



# **Decarbonisation & sustainability update:**

## **What shippers/BCOs should know**

September 2023

Supply Chain Advisors

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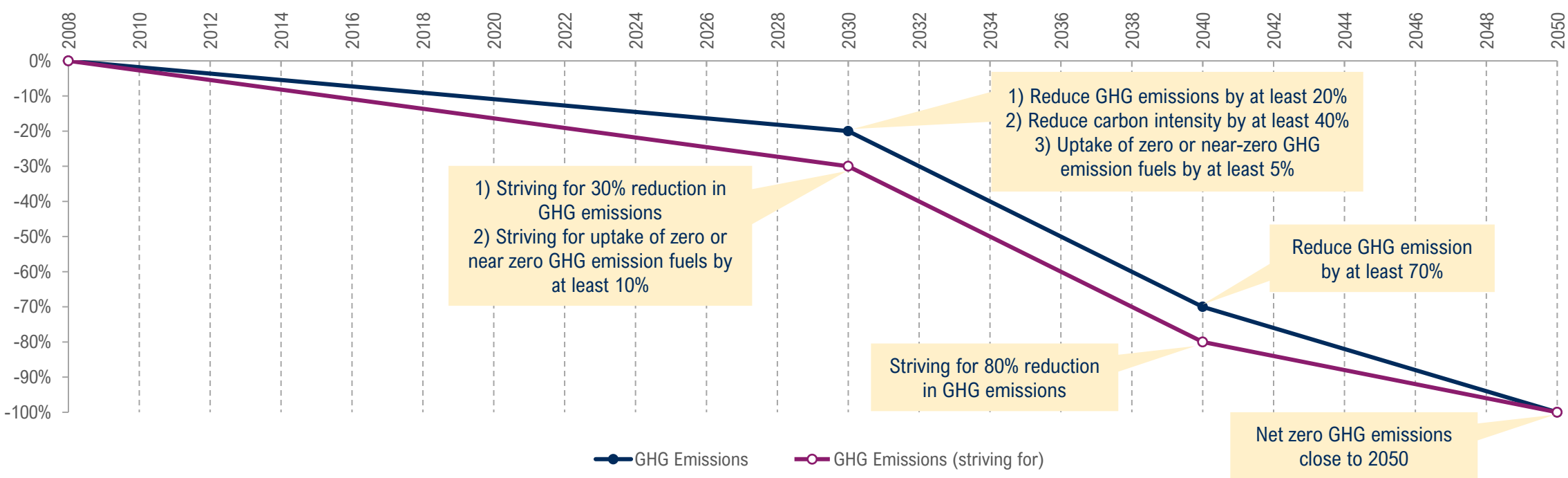
# Why does this topic matter?

Pressures to improve sustainability in logistics and transport procurement, and to reduce Green House Gas (GHG) emissions from shipping, are coming from many sources: new national and international regulations and taxes, pressures from customers, from financial institutions and from corporate management.

Typically, more than 70% of a shipper's/cargo owner's carbon footprint stems from "Scope 3" external emissions and about a third of that directly from container shipping.

Figure 1 shows the current, global reduction targets of the International Maritime Organisation (IMO), following decisions made in July.

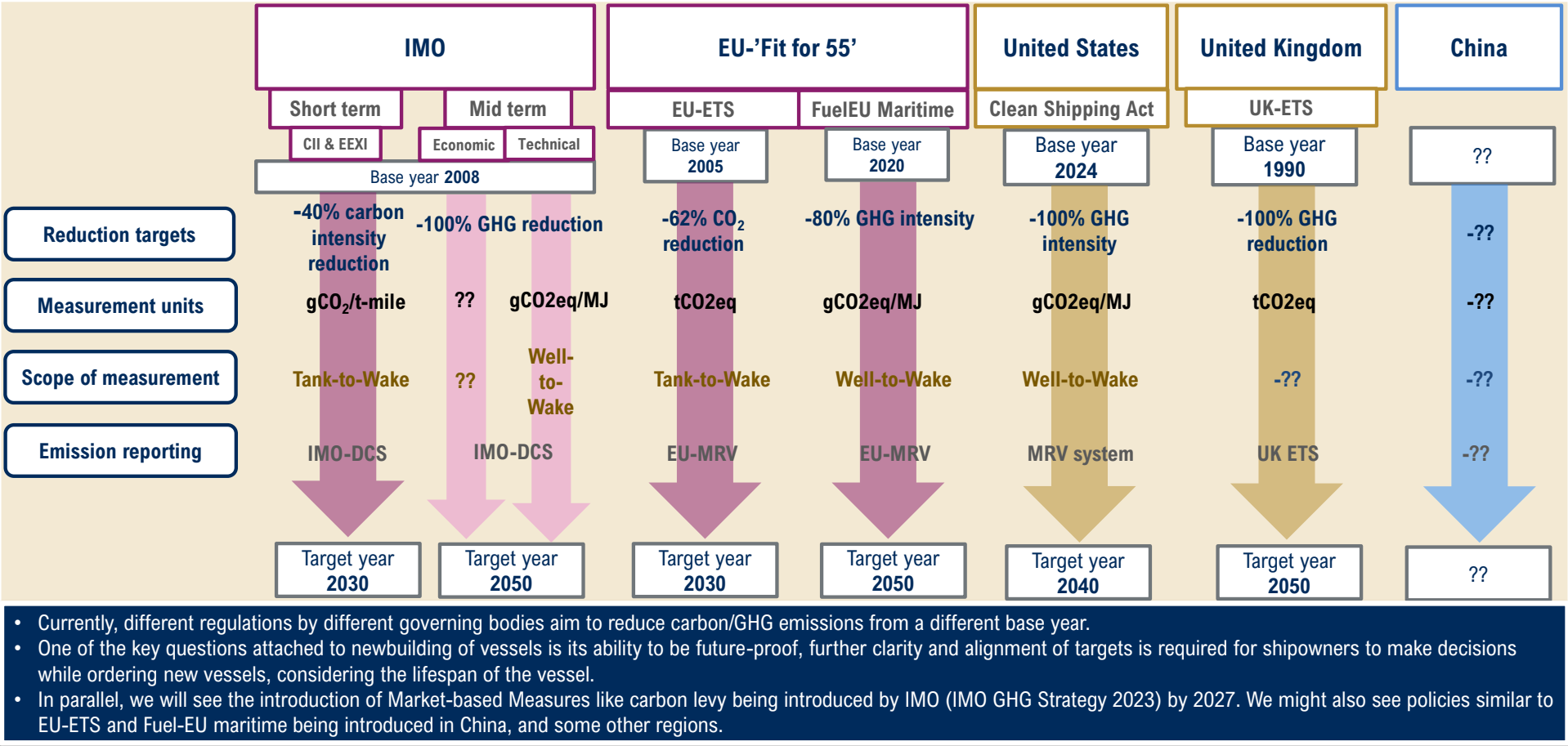
Figure 1 IMO 2023 revised reduction targets for emissions from shipping



# Why does this topic matter?

Key regulatory changes introduced by the IMO recently, and additional regulations being implemented by regulators in the European Union, the US, China and the United Kingdom, are summarised in Figure 2.

Figure 2 global and regional targets in reducing emissions from shipping

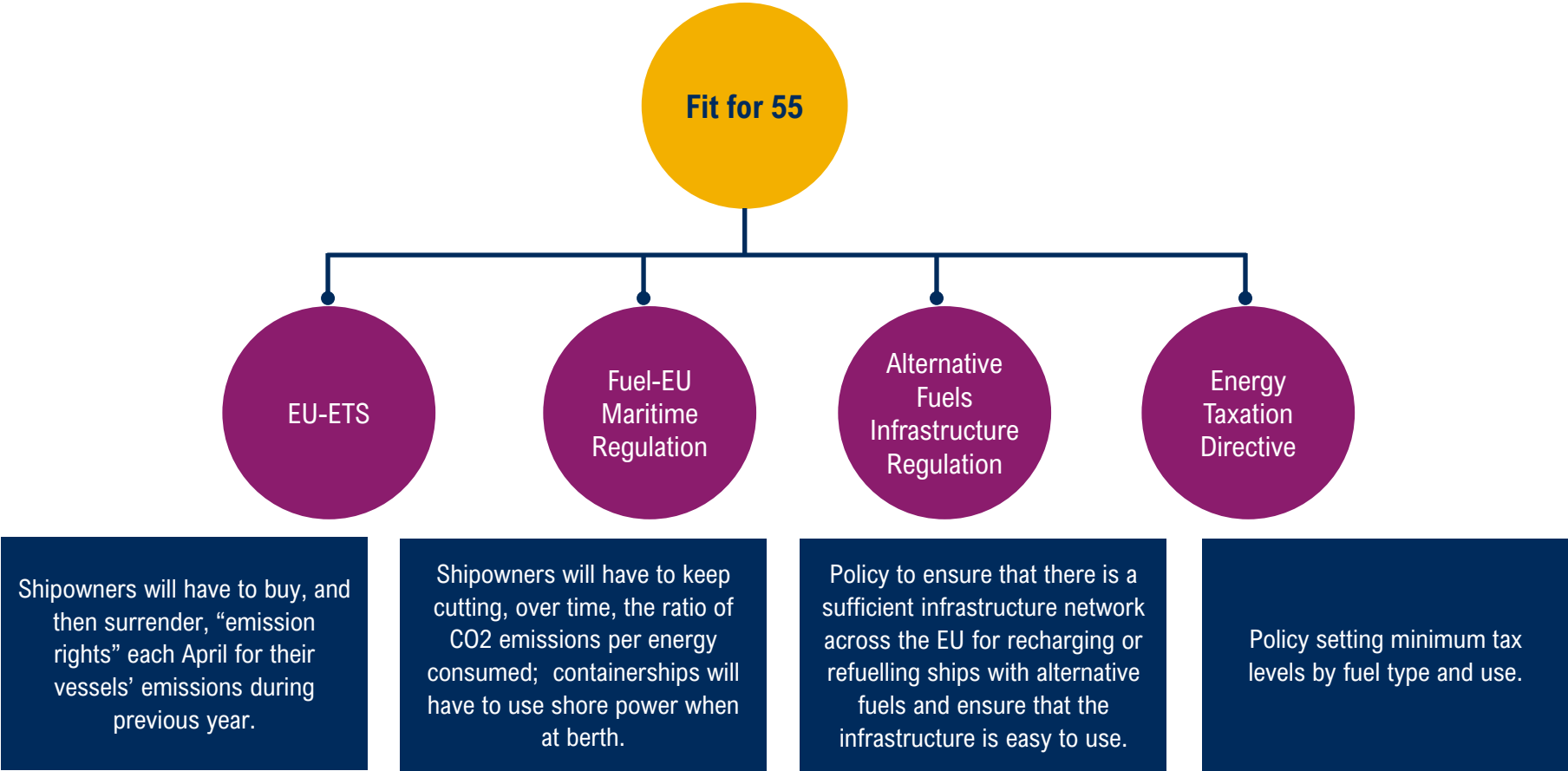




# Why does this topic matter?

The European Union is planning to tighten policies concerning shipping emissions and fuels more than other regions – see Figure 3.

Figure 3 EU “Fit For 55” policies on emissions from shipping, taxes and fuel infrastructures

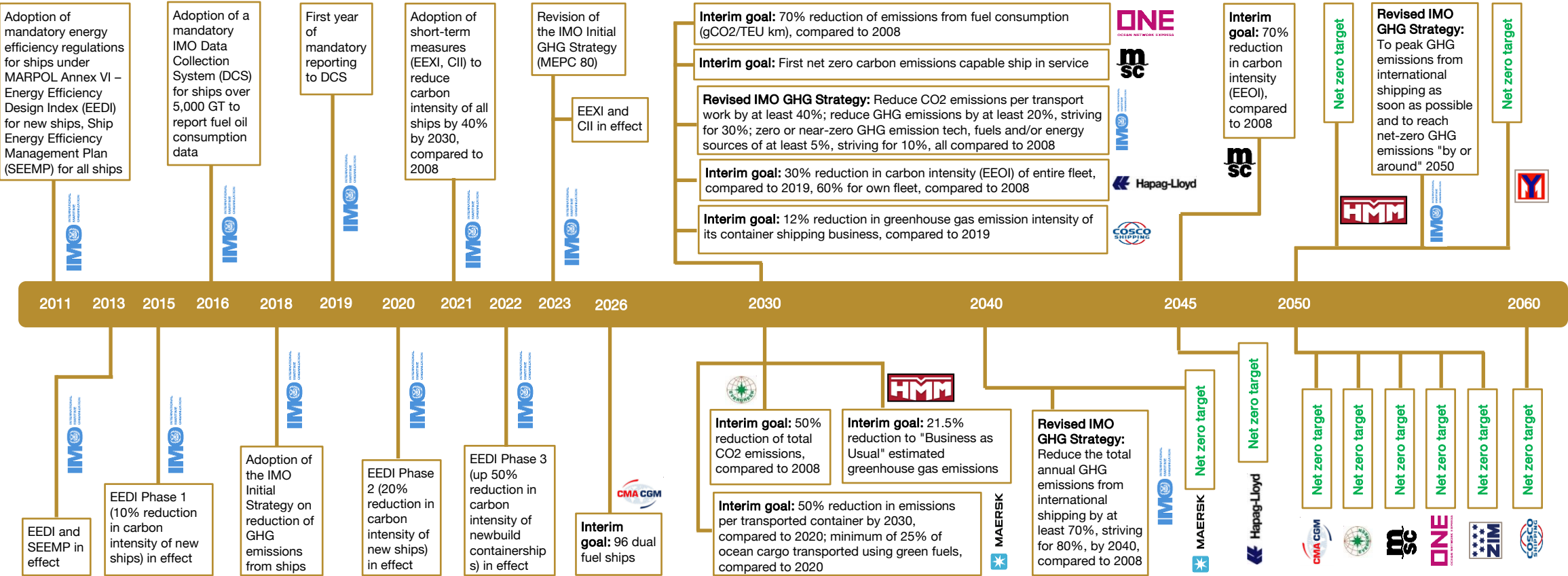


# How will it happen? The carriers' plans.

## Carrier emission goals

From the leading 10 ocean carriers – collectively operating approximately 85% of the active containership fleet – eight have confirmed net zero targets by 2050 at the latest - see Figure 4. One other (Cosco) is aiming for 2060, in line with all Chinese state-owned entities.

Figure 4 IMO latest goals, top 10 carriers' net zero targets, interim goals (updated July 2023)



\* Zim has pledged to improve its fleet's average CO<sub>2</sub> emissions per TEU (gCO<sub>2</sub>/TEU km) every year by 2%.

# How will it happen? The carriers' plans.

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The reality is that the process of cleaning the containership fleet has only just started and will inevitably take time. As things stood on 1 August 2023, approximately 97% of the active fleet, when measured by teu capacity, had main engines which could only use bunker fuel derived from crude oil.

Looking at the orderbook and the net zero targets, although most big carriers have issued aspirational statements that they aim to become carbon neutral by around 2040-2050, few have come up with a concrete roadmap to reach net zero carbon.

The reasons are that shipping is a cost-driven commoditised service and that green fuel is much more expensive than conventional fossil fuel.

## Greener fuel types

Ocean carriers have relied on fossil fuel for decades. The fuel types with the highest GHG emissions are these conventional fossil fuels - Very Low Sulphur Fuel Oil (VLSFO) and Marine Gas Oil (MGO). These also produce the highest emissions.

The greener fuel types either already in use or expected to be used in container shipping are:

- Liquefied Natural Gas (LNG)
- Biofuel and biogas
- Hydrogen
- Ammonia
- Methanol

# How will it happen? The carriers' plans...

Table 1 Quick comparison of the greener fuel types

Fuel type	Pro's	Con's	Industry backers
<b>Liquefied Natural Gas</b>	Lower emissions than fuel oil; technology and infrastructure are available	Not sustainable; engines release methane, which is a much more powerful GHG than CO2	CMA CGM, MSC, Hapag-Lloyd, HMM, Zim, Evergreen and Yang Ming
<b>Biofuel and biogas</b>	Already used as a drop in fuel; sustainable	Insufficient production availability at scale	Hapag-Lloyd, CMA CGM and Evergreen
<b>Hydrogen</b>	Green hydrogen = nearly zero emissions	High cost	
<b>Ammonia</b>	Green hydrogen = nearly zero emissions	High cost; highly toxic	
<b>Methanol</b>	Depending on the production source, methanol produces low or very low emissions; infrastructure is available	High cost; production capacity for green methanol is limited	Evergreen, Maersk, CMA CGM and COSCO

Methanol is becoming the most common greener fuel type for new containerships.

Provided the feedstocks are biological waste (bio-methanol) or renewable electricity (e-methanol), methanol can be 100% sustainable (apart from the 3%-5% fuel oil required as pilot fuel). Currently, grey methanol (which uses LNG as feedstock) is most widely used and relatively plentifully available at relatively competitive prices, but this fuel type only provides a +/- 20% reduction in CO2 emissions while requiring more frequent bunkering due to its lower energy content. Maersk has made strong commitments with 9 energy providers to create a supply of 'green methanol', a combination of e- and bio-methanol, in major shipping regions, needed for its soon to be 19 methanol-enabled container vessels.

Many carriers have ordered greener "dual-fuel" ships, which can work on both more polluting and greener fuel types, even though the carriers have no certainty that there will be enough supply of green fuel in the future, and that port infrastructures will be available to supply the new green fuel.

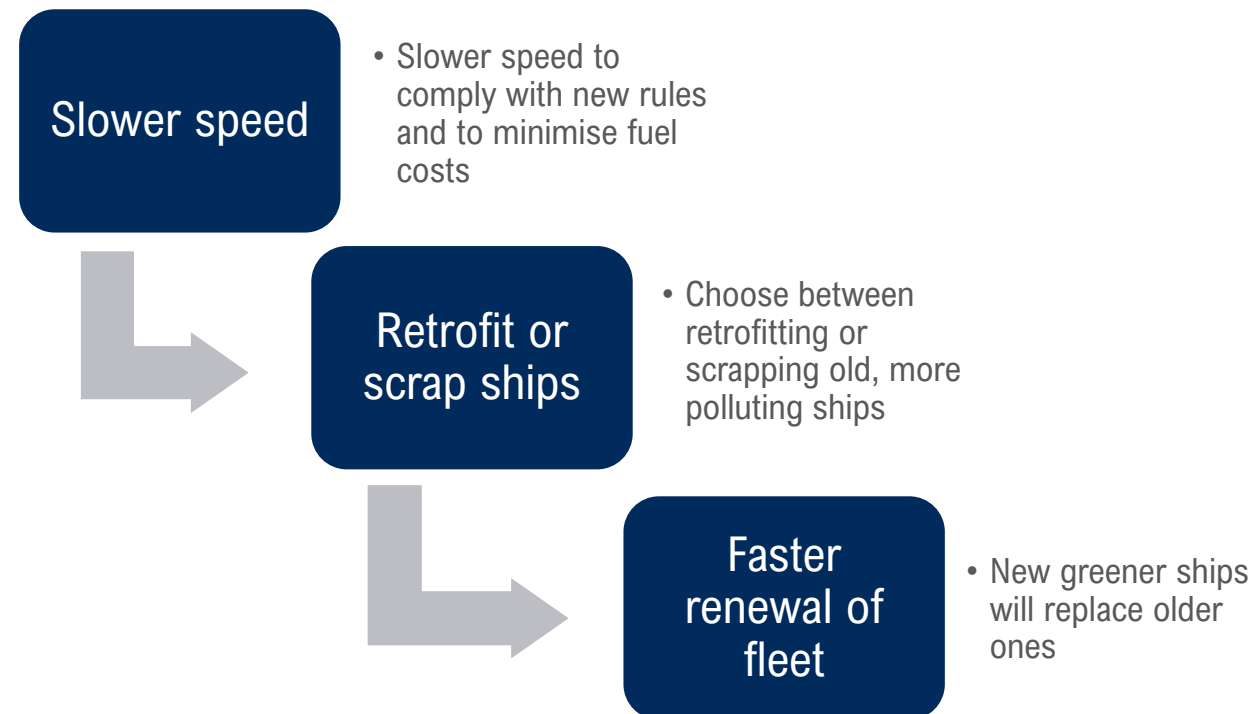


# How will it happen? The carriers' plans.

## Effect on capacity

New regulations to reduce emissions from shipping will affect ship capacity in 3 ways, mainly resulting in less capacity.

**Figure 5 Effect of decarbonisation regulations on ship capacity**



# How will it happen? The carriers' plans.

The supply side of the market is likely to split into different tiers of vessels, based on environmental or CII performance. Those ships at the bottom will be least likely to find employment (or to be accepted by shippers) and those at the top will be likely to attract a price premium. Such tiers will likely reduce the flexibility and total potential capacity of the fleet.

Unless and until regulators ban fossil fuel-powered ships, there will likely be no shortage of ship capacity, but the prospect of slower ships is high.

Looking at the orderbook of new containerships, whereas 40% of ship capacity on order is intended to be sailed solely by conventional marine fuel, the balance of 60% will be able to use greener fuels.

In relative terms, CMA CGM has the largest share of its deployed fleet classed as “green” (14%), followed by Hapag-Lloyd and Zim (both around 8%). Maersk is just about to take delivery of its first green containership.

Figure 6 “Green” share of current fleet (1 August 2023)

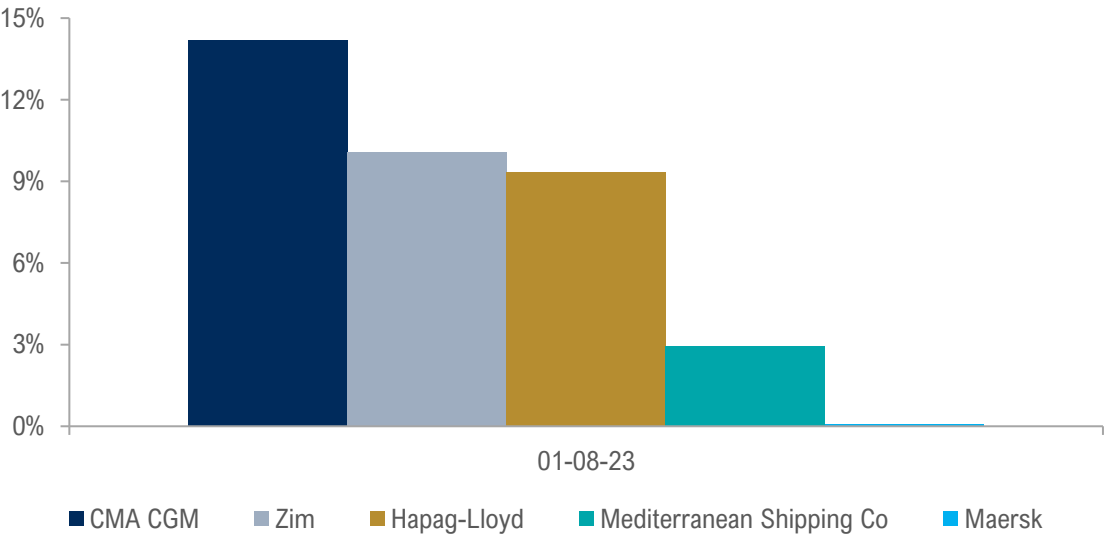
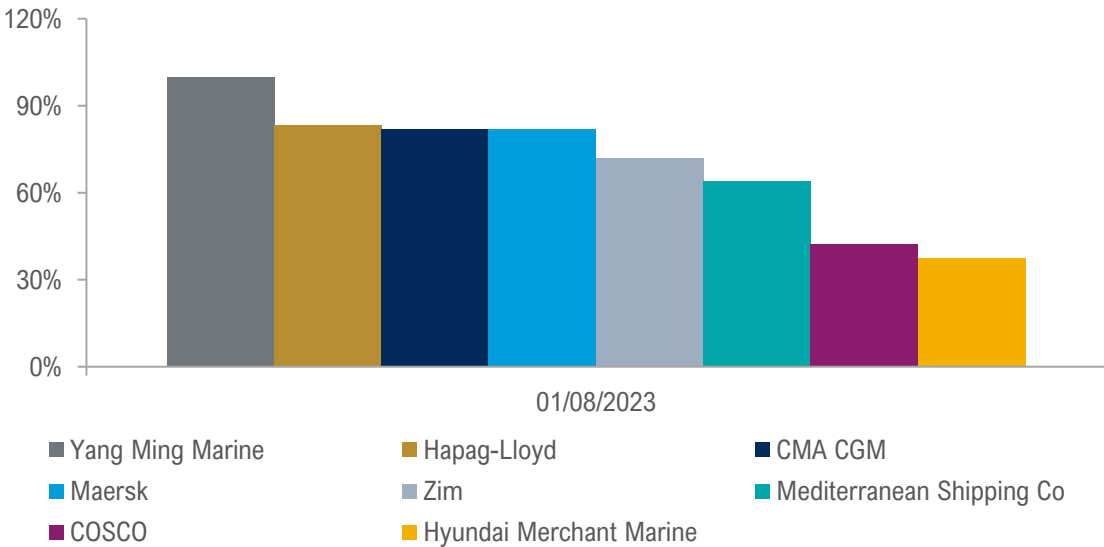


Figure 7 “Green” share of orderbook (1 August 2023)



# When will shippers be impacted?

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Shippers should already plan and assess the extra costs of decarbonisation in shipping, because the cost increases are likely to start from January 2024. The EU carbon taxes will start to apply from January 2024.

Expect longer transit times on most routes, too.

As more and more greener ships are introduced, the average fuel cost per shipment will rise. We expect fuel taxes to keep rising as the emission reduction targets become more demanding over time. Indeed, if insufficient progress is made, we might even see governments banning the use of certain fuel types altogether to ensure that the recently ordered dual-fuel capable vessels actually use the least polluting fuels. It is difficult to predict when carbon taxes will be raised, but shippers need to watch this closely.

Over time, green shipping will become more expensive and we may find that some low-value products will become uncompetitive in distant markets.

With corporate sustainability programmes within large companies already playing a role, more shippers are starting to define and implement new policies on sustainability within transport procurement and carrier management – on a voluntary basis.

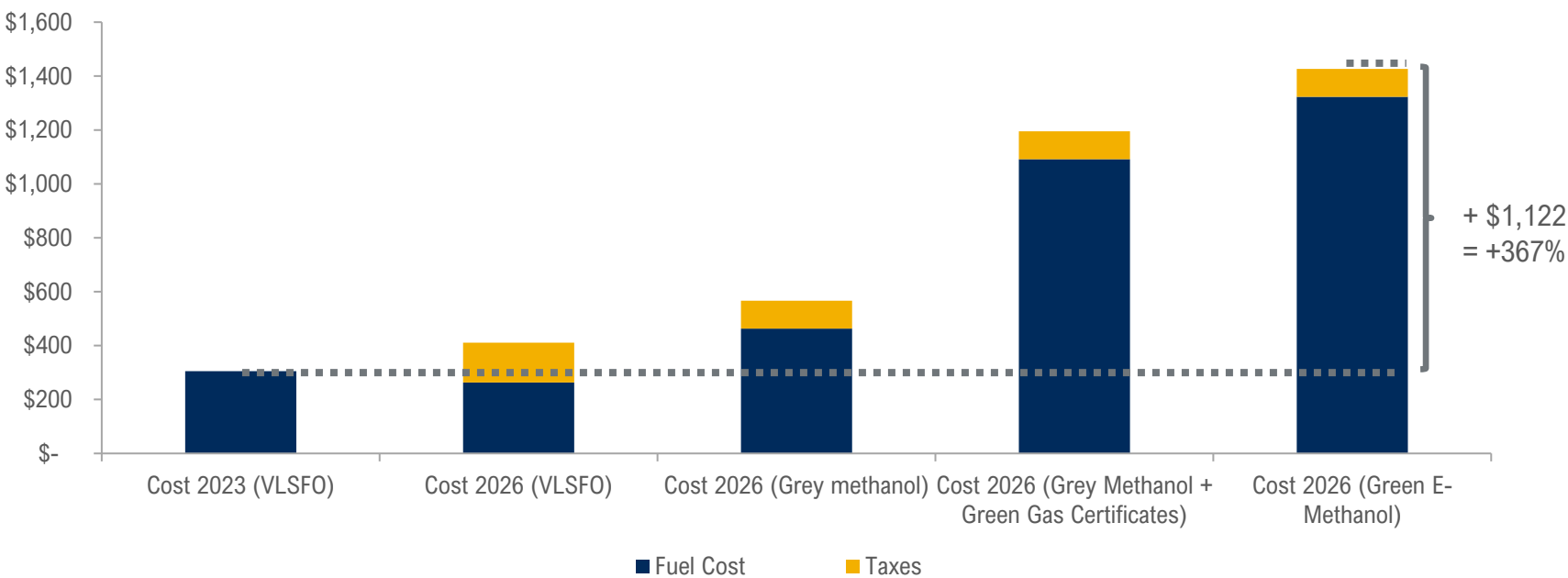
# How much will it cost and how to calculate the cost?

Drewry expects that ocean carriers will start to introduce pass-through environmental costs in 2024-26, as the regulations (EU Emission Trading Scheme and Carbon Intensity Indicator) are implemented and tightened.

Shippers will for certain soon be facing additional costs related to the green transition, but what we don't know at this stage is how much it will be and if it will be standardised at a global level, or done piecemeal on a regional basis.

Based on current regulations and available data, Drewry has calculated that new green fuels will be far more expensive than the regularly used VLSFO fuel, despite initial plans by the European Union to tax fossil fuel more – see Figure 8. Green fuel will cost up to 4 times the current fossil fuel.

**Figure 8 2023-26 Forecast of fuel cost and associated tax, by fuel type (US\$ per 40ft)**



Note: based on a representative Asia-North Europe service employing 20,000 teu vessels, carbon cost 100EUR per ton CO2.

# How to monitor?

Logistics Service Providers (LSPs) have tools to estimate the carbon footprint of individual shipments and some also provide customised monitoring reports for shippers. If a shipper uses multiple LSPs or multiple ocean carriers, the risk is that the different reports use different methodologies and CO2 estimates and it may be better to rely on the estimates from a specialised third party.

Many such companies specialising in providing CO2 and other GHG emission estimates for a given shipper's cargoes can be used by shippers. To help BCOs select one, Drewry has published an "Emission Measurement Providers Comparison Guide". We contacted 19 GLEC certified service providers and, based on a structured questionnaire, ranked the 9 that participated, as shown in Figure 9. Based on our understanding of what a BCO values most from an Emissions Measurement provider, our top 3 providers are Searoutes, Pledge and Routescanner. You can download the [Emission Measurement Providers Comparison Guide](https://www.drewry.co.uk/emission-guide) from: <https://www.drewry.co.uk/emission-guide>

**Table 2 Ranking table of providers of emissions measuring and management services**

Vendor	Accuracy	Fuel	Scope	Accreditation	Integration	Future	Total
Searoutes SAS	1.6	1.0	0.8	0.5	3.0	2.0	8.9
Pledge Earth Technologies Ltd.	0.5	0.7	1.0	1.0	3.0	1.3	7.5
Routescanner	1.4	0.3	0.8	1.0	3.0	0.7	7.2
IVE mbH	1.6	1.0	1.0	1.0	1.0	1.3	7.0
BigMile	0.5	1.0	1.0	0.5	2.0	2.0	7.0
VesselBot	1.6	0.7	1.0	0.5	1.0	2.0	6.8
GreenRouter S.r.l.	0.8	0.7	0.8	1.0	2.0	1.3	6.6
Sustaining Supply Chains B.V.	0.1	0.3	1.0	0.5	3.0	0.7	5.6
Climatiq	0.4	0.3	1.0	0.5	1.0	0.7	3.9

Measuring Scope 3 emissions could be a time-consuming task (bottom-up emissions by shipment is simply not available) and could give a distorted view if the methodology or the source are not reliable.

Furthermore, actual emissions data by ship is reported by shipowners with a delay, which means that standardised estimates of emissions by container are required to monitor emissions from shipping by route and by ocean carrier or by LSP.



# How to plan?

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To support the decarbonisation of their companies' supply chains, logistics and transport procurement managers need to understand the issues, the regulations, the possible technologies and to define strategic, tactical and operational plans or partnerships, both short term and long term.

When organising workshops for shippers on how to become a “Sustainable Shipper”, Drewry recommends looking at 3 aspects:

- Lead – A comprehensive sustainability strategy is developed matching the scale of transportation efforts for the immediate term, mid term and long term. Clear ambitions and measurable outcomes defined;
- Evaluate – Sustainability metrics and performance guidelines are in play to bring transparency. Targets support the progressive sustainability focused effort of year over year advances. Expectations clear around ways of working (including service level and program level contracts);
- Responsibility - Active engagement by key stakeholders (including LSPs). Clear organization governance structures to ensure accountability to implementing sustainability strategies and achieving targets.

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