

ASIA MARITIME & OFFSHORE WEBINAR WEEK

WEBINAR

MONDAY 16 JUNE

16:00-17:00 SGT (09:00-10:00 BST)

# FuelEU Maritime: building a viable compliance strategy

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# PANELLIST

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**Ilias Soultanias**

Manager, Global Sustainability

**ABS**

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# Fuel EU: Compliance Options

ABS Global Sustainability | June 2025

# FuelEU Maritime Regulation

## Objectives:

2025 -



The GHG intensity of the energy used [gCO<sub>2e</sub>/MJ]

*Combustion Emissions*  
*Fuel Mass*

2030 -



*Total Emissions*  
*Fuel Energy*

## Application:

- Similar application to the EU ETS Directive. →
- Well-to-Wake (WtW) CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O emissions.
- Reference GHG intensity from 2020 fleet average (MRV Data).
- Entry into force from 1<sup>st</sup> January 2025 (**Monitoring 2025, Reporting 2026**).

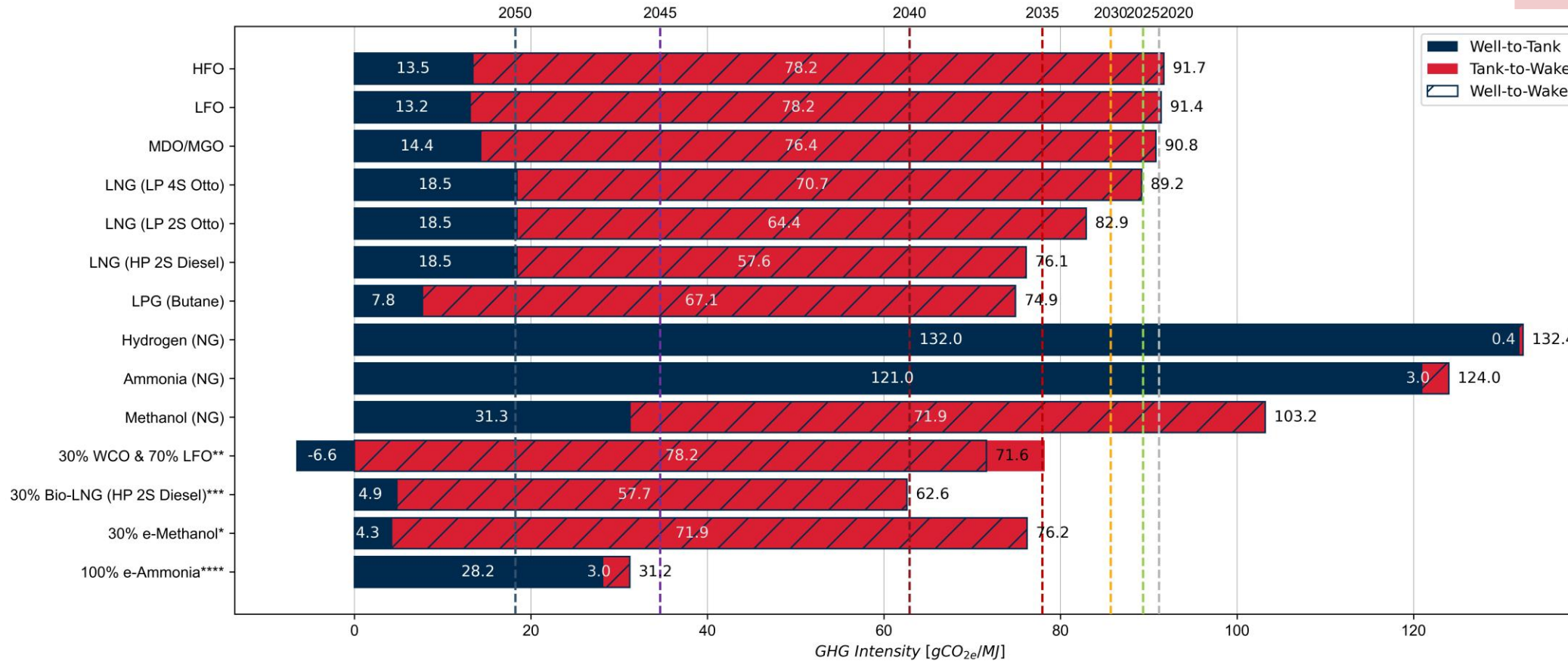
## Geographical scope:

- **50%** of the energy from voyages starting or ending at EU ports
- **100%** when ships are at berth in EU ports, and all energy from voyages within the EU

# FuelEU Maritime Regulation

## GHG intensity limit and most common fuels

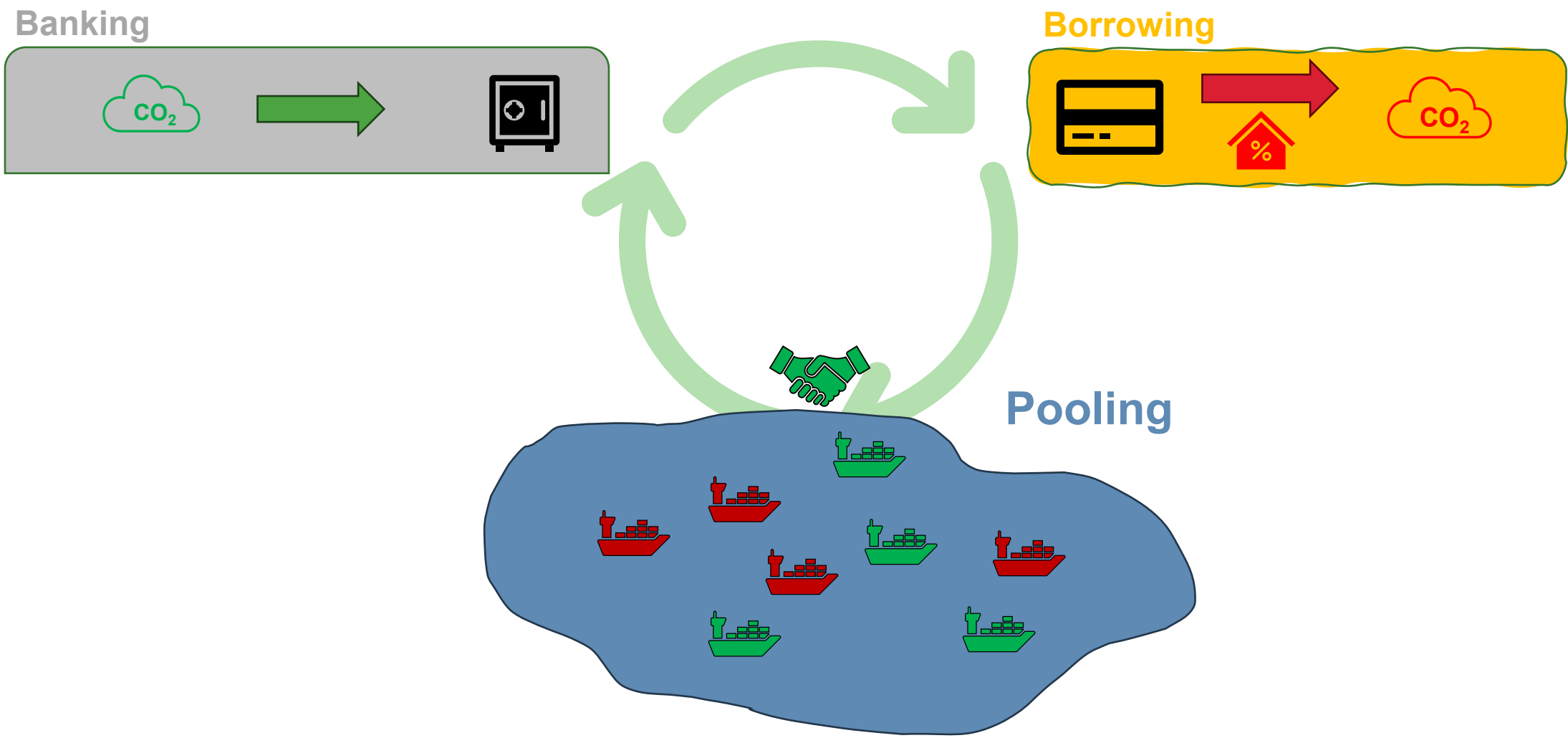
GWP <sub>CH4</sub>	GWP <sub>N2O</sub>
25	298



\* e-Methanol produced from black-liquor gasification integrated with pulp mill (89% GHG reduction).  
 \*\* Hydrotreated oil from waste cooking oil (80% GHG reduction).  
 \*\*\* Biomethane for transport (Open digestate, no off-gas combustion) (69% GHG reduction).  
 \*\*\*\* Green Ammonia based on the minimum allowed GHG reduction as per RED II (70% GHG reduction).



# Compliance Options & Flexibility



# FuelEU – Fleet Pooling

2025 GHG target,  $\text{GHGIE}_{\text{actual}} = 89.34 \text{ gCO}_{2\text{e}}/\text{MJ}$  - LFO  $\text{GHGIE}_{\text{actual}} = 91.4 \text{ gCO}_{2\text{e}}/\text{MJ}$  - 30 MT/day LFO ( $1.23 \cdot 10^6 \text{ MJ}$ )

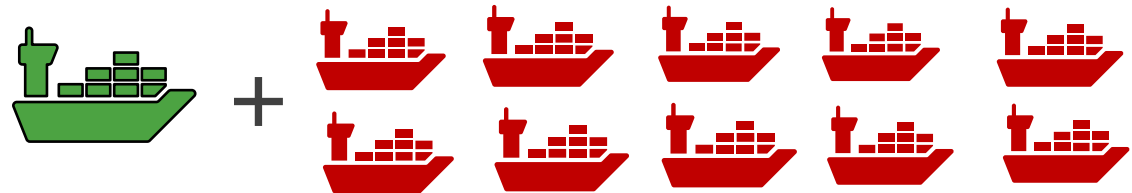
Scenario 1: LFO & WAP ( $0.95 f_{\text{wind}}$ )  
 LFO WAP  $\text{GHGIE}_{\text{actual}} = 86.8 \text{ gCO}_{2\text{e}}/\text{MJ}$



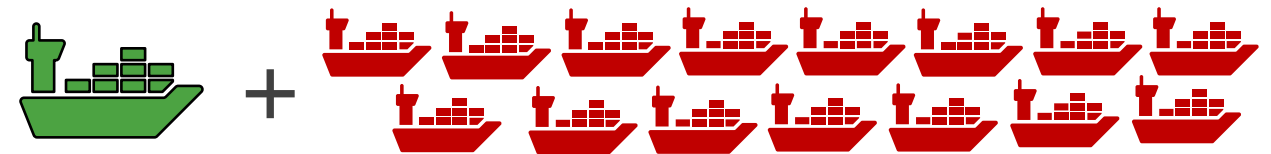
Scenario 2: LFO & LNG 0.2% Methane slip  
 LNG & LFO  $\text{GHGIE}_{\text{actual}} = 78.2 \text{ gCO}_{2\text{e}}/\text{MJ}$



Scenario 4: LFO & 30% Biofuel  
 30% Biofuel\*  $\text{GHGIE}_{\text{actual}} = 68.8 \text{ gCO}_{2\text{e}}/\text{MJ}$



Scenario 3: LFO & 30% e-Methanol  
 30% e-Methanol\*\*  $\text{GHGIE}_{\text{actual}} = 58.6^{***} \text{ gCO}_{2\text{e}}/\text{MJ}$



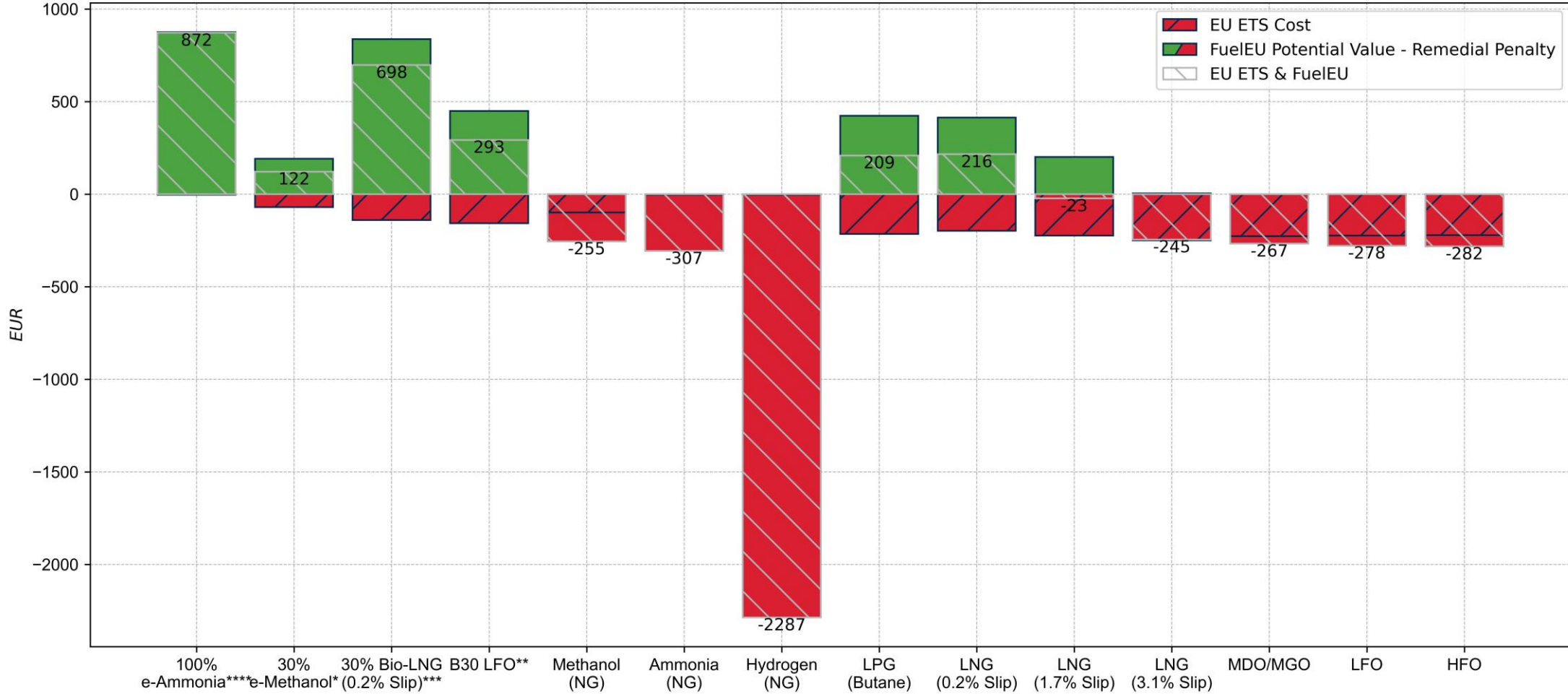
\* Used Cooking Oil (UCO) WtW  $\text{GHGIE} = 16.2 \text{ gCO}_{2\text{e}}/\text{MJ}$

\*\* e-Methanol produced from black-liquor gasification integrated with pulp mill, WtW =  $13.1 \text{ gCO}_2/\text{MJ}$

\*\*\* Using a Reward factor of 2 (RWD = 2) for the case of **RFNBO (e-Methanol)**, until 31 December 2033

# FuelEU & EU ETS Combined

Compliance Cost & Potential Value for EU ETS & FuelEU per fuel MT (2025-2030) (EUAs 70 EUR)



\* e-Methanol produced from black-liquor gasification integrated with pulp mill (89% GHG reduction).  
 \*\* Hydrotreated oil from waste cooking oil (80% GHG reduction).  
 \*\*\* Biomethane for transport (Open digestate, no off-gas combustion) (69% GHG reduction).  
 \*\*\*\* Green Ammonia based on the minimum allowed GHG reduction as per RED II (70% GHG reduction).



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**Send Us an Email**  
[Sustainability@eagle.org](mailto:Sustainability@eagle.org)



**Singapore contact**  
**Ilias Soutanias**  
Manager, Sustainability

Tel: +65 6371 2661  
Email: [isoutanias@eagle.org](mailto:isoutanias@eagle.org)

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**Kiran Shet**

Business Head

**Azolla**

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# THE COST-EFFECTIVE WAY TO FEUM COMPLIANCE.

Based On



## COMMERCIAL IMPLICATIONS OF FEUM AND EU ETS ON MERCHANT VESSELS

Dr. Pinaac Makwana<sup>a</sup>, Aditya Srivastava<sup>a</sup>, Kiran Shet<sup>a</sup>  
<sup>a</sup>Azolla Pte. Ltd.



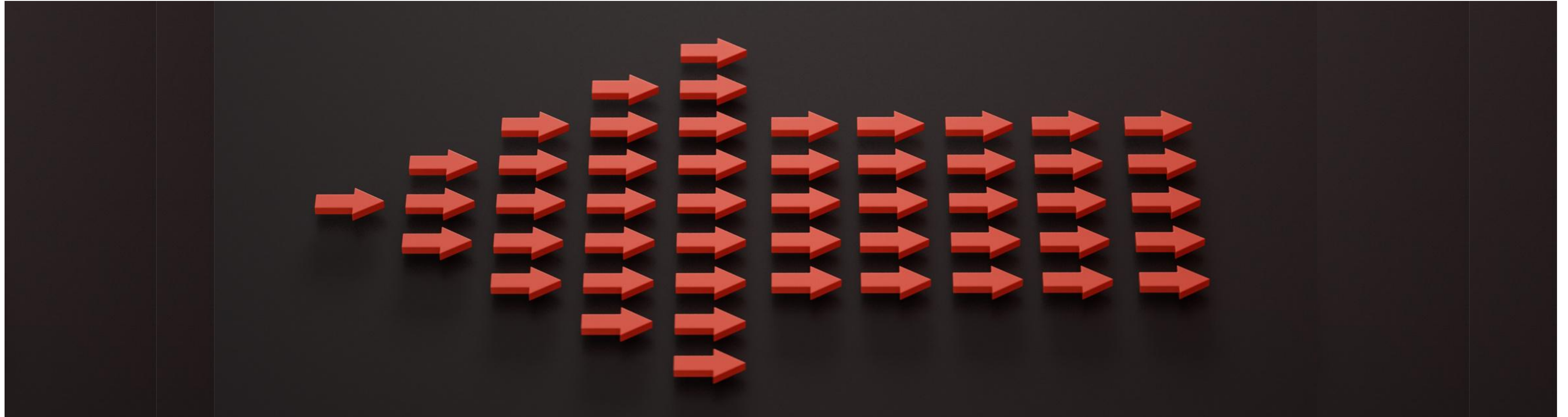
PRESENTATION BY



**KIRAN SHET**  
BUSINESS HEAD  
AZOLLA

# The Dilemma!

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**FEUM compliance isn't just about meeting a target — it's about making the right decisions for your fleet, your contracts, and your balance sheet. Every owner and manager is facing the same set of strategic questions:**

- Do we adopt biofuels?
- Should we buy surplus through pooling, pay the penalty or borrow?
- Who pays for compliance — Owner or Charterer?
- How do we know if surplus offers are credible and guaranteed?
- How do we structure surplus purchases in time-charter arrangements?

# Burn, Borrow, Pay, or Pool: The Paths to FEUM Compliance

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FuelEU Maritime offers flexibility in how you comply — but each path comes with trade-offs in cost, control, and operational impact.

## Understanding the compliance methodologies:

### 1. Consuming compliant fuels

A direct but costly path to compliance, challenged by price volatility, limited availability, storage issues, and operational constraints.

### 2. Borrowing Compliance

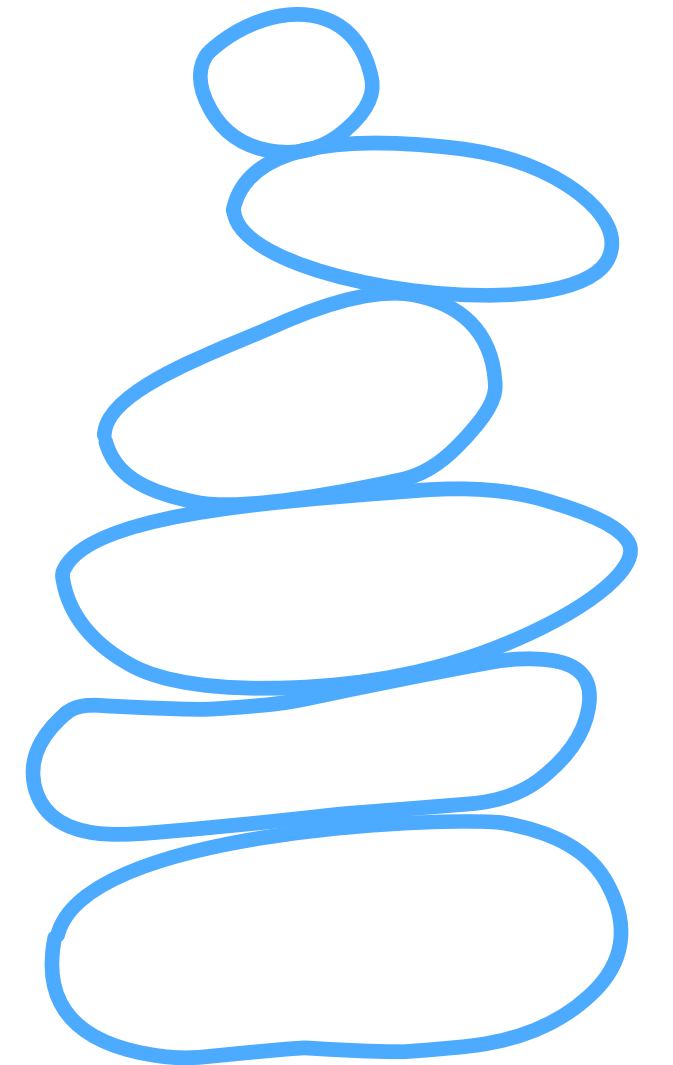
Borrowing lets vessels carry forward a deficit only if their GHG intensity is below 91.16 gCO<sub>2</sub>e/MJ, excluding HFO and LFO users. Even then, it must be repaid with a 10% premium, making it a costly deferral.

### 3. Paying Penalties

It's the simplest option, but also the most expensive (~€639 per ton of CO<sub>2</sub>e for VLSFO or ~€645 for MGO )— with no operational gains or future compliance value.

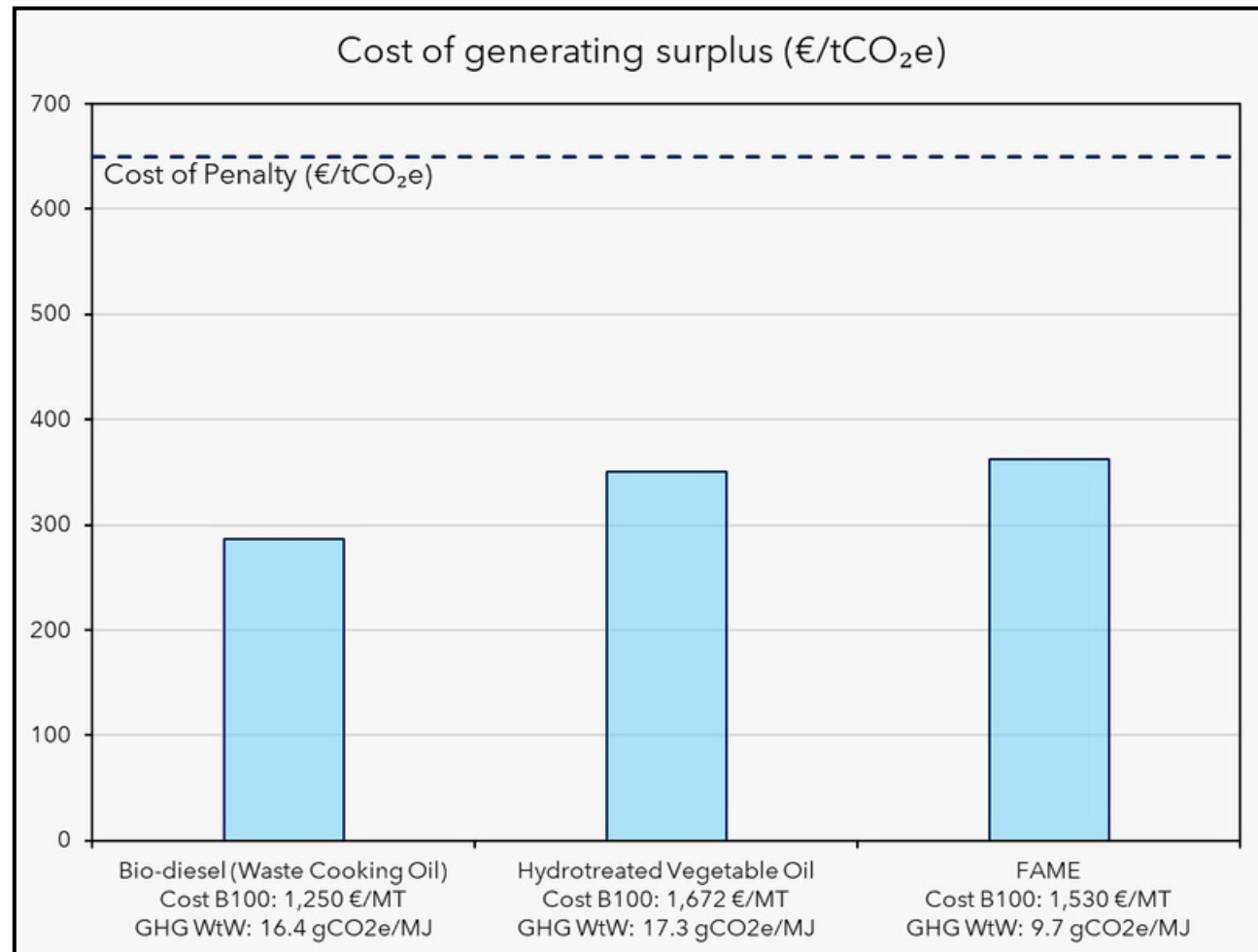
### 4. Pooling

Pooling allows you to procure surplus from compliant vessels and offset your deficit at a lower cost. It requires no fuel switch or operational change,



# The actual cost of generating surplus.

While surplus can be generated using biofuels, RFNBOs, and other alternative fuels, biofuels remain the most cost-effective option. Yet even then, as the data shows, generating surplus typically costs between €280–350 per tCO<sub>2</sub>e, making it an expensive and operationally complex path.

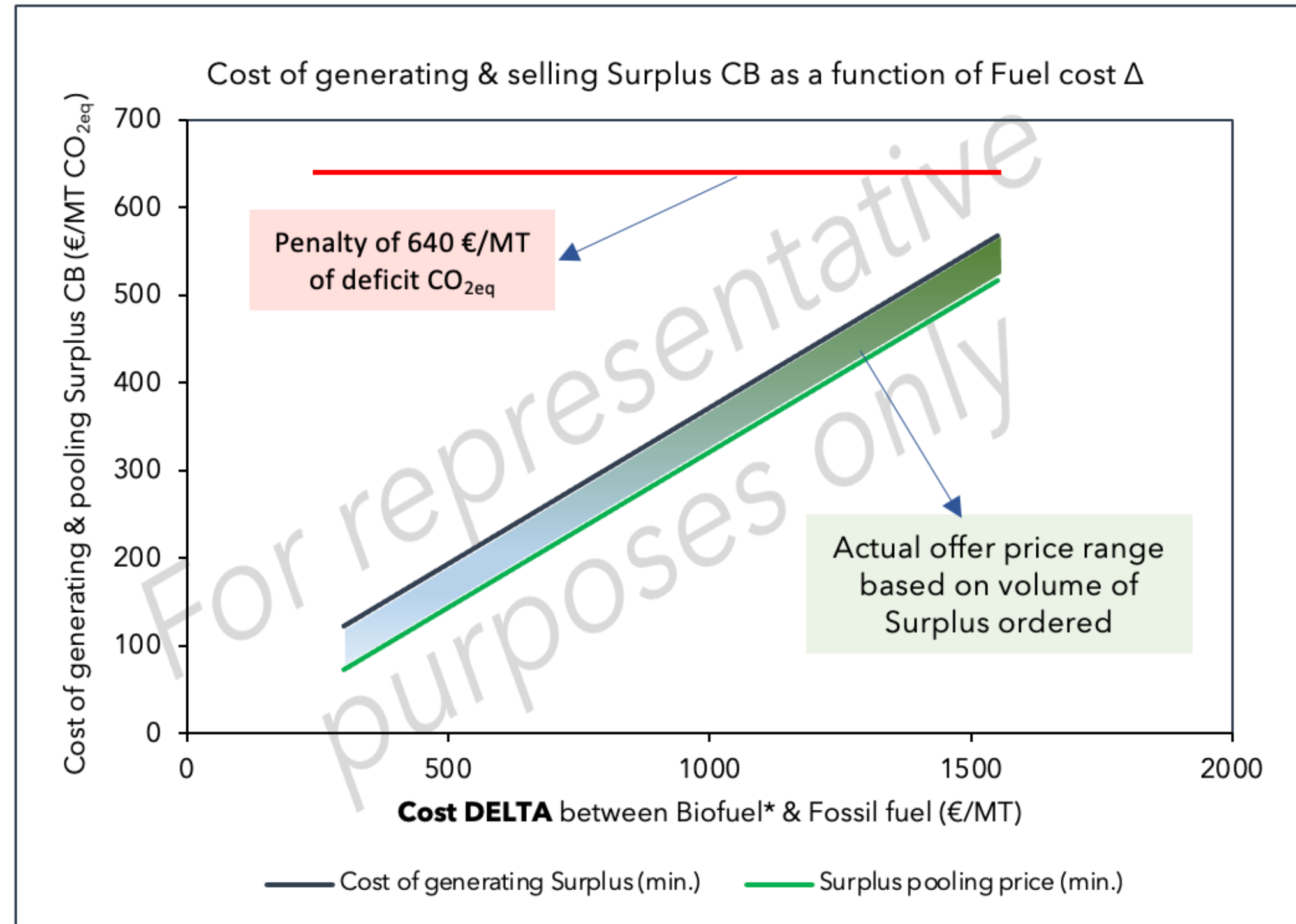


LFO Cost (€/MT)	B100 Bio-diesel (UCOME) Blend Cost (€/MT)																
	1075	1100	1125	1150	1175	1200	1225	1250	1275	1300	1325	1350	1375	1400	1425	1450	1475
333	273	282	291	300	309	317	326	335	344	353	362	371	380	388	397	406	415
358	265	274	283	292	300	309	318	327	336	345	354	363	371	380	389	398	407
383	257	266	275	283	292	301	310	319	328	337	346	354	363	372	381	390	399
408	249	257	266	275	284	293	302	311	320	329	337	346	355	364	373	382	391
433	240	249	258	267	276	285	294	303	312	320	329	338	347	356	365	374	383
458	232	241	250	259	268	277	286	295	303	312	321	330	339	348	357	366	375
<b>483</b>	224	233	242	251	260	269	278	<b>286</b>	295	304	313	322	331	340	349	358	366
508	216	225	234	243	252	261	269	278	287	296	305	314	323	332	340	349	358
533	208	217	226	235	244	252	261	270	279	288	297	306	315	323	332	341	350
558	200	209	218	227	235	244	253	262	271	280	289	298	306	315	324	333	342
583	192	201	209	218	227	236	245	254	263	272	281	289	298	307	316	325	334
608	184	192	201	210	219	228	237	246	255	264	272	281	290	299	308	317	326
633	175	184	193	202	211	220	229	238	247	255	264	273	282	291	300	309	318

Current Prices

# Yes, Compliance is Costly & Complex, but there is a smarter strategy.

But what if we tell you, the compliance can be achieved by paying less! **Less than 50%**, to be specific.



# How does compliance pooling work?

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**THANK YOU FOR YOUR  
TIME AND PARTICIPATION.**



(Scan to read our white paper)

FOR FURTHER DISCUSSIONS OR TO  
SCHEDULE A PERSONALIZED DEMO, REACH  
OUT TO ME AT [KIRAN@AZOLLA.SG](mailto:KIRAN@AZOLLA.SG)

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**Sanjeev Wewerinke Singh**

Director

**Varuna Marine Services**

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# FUELEU maritime

*Empowering Maritime Sustainability*

***Presented by: Mr. Sanjeev Wewerinke Singh***

[www.varunamarine.eu](http://www.varunamarine.eu)



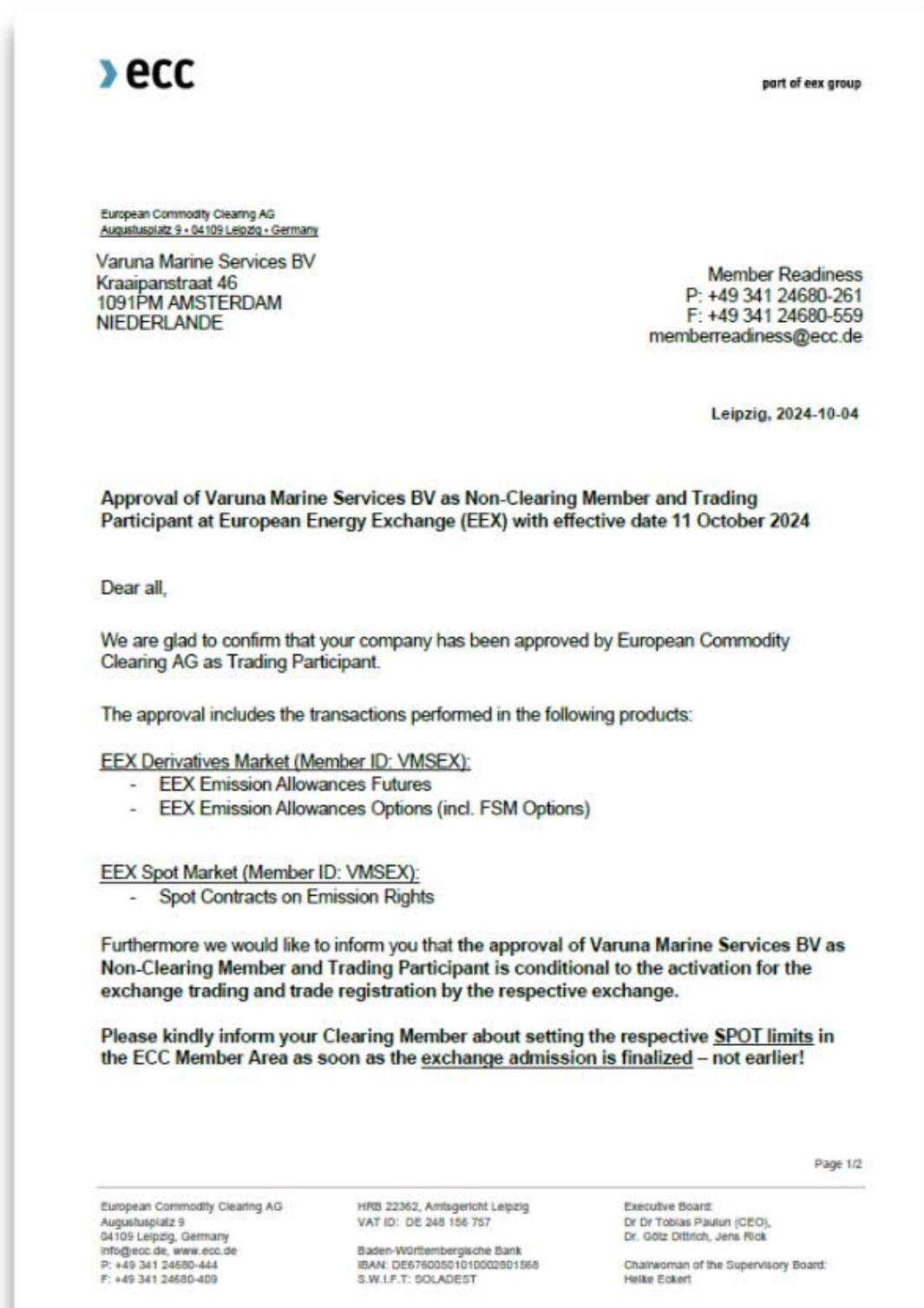
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2025



# AN EEX-LISTED EUA TRADER



- Varuna Marine Services B.V., an EEX-listed and MiFID-regulated carbon trader, offers comprehensive EUA trading solutions for maritime operators across both Primary and Secondary markets.
- We simplify access to the EU Emissions Trading System (ETS), ensuring smooth, compliant participation in EUA auctions and OTC trades.
- We act as an intermediary, facilitating access to EUA auctions and over-the-counter (OTC) trades via the EEX.
- Our services include opening Maritime Operator Holding Accounts (MOHAs), Managing Holding Accounts, and comprehensive MOHA administration.
- Additionally, we offer FuelEU pooling solutions and scenario planning to optimize your emissions compliance strategy.

# HOW TO COMPLY



## **Borrowing:**

- Compliance can be borrowed from future reporting years (up to two consecutive years) to meet current year requirements.
- This loan is accounted for in the following year and is beneficial for owners expecting to exceed compliance later.



## **Banking:**

- Vessels that are over-compliant can bank surplus compliance for future reporting years.
- There is no expiration on banked surplus, making it useful when compliance thresholds lower in later years.



## **Pooling:**

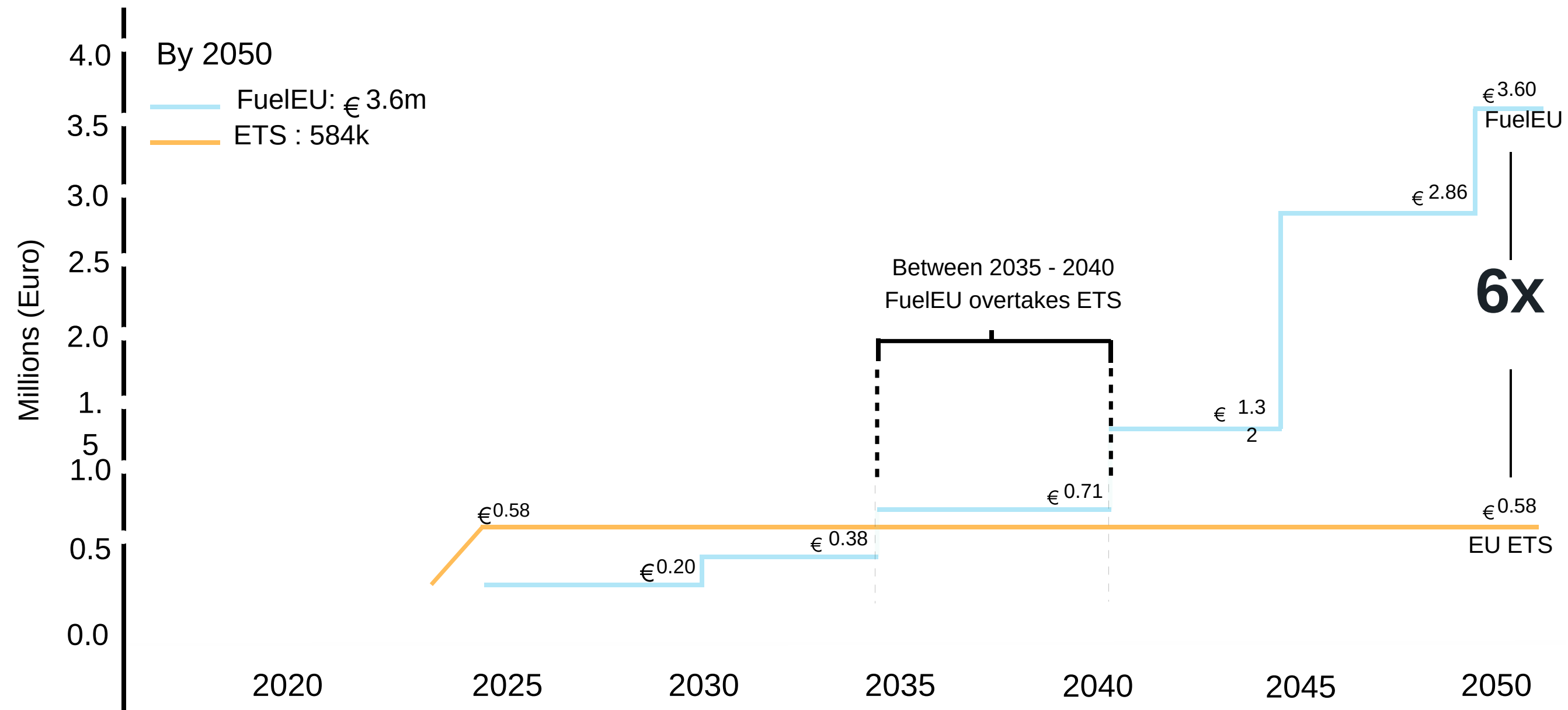
- Compliance can be pooled across a fleet, allowing compliant vessels to offset non-compliant ones.
- Vessels can market space within these pools.



## **Bio or e-Fuels:**

- HFO vessels can switch to biofuels in EU waters.
- LNG vessels can use biogas or retrofit with dual fuel systems to lower emissions.
- Long-term, vessels may switch to e-fuels (e.g., e-LNG, e-Ammonia), earning a 2x reward factor.
- Wind-assisted propulsion and ice-class vessels are also eligible for credits.
- Only non-food stock biofuels qualify, requiring modifications to ShipSure for storing bunker delivery notes and fuel quality certificates.

# EU ETS AND FUELEU COST COMPARISON

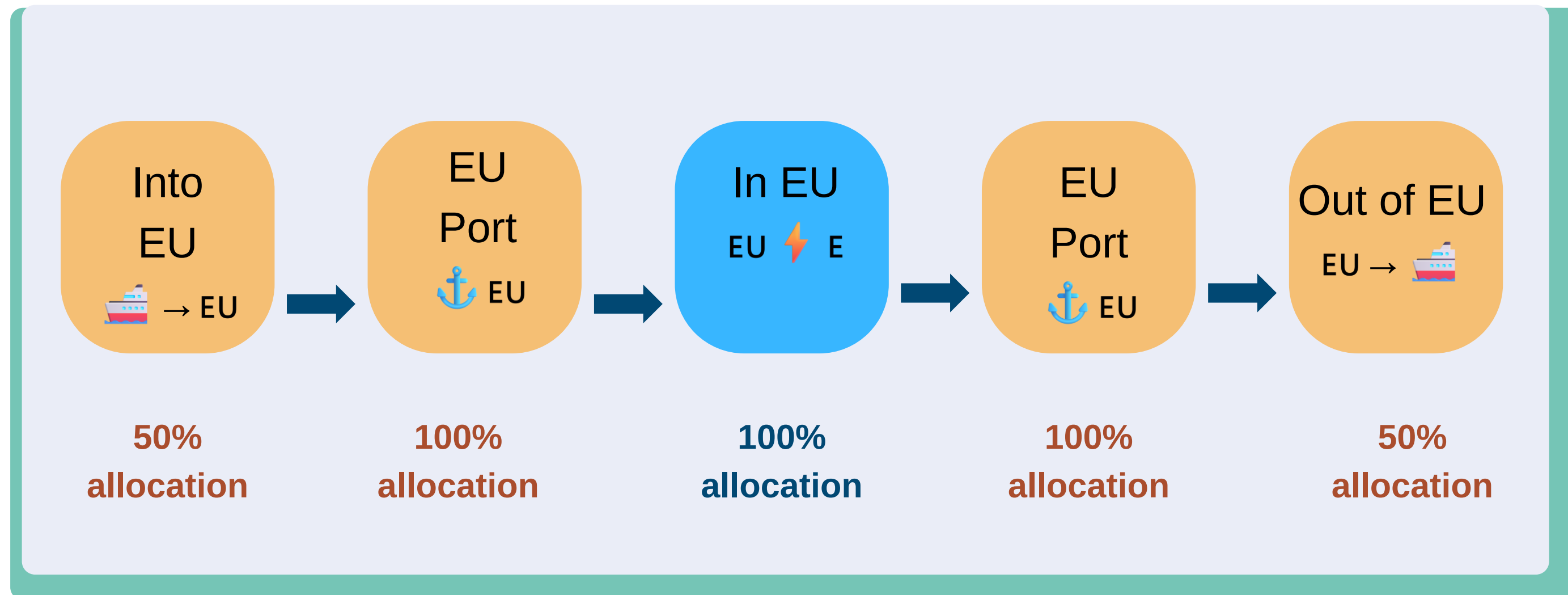


Note -

- EUA and FuelEU penalty costs for vessel emitting 9725 tonnes of CO<sub>2</sub> equivalent (CO<sub>2</sub>eq) on voyages to and from the EU, and 1,399 CO<sub>2</sub>eq tonnes on intra-EU voyages or at berth in EU ports ;
- Excludes EUA price changes, potential impact of FuelEU penalties and penalty multipliers for non-complaint port calls without using onshore power supply or failing to meet 2% RNFB0 usage

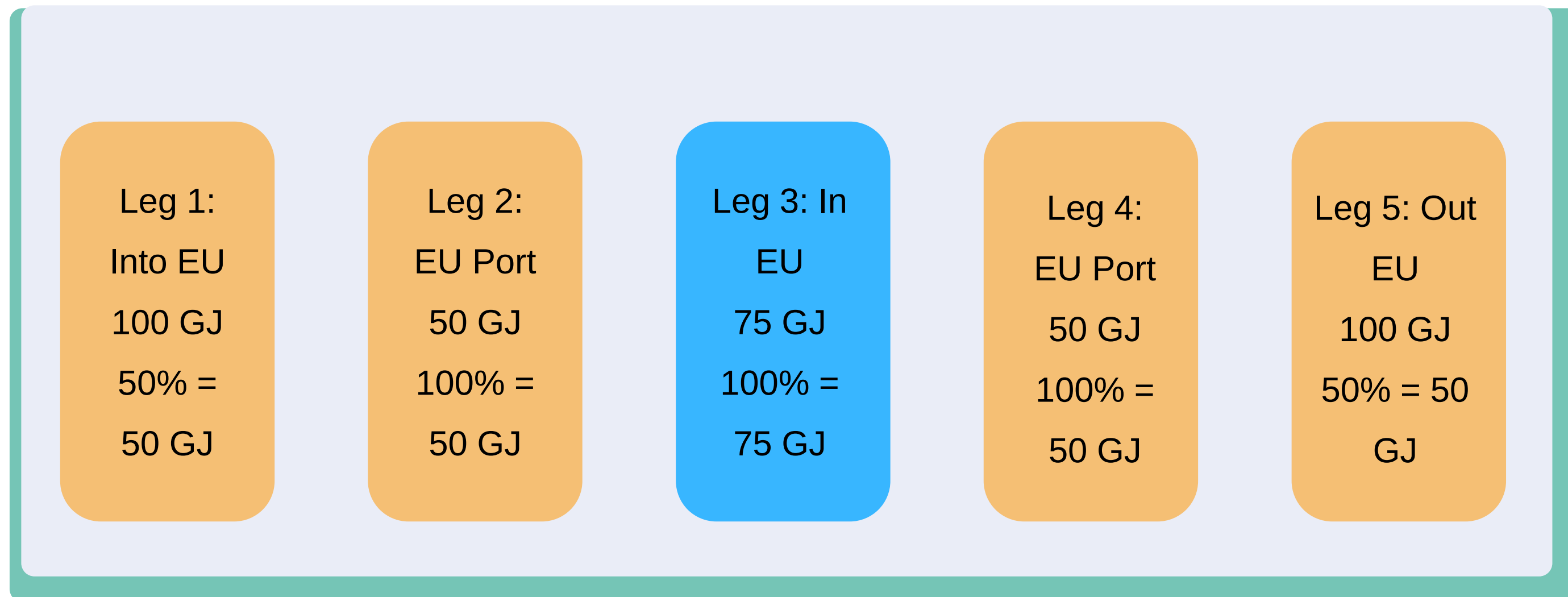
# VOYAGE STRUCTURE AND ENERGY ALLOCATION

## Maritime Voyage Segments



# VOYAGE STRUCTURE AND ENERGY ALLOCATION

## Energy Breakdown with Visual Allocation



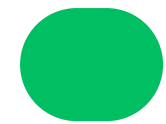
# VOYAGE STRUCTURE AND ENERGY ALLOCATION

## Visual Allocation Bars

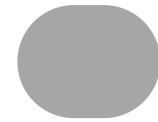


**Total Energy in Scope: 275 GJ** (out of 375 GJ total consumption)

# FUEL CLASSIFICATION

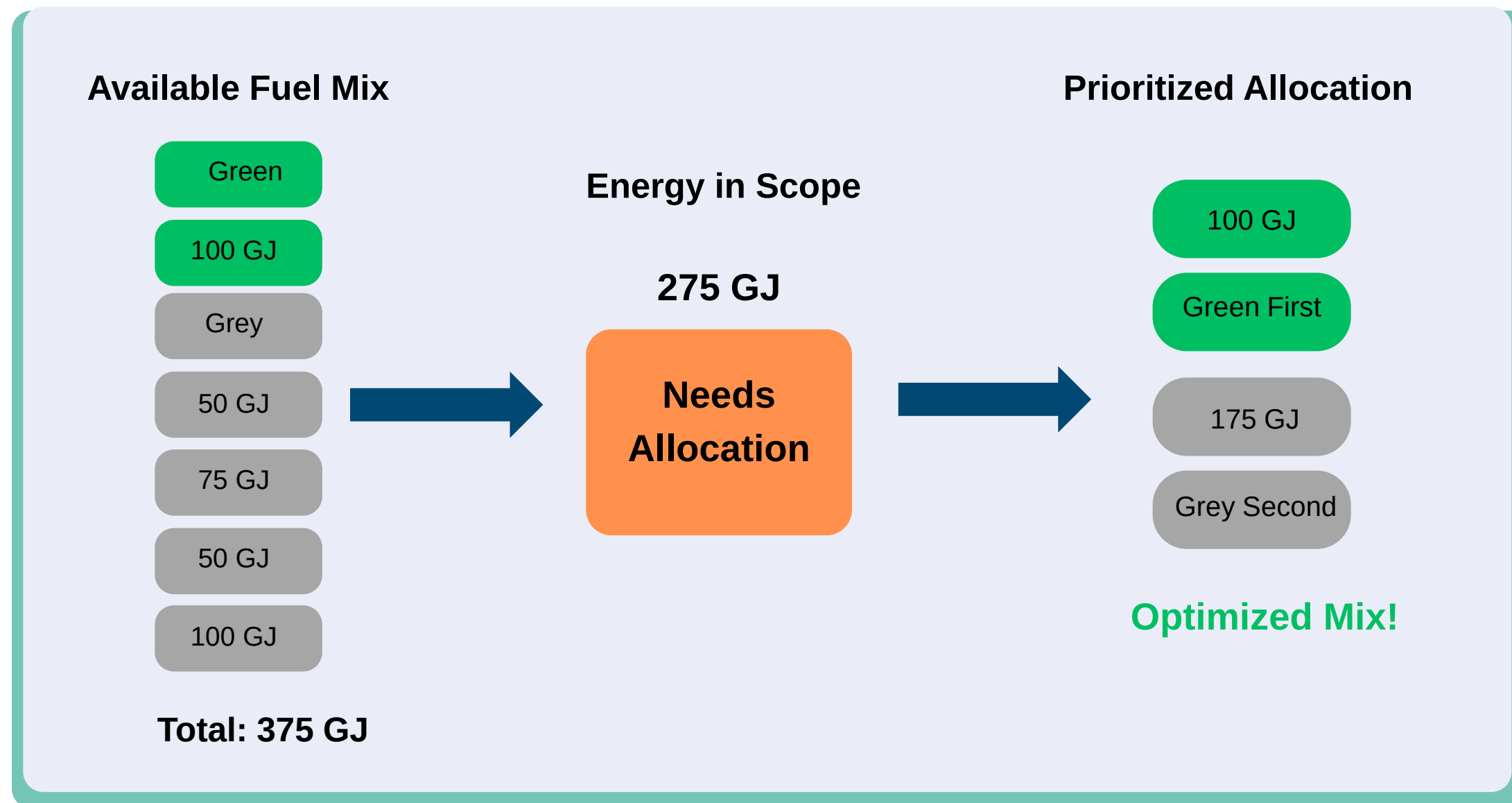


Low GHG Intensity Fuel (Green)



Fossil Fuel (Grey) - Higher GHG Intensity

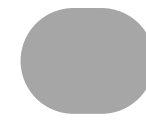
## Visual Fuel Allocation Process



# FUEL CLASSIFICATION Step-by-Step Allocation

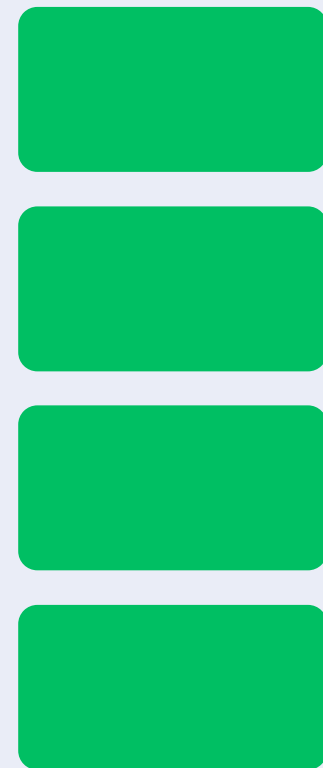


Low GHG Intensity Fuel (Green)



Fossil Fuel (Grey) - Higher GHG Intensity

## Step 1: Prioritize Green Fuel



100 GJ Green Fuel



## Step 2: Add Grey Fuel as Needed



175 GJ Grey Fuel



Result: Total  
Energy in Scope

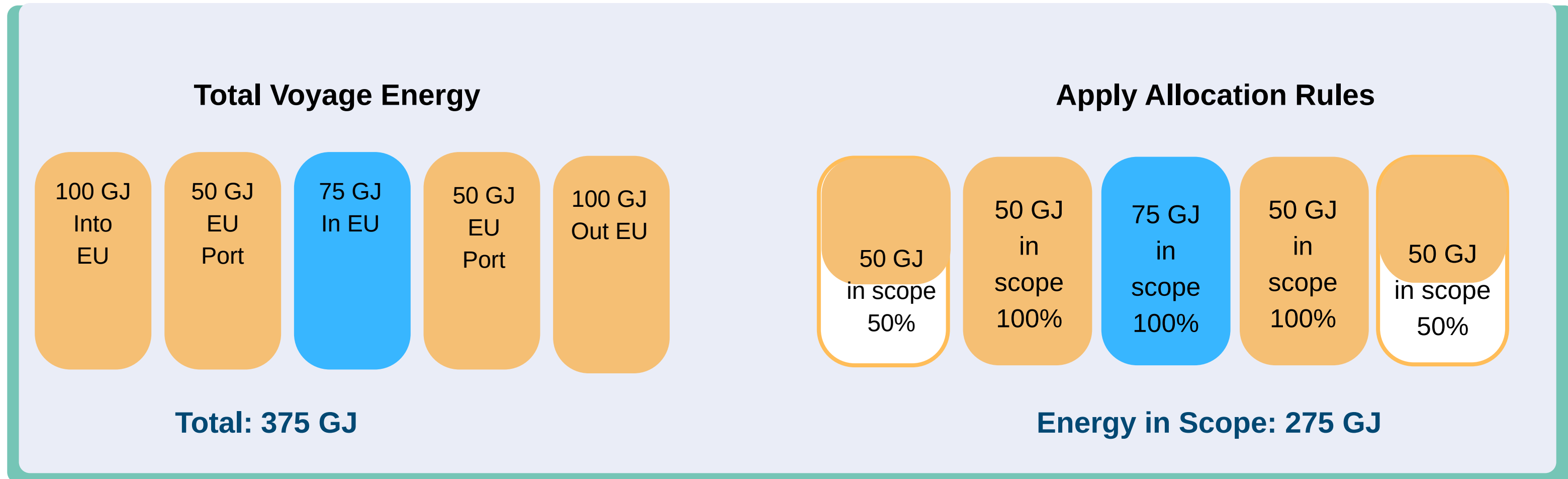
275 GJ

36% Green | 64% Grey

Key Innovation: Highest GHG intensity fuels can be excluded from calculations when sufficient lower-intensity alternatives are available!

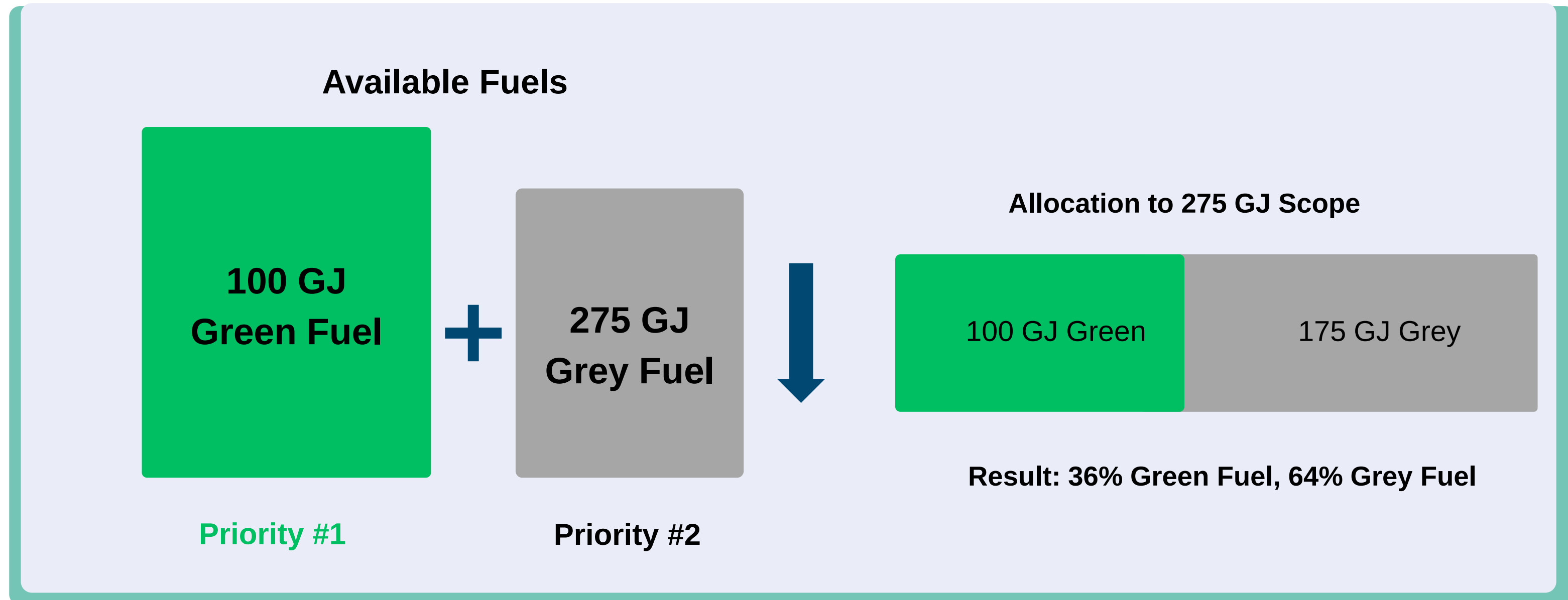
# VISUAL CALCULATION METHODOLOGY

## Step 1: Energy Scope Determination



# VISUAL CALCULATION METHODOLOGY

## Step 2: Fuel Mix Prioritization



# VISUAL CALCULATION METHODOLOGY

## Step 3: Annual GHG Intensity Calculation

**Final GHG Intensity =**

$$\frac{(100 \text{ GJ} \times \text{Green Fuel Intensity}) + (175 \text{ GJ} \times \text{Grey Fuel Intensity})}{\div 275 \text{ GJ Total Energy in Scope}}$$

# FuelEU Maritime Compliance:

*with Varuna Marine Services B.V*

Varuna Marine Services BV offers strategic support to help you accurately measure and effectively reduce your vessel's fuel emissions, while ensuring full compliance with FuelEU Maritime regulations. We offer:

- **Assist in pooling** arrangements with other companies for collaborative compliance.
- **Sale and Purchase** of FuelEU Maritime Compliance Credits by liaising with multiple parties including Ship owners and Verifiers.
- **Scenario planning** to manage compliance costs and risks.
- **Monitoring** plan creation and updates.
- **Report submission** to verifiers and Thetis MRV system.
- **Compliance strategies**, including alternative fuels, onshore power, wind-assisted propulsion, etc.
- **Expert guidance** on FuelEU regulations and their impact on your fleet.
- **Accurate measurement** of fuel consumption and emissions, providing you with reliable data for compliance reporting.
- **Continuous monitoring and support** to address any challenges and stay informed about the latest developments in FuelEU regulations.
- **Mitigate financial risks** from non-compliance to avoid Fines and Penalties.
- **Optimize operational efficiency** to reduce fuel consumption and improve overall vessel performance.

# Thank You

**We look forward to hearing from you soon!**

Thanks for going through the presentation and appreciate your time taken!



**Varuna Marine Services**

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**Website:** [www.varunamarine.eu](http://www.varunamarine.eu) | **Email:** [info@varunamarine.eu](mailto:info@varunamarine.eu)

**Address:** Varuna Marine Services B.V., H.J.E. Wenckebachweg  
58, 1114 AD, Amsterdam-Duivendrecht, The Netherlands

**Phone:** + 31 107 640 935

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osj offshore support journal

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