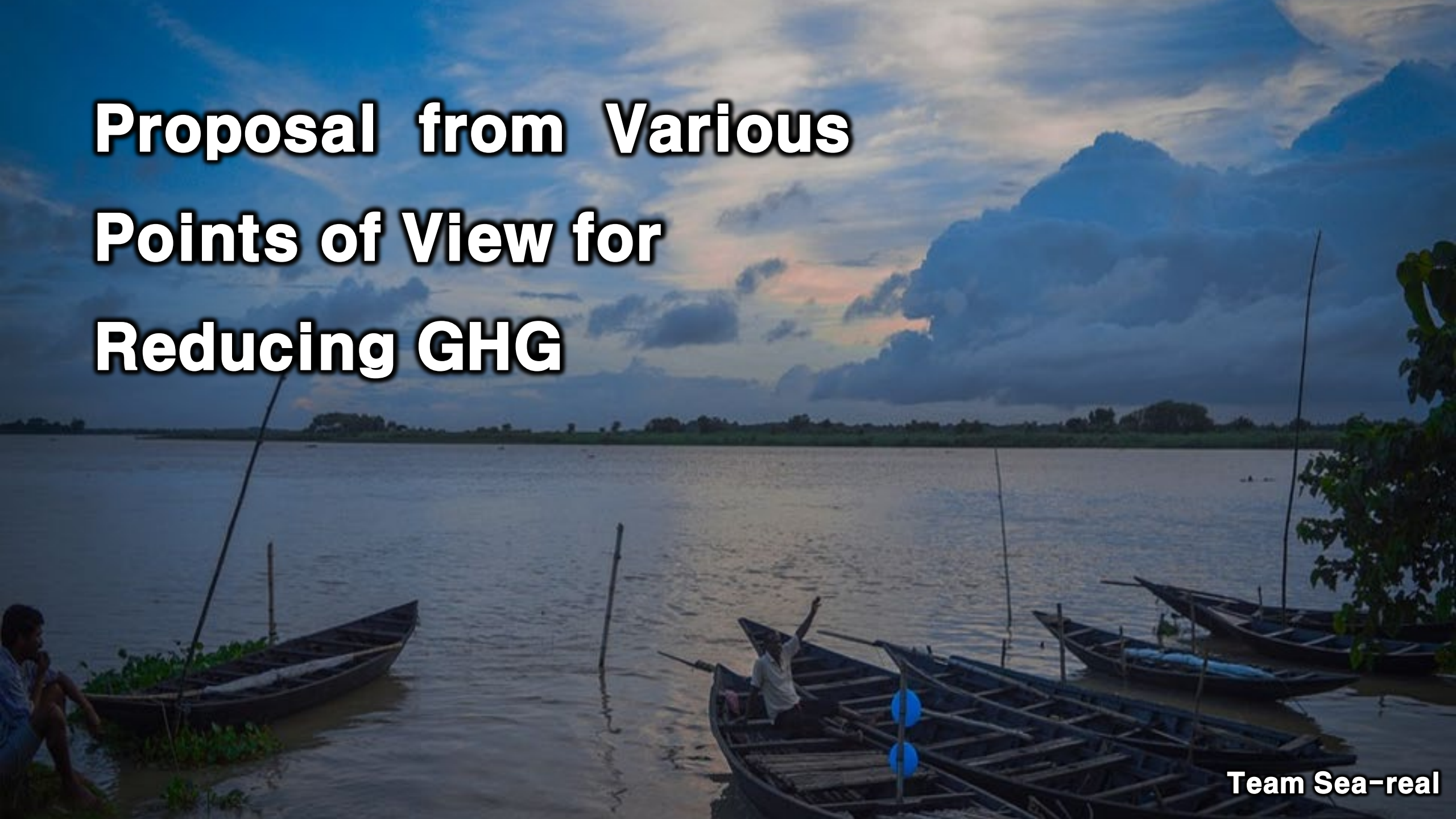
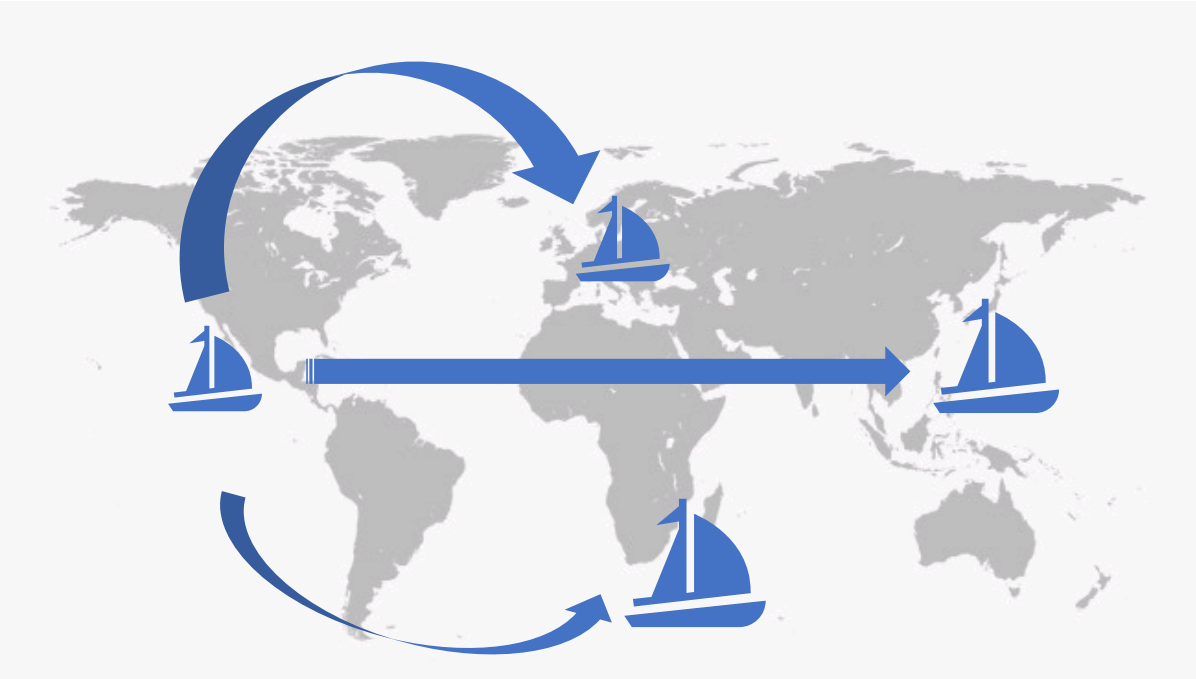


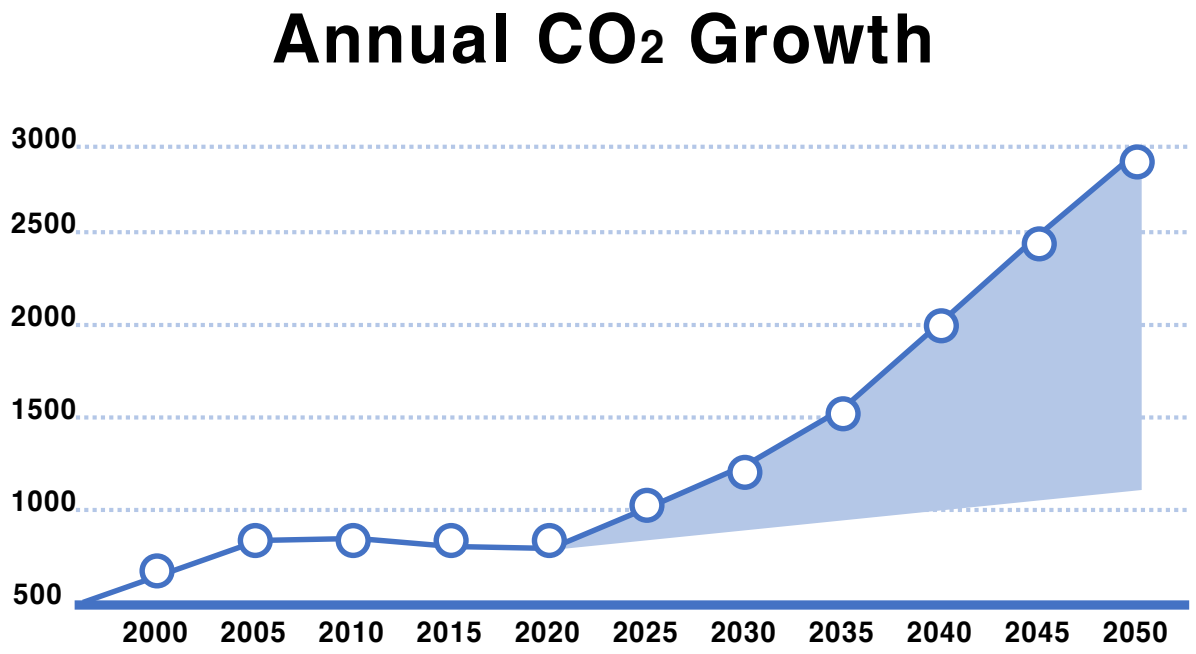
Proposal from Various Points of View for Reducing GHG

Team Sea-real

CONTENTS

BACKGROUND

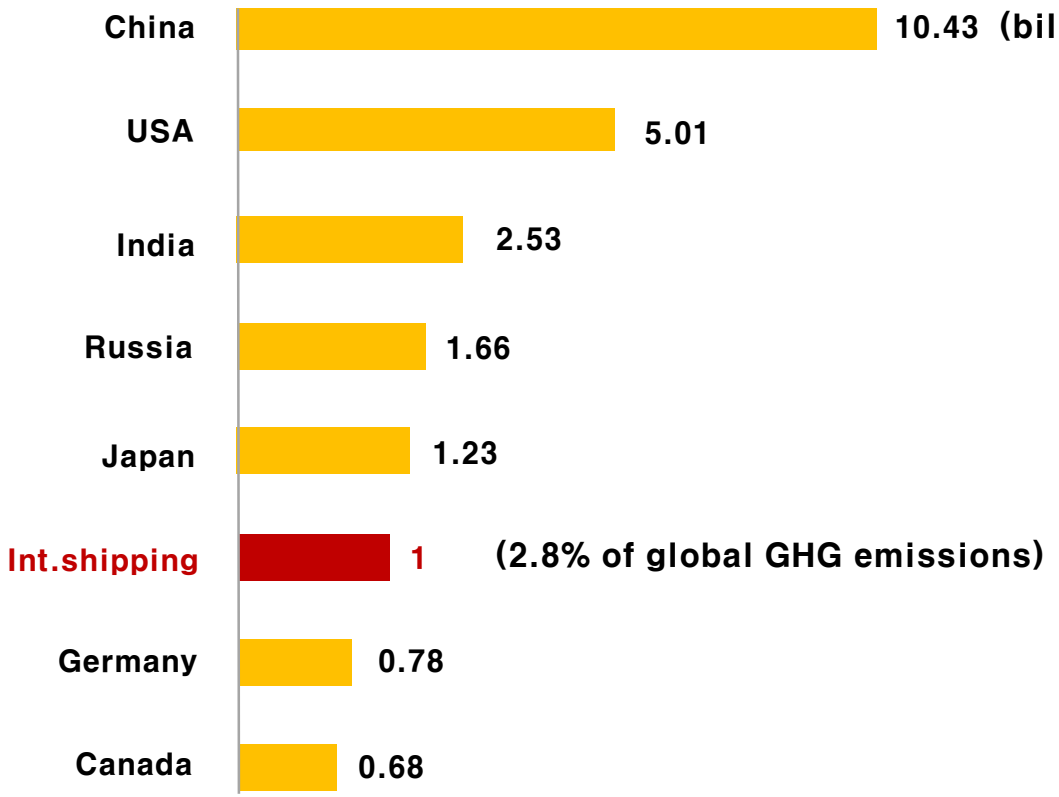




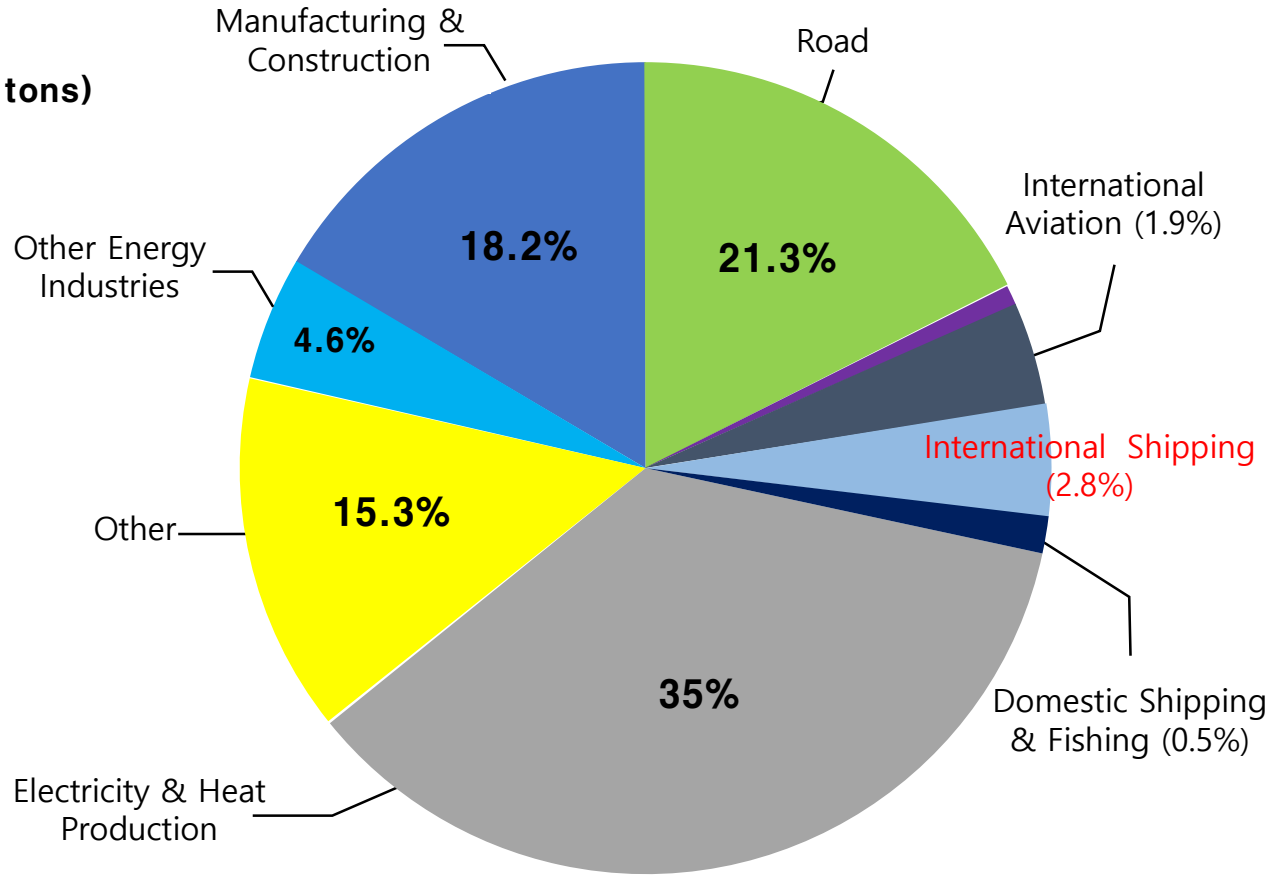
(GHG3 Executive Summary and Report.)

BACKGROUND

CO_2 Emissions



Global CO_2 Emissions by Sector



(Referenced : wikipidia- list of countries by carbon dioxide emissions)

BACKGROUND

IMO GHG STUDY 2014

MEPC 72

IMO anticipates shipping emissions will grow 50-250% by 2050.

Study found that for international shipping, the CO2 estimate dropped from 2.8% in 2007 to 2.2% in 2012.

The MEPC adopted an initial strategy on the reduction of GHG emissions from ships.

The vision of the initial strategy is to reduce total greenhouse gas emissions by more than 50 percent by 2050 from 2008. Carbon zero emissions is the final goal.

Approval of a revision to MARPOL 73/78 which prohibits the transport of fuel oil containing high oil on ships from 2020.

ADOPTED SOLUTION

ADOPTED SOLUTION

Initial strategy to reduce GHG

ADOPTED SOLUTION

Initial strategy to reduce GHG

Short-term

- New EEDI phases
- Operational efficiency measures

ADOPTED SOLUTION

Initial strategy to reduce GHG

2023

Short-term

- New EEDI phases
- Operational efficiency measures

2030

Mid-term

- Fossil fuel substitution
- Market-based measures

ADOPTED SOLUTION

Initial strategy to reduce GHG

Short-term

- New EEDI phases
- Operational efficiency measures

Mid-term

- Fossil fuel substitution
- Market-based measures

Long-term

- Development of Zero carbon fuels

ADOPTED SOLUTION

MEPC72’ s published initial strategy
has suggested a rough direction for reducing GHG emissions

BUT

We need to consider various ways of reducing GHG emissions not mentioned in IMO GHG STUDY or MEPC

PROPOSAL

PROPOSAL #1 – the Hottest Reducing Method , But..?

Future of Fjords

Operating by **electric** propulsion

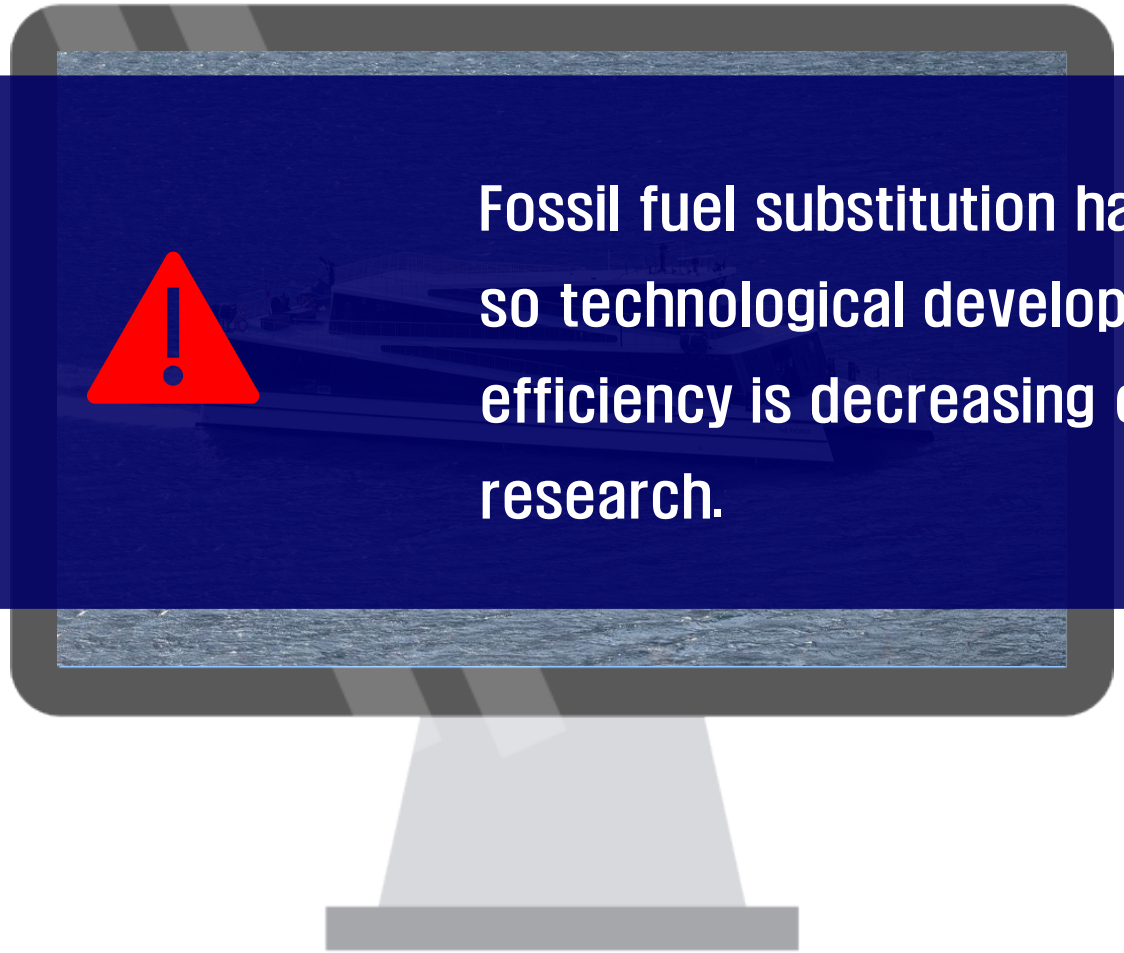
All of GHG **zero**

SOX , NOX **zero**

Referenced : www.ship-technology.com

PROPOSAL #1 – the Hottest Reducing Method , But..?

Future of Fjords



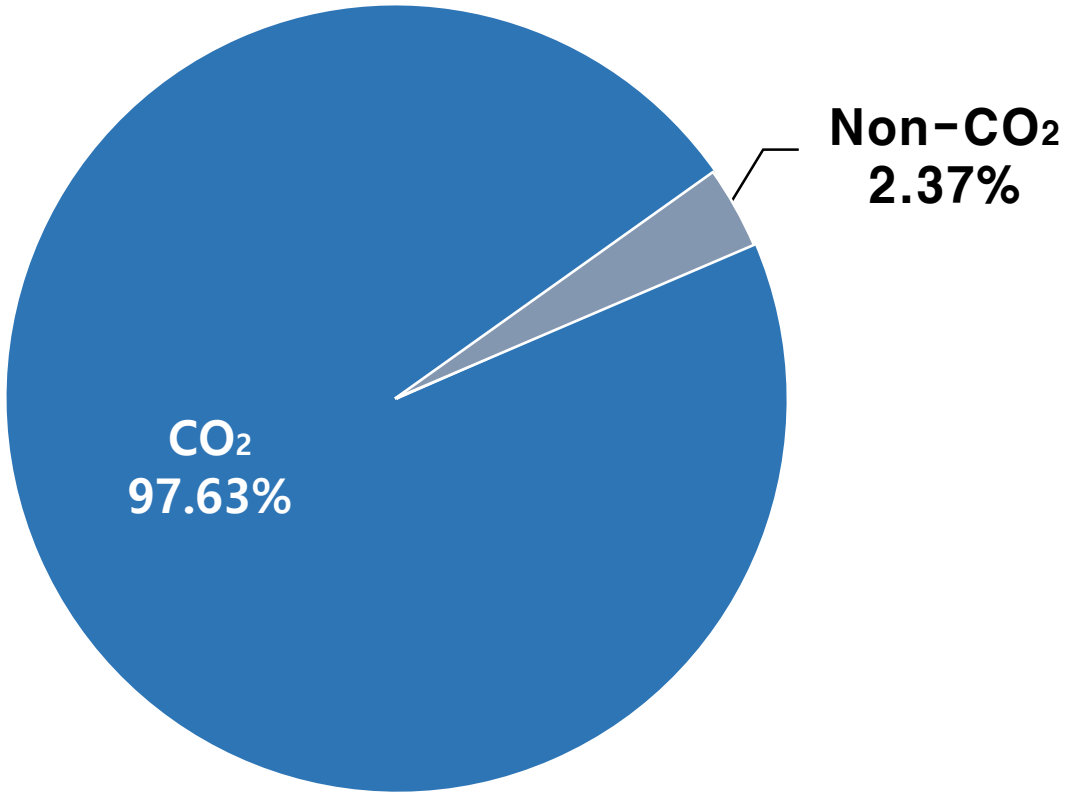
Fossil fuel substitution has already been researched a lot, so technological development is reaching its limit and efficiency is decreasing compared to the beginning of research.

Operating by electric propulsion

SOX , NOX zero

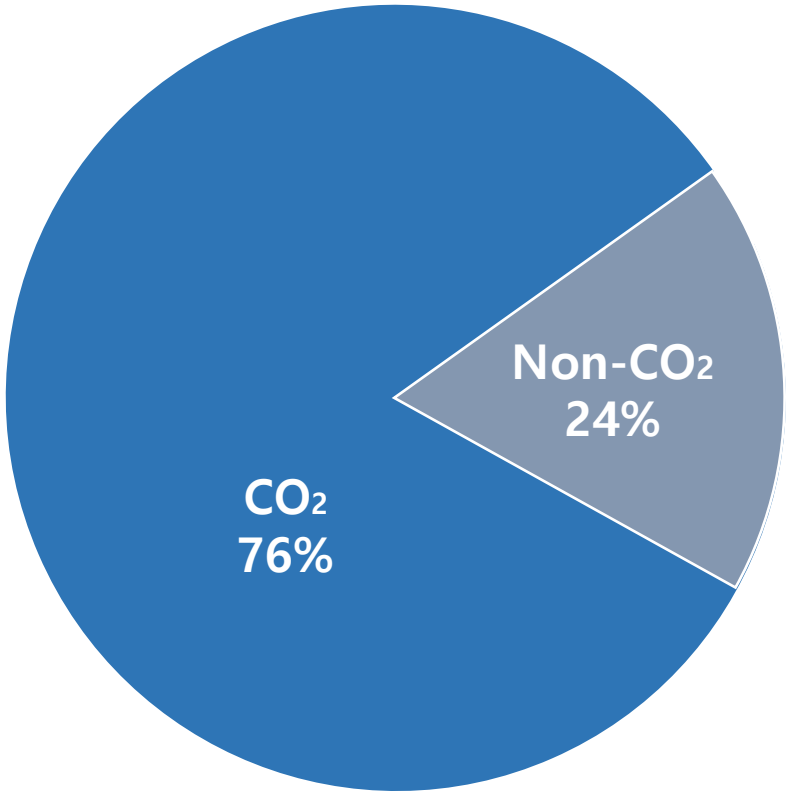
PROPOSAL #2 – Why not consider Non-CO_2

Int.shipping GHG Emissions



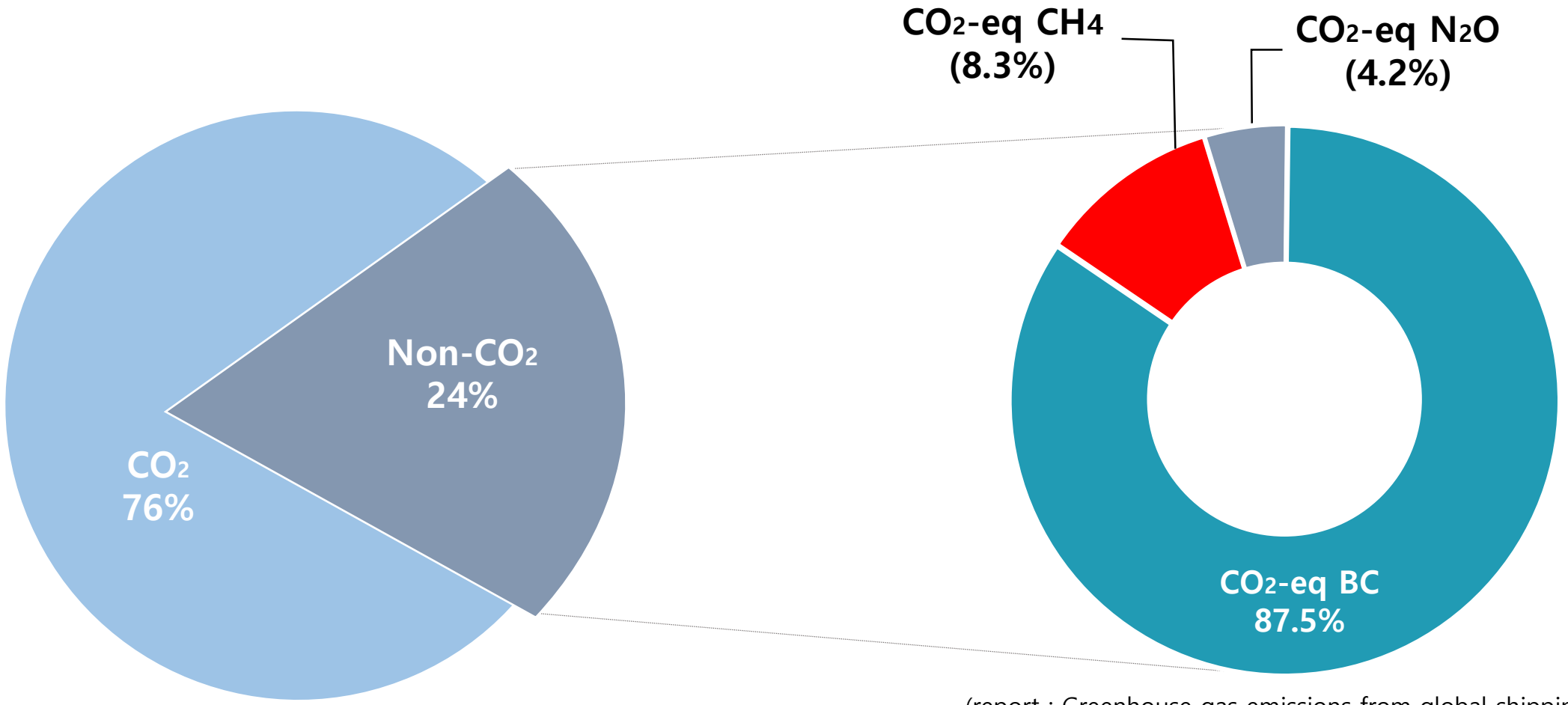
PROPOSAL #2 – Why not consider Non-CO_2

20 Year GWP 1,222 million tonnes



PROPOSAL #2 – Why not consider Non-CO_2

GHG Contained in Non-CO_2

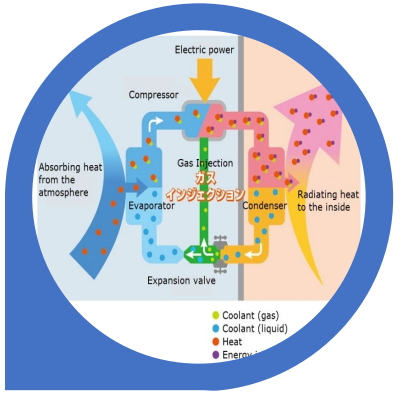


(report : Greenhouse gas emissions from global shipping)

Our Solutions of Low Non-CO_2 Exhaust

Eco Plasma System

(N_2O, SF_6 over 50% savings)

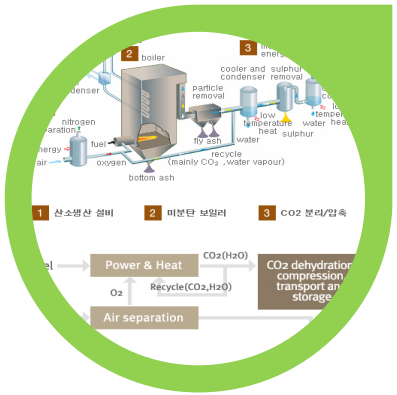


Fuel Heating System Using TCMs

(N_2O, Sox 30% savings)

Pure Oxygen Combustion System

(N_2O, SF_6 over 50% savings)



Water-Based Paint

(CH_4 99% savings)

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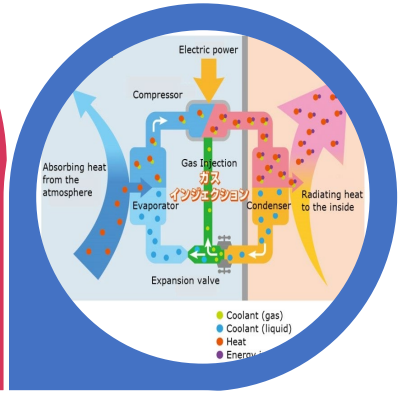

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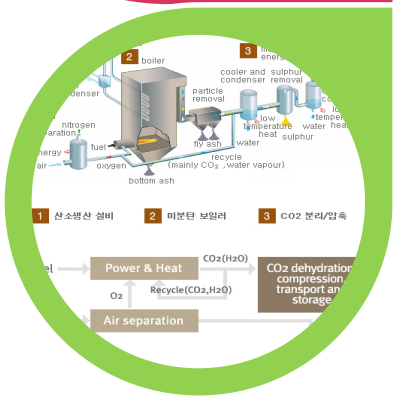

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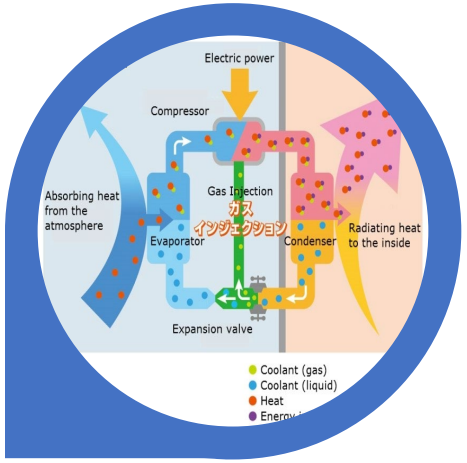

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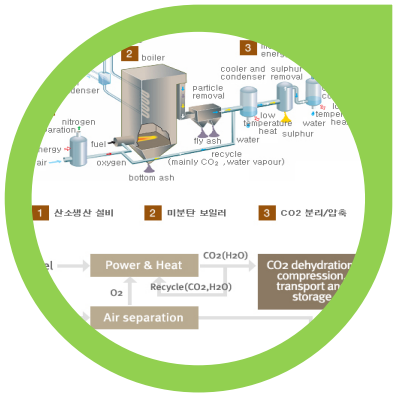

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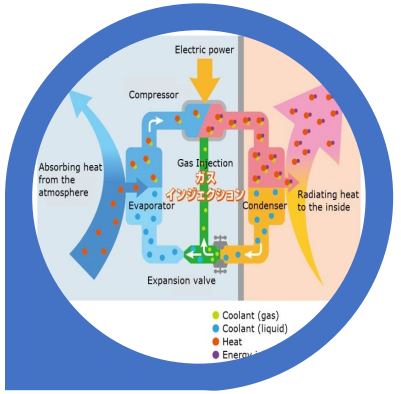

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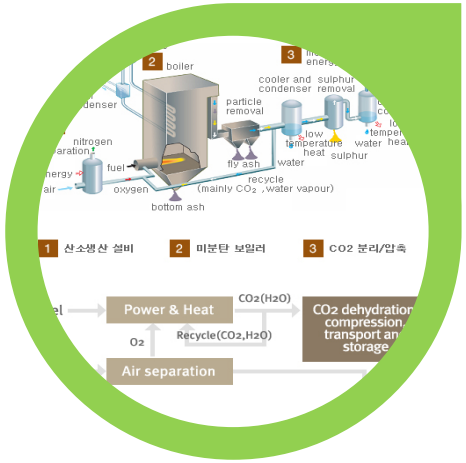

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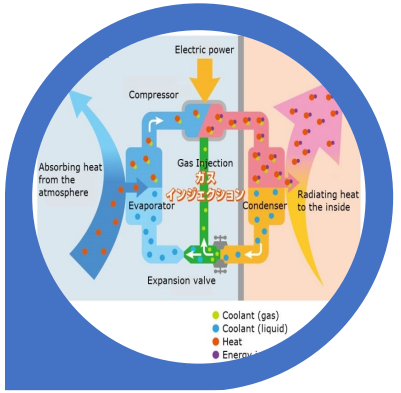

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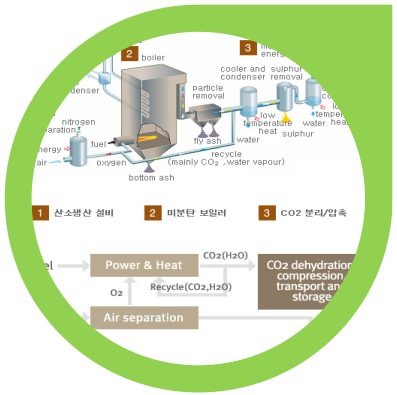


Water-Based Paint

(CH_4 99% savings)

Why should we focus on Ship-reuse ?

New Way

Find GHG not about fuel or operational improvement

Plan

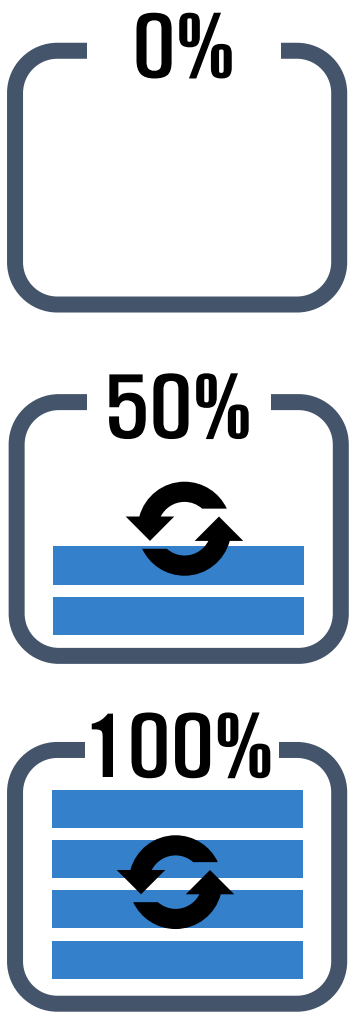
When designing the ship, design the hull for reuse.

Effect

50% of Hull reused→ 10% GHG emission reduced
100% of Hull reused→ 29% GHG emission reduced

(Referenced : The role of material efficiency to reduce CO_2 emissions during ship manufacture)

Effect of ship-reuse



	Per tonne of steel	BAU	BAU
Extraction, Production & Processing	1.12	67,518	67,518
Steel Transported from Shanghai	0.01	593	593
Cutting		4.57	4.57

	Per tonne of steel	Scenario 2	Scenario 2
Extraction, Production & Processing	1.12	67,518	33,759
Steel Transported from Shanghai	0.01	593	296
Cutting		4.57	2.29

	Per tonne of steel	Scenario 1	Scenario 1
Extraction, Production & Processing	1.12	67,518	0
Steel Transported from Shanghai	0.01	593	0
Cutting		4.57	0

(Referenced : The role of material efficiency to reduce CO_2 emissions during ship manufacture)

CONCLUSION

CONCLUSION

Environment problem is the most important issue not only in the ocean but also in the world. Therefore, efforts are needed to solve the GHG problem.
A more diverse and specific reduction strategy in GHG will have to come out of the IMO

REFERENCE

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