

New Maritime Decarbonization Regulations: Background & Market Effects (Part 2)

[Rudy Telles Jr.](#), Office of Industry and Competitiveness Analysis

The European Union's Emissions Trading System (EU ETS) will include maritime shipping in its carbon market beginning in 2024, placing a limit on the carbon emissions of ships above 5,000 gross tonnage that operate within the EU. The EU ETS will require shipping firms that exceed those limits to either purchase carbon credits in the EU ETS market or face penalties. Although the new requirements are expected to have a small impact on global trade, industry analysts expect operational costs for shippers to increase and shippers to respond by modernizing their fleets and/or rerouting their ships to lessen their exposure to the EU ETS system. This EBOT is the second in a series that examines the market impacts of a new wave of global maritime decarbonization initiatives.

The European Union Emissions Trading System and Maritime Shipping's 2024 Inclusion

The European Union Emissions Trading System (EU ETS) is a cap-and-trade system designed to reduce greenhouse gas (GHG) emissions from various industries operating within the European Union by setting a limit, or “cap”, on the total amount of GHG released by companies within covered sectors.¹ These companies are issued and/or purchase emission allowances, referred to as carbon permits, that represent their authorized CO₂ (carbon dioxide), CH₄ (methane), and N₂O (nitrous oxide) output. Companies that exceed their allowances must purchase additional allowances within the EU ETS market from companies that produced fewer emissions than their own limit. In 2022, prior to the inclusion of maritime shipping, the EU ETS covered roughly 38 percent of total GHG emissions in the EU and issued permits worth approximately \$715 billion, comprising more than 85 percent of the value of global carbon markets.² The EU collects and disburses half of the allowance fees to the EU Innovation Fund, which aims to accelerate the development of alternative fuel and renewable energy infrastructure by funding low-carbon technology projects. The remaining fees are split among Member States.

On May 16, 2023, EU legislators formally adopted into law requirements that GHG emissions from the maritime transport sector, which comprises roughly 3-4 percent of total EU CO₂ emissions, be included in the EU ETS beginning on January 1, 2024.³ The EU ETS will ultimately require that all ships above 5,000 gross tonnage, which account for most maritime emissions, surrender (or use) allowances for all CO₂, CH₄, and N₂O emissions released while traveling between or docked at EU ports, and 50 percent of emissions from voyages that started or ended within the EU. During an initial phase-in period, shipping companies will surrender allowances for only their CO₂ emissions, with CH₄ and N₂O emissions added in 2026. As part of this phase-in, the EU ETS will also require ship companies to surrender allowances for 40 percent of their reported emissions for 2024 and 70 percent for 2025. The updated EU ETS will be the first international maritime regulation that directly charges shippers for their carbon output.

¹ By 2030, the cap on emissions from sectors covered by the EU ETS is set to decrease by 62 percent compared to 2005. Sectors covered include electricity and heat generation; oil refineries; steel works; production of iron, aluminium, metals, cement, lime, glass, ceramics, pulp, paper, cardboard, acids, and bulk organic chemicals; aviation within the European Economic Area; and departing flights to the United Kingdom and Switzerland.

² Based on a €750 billion estimated market with a 1.05 euro-to-dollar average exchange rate in 2022.

³ Prior to including maritime shipping in the EU ETS, the EU developed a separate regulatory framework called the Monitoring, Reporting, and Verification (MRV) system. Under this system, ships exceeding certain emission thresholds were required to monitor and report their fuel consumption, distance traveled, and cargo carried.

The views expressed solely represent the opinions and professional research of the author. The content of the EBOT is not meant to represent the views of the U.S. International Trade Commission, any of its individual Commissioners, or the United States government.

Market Effects in 2024 and Beyond

Maritime shipping's inclusion in the EU ETS is expected to increase the operating costs of vessels that travel within the EU (table 1). One maritime industry study estimated that these effects will differ depending on a vessel's CO₂ profile and typical operating route. Another analysis by a maritime industry group estimated that the inclusion of maritime shipping in the EU ETS will increase the average annual operating costs per container vessel by \$524,000 in 2024 and by \$1.4m in 2026, and increase the operating costs per tanker by \$400,000 in 2024 and \$1.1m in 2026. Another industry study estimated that the operating costs of an average bulk vessel that emits roughly 16,000 tons of CO₂ per year and operates solely between EU ports would increase by \$1.2m in 2026. The extent to which these costs will be reflected in freight rates and consumer costs both globally and within the EU will not be known until the EU ETS is implemented. Analysts do expect a widening in the charter, or leasing, rate differential for ships based on their fuel efficiency.

Table 1. Projected Costs of EU ETS Per Day at Sea, by Ship Type

Ship Type	Tons of emissions subject to EU ETS per day at sea	Cost per day at sea with EU ETS CO ₂ price of \$95/ton
Bulk Carrier	45	\$4,275
Chemical Tanker	44	\$4,180
Container Ship	124	\$11,780
Gas Carrier	50	\$4,750
General Cargo	32	\$3,040
LNG Carrier	136	\$12,920
Oil Tanker	60	\$5,700
Passenger Ship	250	\$23,750
Ro-pax ship*	196	\$18,620
Vehicle Carrier	66	\$6,270

Source: PROW Capital

Note: Calculations are based on 2021 EU MRV data.

Values converted to USD using 2021 EUR/USD avg. XR

* Used for freight vehicle and passenger transport.

Industry analysts expect maritime's inclusion in the EU ETS to have a minimal impact on total global trade or GDP, as the EU ETS will cover only 10-15 percent of global shipping emissions. However, the cap on maritime emissions may act as a price signal, potentially incentivizing improvements in the energy efficiency of maritime fleets and reducing the current price difference between traditional and alternative maritime fuels. The pressure for shippers to reduce their fleet's carbon output, due in part to new International Maritime Organization decarbonization regulations (discussed in [part 1 of this series](#)), will only be exacerbated by the more direct costs of EU ETS carbon emission allowances.

Critics of maritime's inclusion in the EU ETS, however, cite loopholes that would allow shippers to circumvent cap and trade regulations by rerouting their ships, potentially increasing a fleet's total distance traveled and carbon emissions released. For instance, one study suggested that the EU ETS could lead to greater development of port and shipping infrastructure in North Africa, with ports in Algeria and Tunisia becoming transshipment hubs. This could allow shippers to reduce their EU ETS exposure and maintain a competitive advantage in European markets, but may also lead to longer voyages and higher emissions. Additionally, critics argue that the EU ETS incentivizes the use of cheap "brown" fuels produced by fossil sources, since the EU ETS only measures GHG emissions and does not consider a ship's fuel type, disadvantaging those that utilize costlier but more sustainably produced blue fuels (produced from fossil sources with carbon capture) or green fuels (produced via electrolysis using hydrogen).

Sources: European Commission, "[Reducing emissions from the shipping sector](#)," accessed 8/16/23; Garrido, Hervas, and Saragani, "[The turbulent future for European maritime transport](#)," 2/10/23; Savvides, "[Major shipping lines will pass on cost](#)," 11/22/22; PROW, "[The Financial Consequences of bringing Shipping under ETS](#)," 1/20/23; QueSeas, "[EU ETS – Case study based on 2021 MRV data](#)," 9/22; Hesse, "[Up to €1.5m per year: understanding financial implications](#)," 3/2/23; HFW, "[ETS Factsheet](#)," 2023; Blenkey, "[Shipping to EU: Brown fuels aren't green](#)," 11/21/22; Armstrong, "[Climate Impacts of Exemptions to E.U.'s Shipping Proposals](#)," 1/22.

The views expressed solely represent the opinions and professional research of the author. The content of the EBOT is not meant to represent the views of the U.S. International Trade Commission, any of its individual Commissioners, or the United States government.