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Scenarios shaping EU ETS prices

- **Using Bloomberg's EUCPM model, we run scenarios to simulate several market and policy changes in the EU ETS market**
- **Our baseline scenario sees EUA prices rising to €145/tCO2 by 2030 and €200/tCO2 by 2035, driven mainly by lower supply of allowances and a decline in the Total Number of Allowances in Circulation (TNAC)**
- **We also consider a link between the EU-ETS and the UK-ETS in 2027, which would lower prices by up to 8 EUR/tCO2, increasing market liquidity while reducing TNAC**
- **A stricter market stability reserve (MSR) threshold would induce a temporary tightness raising the price towards 201 EUR/tCO2 in 2033, however, adjusting the intake rate alone would have no impact**
- **Adding carbon removals in 2030 would slow the rise in prices to €185/tCO2 by 2035 as more technologies under the removal scenario are allowed to be used for emission reductions**
- **Prices drop to €97/tCO2 by 2030 under an Optimistic transition scenario due to lower demand and higher abatement effectiveness, while the Pessimistic transition scenario leads to higher prices, mainly driven by increased demand**

Moutaz Altaghlibi
Senior Energy Economist
Moutaz.altaghlibi@nl.abnamro.com

Giovanni Gentile
Fixed Income Strategist
giovanni.gentile@nl.abnamro.com

Introduction

Carbon pricing is the main policy tool to control emissions and to achieve climate ambitions. The EU is a world leader in climate policies through its emission trading system (EU-ETS) which is currently the world's largest carbon market covering emission-intensive sectors. The price of the EU carbon Allowances (EUAs) is the main driver of the energy transition process. It incentivizes emissions reduction and the adoption of cleaner technologies. Thus, EUA price developments have been an interest for compliance entities, while providing a speculative and hedging opportunity to other parties such as institutional investors and financial intermediaries.

We have been actively following EU-ETS market developments and drivers in the short term in our Carbon Market Strategist series (see here our latest version). However, given the long term nature of the climate challenge and transition process, we provide in this note a long term outlook for EUA prices under several scenarios, distinguished in their assumptions on potential shifts in EU-ETS regulation and transition speed. For our price forecasts, we use the Bloomberg EU-ETS Carbon Pricing Model (EUCPM).

EUCPM model

We use Bloomberg's EU-ETS Carbon Pricing Model (EUCPM 2.0) to simulate EU ETS market balance and carbon prices. We judge that this well-established model captures the fundamental dynamics in the EU-ETS market. It incorporates forecasts for emissions allowance supply, baseline emissions, hedging demand, and marginal abatement cost curves (MACC).

Historical data is sourced from the EU Transaction Log (EUTL) and European Energy Exchange (EEX), while projections for free allocations, auctions, and business-as-usual emissions are based on other BNEF models.

The EUCPM estimates the annual total number of allowances in circulation (TNAC) and calculates the EUA shortage by comparing supply-demand dynamics with hedged holdings. This shortage determines the required emissions abatement, used to achieve a carbon price, equal to the lowest marginal abatement cost on the MACC. A market horizon is applied to factor in future scarcity for accurate pricing. More information about EUCPM can be found here.

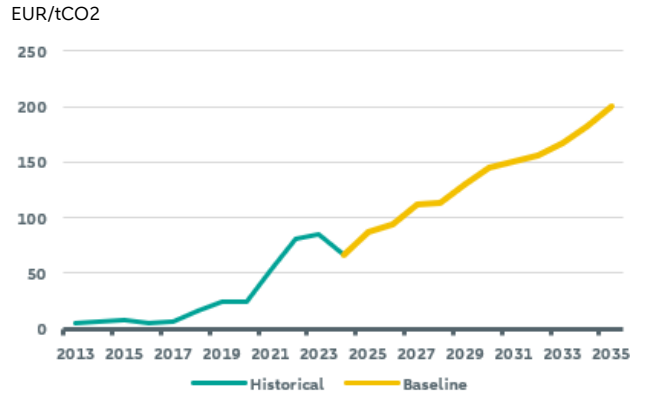
EU-ETS price scenarios

We begin with a Baseline scenario representing the current state of the EU ETS market. To isolate the price impact of proposed reforms or changes to the EU ETS structure or regulations, we simulate each development in a separate scenario thereafter. We also run two scenarios that reflect an optimistic and pessimistic transition process. For every scenario we project prices until 2035. We present our scenario background and narratives in the following sections.

Baseline scenario

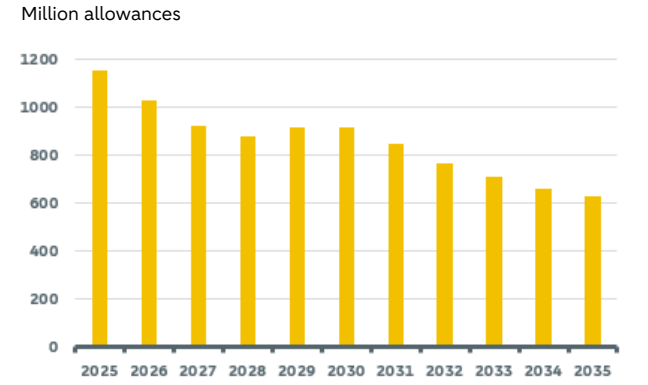
Under this scenario, we incorporate the current state of supply and demand in the EU ETS market. In this scenario we take CBAM's start in 2026 as given. While discussions about a potential linkage of the EU and UK ETS markets have been prominent in recent times, we do not include such linkage here. On the supply side, we lean on BNEF's assumptions on auctions and free allocations, estimated through a bottom-up approach. We also assume the linear reduction factor to be increased to 4.3% from 2028 onward according to current legislation. On the demand side, we rely on the actual transaction log, which BNEF uses to forecast business-as-usual emissions. Lastly, we assume that market players have a three year investment and hedging horizon. That is, firms will anticipate price increases and start hedging against ETS price risk three years in advance, as demonstrated in academic literature. We judge the combination of these assumptions as a reasonable basis for our analysis.

EUA prices to reach 200 by 2035



Source: BNEF, ABN AMRO Group Economics

TNAC decreases over time



Source: BNEF, ABN AMRO Group Economics

The chart above clearly indicates an upward trend for EUA prices in the years to come. Prices are set to reach 145 EUR/tCO2 and 200 EUR/tCO2 in 2030 and 2035 respectively. The surge in prices is driven mainly by lower supply. The right chart depicts the underlining yearly development in TNAC indicating a decreasing trend in almost all years except for 2029 and a to a lesser extent in 2030.

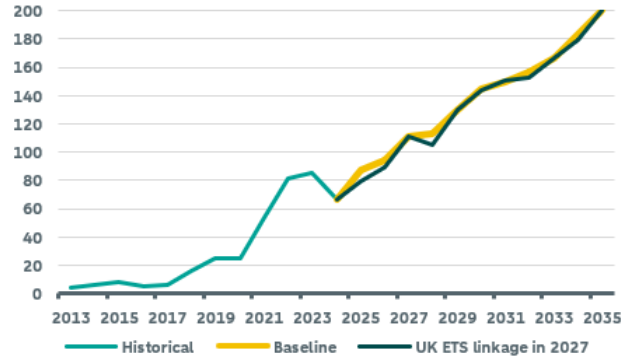
Linking EU-ETS with UK-ETS

Ahead of CBAM's implementation in 2026, some countries are pursuing climate agreements with the EU. In that regard, the UK has announced ongoing negotiations to merge its emissions trading system with the EU's. While details and timelines are still unclear, such a merger could impact carbon prices on both sides of the English Channel.

Linking the two systems would make allowances interchangeable, improve market liquidity, and likely narrow the current price gap by shifting demand to cheaper allowances. This could lower EUA prices, though the impact will depend on the timing due to differing cap trajectories. In this scenario, we assume the linkage between the two markets would take place in 2027. We further assume the UK power sector emissions is subject to a £18/tCO2 (nominal) Carbon Pricing Support (CPS) which effectively reduces power sector's abatement costs in UK MACC by £18/tCO2.

EUA prices to slightly decrease

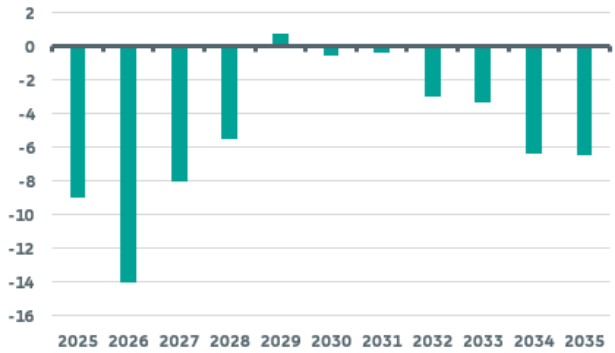
EUR/tCO2



Source: BNEF, ABN AMRO Group Economics

Change in TNAC (UK ETS linkage versus Baseline)

Million allowances



Source: BNEF, ABN AMRO Group Economics

As expected, results under this scenario show that EUA prices are slightly lower compared to the Baseline scenario. That is, linking the EU ETS and UK ETS would lower EU ETS prices by increasing the overall supply of allowances and enabling arbitrage between the two systems, especially as the UK ETS has lower marginal abatement costs. This would cause price convergence, with EU allowance prices decreasing as a result. Accordingly, the highest price difference between the two scenarios is 8 EUR/tCO2 in 2028. The impact of the linkage is already felt in 2025 as the model allows emission reductions from UK MACC two years in advance of the implementation year. All in all, the price change following the linkage is the result of changes in supply and demand of allowances, and the Market Stability Reserve (MSR)[1]. The right chart above depicts the change in TNAC between the UK linkage and the Baseline scenarios. Linking the two systems would induce an overall lower Total Number of Allowances in Circulation (TNAC) for most years along the forecast horizon.

MSR reform

There are several reforms that could take place in the coming year and would have direct impacts on EU-ETS. For example, the review of the Market Stability Reserve (MSR) in 2026 may strengthen the effectiveness of the ETS market, supporting emissions reductions. MSR controls allowances in the EU system based on TNAC. Adjusting intake/ejection thresholds therefore influences its operation. The MSR reform may introduce stricter rules to remove more supply from the market. Proposals range from maintaining or increasing the intake rate[2] (currently at 24%) by adjusting it toward 36% rather than allowing it to revert to 12% as currently scheduled from 2031 onwards. There are also calls to reduce the upper threshold, currently set at 833 million EUAs, to reflect reduced surplus and declining hedging requirements with recommended levels around 500-700 million EUA range. It can also be argued that the current buffer zone upper limit (currently set at 1096 million EUAs) should also be reduced to enhance market stability and prevent oversupply.

Accordingly, we run two scenarios. In the first one we assume that only the intake rate is strengthened from the current 24% towards 36%, starting from 2031 onwards while keeping the upper threshold constant. In addition to the 36% intake rate, we assume in the second scenario that the upper threshold for MSR is reduced from 833 towards 700 million allowances starting from 2031 onwards.

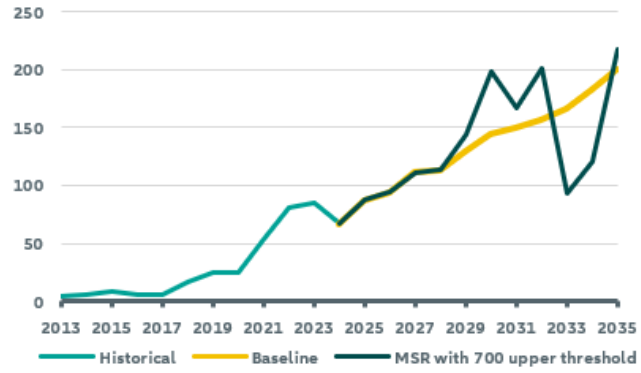
[1] The MSR manages supply in the EU ETS by automatically removing surplus allowances from the market when oversupplied and releasing them during shortages, ensuring market balance and price stability.

[2] The intake rate under the EU ETS is the proportion of surplus allowances taken out of the market and transferred to the market stability reserve to correct for supply and demand imbalances.

Under the first scenario, the change in the intake rate induced no change in price levels under the Baseline scenario. This is because the TNAC level under this scenario between 2031 and 2035 is already below the 833 threshold. Thus, the MSR mechanism is not triggered in this scenario.

EUA price to increase before temporary plunging

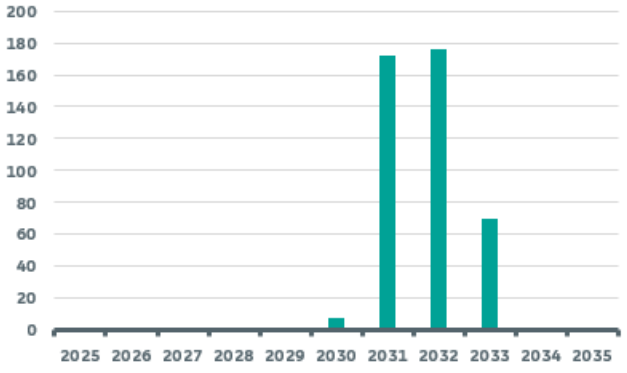
EUR/tCO2



Source: BNEF, ABN AMRO Group Economics

MSR withdrawal to increase

Million allowances (difference from withdrawals under Baseline)



Source: BNEF, ABN AMRO Group Economics

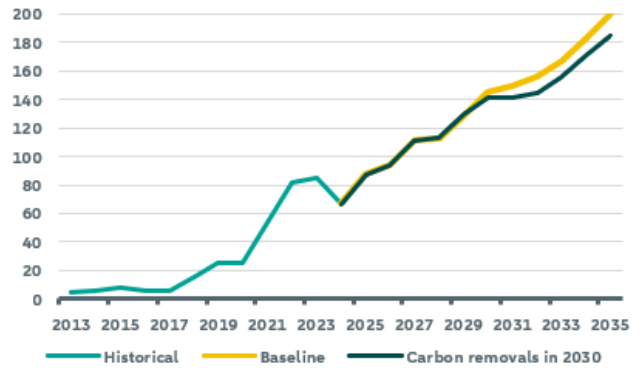
However, this is not the case when we decrease the upper threshold in the second scenario. As shown in the right chart above, which depicts the difference in MSR withdrawal amounts between this scenario and the Baseline scenario. The chart illustrates the impact of policy change of increasing the withdrawal amounts, reducing further the supply in the market and inducing a temporary surge in EUA prices towards 201 EUR/tCO2 in 2032 before plunging back to 93 EUR/tCO2 in 2033 and increasing again to 218 in 2035. These price dynamics are similar to those under backloading of allowances but here we see a sharper price reaction as the change in the upper threshold occurs at once, bringing along a sudden temporary tightness of supply. More concretely, the V-shaped price dynamics result from a combination of market anticipation, speculative behaviour, MSR dynamics (higher withdrawals of allowances), compliance frontloading, and external factors temporarily affecting demand. Initially, the MSR tightening drives prices up, but oversupply or reduced demand causes a temporary correction before long-term scarcity and policy ambition drive prices higher again.

Inclusion of removals by 2030

The European Commission is exploring the integration of carbon removal credits, particularly those involving permanent removals such as Direct Air Carbon Capture and Storage (DACCS) and Bioenergy with Carbon Capture and Storage (BECCS), into the EU-ETS. This initiative aims to enable the use of carbon removal credits to offset residual emissions from sectors that face particularly high obstacles to decarbonize.

Price to decrease with additional abatement options

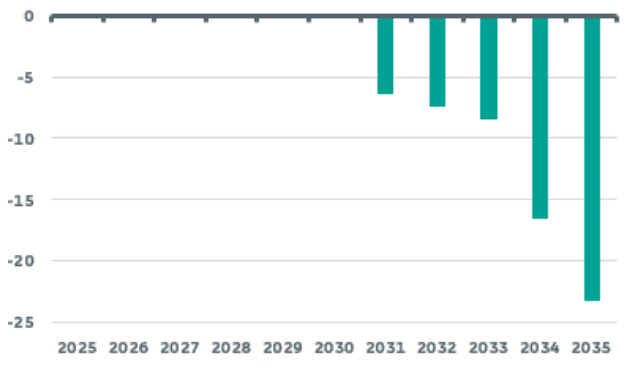
EUR/tCO2



Source: BNEF, ABN AMRO Group Economics

... and reduce TNAC

Million allowances (difference from Baseline TNAC levels)



Source: BNEF, ABN AMRO Group Economics

A formal review and evaluation of incorporating carbon removals into the EU ETS is planned for 2026. The earliest possible inclusion of carbon removals in the EU ETS is anticipated around 2030 or slightly thereafter, with ongoing negotiations and framework development in the intervening years. Recent proposals linked to the EU's 2040 climate target indicate that carbon removals could begin to play a role in compliance under the EU ETS starting in the mid-2030s, potentially around 2036 or later, depending on the adoption of the necessary legal and regulatory frameworks. Thus, under this scenario we are interested in the optimistic case when carbon removals are included in the EU ETS by 2030.

The left chart above shows that EUA prices will coincide with those under the Baseline up until the inclusion of removals in 2030. From that year onward projects under the removal MACC in the model are allowed to be used for emission reductions. That is, the inclusion allows for cheaper abatement options to be included in the MACC and thus reduces price levels associated to certain abatement options. Accordingly, the price under the two scenarios start to diverge towards 185 EUR/tCO2 in 2035 under the removals scenario. All in all, Including carbon removal credits in the EU ETS would lower allowance prices by increasing compliance options and reducing demand for allowances. The price impact depends on the cost and availability of removal technologies like DACCS and BECCS, with limited supply potentially muting the effect.

Optimistic versus pessimistic transition scenarios

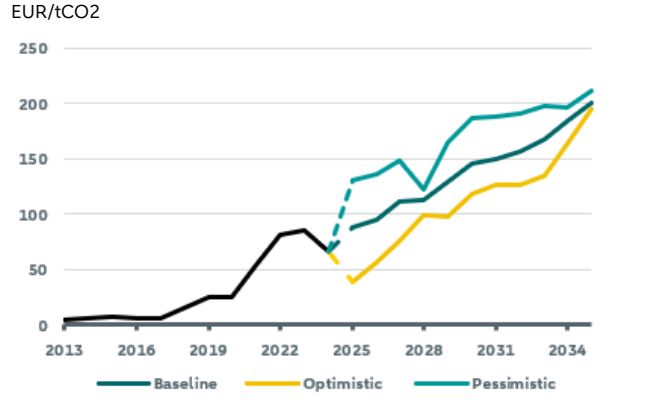
In this section, we present the narrative and results of two opposite scenarios. Each of these scenarios reflects a combination of market changes driving the speed of the transition process.

Under the Pessimistic transition scenario, we assume a combination of market and policy changes that result in a slower transition process. More precisely, we assume a higher emission cap inducing higher supply of allowances through lower liner reduction factor of 3.3% (4.3% under the Baseline scenario). This could come about as a result of a change in climate ambitions or more relaxed emission reduction targets. We also assume higher demand for allowances by 5%, compared to the baseline scenario along the forecasting horizon. This could be due to a lock-in effect due to clean technologies not being readily available, low fossil fuels prices, or even a delay in infrastructural development. Lastly, we assume lower effectiveness of abatement technologies (5% lower than Baseline), which necessitates more investments to achieve specific emission target.

The Optimistic transition scenario assumes the opposite dynamics to those under the Pessimistic transition scenario. More concretely, we assume here higher linear reduction factor (set at 5.3%) leading to lower supply of allowances. We also assume lower demand for allowances reflecting a smooth adoption of clean technologies and development of needed infrastructure. We also include a 5% higher effectiveness of abatement technologies compared to the Baseline scenario.

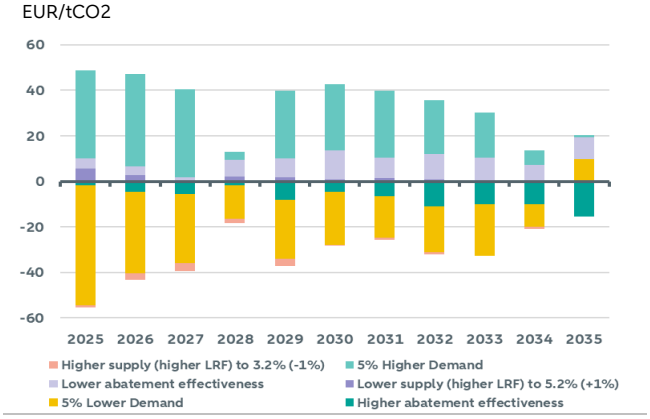
All in all, EUA prices will decrease under the Optimistic transition scenario and increase under the Pessimistic transition scenario in comparison to the Baseline scenario.

EUA price to diverge along the forecast horizon



Source: BNEF, ABN AMRO Group Economics

Singled-out nominal price impact on Baseline price



Source: BNEF, ABN AMRO Group Economics

The right chart above depicts the nominal price impact of each of the market and policy changes we implemented under the Optimistic and Pessimistic transition scenarios on the price of the Baseline scenario. The chart further illustrates the

heterogenous impact of market dynamics over time and across policies. We see that adjustments like lower supply would increase prices, while higher abatement effectiveness and lower demand reduce prices. The interplay of these factors determines the overall EUA price trajectory under different scenarios. For example, under the Optimistic transition scenario in 2030, EUA price will reach 97 EUR/tCO2, almost 32 euros lower than the Baseline price level in that year. This difference is the final impact of higher linear reduction factor (increases price by 2 EUR/tCO2), higher abatement effectiveness and lower demand (which decreases the price by 8 and 26 EUR/tCO2, respectively).

All in all, the final price level under the two scenarios provides a price range around the Baseline level. This range could be higher or narrower, depending on the size (significance) of the market dynamics used as input in the model. Also, it's important to note that these market dynamics can move in opposite directions, offsetting each other's net effect on EU-ETS prices.

We think that the scenarios presented in this note shed a light on possible price changes under different market and policy reforms within the EU-ETS and provide a useful reference to other scenarios combining one or more market and policy changes.