How does the shipping ETS work?

T&E explainer of the new carbon market for shipping

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1. What is the ETS?

The Emission Trading System (ETS) creates a financial incentive for polluters to reduce emissions by putting a price on each tonne of emissions. This is in line with the *polluter pays principle* at the heart of European climate policy.

The ETS was adopted in 2003 and came into force in 2005. It covers all EU states plus Iceland, Liechtenstein and Norway. It mainly covers carbon dioxide (CO_2) but also other greenhouse gases such as methane and nitrous oxide from energy intensive industries such as electricity and heat generation, oil refineries and production of various metals and chemicals, as well as aviation. From 2024, the ETS will apply to maritime shipping.

2. How does the ETS work?

The ETS works through the concept of 'cap and trade'. Every year, a total limit is set on the amount of greenhouse gases (GHGs) that companies under the ETS can cumulatively emit in that year. This 'cap' is reduced each year by a politically decided percentage: the Linear Reduction Factor (LRF). The cap will eventually reach zero, meaning that companies operating under the ETS should no longer be allowed to pollute.

Each tonne of emissions corresponds to 1 emission allowance (EUA). Companies can get EUAs either from European auctions (organised on behalf of Member States) - where companies bid for a certain amount of EUAs - or from trading with other companies. **Hence the system is known as 'cap and trade'.**

In the past, some EUAs were allocated for free each year to certain sectors to mitigate the supposed risk of becoming uncompetitive as a result of the ETS and moving outside of Europe (often referred to as 'carbon leakage'). Companies could use those free allowances to either comply with ETS or, if they lowered their emissions, they could sell these free allowances to other companies for profit. But these free allowances are gradually being phased out because of their environmental ineffectiveness. Each auction requires a certain minimum amount - e.g. 10,000 EUAs - to be sold. If, altogether, companies bid for less EUAs on that auctioning day, the EUAs are not sold. Larger companies tend to buy and sell allowances themselves, while smaller companies tend to get their EUAs through trading houses ('aggregators').

The auctioning of EUAs takes place throughout the year. From 2024, companies covered by the ETS will have to demonstrate that they have bought enough EUAs to cover their annual emissions by September 30, as opposed to April 30 as it has been the case so far. They will then 'surrender' these EUAs as an act of compliance. Surplus EUAs can either be kept for the next year or traded. If emissions are greater than the number of surrendered EUAs, a penalty of €100 (plus an inflation adjustment) is imposed for every missing EUA. The company will still need to surrender the missing EUAs the following year.

3. Has the ETS been successful?

The ETS has demonstrated that a cap and trade system works. Numerous other countries have copied the model, notably China. Moreover, ETS revenues have financed the development of clean technologies, for example through the Innovation Fund.

However, the ETS has not always succeeded in its main goal of emissions reduction. In the aftermath of the 2008 economic crisis, European industrial production fell dramatically, leading

to a surplus of EUAs, low ETS prices and no incentive for emissions reduction. Consequently, the European Commission established a mechanism, the 'Market Stability Reserve' (MSR), to keep the annual supply of EUAs in check. This mechanism makes sure the EUA price is at a high enough level to incentivise companies to reduce emissions. The MSR has helped to push the ETS price up to around €90 per EUA, whereas the ETS price struggled to go above €5 per EUA from 2013 to 2017.

Similarly, while the most recent revision of the ETS improves climate ambition, the impact of the ETS is still limited due to the late phase out of free allowances and relatively low prices of fossil fuels compared to renewables, hence most sectors are subject to other climate laws alongside the ETS.

4. Which emissions are covered by the Shipping ETS?

The ETS will apply to 100% of emissions on voyages between European ports and 50% of emissions on voyages from a country outside the EU to an EU country and 50% of emissions in the opposite direction (Fig.1). A voyage is defined as any movement of a ship that originates from and terminates in a port of a Member State and that transports passengers or goods for commercial purposes. A cargo ship will therefore pay for its emissions if it transports goods from the USA to Spain, but not if it only stops in Spain only to refuel or if a vessel simply transits Spanish territorial waters without calling at a Spanish port to load or unload cargo.

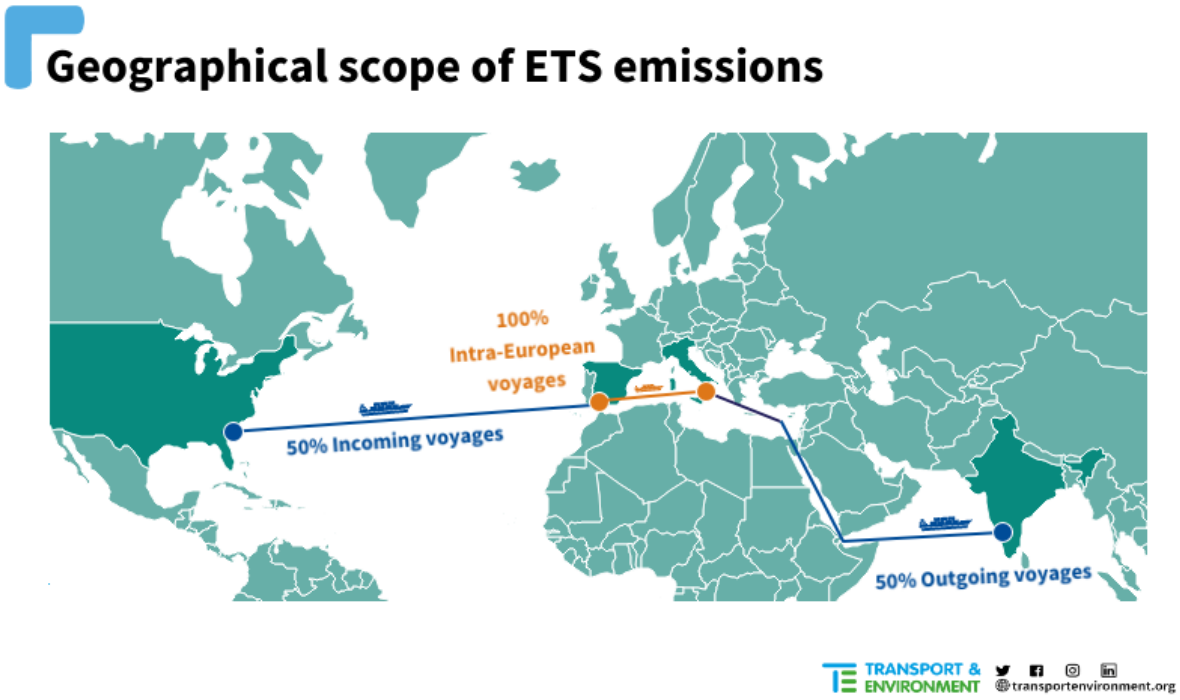

Figure 1: Geographical scope of ETS emissions

The ETS will cover CO_2 emissions emitted in 2024 and onwards. Methane (CH_4) and nitrous oxide (N_20) emitted in 2026 and onwards will also be included in the EU ETS. There are some specific exemptions for specific national circumstances. For example, ships travelling on ice will pay less until 2030, while voyages to outermost EU regions like the Azores or Canary Islands and ferries travelling between islands with a population of under 200,000 are also exempted.

5. What type and size of vessels are covered?

The ETS will apply to ships of 5,000 gross tonnage (GT) and above, that perform commercial voyages transporting goods or passengers. In 2027, the EU will decide whether to also include GHGs emitted by offshore ships of 5,000 GT and above and general cargo ships between 400 and 5,000 GT. This means that no fishing vessels, private yachts, service vessels (e.g. tugs, dredgers) or military vessels will have to pay for their emissions.

Year	Ships regulated	% of covered emissions regulated	GHGs
2024	Cargo and passenger above 5,000 GT	40%	CO_2
2025		70%	
2026		100%	CO_2 - CH_4 - N_20
2027	Cargo and passenger above 5,000 GT *Depending on legislative review: offshore ships above 5,000 GT and cargo and passenger ships above 400 GT*		

Table 1: Types of emissions and ships covered by the EU ETS

6. Are there free allowances for shipping?

Unlike other sectors under the ETS, free allowances will not be granted to shipping. All allowances will be acquired through auctioning. Shipping companies will only gradually acquire and surrender allowances for all emissions that fall under the ETS geographical scope until 2026. Since emissions for the current year are paid the year after, in 2025 ships will pay for 40% of their 2024 emissions, in 2026 for 70% and in 2027 100%.

7. Who is responsible for complying with the ETS?

Shipping companies will be responsible for complying with the ETS. A shipping company is defined as a shipowner or any other organisation or person that is responsible for the vessel under the ISM code. If the responsible company is not the entity taking the day to day decisions that affect a ship's emissions, that company can claim reimbursement for the ETS costs. This measure seeks to avoid charging shipping companies for the ETS when they do not control key operational parameters of the ship (e.g. speed or fuel of the vessel) which directly impact the level of emissions, for example in the case of time charters.

8. How can shipping companies comply?

Shipping companies already need to report their emissions in the EU Monitoring, Reporting and Verifying (MRV) database. Accredited verifiers check the reported data reported by March 31. Starting from 2024, by September 30 of each year, operators will also need to surrender the

number of allowances which correspond to their emissions using a dedicated Union Registry portal.

9. What are the penalties?

Shipping companies that do not comply with the ETS will be fined €100 for each EUA they fail to surrender. In addition, vessels that have failed to surrender allowances for two or more consecutive reporting periods can be detained. Other vessels from the shipping company responsible for those vessels may also be denied entry to any European port.

10. Is there any risk of ships avoiding European ports?

Some industry voices have suggested that the ETS will lead to port evasion; i.e. that ships will call at non-EU ports just outside the EU in order to reduce their ETS costs (sometimes called carbon leakage) consequently diminishing the effectiveness of ETS. While studies[1] have shown that port evasion is unlikely to happen, the ETS will also apply to ships calling at certain non-EU ports to minimise any risks.

This means that a containership coming from a non-EU port and stopping in another transhipment non-EU port which is less than 300 nautical miles from the nearest EU port will have to pay for 50% of the emissions for the voyage between the non-EU port of origin going through the neighbouring non-EU transhipment and ending in the first EU port of destination (and in the opposite direction), as if it had never stopped in the non-EU transhipment port in question. The list of non-EU transhipment ports that will fall into this category will be decided by the European Commission.

[1] Transport & Environment (2020). 'Negligible risk of ships evading EU carbon market – study'. Retrieved from https://www.transportenvironment.org/discover/negligible-risk-ships-evading-eu-carbon-market-study/; CE Delft (2022). 'Maritime shipping and EU ETS: An assessment of the possibilities to evade ETS costs'. Retrieved from https://www.portofrotterdam.com/sites/default/files/2022-03/ce-delft-maritime-shipping-eu-ets.pdf

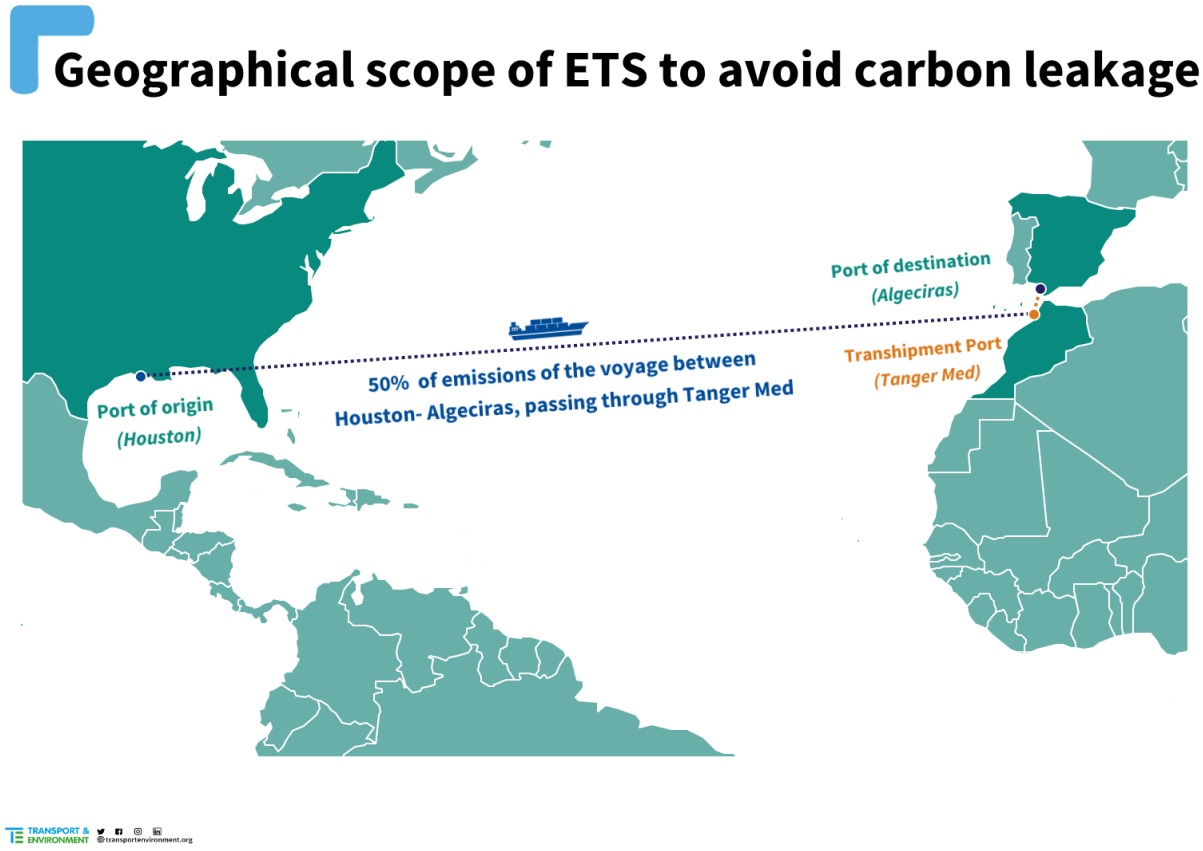

Figure 2: Geographical scope of ETS emissions to avoid carbon leakage.

When a voyage from a non-EU port to an EU port stops in a non-EU intermediate transhipment port before proceeding to the EU port of destination, 50% of the emissions from the non-EU port of origin to the EU port of destination (passing through the transhipment port) will be counted, instead of just counting 50% of the emissions from the transhipment port to the EU port.

11. What will happen to the ETS revenue?

The majority of the ETS revenue will go to Member States and will be used for projects related to climate action. Around 600 million EUAs will be transferred to the European Innovation Fund until 2030 to support low carbon technologies. With an average CO_2 price of €90/tonne CO2, these allowances will create around €54 billion euro in revenues. In addition, 20 million allowances, which correspond to €1.8 billion at a carbon price of €90, will be reinvested specifically in the shipping sector until 2030.

12. Will the ETS be enough to drive shipping decarbonisation?

While part of the revenue generated by the ETS will be reinvested in the shipping sector, the price gap between carbon and renewable fuels is still far too great for the ETS to finance the complete decarbonisation of the shipping sector.

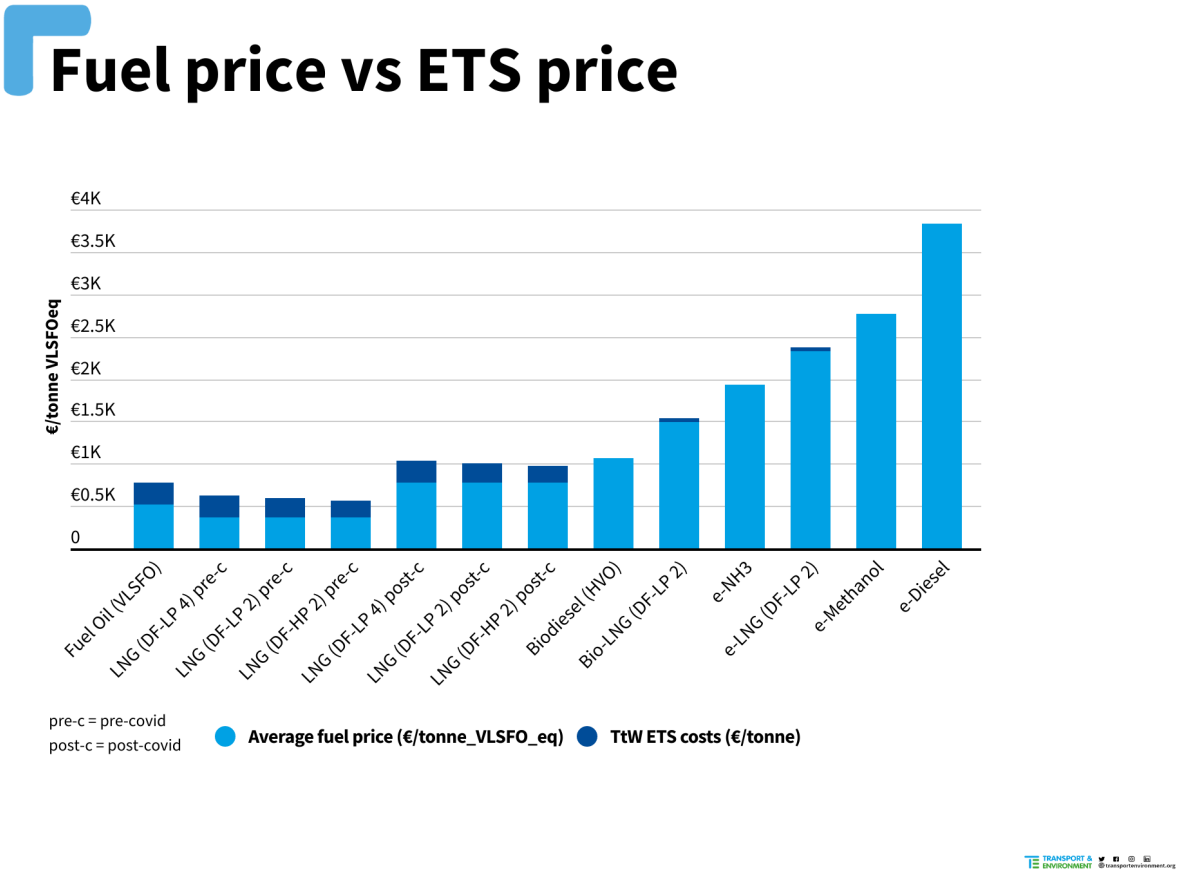

Figure 3: Fuel price vs ETS price

Even when adding ETS costs, fossil fuels are still more cost competitive than renewable fuels such as e-methanol and e-ammonia

This is why other legislative measures are needed. For example, Member States could subsidise renewable energy by paying for the price difference between renewables and fossil fuels (Carbon Contracts for Difference) or oblige companies to use clean energy technology or

fuels under dedicated command and control regulations e.g. the draft FuelEU Maritime Regulation.

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