



WHEN TRUST MATTERS

Understanding the Emissions Conundrum

28th September 2023, Dubai

The Nautical Institute UAE

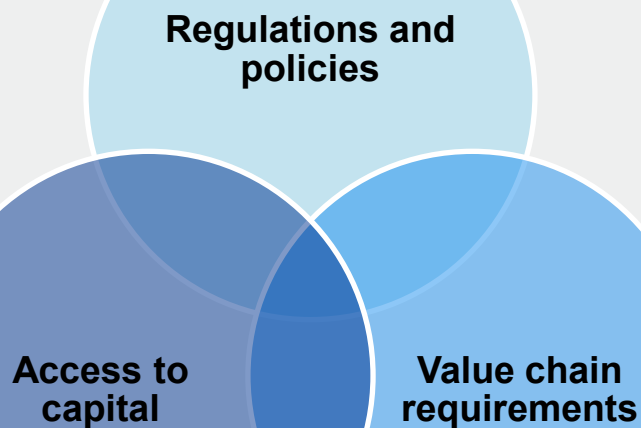
Pawan Sahni
Vice President & Business Development Director MEA





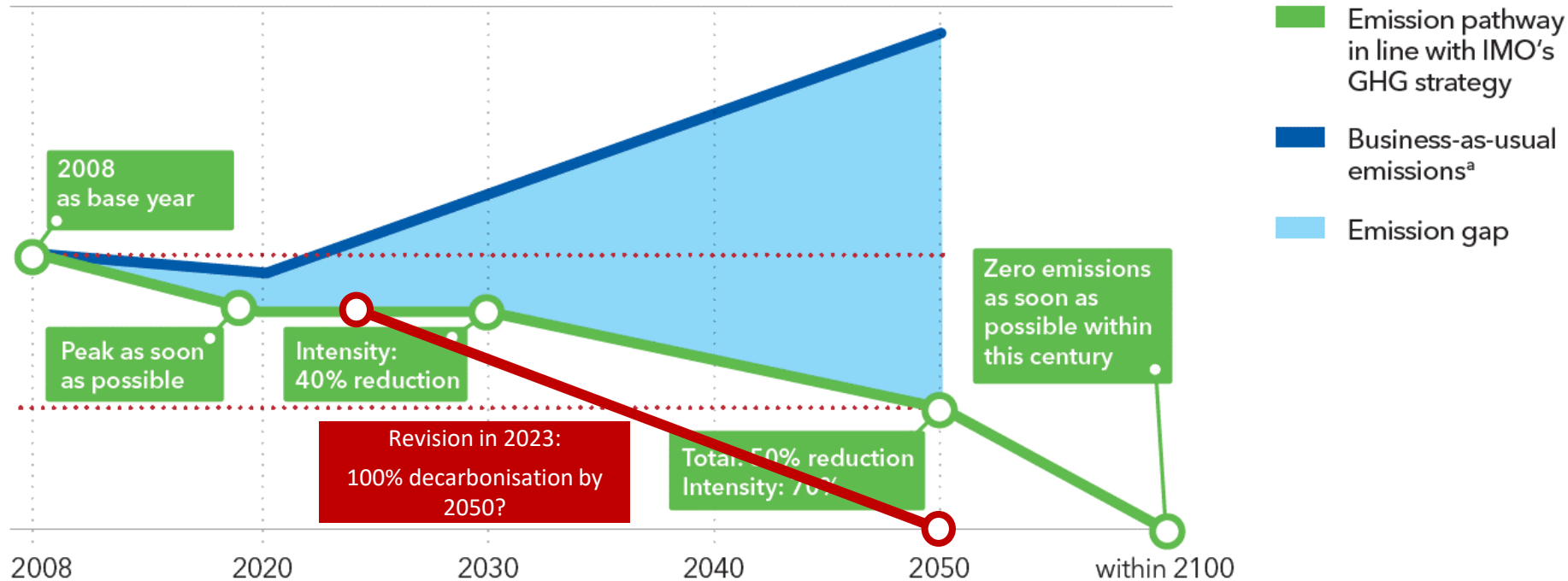
Regional regulators, financiers and charterers push for faster progress on decarbonization

Key drivers of maritime decarbonization:



IMO strategy on GHG reductions

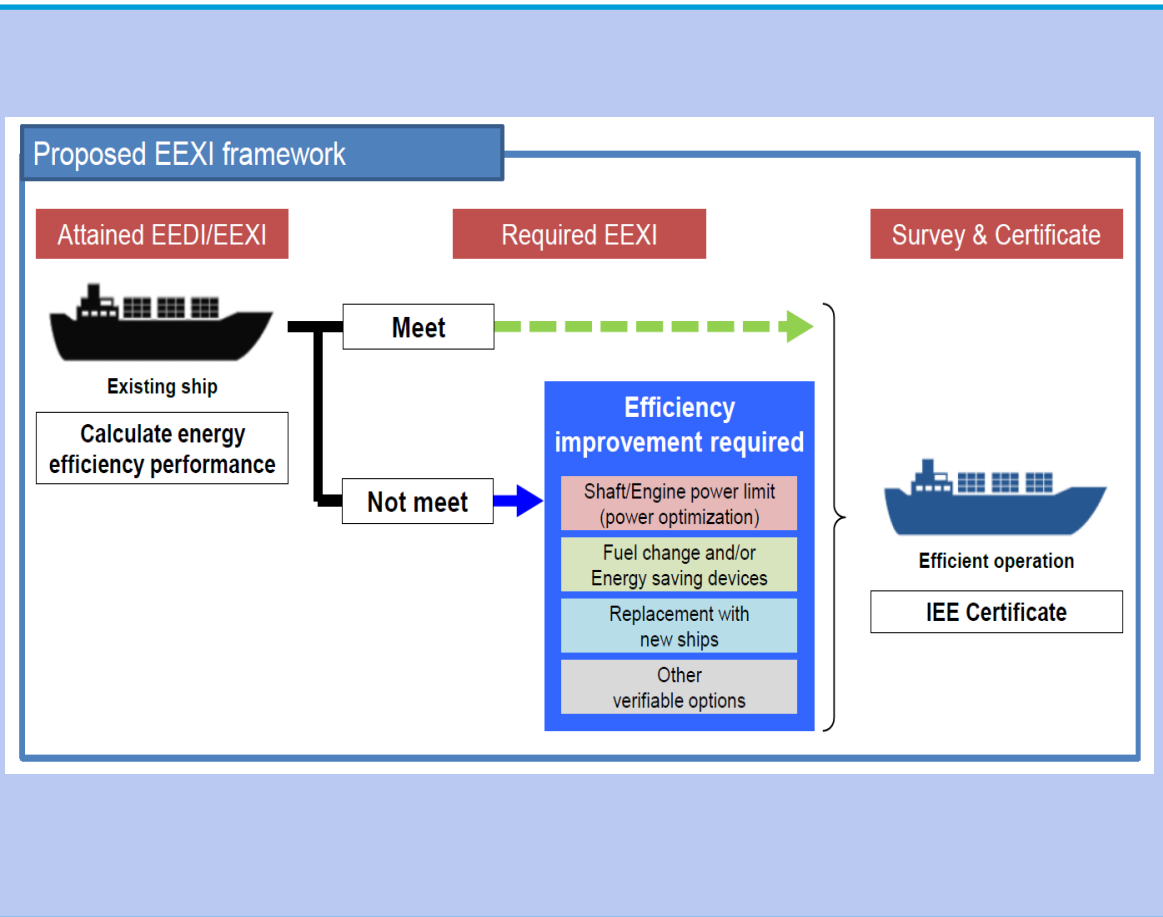
Units: GHG emissions



Total: Refers to the absolute amount of GHG emissions from international shipping.
Intensity: Carbon dioxide (CO₂) emitted per tonne-mile.

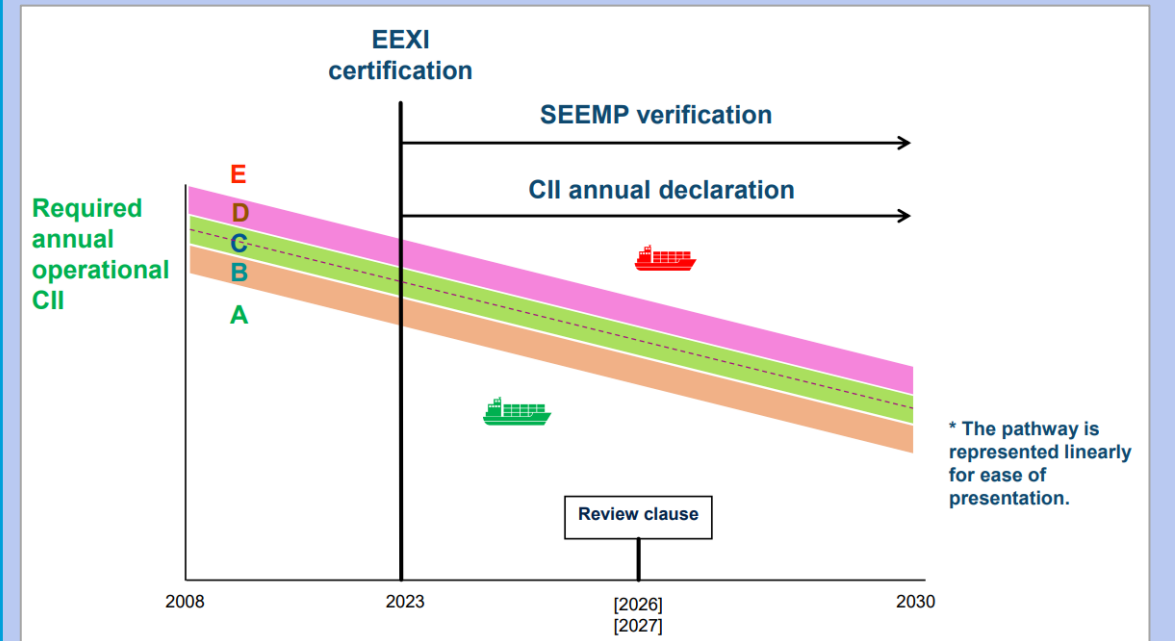
Regulatory focus on 2 tracks: DESIGN and OPERATION

EEXI: Design indicator



CII: Operational indicator

$$CII = f \frac{CO_2 \text{ emissions}}{\text{capacity} \times \text{distance}}$$



EEXI and global fleet

Impact:

- Average power reduction 20% of MCR.
- Most common limitation 10% to 30% of MCR.
- About 6% of vessels need to reduce MCR more than 40%.
- Impact on average speed in **2019** is low due to slow speeding (about 3% from 12.8 to 12.4 knots)

Number of ships per range of power reduction

Ship segment	More than 40%	31-40%	21-30%	11-20%	1-10%	No change	TOTAL
Bulk carrier	82	616	3805	3986	1955	323	10767
Tanker and comb. carrier	283	892	2906	3063	1280	829	9253
Container ship	653	1451	1295	587	374	241	4601
Gas/LNG carrier	92	281	433	256	58	30	1150
General cargo ship	975	1117	1449	1118	547	1077	6283
Refrigerated cargo carrier	3	6	61	84	110	205	469
Ro-ro cargo, vehicle	3	18	71	223	241	102	658
Total	2091	4381	10020	9317	4565	2807	33181

Carbon Intensity Indicator rating in a nutshell

IMO Status

Step 1: Calculate CII

Calculation of annual CII:

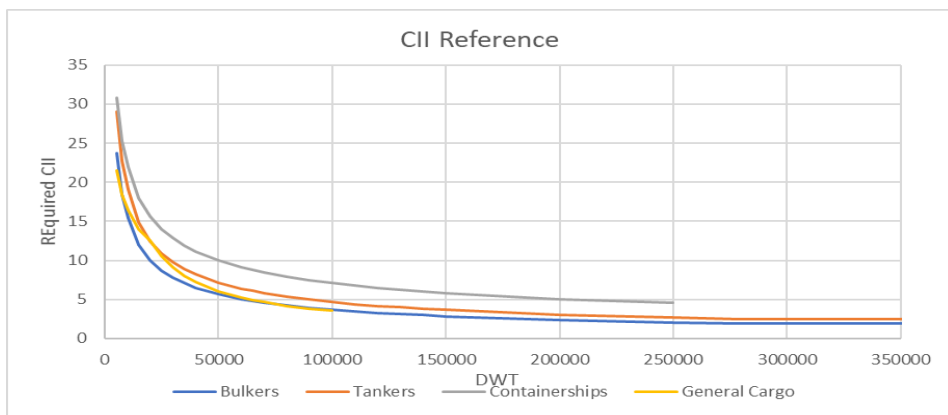
$$\text{CII} = \frac{\text{Annual fuel consumption} \cdot \text{CO}_2 \text{ factor}}{\text{Annual distance travelled} \cdot \text{Capacity}} \cdot \text{Correction factors}$$

To be developed

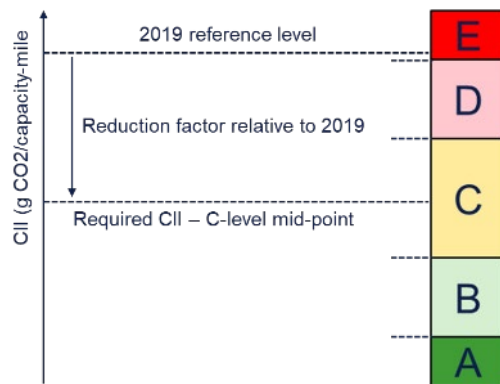


IMO Status

Step 2: Find Required CII (Ref. line)



Step 4: Identify rating band width



IMO Status



IMO Status

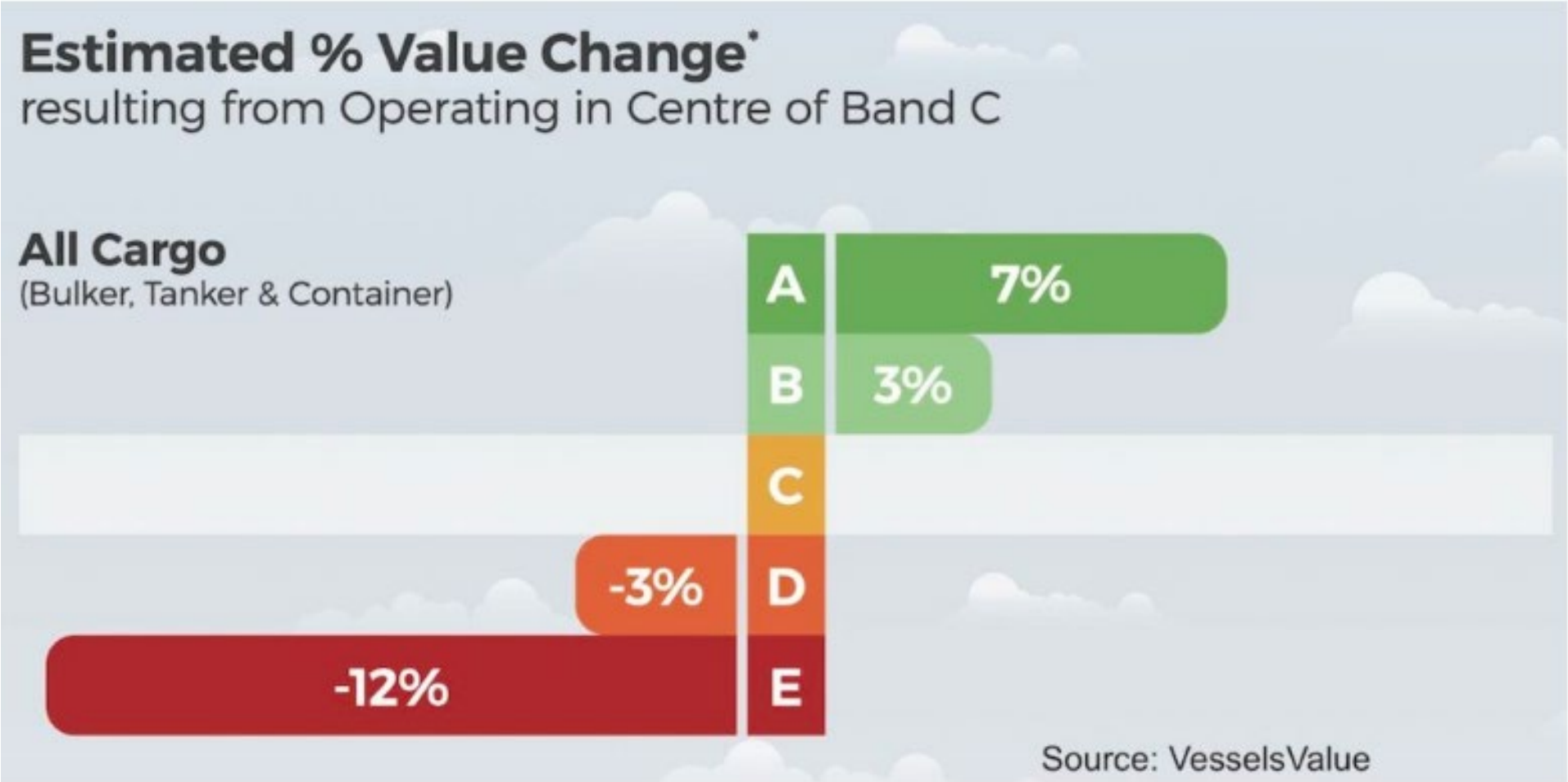
Step 3: Find CII ref. line reduction over time

Year	Reduction from 2019 ref. (mid-point of C-rating band)
2023	5 %
2024	7 %
2025	9 %
2026	11 %
2027-2030	To be decided



Impact of CII for the 2nd hand prices

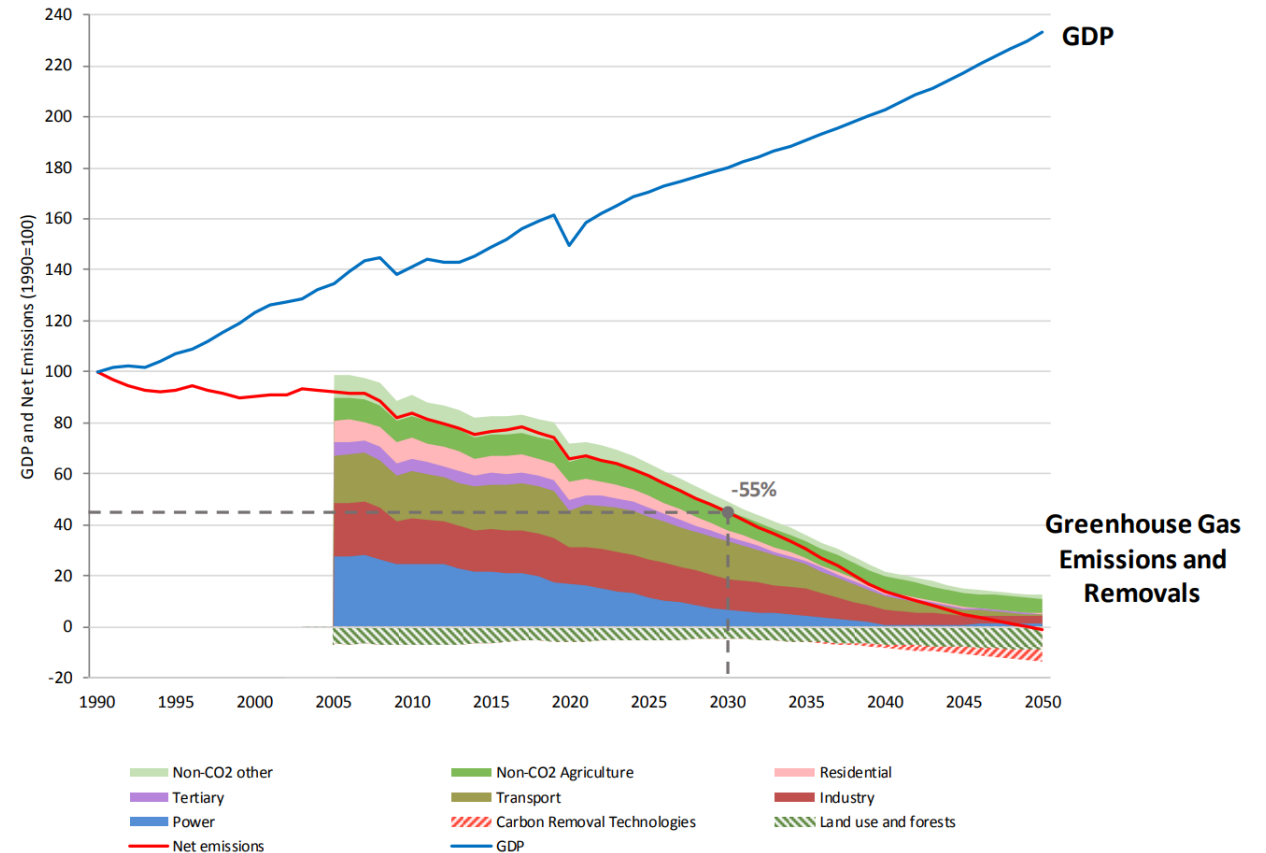
“Ships with CII’s lowest rating suffer significant drop in value”



EU ETS

EU Green Deal – a climate neutral Europe by 2050

- Estimated **90% reduction in maritime transport emissions** relative to 1990 needed by 2050
- Fit for 55 package proposed by Commission on 14 July 2021. Key elements for shipping:
 - Inclusion of shipping in **the European Trading System**
 - **FuelEU Maritime**: requirements on lifecycle GHG intensity of energy
 - Revision of **Alternative Fuels Infrastructure Regulation**: Shore side electricity and LNG in core network ports by 2030 (electricity) and 2025 (LNG)
 - Revision of **Energy Taxation Directive**: Ending tax exemptions for marine fuels within EU



Source: EU Commission, COM(2020) 562 final

Shipping to be included in the EU Emissions Trading System from 2024

- First reporting period: **1 January to 31 December 2024**
- Shipping companies need to **surrender emission allowances by 30 September every year** (starting in 2025) for emissions in the previous calendar year
- Starts with current MRV scope, then expands (see timeline).
- **50%** of emissions into or out of EEA, **100%** of CO₂ emissions between and within EEA ports
- Sustainable biofuels considered zero CO₂ emissions
- Annual revenues from 20M EUAs (~1.6 bill € annually) **earmarked for shipping** through the Innovation Fund



Source: <https://tradingeconomics.com/>

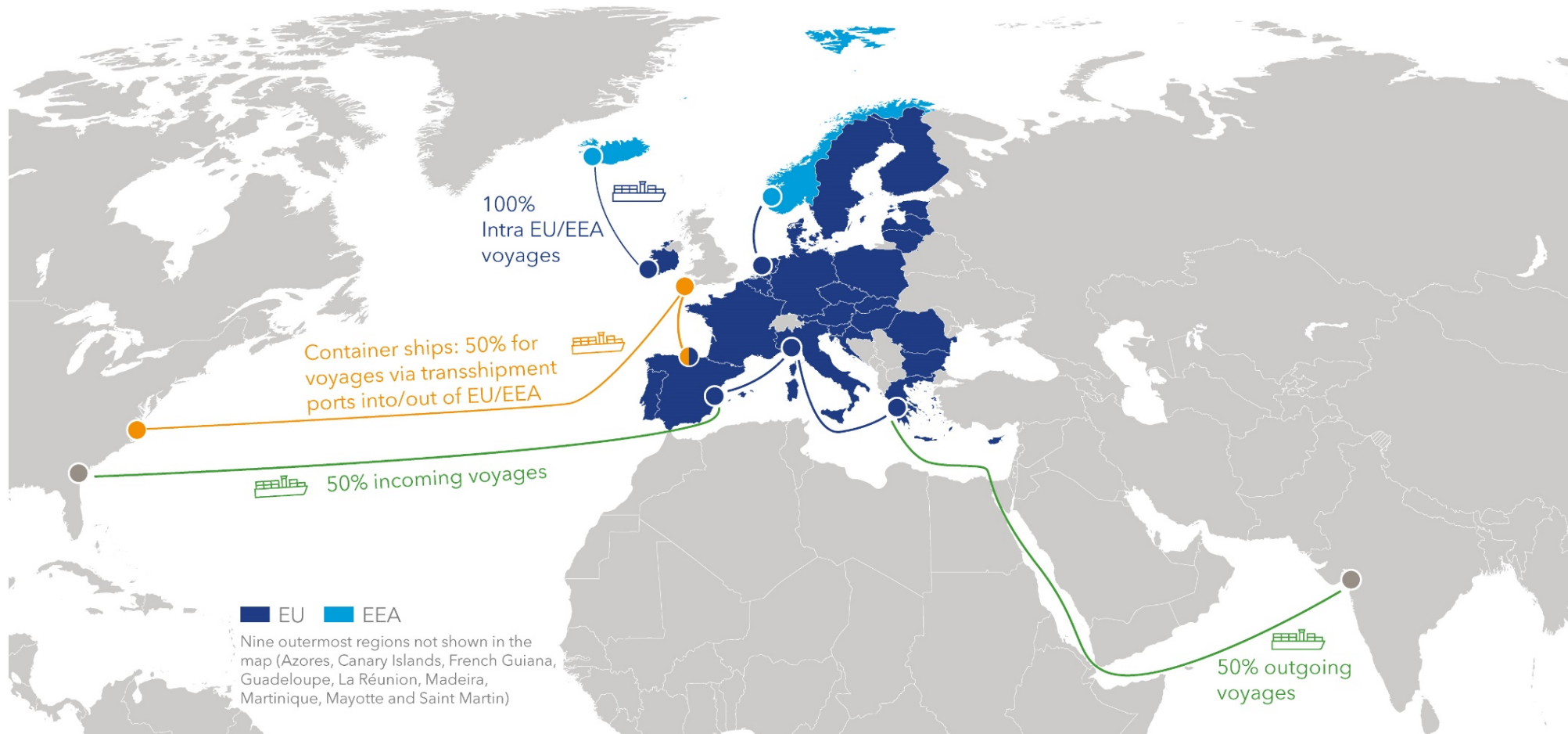
Impact

Current price: **81.5 €/t CO₂e**

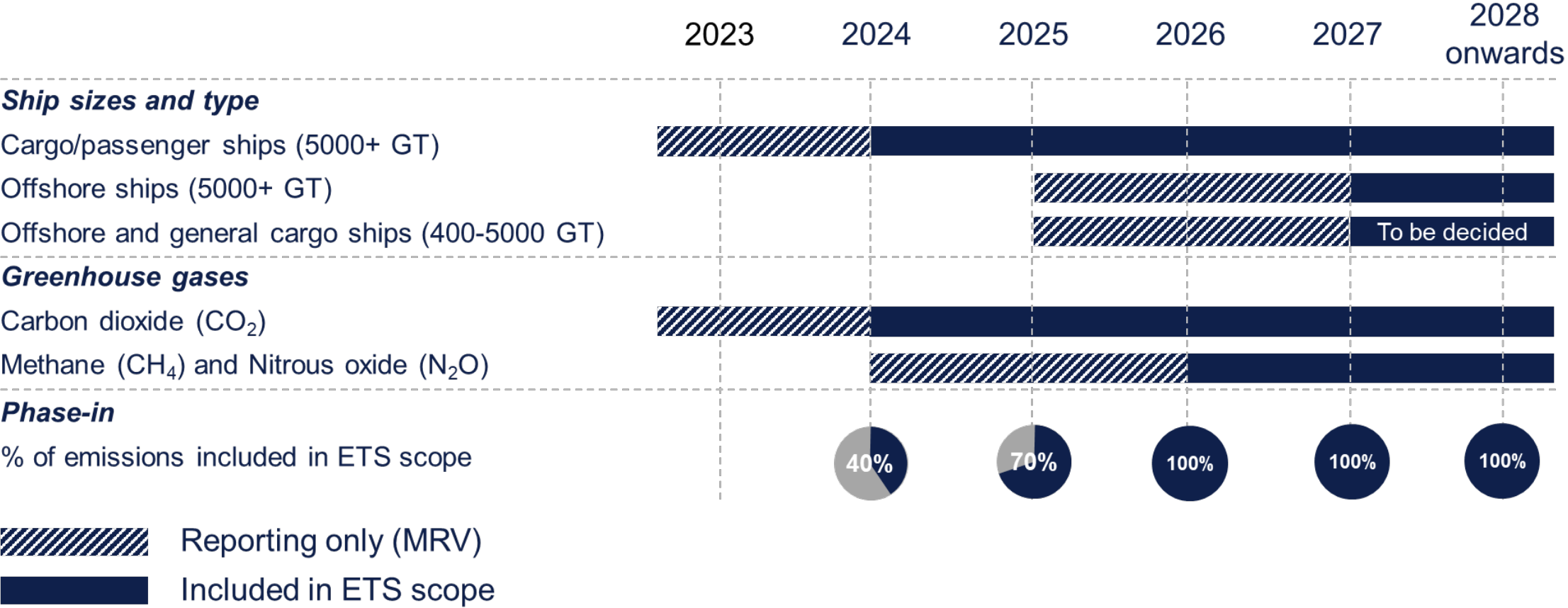
254 €/t HFO consumed

25,400 €/day additional cost @ 100t HFO/day

ETS applies to voyages and port calls in EU/EEA and voyages to and from EU/EEA



Phase-in EU ETS

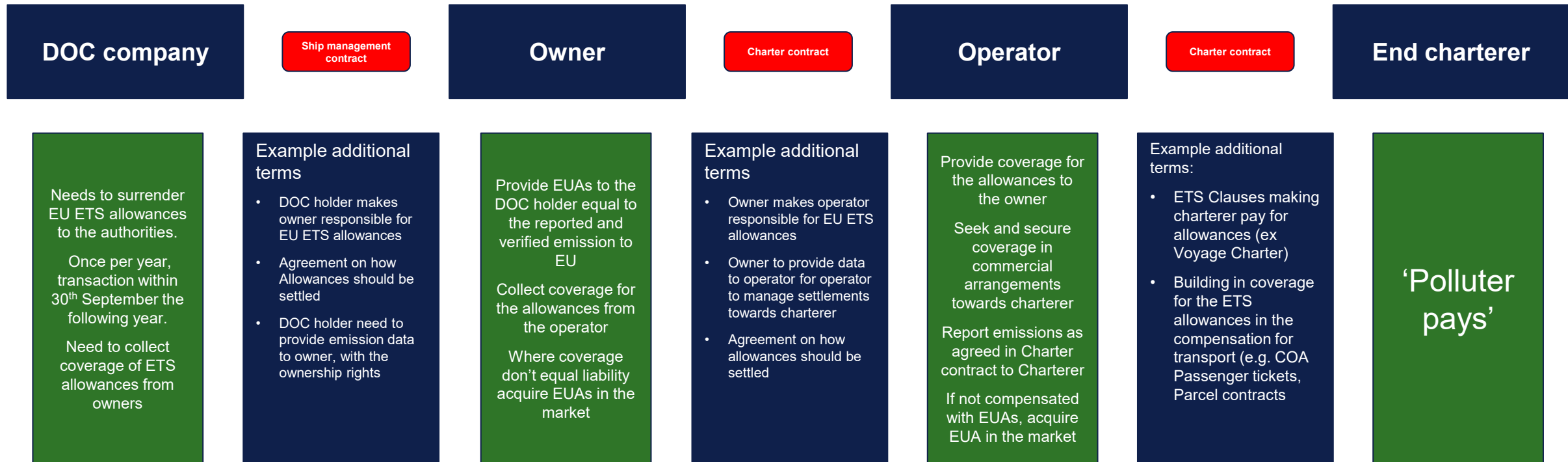


ETS compliance cycle, handling of carbon-neutral fuels and revenues

- First reporting period: **1 January to 31 December 2024**
- Shipping companies need to **surrender emission allowances by 30 September every year** (starting in 2025) for emissions in the previous calendar year
- Non-compliance can be **fined (additional 100 EUR/ton)**, lead to **denial of entry into EU**, and **detention**.
- **Sustainable biofuels, RFNBO, RCF** considered as zero CO₂ emissions (>50-70 % WtW GHG reduction)
- EUAs can be **acquired from auctions** run by [European Energy Exchange \(EEX\)](#) or **bought directly from other EUA holders**.
EUA price will be volatile, amount of EUAs auctioned will decrease by 4.3% ('24-'27) / 4.4% ('28-'30) p.a.
EUAs dated 1 January 2013 or later are valid for use



How to secure that polluter pays requires updated contracts covering EU ETS



Key factors for success:

- Standardized data formats, verified data (real time), All players uses same verified data set, data is trusted by the players in the value chain, transactions of allowances are supported by verified statements of emission

CII and ETS becoming terms in commercial contracts and will be key areas to manage

EU ETS terms are included in commercial contracts

Why it is used:

- To transfer liabilities for ETS allowances to towards the end charterer
- Financial control
- P&L management

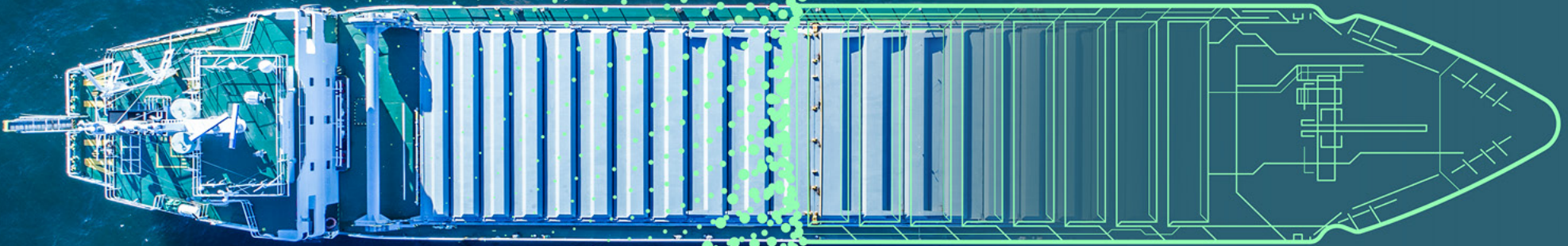
CII terms are applied in commercial contracts

- To manage future commercial attractiveness, and concerns that this might affect asset value
- Could be terms in financial arrangements, impacting cost and access to capital
- Could be used in ESG reporting

The application of the terms requires high quality data and trust among multiple stakeholders



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Emissions Connect

ADVANCE FROM RAW DATA TO SUSTAINABLE OPERATIONS

Illustration of ETS cost per vessel



4 mill euro



1,2 mill euro



2 mill euro



12,3 mill euro



1,5 mill euro

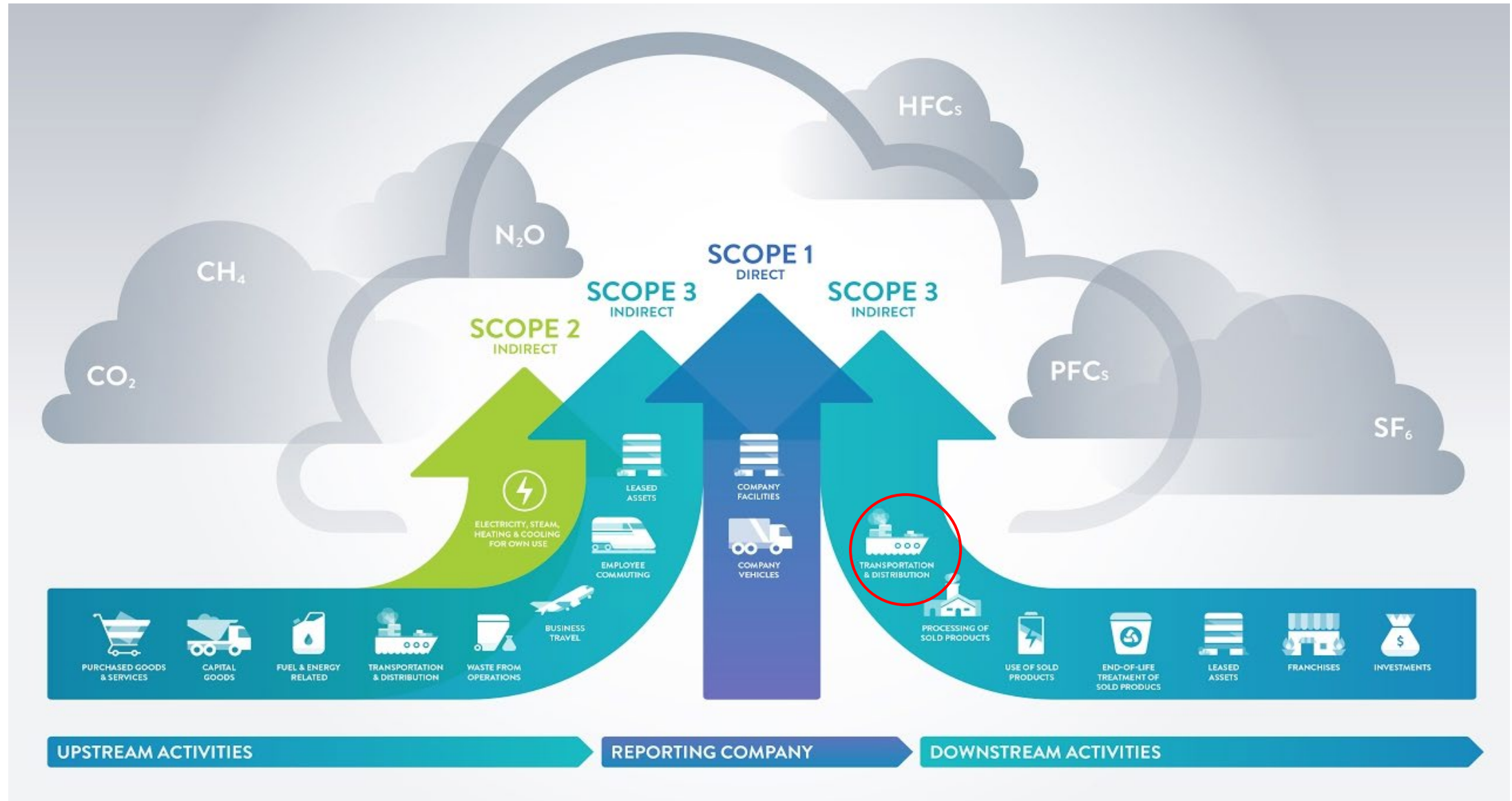


2,6 mill euro

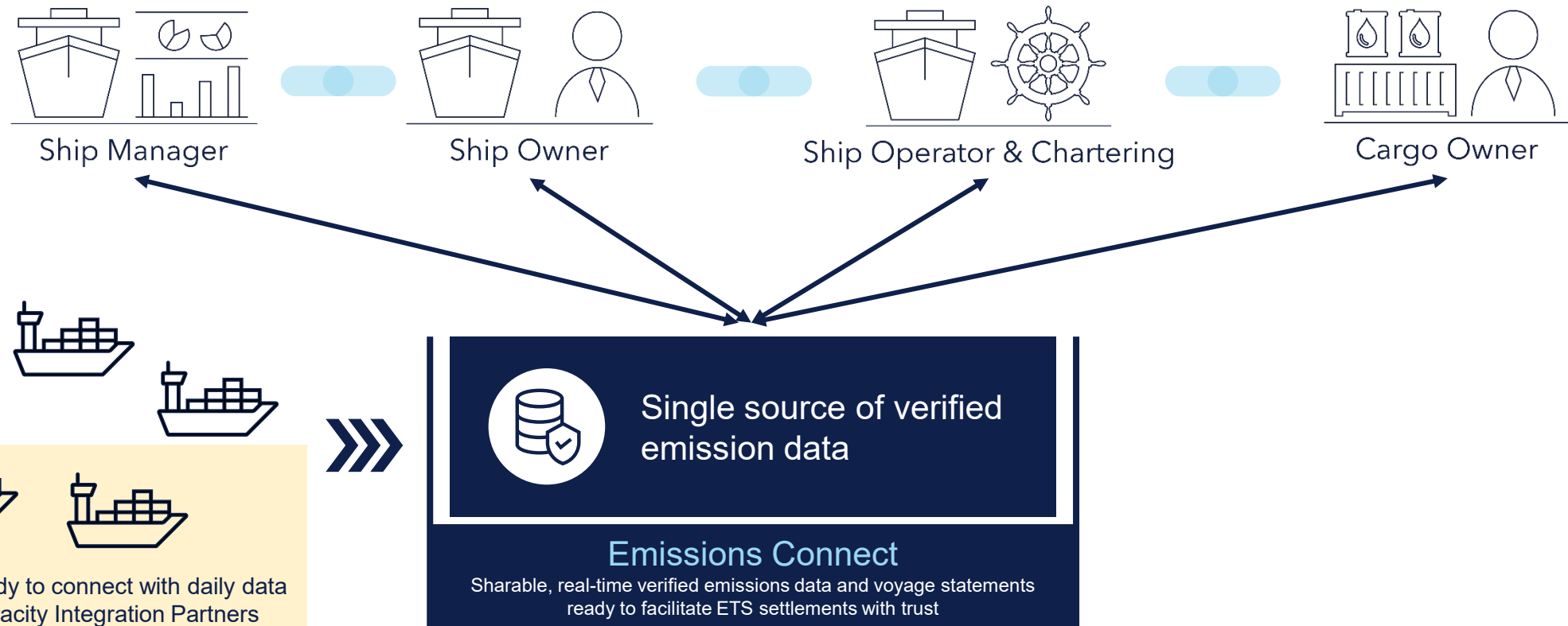


3,6 mill euro

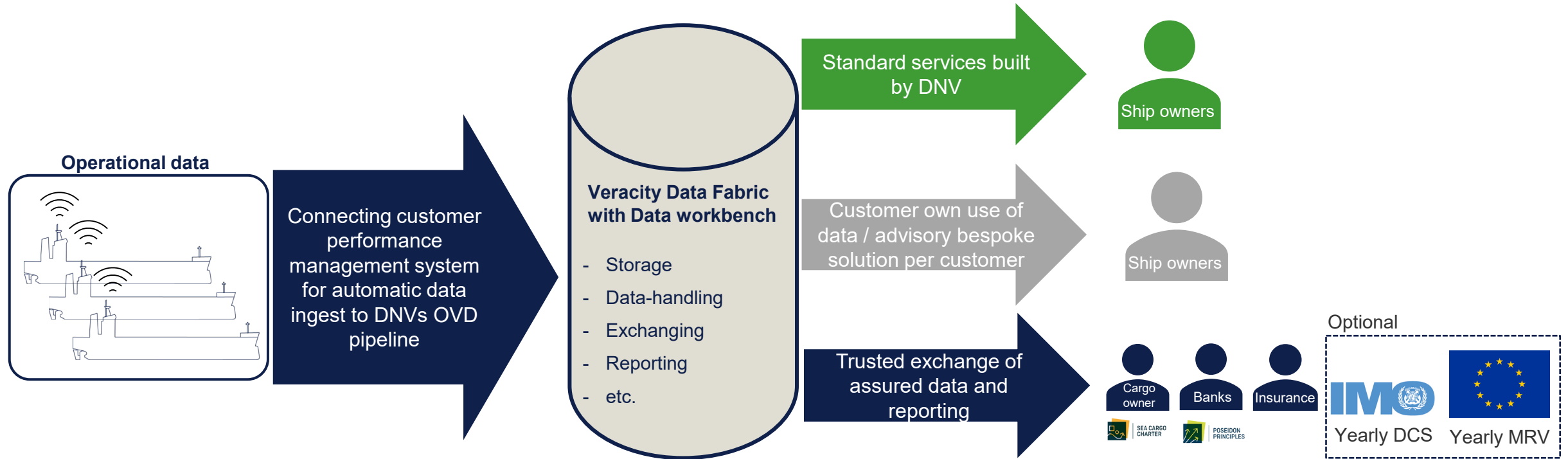
ESG – Emissions from “transportation and distribution”



Facilitation of commercial agreements along the value chain requires a trusted source of emissions data

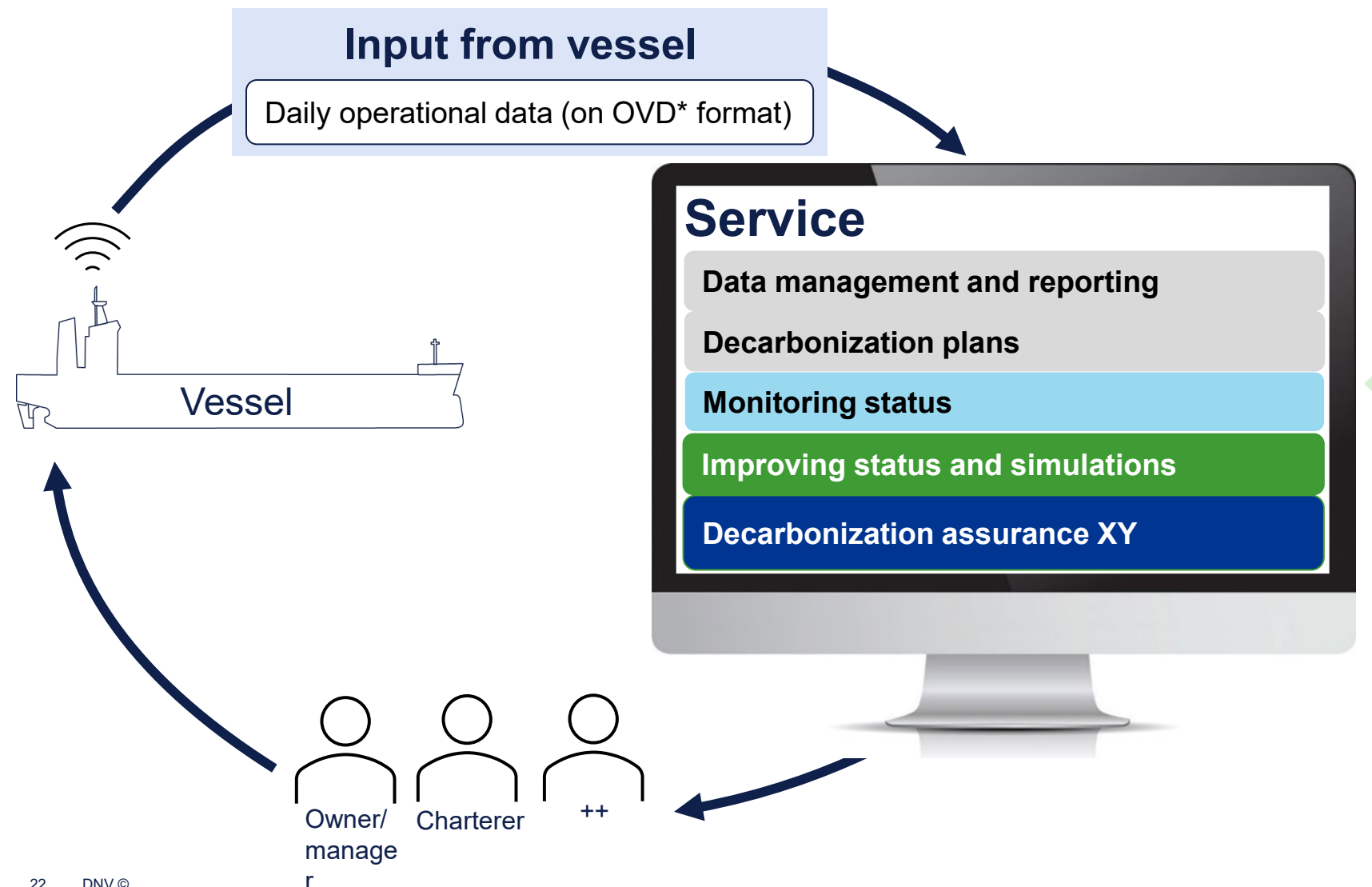


Data management and reporting



Key factor is to connect and automate the data (API) from the vessel to the DNV platform. This enables better control and management in addition to reduce manual work to a minimum

DNV future support: Owners decarbonization challenge



Input from DNV

DNV's Abatement Insight database

Operational measures:

- Antifouling optimization and painting (1.1%)
- Post optimization (0.4%)
- Weather routing (1.2%)
- Efficient DP operations (1.1%)
- Tide and draft optimization (1.6%)
- Speed reduction (0.9%)
- Advanced use of data ("Digital twin") (0.4%)
- Propeller polishing (0.3%)
- Engine performance testing and tuning (0.1%)
- Steam plant operation improvement (0.2%)
- Improved auxiliary engine load (0.5%)
- Hull cleaning (0.4%)

(Source: DNV's Abatement Insight database)

Models & tools

Carbon indicator

2020 2023 2026 2030

AIS data

Emissions Connects Data managers gives you control of your data

Simple reporting to banks and insurance on Poseidon Principles

Simple reporting on sea cargo Charter

Overview of created data sets

Who the data set is shared with

Status of the verification process

The screenshot displays the VERACITY by DNV Data Workbench interface. At the top, there are navigation links: Home, Data catalogue, Connections, Workspace, and API integrations. Below this, there are two main cards: 'Poseidon Principles' and 'Sea Cargo Charter', both with the text 'Securely share emission data with your bank' or 'charterers'. Below these cards is a table titled 'Recent data sets' with columns: Data set name, Source, Schema, Available assets, Available time period, Data classification, Shared with, and Created. The table lists five data sets, all with a status of '100% Not verified'. A callout box points to the 'Shared with' column, indicating who the data set is shared with. Another callout box points to the 'Data classification' column, indicating the status of the verification process.


Data set name	Source	Schema	Available assets	Available time period	Data classification	Shared with	Created
nk test 1	OVD Connector	DCS Period Summary v1	1	2021-01-01 to 2022-01-01	100% Not verified	NN natalia.khramova.test	2022-11-02 13:18:08
Helge Bulker 1 Poseidon	OVD Connector	DCS Period Summary v1	1	2021-01-01 to 2022-01-01	100% Not verified	HH NN +1	2022-10-31 14:10:49
Eason TEST	OVD Connector	DCS Period Summary v1	1	2020-01-01 to 2020-08-04	100% Not verified	SX Sheng, Xin Yi Eason	2022-10-28 03:05:07
SCC 1026010 emissions n...	OVD Connector	Leg emissions summary v1	6	2019-01-02 to 2022-03-08	100% Not verified	SX Sheng, Xin Yi Eason	2022-10-26 10:58:52
SCC 102601 emissions	OVD Connector	Leg emissions summary v1	6	2019-01-02 to 2022-03-08	100% Not verified		2022-10-26 10:58:09

Fleet monitoring gives you an overview of the fleet

Emissions Connect

 Emissions Connect Support

 Give feedback

 An enhanced version of Emissions Connect is now available to you. For details, please see [here](#).

Fleet Monitoring NEW

Vessel Monitoring NEW

Voyage Monitoring NEW

Voyage Simulation NEW

Year


2023 

Month

Select month... 

Fleet group

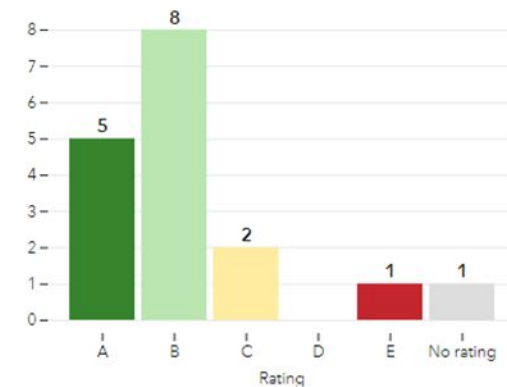
Tankers 

Correction factors 

☐ Not used

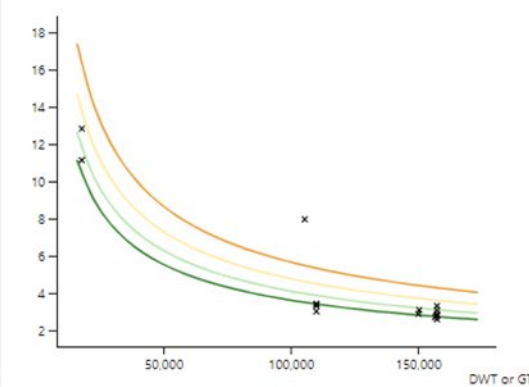
Fleet rating overview

Number of vessels

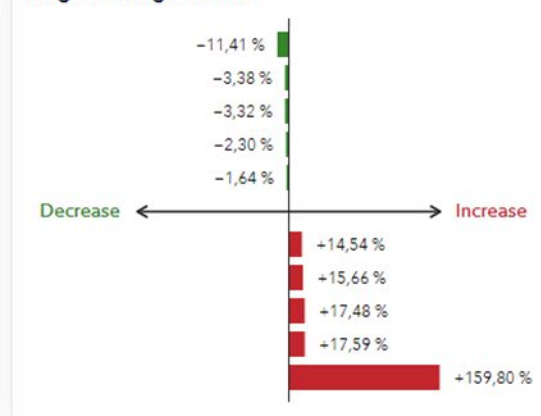


Positions within the thresholds

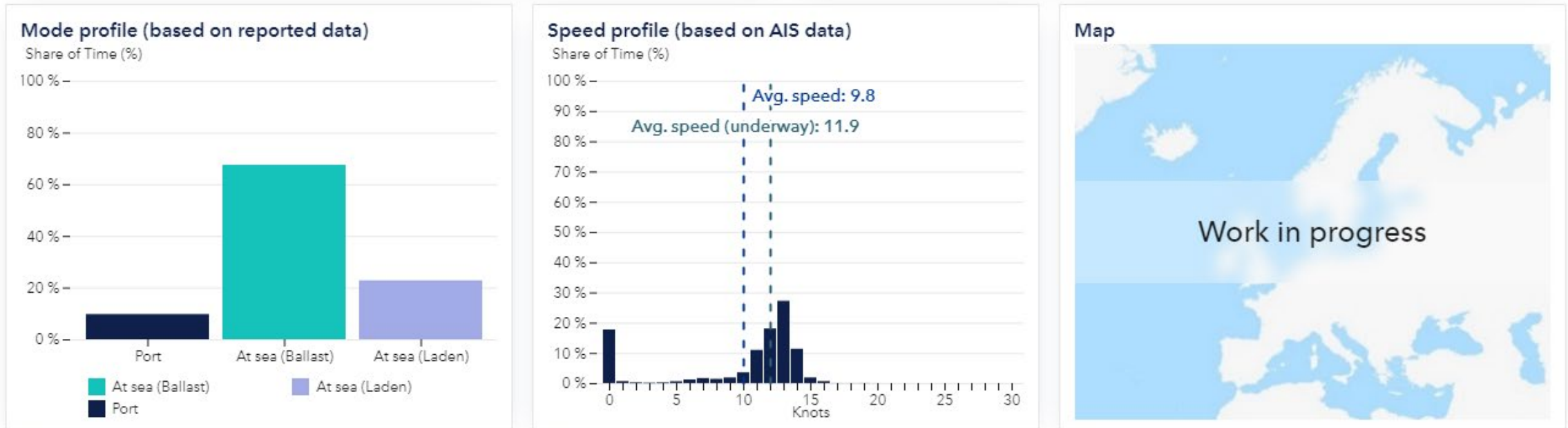
Carbon intensity (gCO₂/nm*(DWT or GT))



Largest change in 2023



Vessel Monitoring gives you an speed profile, mode profile and AIS track of where the vessel have been trading



Many leading data providers are already integrated with Veracity through the partnership program



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