



**European
Shipowners**

ECSA | European Community Shipowners' Associations



SHORT STUDY

Creating a market for sustainable maritime fuels and technologies

How can ETS revenues contribute?

2026



ES|ECSA in-house analysis



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Executive summary

The Commission's proposed SMAP of 110 million allowances would cover only one third of what is needed to kick-start the market for sustainable maritime fuels and sustainable technologies. This in-house analysis found that the SMAP mechanism would need at least 330 million allowances to meet this objective.

No free allowances. Unlike sectors such as steel, cement, chemicals and aviation, shipping has never received any free allowances. Every single tonne of emissions under the EU ETS scope must be accounted for by surrendering an allowance purchased on the carbon market. At current emissions levels, this represents an annual surrender requirement of around 90 million allowances¹.

Shipping's outsized contribution. Although shipping accounts for around 10% of EU ETS emissions, it purchases approximately 90 million allowances per year, the equivalent of almost 20% of all allowances auctioned under the system. Yet, the Commission proposal would reserve a maximum of only 110 million allowances for SMAP **across the entire 13-year period from 2028 to 2040**². For comparison, spread evenly across the period, this amounts to less than 10% of shipping's annual surrender requirement.

The cost gap for sustainable maritime fuels and technologies is substantial. Sustainable fuels are on average four times more expensive than conventional fuels. Sustainable technologies also involve significant additional deployment and operating costs and are necessary for the uptake of several sustainable fuels. For SMAP to deliver on its objectives, a broad spectrum of sustainable technologies needs to be supported, including energy efficiency projects that can deliver immediate emission savings.

As part of the revision of the EU Emissions Trading System (EU ETS), the proposed Sustainable Maritime Alternative Propulsion (SMAP) mechanism is an opportunity to strengthen support for shipping's energy transition by creating a market for sustainable maritime fuels and sustainable technologies, including energy efficiency projects. A reserve of EU allowances would be set aside to narrow the cost gap between conventional and sustainable fuels and technologies. Rather than providing direct payments, the SMAP mechanism would award EU ETS allowances to shipping companies using sustainable fuels and technologies. Under the Commission proposal, the monetary value of these allowances would cover:

- 55% of the remaining price differential for biogas and advanced biofuels.
- 80% for low-carbon hydrogen and low-carbon fuels.
- 90% for renewable fuels of non-biological origin (RFNBOs).
- 90% of the additional cost of technologies.

¹ ES|ECSA (2026). [Maritime EU ETS Revenue: Shipping's contribution & national revenues](#).

² European Commission (2026), [Proposal for a Directive amending Directive 2003/87/EC and Decision \(EU\) 2015/1814 as regards driving competitiveness and cost-effective decarbonisation](#), COM(2026) 616 final.

European Shipowners | ECSA has undertaken detailed modelling to assess the minimum amount of allowances required under the SMAP mechanism to provide a credible signal and create a market for sustainable fuels and technologies. The model estimates annual demand on the SMAP reserve using an internally modelled pathway for the scale-up of sustainable maritime fuels and technologies, including energy efficiency projects. This pathway is informed by FuelEU Maritime targets and the scale-up of sustainable maritime fuels projected in the Commission's Impact Assessment accompanying the EU ETS revision.

The analysis found that the proposed SMAP mechanism of 110 million allowances would cover only one third of the allowances needed to send a credible signal to the market and deliver a tangible scale-up of sustainable fuels and technologies. By narrowing the cost gap with conventional alternatives, SMAP could stimulate demand and encourage investment in sustainable fuel production and sustainable technology deployment. Its effectiveness, however, will depend on sufficiently broad technology eligibility and the availability of adequate, predictable support.

ES|ECSA therefore calls for a SMAP mechanism of at least 330 million allowances to provide a credible market signal to create a market for the scale-up of sustainable maritime fuels and technologies. This is crucial to helping shipping meet FuelEU Maritime's 2040 target, while helping to create a market for sustainable fuels and technologies that would facilitate the energy transition of shipping. Even at this level, less than one third of shipping's contribution to EU ETS revenues would be going back into the sector's own decarbonisation.

SMAP can contribute to the energy transition of shipping, but only if it is sized to match the scale of the challenge.

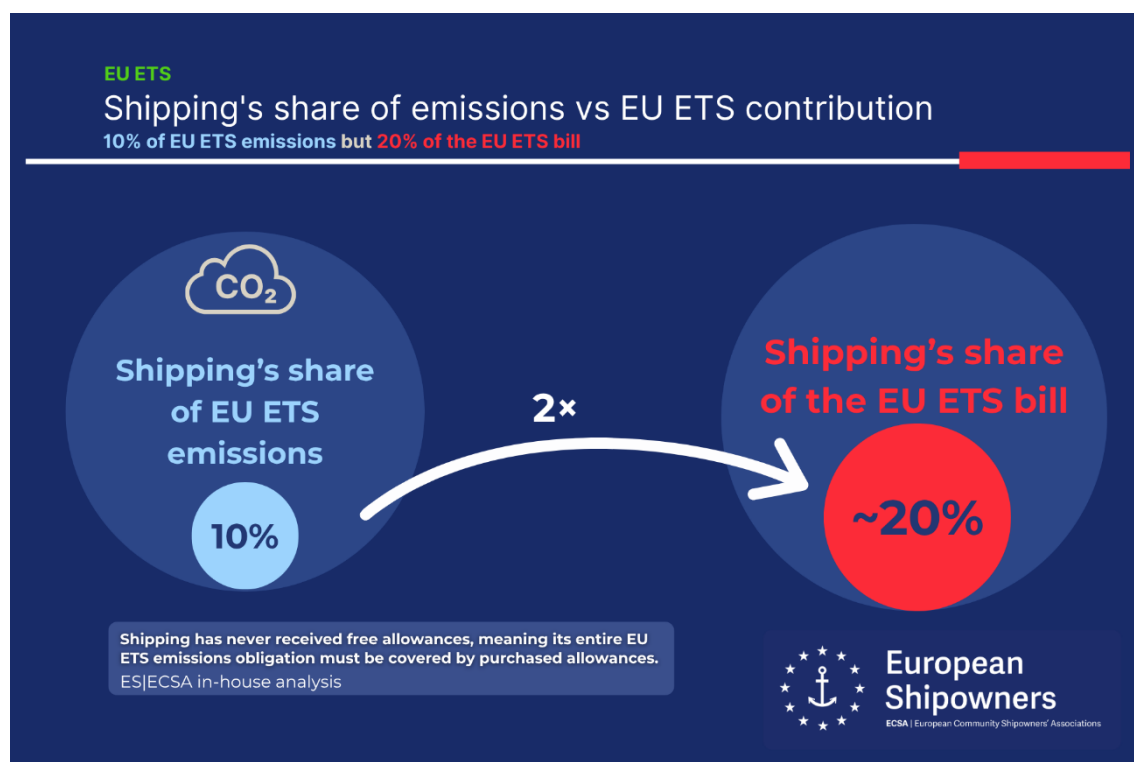
1 Shipping's contribution to the EU ETS and the cost of its transition

Shipping makes a significant and recurring contribution to the EU ETS, without guaranteed corresponding support for its transition, and faces particularly high costs in decarbonising.

Maritime transport has been covered by the EU Emissions Trading System (EU ETS) since 1 January 2024. From the 2026 reporting year onwards, following a phase-in period, shipping companies must surrender allowances (EUAs) for 100% of emissions within the EU ETS scope.

Unlike sectors such as steel, cement, chemicals and aviation, shipping has never received free allowances: its surrender obligations must be met entirely through purchased allowances.

Although shipping accounts for around 10% of EU ETS emissions³, it purchases approximately 90 million allowances per year, the equivalent of almost 20% of all allowances auctioned under the system⁴. ES|ECSA's 2026 study, *Maritime EU ETS: Shipping's contribution & national revenues*, found that at current emission levels and a price of EUR 100 per allowance, shipping's surrender requirements translate to a contribution of approximately EUR 9 billion into the EU ETS every year. **Despite this large and recurring contribution, the existing EU ETS revenue framework does not guarantee corresponding decarbonisation support.**



³ Calculation based on European Environment Agency (2026). [EU ETS verified emissions data from the Union Registry](#).

⁴ Calculation based on European Energy Exchange (2026). [EEX Auction Calendar 2026](#).

This lack of dedicated support is particularly significant for shipping, which is recognised in the Draghi report as one of the hardest sectors to decarbonise⁵. Sustainable fuels are on average four times more expensive than conventional fuels. Sustainable technologies, including energy efficiency projects, also involve significant additional deployment and operating costs.

European shipowners are already investing in the transition, but those investments need affordable sustainable fuels and technologies, including energy efficiency projects, to deliver their decarbonisation potential. European shipowners account for 44% of the global orderbook for sustainable fuel-capable vessels by tonnage, the largest share of any region⁶. However, high costs, limited fuel availability and barriers to technology deployment risk preventing these investments from delivering their full decarbonisation potential. Targeted support is therefore essential to narrow the cost gap, encourage production, drive the scale-up and create a viable market for sustainable maritime fuels and technologies.

⁵ Draghi, M. (2024). [The Future of European Competitiveness: A Competitiveness Strategy for Europe, Part A](#).

⁶ ES| ECSA (2026). [The economic value of European shipping, Annex 1](#), based on Clarksons Research (2026). World Fleet Register database.

2 How can SMAP help create a market?

Against the backdrop of the high cost of shipping's transition and the lack of dedicated support, the proposed Sustainable Maritime Alternative Propulsion (SMAP) mechanism offers an opportunity to support shipping's energy transition. Introduced as part of the European Commission's review of the EU Emissions Trading System (EU ETS), SMAP would provide targeted support to narrow the cost gap between conventional and sustainable maritime fuels and technologies.

The existing EU ETS begins to narrow the cost gap by imposing a carbon price on emissions from conventional maritime fuels. SMAP would complement this by awarding EU ETS allowances to shipping companies using sustainable fuels and technologies. Under the Commission proposal, the monetary value of these allowances would cover:

- 55% of the remaining price differential for biogas and advanced biofuels.
- 80% for low-carbon hydrogen and low-carbon fuels.
- 90% for renewable fuels of non-biological origin (RFNBOs).
- 90% of the additional cost of technologies.⁷

ES|ECSA's analysis indicates that SMAP could be a highly effective mechanism for creating a market for sustainable maritime fuels and technologies. Its effectiveness will however depend on whether the allowance reserve is sufficiently large to provide a credible signal to shipping companies, fuel producers and technology providers. The SMAP support rates set out in the Commission proposal are not guaranteed: if claims exceed the available allowance reserve, the support provided for each claim would be reduced proportionately. Against shipping's annual contribution of around 90 million allowances, the Commission proposes a reserve of only 110 million allowances for the entire 13-year period from 2028 to 2040. Spread evenly across the period, this amounts to around 8.5 million allowances a year, less than 10% of shipping's annual contribution.

Furthermore, in order for SMAP to achieve its objectives, all sustainable technologies for the energy transition, including energy efficiency projects that can deliver immediate emission savings, need to be supported. By narrowing the cost gap, the mechanism could improve the commercial viability of sustainable alternatives, stimulate demand and encourage investments in sustainable fuel production and technology deployment. In doing so, SMAP would help overcome some of the key barriers to market development identified by the shipping industry, by directing part of shipping's ETS contribution towards its own energy transition.

⁷ European Commission (2026). [COM\(2026\) 616 final](#).

3 SMAP needs 330 million allowances

ES|ECSA has undertaken detailed modelling to assess how many allowances the SMAP mechanism would need to provide a credible signal and create a market for sustainable maritime fuels and technologies.

The model starts from an estimated annual energy demand of 27.5 million tonnes of oil equivalent (Mtoe) for shipping within the relevant EU ETS scope⁸. It applies a pathway for the uptake of sustainable maritime fuels and technologies over 2028-2040, drawing on industry insights into investment decisions, sustainable fuel production and availability, and barriers to technology deployment. The pathway is also informed by FuelEU Maritime's targets and the projected uptake of sustainable maritime fuels in the Commission's Impact Assessment accompanying the EU ETS revision⁹. This provides the basis for estimating the additional costs associated with their uptake and the corresponding number of allowances required under SMAP.



Allowances required for sustainable fuels. For each fuel category, the model estimates the additional cost relative to conventional maritime fuels using industry-informed forecasts of energy-equivalent price differentials. These differentials are adjusted, where possible, to account for regulatory incentives, including EU ETS and FuelEU Maritime. For each fuel, the corresponding SMAP support rate is then applied to estimate the financial support required,

⁸ Analysis of European Maritime Safety Agency (EMSA) (2025). [THETIS-MRV: Public-Emission-Report, \(2025 Reporting year\)](#).

⁹ European Commission (2026). [Commission Staff Working Document: Impact Assessment Report, SWD\(2026\) 616 final](#).

which is converted into an allowance requirement using an assumed EU ETS allowance price of EUR 100.

For each fuel category f and year t , the allowance requirement is:

$$A_{f,t} = \frac{Q_{f,t} \times \Delta P_{f,t} \times r_f}{P_{EUA,t}}$$

where:

- $A_{f,t}$: allowances required for fuel category f in year t (EUAs).
- $Q_{f,t}$: projected uptake of fuel (million tonnes of oil equivalent, Mtoe).
- $\Delta P_{f,t}$: estimated remaining energy-equivalent price differential (EUR/Mtoe).
- r_f : applicable base SMAP support rates (55%, 80% or 90%).
- $P_{EUA,t}$: assumed allowance price (EUR/EUA), fixed at EUR 100 in this analysis.

Allowances required for sustainable technologies. The model incorporates the estimated support required for sustainable technologies, including energy efficiency projects, drawing on analysis of marginal abatement costs. Given the limited availability of reliable data on the costs, deployment potential and emissions reductions associated with emerging maritime technologies, these estimates are necessarily indicative. Nevertheless, they provide a basis for incorporating sustainable technologies into the overall assessment of SMAP allowance requirements. The financial support is converted into allowances using an assumed EU ETS allowance price of EUR 100:

$$A_{tech,t} = \frac{C_{tech,t} \times r_{tech}}{P_{EUA,t}}$$

where:

- $A_{tech,t}$: allowances required for sustainable technologies in year t (EUAs).
- $C_{tech,t}$: estimated total additional cost of deploying and operating sustainable technologies (EUR), informed by marginal abatement cost analysis (EUR/tCO₂e).
- r_{tech} : applicable base SMAP support rates for sustainable technologies (90%).
- $P_{EUA,t}$: assumed allowance price (EUR/EUA), fixed at EUR 100 in this analysis.

Total SMAP Reserve Requirement. The total SMAP reserve requirement across sustainable fuels, technologies, and aggregated over the mechanism's duration (2028-2040) is therefore:

$$A_{SMAP} = \sum_{t=2028}^{2040} (\sum_f A_{f,t} + A_{tech,t})$$

Limitations. The modelling is subject to several sources of uncertainty.

First, future fuel prices, production capacity and uptake remain uncertain. We have sought to account for these uncertainties through industry-informed assumptions drawing on available forecasts.

Second, important details of SMAP's implementation remain to be determined. In particular, the Commission has yet to establish the detailed methodology for calculating the *remaining price differential* between conventional and sustainable maritime fuels, including how existing incentives under the EU ETS, FuelEU Maritime and other support mechanisms will be taken into account. We have sought to include these as far as possible in our net fuel-price differentials.

For sustainable technologies, uncertainty is greater still, with limited details on how SMAP support will be calculated and a lack of reliable information on deployment costs, potential uptake and emissions reductions.

Finally, the model excludes the proposed bonus increases in support rates for eligible island voyages, qualifying fuel feedstocks and technologies fitted in EU shipyards¹⁰. These exclusions reduce the modelled allowance requirements relative to a scenario in which the bonuses apply.

Under the modelled uptake pathway, the minimum requirement over the 2028-2040 period amounts to at least 330 million allowances. The Commission's proposed SMAP mechanism of 110 million allowances would therefore cover only one third of this requirement, leaving a shortfall of approximately 220 million allowances. A SMAP mechanism of 330 million allowances would remain below one third of shipping's contribution to the EU ETS over the same period. At current annual emissions levels, shipping would surrender approximately 1.17 billion allowances over 2028-2040. The modelled SMAP minimum requirement represents around 28% of that volume, compared to approximately 9% under the Commission proposal.

At an allowance price of EUR 100, these volumes correspond to EUR 33 billion in SMAP support over 2028-2040, compared with an estimated EUR 117 billion in shipping's cumulative EU ETS surrender obligations over the same period.

¹⁰ European Commission (2026). [COM\(2026\) 616 final](#), proposed Article 3gaa(9) and (14).

Conclusions

Shipping, recognised in the Draghi report¹¹ as one of the hardest sectors to decarbonise, makes a substantial contribution to the EU ETS, without corresponding support for its transition. Unlike sectors such as steel, cement, chemicals and aviation, shipping has never received free allowances. Although shipping accounts for around 10% of EU ETS emissions, its annual contribution of approximately 90 million allowances is equivalent to almost 20% of all allowances auctioned under the system. At an illustrative price of EUR 100 per allowance, this represents an annual carbon cost of approximately EUR 9 billion.

ES|ECSA's analysis indicates that SMAP could be a highly effective mechanism to support the creation of a market for sustainable maritime fuels and technologies. By narrowing the cost gap with conventional alternatives, SMAP could stimulate demand and encourage investment in sustainable fuel production and technology deployment, including energy efficiency projects that can deliver immediate emission savings. Its effectiveness, however, will depend on sufficiently broad technology eligibility and the availability of adequate, predictable support.

ES|ECSA's modelling found that at least 330 million allowances would be required over 2028-2040 to provide a credible signal to create a market for sustainable maritime fuels and technologies. The Commission's proposed SMAP of 110 million allowances would cover only one third of this requirement, leaving a shortfall of 220 million allowances. Even at 330 million allowances, the reserve would represent less than one third of shipping's estimated cumulative EU ETS surrender requirements over the same period.

The potential environmental benefits are substantial. The Commission's Impact Assessment suggests that SMAP could contribute to annual greenhouse-gas emissions reductions of between 1.7 and 9 million tonnes of CO₂ by 2035, depending on the funding available¹². SMAP could accelerate shipping's decarbonisation and support progress towards FuelEU Maritime, while supporting the creation of a market for sustainable fuels and technologies that would facilitate the energy transition of shipping.

ES|ECSA therefore calls for a SMAP mechanism of at least 330 million allowances to provide a credible market signal to create a market for the scale-up of sustainable maritime fuels and technologies, including energy efficiency projects.

SMAP can contribute to the energy transition of shipping, but only if it is sized to match the scale of the challenge.

¹¹Draghi, M. (2024). [The Future of European Competitiveness, Part A](#).

¹² European Commission (2026). [SWD\(2026\) 616 final](#).



European Shipowners | ECSA is **the voice of European shipping.**

Founded in 1965, ECSA promotes the interests of 21 member associations of the EU and Norway. ECSA strives for a regulatory environment that fosters the international competitiveness of European shipping.

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