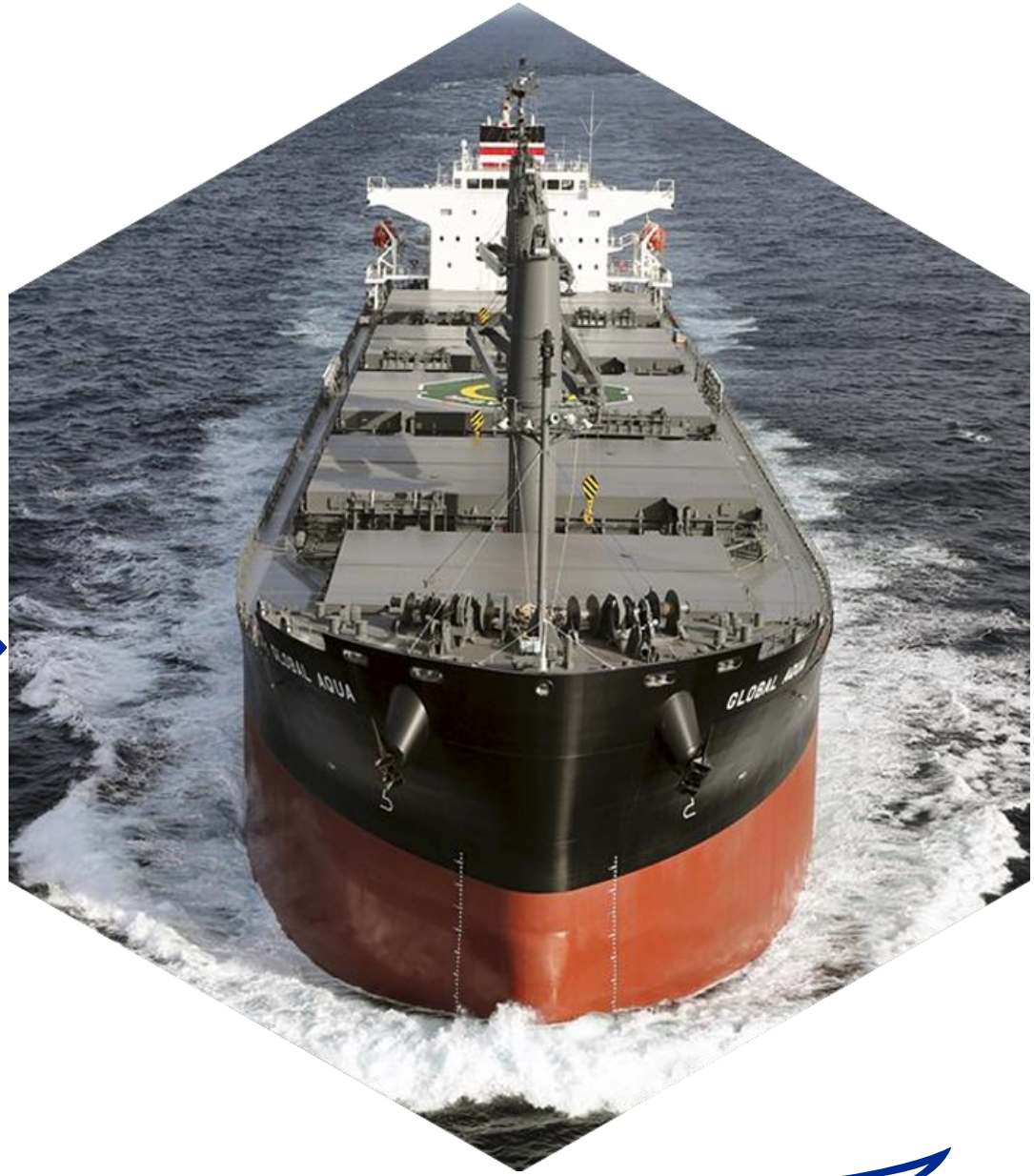
●●●●NYK Group

WPAC 2025

09.24.2025



NYK LINE
NIPPON YUSEN KAISHA

NYK GROUP

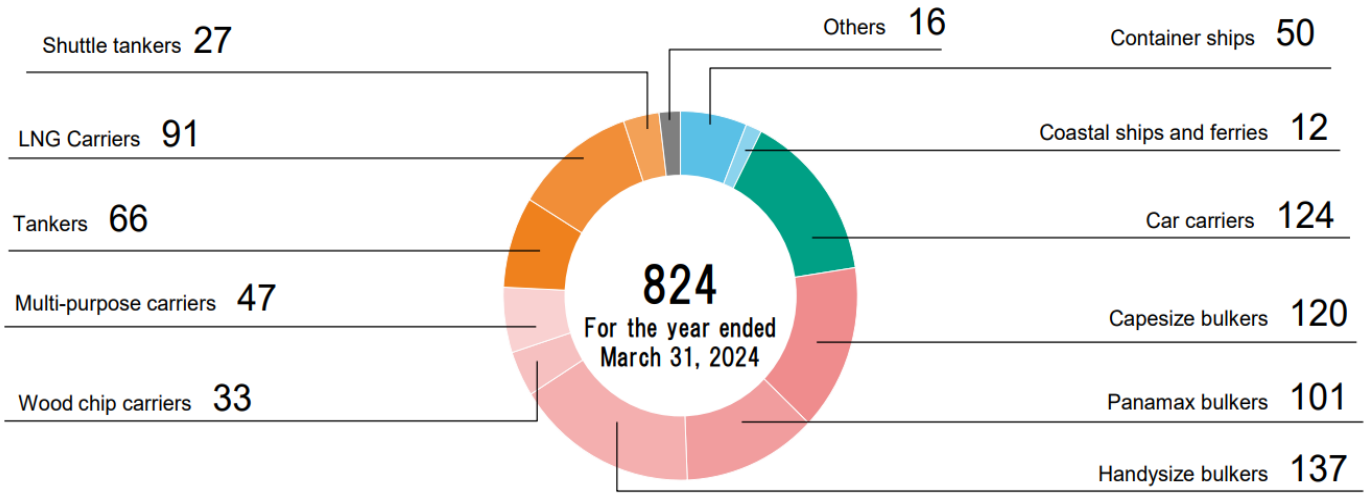
About NYK - Overview

Established
29 September 1885

Paid-in Capital
JPY144,319,833,730

Employees
35,230 as of 31 March 2025

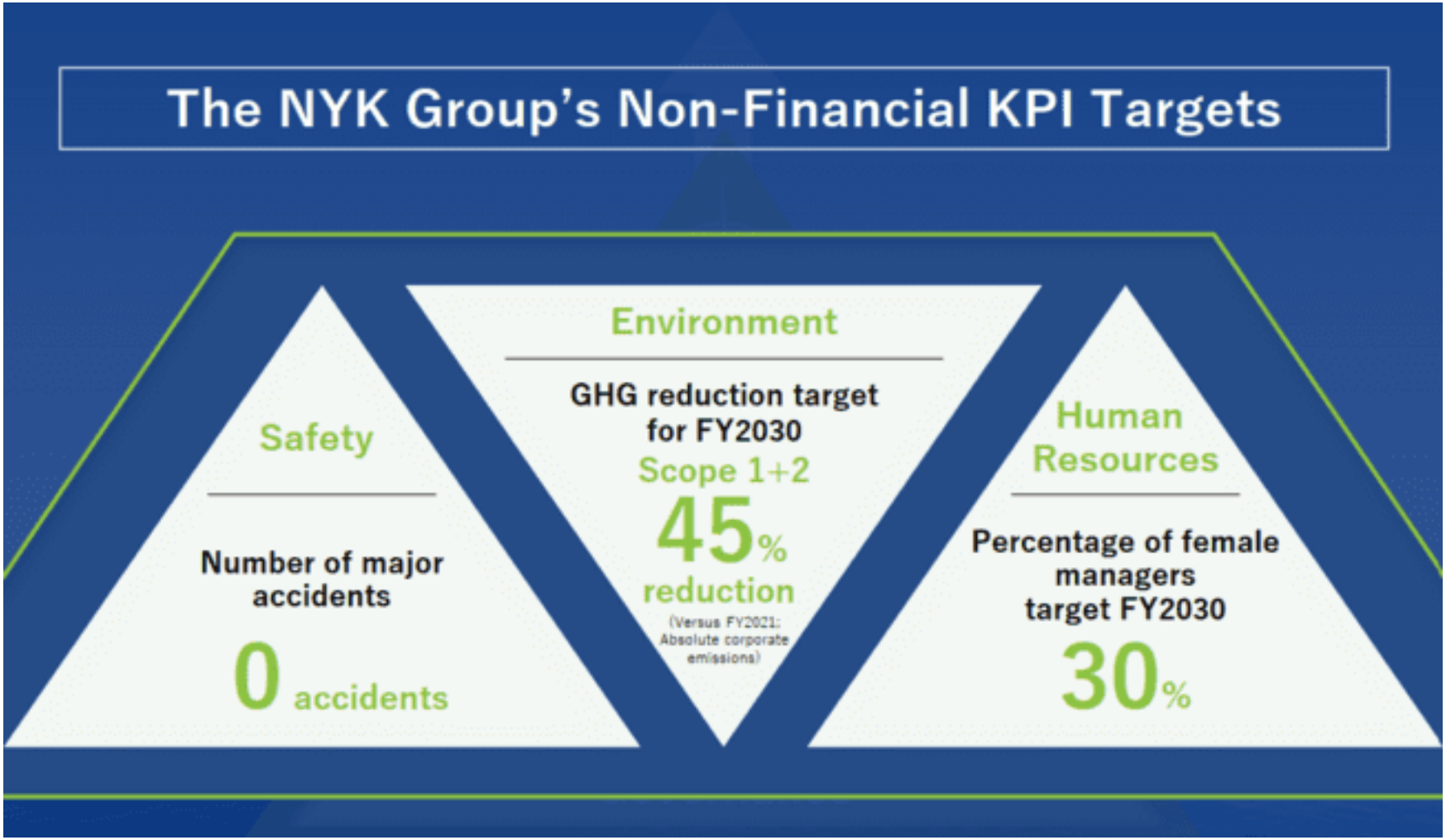
Main Activities
Bulk Shipping Business, Liner Trade, Air Cargo Transportation, Logistics, Real Estate and Other businesses



Note: "Others" include FPSO, FSO, drillship, LNG bunkering vessel, CTV and others.

NYK ESG Story

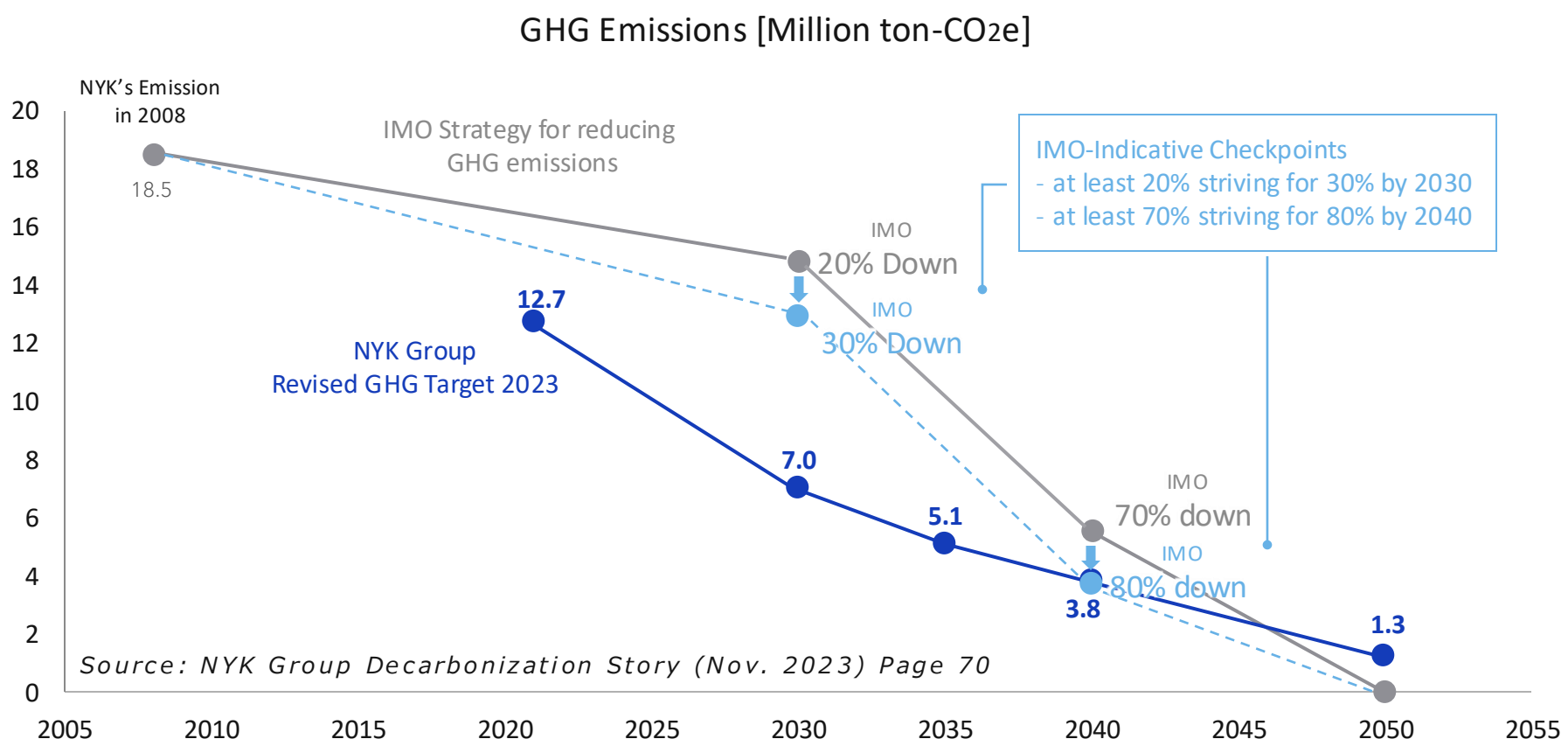
Main material issues identified for NYK Group



ENVIRONMENT

GHG Reduction Targets

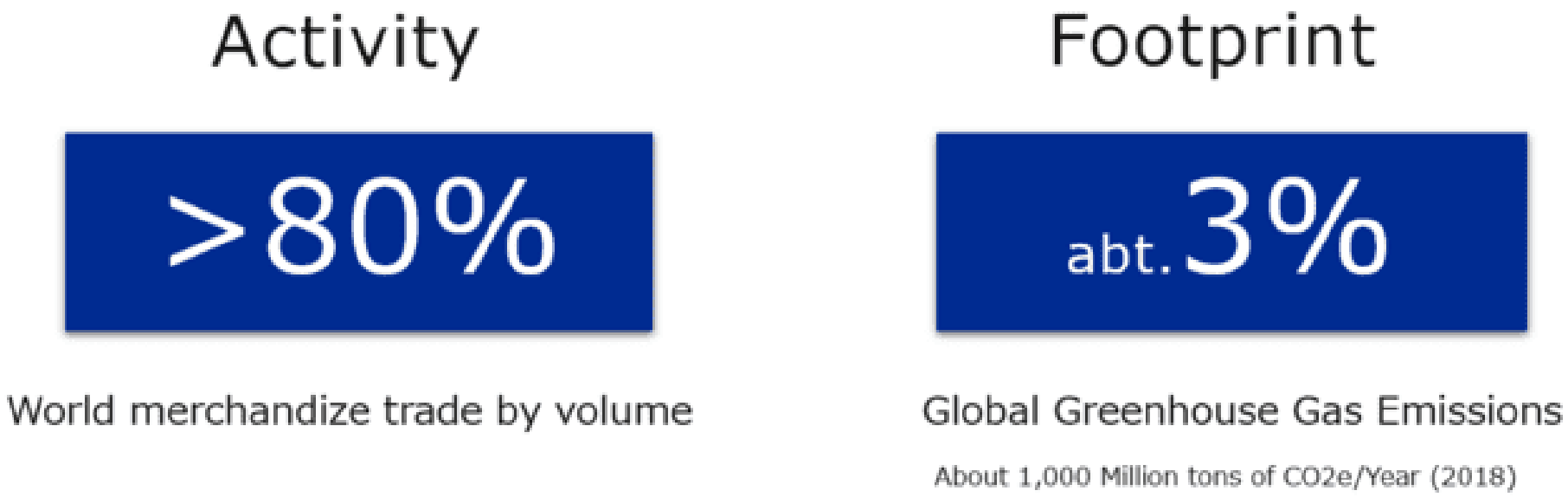
- NYK is leading GHG emission reduction initiatives in international shipping



First Movers Coalition（FMC）and collaboration among stakeholders sharing the same ambitions are key to success

Maritime Industry

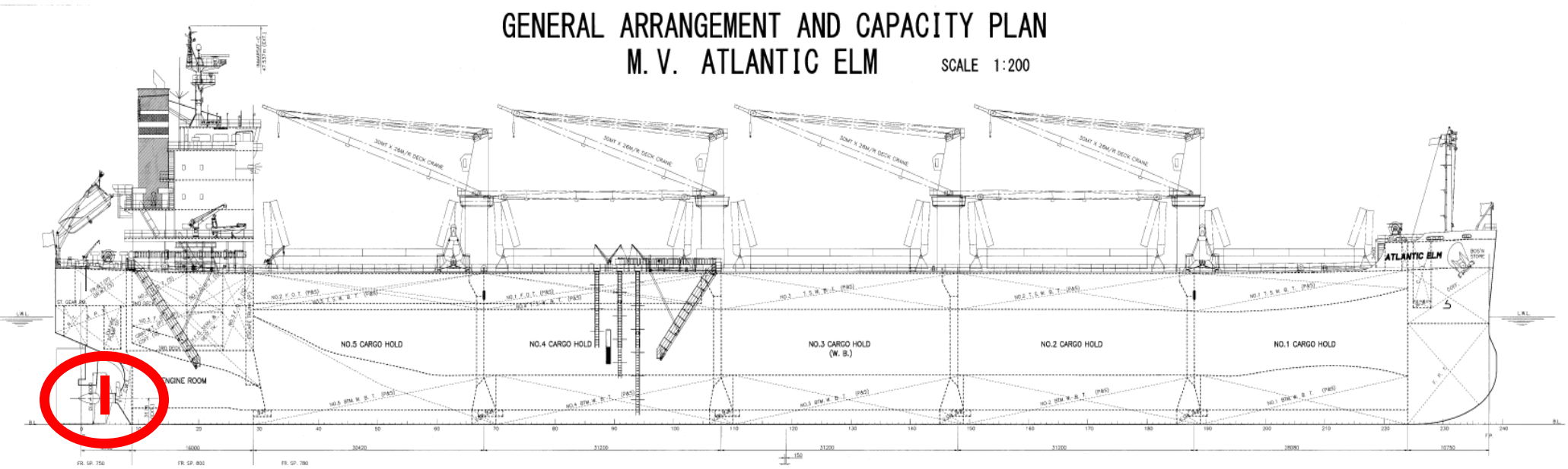
- Shipping connects world global supply chains with 84,000 vessels
- GHG Emissions of International Shipping = 953 Million Tons CO2e/Year



Reference: UNCTAD Policy Brief No.112 (Nov.2023)

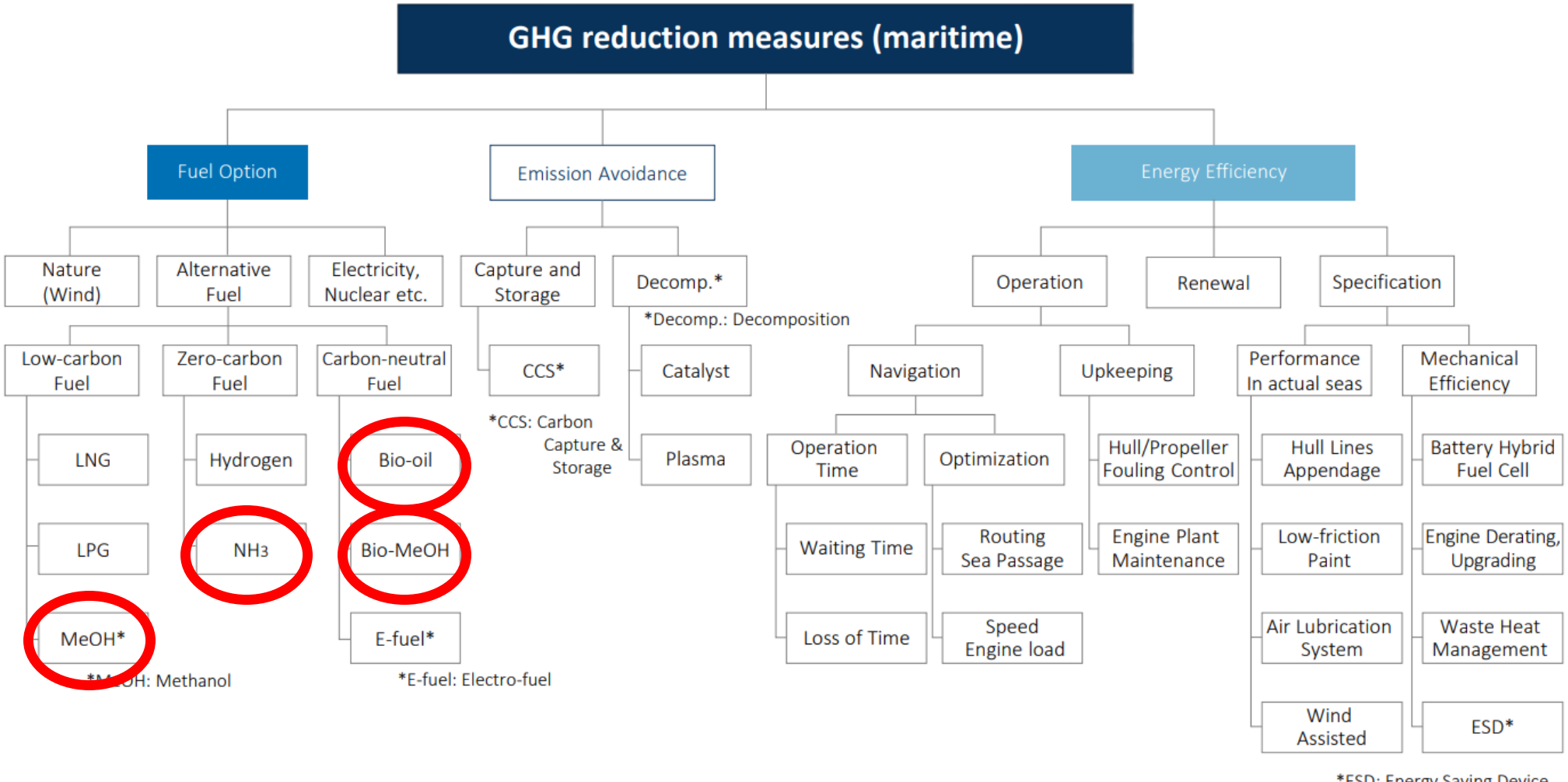
Vessel power

2 stroke slow speed engines with elongated cylinder shafts.　(Mitsui Man B&W in this case)



GHG emissions reduction measures

- All hands on deck with every possible measure to reduce GHG emission.
  We do expect other innovative options to be a part of this important role together.



Energy Efficiency and Emission Avoidance

- NYK Bulkship (Atlantic) installed two wind-assisted ship-propulsion units on bulk carrier NBA Magritte at the port of Rotterdam, the Netherlands, which is engaged in a long-term charter contract with Cargill (USA).
- NYK will collect data on propulsion generated, meteorological and ocean conditions during navigation, to measure unit's effectiveness in collaboration with Cargill

Fuel option – Biofuel

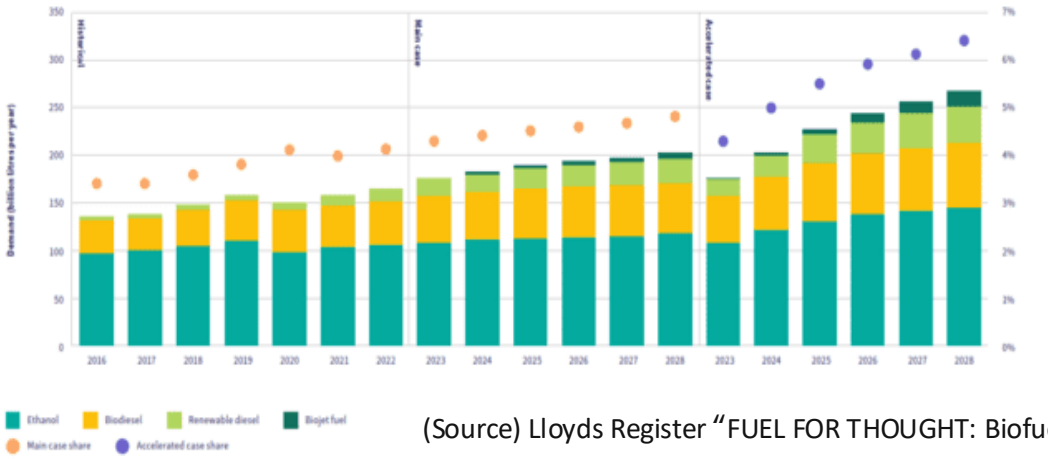
Immediate decarbonization at reduced CAPEX

- Benefit
  - Drop-in fuel with conventional engine
  - Relatively available commodity
- Challenges
  - Price (Higher than conventional fuel oil)
  - Scalability (Security of feedstock)
  - Traceability (Really eco-friendly and recycled?)
  - Competition with food demand and SAF
  - Quality (impact on ship's engine)
  - Variety of feedstock and products

- NYK's own biofuel laboratory in Japan

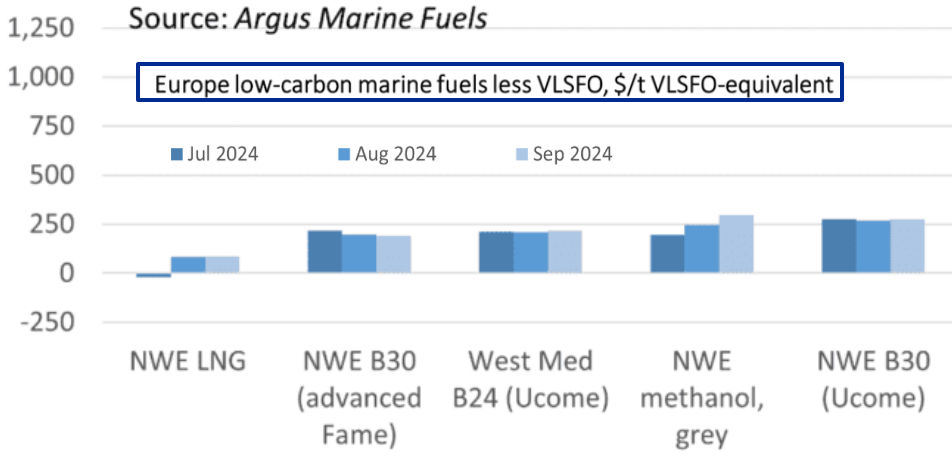
Engine test in NYK labo (prior to onboard use)
→ Trial consumption onboard
→ Gradual increase bio-fuel use
→ Check engine condition
→ Full-scale use

Global biofuel demand, historical, main and accelerated case, 2016-2028 (IEA)



(Source) Lloyds Register "FUEL FOR THOUGHT: Biofuel"

<Argus's biofuel price index>

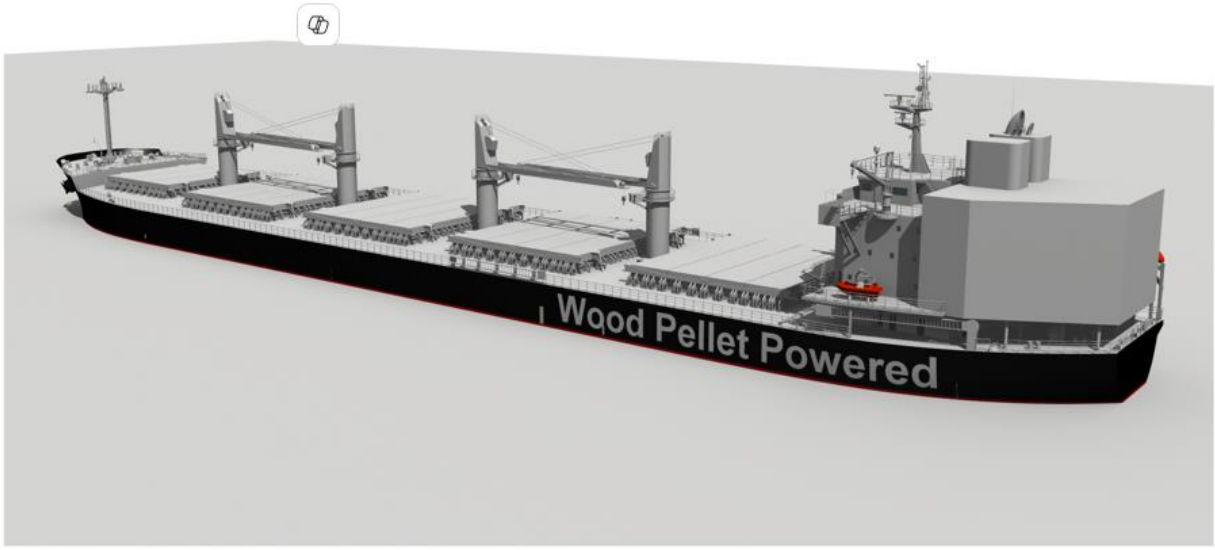


Fuel option – Biofuel

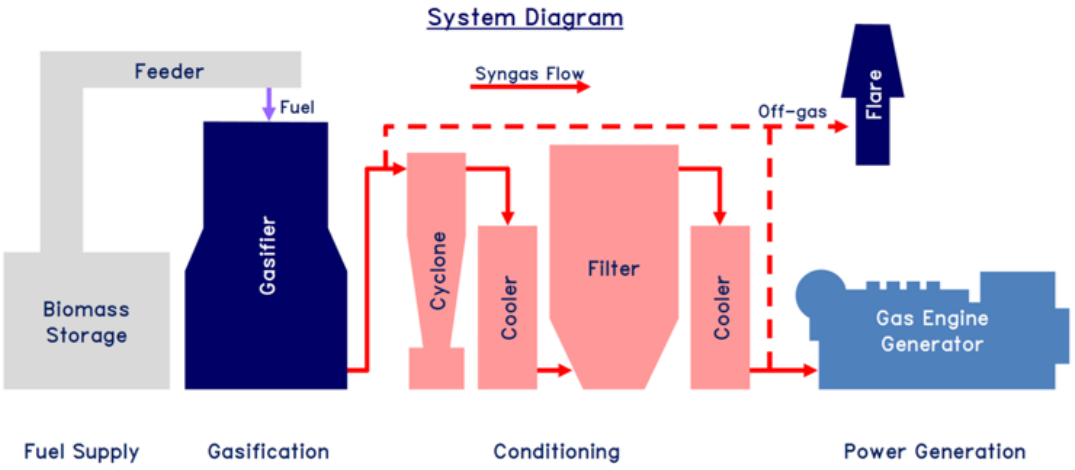
- NYK has been conducting biofuel trials of increasing length
- In 2023, conducted trials for continuous use on board car carriers and bulkers
- From basically trace in 2023, our share of biofuels has risen to about 7%
- Now continuous use of biofuels especially for car carriers

Fuel Option – Biogas from wood pellets

NYK Group companies, TSUNEISHI SHIPBUILDING Co., Ltd. ("TSUNEISHI SHIPBUILDING") embarked on a project to develop both the world's first biomass-fuelled ship (bioship) and the technology that could power it.



Gasifier System



Fuel option – Methanol

First methanol-fuelled ultramax bulker

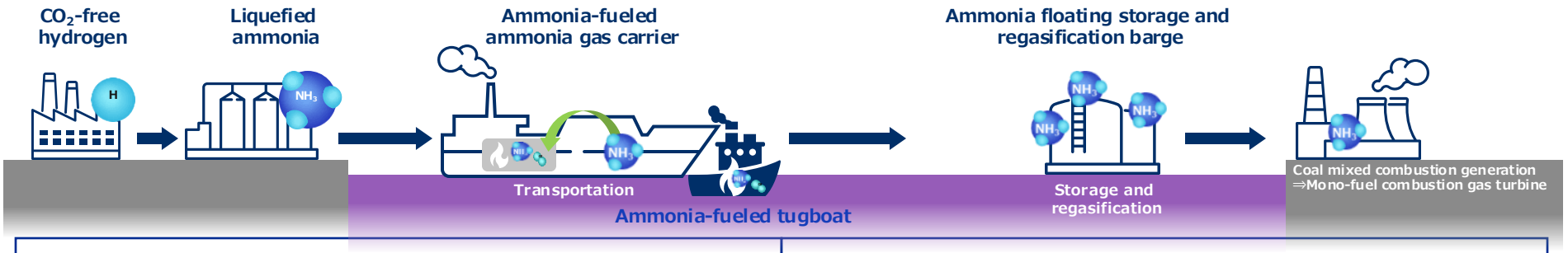
- NYK 100% subsidiary, NBP charters methanol dual-fuel handymax bulker (del in 2025)
- First methanol-DF vessel in NYK fleet (excl. methanol carriers)
- Charter / Trade subject to global methanol bunkering availability

	Vessel's Brief Description
Shipyard	Tsuneishi Shipbuilding Co., Ltd.
Fuel Type	Methanol Dual Fuel Type
DWT / Draft	About 65,700 MT on Summer sea draft of 13.8M
Gross / Net tonnage	About 38,300 MT / About 22,800 MT
LOA / Beam / Depth	Less than 200M / 32.25M / 19.15M
Cargo Hold Capacity	Abt. 81,500 m3 (Grain Capacity)
Main Engine	MAN B&W 6G50ME-C9.6-LGIM (made by MITSUI E&S)
Delivery	2025/2Q

(Release) https://www.nyk.com/english/news/2024/20240819_01.html

Fuel option – Ammonia

Biz Scope: Entire Supply Chain of Next Gen Fuels



Production

- Participation in upstream production projects of clean fuels

Transport & Use

- Ocean transport
- Storage
- Bunkering
- Distribution

Tsubame BHB	AFAGC (GI fund)	A-FSRB	AFT (GI fund)	ARLFV	ABV
Efficiency improvement of ammonia production	Ammonia-fueled Ammonia Gas Carrier	Ammonia Floating Storage Regasification Barge	Ammonia-fueled Tugboat	Ammonia-fuel Ready LNG-Fueled Vessel	Ammonia-Bunkering Vessel
Production	Transportation & Demand Creation	Storage	Demand Creation	Demand Creation	Supply Creation
					

GI (Green Innovation) fund: support programs of Japan's METI to R&D / demo of green projects

Fuel option – Ammonia

Ammonia-fueled tugboat (23/Aug '24)

- World's 1st commercial-use ammonia-fueled vessel
- Deployed in Tokyo Bay
- Under demo voyages under agreement with government

(Link) https://www.nyk.com/english/news/2024/20240823_01.html

1st Ammonia bunkering (17/Jul '24)

- 1st ammonia bunkering supply by Truck-to-Ship.
- Ammonia fuel used in trial after conversion to NH3-fueled engine
- After delivery, A-tug takes routine truck-to-ship supply of ammonia fuel for engine combustion (Link) https://www.nyk.com/english/news/2024/20240717_01.html

Fuel option – Ammonia

ABV – Ammonia Bunkering Vessel

- Obtained AiP in Sep 2022
- Introduced 3D conceptual design
- Intensive HAZID carried out
- Develop Japan's First Ammonia Bunkering Boom with TB Global Technologies
  Granted World 1st AiP by ClassNK (July-2024)

A-FSRB – Floating Storage & Regas Barge

- Alleviates investment to storage/regas facilities (vs onshore)
- 2022 Aug JDA signed between NSY/IHI/NK/NYK
- 2022 Dec obtained AiP

Project Manager
・define design basis

Regulatory conformity & risk assessment
・design review
・risk assessment

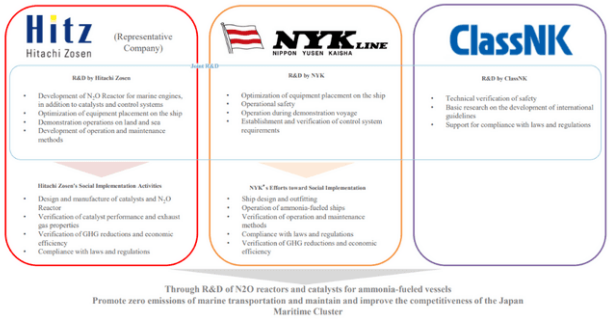
NYK LINE NIPPON YUSEN KAISHA NSY ClassNK IHI

Development of floating system
・floating system
・onboard equipment
・NH3 transfer system

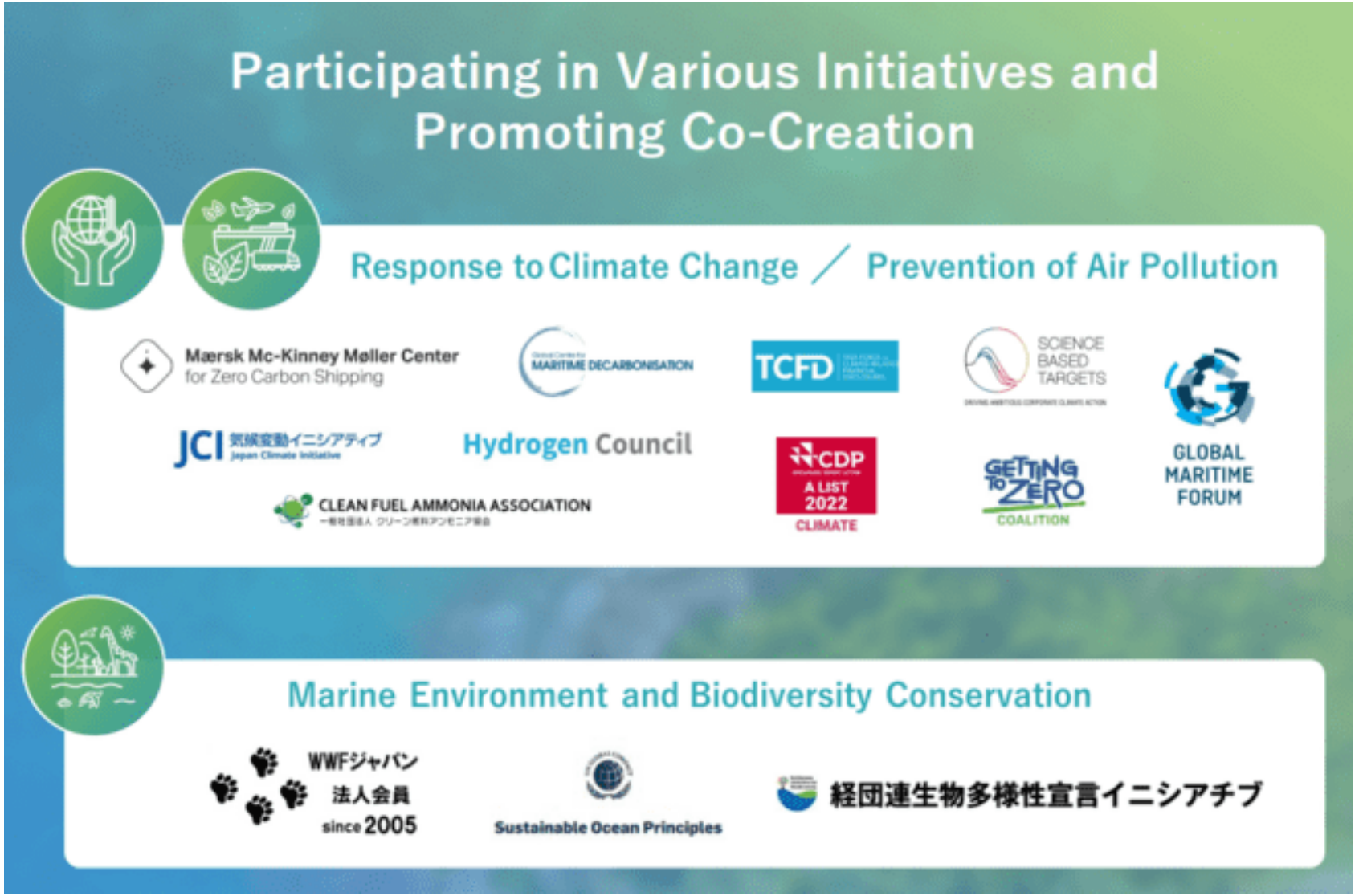
Plant development
・offload/regasification process
・onboard equipment

N2O Reactor for Ammonia-fueled vessels

- Co-development of N2O Reactor with Hitachi Zosen and ClassNK
- Financially supported by Green Innovation Fund
- N2O has about 300 times GHG effect of CO2



Major initiatives



NYK GREEN EARTH