

MOL Group

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**Driving Sustainability**  
- MOL's Vision for  
Decarbonization-

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November 2025  
16<sup>th</sup> ASEF Forum



# Agenda

- 1. MOL's Corporate Profile**
- 2. IMO Net-Zero Framework**
- 3. MOL's Decarbonization Strategy & Actions**

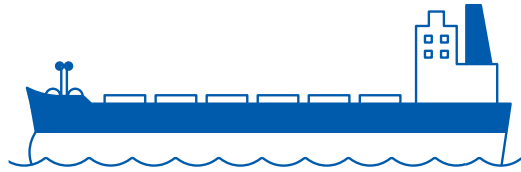
# 1. MOL's Corporate Profile

# MOL by the Numbers

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## MOL Fleet Scale (at the end of March 2025)

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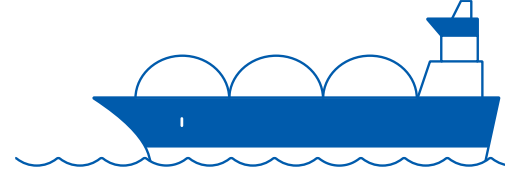


World's Second largest

**935** vessels

## Number of LNG carriers owned (at the end of March 2025)

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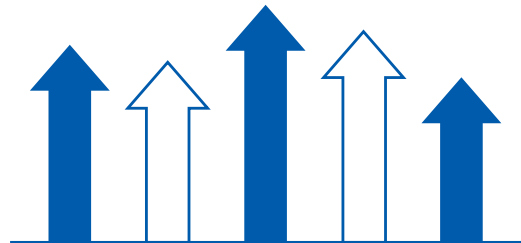


World's largest

**107** vessels

## Consolidated ordinary profit (at the end of March 2025)

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**419.7**

Billion JP Yen

## Number of countries served by MOL-operated vessels [out of 145 sea-facing countries](at the end of March 2025)

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More than **100**

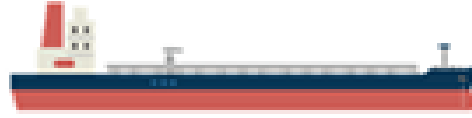
# MOL Business

## Dry Bulk Business



Dry Bulk carriers

## Energy Business



Tankers



LNG Carriers



Offshore Business

## Product Transport Business



Car Carriers



Containerships

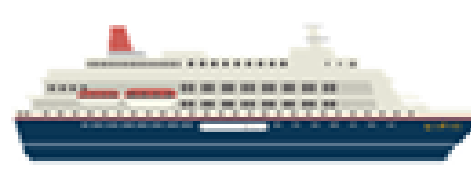
## Wellbeing Lifestyle Business



Real Property Business

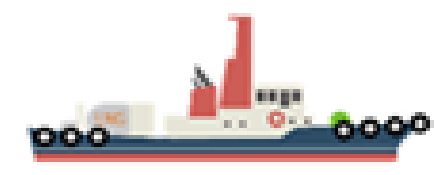


Ferries and Coastal RoRo ships



Cruise Business

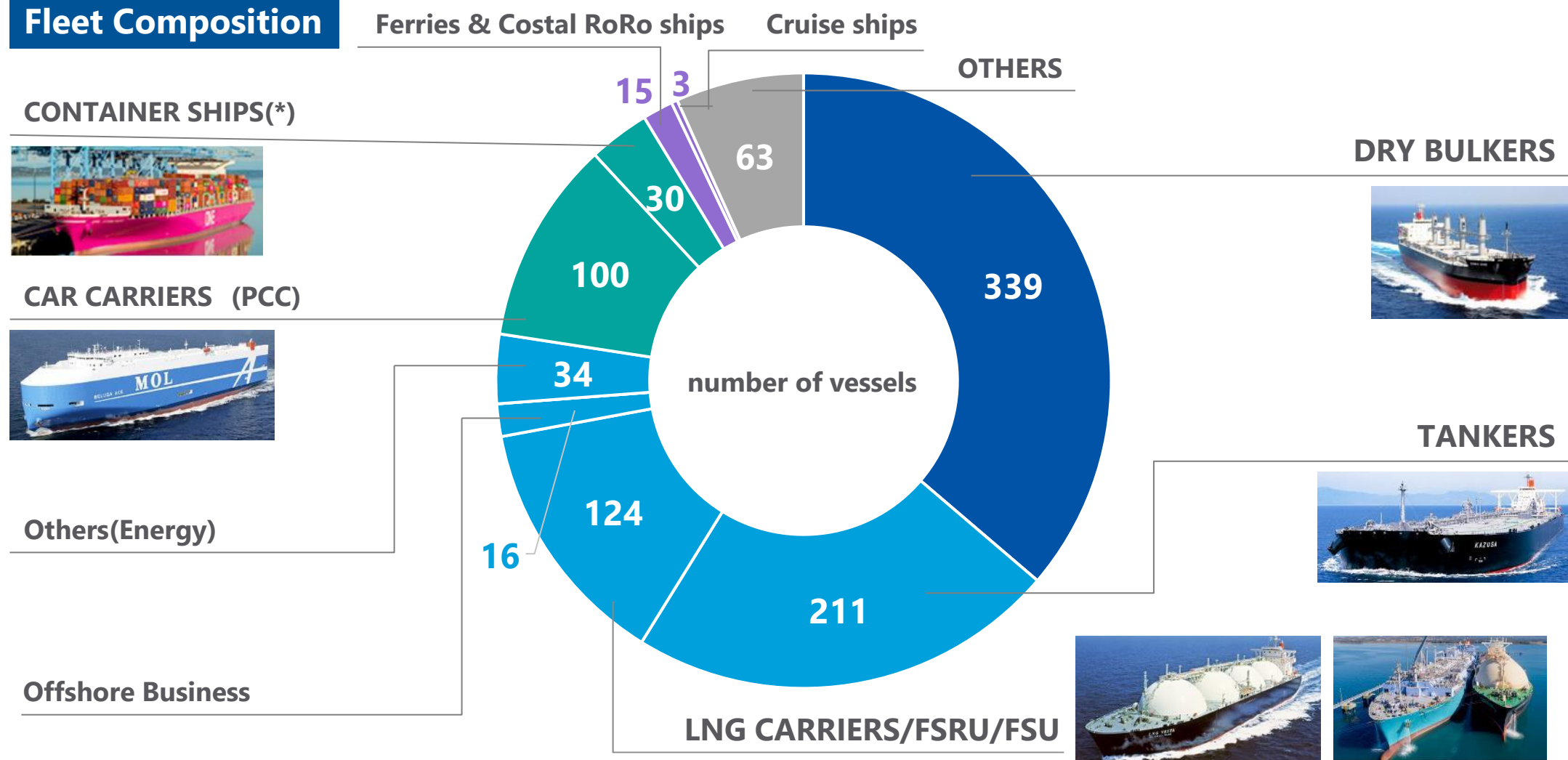
## Associated Businesses



Tugboats, Trading etc.

# MOL Business

## Fleet Composition

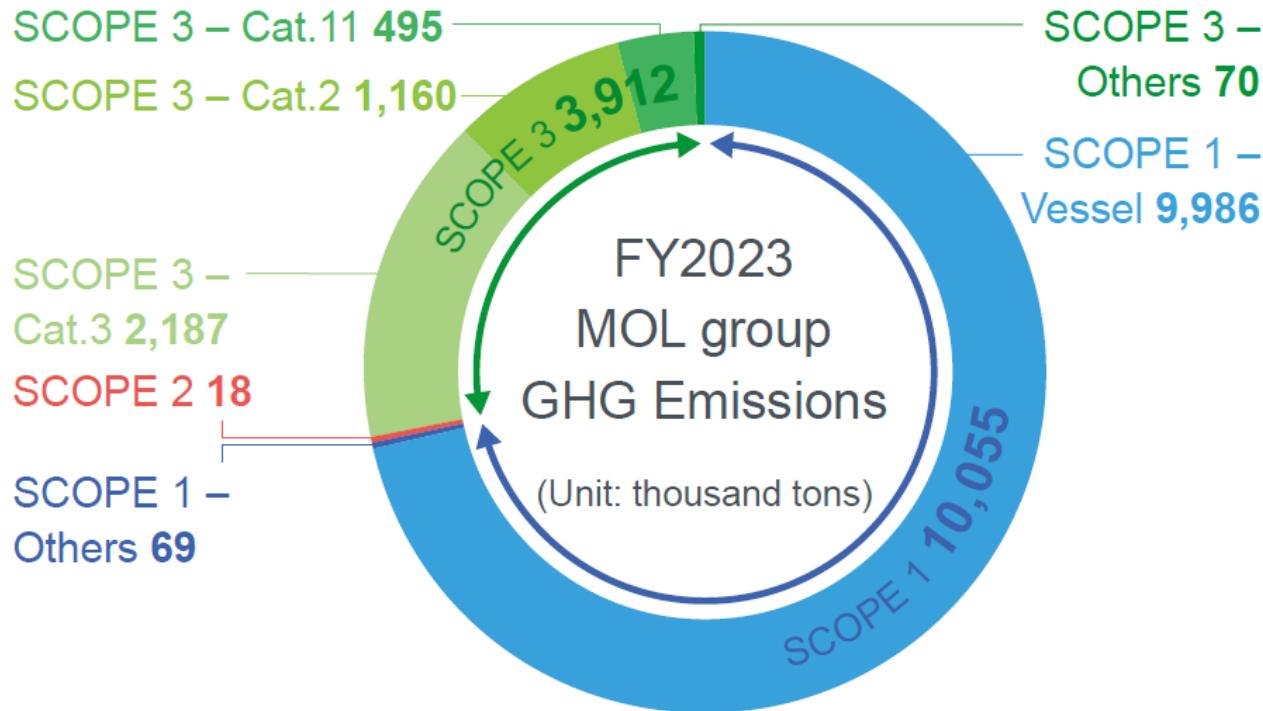


(\*)Japanese three shipping companies including MOL integrated their container service under Ocean Network Express(ONE) brand in July 2017.

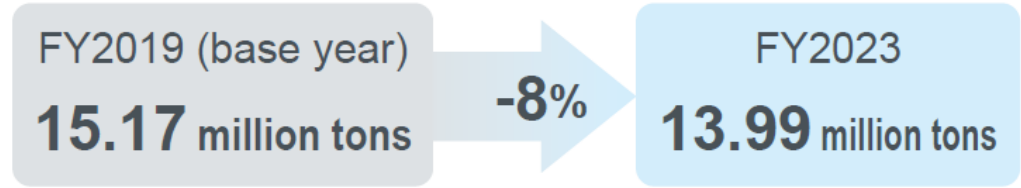
(at the end of March 2025)

# MOL Group GHG Emissions

## Total GHG emissions



- SCOPE 3 – Cat.3  
Emissions from the production of fuel consumed
- SCOPE 3 – Cat.2  
Emissions during the shipbuilding stage of MOL's owned vessels
- SCOPE 3 – Cat.11  
Emissions from fuel sold by MOL Group
- SCOPE 3 Others  
Total of Cat.1, 5, 6, and 7

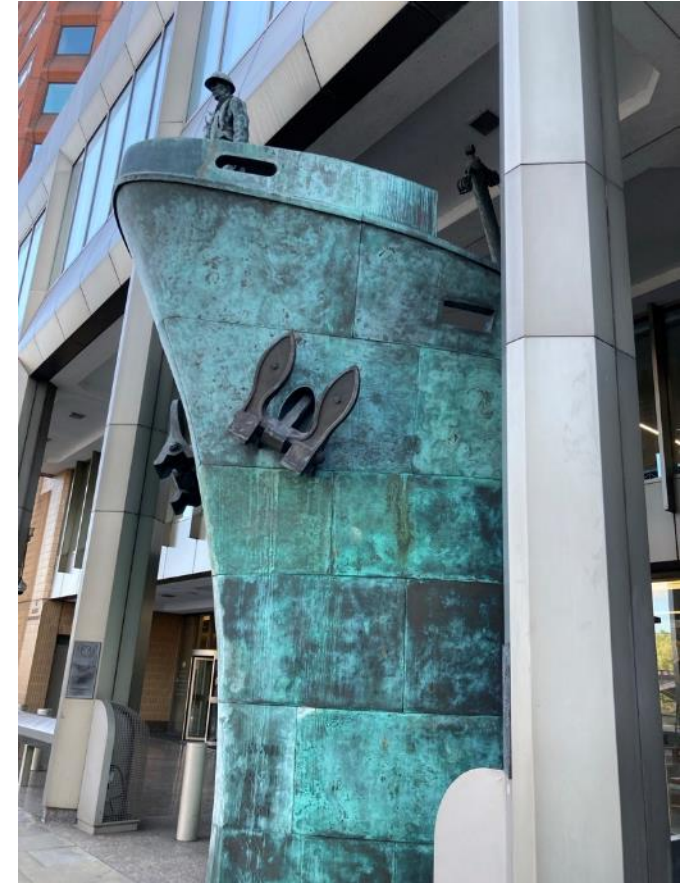


## 2. IMO Net-Zero Framework

# IMO Net-Zero Framework

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- The IMO Net-zero Framework is the first in the world to combine mandatory emissions limits and GHG pricing across an entire industry sector.
- The NZF was not adopted at MEPC ES.2 due to significant disagreements, and the meeting was postponed for a year.
- Further discussions will continue, and the regulation may likely be eased to find common ground among member states.



# What does the delay of Net-Zero Framework mean to MOL?

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- We remain firmly committed to continuing our efforts toward decarbonization.
- Along with using LNG and biodiesel, we will continue introducing new green fuels like ammonia and methanol early.
- Regulatory support is essential, and while short-term milestones may shift, medium- to long-term goals remain firm.



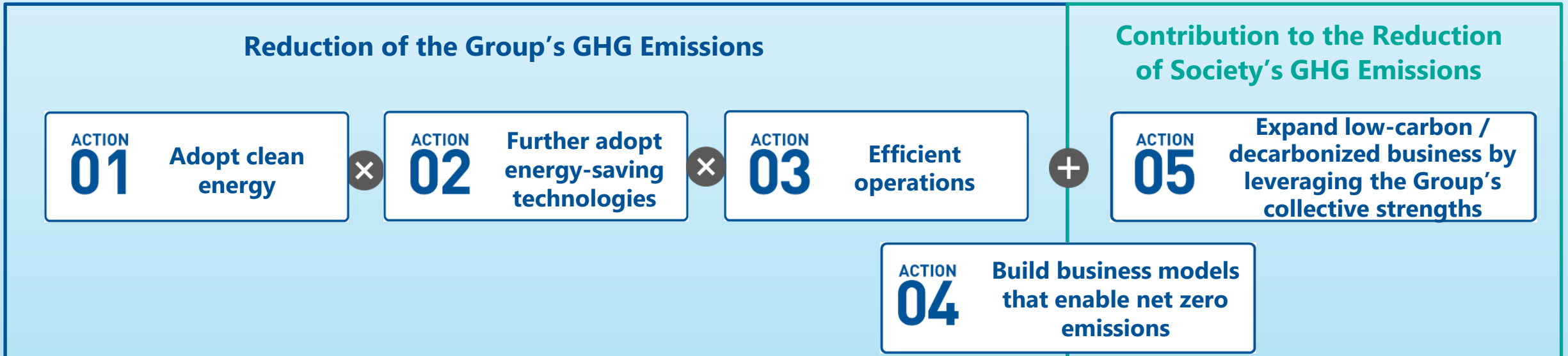
### 3. MOL's Decarbonization Strategy & Actions

# Our Targets and Actions

## Medium- to long-term targets



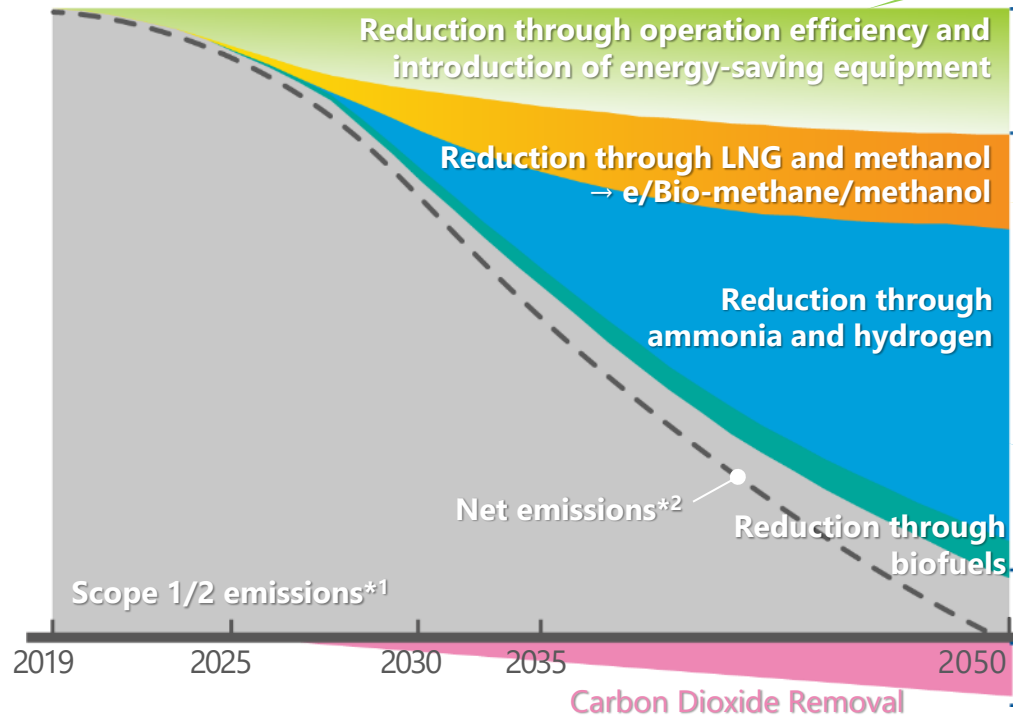
## Five Actions to achieve our targets



# Pathway to Net Zero GHG emissions

## MOL Group's Pathway to Net Zero GHG Emissions

Vertical axis: GHG emissions



**Efficiency improvements mainly focused on wind propulsion: approx. 20%**

**Adoption of clean energy: approx. 70%**

Less than 10% residual  
**Neutralization through carbon dioxide removal**



Wind Challenger



Efficient Operations



LNG-fueled Car Carrier



Ammonia Fueled Vessel

\*1 Scope: MOL and all consolidated subsidiaries. Scope 3 emissions are also included in the 2050 net zero target.

\*2 For the calculation of emissions for years prior to the target year of 2050, emissions will not be offset with carbon dioxide removal.

# Adopting Clean fuels

- Accelerate decarbonization of our fleet to achieve net zero by 2050.
- Utilize transition fuels such as LNG that can be effective immediately.

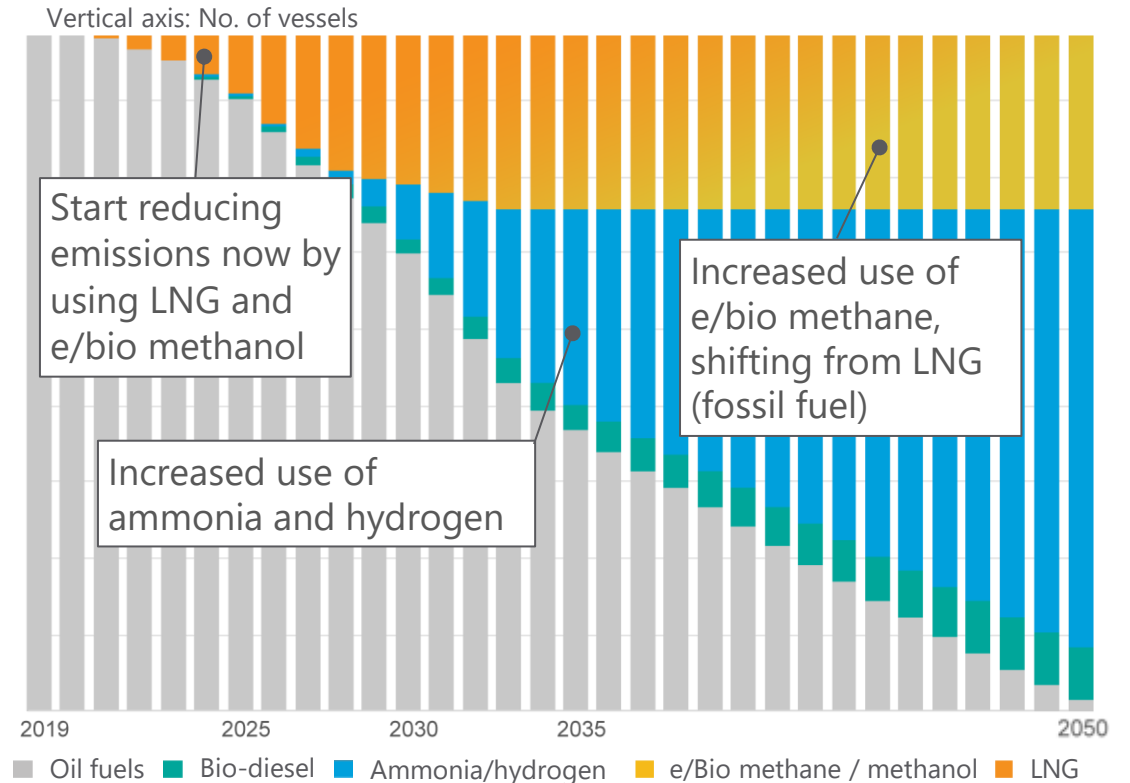
## Introduction of alternative fuels Milestones

2030 Ratio of zero-emission fuel used: **5%**

2030 No. of LNG/methanol-fueled ocean-going vessels: **90**

2035 No. of net zero emissions ocean-going vessels: **130**

### Composition of MOL's Ocean-Going Fleet by Fuel Type



# Ammonia-fueled vessels

## Deploying ammonia-fueled vessels

MOL decided to jointly own and charter 3 capesize bulkers and 6 chemical tankers (including 4 ammonia ready tankers) that can run on ammonia. These vessels will be delivered from 2026.

Ship Type	No. of Vessels	Contracts with CMB. TECH	Contracted Company with CMB. TECH	Scheduled Delivery Year	Shipyard
Ammonia dual fuel Capesize bulker	3	Joint ownership/ time charter	MOL	2026-27	CSSC Qingdao Beihai Shipbuilding Co., Ltd.
Ammonia dual fuel Chemical tanker	2	Time charter	MOLCT	2028-29	China Merchants Jinling Shipyard (Yangzhou) Dingheng Co., Ltd.
Ammonia Ready <sup>(Note)</sup> Chemical Tanker	4				



Image: Ammonia-powered vessel

Press Release: [Mar 24, 2025](#)

## Acquiring basic design approval (AiP), etc.

MOL and joint development partner received AiP for Ammonia fueled vessels from ClassNK (Bulk carrier / ocean-going liquefied gas carrier) and Lloyd's (ocean-going liquefied gas carrier).

### Ammonia Fueled Oceangoing Liquefied Gas Carrier



AiP Certificate Presentation Ceremony

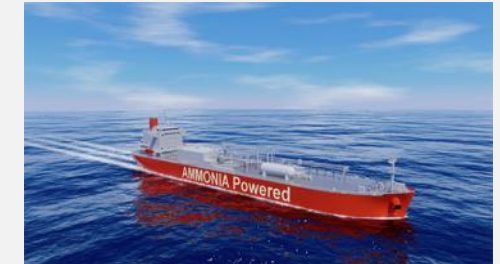


Image: Ocean-going liquefied gas carrier



#### Outline of the vessel

LOA: About 180m

Breadth: About 30m

Depth: About 19m

Cargo tank capacity: About 40,000m<sup>3</sup>

Main engine: Mitsui-MAN B&W type S60 two-stroke dual-fuel ammonia engine (under development)

Press Release: [Jan 27, 2023](#); [Apr 14, 2023](#)

# LNG fueled vessels

## Investment in LNG-fueled ocean-going vessels

Toward the introduction of 90 LNG/methanol oceangoing vessels by 2030, 42 LNG-fueled vessels, including car carriers, bulk carriers and VLCC are in service or have been approved for chartering or newbuilding (as of May 2025).



Car Carrier "Cerulean Ace"



Capesize bulker "Verde Heraldo" for JFE Steel

Press Release: [Mar 13, 2024](#); [Apr 18, 2025](#)

## Building a framework to expand LNG fleet

Opened a joint venture LNG carrier manning company in Indonesia to secure a stable supply of LNG crew members in April 2024, and conducted first LNG bunkering in Western North America among Japanese shipping companies.



Local opening ceremony



LNG bunkering in Canada

Press Release: [Apr 26, 2024](#); [Mar 05, 2025](#)

## Collaboration to adopt e/bio-methane fuel

In 2024, we launched joint study on the production of biomethane and its utilization for ships in Hokkaido. In 2025, we have started used of bio-LNG fuel through Titan Supply at Zeebrugge.



6 partners participating in the joint study



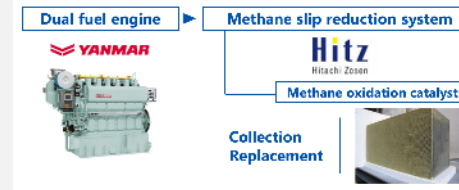
Car Carrier "Celeste Ace" receiving bio-LNG fuel



Press Release: [Aug 19, 2024](#); [Mar 19, 2025](#)

## Development of methane slip reduction technology

Received AiP for "Methane Oxidation Catalyst System" with Hitachi Zosen and Yanmar in 2022, and received a certification for 93.8% reduction in land-based test in April 2024.



Methane Oxidation Catalyst System



Demonstration vessel "Reimei"

Press Release: [Mar 16, 2022](#); [Apr 11, 2024](#)

# Clarification needed on LNG as fuel in the Net-Zero Framework

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## LNG Well to Wake Default Values

- Currently, the IMO LCA guideline does not specify these values.
- FuelEU Maritime sets the value at 18.5gCO<sub>2</sub>/MJ.

## Recognition of Avoided Emissions for Bio-LNG

- Avoided emissions, such as those from animal manure, are not addressed in the IMO LCA guideline.
- Recognizing these emissions is important to encourage the use of bio-LNG.

## Mass Balancing for Bio-LNG and e-LNG

- Mass balancing is currently not included in the IMO LCA guideline.
- Acknowledging mass balancing is crucial to promote bio-LNG and e-LNG.

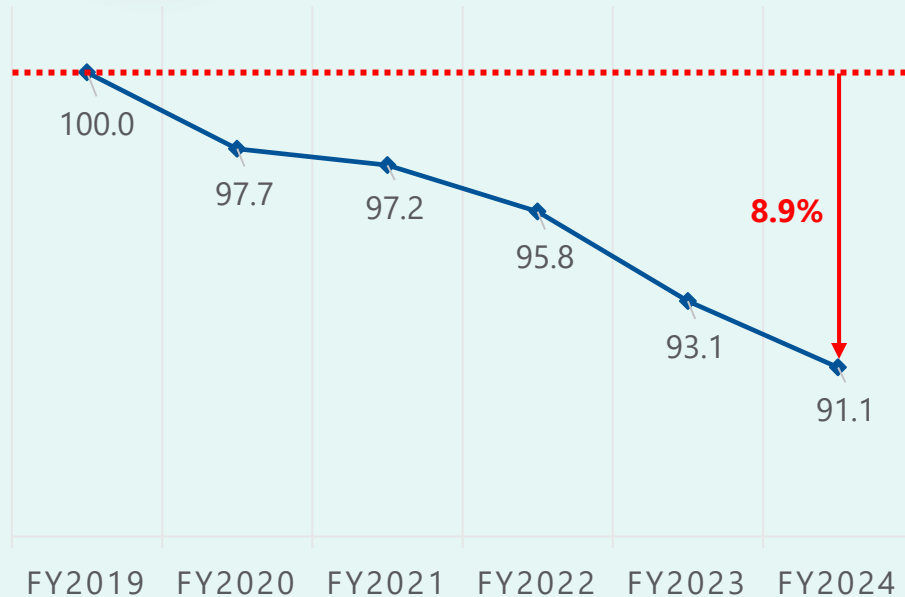
# Efficient Operations

- We will improve fuel efficiency by promoting operation efficiency (the DarWIN project) and pursue measures that we can take immediately to reduce GHG emissions.

Improve fuel efficiency

Improved fuel efficiency 8.9% as of 2025 (compared to 2019)

Progress with FY2019 as 100






## DarWIN Project Overview



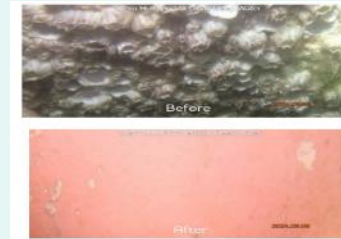
Digital Approach to Reduce GHG With Integrated Network

### Three main approaches for target vessels

 <p><b>1. Specification Improvements</b></p> <p>Installing energy-saving devices to improve hull and equipment efficiency</p>	 <p><b>2. Condition Maintenance</b></p> <p>Maintaining energy efficiency through regular maintenance measures</p>	 <p><b>3. Optimal Operation</b></p> <p>Optimizing operation by optimal route, speed, trim(condition)</p>
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PBCF installed on a propeller  
Abt 2-3% FOC reduction



Hull Cleaning (by ROV/ diver)  
Abt 1-7% FOC reduction

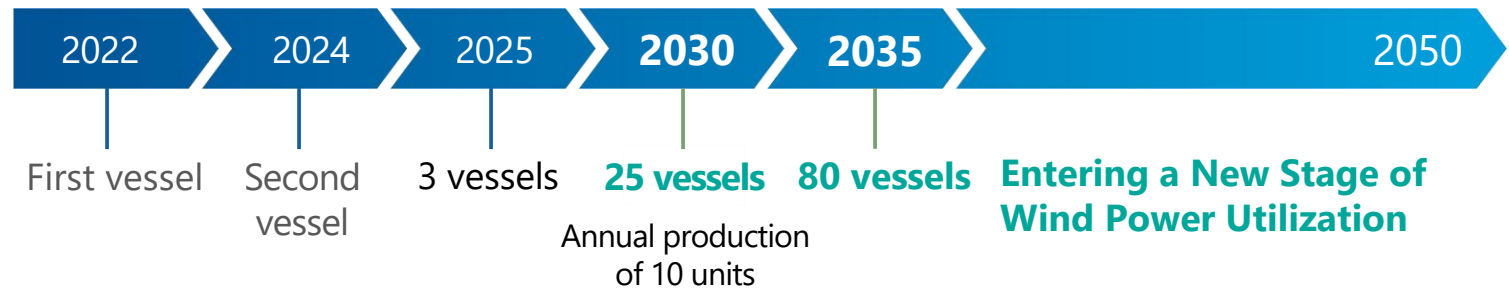


Voyage optimization tool "Wayfinder"  
Abt 3-6% fuel & Emissions savings

# Wind Challenger



- Device developed by MOL and its partners
- First vessel safely under operation since 2022
- Cutting fuel use and emissions by 5 to 8%
- Project cooperated with our customers



# Wind Challenger on LNG carriers

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Video Play

# Carbon Inset Program

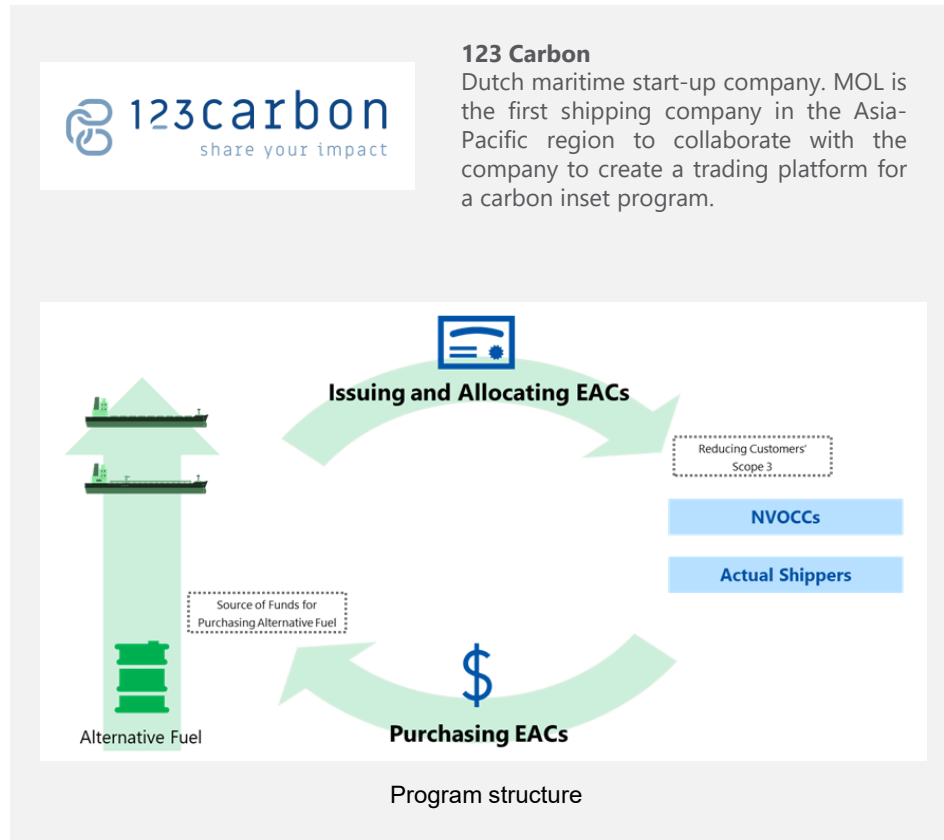


By collaborating with stakeholders involved in marine transportation to create and enhance low-emission marine transportation services using alternative fuels, MOL contribute to the reduction of Scope 3 emissions for customers utilizing marine transportation.

## Program structure and collaborative partner

## Participation to initiative

## Contract cases



**Book and Claim Community**  
A community created in 2023 to develop a unified book and claim chain of custody framework for transport decarbonization. MOL is the first and only Asian company joining the board of the community. (Joined in Sep, 2024)

**Secretariat**  
RMI, Smart Freight Centre

**Governing Board**  
amazon, Deloitte, DHL Group, Meta, Microsoft, MOL Mitsui O.S.K. Lines, NORDEN, Shell, UPS, world energy

**Strategic Partners**  
GREEN MARKET ACTIVATION, ISCC, RSB.

**Book and Claim Community in 2024**

**Be Forward (JPN) – Used Car Transportation**  
Signed for MoU for book and claim service for used car transport to Africa.

**Nippon Express (JPN) – Logistics**  
Participate in the alliance, and launch an international ocean freight forwarding service that reduces customers' Scope 3 emissions from Feb, 2025

**Nippon Express (USA) – Logistics**  
One of the world's largest U.S. logistics companies. In addition to land transportation, the company is also involved in the forwarding business.

\*Includes cases where the contract was concluded through a mechanism different from that shown.

Related info.: [BLUE ACTION NET-ZERO ALLIANCE](#) Press Release: [Feb 12, 2025](#)

Press Release: [Sep 13, 2024](#)

Press Release: [Dec 19, 2024](#); [Feb 05, 2024](#); [Feb 12, 2025](#)

