



Decarbonization Across Industries:
Challenges, Opportunities, and Insurance Implications.
A focus on the Cruising industry

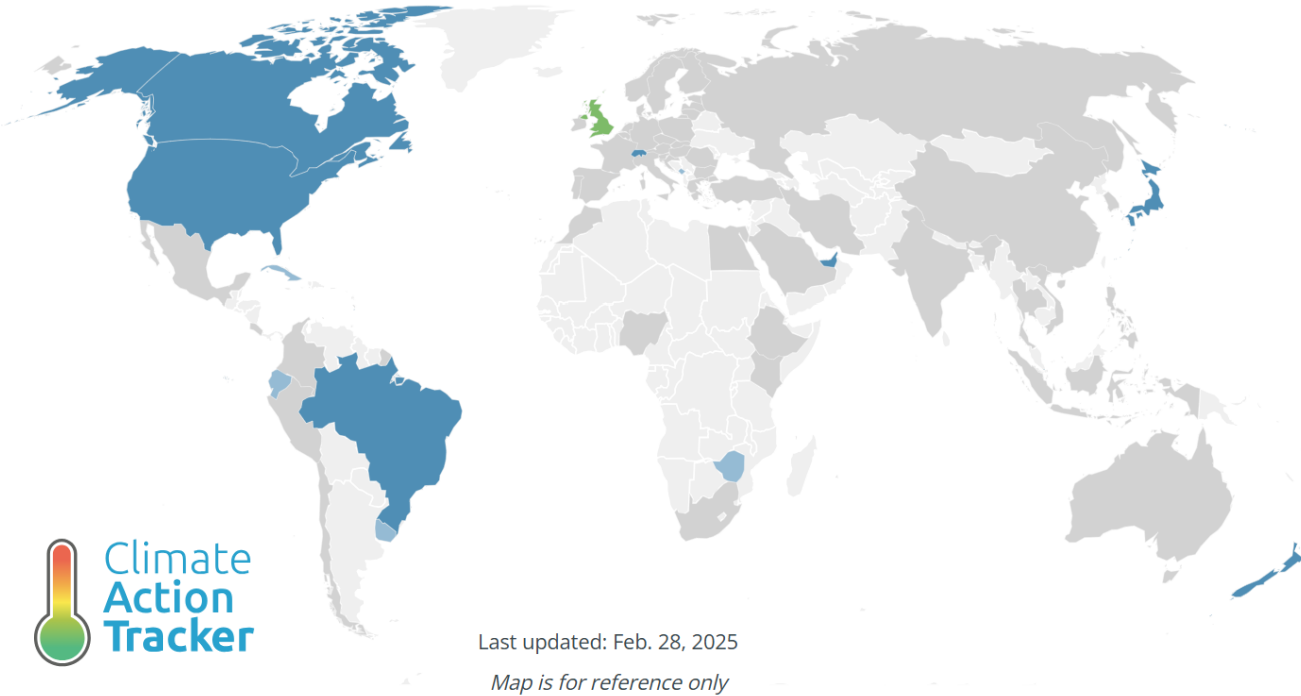
Rocco Bozzelli

Head of Global Insurance

MSC Cruises



Decarbonization Across Industries: Challenges, Opportunities, and Insurance Implications. A focus on the Cruising industry



CLIMATE TARGETS

2035 NDC targets submitted since Nov 2024

18 Countries have submitted a 2035 NDC target

- **1** 1.5C compatible NDC against modelled domestic pathways*
- **8** Submitted NDC target
- **9** Countries **we do not analyse** submitted NDC target

175 Countries have **not** submitted a 2035 NDC target

- **52** Countries **we analyse** have not submitted NDC target (26 countries plus EU27)



Source: United Nation - The Sustainable Development Solutions Network (SDSN)

Nationally Determined Contributions, or NDCs, are national climate action plans by each country under the Paris Agreement (international shipping & aviation are not covered by the Paris Agreement directly).

A country's NDC outlines how it plans to reduce greenhouse gas emissions to help meet the global goal of limiting temperature rise to 1.5C and adapt to the impacts of climate change.

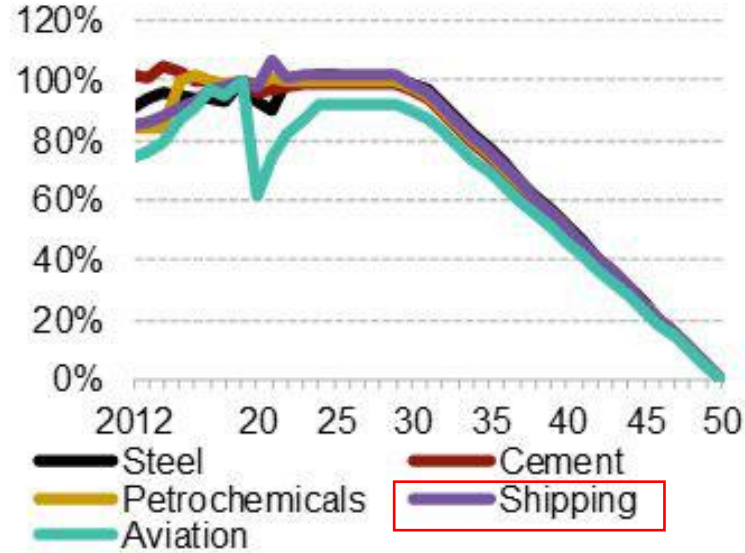
Decarbonization budget pattern per sector

Figure 2: Group 1 emissions budgets, index= 2019



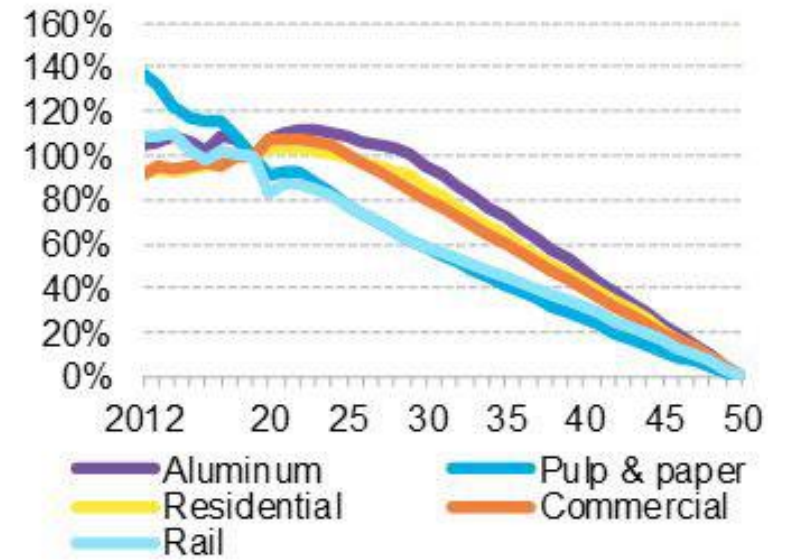
Source: BloombergNEF

Figure 3: Group 2 emissions budgets, index= 2019



Source: BloombergNEF

Figure 4: Group 3 emissions budgets, index= 2019

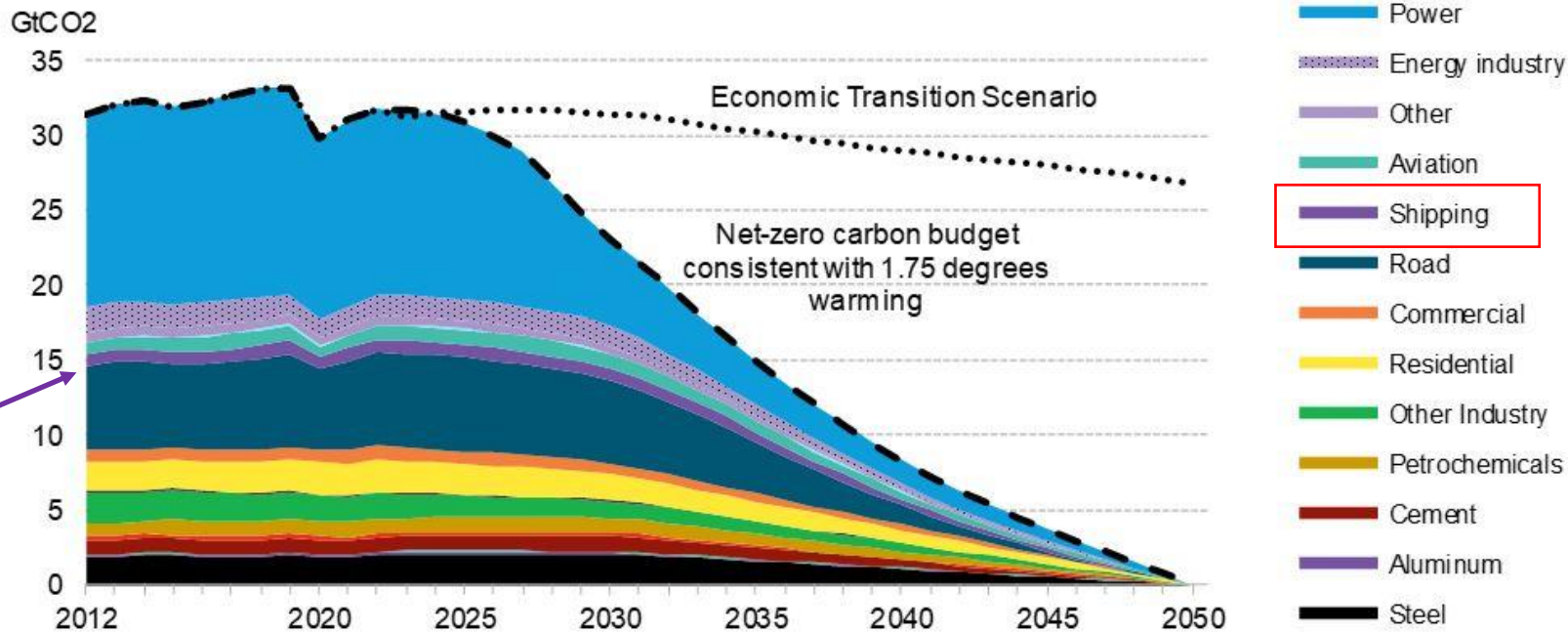


Source: BloombergNEF

Each business sector has different decarbonization costs, technological challenges and timing

Decarbonization budget pattern per sector

Figure 5: Energy emissions and net zero carbon budget, by sector



Any business sector is involved

•Principle 1 – **There can be no free riders** : To achieve global net-zero, every sector of the energy economy needs to start eliminating emissions to be completely carbon free by mid-century.

•Principle 2 – **Some sectors face a tougher task than others**: Lower expectations this decade for sectors with rapidly growing emissions or few economically viable abatement options.

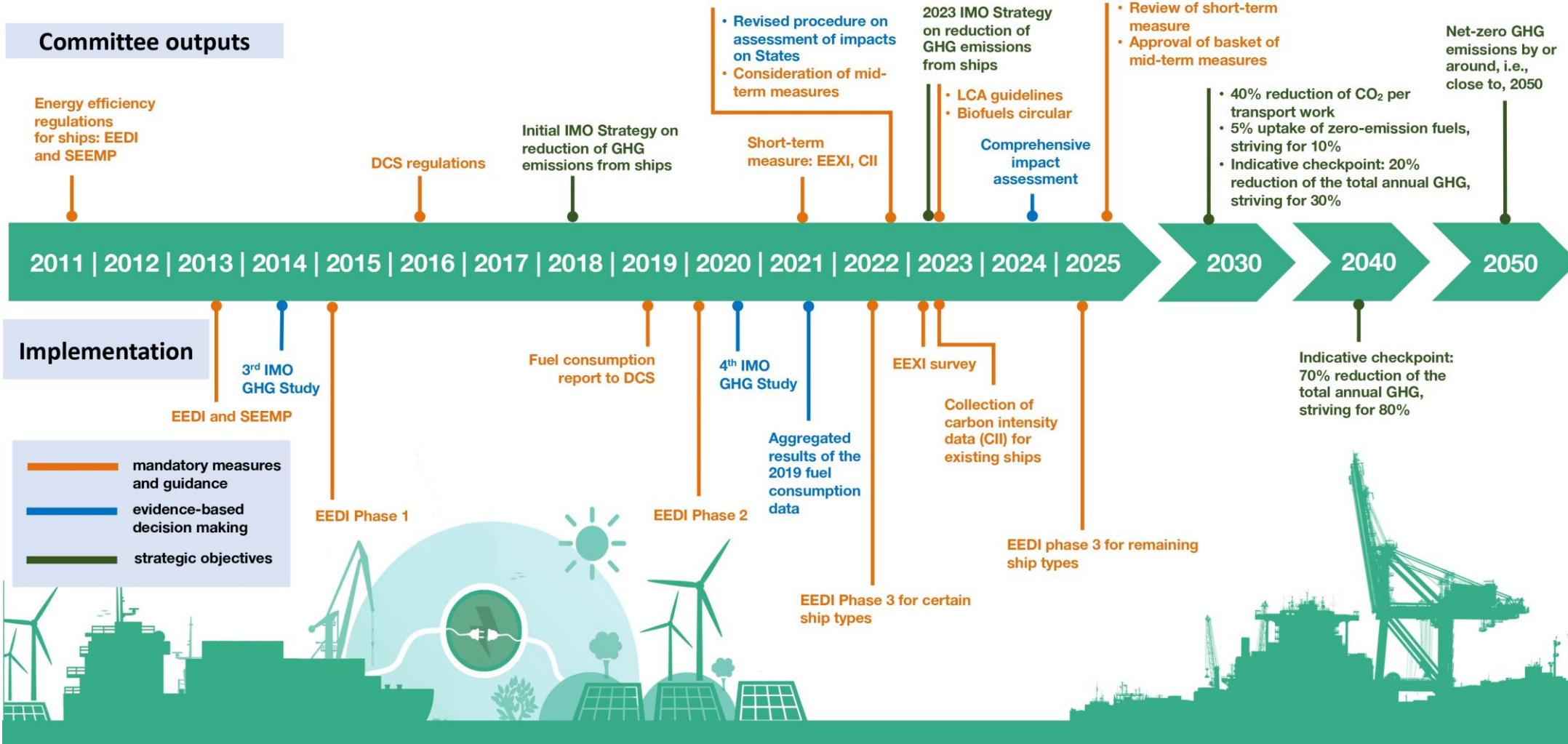
•Principle 3 – **An orderly transition**: This is where change occurs incrementally to maintain economic and social security.

Source: BloombergNEF

Shipping & Cruising industry regulatory framework

Addressing climate change

Over a decade of regulatory action to cut GHG emissions from shipping



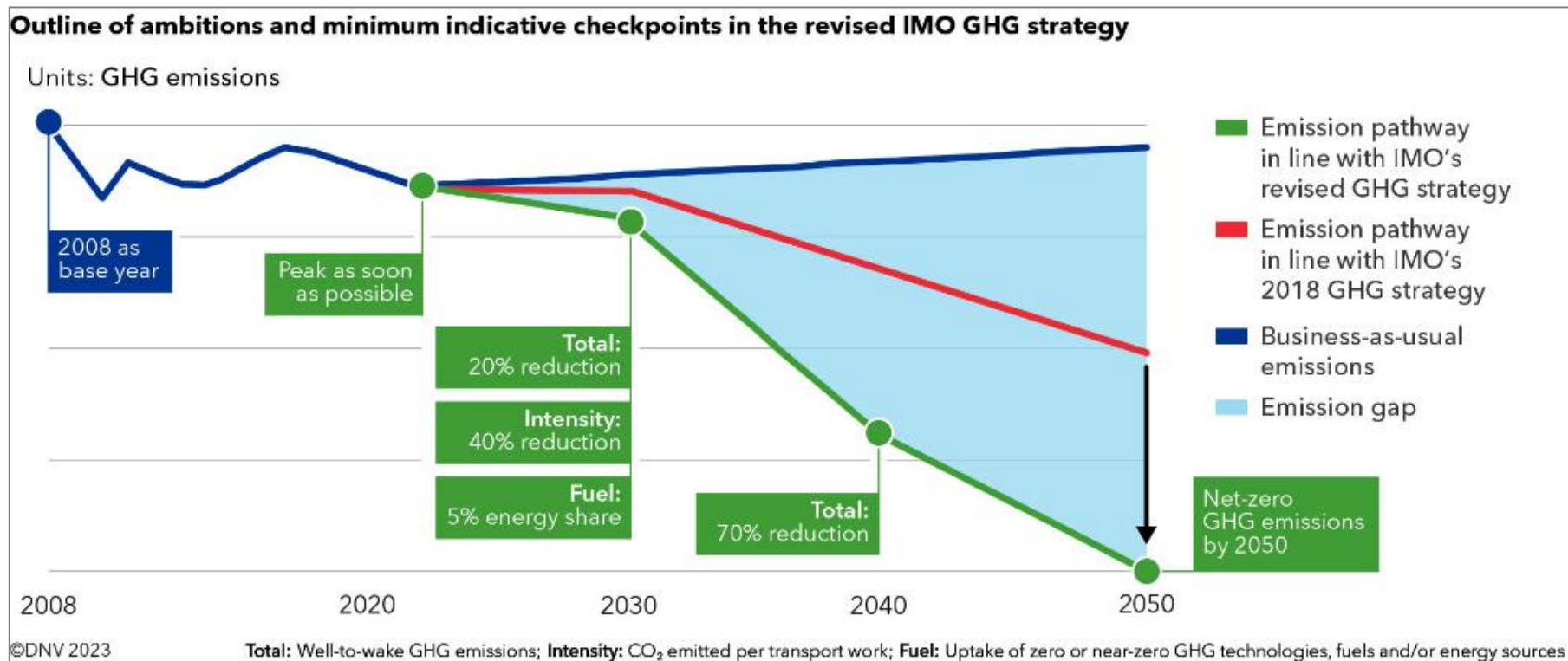
Shipping & Cruising industry regulatory framework

2023 Revised IMO Strategy: Resolution MEPC.377(80) adopted July 2023

Increased climate ambition, with milestones:

- **20%** reduction by **2030**, **70%** reduction by **2040**
- **Net Zero** by **2050**

The new level of ambition will influence future regulatory developments.



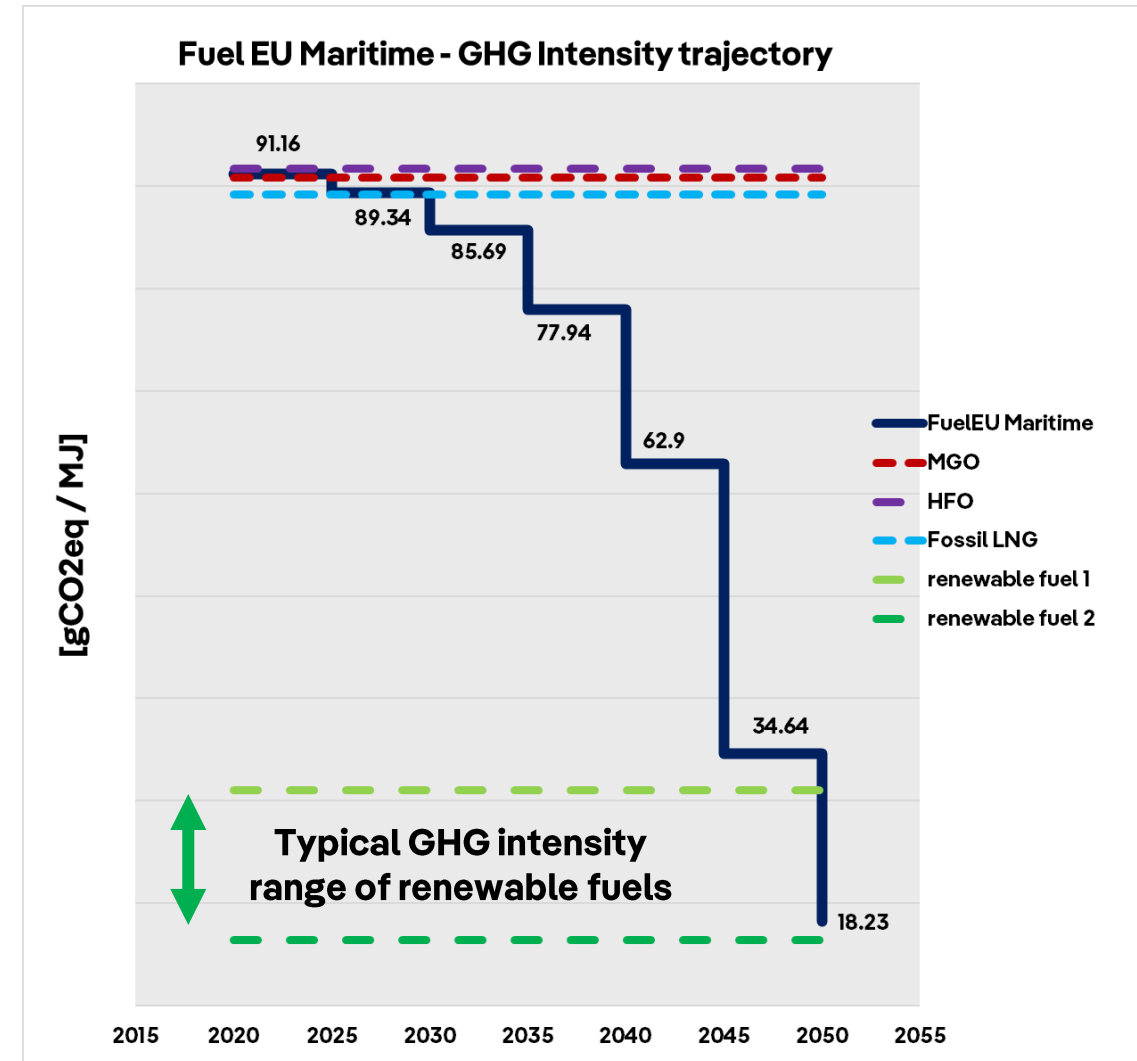
Shipping & Cruising industry regulatory framework -Fuel EU Maritime Directive



- **FuelEU Maritime** establishes a limit on the annual **GHG intensity** (gCO₂eq/MJ) of energy used by vessels on a WtW basis (lifecycle emissions of the fuel) **from 2025**.
- The established annual **GHG intensity** (gCO₂eq/MJ) decreases over time compared to a 2020 baseline.

2025	2030	2035	2040	2045	2050
-2%	-6%	-14,5%	-31%	-62%	-80%

- Monitoring and Reporting is based on **MRV**, with some additional data.
- FuelEU covers **Well-to-Wake (WtW)** (resulting from the lifecycle emissions of the fuel)- specifically:
 - ❑ 100% of the energy used within EU/EEA ports and from voyages between EU/EEA ports.
 - ❑ 50% of the energy from voyages to or from EU/EEA ports, departing from or arriving at non-EU/EEA ports and from voyages to/from EU outermost regions.



Shipping & Cruising industry regulatory framework

REGULATORY DEVELOPMENTS



Net-zero 2050

In 2021, MSC Cruises committed to achieving net-zero greenhouse gas emissions in its marine operations by 2050.



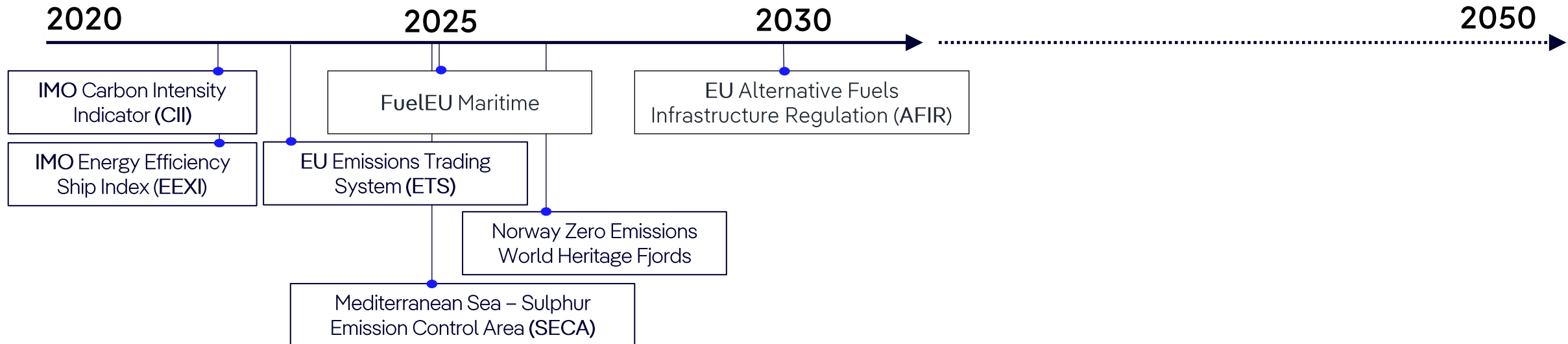
2030

MSC Cruises is committed to achieving a 40% carbon intensity improvement by 2030 (vs. 2008 baseline).



2050 Revised Ambition

MSC Cruises is supportive of the recent agreement to pursue a more ambitious decarbonization pathway for the global industry.



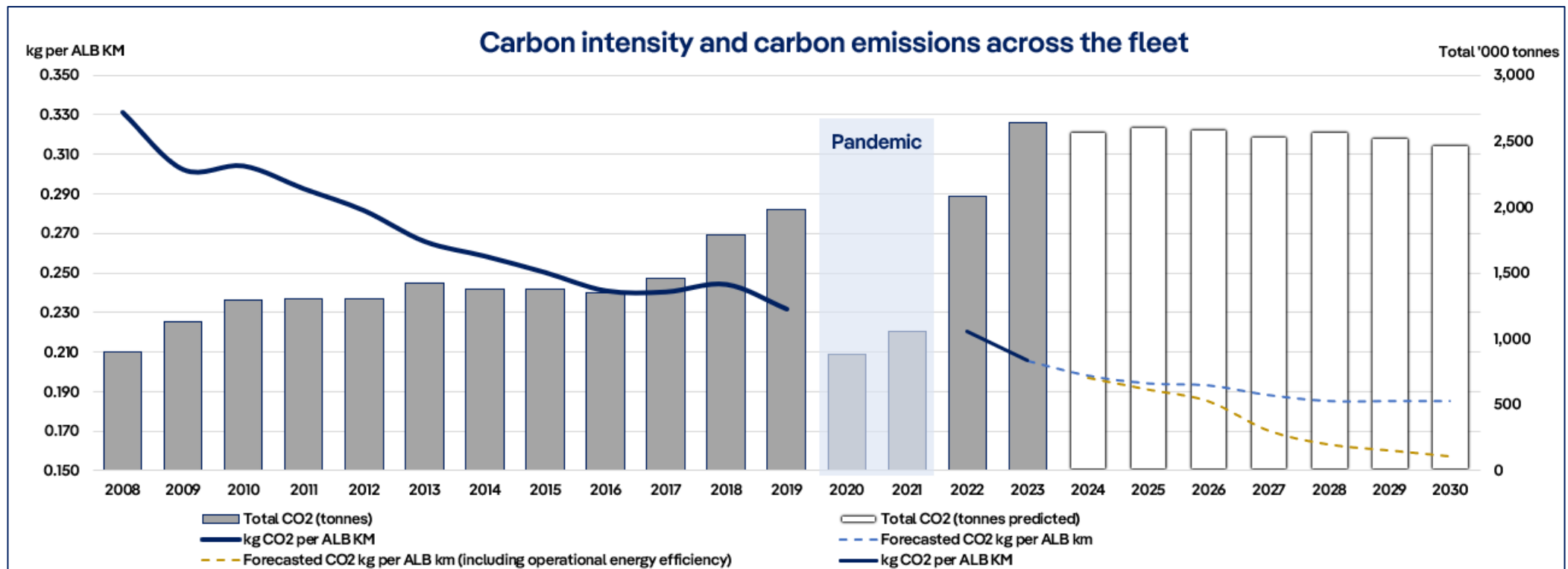
Shipping & Cruising sector is heavily regulated in terms of decarbonization targets and metrics

Shipping & Cruising Towards Net Zero Emissions: Two Key Commitments

- **Commitment 2030:** Meeting IMO 40% carbon emission intensity improvement by 2030.

- **Commitment 2050:** Net Zero emissions by 2050.

In 2023: We have reduced our kg of CO2 per ALB km by **37.8%** in 2023 compared to 2008 and achieved a year-on-year decrease of **6.5%** from 2022 to 2023.



MSC Cruises - Our Pathway to Net Zero: Three Pillars



Ship and Engine Technology

- Designing vessels that are better than **IMO Energy Efficiency Design Index (EEDI)** requirement.
- MSC Cruises' Newbuilds and recent ships are powered by **dual-fuel Wärtsilä engines** that can run on both gas (LNG) and liquid fuel (MGO). Attaining Immediate reduction in GHGs compared to conventional marine fuels and offering flexibility for drop-in renewable gaseous fuels alternatives.
- **Shore Power** to reduce ship emissions and improving local air quality.
- MSC Cruises is actively involved in several **research projects**, funded by the EU, to address key technology challenges including methane slip abatement, fuel cell integration in maritime applications, itinerary optimization software, use of hydrogen on large ships, etc.



Operational Efficiency

- Cruise Itinerary Optimization Tool (Energy Efficiency, Technical aspects, Trust attractiveness, Revenue, Cost)
- Real-time Monitoring & Analytics
- Oceanly Performance was installed on all ships in our fleet. The platform enables data-driven decision-making to improve the efficiency of our fleet.



Renewable Fuels

- MSC Cruises' began its energy transition in 2023 with both **B30 blends** and **bio-LNG**.
- MSC Cruises is working with partners from across the supply chain to ensure it can access affordable renewable fuels at the volumes required.
- New regulations will drive accelerated uptake of renewable fuels across the industry (e.g., Fuel EU Maritime).

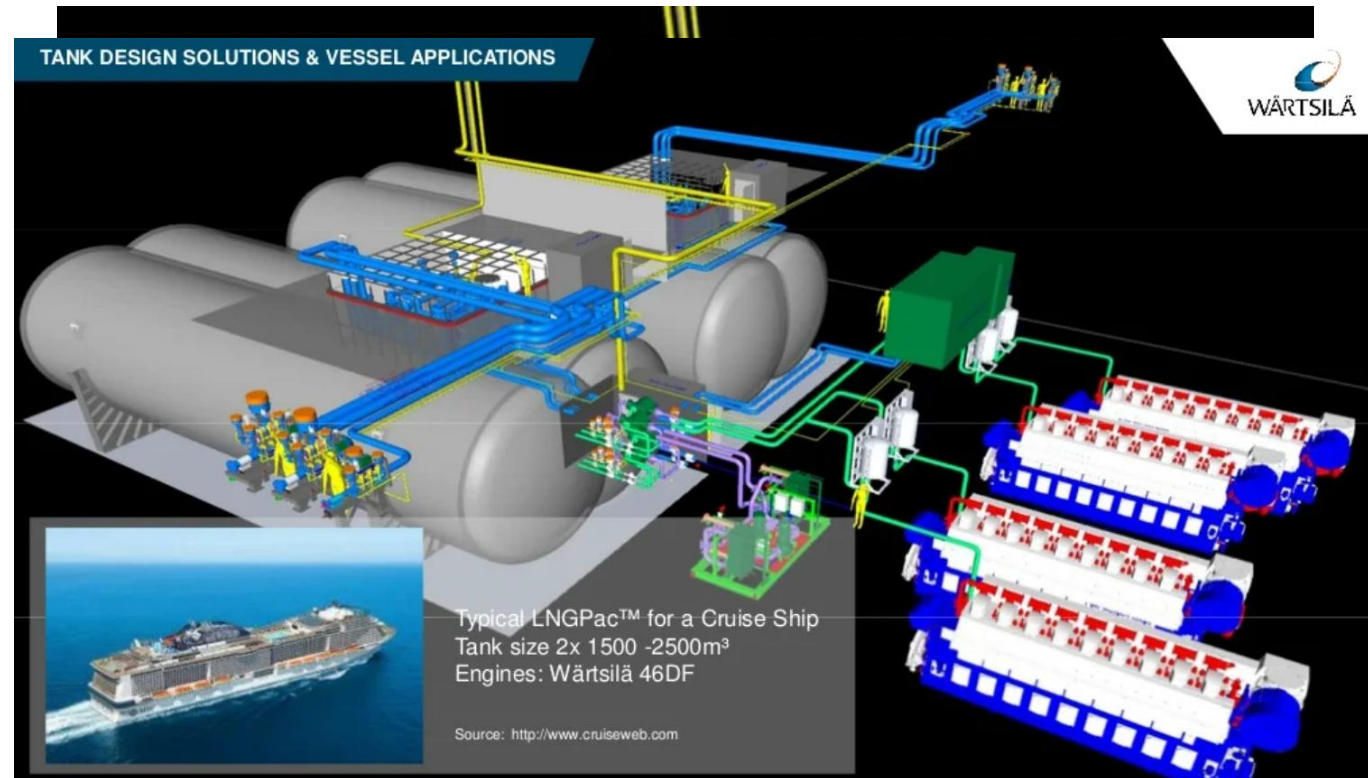
New risks & new challenges for Insurers

LNG CHALLENGES

Larger bunkering requirements - 3-4 x more volume required for LNG than traditional liquid hydrocarbon fuels. Making retrofit almost impossible

Supply chain issues – current political situations may impact the supply of LNG in the places we need it

Methane slip – unburnt methane during combustion is a potent greenhouse gas. Engine technology is improving to reduce this, and we are investigating post combustion technologies to eliminate it.



New risks & new challenges for Insurers

New Risks – Renewable Fuel Certification & Eligibility

Sample of 2024-25 Headlines

UK investigating claims green fuel contains virgin palm oil

7 days ago

Share Save

Matt McGrath and Mark Poynting
BBC Climate & Science



EU Scrutinizes Fraud in Certification of Biofuels



Palm plantations and forest in Sentabai Village, West Kalimantan, 2017 (Nanang Sujana/CIFOR / CC BY NC ND 2.0)

PUBLISHED MAR 30, 2025 3:41 PM BY THE MARITIME

EXECUTIVE

France, Germany urge tougher EU checks on biofuel imports in fraud probe

By Reuters

May 31, 2024 6:54 PM GMT+2 · Updated a year ago

Share Aa



European Union flags fly outside the European Commission headquarters in Brussels, Belgium, March 1, 2023. REUTERS/Johanna Geron/File Photo Purchase Licensing Biobits

Belgium: EPPO arrests two suspects in €3.1 million biodiesel fraud investigation

Published on 28 June 2024



New risks & new challenges for Insurers

FUTURE CHALLENGES

GREEN FUELS

Bio-fuels, LH2, Methanol, Ammonia, etc.

STORAGE &
TRANSFER

CARBON BASED

SUPPLY CHAIN

NEW TECHNOLOGIES

Fuel Cells, Carbon capture, etc.

STILL UNDER
DEVELOPMENT

SCALABILITY

RELIABILITY

The role of the Insurance Industry

Important investments are (and will be) required to comply with net zero targets for shipping & cruising business as for any other industry



- How will Insurers consider those investments and level of emissions reduction reached in their underwriting policies?
- In what way Insurers and Brokers will assist Assured to support them in this sustainability revolution transitional phase with new types of risks and exposures?
- What innovations we should expect from the Hull Insurance Industry?

How will Insurers approach underwriting for SMEs ?

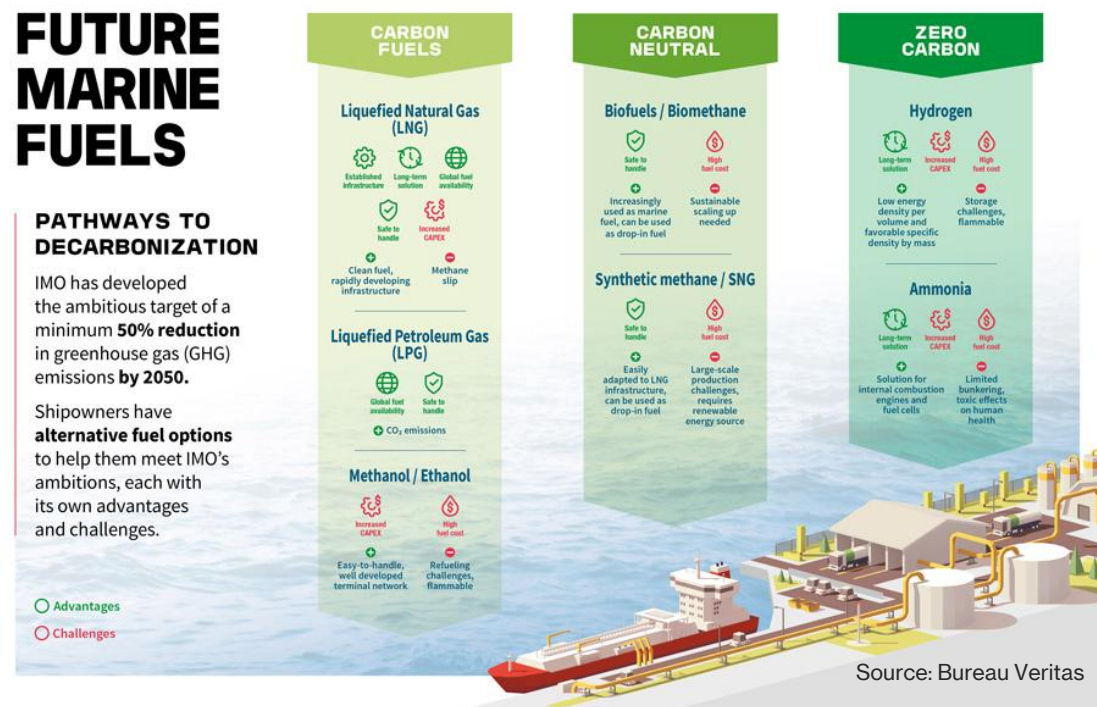
- SMEs (small-mid sized shipping companies) may not have a large budget for decarbonization actions – they may not be aligned on global targets. Market concentration risk (M&As) ?
- What about corporations that operate in sectors harder to abate?



The role of the Insurance Industry

HOW CAN INSURANCE INDUSTRY SUPPORT?

- What to expect from the Insurance Industry for Innovation, underwriting approach, loss prevention for new Shipping Risks triggered by decarbonization targets
- How will Brokers & Insurers support shipping companies of all sizes during this transitional phase ?
- Are Poseidon Principle for Marine Insurance indexes & metric aligned with other regulatory requirements and suitable for the insured ships?
- What is the position of Marine Insurers in their underwriting assessment and decisions?



Some examples in shipping & cruising:

FUTURE MARINE FUELS

- Different risks & challenges (example: salvage)

PROTOTYPES

- Need change of Insurer's mindset on underwriting
- Data sharing required (sometimes it is a challenge)

In a nutshell...

The Poseidon Principles for Marine Insurance

- Serve as a reporting framework **developed by industry** in collaboration with the Global Maritime Forum and supported by expert advisories.
- **A framework for measuring & reporting emissions** and **promoting collaboration** between financial, insurance and other shipping stakeholders.
- **Promote the decarbonisation of international shipping** by enhancing transparency and collaboration between industry leaders.
- Support the **overall direction set by the IMO**, including decarbonisation targets, and incentivise responsible business practices.



A global framework
for responsible
marine insurance

**Creating common global
baselines with the aim of
integrating climate
considerations into
business activities and
supporting clients to meet
ambitions set by the IMO.**

Source:
Poseidon Principles
A global framework for responsible
marine insurance
April 2025

It is a Voluntary initiative by financial institutions and Marine Insurance industry players.

Originally started by representatives from Citi Bank.

Established framework for assessing and disclosing the climate alignment of financial institutions' shipping portfolios.

- **35 financial institutions and export credit agencies (ECAs) are signatories to the Poseidon Principles**, representing a bank loan portfolio to global shipping of over 80% of the global ship finance portfolio.
- Signatory institutions commit to annually report their portfolio climate alignment and implement the Poseidon Principles into their internal policies, procedures, and standards.
- The Principles aim to assist financial institutions in integrating climate considerations into their lending decisions in line with global climate-related goals.

Technical Guidance to assess ship performance (TG 5, TG 5.1) was updated to reflect the revised 2023 IMO GHG Strategy. Previously aligned with the 2018 IMO GHG Strategy.

- The new metric is based on well-to-wake CO₂-equivalent emissions; whereas the previous was a tank-to-wake CO₂-only metric.
- Remains distance-based (GT * nautical miles) – similar to CII (Carbon Intensity Indicator).

Poseidon Principles – Background – Insurance Industry



POSEIDON
PRINCIPLES



What is the objective?

To create common, global baselines that are consistent with and supportive of society's goals to better enable marine insurers to align their portfolios with responsible environmental impacts.



Which environmental factors?

Climate alignment is the only environmental factor that is considered. Signatories may expand that scope in future if they choose.



Who are they for?

The Poseidon Principles for Marine Insurance are applicable to **marine insurers with H&M coverage (signatories)**, along with other institutions in the marine insurance ecosystem like **brokers and collective groups (affiliate members)**.

- **Same** principles as for the financial institutions apply also for the Insurance industry members
- **Same** metric as the one used for financial institutions

Poseidon Principles – Background – Insurance Industry



Signatories



Affiliate members



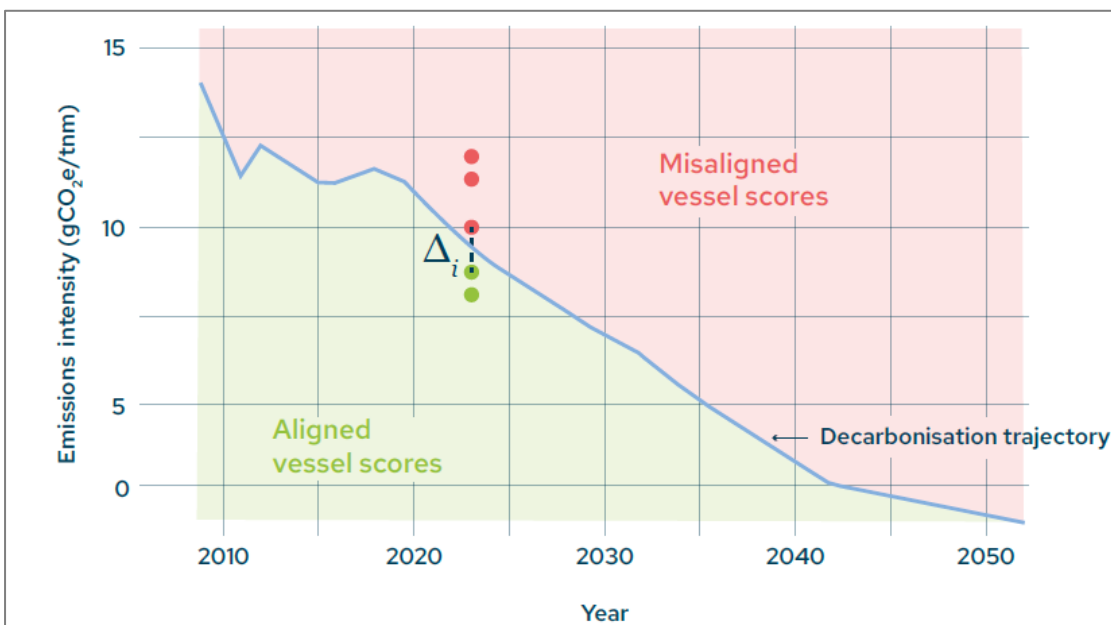
Supporting partner



Methodology

Calculation:

1. Vessel level calculation of the emissions intensity (AER value, similar to CII)
2. is compared to the required emissions intensity set by the associated decarbonization trajectory

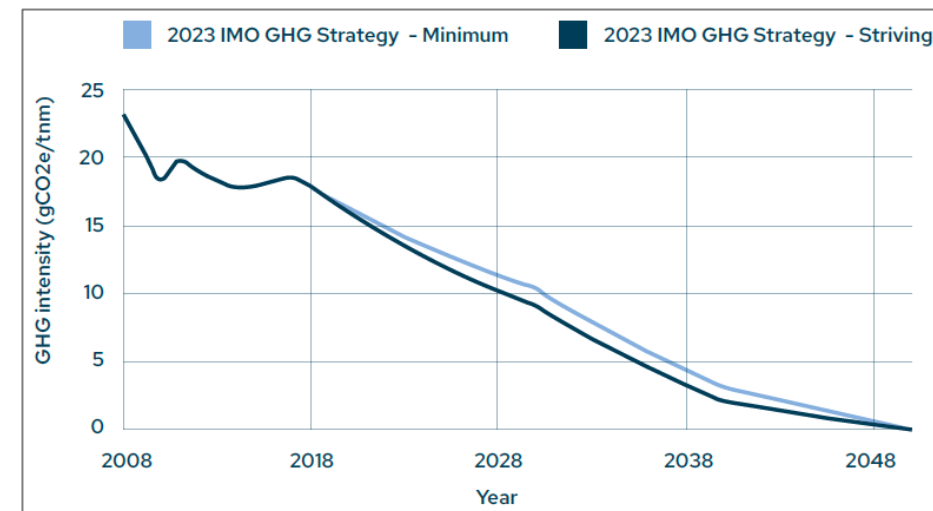


Banks assess the performance of their overall shipping portfolio against the benchmarks established by the Poseidon Principles.

MSC shares data on its own performance with its banking and ECA partners on a yearly basis (IMO DCS).

Old Guideline	New Guideline
Tank-to-Wake	Well-to-Wake
CO2 only	CO2 eq
2018 IMO GHG Strategy	2023 IMO GHG Strategy

- **Minimum**: defined by the minimum requirement of the revised strategy with a 20% reduction in 2030, a 70% reduction in 2040, and net-zero by 2050.
- **Striving**: defined by the higher level of ambition in the revised strategy: with a 30% reduction in 2030, a 80% reduction in 2040 and net-zero by 2050.



Financial Institutions Aware of Issue

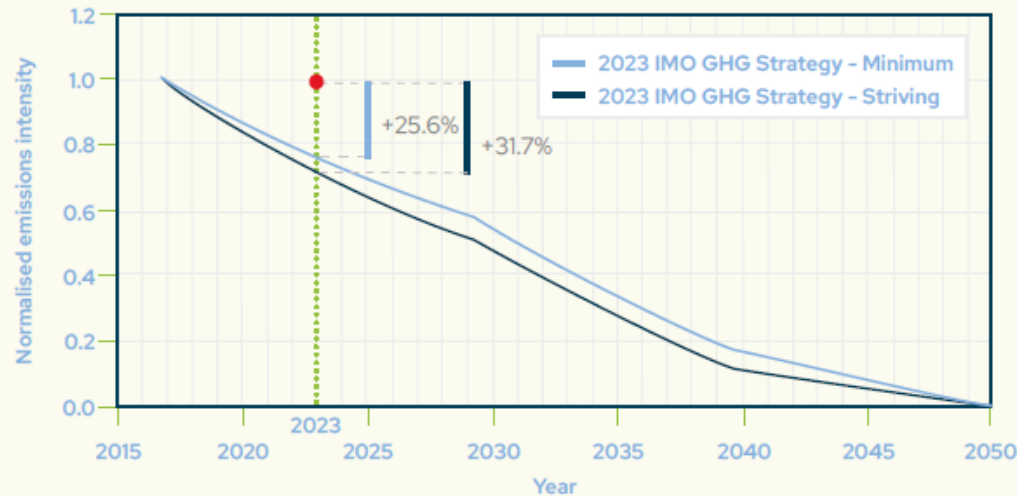


KfW IPEX-Bank

Portfolio climate alignment score

Cargo vessels climate alignment score
 Passenger vessels climate alignment score

	minimum	striving
Portfolio climate alignment score	+25.6%	+31.7%
Cargo vessels climate alignment score	+2.8%	+7.8%
Passenger vessels climate alignment score	+41.3%	+48.1%

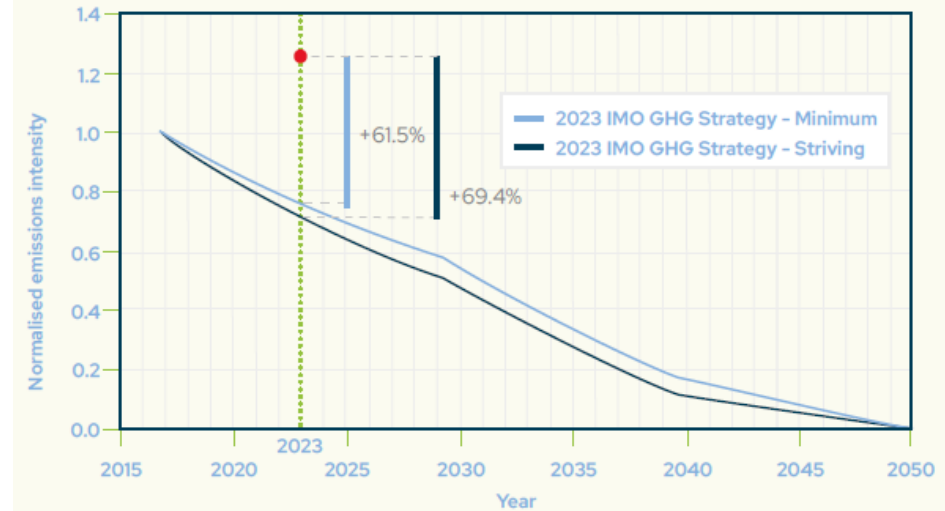


cdp

Portfolio climate alignment score

Passenger vessels climate alignment score

	minimum	striving
Portfolio climate alignment score	+61.5%	+69.4%
Passenger vessels climate alignment score	+61.5%	+69.4%



The decarbonisation of the global economy remains one of the key challenges. We are committed to contribute to this goal and the efficiency improvement in our shipping portfolio is a testament to our continuous efforts. Despite this positive trend cruise vessels continue to present an important opportunity for improvement and innovation. **However, this also requires a review of the AER methodology to properly account for the distinct features of the cruise sector. We strongly support CLIA's initiative at MEPC 82 to move to a time-based AER measurement (cgHRS) and recommend a quick implementation within the Poseidon Principles.** We are convinced that these adjustments will help to set the right incentives for investments in more efficient and innovative cruise vessels.

Sebastian Blum, Global Head of Mobility

➤ Banks are approaching MSC to seek views on how Poseidon can be amended/approved.



Insurance Players are also aware of the issue



POSEIDON
PRINCIPLES

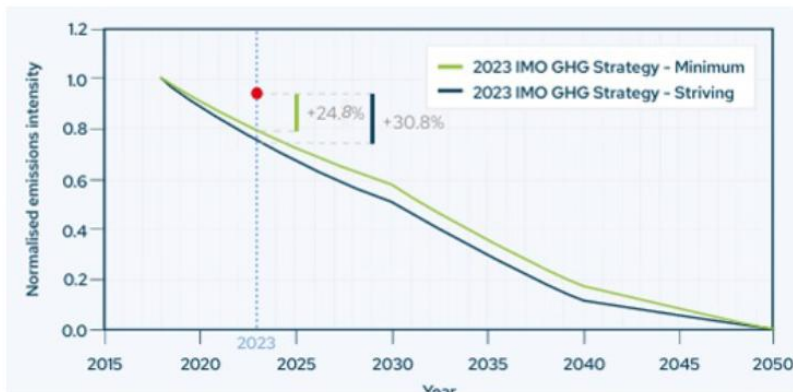
Weighted average climate alignment scores

+24.8% against the **minimum trajectory**

+20.8% simple average

+30.8% against the **striving trajectory**

+26.7% simple average



9 signatories reported climate alignment scores

9 affiliate members re-affirmed their support

10 countries represented

25% of the total deadweight of the world fleet within the reporting scope

Source:
Poseidon Principles
A global framework for responsible marine insurance
April 2025

Why is this relevant for shipowners?



Poseidon Principles

- Part of existing financing contract with banks
- Importance of Marine Insurance for shipping & cruising industry
- MSC is committed to provide the necessary information for the banks and Insurers to assess alignment with Poseidon Principles
- Shipping Financing teams need to report every year to their board the performance of their shipping portfolio against the PP targets
- Only applies to the emissions performance of ships
- Potential future impact on access to finance for future ships
- Potential future impact for insurance solutions and rating – **the position of the Insurers is still unclear in respect of their underwriting assessment & decisions**

Decarbonization Across Industries: Challenges, Opportunities, and Insurance Implications. A focus on the Cruising industry

CONCLUSIONS: SAILING TO NET ZERO

- Net zero emissions 2050 – focus on new technologies and next generation fuels
- No single solution for the shipping & cruising industry
- The transition period will be long – many decades – and not linear
- Dual fuel/ hybrid options will allow gradual integration of lower and potentially zero carbon fuels – biofuels, e-methane, hydrogen mix
- More R&D needed on completely new energy systems such as fuels cells and wind power
- **Collaboration with industry partners (Financial Institutions, Insurance Industry, Shipyards, Engine Manufacturers, fuel suppliers, etc.) and Government guidance and support is essential on this journey**



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CONCLUSIONS: SAILING TO NET ZERO

- Cooperation, innovation, transparency and open dialogue between stakeholders will be key.
- The legal framework (local and international) and the indexes metric setup will surely play a major role.
- It is a challenge but also a great opportunity for the insurance industry to support their clients during this important decarbonization phase.



***Decarbonization Across Industries:
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THANK YOU !



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