

# Steering through the EU ETS

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**The European Union Emissions Trading System (EU ETS), which has been in effect since 2005, will extend its scope to the maritime shipping industry starting in 2024, presenting unprecedented operational and financial challenges within the European Economic Area (EEA). By mandating every vessel of and above gross tonnage of 5,000 to purchase carbon offset credits proportional to their carbon emissions, the EU ETS is set to significantly increase costs for all voyages to, from, and within EEA ports.**

**H**owever, amidst these challenges lies an opportunity for maritime shipping companies to gain a competitive edge. This can be achieved by leveraging artificial intelligence (AI) to efficiently predict and optimize vessel emissions – a data-driven approach that could significantly curb unnecessary EU ETS expenses. By harnessing precise AI-powered emission forecasts, shipping stakeholders can make informed decisions that balance operational efficiency, financial management, and environmental responsibility.

## Charting anew

The EU ETS is the world's first and largest carbon market, aimed at combating climate change through cost-effective emission reduction. The shipping-included EU ETS will cover greenhouse gas (GHG) from GT 5,000 ≥ ships arriving into, within, and departing from EEA ports, regardless of the flag they fly.

EU ETS will apply to 50% of emissions from voyages to or from a port in an EEA member state that starts or ends outside of the EEA (allowing the third country to decide on appropriate action for the remaining share of emissions) and 100% of

emissions that occur between two ports in EEA member states and within ports in EEA member states. Initially, the EU ETS will only cover carbon dioxide (CO<sub>2</sub>) emissions and, from 2026, methane and nitrous oxide.

According to the European Commission, to ensure a smooth transition, shipping companies only have to surrender allowances for a portion of their emissions during an initial phase-in period: 40% and 70% reported in 2024 and 2025, respectively, up to all later on.

## Uncertainty managed strategically

Purchasing carbon credits under the EU ETS will necessitate a new strategic approach to operations for maritime vessel owners and operators. These will be traded on the EU's carbon market, where the price will be determined by supply and demand dynamics. Operators must keep a close eye on market fluctuations to optimize their purchasing decisions. A higher demand for credits will raise prices, potentially increasing operational costs for shipowners not proactively managing their emissions.

To purchase these credits, operators must participate in auctions conducted by the European Energy Exchange or trade on secondary markets. The auctions will occur

throughout the year, allowing operators to purchase additional credits as needed. Operators must develop robust strategies to predict their emissions accurately and secure sufficient credits without overspending. This process will require not just an understanding of the carbon market but also a keen insight into their vessel operations, achievable with the aid of AI-powered emission prediction systems.

Operators are required to track and report their emissions per the EU Monitoring, Reporting and Verification Regulation – but now they'll be charged for what they emit. Therefore, the maritime shipping industry is tasked with determining how to accurately predict their emissions to ensure they're making strategic financial and operational decisions (so as to not get a fine of €100/t of CO<sub>2</sub>-equivalent, corrected for inflation, and their names disclosed to the public, among others).

The financial implications are equally significant. For instance, a cargo vessel sailing within the EEA from 2025 and beyond that emits 15,000 tonnes of CO<sub>2</sub> and faces a carbon price of €83 per tonne would have to bear an added cost of €1,245,000 annually. For a shipping company operating ten such vessels, this would amount to an additional



Photo: Canva

expense of €12.5m/year. If these vessels could reduce their emissions by a mere 10%, one would sail, so to say, EU ETS-free. On the flip side, the unforeseen costs can be significant if companies underpredict their annual carbon spending.

Fundamentally, the EU ETS will change how maritime companies budget and plan for their operations. Companies will need to forecast their emissions and the associated costs accurately. They will also need to account for the potential volatility in the price of carbon credits, which can fluctuate based on market ups & downs. This introduces a degree of uncertainty that organizations will need to manage strategically.

### Compliance & commerce

Complying with the EU ETS is mandatory for all relevant entities. However, deriving competitive advantages hinges on the astute navigation of its frameworks. For instance, shipping companies investing in AI technologies to optimize efficiency will have more competitive services. Using AI to predict their EU ETS obligation more precisely will result in better profit margins and more competitive quotations. Together, this provides a sharper competitive edge with significant financial impact.

Taking into account different factors (such as weather conditions, vessel speed, cargo load, fuel type, and more), AI-driven models are able to generate prediction estimates that can be used to proactively adjust the ship's speed or route to keep emissions within allowance limits and avoid costly

penalties. This approach not only helps reduce costs associated with compliance but also helps ensure that vessels are operating at optimal efficiency and with reduced environmental impact.

Contract negotiations could also benefit from AI's predictive capabilities. Better emission forecasts provide more accurate cost estimates, which can be used in contractual discussions. For example, a shipping company could use its AI-driven emission forecasts to negotiate fuel surcharge adjustments in its contracts, making them more competitive by offering more certainty and less risk to customers.

The EU ETS marks a turning point for the maritime industry. It necessitates precise emission forecasting and strategic planning to navigate the associated costs effectively. However, it also opens the door to innovative approaches, leading to strategic advantages and improved sustainability. AI stands at the forefront of these approaches. With its predictive capabilities and optimization solutions, AI can transform the industry's approach to emissions, offering significant cost savings, competitive advantages, and a path to more sustainable operations.

We at Bearing want to get AI innovation on board the maritime shipping industry.

Our advanced AI platform powers accurate emission predictions and operational optimizations to help shipowners and operators navigate the new regulatory landscape. With Bearing AI, leading maritime companies will mitigate some of the financial impacts of the EU ETS and position themselves at the forefront of sustainable shipping practices. As the industry evolves, adopting such intelligent solutions will be vital to remaining competitive and achieving long-term sustainability goals.

### Green shipping: environmentally & economically

Artificial intelligence's predictive and optimization capabilities are potent tools to help companies weather the regulatory storm and thrive in the face of change. Organizations are already leveraging this by optimizing their decision-making under the International Maritime Organization's recently implemented Carbon Intensity Index with Bearing AI emission management solutions.

By harnessing AI's potential, maritime companies can comply with the EU ETS effectively and, at the same time, take significant strides toward more sustainable operations. ■

BEARING AI

Bearing is at the forefront of bringing AI to maritime shipping. This is a trillion dollar industry that moves 90% of the goods we interact with on a daily basis, but has traditionally lagged far behind other industries in adopting new technologies. At Bearing, we're changing that. We're building AI-enabled products that solve the shipping industry's biggest pain points and we already have some of the world's biggest shippers as our partners. Go to [bearing.ai](https://bearing.ai) to learn more.