参考資料 1

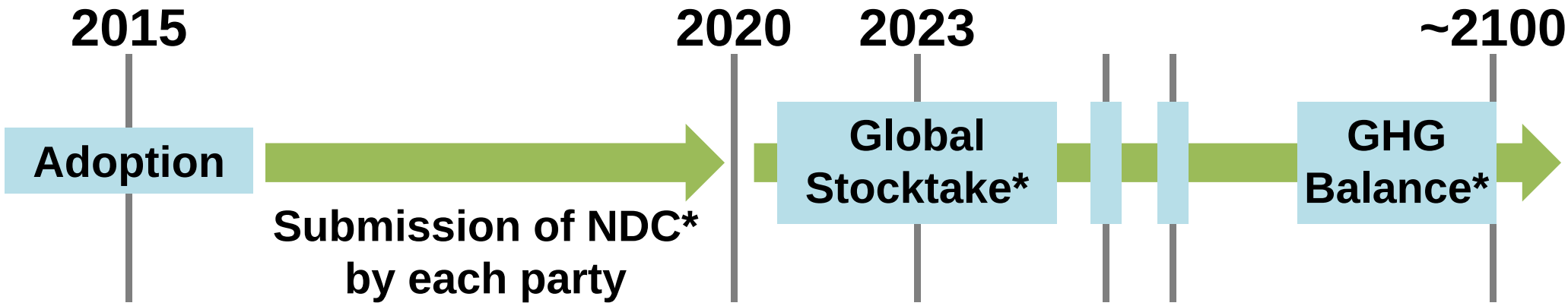
GHG Emissions Reduction Targets for International Shipping

Maritime Bureau,
Ministry of Land, Infrastructure, Transport and Tourism,
Japan

Adopted the Paris Agreement in 2015

Long-term goal

- **Below △2℃ above pre-industrial**
- **Pursuing efforts to limit △1.5℃**



*NDC: Nationally determined contribution

*Global stocktake: review process every 5 years

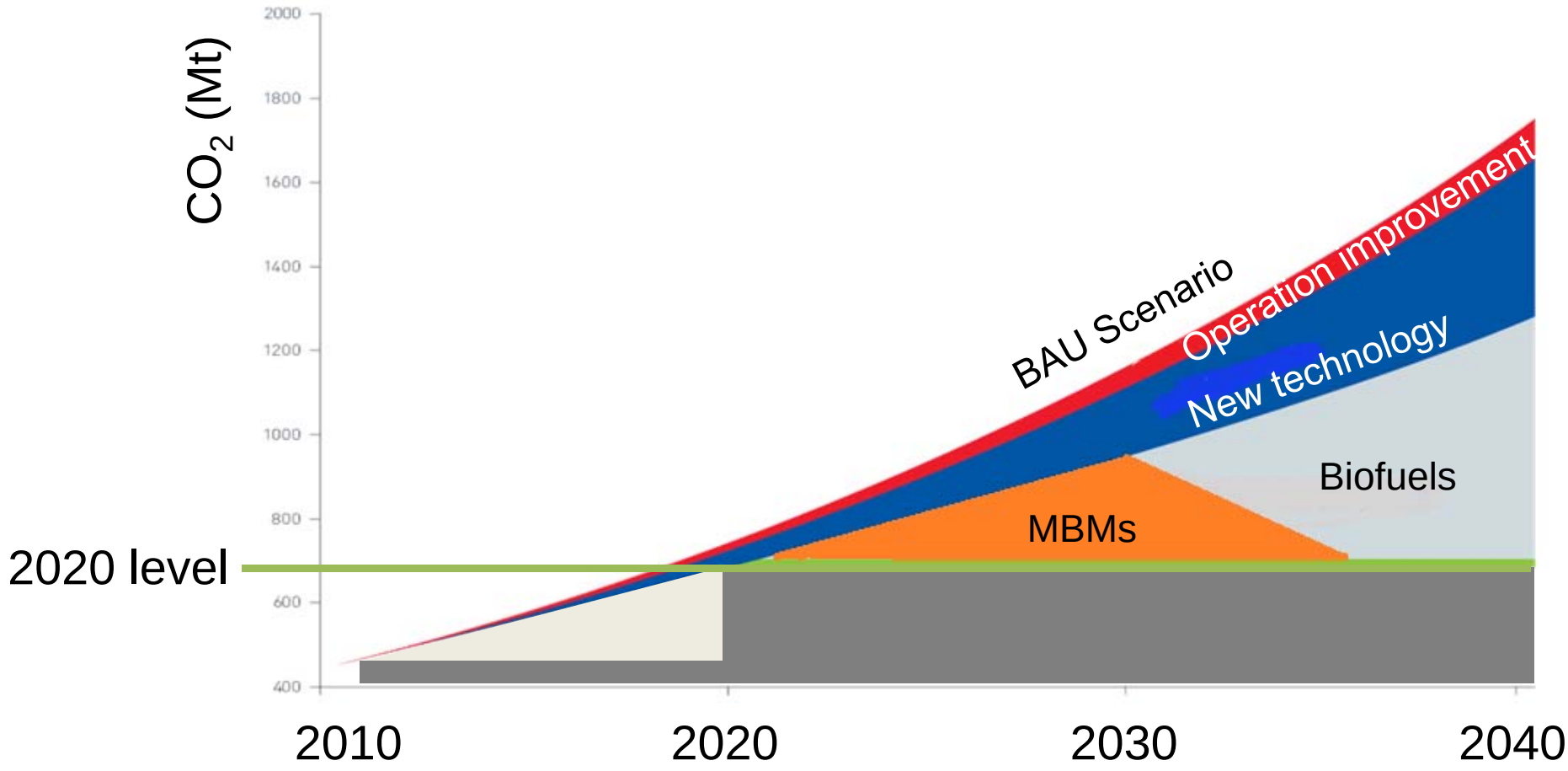
*GHG balance: anthropogenic emissions = removals

Submitted NDCs			
EU	△40% by 2030	China	△65%/GDP by 2030
Japan	△26% by 2030	India	△35%/GDP by 2030
Canada	△30% by 2030	Brazil	△43% by 2030

Adopted global GHG reduction targets and measures including MBM in 2013

Global targets

- **△2% (efficiency) every year**
- **Maintain below 2020 level (volume)**



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International shipping needs GHG reduction target

IMO's approach

- **EEDI** for new ships (2013-)
- **SEEMP** for new & existing ships (2013-)
- **Data collection system** for new & existing ships (2019-)

Yet, **no GHG reduction target** in international shipping

→ **Could be regarded as a "loophole"**

IMO should show its commitment to the world

Setting the targets for International Shipping

Targets should be ambitious, but achievable

Level of contribution to climate change

- Paris agreement
  - well below △2℃
  - pursuing efforts △1.5 ℃

Maximum achievable level of GHG reduction

- Operation;
- Design & retrofitting; and
- Alternative fuels.

satisfying both requirements

Global GHG reduction targets with the highest possible ambition

GHG reduction
Short- to Mid-term Target (-2030)

Short- to mid-term goal (Japan's proposal)

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Reduction target for shipping sector should be based on efficiency

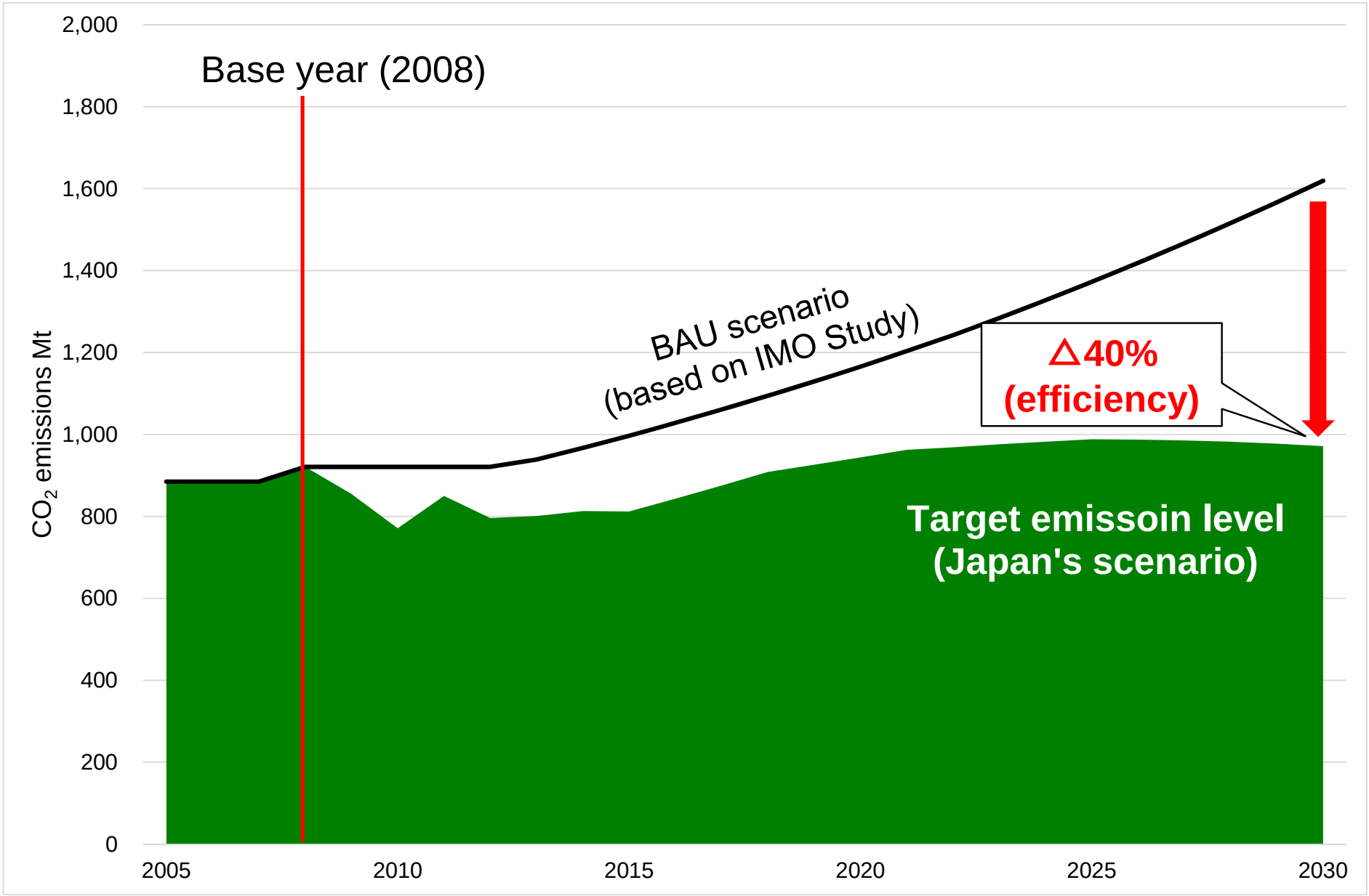
[GHG emission] = [transport volume] × [efficiency]

Out of control for the maritime sector

Can be improved by the effort of the maritime sector

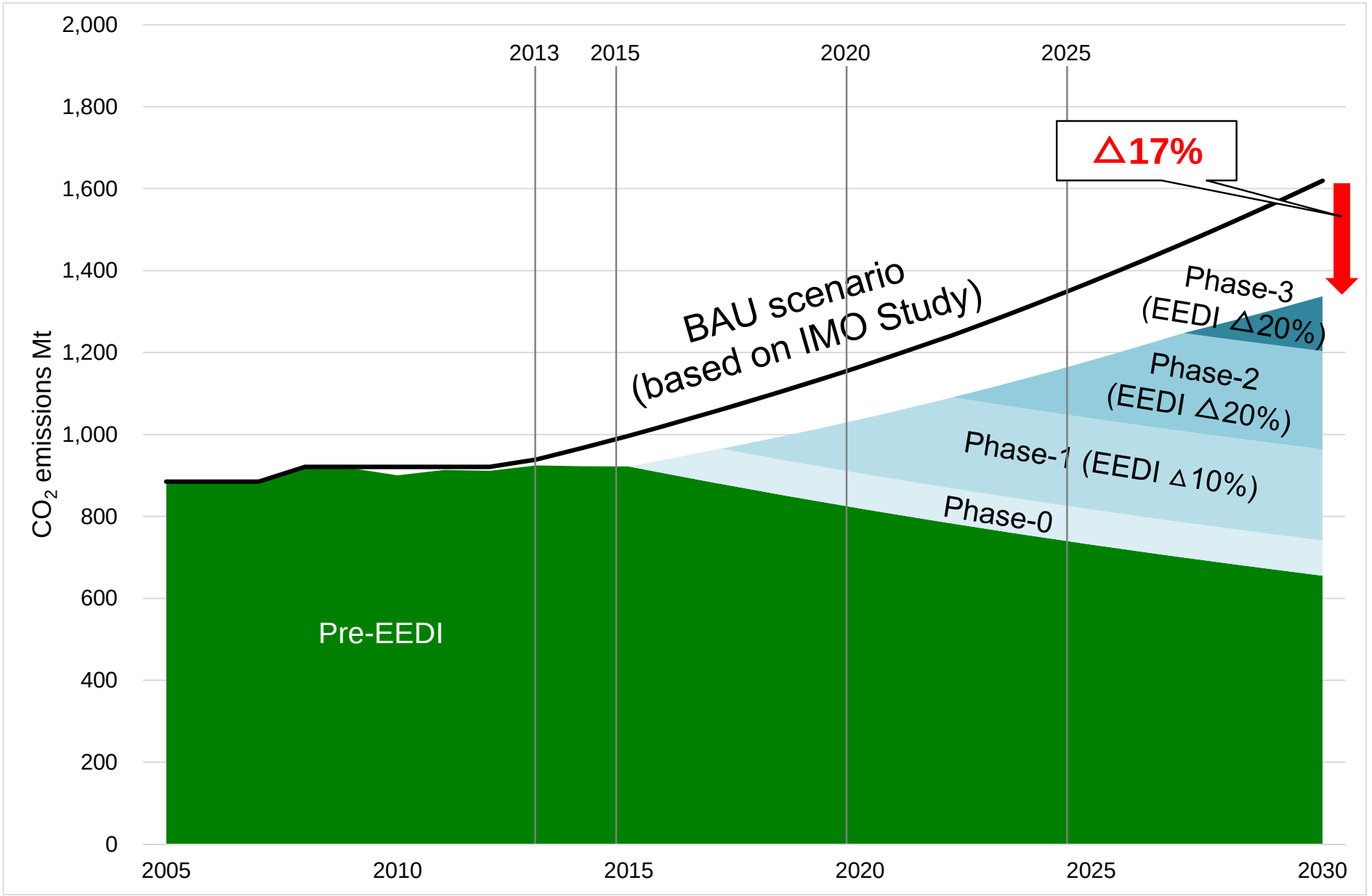
Short- to mid-term goal (Japan's proposal)

Short- to mid-term goal: △40% (efficiency) by 2030



New ships

Contributions by EEDI upgraded new ships: △17% (efficiency)



New ships

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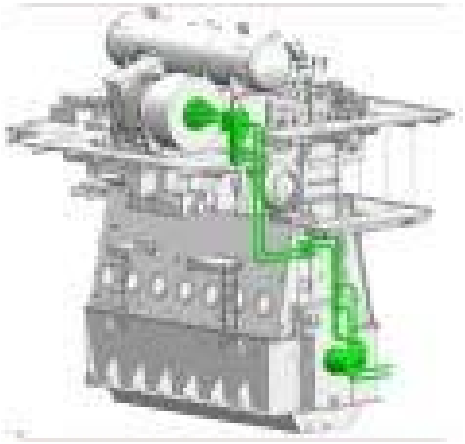
Continuous R&Ds necessary to meet EEDI upgrades

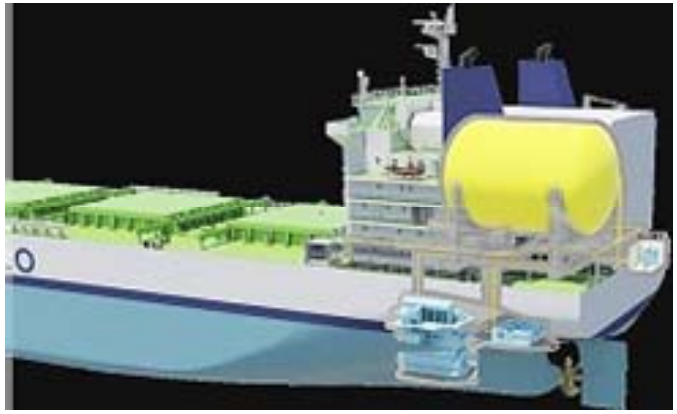
Hull & propulsion improvement

Air lubrication



Energy recovery

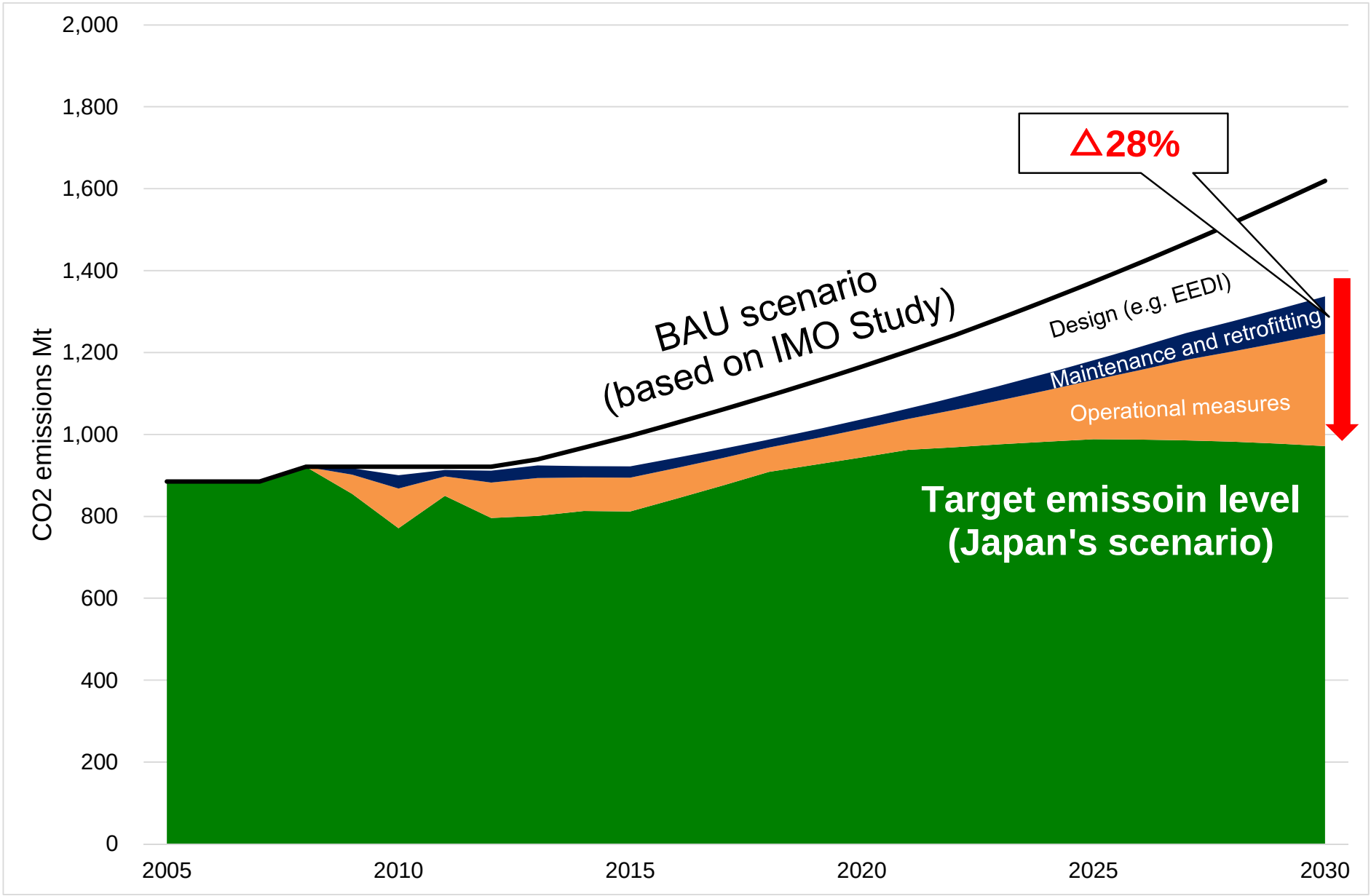
Wind power



LNG-fueled ships

Existing ships

Retrofitting + Maintenance + Operation: △28% (efficiency)

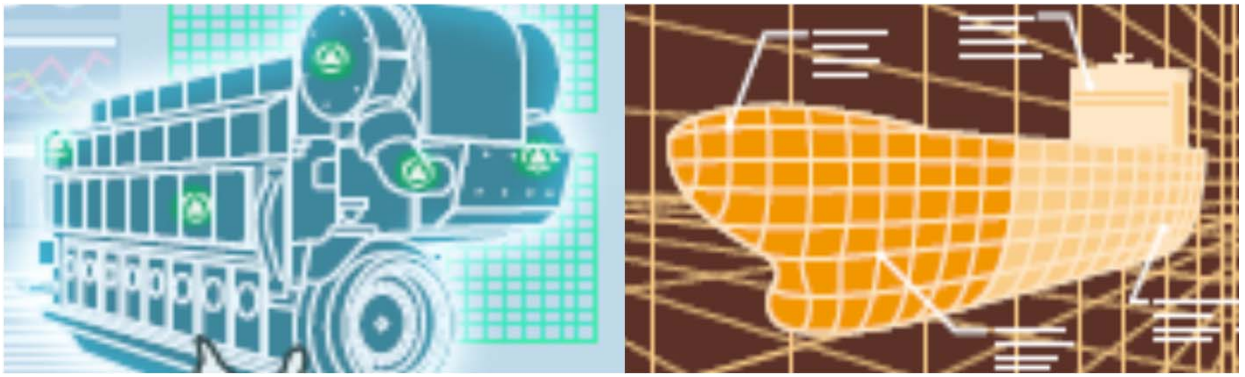


Existing ships

Retrofitting & Maintenance

Costly and limited options

Propulsion system upgrade

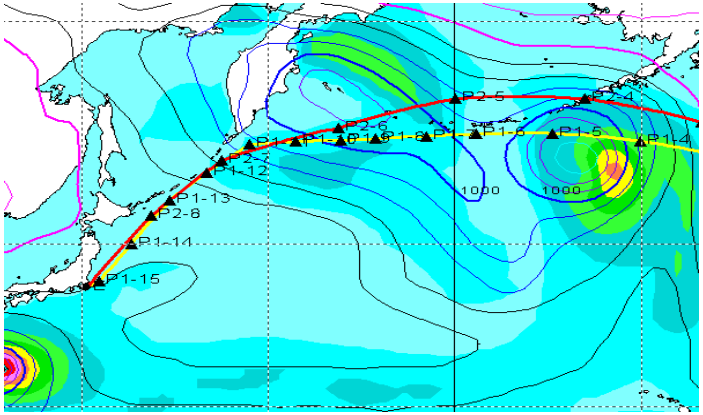


Maintenance and monitoring

Operational measures

Potential without substantial investments

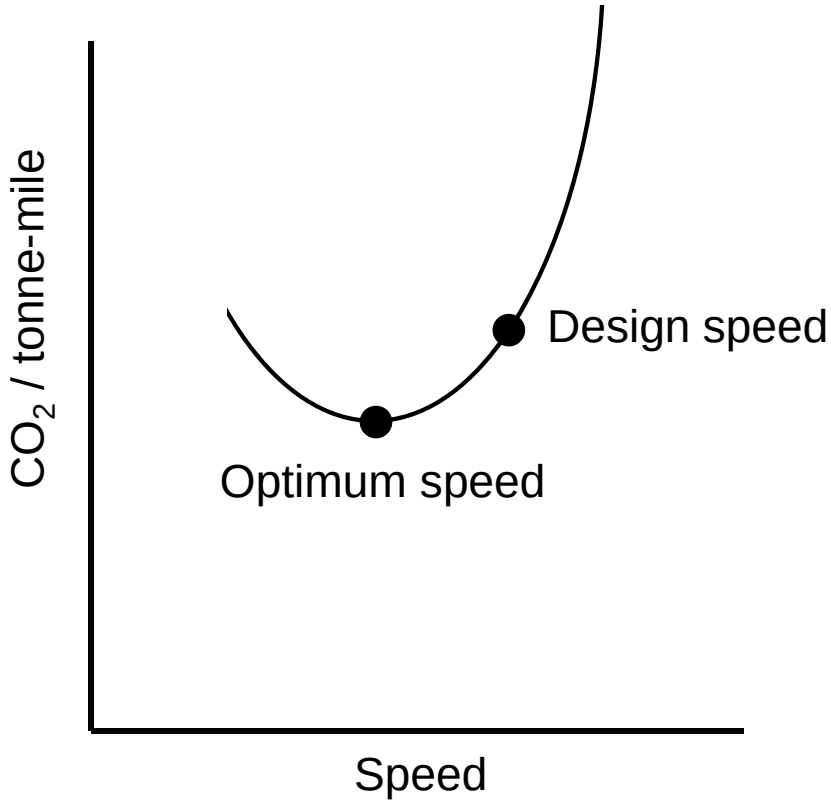
Speed reduction



Weather routing

Speed reduction has potential, but has limit

Design speed → **reduction** → ***Optimum speed***



Constraints

- Social impact
- Fleet increase
- Safety
- Other environmental risk

Summary (-2030)

- In the **short- to mid-term**,

  △40% (efficiency) is challenging,

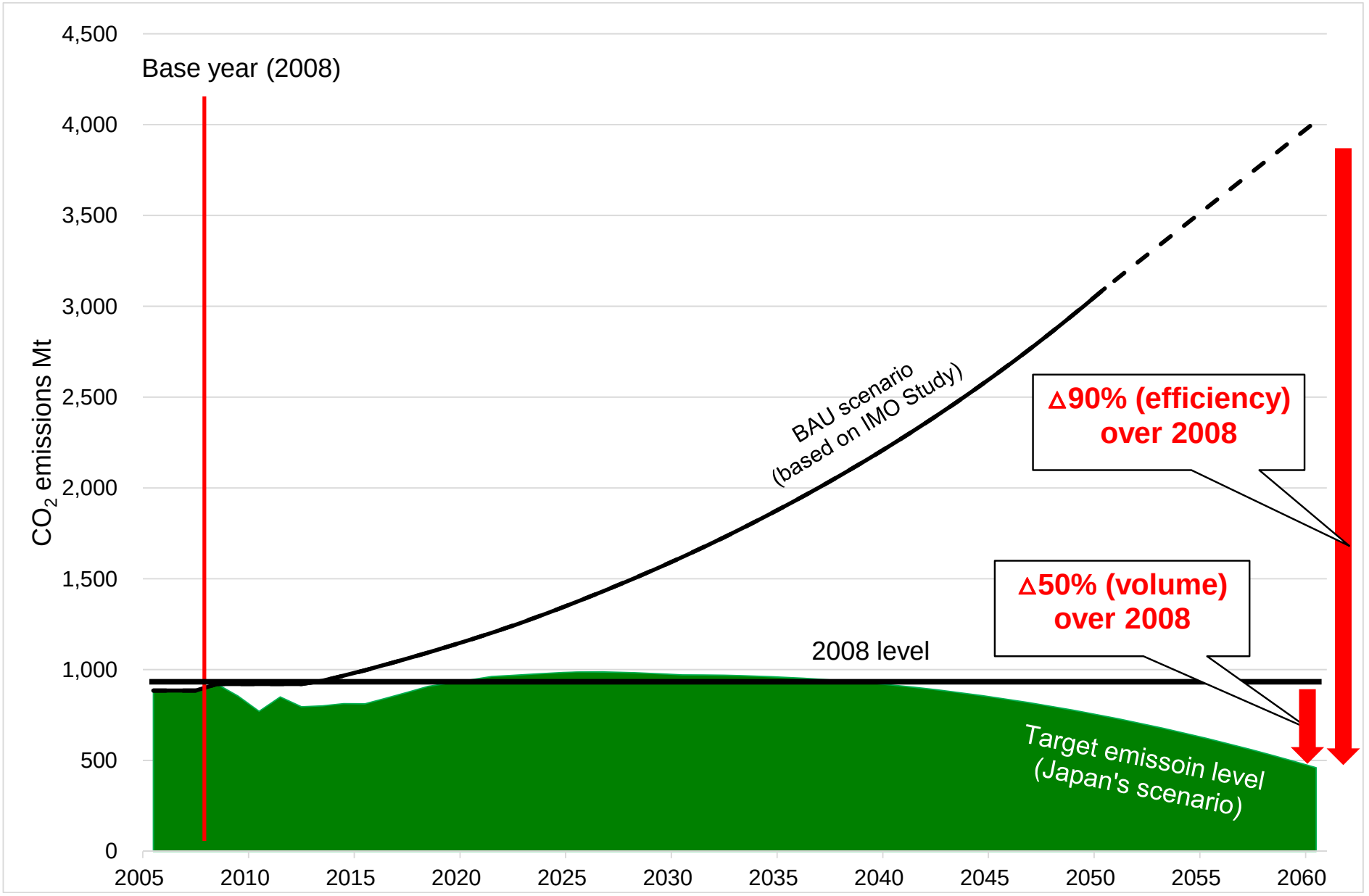
  but achievable in **2030**.

  - △40% = EEDI (design & LNG) + retrofitting + maintenance + operation

GHG reduction
Long-term Target (-2060)

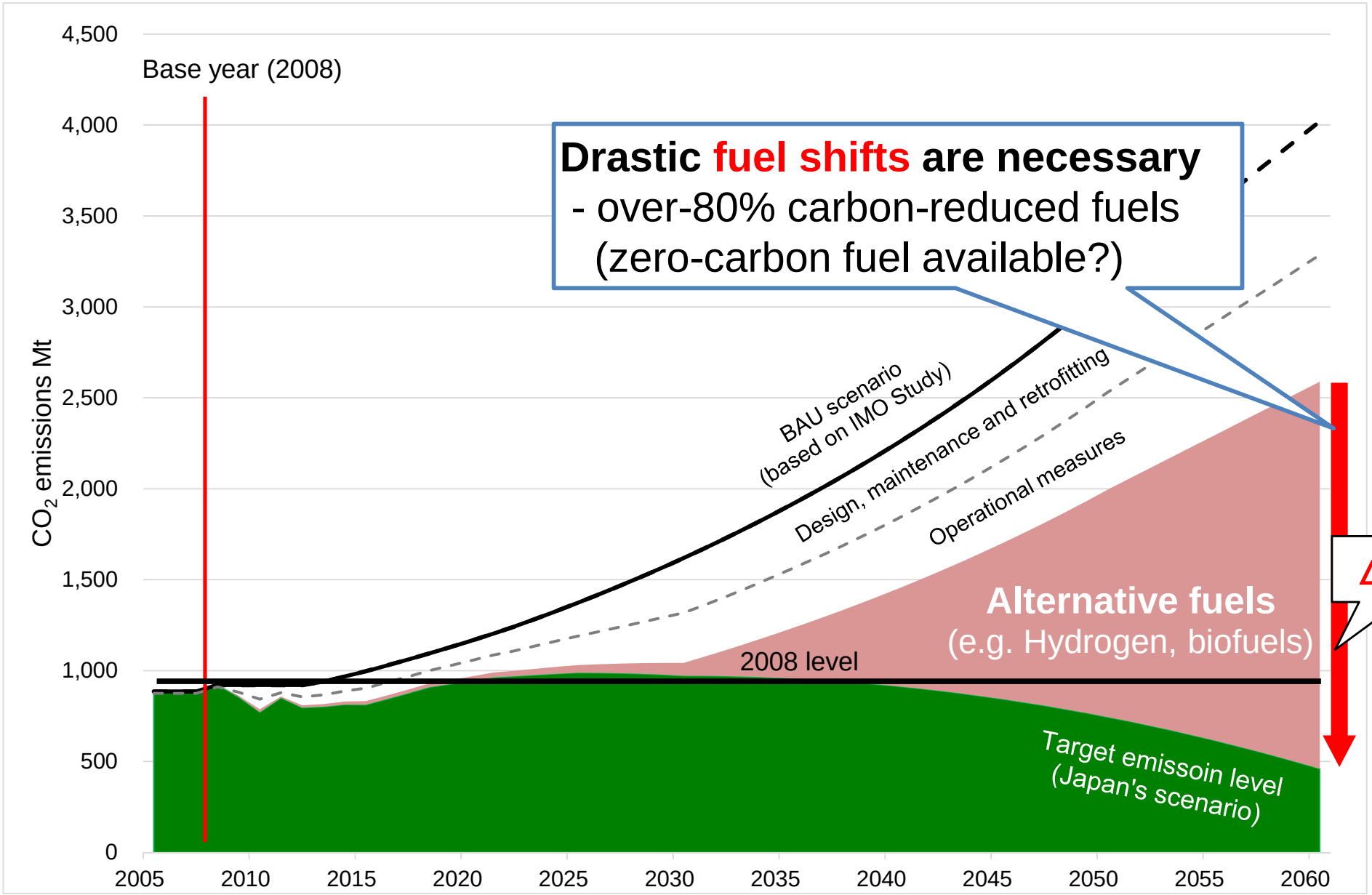
Long-term goal (Japan's proposal)

Long-term goal by 2060: △90% (efficiency) (=△50% (volume))



New alternative fuels

Not achievable by conventional approaches (technical & operational)



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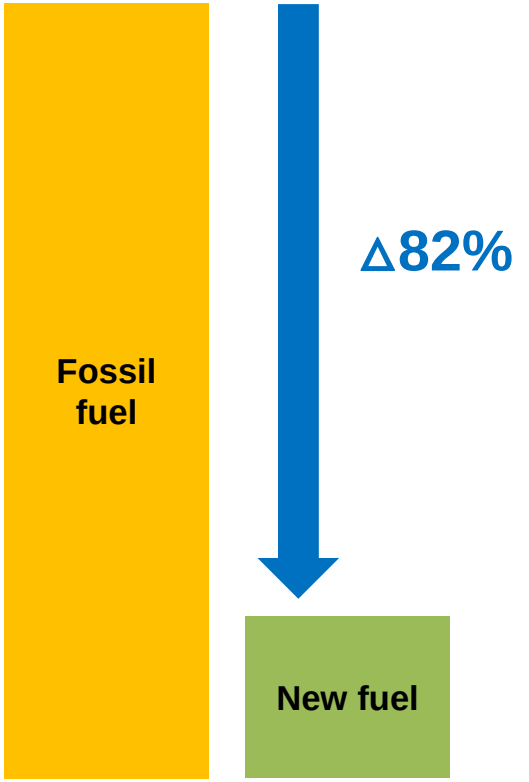
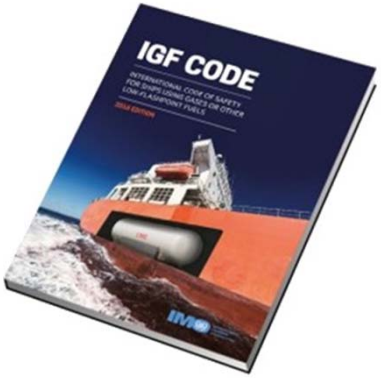
New fuels involve challenges

Carbon intensity of the fuels



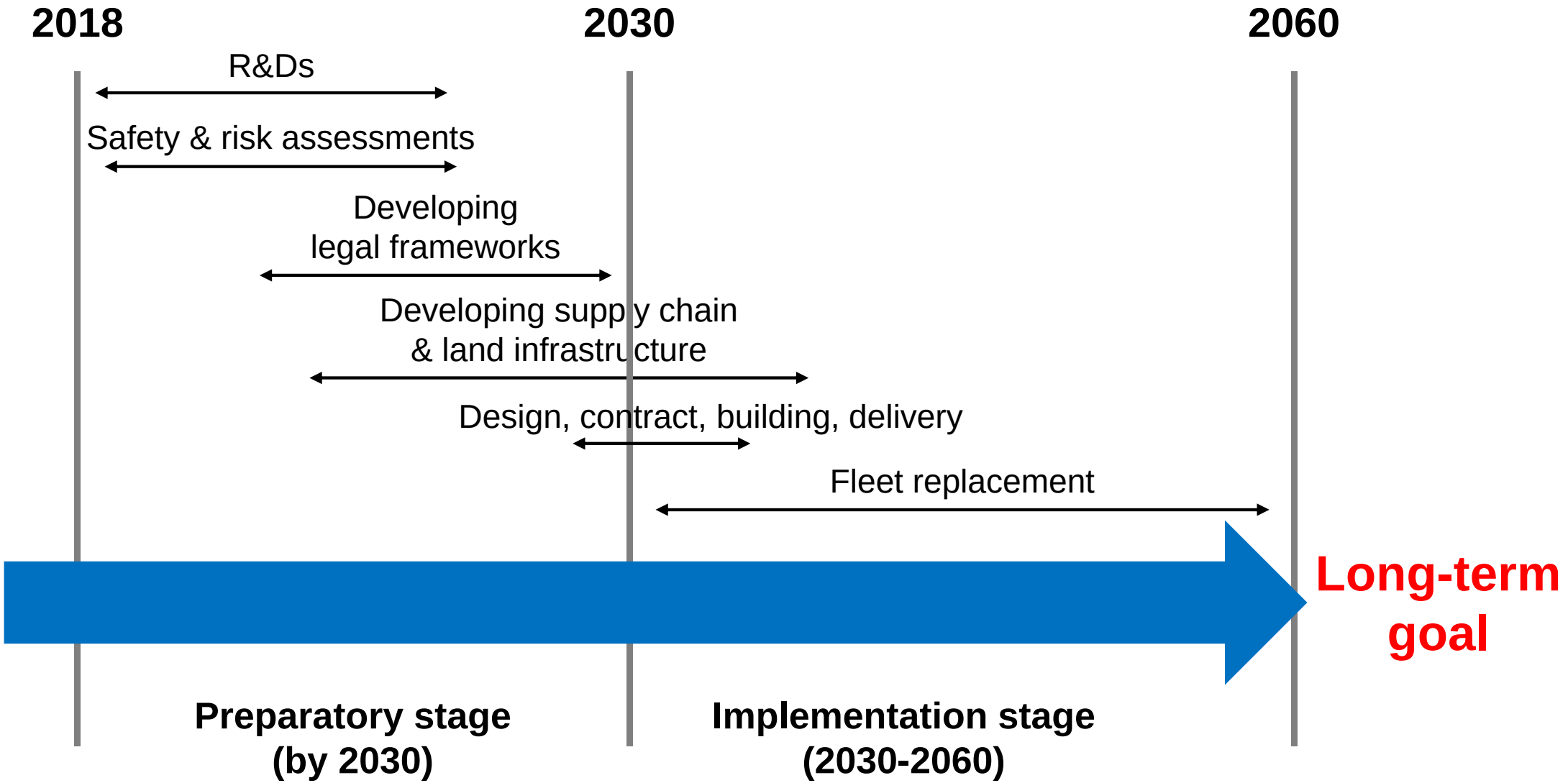
Challenges

- R&D
- Safety & risk assessments
- Legal frameworks
- Supply chain
- Land infrastructure
- Fleet replacement



New alternative fuels

Years are needed for fuel shift



Long-term goal (Japan's proposal)

Long-term target could be based on volume

In principle, reduction target for shipping sector should be based on efficiency.

But **volume target** would be appropriate for the **long term.**

Because

- ✓ 90% efficiency reduction target is not achievable by conventional approaches by the shipping sector;
- ✓ mostly depends on readiness of alternative fuel; and
- ✓ volume target can show the level of contribution to the global GHG reduction.

Summary (-2060)

- In the **long-term**

  △50% (volume) is challenging,

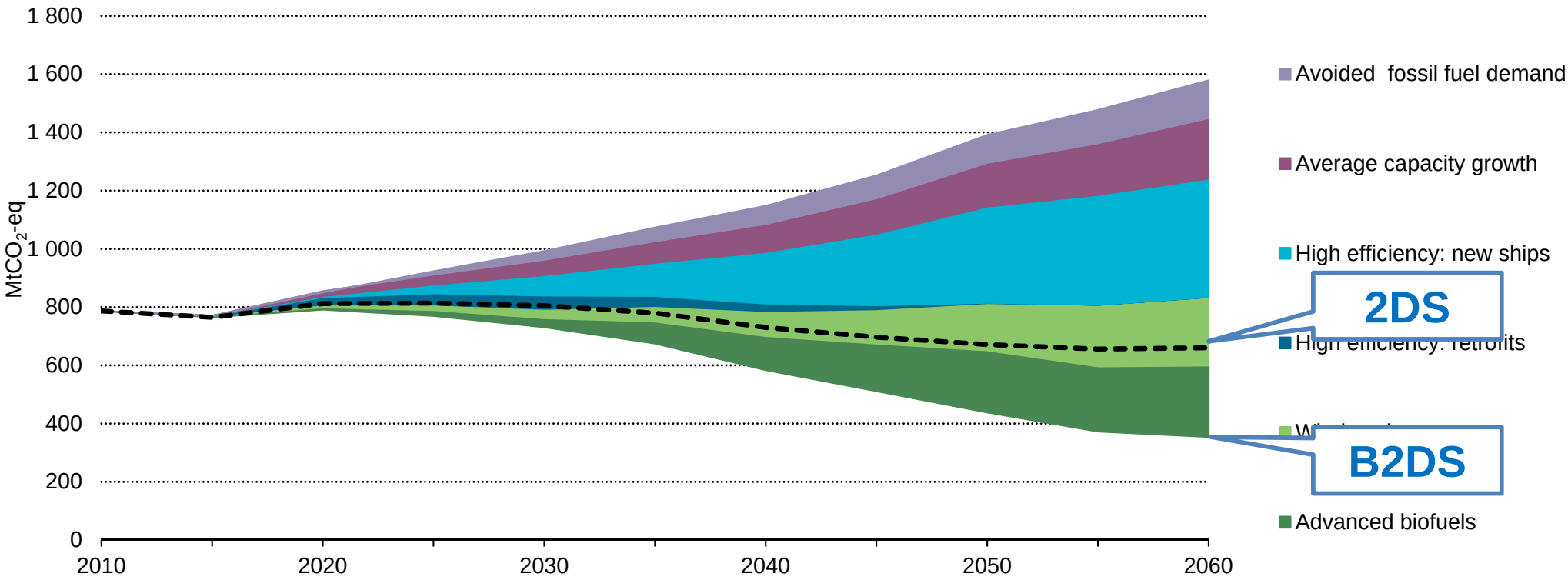
  but achievable in **2060**.

  - △50% = $\underbrace{\text{technology} + \text{regulation} + \text{infrastructure} + \text{fleet replacement}}_{\text{Fuel shift}}$

IEA Energy Technology Perspective 2017

- 2-Degree Scenario (2DS)
- Beyond 2-Degree Scenario (B2DS)

Shipping, 2DS/B2DS

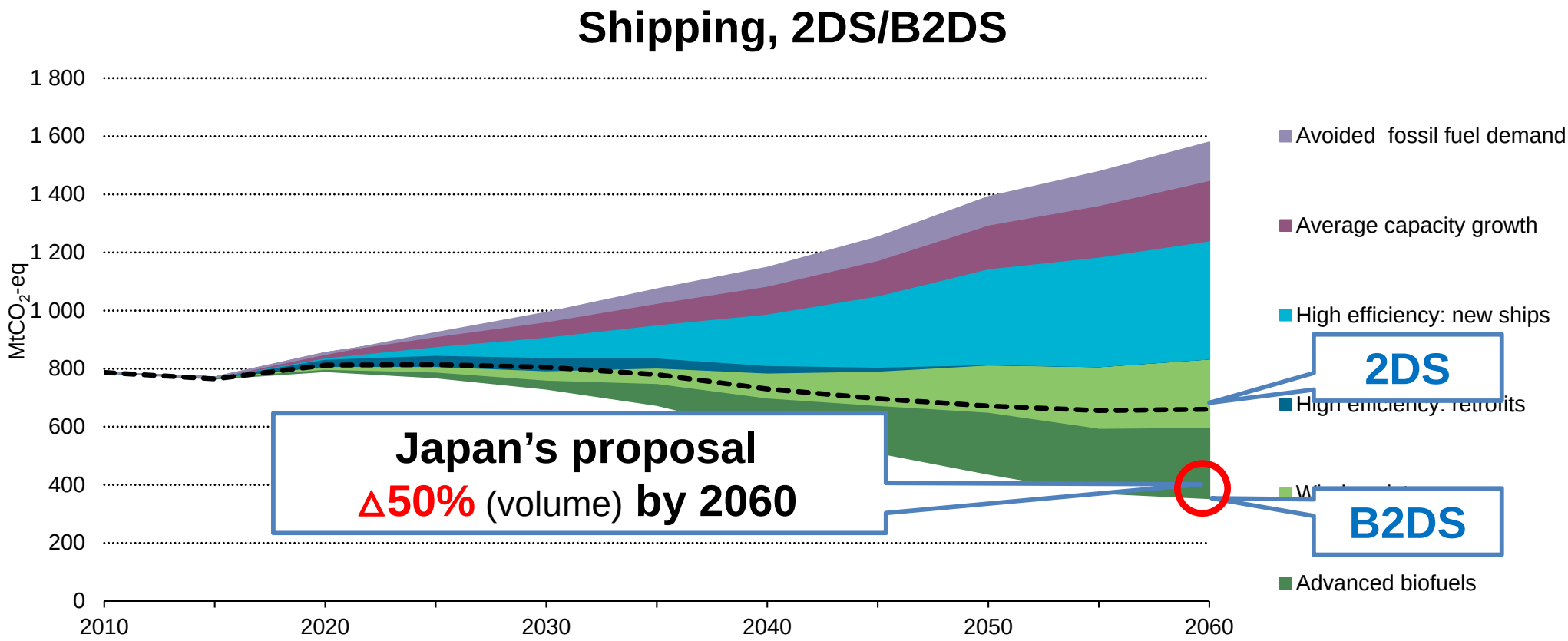


Source: International Energy Agency (2017), Energy Technology Perspectives 2017, OECD/IEA, Paris

IEA Energy Technology Perspective 2017

△50% (volume) **by 2060 is within the range of below △2℃ goal**

- **2-Degree Scenario (2DS)**
- **Beyond 2-Degree Scenario (B2DS)**



Source: International Energy Agency (2017), Energy Technology Perspectives 2017, OECD/IEA, Paris

Summary

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Global GHG reduction target with the highest possible ambition

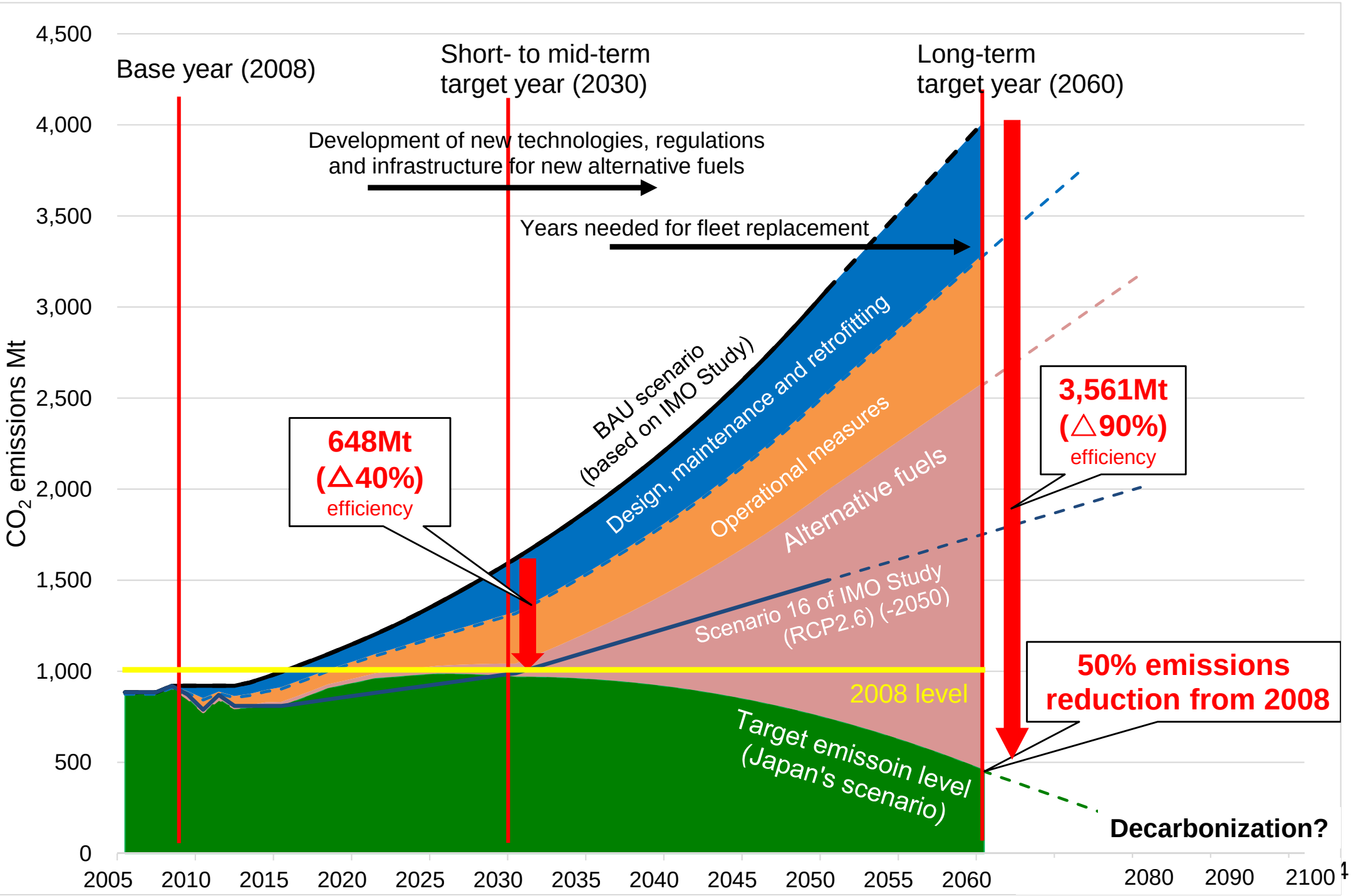
1. Short- to mid-term target

- **△40% (efficiency) by 2030** (over 2008)

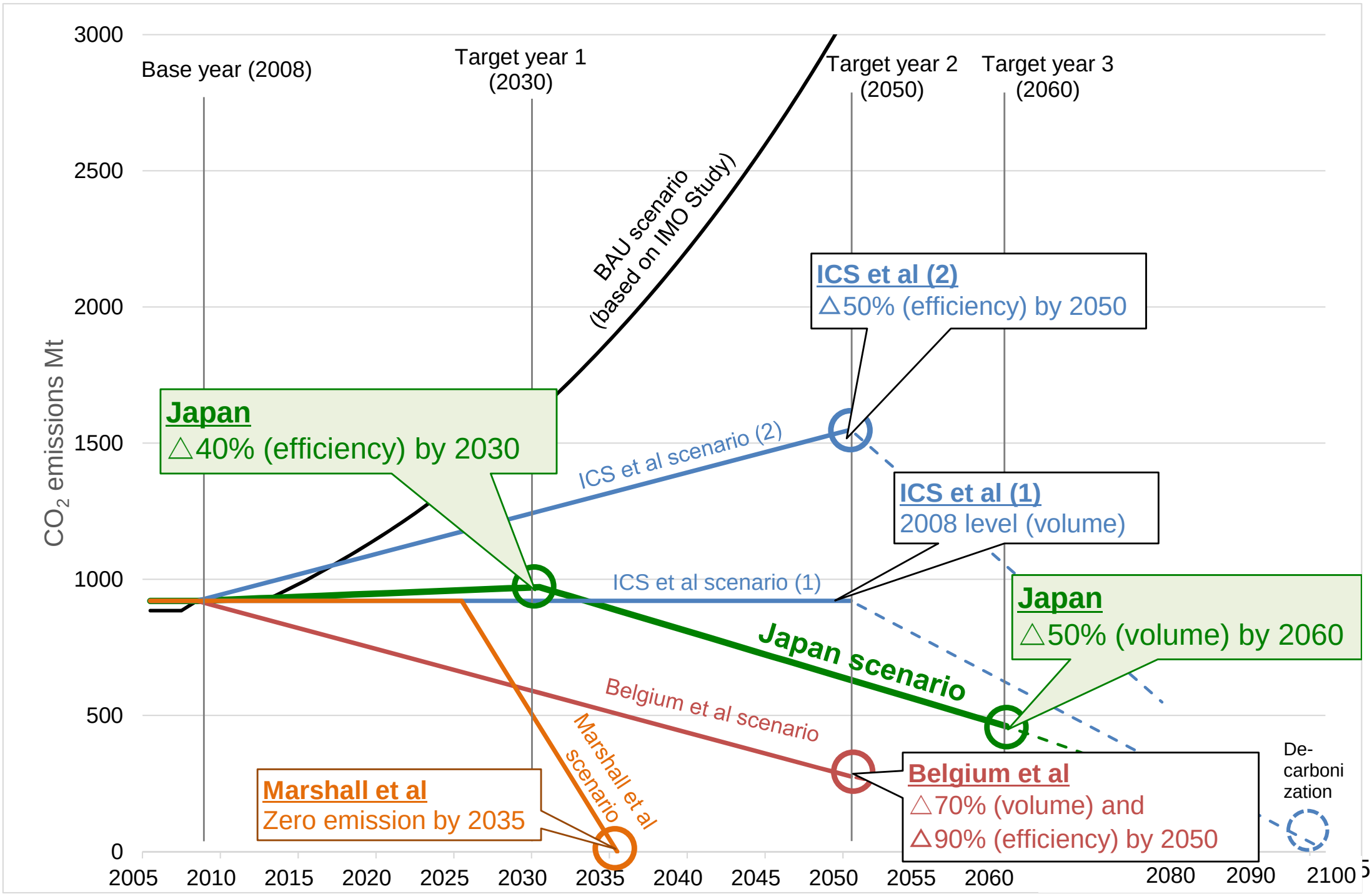
2. Long-term target

- **△50% (volume) by 2060** (over 2008)

Emission scenarios (Japan's proposal)



Emission scenarios (proposals to ISWG-GHG 2)



Thank you.

MB

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