



Intro to the EU Emissions Trading System (EU ETS) and Emissions Price Risk Management

As the shipping sector comes into scope of the EU Emissions Trading System (EU ETS), we consider how shipping players might best negotiate their exposure to this volatile market.

The maritime transport sector kicks out near 1bn tonnes of CO₂ per year, or just under 3% of global emissions. The world's biggest carbon market, the European Union's Emissions Trading System (EU ETS), is a cornerstone of the bloc's efforts to lead the world in the fight against climate change. It plays an instrumental role in reducing greenhouse gas emissions (GHG) across the EU. Currently, its scope covers around 40% of the EU's GHG. This figure is about to increase materially as the shipping industry will be integrated into the system in 2024.

From 2024, shipper players will be required to calculate their emissions and pay for them the following year. Payment is made by way of 'surrendering' tokens corresponding to emissions. The currency used is called the European Union Allowance (EUA), with one EUA equating to a tonne of carbon emitted. For their first year in the scheme, shipowners and operators will be required to buy and submit allowances amounting to 40% of their emissions, increasing to 70% for 2025 and to 100% from 2026 onwards. What's more, the EU intends to bring other emissions into scope from 2026, including methane (CH₄) and nitrogen-based emissions (NO_x).

EU shipping players will be confronted by an EUA market that is highly volatile, with 5% intraday price moves the norm, which means they are exposed to significantly overpaying for their carbon usage. With many shipping players left feeling adrift in the face of these upcoming changes, in this article we seek to bring some clarity and chart a route through the market aspects of the EU ETS.

What is the EU ETS?

Emissions trading systems (ETS) are initiatives designed to incentivise companies to reduce emissions. They work by 'cap and trade,' a system whereby a gradually decreasing limit (cap) is set on the total amount of certain GHGs that can be emitted by those covered by the system. Allowances (EUAs in this instance) are issued by regulatory authorities and traded between companies. Over time, the number of allowances issued will fall in line with climate ambitions to reduce total emissions.

According to a 22 March report by the intergovernmental forum International Carbon Action Partnership (ICAP), some 28 ETSs have been set up around the world, covering around 17% of global emissions. Together, in 2022 they raised a record £51bn, up from £48bn in 2021. Formed in 2005, the EU ETS is the world's most established ETS.

How do you obtain the allowances?

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EUAs can be bought in primary and secondary markets. The primary market consists of auctions hosted on exchanges and supplied by regulatory authorities. The secondary markets are made of companies trading between each other. The idea is, if companies need more allowances to make up for their high carbon output, they can trade with one another. Meanwhile, those who cut down emissions have an opportunity to generate revenue by selling tokens. EUAs can also be allocated to companies by governments.

While to purchase EUAs in the primary market you must be a clearing member, it is possible to obtain these allowances in the secondary market, which is made up of either bilateral trades directly between companies, often with a broker as an intermediary, or through the different kinds of derivatives made available by financial institutions such as exchanges European Energy Exchange (EEX) and Intercontinental Exchange (ICE).

With regards to the free allocation of credits, this is focused on sectors at highest risk of relocating their business outside of the EU, a concept known as 'leakage'. For less exposed sectors, this is set to be phased out from 2026. Shipping companies will not receive free allowances.

What factors affect price in the EUA market?

On Tuesday the 21st February, the EUA price hit a record high crossing 95 euros a tonne, rising over 25% since the start of the year. The reasons for the surge, according to most key analysts, comprised a combination of cooler weather forecasts and expectations of lower wind power output. This is because these will lead to more demand for power from Europe's fossil fuel-powered plants which need to buy carbon permits in line with their emissions.

As is the case with any other good or service in the market, when considering the volatile nature of EUA's prices, one has to consider both demand and supply. In order to demonstrate this, it's interesting to look over the history of this market since its birth in 2005.

Supply Side

While demand for EUA's has had a historic impact on prices in the EU ETS, the supply side of EUA's have become pertinent to the volatile nature of EUA prices in recent years.

The supply of EUA's has materially changed over the past 15 years. The objective of the system has always been to try and project economic output and project CO2 demand given that output. However, whenever there is a projection and that projection varies from reality, as was the case in 2008 when an unexpected economic shock occurred, the result is an excess supply of allowances in the market due to a lack of economic activity. The lesson learned during this period was that in the scenario of unforeseen economic downfalls, frameworks will need to be in place in order to adjust for the excess supply and contract on the number of allowances in the market. This led to the creation of the market stability reserve in 2019.

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The Market Stability Reserve (MSR)

As a response to the economic downfall in 2008 and subsequent shifts in demand and supply for credits in the market, the MSR was created in order to effectively allow a certain number of credits to be removed from the system when they reached a certain level of build-up, and contrastingly, credits could then be added to the system when there was a shortfall. In essence, it is a way to regulate the amount of effective supply, which has a price impact. With increasing ambitions to reduce carbon emissions in phase 4 (2021-2030), the number of allowances issued each year has been declining at an annual rate of 2.2% since 2021 in contrast to 1.74% throughout phase 3. As such, with all other things remaining constant, including the same economic activity and the same emissions, there is a natural progression for the price to increase. This steady price increase in the years to come is a big factor that the EU shipping players will have to consider as part of their carbon risk management.

Demand Side

On the demand side, the EU energy matrix is significant. Essentially, the demand for fossil fuels remains a function of how much alternative energy sources are taking slack. For example, recent socio-political developments, namely the ongoing invasion of Ukraine, have given rise to an increased demand for fossil fuels. As a result of the war, gas that was sourced from Russia, and depended on by major European countries such as Germany, was switched off. This elimination of gas as an energy source led to the bid on coal increasing. Given the ratio of CO₂ between coal and gas is 2:1, and coal is now being used as an alternative to gas, the same amount of energy output is being produced but double the amount of carbon is being emitted. As follows in the EU ETS, demand for EUAs increases as one must buy credits in order to justify this increased volume of carbon being emitted.

Fossil Fuels & Alternative Energy

In relation to fossil fuels such as gas and oil, prices would follow the same pattern of coal price increases, but to a lesser extent. Despite the damage to the environment caused by oil and gas, coal is the most carbon intensive. Can this trend in coal usage be broken? In answering this, one must consider the baseload energy which is the amount of energy that an economy needs to function at a basic level. At present, and dating back to the industrial revolution, the world is still fossil fuel based as these sources are constant and the infrastructure has been built around that. While renewable energy such as wind and solar are becoming more widely applied across the world, the intermittent nature of them means that the baseload has remained fossil fuel based. This once again comes



back to why a huge spike in the price of EUA's recently occurred. With heavy restrictions to European gas supply occurring due to the war in Ukraine, political polarisation remaining a key issue surrounding the widespread use of nuclear energy, and renewables being inconsistent in their ability to generate energy, coal was one of the few fuels left during this period which could deliver constant energy on such a large scale.

How will the EU ETS play out in the shipping sector?

As mentioned, the shipping sector will be included in the EU ETS from 2024 and it will apply to commercial cargo and passenger ships over 5,000 gross tonnes (GT). From 2025, offshore ships and general cargo ships between 400 and 5,000 GT transporting for commercial purposes will be included. This regulation will capture 100% of emissions from voyages and port calls within the EU/EEA and 50% of emissions on voyages into or out of the EU/EEA. In order to disincentivize evasive behaviour, container ships stopping in transshipment ports outside the EU/EEA but less than 300 nautical miles from an EU/EEA port, need to include 50% of the emissions for the voyage to that port as well, rather than just the short voyage from the transshipment port.

As outlined in the introduction, a three-year phase in period will be in place for the shipping sector. In the first phase (2024), cargo and commercial ships above 5,000GT will have to cover 40% of their emissions. This will increase to 70% of emissions covered in phase 2 (2025), and finally 100% of emissions will have to be covered by the ETS in phase three (2026). It is also worth mentioning that methane and nitrogen-based emissions will be included in the system in 2026.

When it comes to the compliance process, each company must be registered with an administering authority. Companies within the EU will be assigned to the member state to which it is already registered with, whereas companies outside the EU will register with the member state to which they made the most port calls in the prior two monitoring years.

Ship's will monitor and submit their annual credits using the existent monitoring, reporting and verification (MRV) procedure in place. Starting in 2025, shipowners must submit an emissions report by the 31st of March followed by the number of allowances corresponding to this report by the 30th of September. These emissions will be based on the preceding year. At the time of submission, for each tonne of CO2 that is not accompanied by an allowance, there is a penalty of EUR 100.

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Who is ultimately going to pay for this EUA?

The EU has adopted the ‘polluter pays principle’, which means that the fuel buyer pays for EUAs. This will vary in the shipping sector, with the voyage and spot market compelling the shipowner to pay, while in the time charterer market the charterer will pay.

There may/will be a push pull effect between shipowners and the charterers as to who will bear the cost of the EUA ultimately. It will depend on the power plays of points in time. This is especially true for the spot market, where if there is one ship and multiple cargoes available, the shipowner will have leverage and be able to negotiate good terms, and vice versa. So, the market will work out how to price it in, and even though the obligations of who the EUA price will fall on are from the perspectives of the EU, the charter market is likely to decide how best to allocate those costs in reality.

Worked Example for one Ship (Panamax)

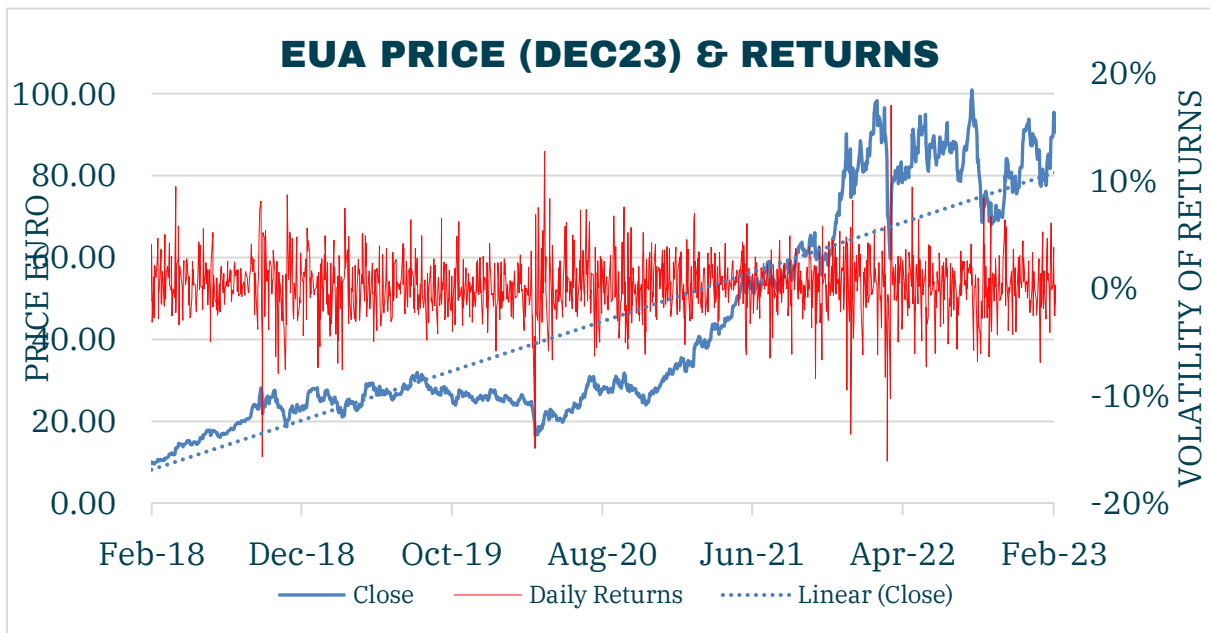
Let’s take an example, if we consider the busy dry bulk sector, and within that choose a Panamax. Panamaxes are quite often in Europe, so we can assume it spends 50% of its time under the EU’s jurisdiction, burning 33.5 tonnes of fuel a day, operating for a typical 340 days per year. If we map that to an EUA price of €100, a bunker price of \$555 per tonne using the common Very Low Sulphur Fuel Oil (VLSFO), and use the IMO multiple 3.114 tonnes of CO₂ per tonne of VLSFO—the costs of bunker fuel would increase by 12% in the first wave of the shipping sector’s introduction to the EU ETS. This will increase to 21% in the second phase in 2025 and finally to 31% in the third phase. Given that bunker costs are the most significant cost of the voyage, this could send shock waves through the market.

What is emissions risk?

Now a lot of our shipping clients are interested in understanding what this means from a risk management perspective.



Risk in this context means the risk of losing money because of having to spend more than necessary. The first way to avoid this is to surrender credits on time because failing that you'll be hit with a 100 Euro charge per credit not surrendered, in addition to having to actually buy the necessary credit. With this covered, there are many ways in which a smart trader might ensure a better price. Where trading strategy comes into play is knowing the market to such a degree that you can avoid spot risk, AKA those daily price swings by typically up to 5% that we mentioned earlier. A minimum expectation should be not paying above average price. The key is to have a strategy.



This is a chart of an EAU future, the DEC 23, the benchmark contract traded. This chart encapsulates your carbon risk because it is a cost.

The first key takeaway is the steady price rise, which here approximates to 64% per year over the past five years – This is more or less due to a question of supply: The EU reduces total allowances each year, this was at a rate 1.74% up until 2021, it was then amended to 2.2%, this rate of reduction will increase over time. The aim is to ensure that the sector is aligned with the EU's net target of a 55% reduction in emissions by 2030 compared to 1990 levels. The second key takeaway is the volatility of returns. You can see a clear price rise in line with economic activity, such as during the lifting of the lockdown through 2021, or a price decrease in line with selling off riskier assets such as during the onset of the Ukraine war in March 2022.

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Emissions Risk Management: How might a shipping player best mitigate the risk of volatile price movements?

For example, it might not be a great idea to buy all your EUAs the month before submission date, as similarly unaware buyers attempt the same, resulting in a short-term pent-up demand. Note, there is also a supply side element here, because the EU will issue allowances in view of the inclusion of shipping in the EU ETS, so it won't necessarily be that there will be a static supply and then masses of demand. However, the timing of take up of these credits will be known by many and the risk of a spot event in the end of Q1 2025 is much higher as a result. In terms of basic strategy, just by averaging in throughout the year, which is to say buying credits at the end of the month, the possibility of that spot risk is mitigated as you are not exposed to a one-off price at the end of a quarter or the calendar year which may exceed the average price of that year.

Smarter Strategy

Just by taking the average and averaging in, that is a 'passive' strategy that would outperform a spot strategy on the day, but being able to anticipate or interpret how to separate short term price spikes from fundamental or technical moves will be the next stage in trading precision. Often things that do not have anything to do with the medium to long term fundamentals *do* have short term effects. For example, holidays spikes, auction timings and things to that can have short term pressure on price. We saw some of those last summer. It's relatively straightforward if one understands the market to be able to say well actually that is unlikely to persist for more than a few months so I will withhold buying to confirm my average at that point and instead delay and recoup at lower levels when things correct back to fundamental levels which they should invariably do.

Smart strategy has many moving parts. With the end goal being cost minimisation for operators in this industry, instead of second guessing the market, one tactic might be to hedge exposure through purchasing allowances in the derivatives market. This is where it can start to get more complicated. There are all sorts of structures available here, such as options corridors or discount accumulators. Put simply, with options, you can gain a visible idea of your maximum cost. With futures, variability dependent on the direction you're in is predictable within a range and there are associated strategies that can mitigate those. Knowing that the end target is to reduce that cost, it is certainly something worth exploring for the shipping community. However, this sort of play has markedly more risk, and so is typically best handled by experienced brokers and traders.

In Sum

Given the increasingly stringent legislation being implemented, namely the 'Fit for 55' package, analyst forecasts predict EUA prices will continue to rise until 2030 and beyond. The move by

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the EU to integrate the shipping sector into its own ETS in 2024 is expected to fundamentally change how shipping operates. Designed to promote technological innovation and remove fossil fuel dependence, the EU ETS incorporates market-based incentives in order to ensure industry stakeholders take their environmental performance into account. With the cost of EUA allowances consistently over 90 euros a tonne, and with this price expected to increase, shipping players should already be developing strategies that minimise their exposure to this market.

Managing carbon risk is an emerging and integral concern for the shipping industry. By using EUAs and experts, shipping clients can reduce their costs and comply with regulations.

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