

Tenth LNG Producer-Consumer Conference

Transition to Zero Emission Shipping

5th October 2021

NYK Line / (Mr.) Toshi Nakamura

Number of LNG fueled vessels

200 ships in operation
350 ships in total (inc. those on order)
(as of Aug. 2021)

LNG-Fueled Vessel Operator (Incl. FIDed)		
1	CMA CGM	32
2	NYK (inc. UECC)	31
3	Shell	26
4	COSCO	12
	Sembcorp Marine (Tug)	12
	Höegh Autoliners	12
	Eastern Pacific Shipping	12
7	Fjord line	11
	SCF	11
	Carnival (inc. affiliated)	11
9	ZIM LINE	10
10	Torghatten Nord	9
11	Hansa Tanker	8
12	MOL	7
13	Hapag-Lloyd	6
14	Wallenius Wilhelmsen Lines	6
14	BHP	5

Reference: DNV-GL

● In operation ● On order ● LNG ready

NYK LNG Fueled/Bunkering Vessels

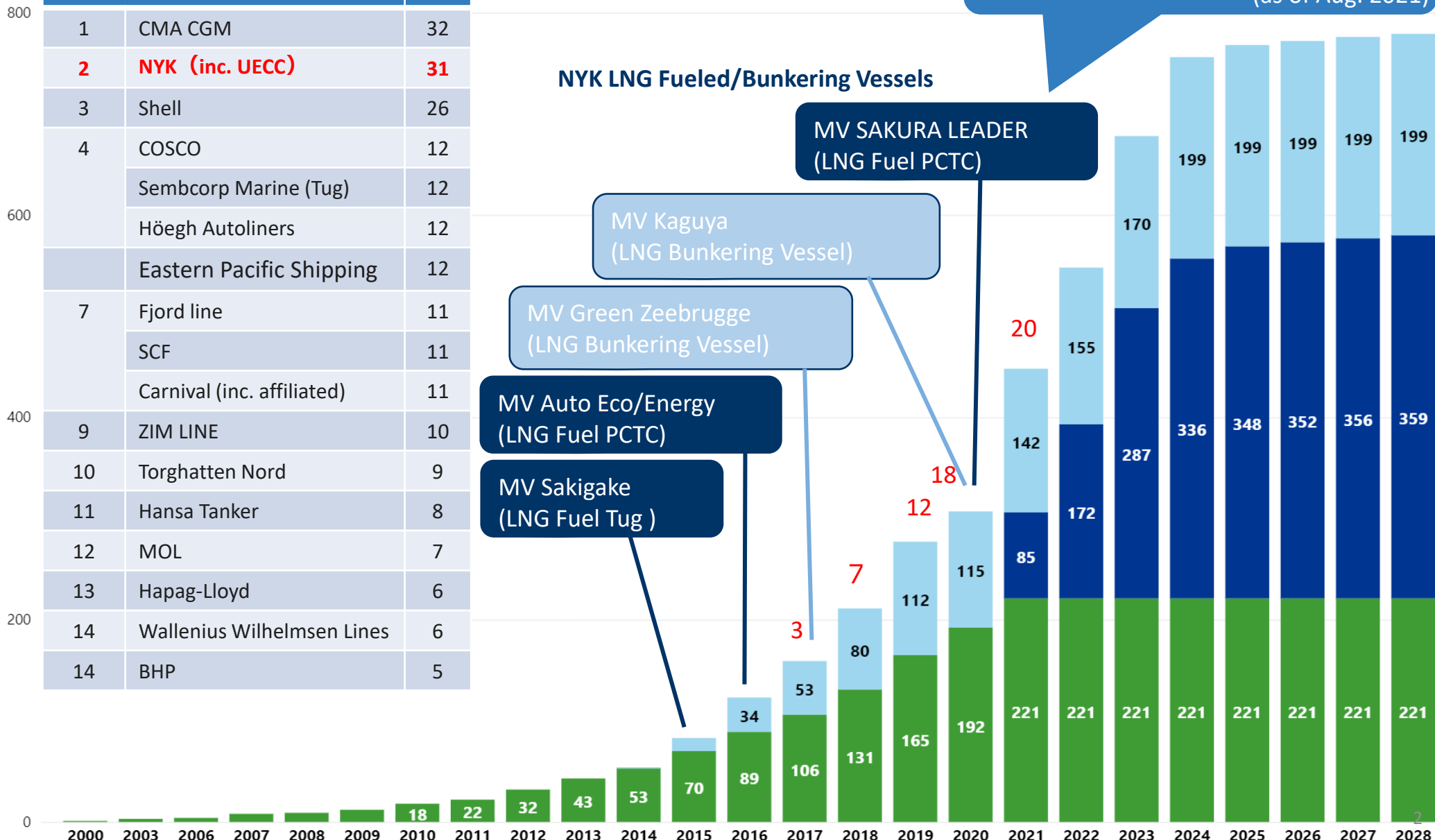
MV SAKURA LEADER
(LNG Fuel PCTC)

MV Kaguya
(LNG Bunkering Vessel)

MV Green Zeebrugge
(LNG Bunkering Vessel)

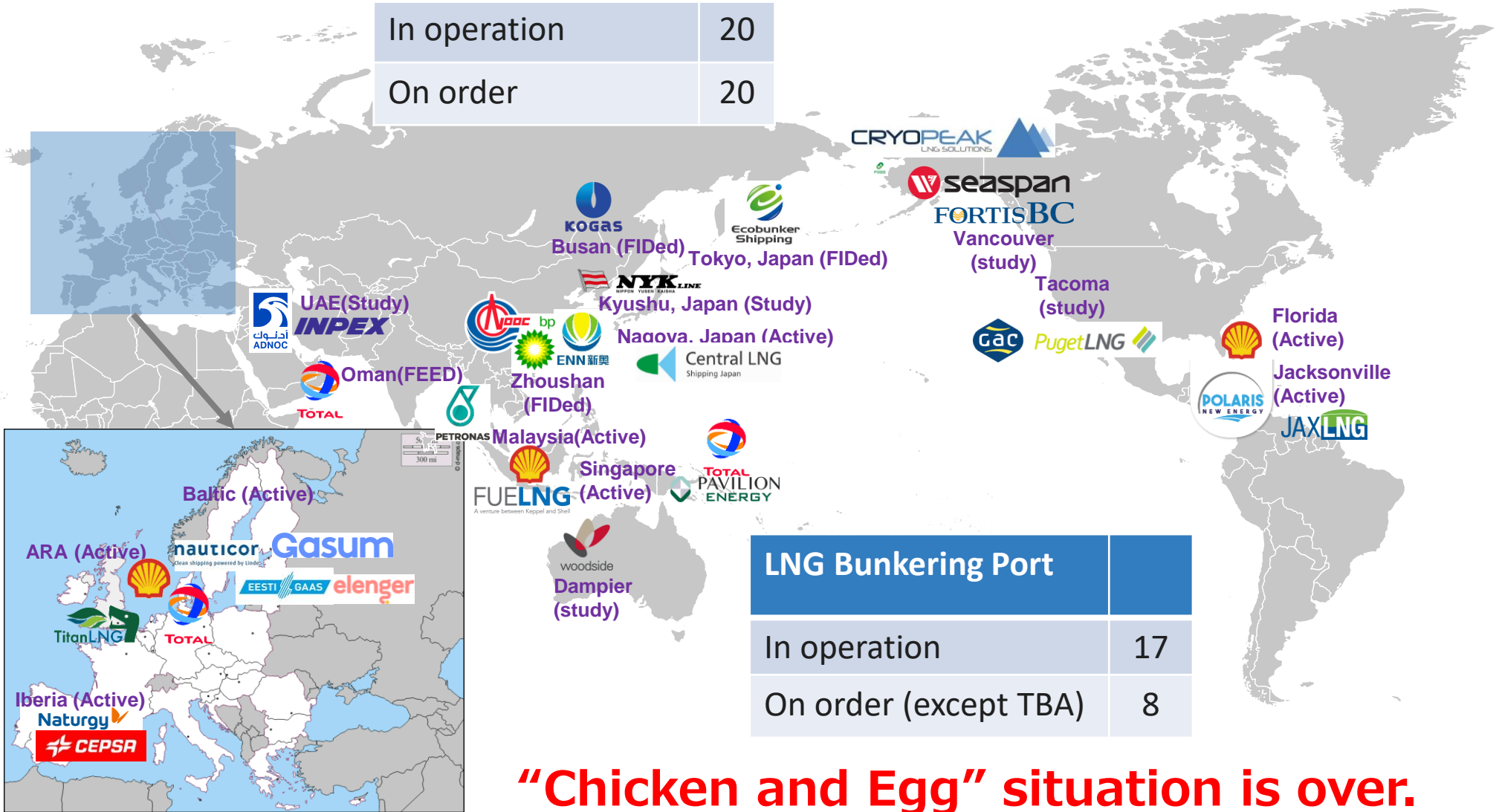
MV Auto Eco/Energy
(LNG Fuel PCTC)

MV Sakigake
(LNG Fuel Tug)



LNG Bunkering Stations (World Wide)

LNG Bunkering Vessel	
In operation	20
On order	20



LNG Bunkering Port	
In operation	17
On order (except TBA)	8

“Chicken and Egg” situation is over.

Roadmap for zero-emission in international shipping

➤ Timeline of GHG emission reduction from IMO



Vision	Zero emissions as early as possible in this century		
Target (vs 2008)	Fuel efficiency (ton-mile basis)	GHG emissions	
	40% improvement by 2030	70% Improvement (effort) by 2050	Halved By 2050 Early zero emissions

This target may increase to **"zero emission"**.
(referring to comments by John Kerry, U.S. Special Presidential Envoy for Climate)

➤ New Regulations from IMO (introduced from 2023)

EEXI (Indicators of Fuel consumption performance)	CII (Ratings of Fuel consumption)
Targeting all ships, it limits the main engine power if it does not meet the fuel consumption standard.	Remedial action is taken where fuel consumption is poor, encouraging incentives for fuel efficient ships.

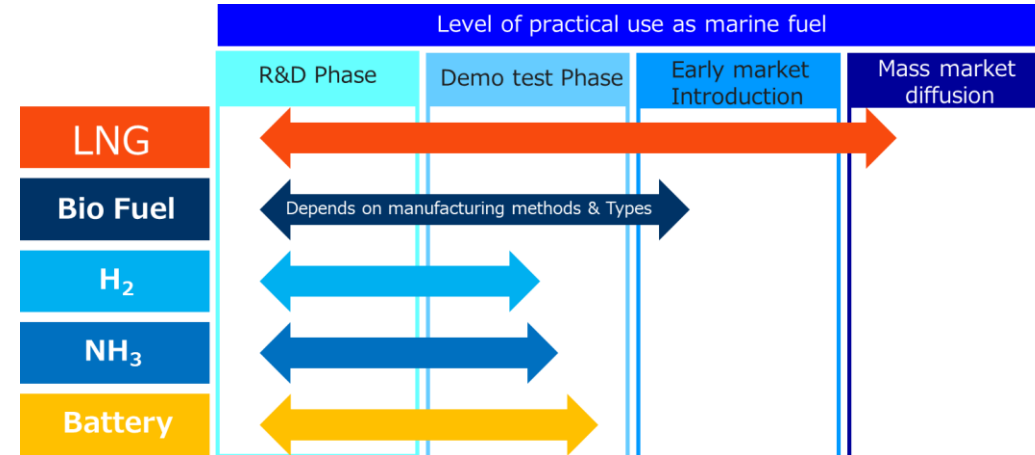
Replacement to LNG Fueled Vessel are expected to accelerate.

Why does NYK consider LNG fuel as bridging solution?



Reason

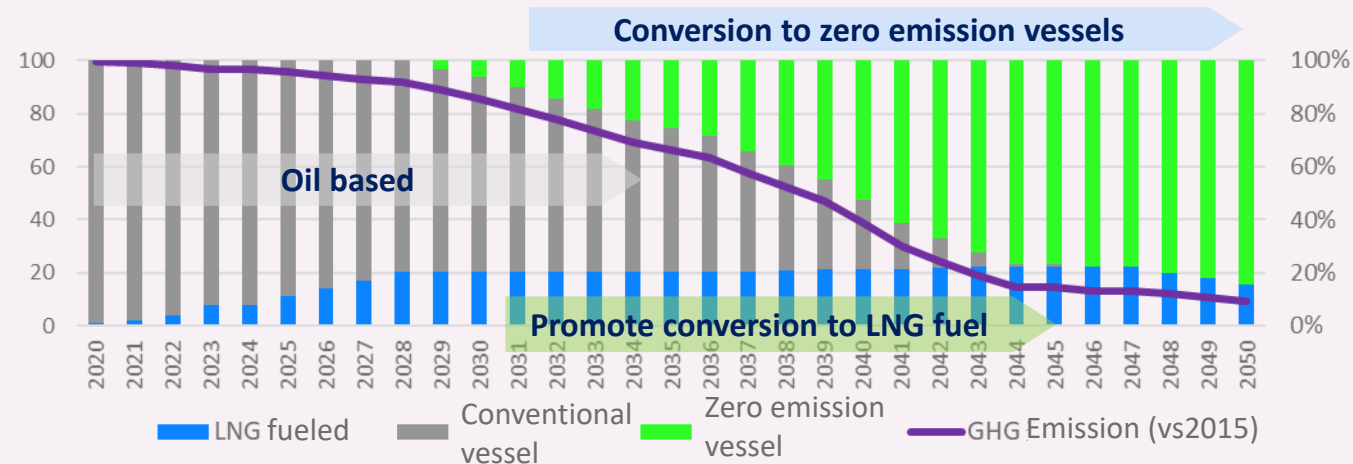
- Among the typical alternative fuels, only LNG is **massively available** in the market.
- **Supply infrastructure** has already been in place at major ports.
- **CO₂ emissions** can be **reduced** more than LPG or methanol.
(cf. Reduction rate from alternative fuel : **LNG 26 %**, LPG 16 %, methanol 10 %)



20 LNG-PCTCs Ordered

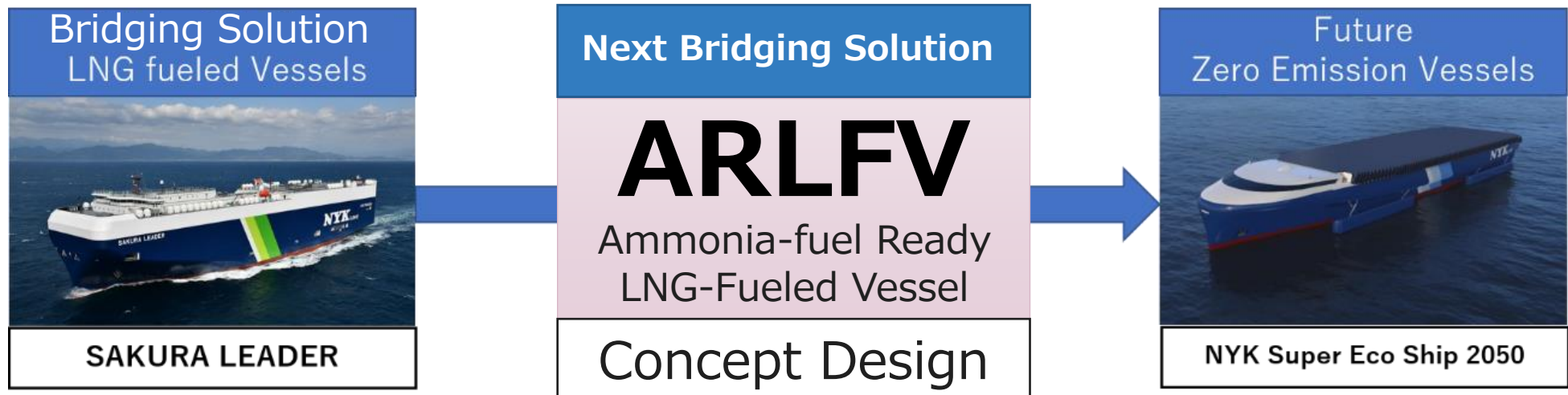
Then, maybe within 10 years, start to switch to **zero emission vessels**

Image of NYK PCTC Fleet Renewal Plan (2020~2050)



Ammonia-fuel Ready LNG-Fueled Vessel

NYK group and Elomatic launched the development of a concept design for **“Ammonia-fuel Ready LNG-Fueled Vessel” (ARLFV)**, as **Next Bridging Solution** from LNG to Ammonia.



The results of this development will be released in a video accompanying 3D models in **January 2022** at the time of the project’s completion.

GHG emission from the financial aspect

2018 Green bond (the world's first in global shipping sector)



2021 Transition bond (Japan's first)

By issuing transition bond to fund projects which reduce GHG emission will contribute to our long-term transition strategy.



SDG Bonds



Use of Proceeds



What will we spend Green/Transition bond on?

Building LFV and R&D for zero emission vessels

LNG (Transition bond only)

Operating



World 1st

LNG bunkering vessel



World 1st

LNG fueled vessel



Japan 1st

LNG bunkering vessel



Japan 1st

LNG fueled vessel

Ordered



World 1st

LNG fueled Coal carrier



LNG fueled Cape size Bulker



LNG fueled vessel
(already ordered **19** vessels more)



LNG fueled
Cruise vessel

NH₃ (Both bond available)



A-Tug
(Ammonia-fueled Tug)



AFAGC
(Ammonia-fueled Ammonia Gas Carrier)

Hydrogen (Both bond available)



**High-power
Fuel Cell vessel**



Bringing Value To Life.

Bringing value to life.

There's only one Earth. Its vibrant hues of green and blue remind us of life. Yet, commerce and industry have placed enormous demands on our planet. As a company that transports goods by ocean, land and air, NYK is working to reduce environmental loads with earth-friendly policies, efficient use of resources, and in-house standards to improve our environmental performance and prevent pollution. The Earth comes first in everything we do. "Bringing value to life."

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