



Sustainable Development of the Northern Sea Route

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Agenda

1. Introduction of MOL

2. MOL's Initiative

3. Advantage of Northern Sea Route

4. Safe Operation

5. Arctic Research Vessel

6. Towards Decarbonization



1. Introduction of MOL

We, Mitsui O.S.K. Lines (MOL), as a **multi-modal transport group**, meets the transportation needs in a wide variety of fields including dry bulkers, tankers, LNG carriers, car carriers and containerships.

Our activities are truly borderless, based on the operation of one of the world's largest merchant fleets over **800 vessels**, backed by expertise and technology developed throughout our over **130-year** history.



2. MOL's Initiative: The Projects in the Northern Sea Route

- **Yamal LNG Project**

MOL owns and manages 3 icebreaking LNG carriers and 4 conventional LNG carriers.

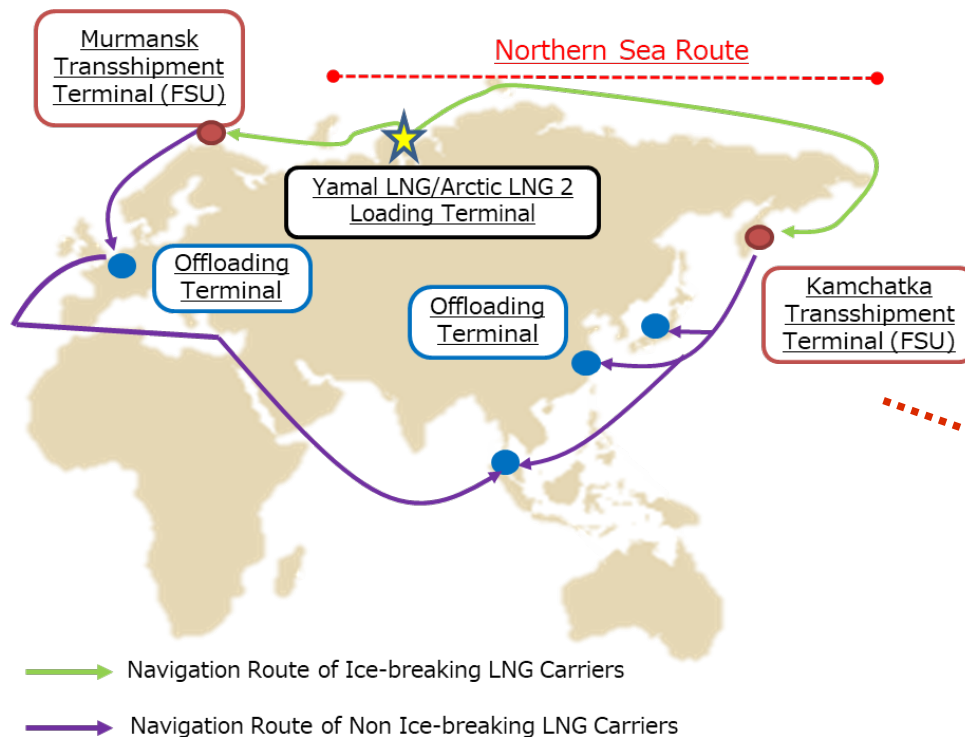
- **Arctic LNG 2 Project**

MOL will own and manage 3 new icebreaking LNG carriers for the project starting from 2023.

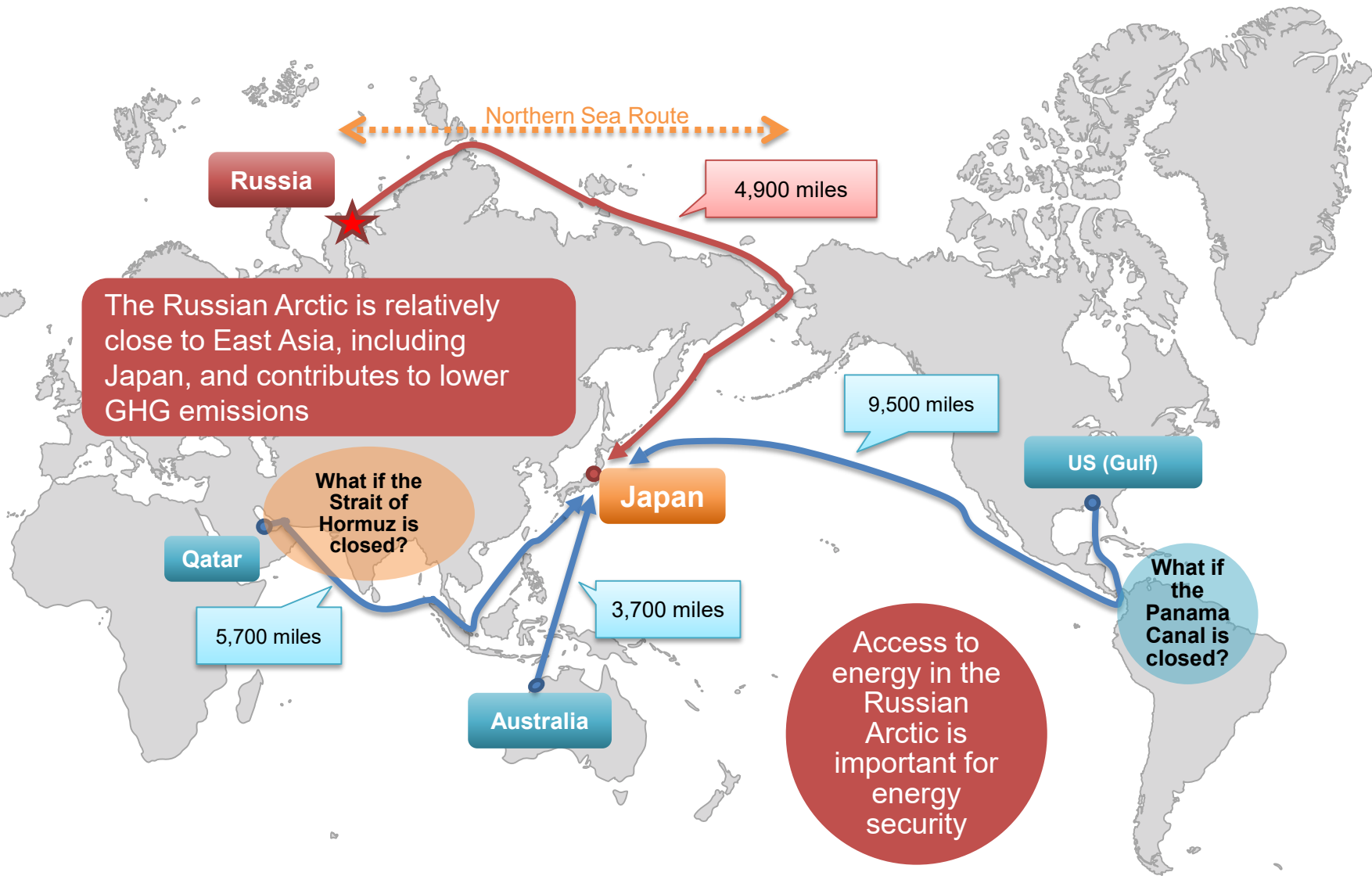
- **Murmansk/Kamchatka LNG Transshipment Projects (Floating Storage Unit ("FSU"))**

MOL has signed a Letter of Intent for the potential acquisition of total 49% shares of the FSU owner companies.

MOL also support projects in the technical and engineering works, such as the FSU basic design, drawing approval, construction supervision, and post delivery operation of the FSUs.

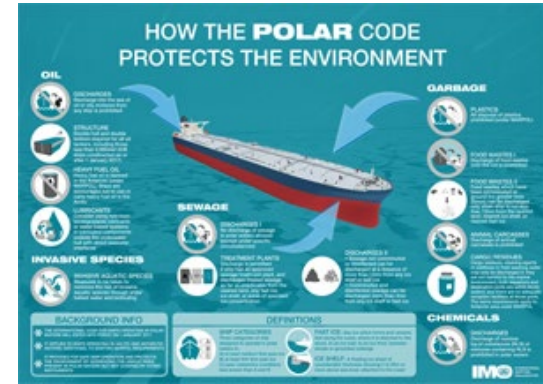


3. Advantage of NSR: Energy Security & Less GHG Emissions

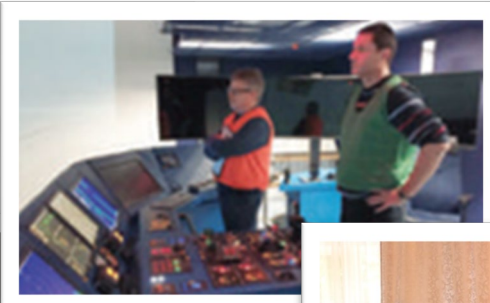
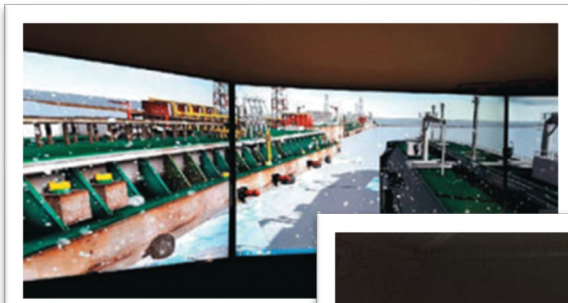


4. Safe Operation

- **Safety** and **Environmental Protection** are of paramount importance.
- Compliance with the requirements of **Polar Code** set by International Maritime Organization (“IMO”)

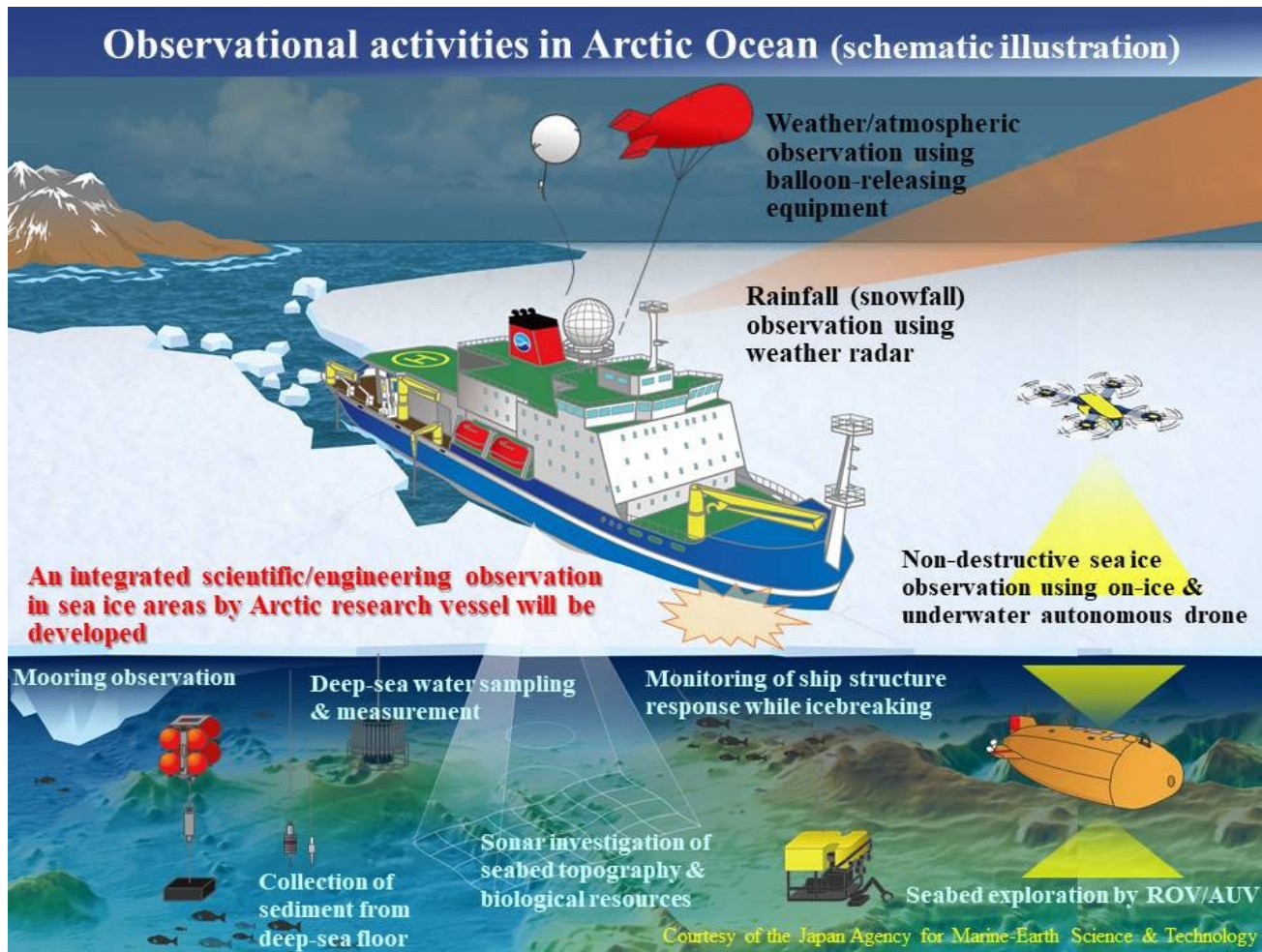


- Investment in not only high spec vessels but also people – extensive **training of personnel** at both onboard and onshore



5. Arctic Research Vessel

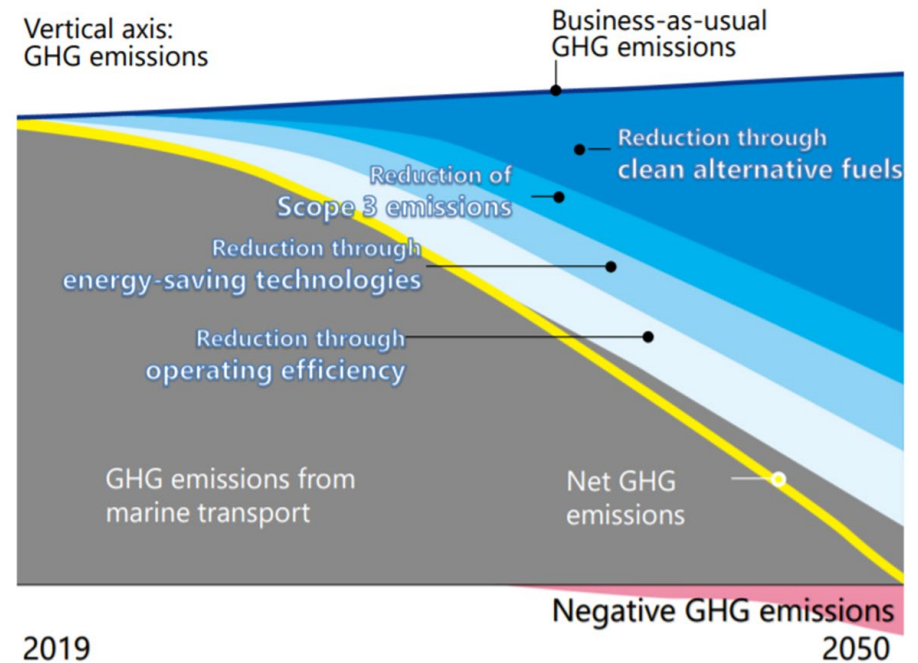
- MOL supports Japan Agency for Marine-Earth Science and Technology (“JAMSTEC”) for the new Arctic Research Vessel



6. Towards Decarbonization

- MOL targeting **Net Zero GHG Emissions by 2050**
- **LNG as Bridging Solution** – shifting from Heavy Fuel Oil to LNG
- Reduction through **Energy Saving Technologies** such as Wind Challenger project and **Operating Efficiency** based on IoT Data
- Reduction through **Clean Alternative Fuels** such as ammonia and hydrogen
- **Blue ammonia/hydrogen** combined with Carbon Capture and Storage technologies
- Utilization of **Renewable Energy**

The MOL Group's Pathway to Net Zero GHG Emissions



Thank you for your kind attention!

