FuelEU Maritime

~ Overview & ClassNK 's Supports ~

Türk Armatörler Birliği
Webinar
12 June 2024

ClassNK

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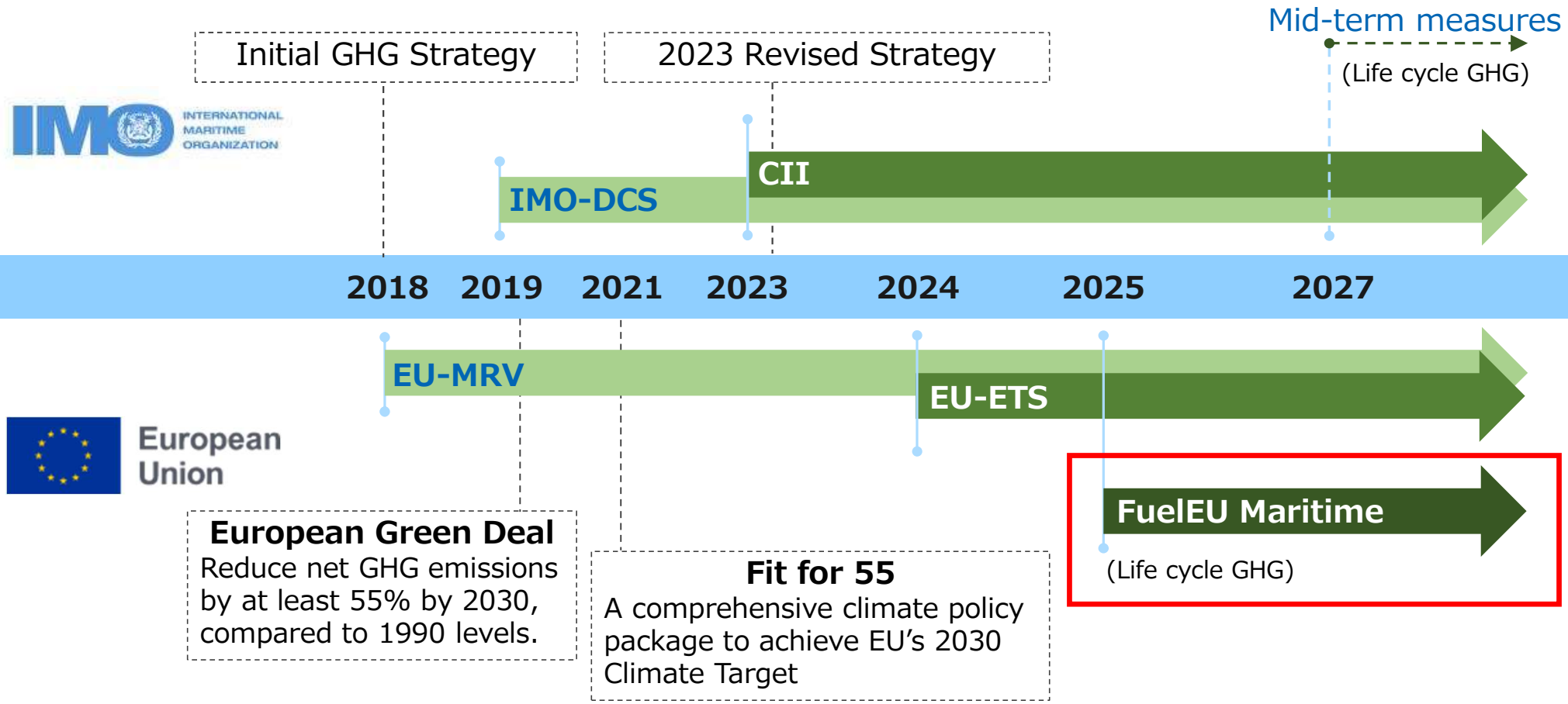
Visualization and measures for emissions from ships



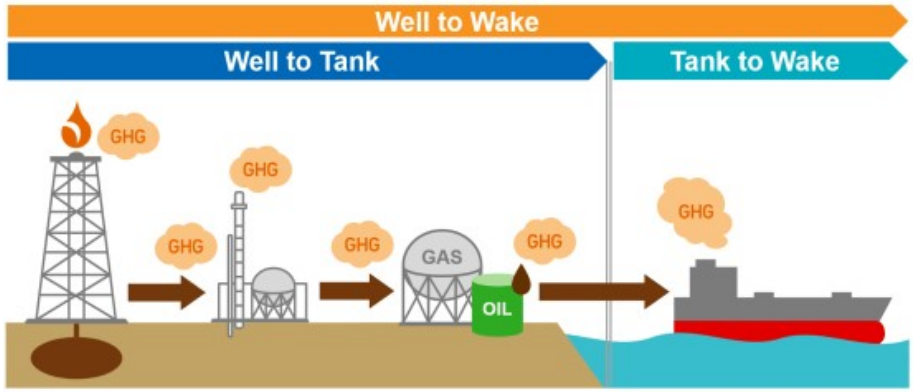
■ FuelEU Maritime

➢ Limitation of lifecycle GHG intensity for fuel used by ships

- Apply from 1 January 2025

【**GHG intensity** under FuelEU Maritime】

- Annual average of GHG emissions per energy [gCO2eq/MJ]
- Greenhouse gases in the scope : CO_2 / CH_4 / N_2O



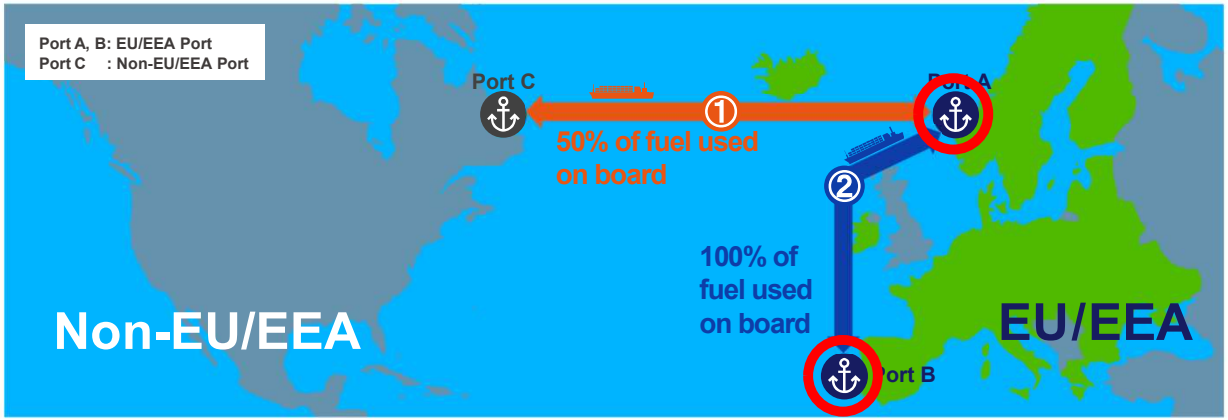
➢ Obligation to use on-shore power supply

- Apply from 1 January 2030
- containerships and passenger ships only

①Overview of FuelEU Maritime : **Limitation of GHG intensity for fuel (1/3)**

■ Scope and Responsibility

- Ships of above 5,000GT
- Fuel used on board (“energy” basis) during EU-related voyages and while at berth in EU ports



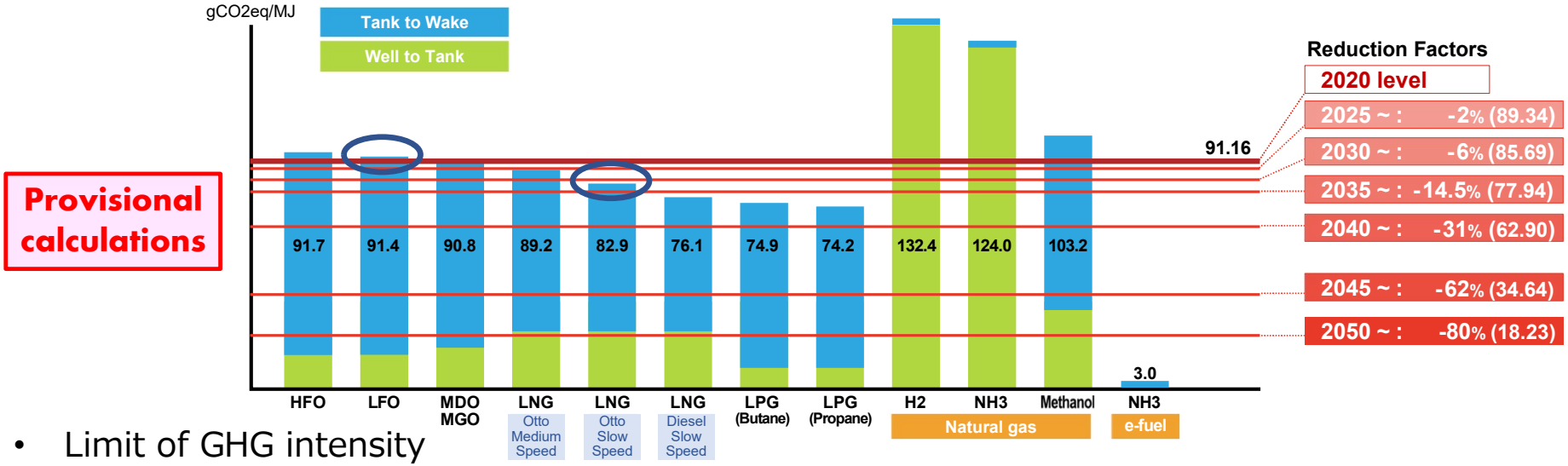
- 50% of fuel used on board from voyages between an EU/EEA port of call and a non-EU/EEA port of call
- 100% of fuel used on board from voyages between the EU/EEA ports of call
- 100% of fuel used on board while at berth in EU/EEA ports of call

- Responsibility:
  Shipowner or any other organization or person who has assumed the responsibility for the operation of the ship (ship management company or bareboat charterer etc.)

Set a limit on the GHG intensity for fuel used on board during EU related voyages (from 2025)

■ Calculation methods and Limit of GHG intensity

- What is GHG intensity (“GHG emissions per energy”)?
  - ➢ GHG emissions of fuels are calculated on **a life cycle basis**, including production, transportation, distribution and used on-board. (“Well-to-Wake”)
  - ➢ Fixed several **conversion factors** (GHG emissions/energy) in respect of Well-to-Tank and Tank-to Wake are set on each fuel.

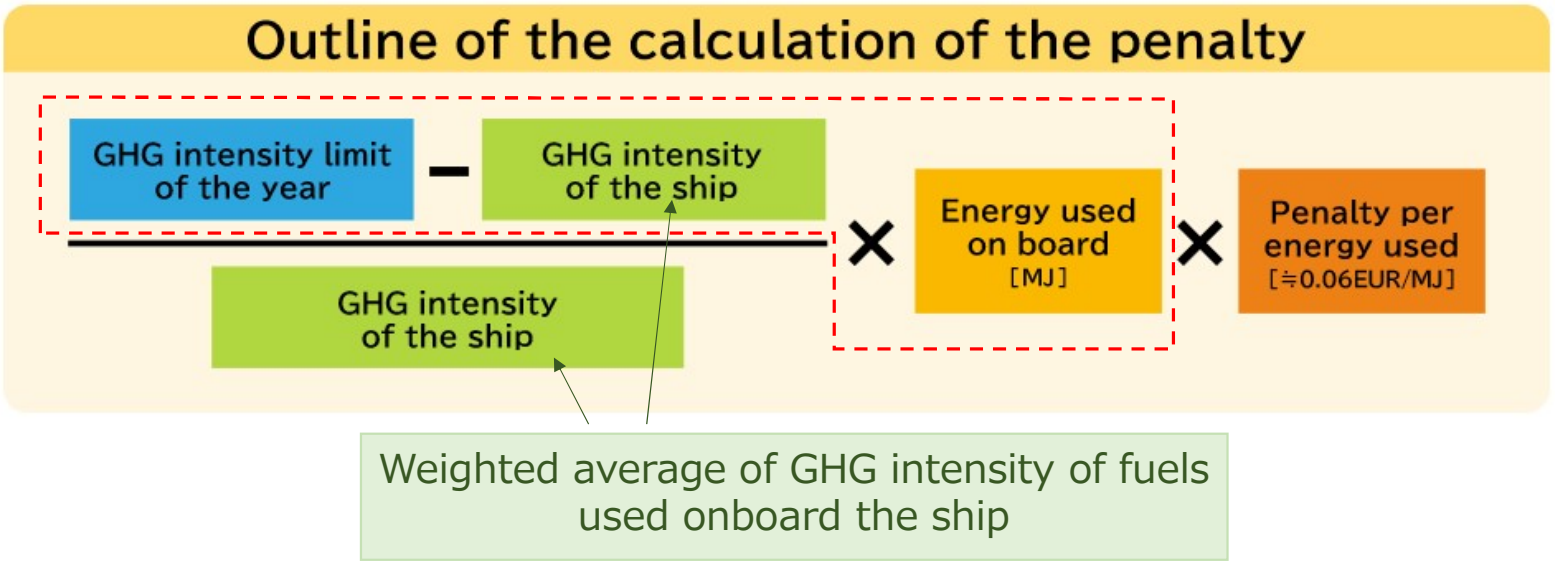


- Limit of GHG intensity
  - ➢ The limit value becomes stringent every 5 years, based on the average GHG intensity in 2020 (EU-MRV data) level, 91.16. (starting from 2025, as 89.34)

■ Implementation of the regulations and penalties, etc.

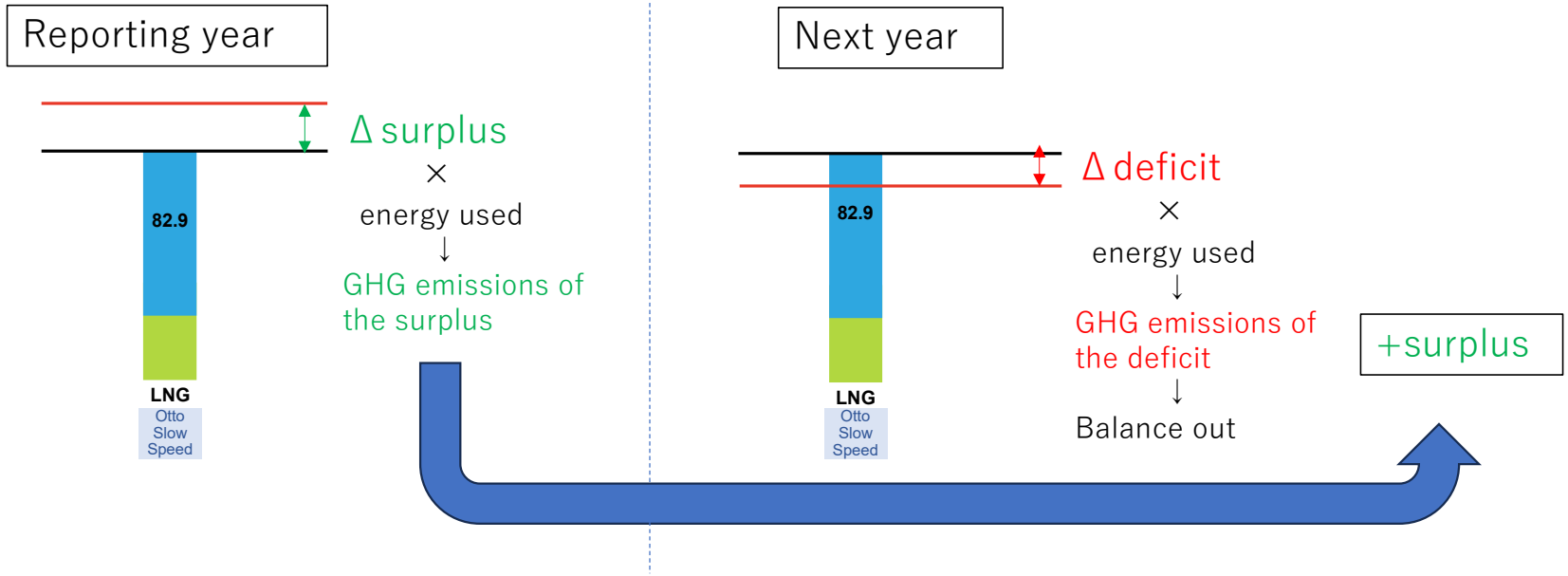
- Implementation : The vessels' compliance can be considered at **Company level**
  - ➢ Banking and borrowing of compliance surplus of the same ship
  - ➢ Pooling of compliance surpluses and deficits of multiple ships (same reporting period)

- Where the ship has a compliance deficit, the company should pay a **penalty**.
  - ➢ A ship's penalty is calculated as follows:



■ Banking （for the same ship only）

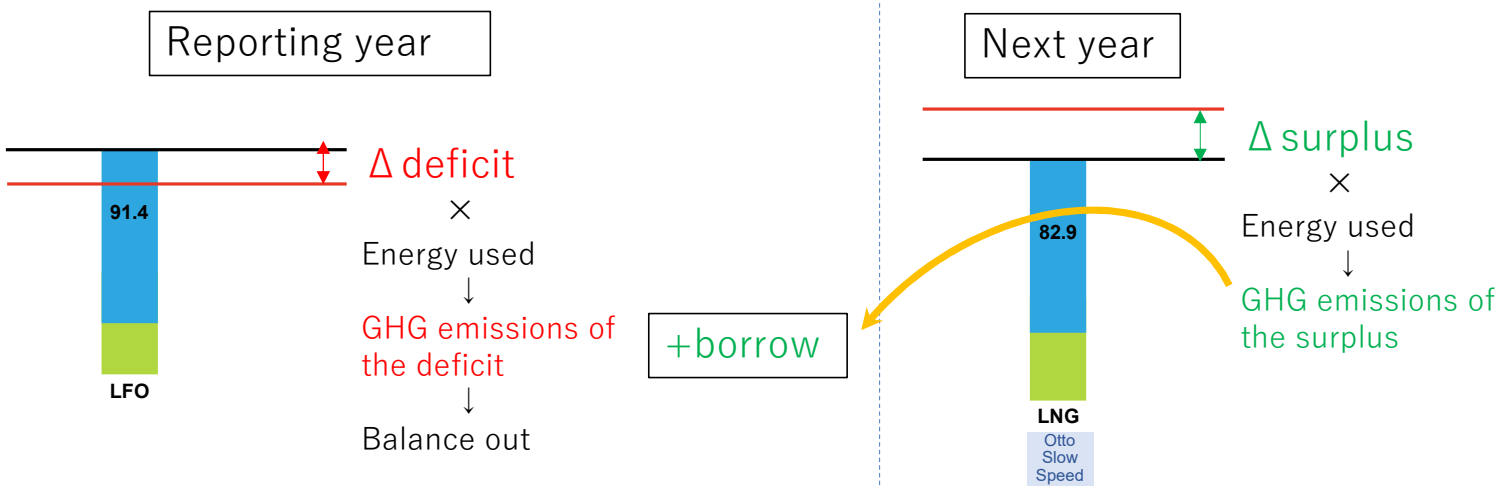
- If a ship's GHG intensity of a reporting year is below the GHG intensity limit for that year(**A ship's GHG intensity < Limit**), the surplus of GHG emissions can be carried forward to the next year.
- If the GHG intensity in the next year exceeds the limit, the banked GHG emissions can be used for the calculation of the penalty.



■ Borrowing (for the same ship only)

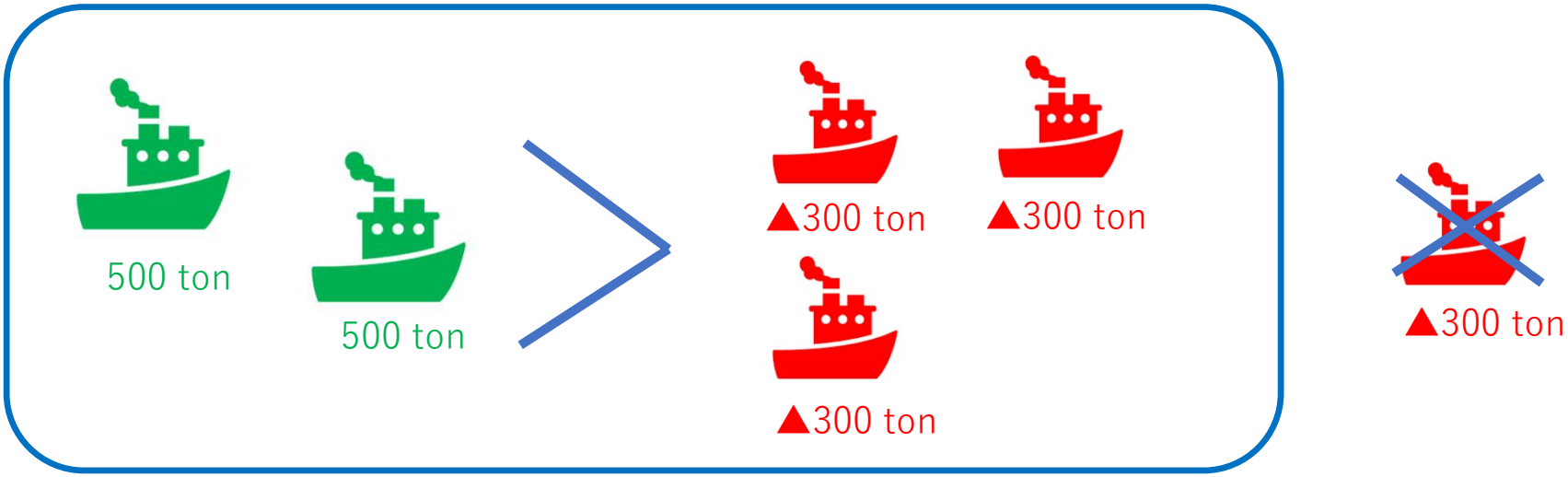
- If a ship's GHG intensity of a reporting year exceeds the limit, the excess can be borrowed from the following year.
- 1.1 times of the borrowed GHG emission is subtracted from the following year.
- There is a limitation for the amount of emissions that can be borrowed.

  Limit : 2% of GHG intensity limit of the year[gCO2eq/MJ] × energy consumption for the year[MJ]
- Borrowing for two consecutive years is not allowed.



■ Pooling （in the same reporting year）

- Shipping company can compensate “surplus” for “deficit” among multiple ships in a pool.
  - Total surplus ＞ total deficits
  - A ship cannot be included in more than 1 pool.
  - A ship using “borrowing” cannot be included in a pool. (banking can be used)
  - Pool can be set up by two or more shipping companies.



■ Case study of Borrowing

<Example> Argentina – Denmark **(5 round voyages)**
Distance: 70,000 miles / year
Fuel consumption : 6,200 ton (LFO)

	2025	2026年	Penalty
NOT using Borrowing	LFO	LFO	**168,000 EUR** (2025) **185,000 EUR** (2026) × **1.1**(next year)
Using Borrowing	LFO (planning to change fuel from LFO to biofuel next eyar)	**Bio-fuel**	**22,000 EUR** (2025) **0 EUR** (2026)

- Where penalty happens consectively, amount of penalty increases every year (e.g : Second year: x1.1, Third year: x1.2)

➢ If you plan to switch from conventional fuels (LFO) to **biofuels** in the following year, you may be able to reduce the amount of the penalty by Borrowing.

- There is a limit for the amount of emissions that can be borrowed.

①Overview of FuelEU Maritime : **Pooling**

■ Case study of Pooling

<Example> Argentina – Denmark **(5 round voyages)**
Distance: 70,000 miles / year
Fuel consumption : 6,200 ton (LFO)

	2025	2026	Penalty
Pooling	LFO **Bio-diesel**	Same fleet	**0 EUR** (until 2034)
Pooling	LFO **e-Ammonia**	Same fleet	**0 EUR** (until 2039)

(GHG intensity of Biofuels: 14.9gCO2eq/MJ in this study)

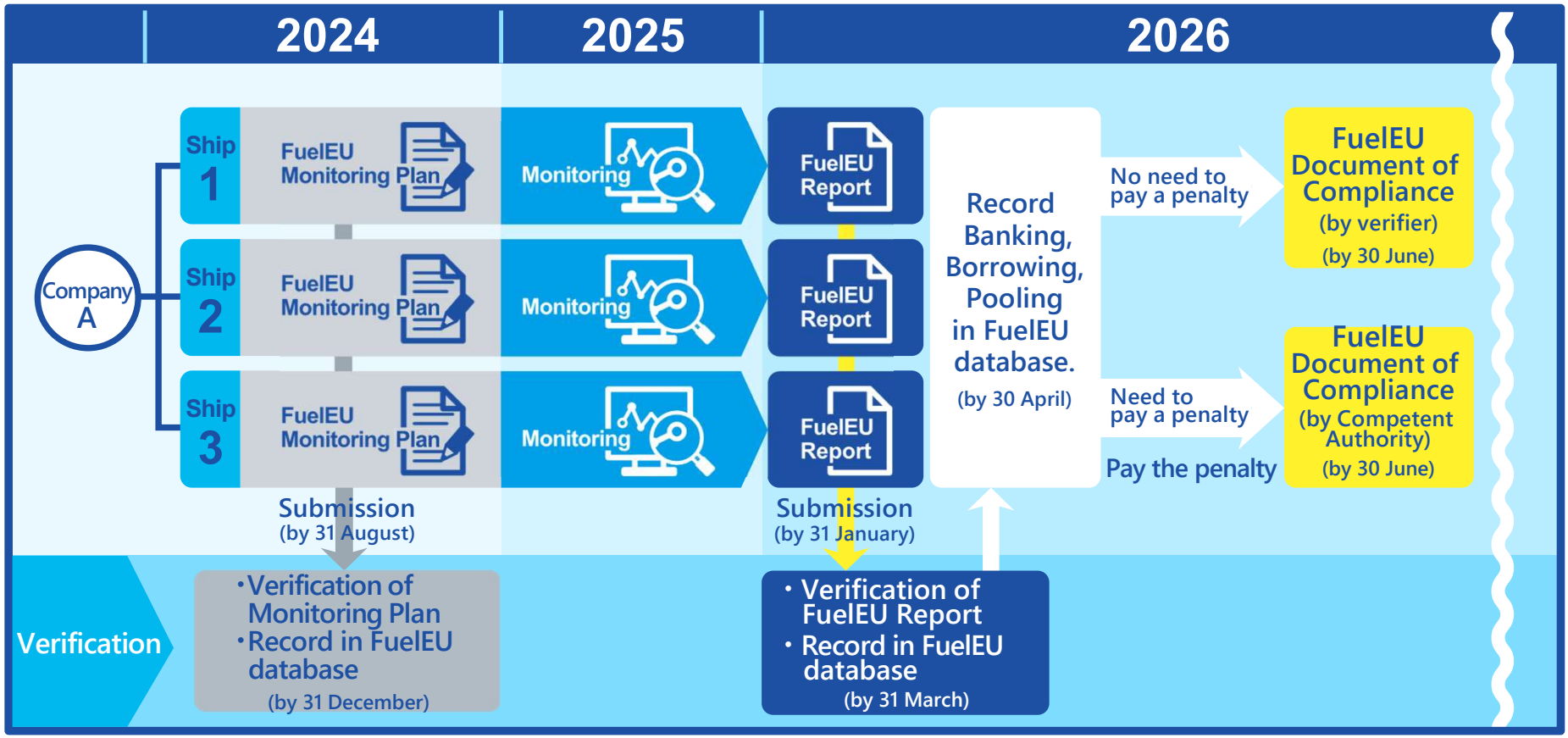
- 5 ships with LFO and 1 ship with **biofuels**: No penalty until **2034**
- 5 ships with LFO and 1 ship with **green ammonia**: No penalty until **2039**

■ Use of on-shore power supply

- **Obligation to use on-shore power supply in EU/EEA ports (from 2030)**
  - **Containerships** and **Passenger ships** of above 5,000GT
- For non-compliant port call(s), the company shall pay a penalty, based on the following calculation:
  - Value of the established total electrical power demand of the ship at berth(kW)
    x
    Hours of mooring at the quayside(hours)
    x
    1.5 EUR/kWh

- Exemptions, such as:
  - Mooring at the quayside for less than 2 hours
  - Unable to connect on-shore power supply due to unavailable connection points in a port
  - Unable to connect on-shore power supply because the shore installation at the port is not compatible with on-board equipment

■ Timeline for introduction of FuelEU Maritime



① Overview of FuelEU Maritime for shipping

② **ClassNK' s supports for FuelEU Maritime for shipping**

- FAQs on the FuelEU Maritime for Shipping
- ClassNK ZETA FuelEU Maritime Feature

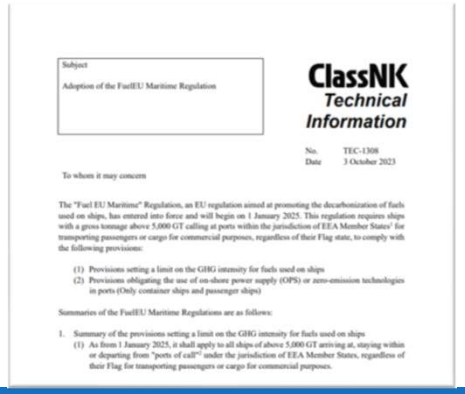
② FuelEU Maritime: **ClassNK's supports**

■ FAQs on the FuelEU Maritime (1st Edition) (August 2023)

- Q&A style explanation of the overview of the regulations and points to be addressed in relation to the introduction of FuelEU Maritime.
- The FAQs will be updated as soon as new information becomes available.

■ ClassNK Technical Information (October 2023)

- Adoption of the FuelEU Maritime Regulation


Subject
Adoption of the FuelEU Maritime Regulation

ClassNK
Technical Information

No. TEC-1308
Date 3 October 2023

To whom it may concern

The "Fuel EU Maritime" Regulation, an EU regulation aimed at promoting the decarbonization of fuels used on ships, has entered into force and will begin on 1 January 2025. This regulation requires ships with a gross tonnage above 5,000 GT calling at ports within the jurisdiction of EEA Member States[1] for transporting passengers or cargo for commercial purposes, regardless of their Flag state, to comply with the following provisions:

(1) Provisions setting a limit on the GHG intensity for fuels used on ships
(2) Provisions obligating the use of on-shore power supply (OPS) or zero-emission technologies in ports (Only container ships and passenger ships)

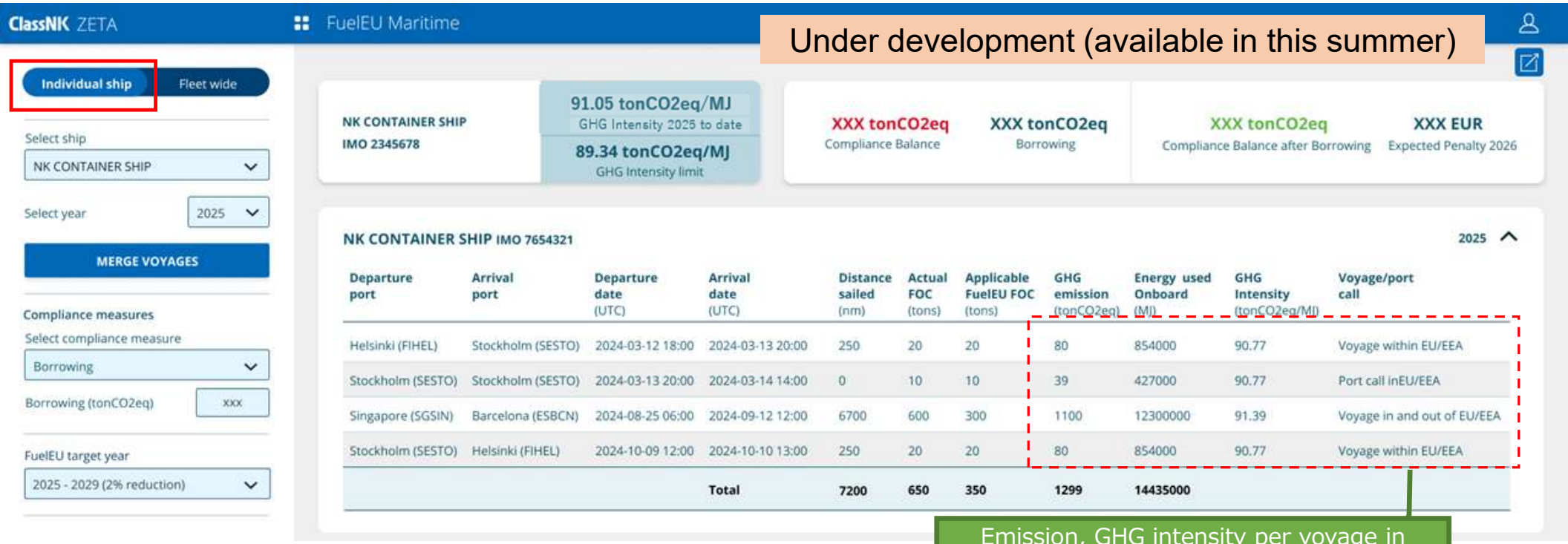
Summaries of the FuelEU Maritime Regulations are as follows:

1. Summary of the provisions setting a limit on the GHG intensity for fuels used on ships
(1) As from 1 January 2025, it shall apply to all ships of above 5,000 GT arriving at, staying within or departing from "ports of call" under the jurisdiction of EEA Member States, regardless of their Flag for transporting passengers or cargo for commercial purposes.

② FuelEU Maritime: **ClassNK's supports**

■ FuelEU Management on ClassNK ZETA

- FuelEU GHG intensity calculation
- Penalty calculation
- Banking, Borrowing, Pooling management



Departure port	Arrival port	Departure date (UTC)	Arrival date (UTC)	Distance sailed (nm)	Actual FOC (tons)	Applicable FuelEU FOC (tons)	GHG emission (tonCO2eq)	Energy used Onboard (MJ)	GHG Intensity (tonCO2eq/MJ)	Voyage/port call
Helsinki (FIHEL)	Stockholm (SESTO)	2024-03-12 18:00	2024-03-13 20:00	250	20	20	80	854000	90.77	Voyage within EU/EEA
Stockholm (SESTO)	Stockholm (SESTO)	2024-03-13 20:00	2024-03-14 14:00	0	10	10	39	427000	90.77	Port call inEU/EEA
Singapore (SGSIN)	Barcelona (ESBCN)	2024-08-25 06:00	2024-09-12 12:00	6700	600	300	1100	12300000	91.39	Voyage in and out of EU/EEA
Stockholm (SESTO)	Helsinki (FIHEL)	2024-10-09 12:00	2024-10-10 13:00	250	20	20	80	854000	90.77	Voyage within EU/EEA
			Total	**7200**	**650**	**350**	**1299**	**14435000**		

② FuelEU Maritime: **ClassNK's supports**

■ FuelEU Management on ClassNK ZETA

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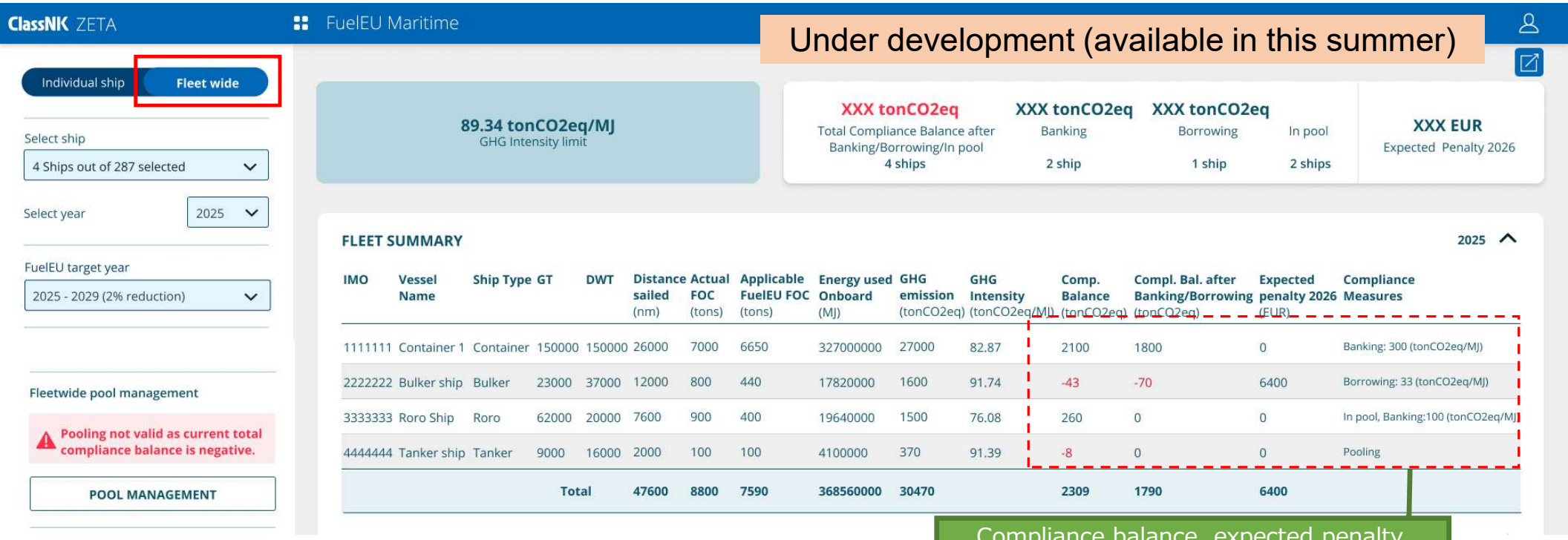
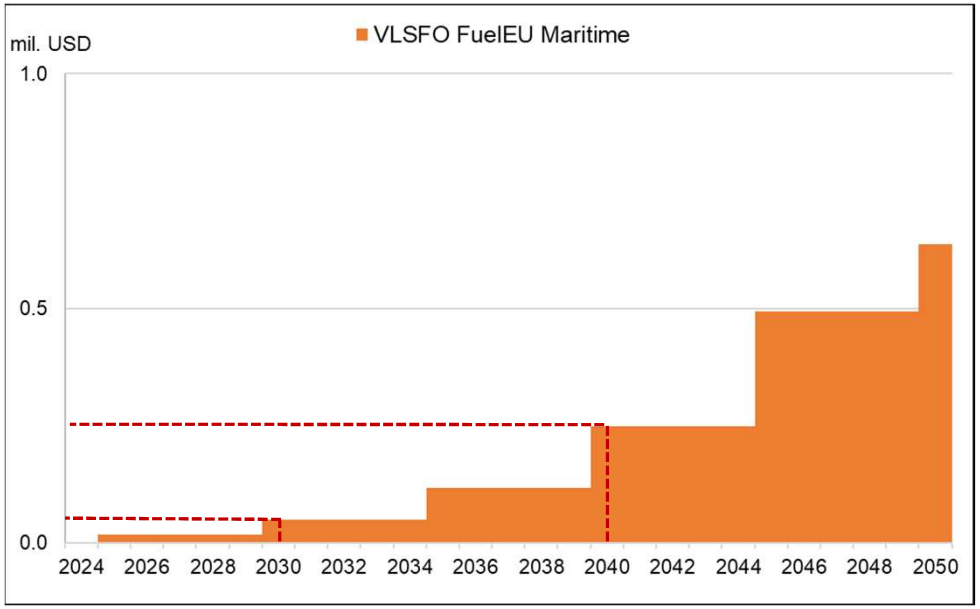


FuelEU Maritime Economic impact – Bulk carrier

Penalty Forecast :
Bulk carrier (82,000 DWT)

<Example> Argentina - Denmark
Distance: approx. 7,000 miles
Fuel Consumption : approx. 620 ton (VLSFO) / 520 ton (LNG)

VLSFO (LFO)



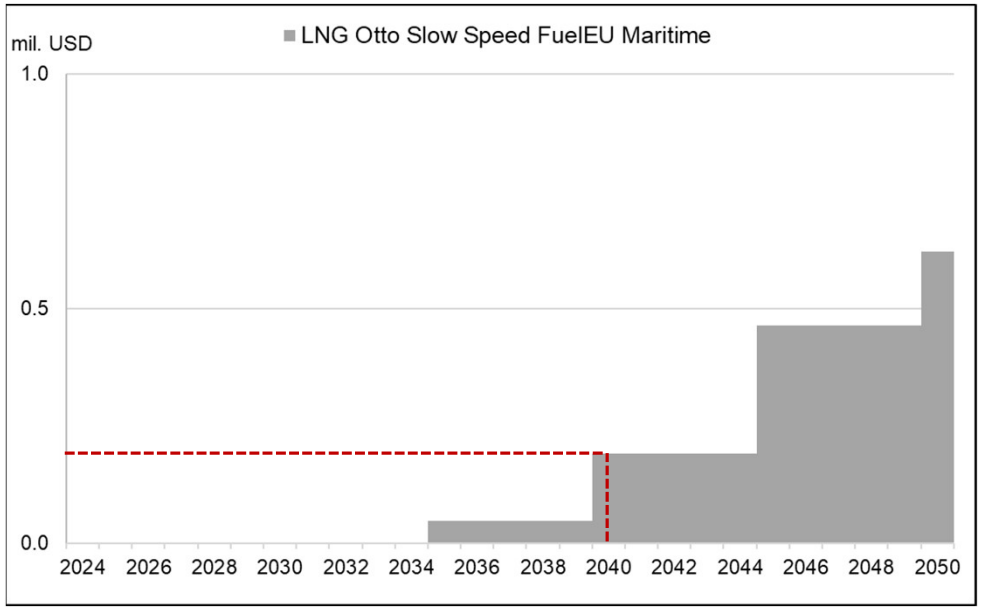
Estimation of penalty

2030 : approx. 50,000 USD/voyage

2040 : approx. 250,000 USD/voyage

Fuel cost: Approx. 370,000 USD/voyage (as of Jan 2024)

LNG



Estimation of penalty

2030 : approx. 0 USD/voyage

2040 : approx. 192,000 USD/voyage

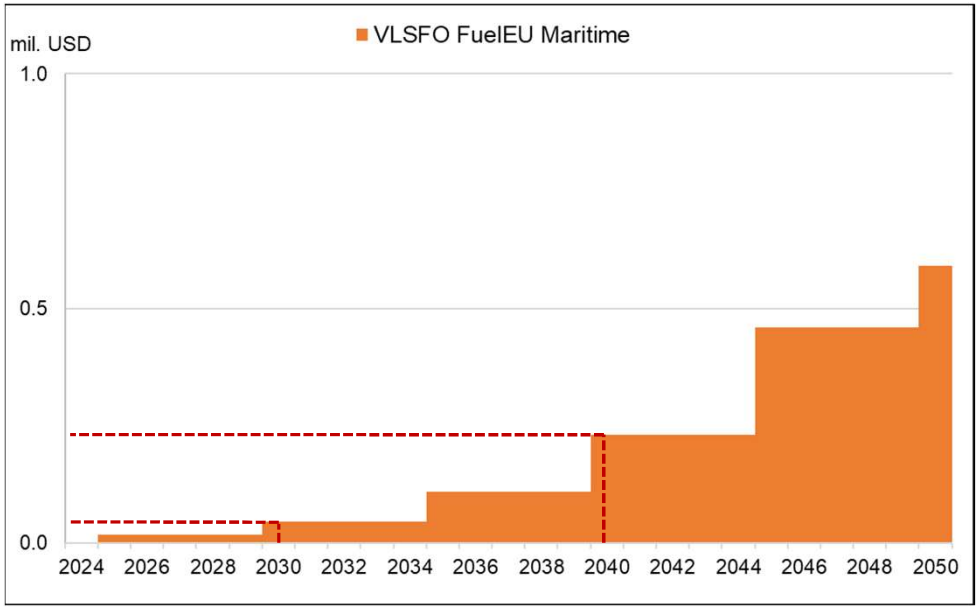
Fuel cost: Approx. 320,000 USD/voyage (as of Jan 2024)

FuelEU Maritime Economic impact – Oil tanker

Penalty Forecast :
Oil tanker (110,000 DWT)

<Example> USA - Portugal
Distance: approx. 5,000 miles
Fuel Consumption : approx. 580 ton (VLSFO) / 480 ton (LNG)

VLSFO (LFO)



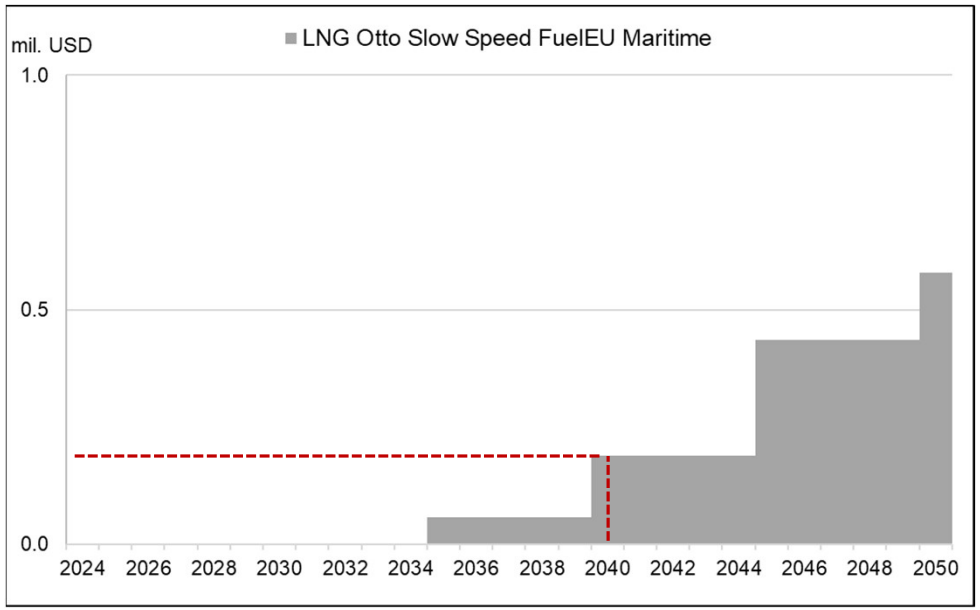
Estimation of penalty

2030 : approx. 46,000 USD/voyage

2040 : approx. 230,000 USD/voyage

Fuel cost: Approx. 350,000 USD/voyage (as of Jan 2024)

LNG



Estimation of penalty

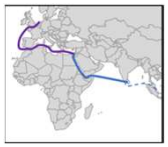
2030 : approx. 0 USD/voyage

2040 : approx. 178,000 USD/voyage

Fuel cost: Approx. 370,000 USD/voyage (as of Jan 2024)

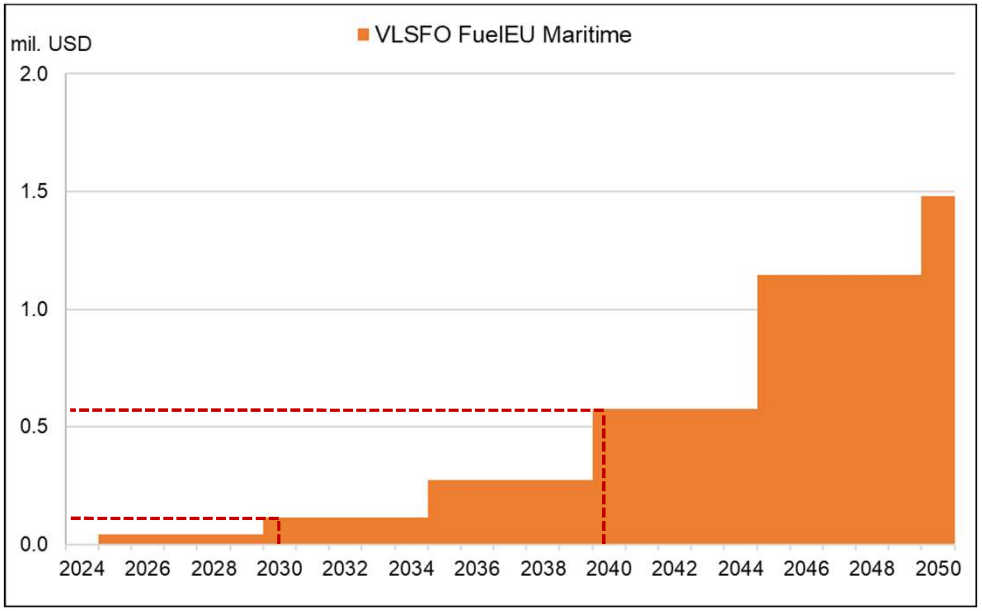
FuelEU Maritime Economic impact – Containership

Penalty Forecast :
Containership (14,000TEU)



<Example> Sri Lanka - Egypt - Netherlands
(In the case where the stop at Egypt is not "port of call" for FuelEU Maritime)
Distance : approx. 7,000 miles
Fuel consumption : approx. 1,450 ton (VLSFO) / 1,210 ton (LNG)

VLSFO (LFO)



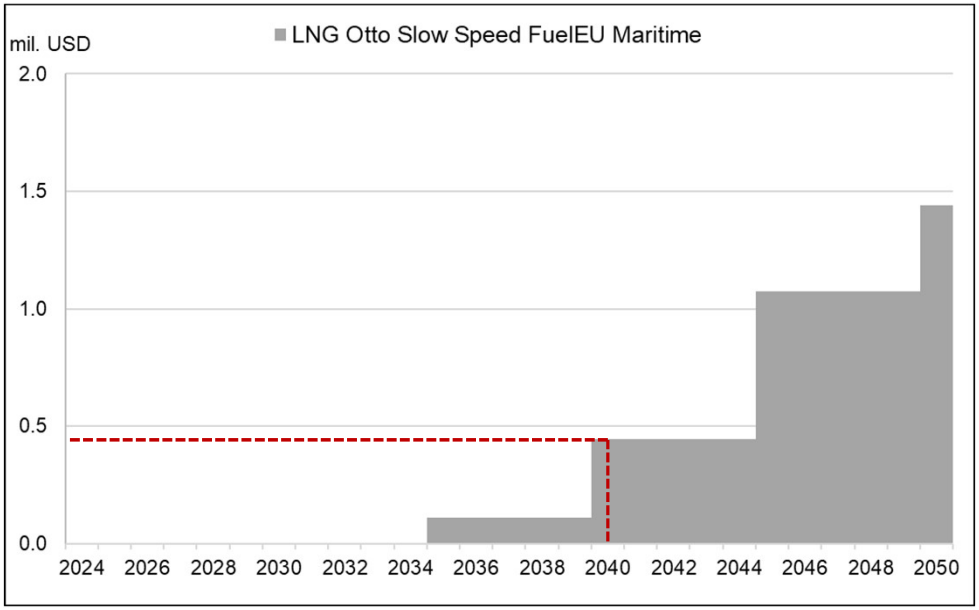
Estimation of penalty

2030 : approx. 115,000 USD/voyage

2040 : approx. 576,000 USD/voyage

Fuel cost: Approx. 870,000 USD/voyage (as of Jan 2024)

LNG



Estimation of penalty

2030 : approx. 0 USD/voyage

2040 : approx. 445,000 USD/voyage

Fuel cost: Approx. 940,000 USD/voyage (as of Jan 2024)

for your kind attention