Industries, Panasia, and Korea Register of Shipping to collaborate on reducing carbon emissions by developing the **onboard Carbon Capture System**.



## II Shipping company Activities

### ○ Eco-Friendly Investment

#### Ammonia & LCO2 Transport Business



- HMM is continuously cooperating with potential shippers in pursuit of ammonia & LCO2 transportation and utilizing ammonia propulsion ships

#### Electric Truck



- HMM is planning to launch electric truck transportation business in the USA
- HMM has established MOU with the local company in 2022.
- HMM plans to make continuous efforts to build an eco-friendly inland transportation network and contribute to reducing carbon emissions.



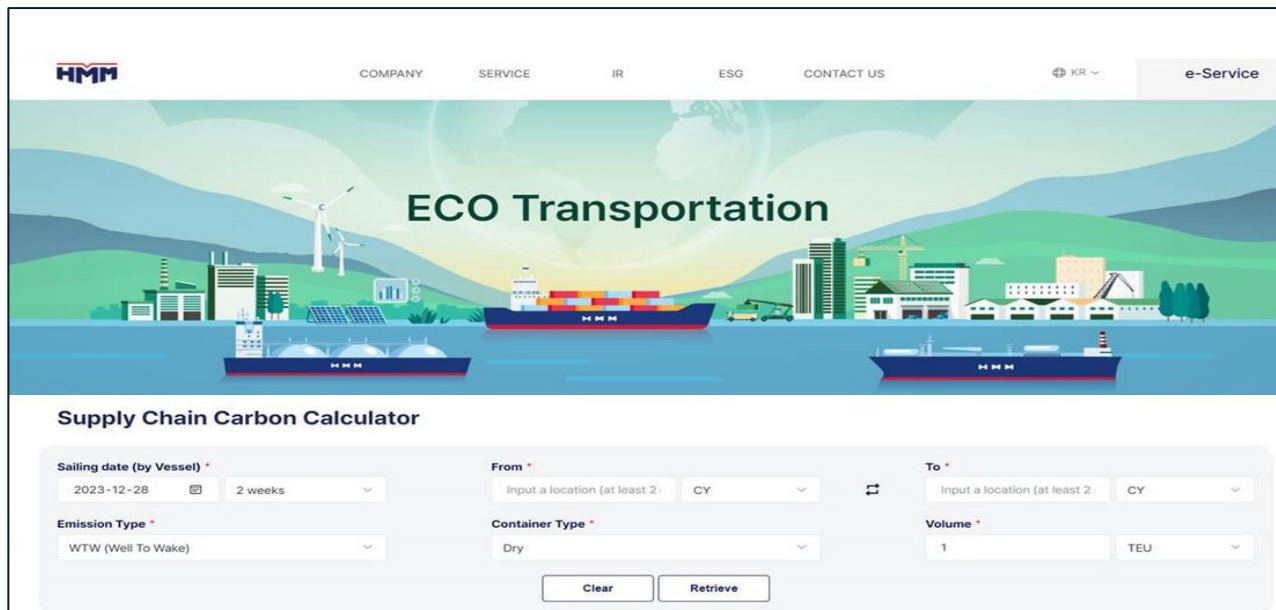
# II Shipping company Activities

## ○ Supply Chain Carbon calculator

We strive to continuously give effort to create sustainable solutions which support customers to understand the environmental impact of their choice.

Supply Chain Carbon Calculator which allows you to calculate the emissions of customer's container transport across the whole logistics journey.

This way, Our customer can effectively manage carbon emissions and choose the most ecological mode of transport.



The screenshot displays the HMM Supply Chain Carbon Calculator web interface. The header includes the HMM logo and navigation links for COMPANY, SERVICE, IR, ESG, CONTACT US, and a language selector for KR. An 'e-Service' button is also present. The main banner features the text 'ECO Transportation' over an illustration of a coastal city with wind turbines, solar panels, and ships. Below the banner, the calculator form is titled 'Supply Chain Carbon Calculator' and contains the following fields:

- Sailing date (by Vessel) \***: 2023-12-28 (with a calendar icon) and 2 weeks (with a dropdown arrow).
- From \***: Input a location (at least 2) and CY (with a dropdown arrow).
- To \***: Input a location (at least 2) and CY (with a dropdown arrow).
- Emission Type \***: WTW (Well To Wake) (with a dropdown arrow).
- Container Type \***: Dry (with a dropdown arrow).
- Volume \***: 1 and TEU (with a dropdown arrow).

At the bottom of the form are 'Clear' and 'Retrieve' buttons.

# II Shipping company Activities

## ○ Green Sailing Service

Launched in 2023, our Green Sailing Service enables customers to directly trade the reduced amount of GHGs resulting from the use of low-carbon fuels to power ships. Shippers can use these reductions as part of their Scope 3 emission reporting. In January 2024, we signed a contract with Hellmann, a German logistics company, and are currently engaging in discussions with other shippers for their use of the service. In the years to come, HMM will adopt a variety of lowcarbon fuels, including biofuels, LNG, and methanol, to promote low-carbon shipping. Based on this, we will build global green partnerships.

### Carbon Insetting Procedure



**HMM buys  
Sustainable biofuel\***



**HMM reduces  
Scope 1 emissions**



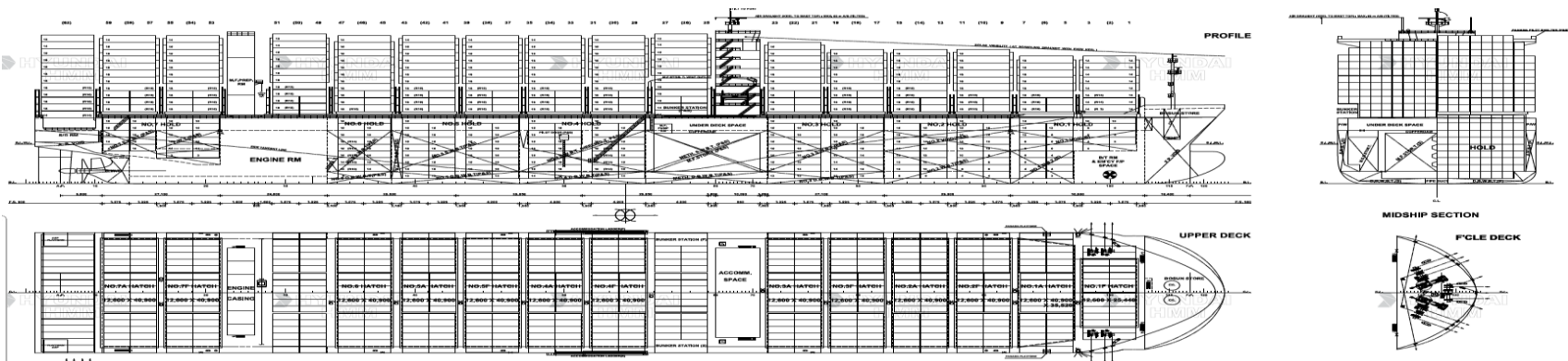
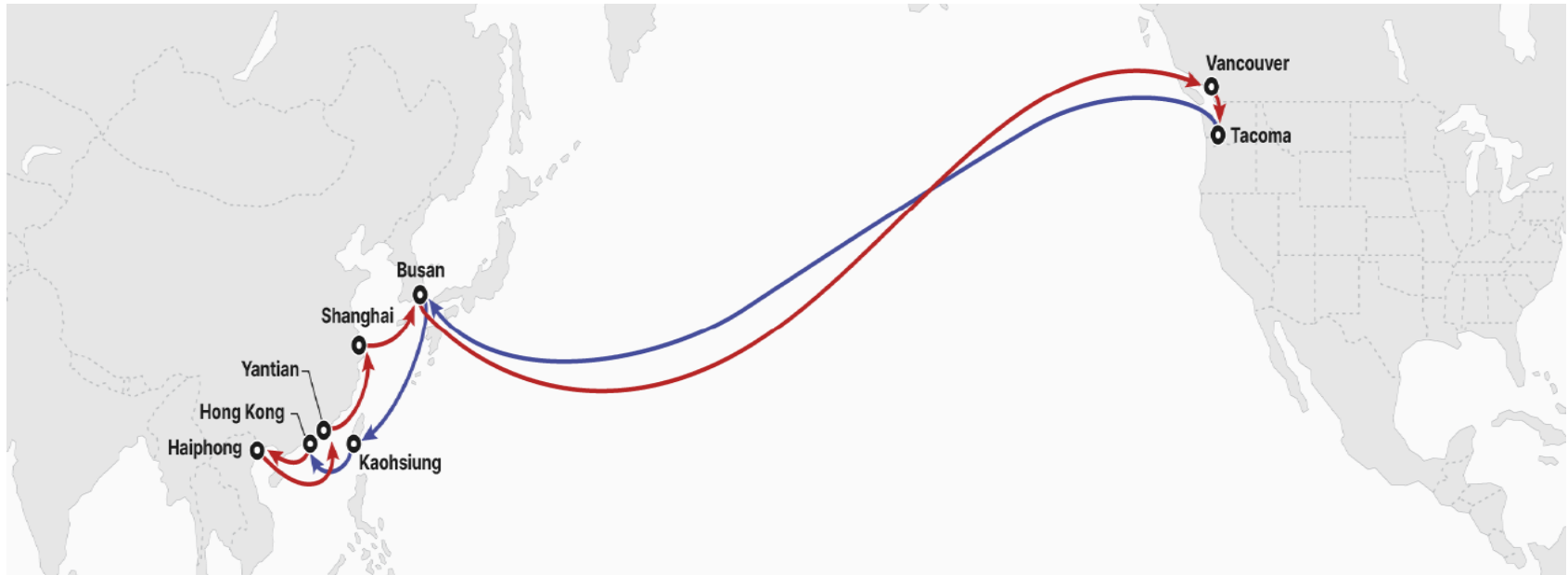
**Customer buys GHG  
Reduction**



**Customer reduces  
Scope 3 emissions**

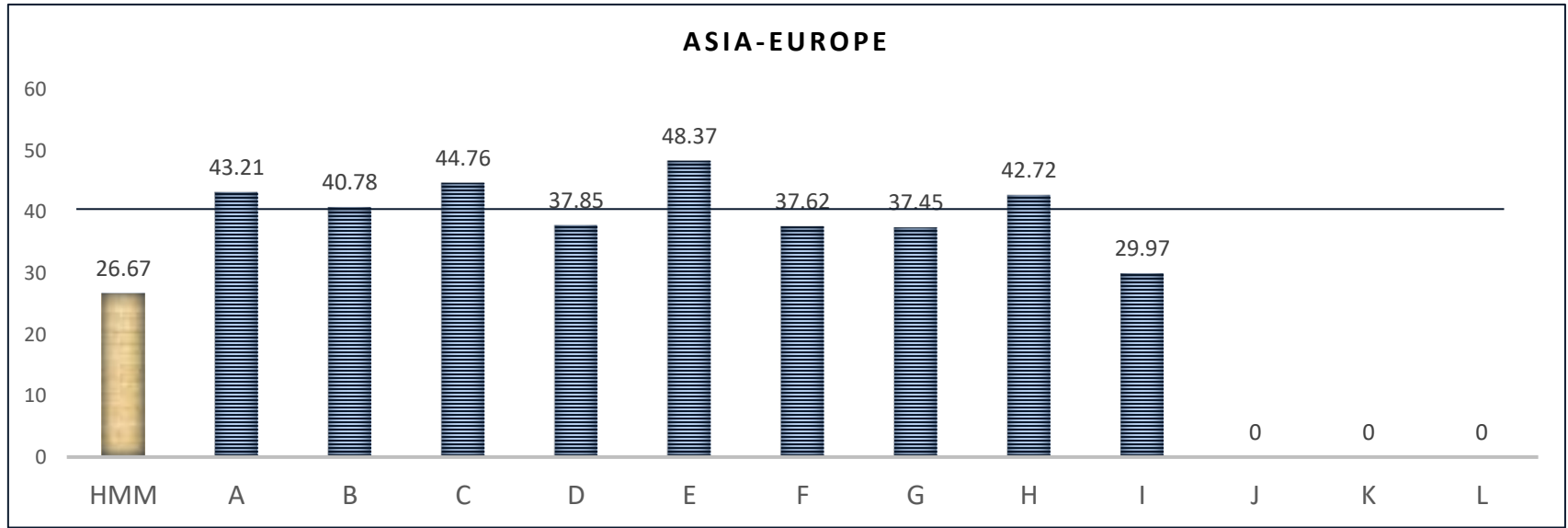
# II Shipping company Activities

## ○ Participating in the Green Shipping Corridor Initiative



## II Shipping company Activities

### ○ 2022 Carbon Intensity( $gCO_2e/TEU-KM$ ) of Container Carriers (Asia-Europe)



### ○ Q1'23 Carbon Intensity of Container Carrier ranking (Asia - US West Coast)









RANKING	CARRIER	CEI SCORE
1	Hyundai Merchant Marine	56.2
2	Yang Ming Lines	58.3
3	MSC	69.9
14	Matson	177.5

HMM stood out among other carriers in this trade route, demonstrating remarkable performance with an average score of 56.2 on the CEI index

(From XENETA, May 23, 2023)

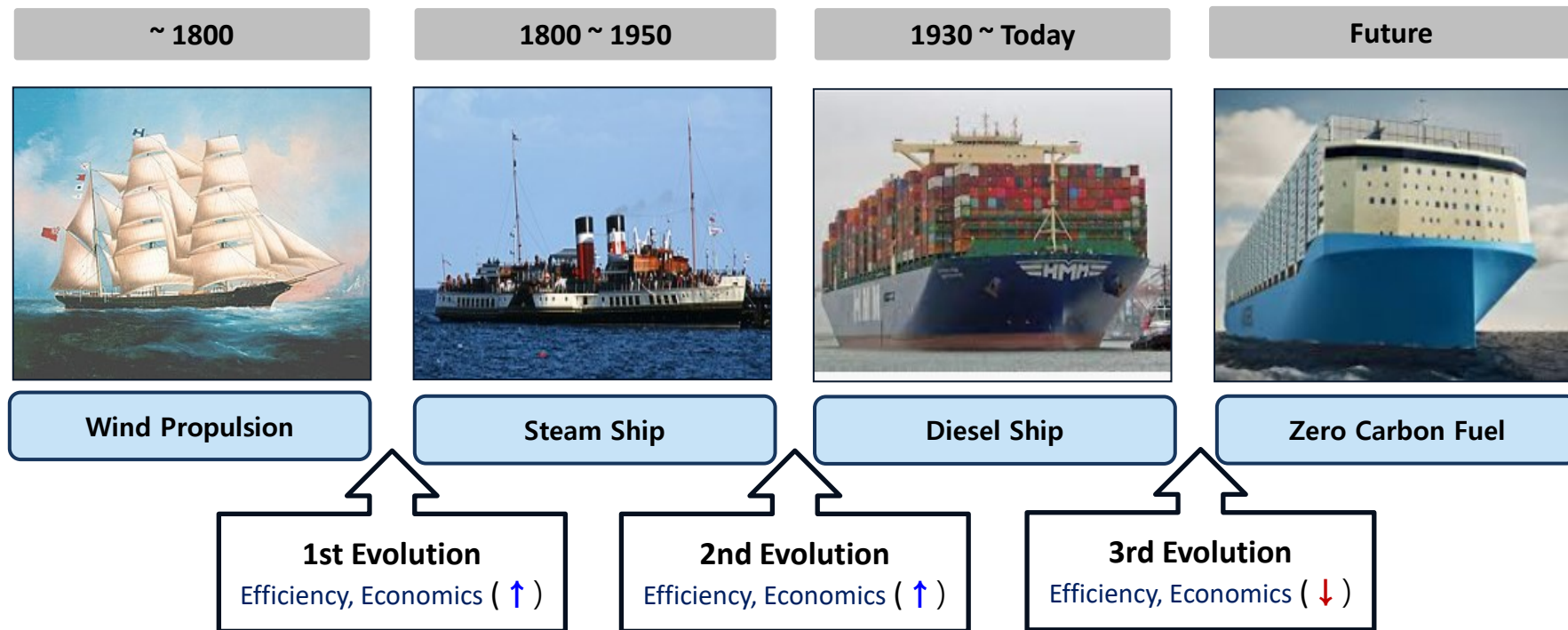
# II Shipping company Activities

## ○ Initiatives and External Performance

Category	Details
	 <p><b>Platinum Medal</b> HMM received Platinum medal, ranking among the top 1% of the world, in the EcoVadis evaluation.</p>
	 <p><b>'Leadership' A-</b> HMM obtained Leadership level, Grade A- , in the 'Climate Change Response Assessment' conducted by CDP.</p>
	 <p><b>Low Risk(15.4)</b> HMM obtained Low Risk level with the score of 15.4 in the Sustainalytics Assessment.</p>
	 <p><b>Environmental: A+</b> <b>Social: A+</b> <b>Governance: B+</b> HMM obtained Grade A in the ESG management evaluation conducted by the Korea Institute of Corporate Governance and Sustainability(KCGS).</p>

# III Conclusion

## ○ Evolution of Marine Fuel



### First Mover Dilemma

A shipping company's proposal for a \$450/t tax on carbon could give it a competitive advantage over others in the industry given its size and financial stability.

**Thanks for listening**