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# The training wheels come off

## The end of free emission allowances in Europe

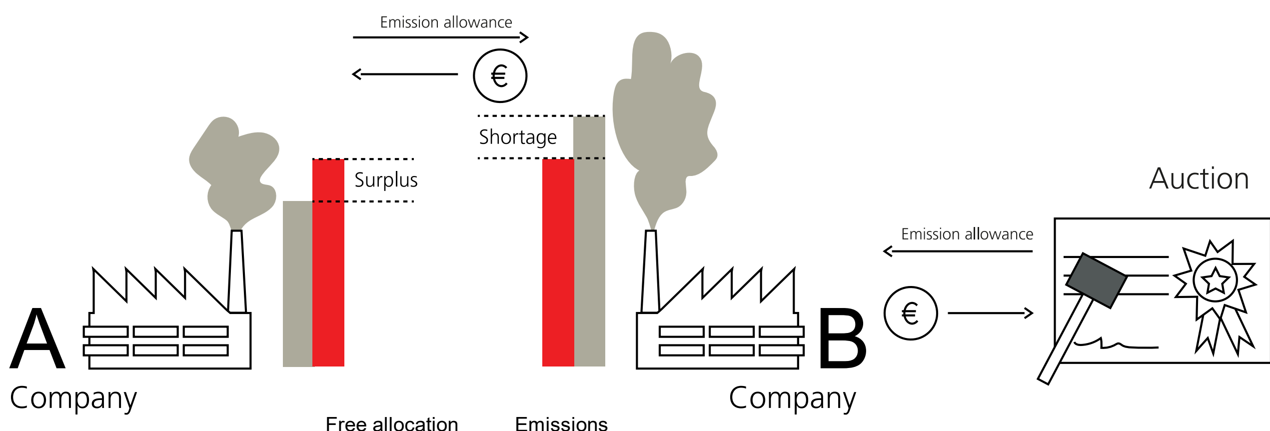
The European Union's cap-and-trade scheme, known as the EU Emissions Trading System (EU ETS), incentivizes companies to lower their emissions to support the region's net zero goal. Adam Gustafsson and Ellis Eckland, UBS-AM research analysts, explore how the expected withdrawal of free emission allowances within the EU ETS might affect the economics of countries, industries, and individual companies. Some novel analysis and collaboration with Marcus Ferdinand, Chief Analytics Officer at the low carbon market insights firm Veyt, provide a look at how decarbonization could provide benefits to a forward-looking steel company.

The analysis suggests a higher carbon cost for climate laggards may be significant, but likely to be passed on to customers, driving up the steel price. However, companies that decarbonize may benefit twofold: they avoid the higher carbon cost while still benefiting from higher steel market prices. Threefold, if their customers are willing to pay a price premium for low-carbon products. However, decarbonizing steel production requires significant investments. Uncertainty around regulation, the future carbon price, and green price premiums makes these large transformative investments risky.

**EU ETS**

The EU ETS was introduced in 2005 to incentivize industry to decarbonize. Each emission permit gives a company the right to emit one metric ton of CO2e. While most industries must buy permits at full market cost, some industries deemed particularly vulnerable to internationally competition receive free allowances. In 2023, the European Commission gave guidance on the withdrawal of these free allowances. This amplifies the incentive for affected companies to accelerate decarbonization to avoid escalating costs. If they manage to reduce emissions faster than the withdrawal of free allowances, surplus permits can be sold to companies with shortages providing a source of additional revenue.

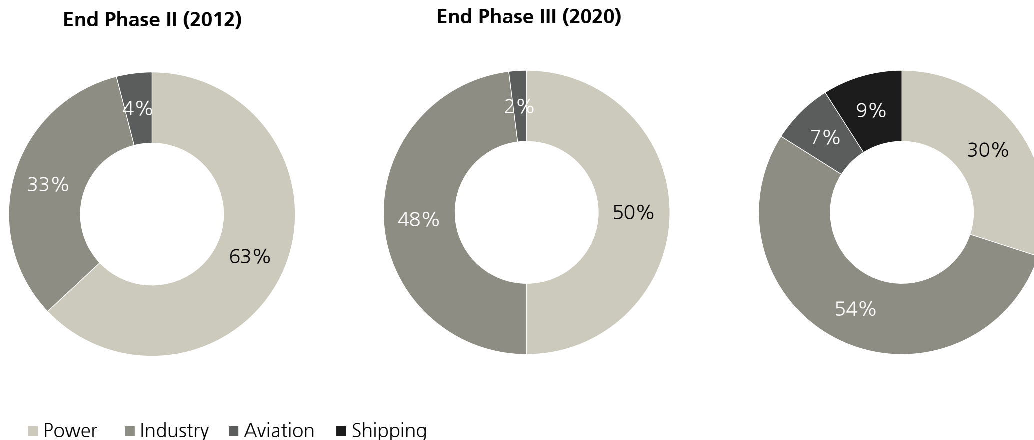
**Companies buy and sell emissions permits on the EU ETS**



## Shifting the focus from power to industry

Many industrial processes are more complicated and expensive to decarbonize than energy generation. As the power sector continues to decarbonize at pace, industry is expected to become Europe's highest emitting sector. The share of total emissions produced by aviation, which was added to the ETS in 2012, and shipping, added to the ETS this year, is also expected to increase. Therefore, we expect the focus to gradually shift to industry and transportation.

**Power emissions are decreasing, and industry emissions are increasing as a percent of the total**




Source: Veyt analysis, February 2024

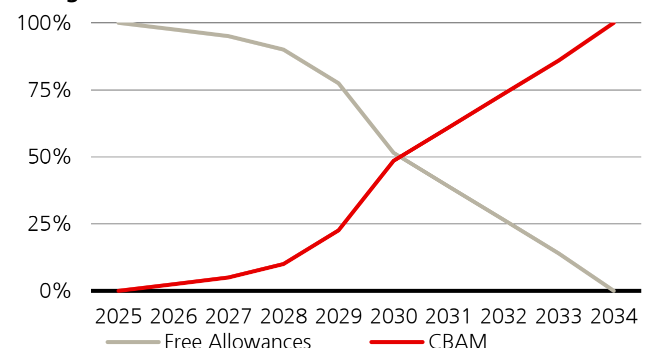
According to Veyt's Ferdinand, the system's market stabilization mechanism will treat the REPowerEU volumes as a supply shock, holding back more allowances from the auctions and keeping them out of market circulation. (REPowerEU, or Renewable Energy Power for Europe, is a term that can refer to various initiatives and policies aimed at promoting the use of renewable energy sources in Europe). With a cap designed to reach zero before 2040, the room for emissions from the big polluters is narrowing very fast. Carbon prices will have to reflect the cost of reducing emissions: Veyt forecasts prices to hit EUR128/t in 2030 (in 2023 real terms). Together with renewable energy policies, this will result in a relative decrease in power sector emissions and a stronger focus on industrial sectors to decarbonize to stay within the cap. Every delayed investment into abatement technology today will add to a bullish market environment towards 2030 and beyond. The earlier the market sees through the fog, Veyt predicts, the earlier the carbon price will re-align with the mid-to-long-term fundamental picture.

## Phase-out of free allowances

Sixty three sectors and sub-sectors are receiving free allowances essentially covering 100% of their emission cost. The covered activities can be found on the EU's carbon leakage list. The expectation has always been for the free allowances to be phased out and while the total emissions cap is reduced over time. In 2023 the European Commission gave guidance on the phase-out: starting in 2026, accelerating towards the end of the decade, and completely withdrawn by 2034.

As the allowances are phased out, carbon leakage and competition issues will likely arise if companies in less restrictive countries or regions can sell more carbon intense or cheaper goods into Europe. Therefore, in parallel, the EU is introducing the Carbon Border Adjustment Mechanism (CBAM). This is effectively a carbon import duty designed to provide a level playing field.

**As free allowances are phased out in the EU duties on foreign emissions will rise**



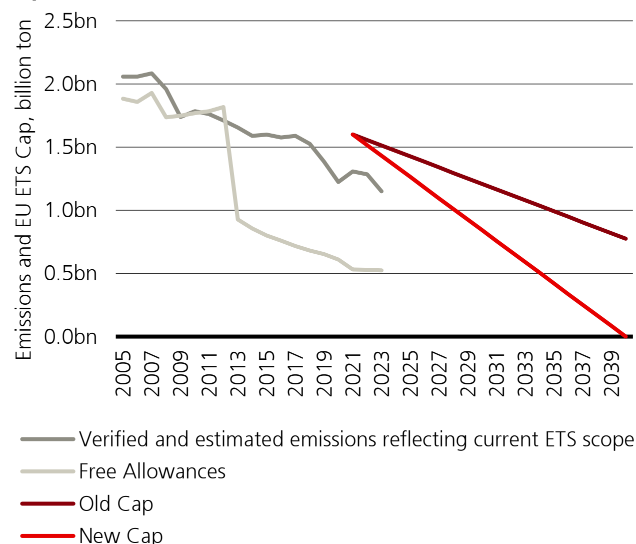

Source: European Commission, April 2024

**EU ETS: historical emissions and expectation for cap reduction**
From 2005 to 2012, free allowances covered most of the industry emissions in the EU ETS. In 2013, the free allowances were reduced, and fewer activities were covered, which introduced an actual cost for the aggregate EU industry. In 2023, the EU ETS covered around 1.15 billion ton of emissions, including aviation, out of which around half were covered by free allowances. Emissions covered by the EU ETS represent around 3.5% of global emissions. While today's emissions are comfortably below the cap, that is expected to change as the reduction pace accelerates.

The EU's Executive Vice-President Maroš Šefčovič gave guidance on a 2040 'milestone' on 6 February 2024, saying: "After careful thought and consideration, we are recommending that by 2040, the European Union reduces its emissions by 90 percent, compared to 1990 levels."

This will accelerate the emission cap reduction rate significantly making it challenging to run a European business with emissions beyond 2040. While uncertainty remains, the expectations are clear. The EU's final legislation reflecting 2040 targets is expected by mid-2026. To reach net zero within the EU ETS, we expect accounting for removals offsetting residual emissions to be introduced.

**Historical emissions within EU ETS and future emission cap**

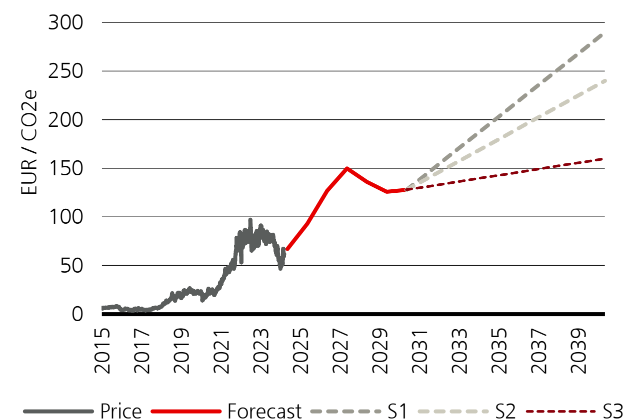


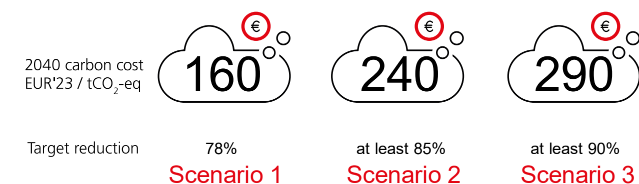

Source: European Commission, April 2024

With the revised fit-for-55 EU ETS directive, a number of cap tightening measures have taken effect as of 2024, according to Veyt. The cap will be rebased twice to adjust it closer to actual EU ETS emissions. First, it will be reduced by 90 million tons in 2024 and second by 27 million tons in 2026. On top of that, this year the linear reduction factor (LRF) increased. This means that the cap will be reduced by 84 Mt each year compared to 43 Mt under the previous ETS framework. The maritime sector is gradually included as a new sector in EU ETS in 2024. The REPowerEU plan to speed up European independence from Russian fossil fuel, is partly funded by the sale of EUAs. A monetary target of EUR 20 billion will be met by front-loading allowances which otherwise should have been auctioned on behalf of Member States and the Innovation Fund, according to Veyt.

**The EU ETS price**
After hitting an all-time high in early 2023, reaching EUR 100 for the first time, near-term EU ETS permits traded in a EUR 45-70 range so far in 2024. The lower level reflects both an improved energy situation in Europe and weak industrial production. However, based on Veyt's analysis, we should expect the price to increase significantly over time.

**ETS carbon emission price is expected to rise over time**



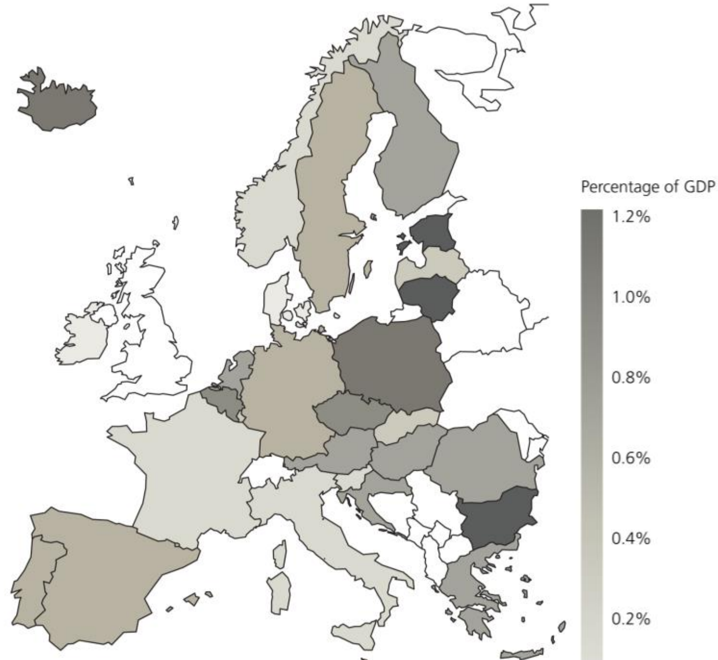

Source: History from European Commission, 2024, and forecast from Veyt, May 2024

The three scenarios between 2031 and 2040 depict the view of the European Commission on the carbon price required to reach climate neutrality in 2050, considering different net GHG levels in 2040. Scenario one assumes continuity of existing decarbonization trends up to 2040, scenario two includes a wider diffusion of novel technologies by 2040, and scenario three assumes an even faster and wider uptake of novel technologies over 2031-2040 such as carbon capture, and e-fuels, according to Veyt.

**Economic significance of free allocations**
Free allowances at facility level are publicly available from an EU database. Around 7,000 individual facilities receive free allowances. We mapped these activities to their ultimate owners. While our mapping relies on several assumptions, for instance, we assume the largest owner fully owns the facility, we still believe the numbers give a good read on how material these free allowances are for countries, sectors, and individual companies.

Our research turned up 300 listed companies benefiting from free allowances, with 70% of the free allowances going to public companies and 30% to private companies.

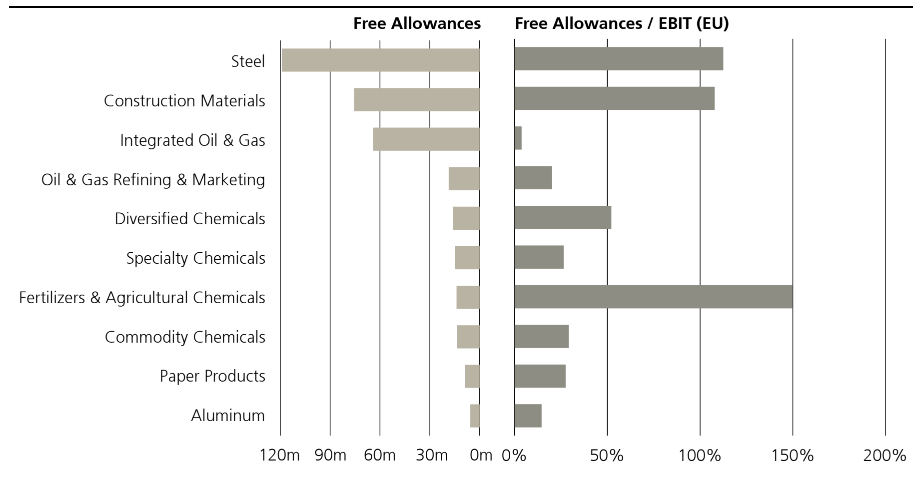
**Value of Free Allowances as a Percentage of GDP**
To put the current free allowances in perspective, at an EU ETS price of EUR 100 the total value is the equivalent to around EUR 550bn compared to EU's current GDP of around EUR 16tn. But the impact varies greatly between member states. Free allocations tend to be more material for highly industrial countries in Eastern Europe.




Source: European Commission, World Bank, and UBS Asset Management, January 2024.

**Industries with greatest impact**
Aggregating data for the 300 listed companies allowed us to assess impact at the sector level. Public companies in the steel sector receive the most free allowances, a total of 120M. If we assume an EU ETS price of EUR 100, the value of the free allowances surpasses the estimated 2024 earnings before interest and taxes (EBIT) from European operations for three sectors: steel, construction materials, and fertilizer and agriculture chemicals.

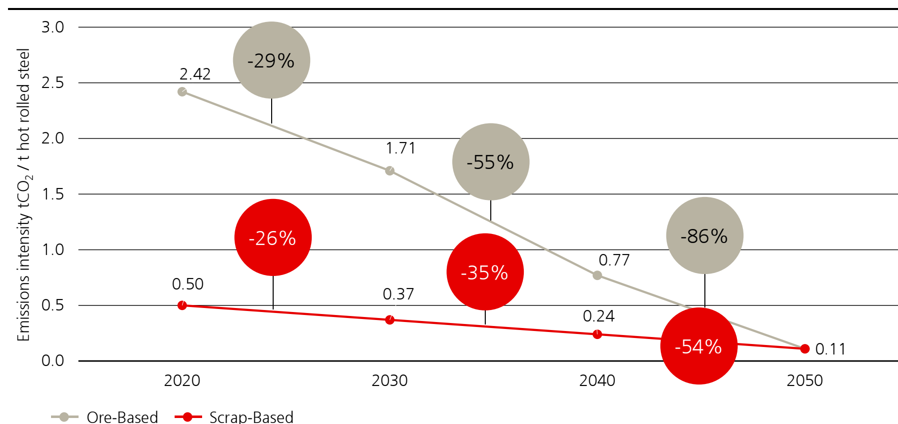
To derive this number, we multiplied analyst consensus estimates for EBIT consolidated at the company level by the percentage revenue derived from the European business. This impact scales linearly with the EU ETS price, i.e., at EUR 50 it halves and at EUR 200 it doubles. Note that the full impact is expected to be realized first in 2034 when the free allowances are expected to be phased-out completely.




Source: European Commission, Factset, and UBS Asset Management, January 2024.

**Case study: steel**
In absolute terms, steel will see the largest impact. The European steel sector predominantly relies on traditional coal fired blast furnaces and moving to electric arc furnaces (EAF) will come at significant cost and will put pressure on already stressed energy systems. The limited supply of required scrap metal or sponge iron produced with direct reduced iron (DRI) further complicates the transition.

**The steel sector's path forward**
The Science Based Targets initiative (SBTi) provided pathways for alignment with 1.5°C. In these, ore-based steel production intensity is expected to drop to 1.71t $CO_2e$ / t steel by 2030 and 0.77 by 2035. More efficient scrap-based production is expected to decarbonize at a slower pace.




Steel Science-Based Target-Setting Guidance
Source: The Science Based Targets initiative (SBTi), July 2023.

**Steel company margin impact scenarios**
We looked at how the free allowances combined with decarbonization actions might impact profit margins for a European steel producer in the year 2034. Inevitably, this gets somewhat technical and requires several assumptions.

We assume a steel price of 650 EUR per ton and that baseline profit margins are 10% EBITDA and 5% EBIT. Significant upfront decarbonization investments, assumed to be around EUR 1bn per million ton of annual production capacity, leads to a 50% increase in depreciation cost. Currently, production with an electric arc furnace (EAF) is more expensive compared with a traditional basic oxygen furnace (BOF).

Without any carbon cost or subsides we assume this cost difference is 35%[1].

Last, we assume European steel production decarbonizes aggressively in line with SBTi and reaches an average intensity of 1 ton $CO_2e$ per 1 ton of steel produced in 2034. If an EU ETS of EUR 100 is passed on to customers, this will lead to a EUR 100 (15%) price increase of steel. Importantly, we assume that buyers of steel can absorb this increase and that there is no change in demand.

## Now let's look at 6 scenarios:

1. **Without incentives**: emission legislation breaks down resulting in zero carbon cost for European steel producers – the 5% EBIT margin remains unchanged.

2. **Free allowances phase out:** in this scenario the steel producer absorbs the full carbon cost with an EU ETS price of EUR 100 – this results in a -10% EBIT margin.

3. **Carbon cost pass-through:** in a more likely scenario, the cost is passed on to the customer leading to a 15% higher steel price – reverts to a 5% EBIT margin.

4. **Fossil-free production:** if the company successfully decarbonizes, the carbon cost goes to zero while they still benefit from the higher market price. However, as of today, DRI production is around 35% more expensive and depreciation charges will increase – EBIT margin drops back to -10%.

5. **Green premium:** if customers are willing to pay a 25% green premium for fossil-free steel – the EBIT margin shoots up to 15%.

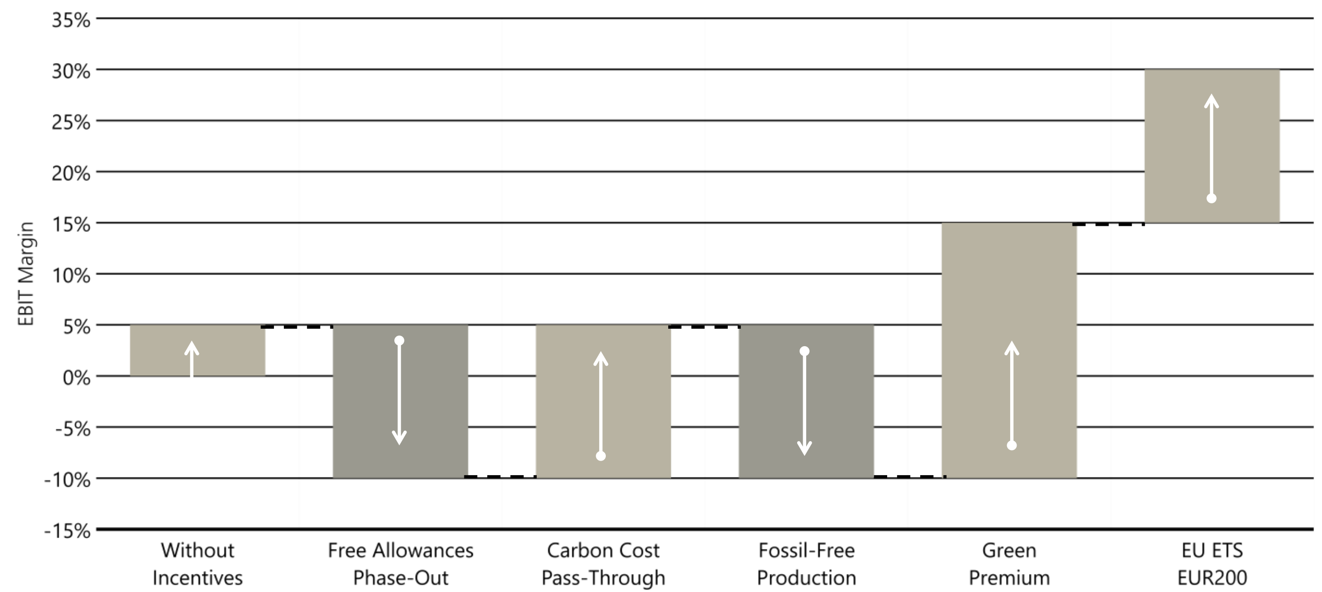
6. **EU ETS EUR 200:** and, finally, if the EU ETS instead trades at EUR 200 by 2034, this will result in a 30% higher market price of steel, which will benefit the fossil-free producer – our analysis suggests this would result in a 30% EBIT margin.

These scenarios are oversimplified and only meant to illustrate the potential without assigning any probabilities. Many important variables are left out of the analysis, such as changes in OPEX, variation in local electricity price, and access to sponge iron and/or scrap.

As we see from scenario four, steel producers that move forward with costly decarbonization investments are dependent on support from green premiums and a meaningful carbon price. Without these, they bear the cost but do not reap the benefit leading to collapsing margins. Also, we believe that margin expansions in scenarios five and six are unlikely to persist in the long run as competition catches up and low emission steel becomes the new normal. While there are no obvious paths forward, we still believe companies taking action represents the best risk-reward for investors.

1 Based on analysis by Andrew Jones, Head of Steel Research and EMEA Paper & Packaging, UBS Investment Bank.

**Profit margin impact scenarios**




| | Without incentives | Free allowances phase-out | Carbon cost pass-through | Fossil-free production | Green Premium | EU ETS EUR 200 |
|---|---|---|---|---|---|---|
| **Sales** | **100** | **100** | **100** | **100** | **100** | **100** |
| *Green Premium* | *0* | *0* | *0* | *0* | *25* | *25* |
| **Cost of goods sold** | **80** | **80** | **80** | **80** | **80** | **80** |
| Incremental DRI Production Cost | 0 | 0 | 0 | 28 | 28 | 28 |
| Carbon Cost | 0 | 15 | 15 | 0 | 0 | 0 |
| Carbon Cost Pass-Through | 0 | 0 | 15 | 15 | 15 | 30 |
| Selling, general, and administrative | 10 | 10 | 10 | 10 | 10 | 10 |
| **EBITDA** | **10** | **-5** | **10** | **-2** | **23** | **37** |
| Depreciation | 5 | 5 | 5 | 5 | 5 | 5 |
| Depreciation of Incramental EAF CAPEX | 0 | 0 | 0 | 3 | 3 | 3 |
| **EBIT** | **5** | **-10** | **5** | **-10** | **15** | **30** |

Source: UBS Asset Management, May 2024.

## Looking ahead

We believe efficient carbon pricing mechanics are necessary for the world to achieve net zero. Investors need to understand the role that it will play in industry's profitability, particularly in time of changing dynamics as exemplified by Europe's phase out of free allowances. Understanding these complexities informs investments in companies with high-emissions in need of decarbonization. Also, it is a tool for us in engagement, encouraging laggards to be more ambitious and supporting leaders in their execution.

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