



PETCO Maritime Decarbonization Initiative

Emission Control of Contracted Maritime Fleet

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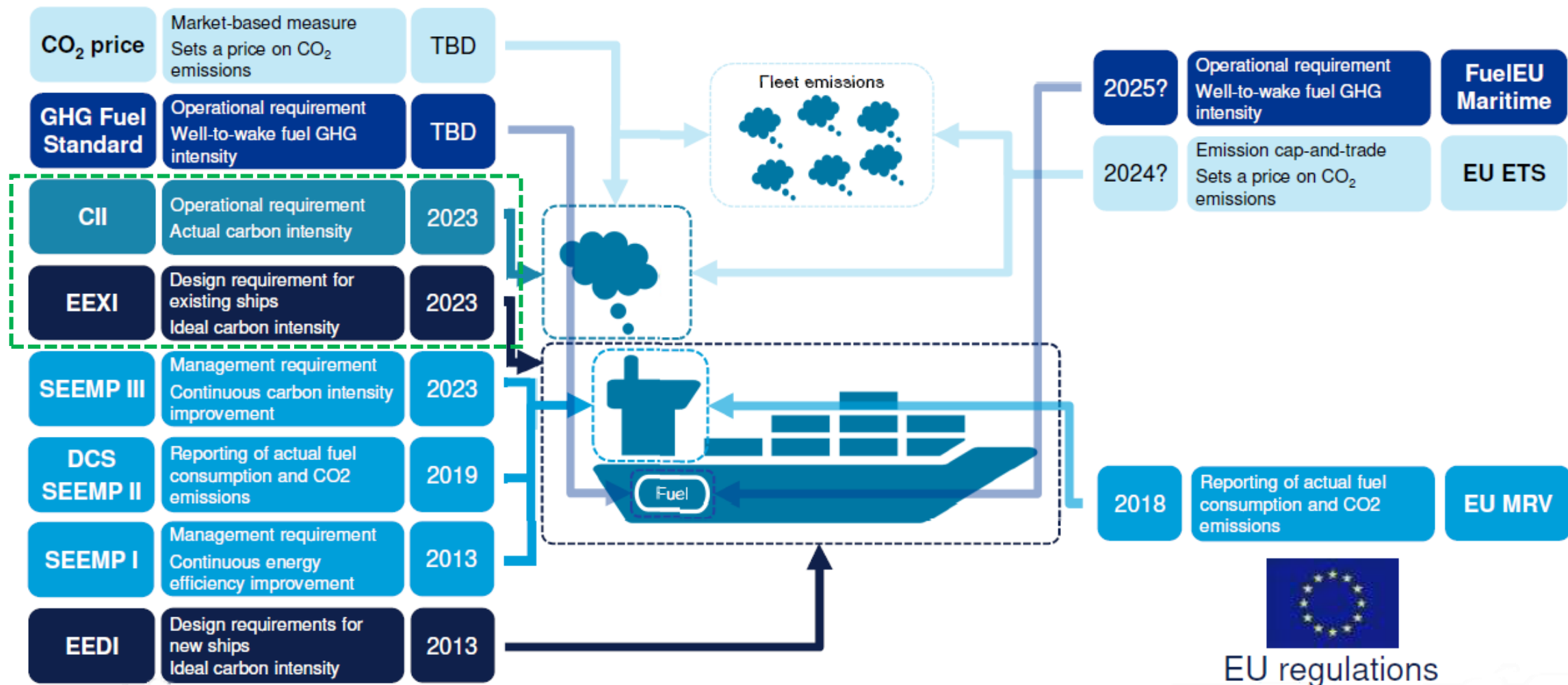
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Initiative Background

The regulatory framework to reduce GHG emissions



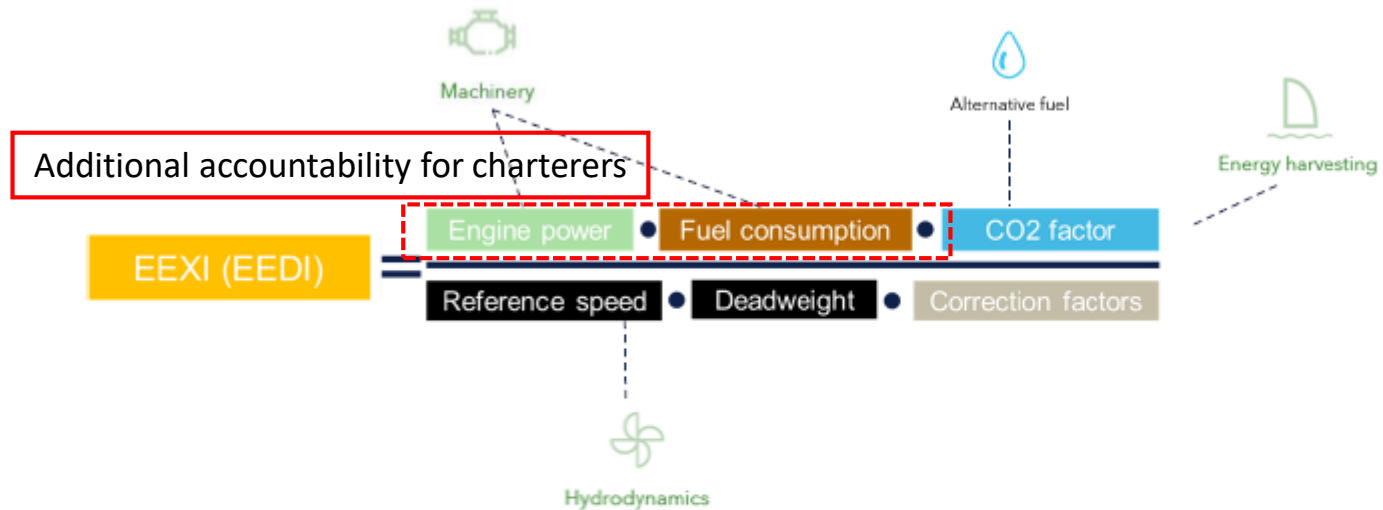
EEXI - Energy Efficiency Existing Ship Index

Scope:

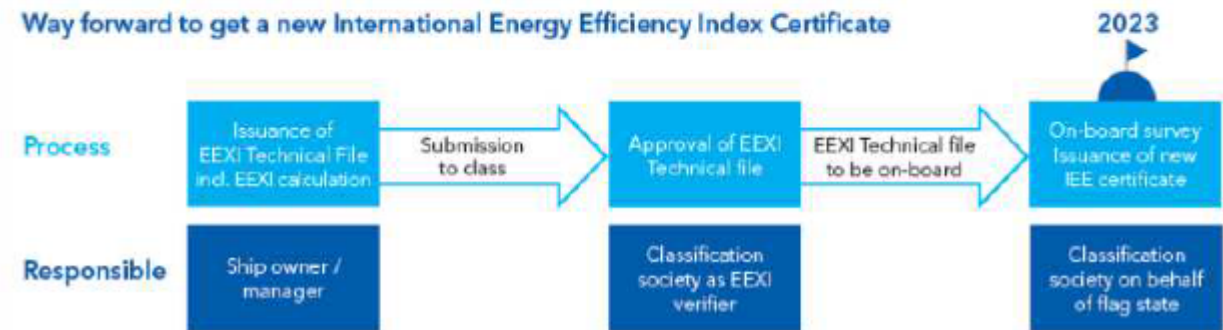
- Cargo and ro-pax ships with conventional propulsion
- Cruise ships with non-conventional propulsion
- LNG ship with any propulsion
- DWT/GT size thresholds per ship type

EEXI:

- Calculated once in a lifetime – a design index, not operational
- Is based on standard reference conditions, no onboard measurements needed
- Ships to comply with the EEXI by first IAPP survey after 1 January 2023
- EEXI Technical File must be submitted to class for approval. The new IEE certificate will subsequently be issued.



Way forward to get a new International Energy Efficiency Index Certificate



CII - Carbon Intensity Indicator rating

Scope:

- Cargo, ro-pax and cruise ships above 5000 GT

Requirements:

- Every year from 2023: Annually calculate and report Carbon Intensity Indicator and rating A to E.
- Each ship needs to achieve rating C or better

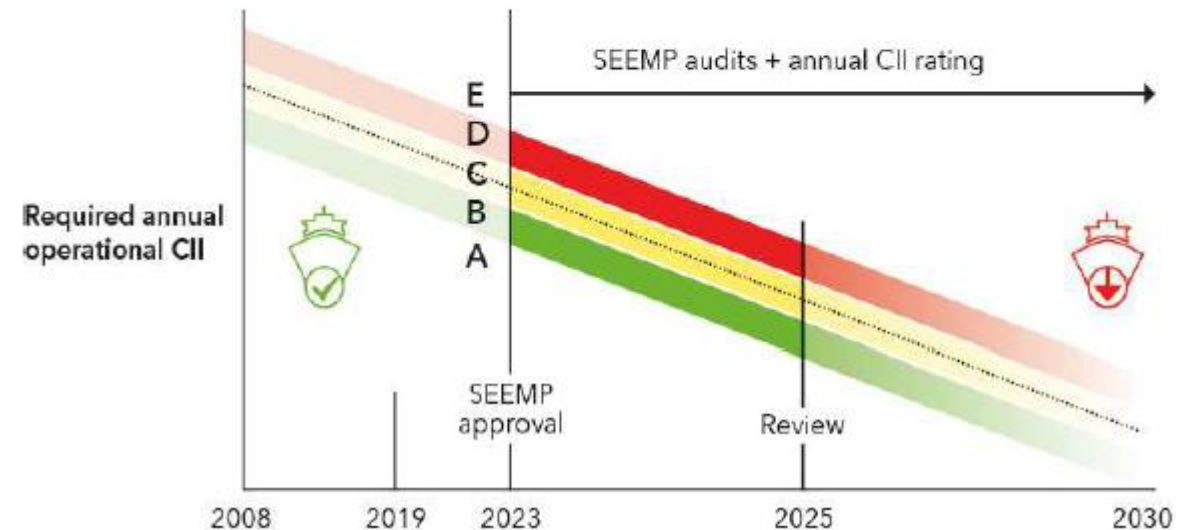
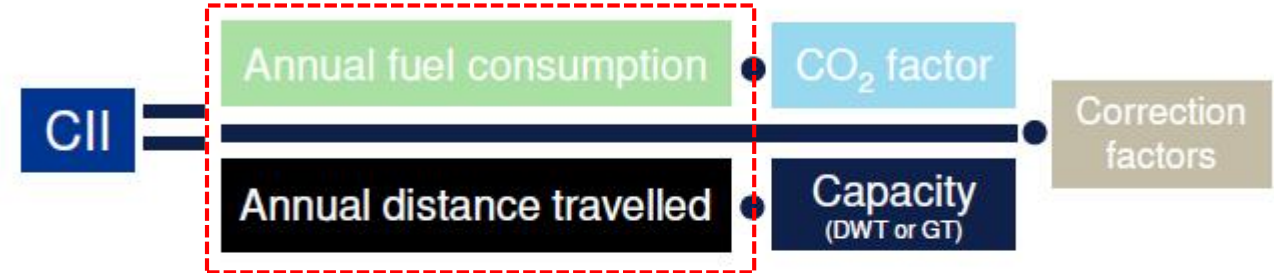
Enforcement:

- If rating D for 3 consecutive years or rating E: develop and implement an approved corrective action plan as part of SEEMP to achieve rating C or better
- Annual Statement of Compliance issued

Other elements:

- Review to be conducted by 1 January 2026, e.g.:
 - Reduction factors for 2027-2030
 - Strengthened corrective actions
 - Need for enhancement of the enforcement mechanism

Additional accountability for charterers



Challenges

- 1 Ensuring contracted fleet is compliant to new regulations
- 2 Hiring compliant vessels
- 3 Operating vessels with target of keeping emissions at minimum
- 4 Smooth negotiations post-contract completion
- 5 Planning voyages for contracted fleet to enhance compliance

Efforts

Emissions Connect

Voyage 1

Duplicate voyage

Extend to Year End

Delete voyage

| From | To | Mode | Laden/Ballast | Fuel Type | Distance (nm) | Days | Hours | Adjustment (%) ⓘ | Avg. speed (kn) |
|------------|--------|---------|---------------|-----------|---------------|------|-------|------------------|-----------------|
| TSET | MELAKA | In Port | Ballast | MGO | 0 nm | 2 | 0 hrs | ±0 % | 0 kn |
| Port Klang | Melaka | At sea | Ballast | MGO | 86 | 2 | 0 hrs | ±0 % | 1,8 |
| TSET | Melaka | | | | 86 | 4 | - | | 1,8 |

+ Add leg

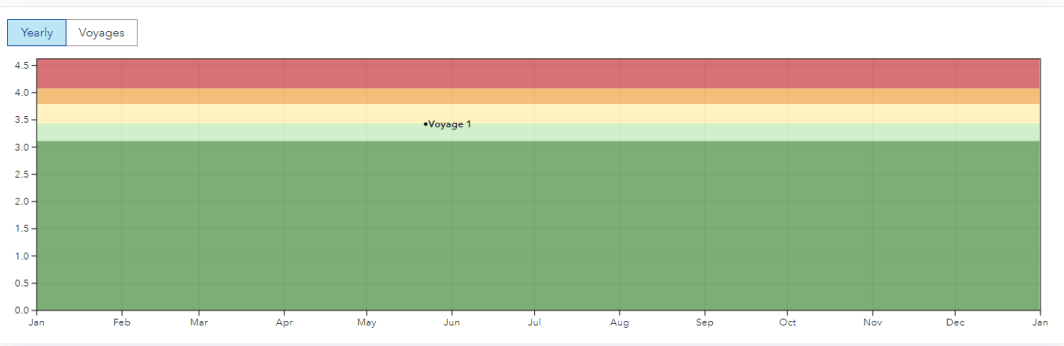
+ Create new voyage

Calculate CII

Delete all voyages

Total estimated CII performance

| Voyage | Pre-voyage CII | Voyage CII | Post-voyage CII | Fuel consumption (tons) | Ton fuel per day | CO ₂ (tons) |
|----------|----------------|------------|-----------------|-------------------------|------------------|------------------------|
| Voyage 1 | - | 3,422 | 3,422 | 10 | 2,5 | 32 |



Engagement with various service providers on PETCO scoping



Partnership with DNV for customized advisory services



Emissions data management for contracted fleets



Monitoring voyage emissions



Platform for voyage simulation and emission control

DNV EMISSIONS CONNECT PLATFORM



Continuously verified emissions data



Operational CII performance control and simulation



Emissions accounting facilitating ETS allowance settlement

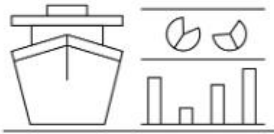
Requirements/
Agreements

Ship managers makes ship owners responsible for future ETS allowances

Ship owner sets requirements to receive and own emission data

Terms of ETS allowance settlement agreed between tonnage owner and operator/ pool company

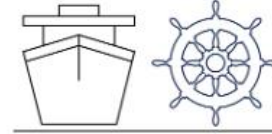
Terms of ETS allowance settlement agreed between commercial operator and cargo owner



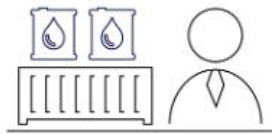
Ship Manager



Ship Owner



Ship Operator & Chartering



Cargo Owner

Response

Ship Manager shares emissions data with owner

Ship Manager surrenders ETS allowances to the authorities

Ship Manager invoices Ship Owner for ETS allowances



Ship Owner compensates the Ship Manager

Tonnage Provider generates report to settle ETS allowances with operator/pool company

Ship Owner invoices Ship Operator for ETS allowances



Ship Operator compensates the Ship Owner

Ship Operator issues a trusted and verified voyage statement to settle ETS allowance with Cargo Owner

Chartering simulates the voyage emissions performance, pre fixture

Operator invoices Cargo Owner based on charter contract



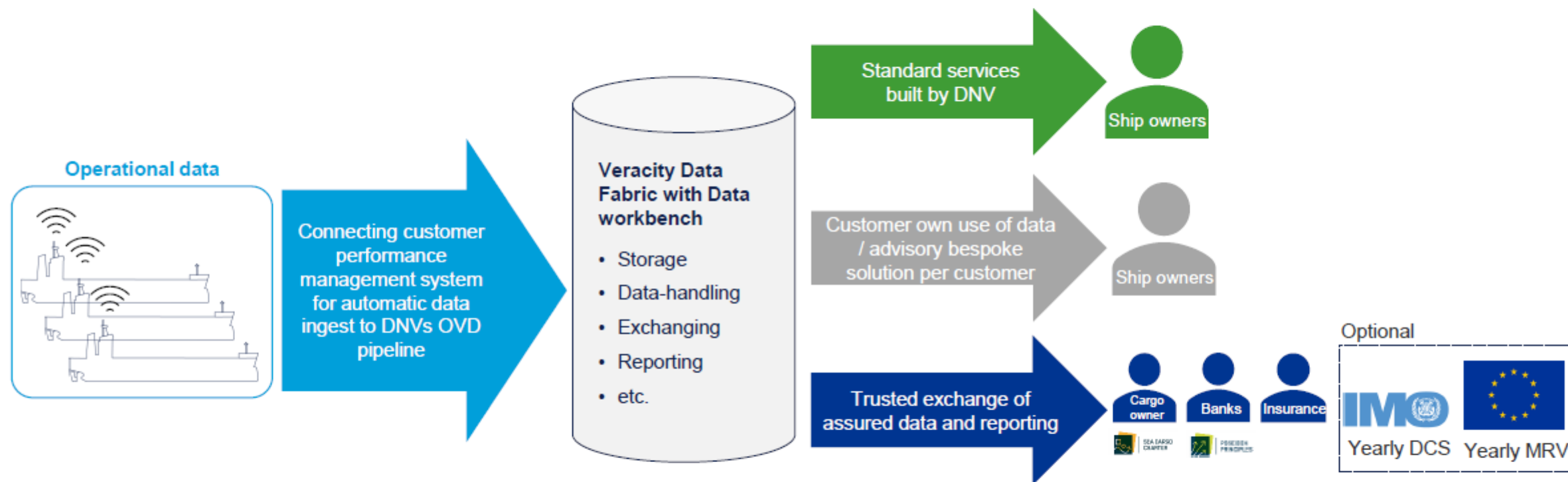
Cargo Owner compensates the Ship Operator

Cargo Owner receives verified voyage statement as trusted basis for commercial agreements

EMISSIONS CONNECT

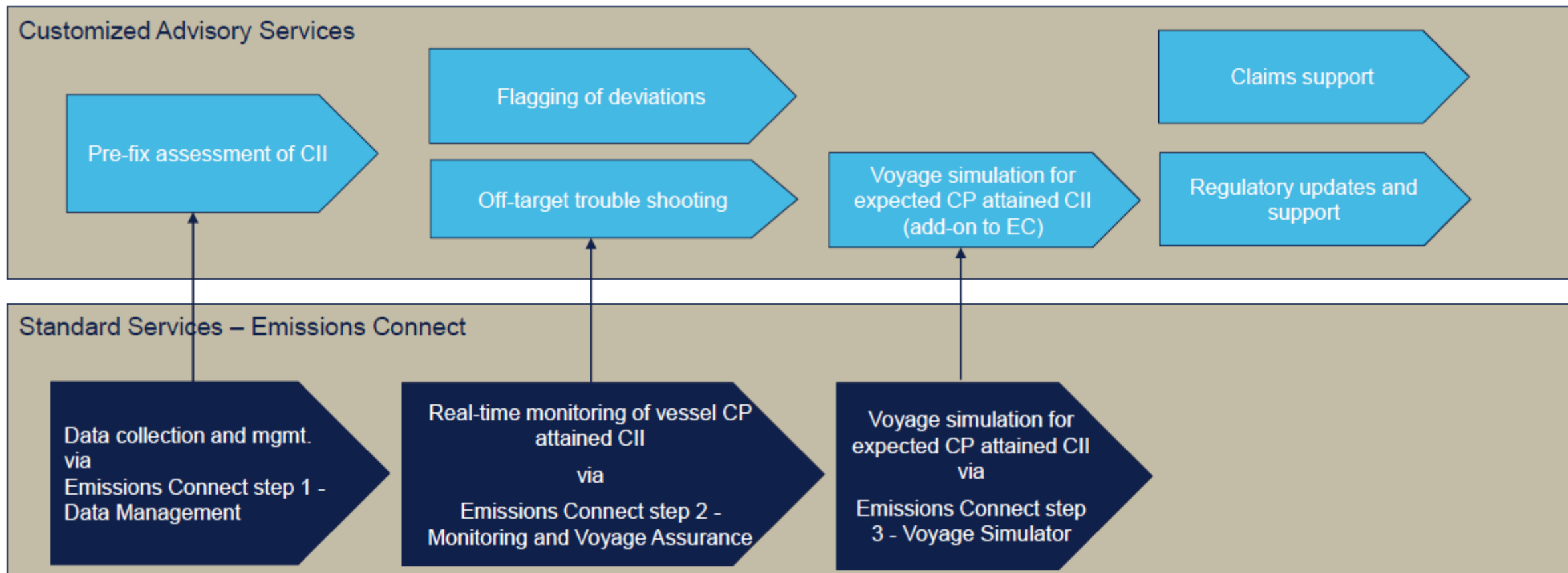
shareable, real-time verified emissions data and voyage statements ready to facilitate ETS settlement with trust

DNV's Emission connect is a digital flow of data, enabling insight and facts – real time



We help shipowners aggregate, quality assure, monitor performance and track, benchmark, and share all relevant GHG data for all relevant internal and external purposes

Scope breakdown - a combination of standard and bespoke services and tools



Results

- Phase 0 (completed):
 - Trial phase completed with dummy vessels on platform
- Phase 1 (ongoing):
 - Group Digital engaging with DNV digital team for integration and cybersecurity checks
 - 10 vessels will be identified and integrated into platform within 2023

Achievements

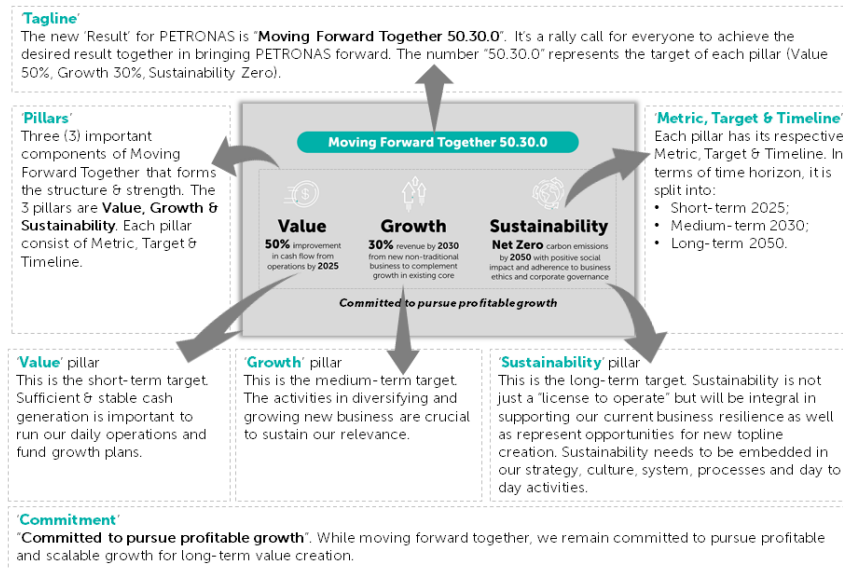
- Proactive approach for mode 3 contractors emission control
- Supporting Malaysian & international ship-owners to ensure compliance with new regulations
- Operating vessels with minimum GHG emissions
- Initiative achieving UN SDG 7, 12 and 13



Initiative Operation Status and Completion Date

- Endorsement by the PDWC of Emissions Connect by DNV
- Incorporation of CII and EEXI clause in running TC and new TC
- Alignment and possible integration with PETCO's digital resources (IMOS) by 2024 Q2

Overall mapping of Moving Forward Together 50.30.0





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