BRIEFING - JULY 2025

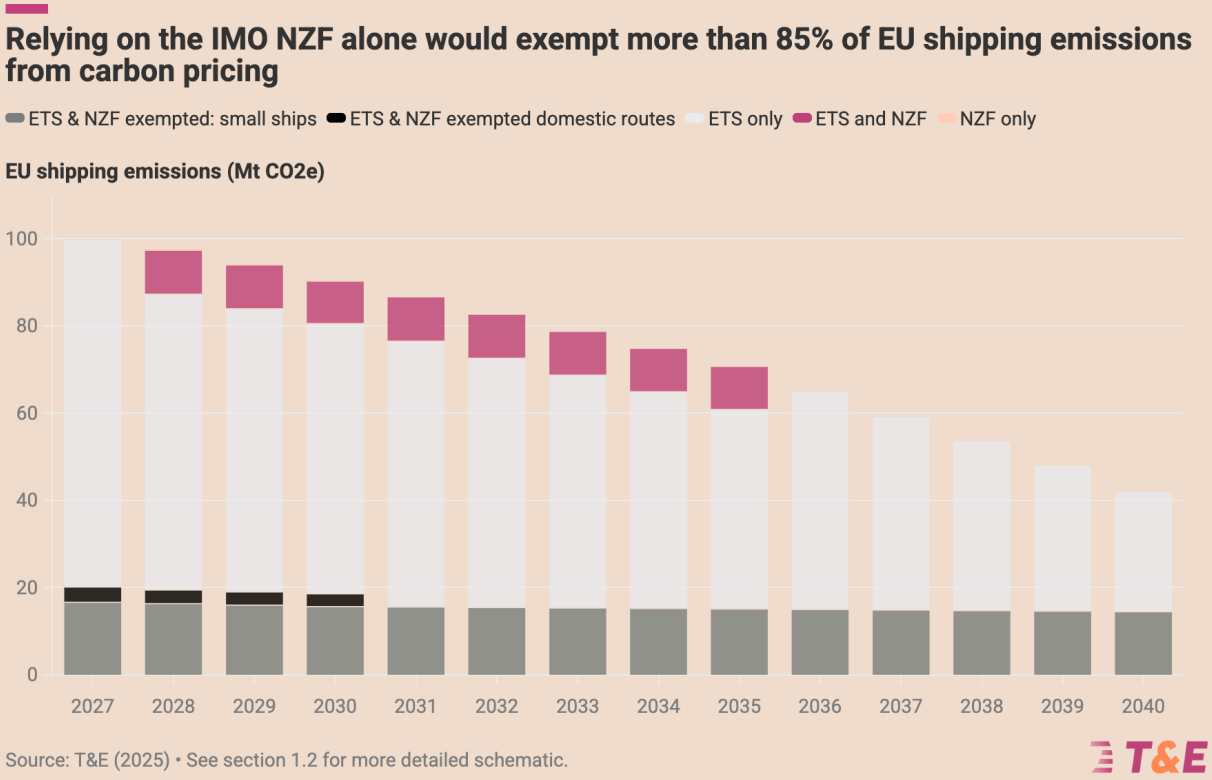
Towards 2040: a strengthened ETS to support the transition of the shipping sector

T&E's contribution to the Commission consultation on the review of the EU ETS

This briefing sets out T&E's key recommendations for strengthening the EU Emissions Trading System (ETS) for the maritime sector, in view of the upcoming policy review and the 2040 EU climate target. T&E highlights the need to maintain both the EU ETS and the IMO's Net Zero Framework (NZF), as neither alone is sufficient to fulfil shipping's share of climate action.

Key recommendations

Ensuring an effective climate cost of emitting GHG. While the IMO's framework marks progress in the global climate regime, it lacks ambition in ensuring that shipping polluters pay for their share of pollution. The ETS is a critical tool for achieving the EU's climate targets for the maritime sector and cannot be replaced by the IMO's NZF, which leaves above 85% of EU shipping emissions unpriced. Despite being a regional measure, the ETS is expected to generate as much revenue (~€10 billion/year) in Europe, as the IMO measure does globally (~$10 billion/year). A portion of ETS funds should be reinvested in green e-fuel production in Europe in order to support the decarbonization of shipping and enhance EU strategic autonomy. Both systems are necessary, especially as neither is sufficient on its own to meet EU climate objectives or cover the true climate cost of emissions.



Extending the ETS to vessels between 400 and 5000 GT. Smaller ships between 400 and 5000 GT are currently excluded from the EU ETS, despite representing a notable share of maritime traffic and contributing significantly to GHG and air pollutant emissions, particularly in coastal areas. Including these vessels in the ETS would create necessary incentives and generate revenues to support their decarbonisation. The required technologies, such as battery-electric, hydrogen-based, and hybrid

propulsion, are already commercially available and well-suited to these vessel types, given their lower energy needs and fixed routes. However, uptake remains limited without policy-driven incentives.

To minimise administrative burden while maintaining environmental ambition, a dual approach is recommended: vessels operating predominantly between EEA ports could fall under ETS 2, with upstream carbon pricing and simplified reporting. Other small vessels could be included in ETS 1, with adapted 'MRV-light' requirements to ease compliance. This differentiated inclusion would support clean technology deployment, help reduce emissions, and contribute to a fair and effective EU maritime climate strategy.

Removing exemptions for ferries that can already be electrified. The ETS exempts certain ferry routes between small EU islands and the mainland until 2030, based on population and lack of land connections. However, many of these short-sea routes could already be serviced by existing electric or hybrid ship technologies, which are capable of covering the distances involved. This suggests the exemptions may no longer be necessary and could be phased-out by 2028, as clean alternatives are readily available.

Considering additional carbon leakage safeguards. While solid and consistent evidence for ETS evasion is lacking, the EU could already consider developing additional safeguards to further disincentivise shipowners from exploring evasive behaviour. This, for example, could be achieved by switching to a container-based ETS application on a limited number of routes which are theoretically more sensitive to potential evasion (see section 3 for further details). This so-called 'CBAM approach' for shipping would apply ETS carbon price on maritime emissions from imported/exported containerised cargo from the **origin-to-destination basis** (as opposed to first/last leg of ship voyages) if these containers are transhipped via the non-EEA transhipment hubs in the EU neighbourhood. This would further reduce the incentive to replace EU transhipment activities with non-EU ones using small feeder vessels.

Additionally, the Commission should consider reducing the 65% transhipment ratio for adding other evasion-risky non-EU ports to the existing safeguard under the ETS.

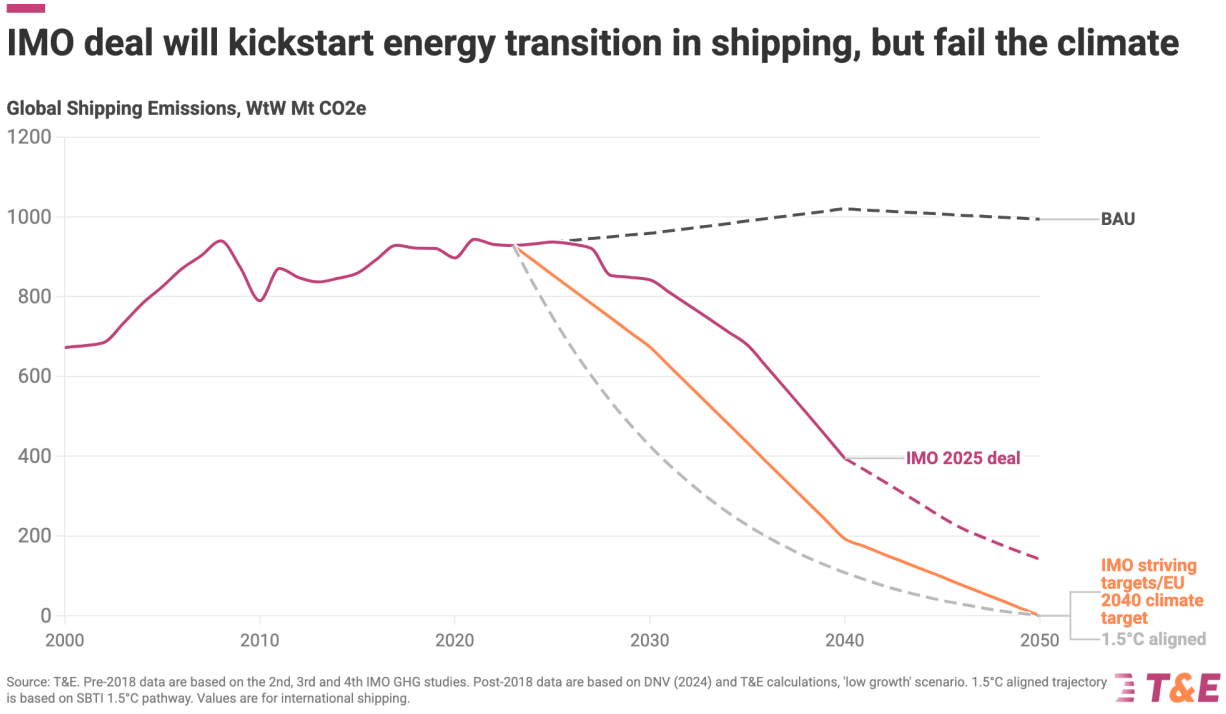
Aligning alternative fuels eligibility across EU ETS and FuelEU Maritime. To ensure consistency and environmental integrity, the ETS should align with FuelEU Maritime's ban on first-generation biofuels, which are linked to deforestation, higher emissions, and biodiversity loss due to indirect land-use change.

1. Both the IMO NZF and EU ETS systems are needed to meet climate targets

As the cornerstone of the EU climate architecture, the ETS is an essential tool to reach EU climate targets and internalise the climate costs of emitting GHG. The social cost of climate change is huge: €180 euros per tonne of CO_2 according to the German Environment Agency, which is significantly higher than the ETS carbon price and IMO NZF penalty costs combined. This justifies application of both systems on EU-related shipping.

1.1. The IMO NZF will miss IMO and EU climate targets

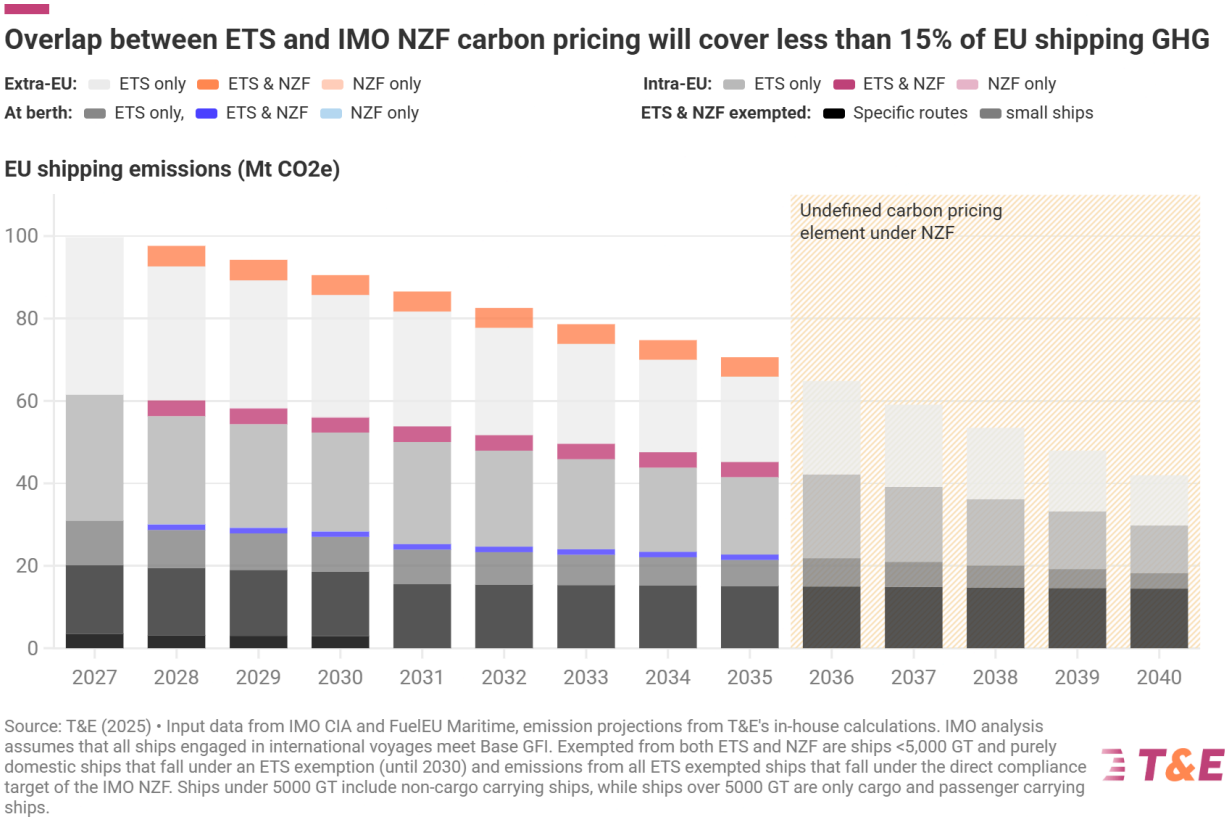
The IMO NZF, expected to be adopted in October, represents progress in global climate negotiations. However, if fully implemented as agreed, it will still miss the IMO's own climate targets under the 2023 GHG Strategy, as well as the EU's forthcoming 2040 economy-wide 90% emission reduction climate target. This necessitates EU Fit for 55 legislation to go beyond the IMO NZF's ambition. Carbon pricing under the ETS has an essential role to play in capping and pricing unabated emissions.



1.2 The overlap between IMO and EU carbon pricing covers less than 15% of EU shipping emissions

The IMO NZF applies to large ships above 5000 GT and engaged in international voyages with no route or flag specific exemptions. In that regard, the regulatory scope of application is fairly expansive. The NZF has also an indirect carbon pricing element, which is operationalised via soft penalties (Tier I RUs). These soft penalties will be applied on emissions that take place

in-between the Base and Direct compliance GFI trajectories, which ships will have to meet. The gap between these GFI trajectories is very narrow under the current NZF draft likely to be adopted at MEPC83. Overlaying the emissions priced indirectly by the NZF and the EU ETS shows that on average, only 15% of emissions priced under the EU ETS each year will also be priced under NZF. This means that applying only the IMO NZF would exempt over 85% of total EU-related shipping emissions (including those not falling under the ETS) from carbon pricing.



Source: T&E (2025) • Input data from IMO CIA and FuelEU Maritime, emission projections from T&E's in-house calculations. IMO analysis assumes that all ships engaged in international voyages meet Base GFI. Exempted from both ETS and NZF are ships <5,000 GT and purely domestic ships that fall under an ETS exemption (until 2030) and emissions from all ETS exempted ships that fall under the direct compliance target of the IMO NZF. Ships under 5000 GT include non-cargo carrying ships, while ships over 5000 GT are only cargo and passenger carrying ships.

In addition, as the IMO NZF exempts so many emissions from carbon pricing, the EU should consider extending the ETS scope to cover 100% of extra EEA voyages, instead of the current 50%.

1.3 ETS revenues will be essential to support European marine e-fuels deployment

Sustainable and scalable alternative marine fuels are CAPEX intensive, while market-driven demand for these fuels will be negligible in the short-term. This necessitates significant financial support to reduce the gap between their high production costs and the low willingness to pay by the industry. To enable this, significant funds will need to be mobilised.

T&E's analysis estimates that the shipping ETS will generate **around €10 billion/year in Europe alone** when it is fully phased in, which is as much as the global ~$10 billion/year revenues from the IMO system. We have also estimated that 25% of these revenues can be sufficient to support around a 5% uptake of **made-in-Europe** marine e-fuels by 2030.

To ensure that shipping's energy transition goes hand-in-hand with ensuring its strategic autonomy, investing in green fuel production in Europe is essential. Revenues to be generated by the IMO NZF will be modest for the size of the global market and it is unlikely that Europe will receive a significant portion of these funds to support its home-grown green fuels industry. This makes continued carbon pricing via the ETS ever more important in parallel to implementing the IMO NZF.

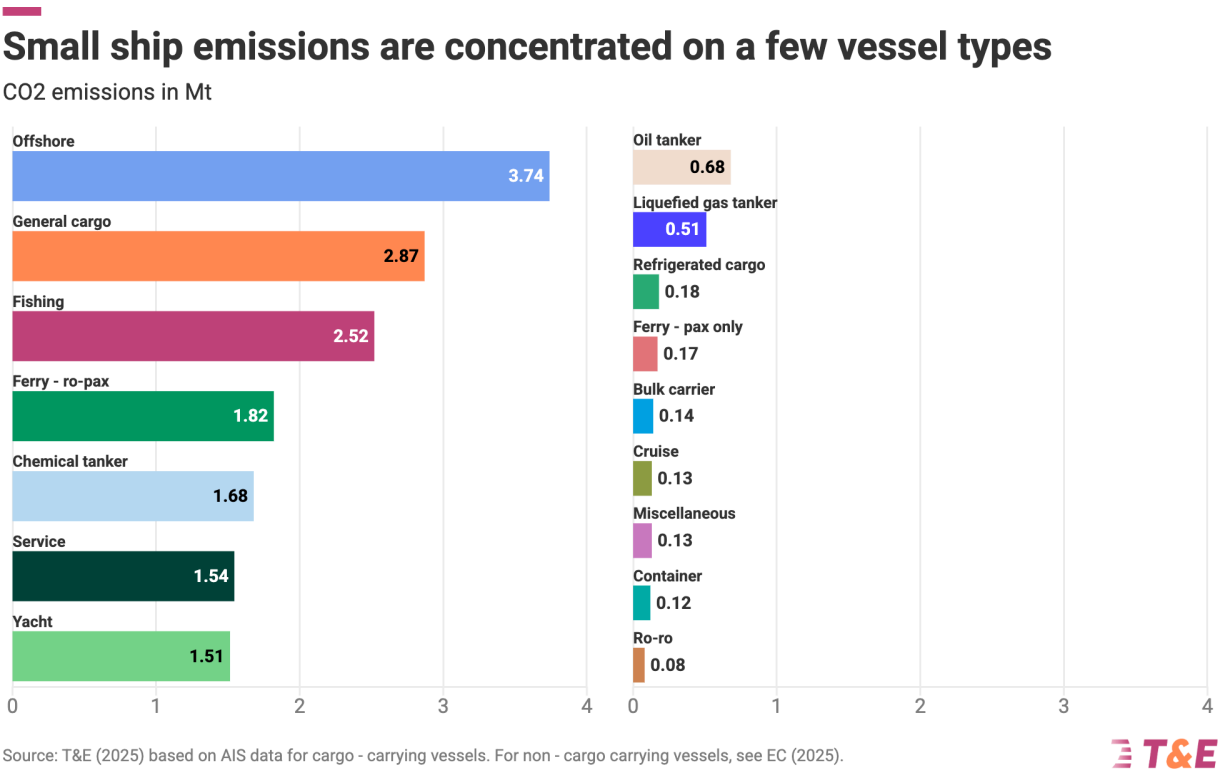
2. Extending the ETS to small vessels could cover around 18 Mt more emissions and generate €1.5 billion extra per year in 2026

Smaller ships of between 400 and 5000 gross tonnage (GT) are currently excluded from the EU ETS. At least **7500 vessels** fall in this category, **emitting 17.8 Mt of CO_2** per year, in addition to generating significant air pollution in coastal areas. Extending the ETS to cover these smaller vessels can create the necessary incentives and resources to invest in their decarbonisation.

ETS coverage could increase by up to 20% if small vessels were included

CO2 emissions by ship categories in M tonnes of CO2

Source: T&E (2025) based on 2023 MRV and AIS data. Non cargo - carrying emissions for small vessels are from European Commission (2025) • For large vessels, only cargo - carrying vessels are included. For small ships, all vessel types are included.



The inclusion of smaller ships would also generate significant revenues, on average **around 2.4 billion annually, between 2028 and 2035**, most of which would go directly to Member States to support the decarbonisation of the sector.

Technology for these ship types, especially battery-electric and hydrogen-based propulsion, is ready. What is missing is the policy-driven incentives.

2.1 ETS 1 vs ETS 2 for small ships

The success of EU policy will depend on finding a balance between minimal administrative costs and the highest environmental ambition. The Commission report on the MRV for small ships highlights this dilemma.

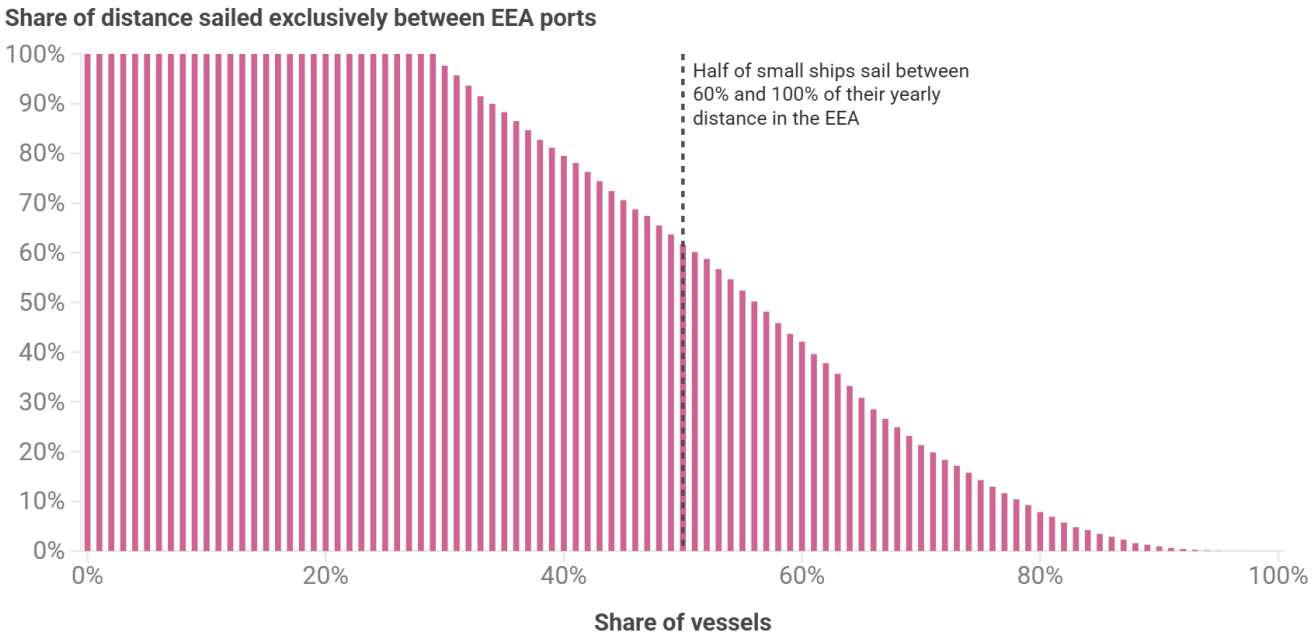
In order to constructively contribute to addressing this challenge, T&E would recommend considering the following options for incorporating small ships (400-5000 GT) into the EU carbon pricing scheme.

- Small vessels that sail more than e.g. 80% of total annual distance on *voyages between EEA ports* (or between EEA and third country ports that apply comparable carbon prices) can be incorporated into ETS 2, which applies a carbon price at the upstream level, i.e. at the point of fuel sales. This would minimise the admin burden as the fuel suppliers will be responsible for ETS compliance, while ships will be required to perform only an *MRV-light*, most likely limited to monitoring annual fuel consumption, fuel types and operational hours.
- Other small vessels can be incorporated into ETS 1 in order to avoid tankering, i.e. refuelling in third-party ports, hence avoiding upstream ETS application. Even under this

option, an *MRV-light* can be considered in order to reduce admin costs on small operators.

Fig. 5 below clearly shows that small ships that would fall under the EU MRV sail predominantly within the EEA, reinforcing the importance of targeting these vessels under the EU carbon pricing scheme. Given this concentration, a well-designed, low-burden MRV and ETS approach—such as upstream pricing for EEA-operating small ships—can deliver strong environmental benefits while keeping administrative costs manageable.

30% of of small vessels sail exclusively between EEA ports



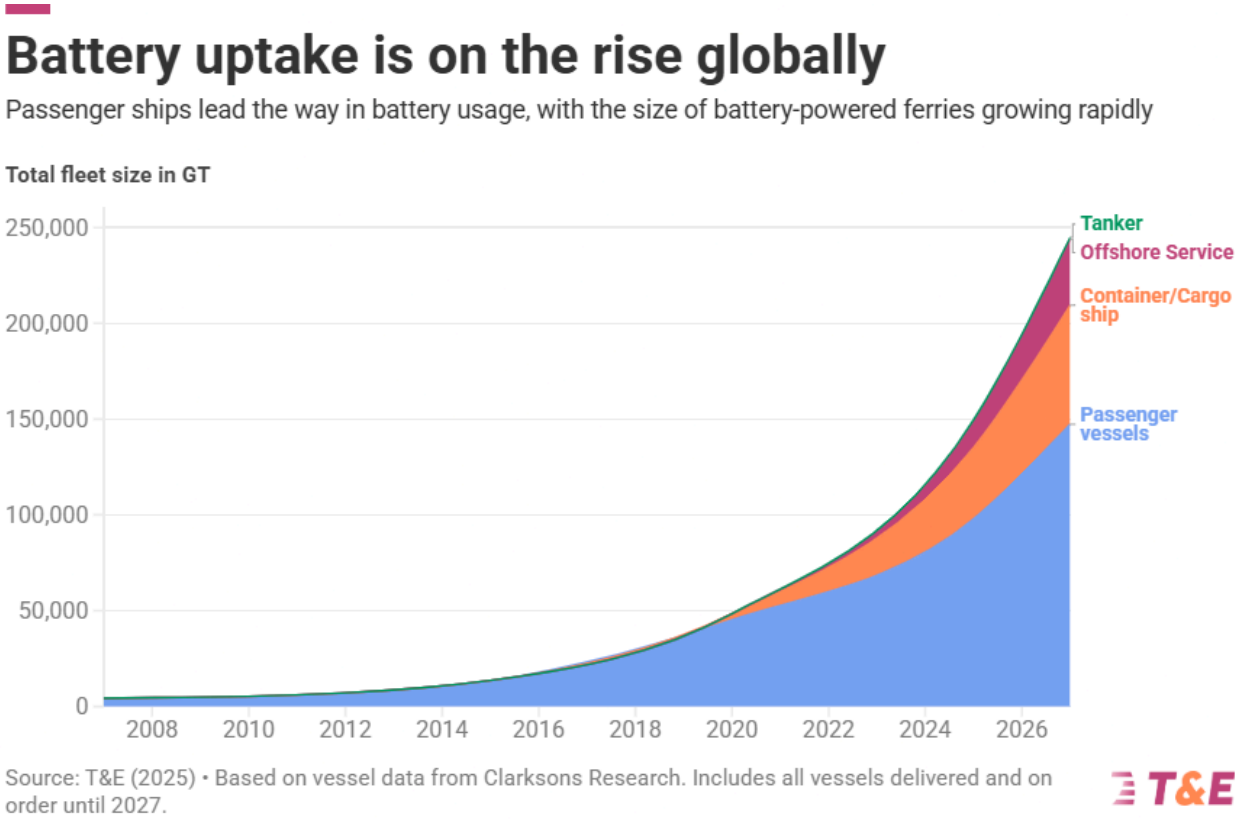
T&E (2025) based on AIS data. Includes all cargo-carrying vessels between 400 and 5000 GT calling at least once at an EEA port in 2023. Percentage is 'distance sailed between EEA ports' over 'total global distance sailed' in 2023.

2.2 Incentivising clean technologies via the ETS for small vessels

Technologies to decarbonise smaller ships are more mature. As these ships require less energy for propulsion due to their lower cargo capacity and shorter typical sailing distances, smaller ships are well-suited for battery-electric propulsion, which is currently being mass deployed in road transport. For instance, some electric ferries and harbor vessels already operate successfully on batteries. Many small vessels (e.g., ferries, tugboats, inland cargo ships) also operate on fixed routes, facilitating the installation of shore-side charging or refueling infrastructure.

Technologies like battery-electric, hydrogen-powered or hybrid propulsion systems are already commercially deployed for small vessels, but their numbers still remain limited compared to the size of the fleet.

Therefore, inclusion of small vessels into the ETS will represent an essential incentive for shipowners to further develop and deploy these technologies as they renew their fleet, thereby helping energy transition, energy efficiency and reduction in climate and environmental pollution in European ports and along the coastline.



2.3 Phasing-out of other exemptions by 2028 to incentivise transition

The ETS extension to the maritime sector provides exemptions for specific ships connecting EU Member States' small islands with the mainland. Emissions of passenger ships and ferries (pax-only and ro-pax ships) are fully exempted for certain voyages between ports in the same Member State, until 2030. Conditions include a population below 200,000 permanent residents, as well as no road or rail connection with the mainland (as per the official list).

However, most of these voyages could be covered by fully electrified or hybrid powered ships already, therefore removing the need for exemptions. For example, new large ferry designs offer fully battery electric propulsion opportunities with up to 160 km range. This makes them perfectly suitable for many of the voyages currently exempted under the ETS, especially for routes with frequent voyages. For example, in Spain, the distance between Ibiza (exempted port) to Denia represents 146 km, while there is only 36 km between Capri (another exempted port) and Napoli.

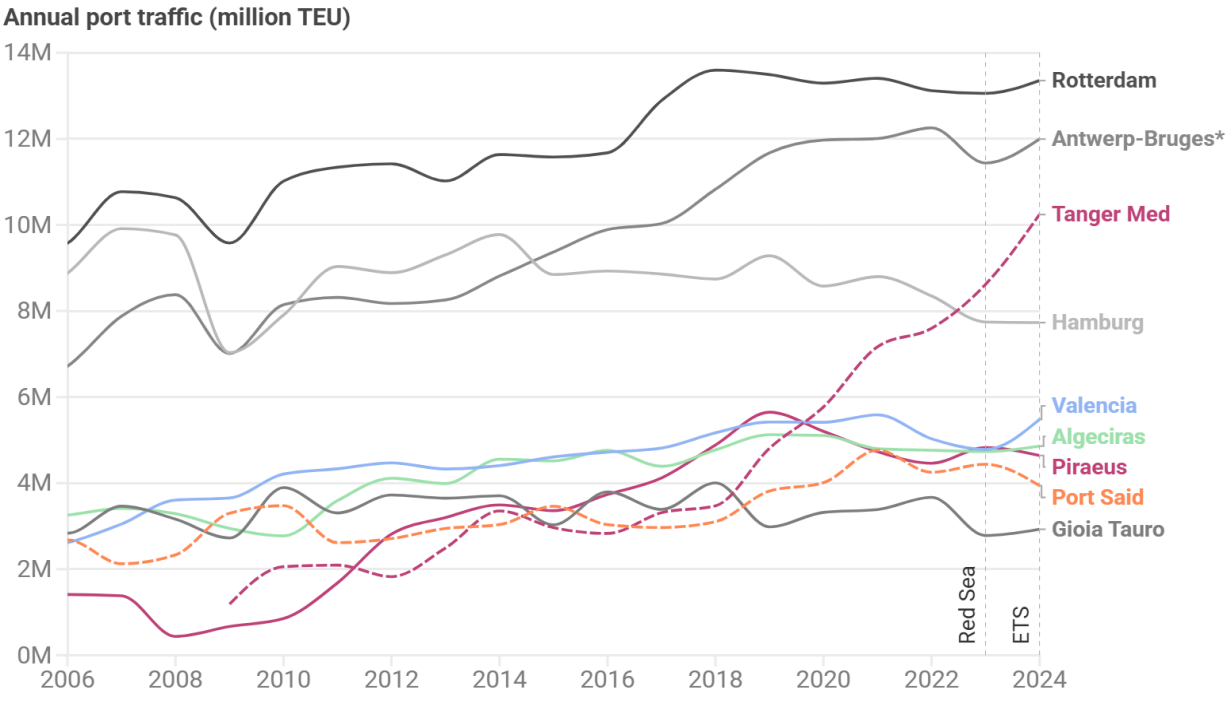
3. Boosting ports' competitiveness by implementing additional carbon leakage safeguards

The Commission's Impact Assessment supporting the ETS proposal has supported previous study concluding that the EU ETS would have minimal impact on port competitiveness, with environmental costs playing a small role in port choice.

In practice, major shipping carriers have chosen to pass through ETS costs to customers via surcharges, supporting the Commission's view that business practices would remain unchanged. Additionally, T&E analysis suggested these surcharges would actually lead to windfall profits for carriers, potentially reinforcing the use of European ports.

In the case of transshipment ports (which could be the ones most at risk in some regions), T&E's analysis shows that evasion risks are still very limited under €100/tonne CO_2 EUA price. While changes to port traffic in and around Europe can be empirically observed, demonstrating causality between traffic change and the introduction of the EU ETS is far less straightforward. In fact, current evidence suggests that other factors could be more important. For example, on the one hand, the growth in container traffic in key competing non-EU transhipment ports far predates the introduction of EU ETS (see below) and can be better explained by effective national policies, domestic and international investment (including by the European Investment Bank itself), high terminal automation and efficiency and lower labour costs. On the other hand, the dip in container traffic in many European ports can be better explained by the geopolitical tensions in the Red Sea since 2023. Similarly, despite the introduction of the EU ETS, port traffic bounced back in 2024 in nearly all potential evasion-sensitive EU ports.

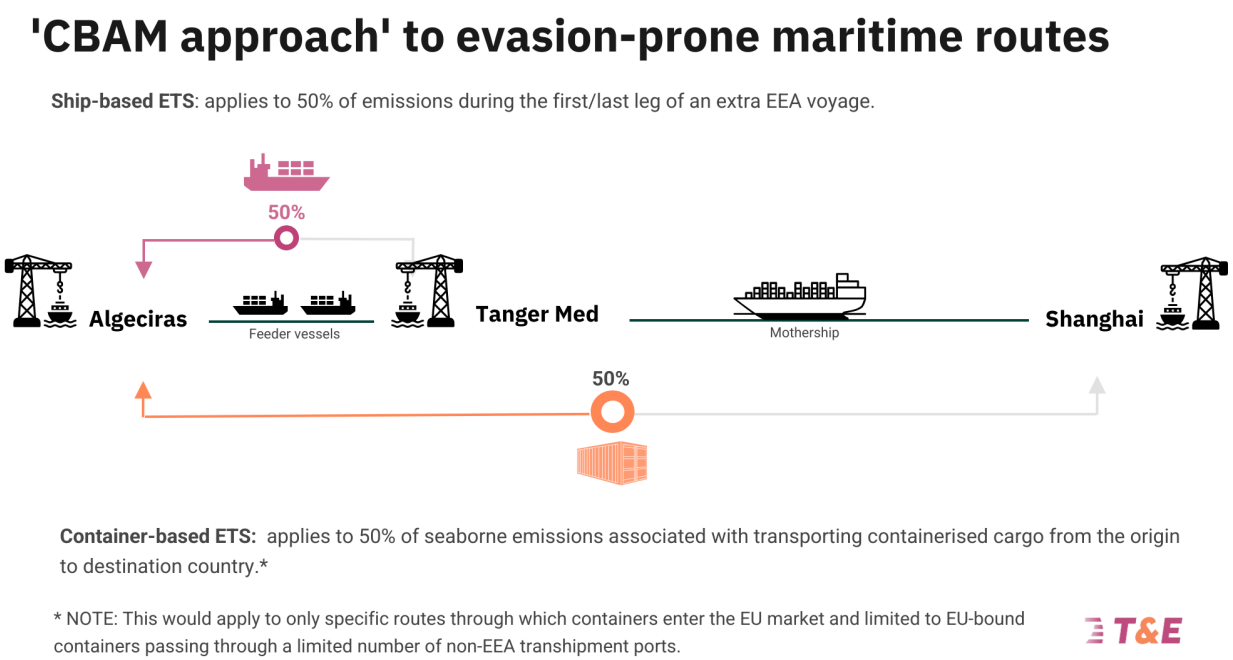
Port traffic growth in key EU and non-EU ports



Source: Eurostat, AAPA and Tanger Med annual reports (Tanger Med data unavailable for 2007 and 2008). The remainder are from annual press releases. *The Port of Antwerp merged with the Port of Bruges in 2022.

However, given the concerns of the EU transhipment ports in Southern Europe, T&E believes that additional anti-evasion safeguards can be incorporated into the EU ETS to further take away incentives of some container operators to prioritise non-EU transhipment hubs. This can be achieved by introducing a 'CBAM approach' for the maritime ETS, which would involve applying container-based emissions accounting and ETS payments for routes, connecting EU ports with neighbouring transhipment ports via feeder vessels. The scope of this safeguard should be limited to a number of most sensitive transhipment routes only and not affect the implementation of the rest of the maritime ETS. The list of evasion sensitive non-EEA transhipment ports is already being published and updated by the EC under the current framework.

This container-based approach would calculate ETS costs based on seaborne emissions that take place on end-to-end trips between the cargo's (container) origin country and the EEA destination port as opposed to first or last legs of the carrier ships' journey. This limited adjustment to ETS would enhance the policy's climate effectiveness and respond to ports' concerns, without affecting the broader ETS or other cargo types.



4. Aligning ETS and FuelEU for simplification

To ensure environmental integrity and consistency across EU climate policies, the ETS should align with FuelEU Maritime's ban on food and feed crop-based biofuels. These fuels are linked to indirect land-use change (ILUC), which leads to deforestation, increased greenhouse gas emissions, and biodiversity loss—impacts that are well-documented even if hard to precisely quantify.

Allowing the use of food and feed crop-based biofuels in shipping could divert limited sustainable biofuels from other sectors, increasing land-use pressure and undermining broader decarbonisation efforts. For this reason, FuelEU Maritime rightly makes these fuels ineligible for compliance, by considering them as having the emission factor of the fossil fuel of the same type. However, the same rules do not currently apply to the maritime ETS. Under this system, certain RED-compliant biofuels including food and feed-crop biofuels RFNBOs are 'zero-rated', meaning they are treated as if they cause no emissions.

Aligning the ETS with the ban on food and feed crop-based biofuels in FuelEU would mean removing the zero rating from these fuels and pricing their emissions.

5. Conclusions

To meet the EU's 2040 climate targets and ensure a fair, effective decarbonisation of the shipping sector, the EU Emissions Trading System (ETS) must be preserved and strengthened alongside the IMO's Net Zero Framework (NZF). As the NZF will only partially price EU-related maritime emissions, both systems are necessary to provide full emissions coverage and maintain sufficient climate ambition. The ETS's ability to generate substantial revenue (~€10 billion/year) also enables the EU to support domestic green fuel production and secure its strategic autonomy. A combined approach is the only way to ensure that polluters pay the true cost of GHG emissions.

The scope of the ETS should be extended to include ships between 400 and 5000 GT, which are currently excluded despite their significant emissions footprint. These smaller vessels represent a major share of maritime activity and are well-suited for clean technologies like battery-electric and hydrogen propulsion. Their inclusion in the ETS would generate an estimated €2.4 billion annually between 2028 and 2035, creating strong incentives for fleet decarbonisation and enabling dedicated support for cleaner infrastructure and vessels. A differentiated approach—upstream pricing for intra-EEA ships and simplified MRV requirements—can balance environmental impact with administrative feasibility.

Unnecessary exemptions must also be removed, particularly for ferry routes that can already be operated using clean technologies. Many routes currently exempted until 2030 fall well within the range of available battery-electric ferries. Phasing-out these exemptions by 2028 would ensure consistency and accelerate deployment of low-emission solutions in short-sea shipping, especially in island communities.

To further safeguard the ETS from evasive practices, the EU should introduce additional carbon leakage protections, such as a limited 'CBAM-style' container-based mechanism for transhipment routes. This would ensure that containerised emissions are priced consistently, regardless of routing strategies that attempt to bypass ETS obligations. At the same time, the rule on how much transhipment is allowed without extra charges could be made stricter, so companies are less likely to use ports outside the EU just to avoid paying for emissions, without undermining the broader integrity of the ETS.

Finally, the ETS must align with the sustainability standards of FuelEU Maritime by excluding food- and feed-based biofuels. These fuels, still ‘zero-rated’ under the ETS, contribute to deforestation, indirect land-use change, and higher emissions. Removing their preferential treatment will reinforce environmental integrity, harmonise EU policies, and prevent the diversion of limited sustainable fuels from sectors with fewer alternatives.

Further information

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Appendix: Methodology

Data

Emissions modeling is based on historical data for the year 2023. Vessels must call at least once in 2023 in an EEA port to be included. We calculated emissions and voyages in this study using AIS data and T&E's SEA model, our ship emissions model. We have used emissions data from the EU MRV database to validate our results.

EU ETS and IMO NZF coverage

We estimated emissions on a voyage basis for all ships of 400 GT and above calling at least once at an EEA port in 2023. GHG emissions for the IMO NZF were calculated on a WTW CO_2e basis. Emissions for the EU ETS were calculated as TTW CO_2 before 2026, and as TTW CO_2e from 2026 onwards.

For each framework, we calculated total emissions covered with the correct scope (WTW or TTW) for all voyages of each vessel. We then removed emissions not covered under various exemptions:

ETS exemptions

For the ETS, we accounted for exemptions on a voyage or ship basis as listed by the Commission until 2030. See notably the updated list of remote islands for which ships sailing to and from can be exempted from ETS coverage. Moreover, we considered that all ships between 400 and 5000 GT are not covered by the ETS for the entire time period modelled. For voyage-based exemptions, we follow the Commission's guidance document and exempt the corresponding port stops in addition to the voyages.

IMO NZF exemptions

For the IMO NZF, we excluded all ships between 400 and 5000 GT from coverage. In addition, following Chapter 5. Regulation 30 of the Draft MARPOL revised Annex IV, we excluded vessels sailing exclusively between ports of the same state (due to data constraints, flag status was not considered). To account for false positive data, we also exempted vessels from IMO NZF coverage if less than 1% of their voyages are not intra - EEA.

Small ship coverage

We define small ships as all vessels between 400 and 5000 GT. For cargo and passenger-carrying vessels, we used T&E's SEA model to model the routes sailed and the emissions produced.

To measure CO2 emissions, we combined two sources of data. We estimated TTW CO2 emissions for cargo and passenger-carrying vessels using 2023 AIS data for 3825 small vessels. For non-cargo-carrying vessels, we estimated emissions using data from the European Commission report on the extension of the MRV.

To compare emissions between ships larger than 5000 GT and ships between 400 and 5000 GT, we calculated emissions of large ships based on MRV data. For all vessels in the MRV database for 2023, we recalculated CO2 emissions based on the ETS scope, i.e. 100% of emissions on intra-EEA voyages, and 50% on voyages to or from an EEA port.

Emissions projections

To project emissions into the future, we estimated the energy covered by IMO NZF and EU ETS based on the emissions calculated as described above, and the share of LNG and VLSFO usage in the 2023 fleet based on 2023 MRV data. We include energy efficiency gains in future years based on the Base Scenario in the 4th IMO GHG study. We then assume that all ships covered by the IMO NZF framework comply with the 'base' compliance target each year, while ships covered by EU ETS follow the FuelEU GHG intensity targets. For emissions covered by both frameworks, we assume that vessels follow whichever of the two targets is stricter. Because EU ETS covers tank-to-wake emissions, all future emission projections were compared by measuring on a tank-to-wake basis, assuming that these follow the same relative trajectory as well-to-wake emissions.

Revenue calculation

To calculate what percentage of emissions are actually priced under each framework, we projected well-to-wake emissions under the IMO NZF into the future following the same methodology as above, and calculated the percentage of emissions that will fall between the Base and the Direct compliance targets, as these will be priced with Tier I RUs. This percentage of priced emissions is then applied to the tank-to-wake emissions under IMO NZF. Projected revenues from EU ETS are then calculated based on EU ETS price forecasts by BloombergNEF (2025). Projected revenues from IMO NZF refer to revenues calculated based on well-to-wake emissions as per the regulation.

Battery uptake

We retrieved all 152 vessels with propulsion marked as "Batteries propulsion" or "Fuel Cell & Battery", and listed as "In service" or "On order" on Clarksons World Fleet Register. Graph values were then calculated as the cumulative GT per ship category.

Distribution of vessels in 2027 is:

	Containers	Passenger	Tanker	Service
Number of vessels	10	99	2	39
Total GT	62,158	147,284	989	34,420