The EU ETS at a Crossroads: Competitiveness Concerns and Policy Scenarios

Joseph Dellatte

Why the EU ETS Is Being Questioned Today

The **European Union Emissions Trading System** (EU ETS) has been the cornerstone of Europe's climate strategy since its **launch in 2005**. Under the ETS cap-and-trade scheme, a cap on total emissions is set and divided into tradable allowances; companies must hold **an allowance for each ton of CO_2** they emit. This mechanism forces polluters to pay for emissions, **internalizing the carbon cost into business decisions**, while allowing **flexibility** through trading so that reductions occur where cheapest.

The ETS's appeal lies in its **technological neutrality** (it doesn't prescribe how to cut emissions, only creates a price signal) and its **cost-effectiveness**, theoretically achieving emissions cuts at the lowest overall cost to the economy, with little impact on public finances.

In practice, the EU ETS has driven significant emissions cuts in covered sectors – by 2023, emissions from European power plants and heavy industry had fallen ~47% compared to 2005.

With various ways to decarbonize, Europe's bet was that a robust carbon price signal would incentivize such transformations and **stimulate green innovation**, without picking winners. Indeed, studies have found the ETS has contributed to an increase in low-carbon patenting and incremental innovation in covered industries.

For years **the ETS suffered from low prices** (due to overallocation and economic crises), delaying its impact. Reforms (like the Market Stability Reserve) eventually tightened supply, and **carbon prices surged from under €10 a few years ago to ~€80 per ton recently** (peaking above €100 in 2023). This strengthened the decarbonization signal – but also intensified costs for European industries.

As climate ambition ratchets up, the **political backlash** has grown: companies and some Member States voice concern that the ETS imposes burdens that competitors abroad do not face. Based on **industrial competitiveness worries**, some question whether Europe's climate leadership is tenable amid global economic rivalry and an uneven playing field on energy and climate costs.

ETS Goes Global – Carbon Pricing Is No Longer Only European

First of its kind, **the EU ETS is no longer an isolated experiment**. In the past two decades, carbon pricing has spread worldwide, with 80 carbon pricing instruments (ETS or carbon taxes) in place, covering about **28% of global greenhouse gas emissions**. Major economies have followed Europe's lead in adopting emissions trading or carbon fees, often with the support of the EU – **from China to US states, Canada or New Zealand. Many more, like Indonesia, Türkiye or Mexico are developing them**.

Yet, **not all carbon markets are created equal**. Approaches differ vastly in scope, stringency and intent. Many systems have much lower carbon prices or cover fewer sectors than

the EU ETS, often reflecting implicit industrial policy choices to shield local industry.

For example, launched in 2021, China's national ETS price hovers around **$8–14 per ton**, and it allocates allowances based on emissions intensity benchmarks (allowing output growth). California's cap-and-trade has a price of roughly **$30–40 per ton** (recent auctions settled at ~$38), and the U.S. Regional Greenhouse Gas Initiative (covering power plants in the Northeast) sees prices on the order of **$13–14/ton**. South Korea's ETS, despite broad coverage, has traded as low as **$7–8/ton** recently. In contrast, the EU carbon price has been in the range of **$80–100+ (approximately €70–90)** in the past year – by far the highest of any major ETS. Only a few countries (like Switzerland or Sweden's carbon tax) approach similar levels.

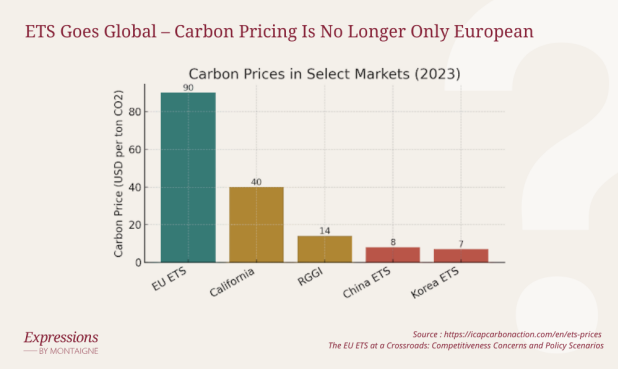

Figure: Carbon prices (USD per ton CO_2) in select carbon markets (2023). The EU ETS price (blue) far exceeds that of other systems – California and RGGI in the U.S. (green) or China and Korea (red) – reflecting Europe's higher climate stringency.

Design differences go beyond price. Many systems cover **a limited set of sectors** (often power generation, as in RGGI or the initial Chinese ETS, with industry only gradually included) or grant a large share of allowances for free to mitigate industry impact (Korea, China, and until recently the EU itself). Some incorporate price ceilings or floors to contain costs (California has a price floor rising annually and a hard price ceiling to prevent prices above ~$90). Others allow the use of **offset credits** to reduce compliance costs – something the EU sharply curtailed after learning that cheap international credits had flooded its market and **suppressed the carbon price, delaying industrial decarbonization** in the ETS's early years.

In essence, many non-EU jurisdictions have built "**functional but accommodating**" carbon markets: they establish the carbon pricing principle, but with design tweaks that limit short-term economic impact on domestic industry. Climate ambition and industrial intent vary: some systems primarily target power sector emissions or serve to raise revenue, whereas Europe's aims to fundamentally transform industrial processes. As underlined by the **World Bank, carbon pricing is expanding globally, but "the increase is mainly occurring in countries that are already pricing carbon,"** and high price levels remain largely a European phenomenon.

For the EU, this global diffusion is **a double-edged sword**. On one hand, it validates the concept of carbon markets, creates potential for future cooperation and gives a diplomatic asset to the bloc. On the other hand, the stark **differences in ambition feed the argument that Europe's industry bears a unique burden**. If European firms pay €80/ton while foreign rivals pay €8 or nothing, carbon leakage (shifting of emissions and production abroad) becomes a real concern.

CBAM, and the EU Climate Package – Coherence of the Initial Model

The EU's recent "Fit for 55" climate policy package is an attempt to **square the circle of climate ambition and competitiveness**. It significantly tightens the ETS cap (aiming for -62% ETS emissions by 2030 vs 2005) and – crucially – restructures carbon leakage protections by phasing out free allowances and

phasing in a **Carbon Border Adjustment Mechanism** (CBAM). The logic is to replace an internal subsidy (free emission permits given to EU producers) with an **external levy** (a border charge on imported goods), thereby maintaining a level playing field without undermining the carbon price signal.

Starting 2026, as free allocations under ETS decline, importers of carbon-intensive products like steel, cement, aluminum, fertilizers, electricity (and later, hydrogen and downstream products) will have to purchase CBAM certificates pegged to the EU carbon price. By 2034, when free allowances drop to zero, CBAM will be fully in force on these sectors – ensuring that whether a ton of steel is produced in Europe or abroad, the **"embedded" carbon is priced equivalently**. This policy coherence is aimed at *both* **climate integrity** (preventing carbon leakage that would undermine emissions cuts) and **fairness for EU industry** (domestic firms won't be undercut by carbon-cost-free imports).

Equally important, the CBAM is designed as a **climate diplomacy tool**. It creates a concrete incentive for other countries to strengthen their own carbon pricing or regulations to avoid paying the EU's fee. Initially, some trading partners decried CBAM as protectionist, but it may be spurring a "virtuous cycle" of climate action: **several major exporters to the EU have announced plans for carbon pricing or emissions trading of their own** (e.g. the top five steel exporters – China, Turkey, Russia, South Korea, and India – are all implementing or at least piloting carbon pricing). **Rather than a climate tariff war, CBAM's early trajectory suggests it could *globalize* the carbon pricing norm.** In this way, CBAM leverages the EU market's size to diffuse climate ambition abroad – a strategic complement to the ETS.

From an internal EU perspective, CBAM was also the *political key* to unlocking ETS reform. Energy-intensive industries had long lobbied that removing free allowances too fast would invite a wave of plant closures or job losses. The promise of the border adjustment eased these fears by shifting **carbon costs onto importers instead of European firms** during the transition. It gave political cover to agree a firm end-date for free allowances (2026–2034).

However, **if CBAM was delayed or diluted, the deal to end free allocations could unravel**. Thus, **the climate package's integrity** is a **three-legged stool**:

- *ambitious ETS cap,*
- *no free rides for domestic polluters,*
- *CBAM leveling external competition.*

Initially, this model seems coherent and ambitious, aligning Europe's climate tools into a unified strategy. It also has a financial upside: as free allocation shrinks and more allowances are auctioned, EU **ETS revenue has ballooned** (Member states auction revenues jumped to €25 billion in 2024, a five-fold increase since 2017). **These funds, if invested wisely, form the "carrot" to complement the ETS "stick".**

Fast forward to today, and we see **growing doubts** about this strategy. **Implementation challenges for CBAM** remain (ensuring WTO compatibility, administrative burden for importers, handling trade partner pushback). More urgently, Europe's industry finds itself squeezed by high energy costs and foreign subsidy onslaughts, leading some to argue the entire ETS/CBAM edifice might need rethinking or even to be scrapped.

Why the ETS Faces Pushback Now: The Competitiveness Crunch

At the heart of current ETS skepticism is a stark reality: **European manufacturers pay significantly more for energy and carbon emissions than many of their global competitors**, potentially undermining their viability. This issue has been magnified by recent crises (the post-Covid demand surge, Russia's

war on Ukraine sending European gas prices to record highs in 2022, etc.), but it is also structural. Europe has long had higher energy costs – due to both resource endowments (Europe imports most of its fossil fuels) and deliberate policy (taxes, carbon pricing). Now, with carbon costs rising too, industrialists warn of a perfect storm for energy-intensive sectors like steel, chemicals, cement, fertilizers, and aluminum.

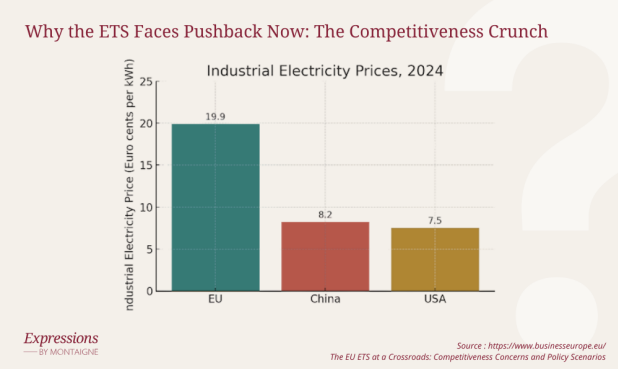

*Figure: Average industrial electricity prices in 2024 (Euro cents per kWh). EU industries pay roughly **20 c€/kWh**, more than twice the cost in China (8 c€) or the US (7.5 c€). Such energy price gaps are a major competitive disadvantage for European manufacturers.*

As the figure shows, **European industrial electricity prices are considerably higher than those in competitor economies – on the order of +150% compared to the U.S. or China**. Natural gas shows similar disparities, especially after 2022 when EU gas spiked to 5–10 times U.S. levels (though it has since eased). These structural cost differences mean that European firms incur higher operating costs quite apart from climate policy.

On top of this, the **carbon price** adds another cost layer in Europe that, for the most part, does not exist elsewhere. **An EU steel mill not only pays twice as much for electricity as a Chinese one, it must also buy CO_2 allowances at €80/ton – whereas the Chinese mill faces a ~$10/ton carbon price (if any)**, and American mills outside California face no carbon cost at all.

Little wonder that **European industries** are **sounding alarms** about an **"un-level playing field,"** where **Europe's dual handicap** – expensive energy + explicit carbon pricing – makes it difficult to attract investment in energy intensive industry.

Why the ETS Faces Pushback Now: The geo-economic Crunch

This concern must be viewed in the context of intensifying geo-economic competition. Two alternative models of development are now asserting themselves on the global stage with consequences on Europe's choice:

- **China's "Electro-State" model**: China has invested massively in industrial infrastructure and clean-tech manufacturing, supported by abundant cheap electricity (often coal-based) and hefty subsidies. **Beijing's industrial policy**, through vehicles like five-year plans and the *Made in China 2025* strategy, **directs large subsidies** into solar panels, batteries, electric vehicles, and other low-carbon technologies – building a **dominant export position**. For example, China today produces the majority of the world's solar panels and EV batteries, having leveraged low energy costs and state financing to outcompete Western producers. Overall Chinese industrial policy support (for all sectors) is estimated at **~4% of GDP**, far exceeding what EU countries can muster. This "electro-state" approach – use state resources (and underpriced coal power) to electrify and dominate emerging green industries – poses a formidable challenge to Europe's high-cost,

market-driven approach.

- **The U.S. "Renovated Petro-State" model**: The United States, historically a fossil fuel superpower, has recently coupled its petro-economy advantage with aggressive industrial subsidies. On one hand, the U.S. enjoys cheap domestic energy: the shale revolution made the US the world's largest oil and gas producer again, keeping industrial natural gas prices around a third of Europe's. It is now a major LNG exporter, and in 2025, it struck a transatlantic deal wherein **Europe pledged to buy $750 billion of U.S. energy (LNG, oil, nuclear) by 2028** – deepening, in principle, Europe's reliance on American energy supply. Washington is also working very hard on expanding external resource access as seen with the Maduro operation in Venezuela, further securing global fossil supplies that it or its allies can draw on. In short, the U.S. is leveraging cheap energy and protectionist subsidies to revitalize its industrial base.

In this "battle of the economic models," Europe finds itself squeezed. It is neither a state-led subsidy giant on the scale of China, nor does it have abundant cheap fossil energy like the U.S. Europe's model has been unique: *put a price on carbon to drive efficiency and innovation, and rely on market competition within a regulated framework*. Now, voices are asking if this model is a liability. **Critics argue that Europe risks *deindustrialization***: energy-intensive industries might relocate to the U.S. or China (or simply lose market share) because operating in Europe is too costly. The high-profile decision by some European metal and fertilizer producers to curtail output in 2022-23 due to energy prices, and the genuine difficulties faced by heavy industries fuel this narrative. The E**TS becomes a prime target** for these concerns – it's a visible cost that policymakers can adjust (unlike global gas prices), and thus a focal point for competitiveness arguments.

The central political argument is straightforward: *at a time of economic stress, should Europe dial back its carbon costs to save its industry?* **Proponents of weakening or even suspending the ETS say that extraordinary energy price differences and foreign subsidy waves justify a pause or slowdown in Europe's climate cost escalation.** They contend that the **EU should protect its existing industrial base first**, or risk losing it and then having no chance to meet climate goals anyway (since production would simply move and emit elsewhere). Essentially, they fear Europe "going for it alone" on high carbon prices while others focus on industrial muscle – a recipe, they say, for economic decline.

The counterargument is that abandoning Europe's climate leadership is short-sighted and unnecessary if the right support measures are in place. Europe can maintain a carbon price AND a viable industry – but **it requires smarter use of carrots (support and investment) alongside the sticks**. This debate has reached a pitch that **scenarios once deemed implausible** – like scrapping the ETS – **are now being floated in political discourse**.

Scenario Analysis: Policy Choices for the EU ETS Under Pressure

Against the backdrop of the new cold war and geoeconomic competition, European decision-makers essentially face a spectrum of choices, roughly three scenarios: (1) a radical step of **terminating or suspending the ETS**, (2)

a **"degraded" business-as-usual** where the ETS continues but with weakened effect (extended free allocations and delayed CBAM), and (3) sticking to the planned ETS tightening (ending free allowances with full CBAM) **while greatly enhancing support for industry's transition**. These scenarios illustrate the trade-offs and likely outcomes of divergent paths.

Scenario 1 – End of the ETS: Scrapping carbon pricing

In this scenario, the EU would effectively dismantle or freeze the ETS – whether by abolishing the system entirely, or setting the allowance price to near-zero through political intervention (e.g. flooding the market with allowances or suspending auctions). This drastic option would be a response to industry outcry, aimed at **immediate cost relief** for European producers.

What signal would this send to companies? In the short term, certainly **a positive one for cost reduction**: firms would no longer need to buy allowances (or they'd be dirt cheap), instantly saving tens of euros per ton CO_2 in compliance costs. Energy-intensive industries like steel, cement, and chemicals would see production costs drop (relative to where they'd be with a high carbon price), potentially improving their profit margins or ability to compete on price. Politically, it would be a strong signal that Europe is prioritizing industrial competitiveness and "keeping factories running" over climate action. Some might hope this prevents plant closures or relocations in the next few years.

However, the **long-term signals** are far more problematic. **Repealing the carbon price would inject massive regulatory uncertainty** into Europe's economic policy framework. Companies have been making **investment plans under the expectation that carbon constraints will tighten** (with a rising ETS price, plus the 2030/2050 climate targets anchoring that trajectory).

If the ETS was abruptly removed, firms would be left guessing **what comes next**. Is the **EU giving up on its climate goals**, or will it simply **try a different approach**? Will a carbon tax replace it? Or command-and-control regulations? T**his uncertainty could actually chill investment in the industries we are trying to save.** For example, a steel company considering a new low-carbon process might cancel action if it perceives EU climate policy is in flux or no longer credible. **Stable policy is crucial for investment**, and scrapping the ETS would be the opposite of stability – it would be a shock. Europe's reputation as a predictable regulatory environment would suffer.

Moreover, **eliminating the carbon price removes the key long-term incentive for innovation in industry**. The ETS was never the sole driver of clean innovation, but it has grown into a powerful catalyst for incremental improvements and is expected to drive bigger changes as prices rise. For instance, **many breakthrough technologies (green steel, low-carbon cement) become economically viable only if carbon costs reach a certain threshold** – something the ETS is on track to deliver in coming years. Without a carbon price (or equivalent regulation), that economic signal vanishes. Companies might shelve R&D projects for cutting emissions, since there is no longer a payoff for success (fossil-based production would remain cheapest if carbon is free). Investments already made – e.g. in efficiency or pollution control – could become stranded or less valuable. In short, **the EU would lose momentum in clean innovation**, and likely its edge in areas like emissions reduction know-how.

Critically, scrapping the ETS could imperil the EU's climate targets and undermine global

climate efforts. **The ETS cap was a central pillar of meeting the 2030 goal (–55% emissions EU-wide). Without it, achieving those cuts would require something to fill the gap.** Perhaps the EU could fall back on direct regulations (like emission performance standards) or greatly expanded subsidies, but designing and implementing those would take time and face their own obstacles. In the interim, emissions would likely **rise**. We have a real-world precedent: **Australia** introduced a carbon pricing mechanism in 2012, but its repeal in 2014 led to emissions climbing again for years. Europe could similarly see a rebound in industrial CO_2 output if the discipline of the ETS is removed.

From an industrial strategy perspective, **any short-term gains might prove pyrrhic**. Yes, companies save money on carbon compliance immediately. But the rest of the world will inevitably continue to move toward carbon neutrality and European industry could find itself behind when those markets evolve. Also, the ETS phase-out was linked with the CBAM – if ETS is gone, CBAM goes too (there's no EU carbon price to charge against).

While suspending or dismantling the ETS may offer short-term relief on compliance costs, it would do little to address the far more fundamental structural weaknesses of European industry. **Europe is a resource-poor continent with limited access to cheap fossil fuels**, aging industrial infrastructure, and chronically higher energy prices than its main competitors in the U.S. and China. T**hese disadvantages are not the result of climate policy, but of geography and legacy.** Removing the carbon price would not eliminate them - it would only reduce the pressure to adapt. **Worse, it risks locking Europe into mature, declining technologies where it once excelled, such as internal combustion engines, rather than pushing it to lead in the technologies of the future.**

In a world of rising geopolitical fragmentation and accelerating clean-tech investment, betting on the past is a high-risk strategy for a region with little to fall back on in terms of resource endowment. **Electrification, energy efficiency, and clean industrial molecules like green hydrogen are not optional for Europe - they are the only credible pathway to secure long-term competitiveness and energy independence.** The ETS, with the right complementary support, can help anchor that shift rather than delay it.

Finally, **the ETS has generated billions in auction revenues and a whole ecosystem of low-carbon funds** (Innovation Fund, Modernisation Fund). These resources would dry up if allowance auctions cease, meaning **less money for green innovation and transition support** that industry actually needs. **It's cutting off not just the stick, but also a source of carrots.**

Scenario 2 – "Business-as-Usual" Degraded: ETS Survives but Weakens

In this scenario, the EU doesn't kill the ETS outright – it keeps the carbon market in name – but political pressure leads to **undermining its effectiveness**. The defining features would be **prolonging free allowances for industries** (beyond the agreed 2026–2034 phase-out, effectively continuing to shield domestic emitters) and either delaying or watering down the CBAM so that imports are not fully charged either. In other words, a partial retreat: the ETS remains, but with a much softer carbon price signal for industry.

Under this approach, heavy industries would continue to receive a large portion of allowances for free past 2026 (perhaps justified by claims that "conditions aren't right" to remove them, or to preserve their market share in third markets (support for export)). **The CBAM might be stalled in its expansion or kept until**

proven efficient. This **degraded status quo** might feel safer for industry in the short run – it's essentially an extension of the current protections or so. European firms would still face a carbon price, but a much reduced one in effective terms. If, for example, a steel plant continues getting (say) 80% of its allowances free, it only pays the carbon price on 20% of emissions, reducing the cost impact proportionally.

The outcome would be a **weak carbon price signal**, insufficient to drive major changes. Already today, **free allocation has led to a lower decarbonization in sectors like steel and cement** – when companies don't fully pay for emissions, they have had little incentive to invest in cleaner processes. Continuing that system means continuing minimal progress. A carbon price that is largely nominal fails to spur green investment or make low-carbon options competitive.

For example, "green steel" (made via hydrogen-based processes) is more expensive than conventional steel. Only a high carbon price can close that gap – on the order of €100+ per ton if hydrogen costs remain high. If the EU chooses to suppress its carbon price (or its impact via free permits) without compensating with large subsidies, then **breakthrough technologies like green steel or carbon-capture cement will remain uncompetitive** in Europe. The market signal to adopt them would be absent, meaning Europe's industrial emissions could plateau rather than fall sharply.

Here again, **if the carbon market is allowed to limp along with low effective prices, the emissions trajectory will overshoot the EU Climate targets**. In effect, it would require other sectors or policies to compensate – but sectors like transport and buildings, while also being addressed (via the new ETS2 and other regulations), cannot realistically pick up all the slack if heavy industry and energy production stagnates in decarbonization.

Another consequence of a half-hearted ETS is industrial misalignment and lost opportunities. **Global markets are gradually moving toward cleaner products – for instance, automotive customers may soon demand "green steel" for EVs**, or construction clients may seek low-carbon cement to meet their own sustainability pledges. **If Europe's policy doesn't create a home market for these products, then European industries might not scale up these innovations. This opens the door for foreign competitors** to take the lead in these emerging "clean" markets. In other words, **Europe risks a strategic technological lag**. An ETS that is too weak to reward cleaner production will not produce the industrial champions of a low-carbon economy, but merely prolong the life of high-emitting incumbents until they eventually face obsolescence from external changes.

Politically, this scenario might seem like a compromise – avoid the drastic step of killing the ETS, but ease pressure on industry. Yet it carries its own **credibility issues**. The EU would be effectively breaking the carefully negotiated "deal" of the Fit for 55 package. Free allocation phase-out and CBAM introduction were approved by EU lawmakers as a balanced plan; undoing or delaying them could **erode trust in EU policy consistency**. Businesses that *did* invest in lowering emissions on the expectation of a rising carbon price might feel cheated if their more carbon-intensive competitors keep getting freebies (a classic moral hazard).

A clear lesson comes from the early years of the ETS: when **too many free allowances or offsets were allowed, the carbon price stayed "insignificantly low" and heavy industry made little change**. If we deliberately recreate those conditions, we should expect the same results – **delay in industrial decarbonization**. Thus

Europe might hit a carbon emissions "plateau" just when it needs a steep decline.

Additionally, **CBAM's credibility would suffer** in this scenario. **If the EU extends free allocations and weakens the carbon price for domestic producers, what justification is there to charge importers full price?** Trading partners could challenge even more the CBAM as **a protectionist sham** if domestic firms aren't actually paying full carbon price. The EU might then implement only a token border fee (to avoid WTO fights), rendering the CBAM ineffective as well. The hoped-for climate diplomatic impact of CBAM (encouraging global carbon pricing) would fade if everyone sees the EU hesitating to impose costs on its own industry.

Additionally, the potential introduction of international carbon credits under Article 6 of the Paris Agreement into the EU ETS raises serious concerns about the integrity and effectiveness of the system. **The EU's current proposal to allow up to 5% of its -90% emissions reduction target by 2040 to be met through such credits could translate into a substantial volume of offsets entering the market** - effectively weakening the cap and diluting the carbon price. While international cooperation has value, if tradable offsets begin to substitute for real decarbonization in sectors possible to abate, the incentive to invest in clean technologies and fundamentally change production methods will erode. These sectors - covered under ETS1 - are precisely those where the EU must accelerate innovation to secure long-term competitiveness and climate neutrality.

If offsets are to play a role, they should be strictly limited to sectors where emissions are genuinely hard to abate and socially sensitive - such as agriculture - or niche segments of the chemical industry where alternatives remain technically or economically constrained.

A **Degraded ETS** offers only a s**hort-term political comfort** – it appeases industrial lobbies and nervous governments by saying "don't worry, we'll soften the blow." But it does so at the expense of the EU's longer-term climate strategy and industrial reinvention. Europe would essentially kick the can down the road, likely finding itself a few years from now with emissions not falling fast enough, industries still unmodernized, and facing an even more acute choice after precious time lost.

Scenario 3 – Stay the Course on ETS + CBAM, Amplify the "Carrot"

The third scenario doubles down on the EU's current climate framework **while addressing its deficiencies through enhanced support for industry's transition**. In this scenario, the EU sticks to the plan: free allowances are phased out on schedule and the ETS carbon price remains the core driver (the "stick"), with the CBAM coming fully online to protect against unfair competition. Crucially, however, the EU would **significantly scale up mechanisms to help industries cope with and benefit from the transition** – effectively supplying the much-needed "carrot" that has so far been relatively modest.

Under this approach, from 2026 onward, **heavy industries would increasingly bear the full brunt of the carbon price** (as free permits decline), which preserves the integrity and predictability of the carbon signal. A clear, credible, and rising carbon-price trajectory would be maintained, providing firms with the certainty that investments in decarbonisation will translate into avoided future compliance costs (see tables below). The cost implications of carbon pricing therefore cannot be assessed solely through a narrow competitiveness lens. **By increasing the effective price of**

carbon-intensive products, the ETS directly narrows - partially - the cost differential with low-carbon alternatives. This price-based convergence is essential to anchor investment expectations and to signal credibly that Europe intends to be a durable location for clean industrial innovation.

Potential Additional Costs Due to the End of Free Allocation for Nitric Acid and Ammonia (Author's Calculations)

Year	Share of Free quotas	CBAM obligation	Price EUA (est)	Nitric Acid: Additional cost as a% of the final price for a non decarbonized ton	Ammonia: Additional cost as a% of the final price for a non decarbonized ton
2025	100,00%	0,00%	83,00 €	0,15%	5,63%
2026	97,50%	2,50%	100,00 €	0,55%	7,59%
2027	95,00%	5,00%	100,00 €	0,91%	8,40%
2028	90,00%	10,00%	100,00 €	1,47%	9,94%
2030	51,50%	48,50%	145,00 €	7,15%	31,14%
2034	0,00%	100,00%	145,00 €	13,37%	53,29%

Expressions BY MONTAIGNE

Source : Author's compilation based on multiple references
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***Table**: potential additional costs due to the end of free allocation for nitric acid and Ammonia, author calculation*

Potential Additional Costs Due to the End of Free Allocation for the Steel Sector, (Author's Calculations)

Year	Share of Free quotas	CBAM obligation	Price EUA (est)	Additional cost as a% of the final price for a non decarbonized ton
2025	100,00%	0,00%	83,00 €	5,89%
2026	97,50%	2,50%	100,00 €	7,56%
2027	95,00%	5,00%	100,00 €	8,01%
2028	90,00%	10,00%	100,00 €	8,89%
2030	51,50%	48,50%	145,00 €	22,40%
2034	0,00%	100,00%	145,00 €	34,99%

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***Table**: potential additional costs due to the end of free allocation for the Steel sector, author calculation*

Nevertheless, **the price differential between low-carbon and carbon-intensive products cannot be addressed through the phase-out of free allocation alone**. In an open global market marked by highly uneven climate ambition, unilateral exposure to the full carbon price risks encouraging carbon dumping, as producers may shift production or investment toward jurisdictions with weaker carbon constraints and additional structural advantages, such as lower energy or labour costs.

The flip side is acknowledging the **"transition cost" problem**: making low-carbon steel, cement, chemicals, etc., is currently more expensive than the high-carbon status quo. If European firms are to invest in these technologies, they need both a sufficiently high carbon price (which is coming) and financial support to cover the gap during the early years. **The problem isn't the carbon stick per se, but the lack of a juicy carrot to reward low-carbon production.**

To date, the EU's primary support tool has been the **Innovation Fund**, which uses a portion of ETS revenues to fund innovative low-carbon projects. While useful (it has funded several first-of-a-kind industrial projects), it has limitations: it focuses mainly on capital investment (CAPEX grants for building new facilities) and often for pilot or demo projects. It does not typically subsidize ongoing operating costs or guarantee markets for clean products. Also, its scale is too small relative to need – calls are usually largely oversubscribed, revealing a huge appetite for funding that wasn't met.

In this scenario, the EU would revamp and massively expand support schemes for industrial decarbonization. Ideas include **transforming the Innovation Fund into or complementing it with a l*arge-scale Industrial Transition Fund* that would offer: direct capital grants, operating support, and market incentives for low-carbon products**.

A leading concept is **Carbon Contracts for Difference (CCfDs)** – essentially long-term contracts where **the government (using EU or Member State funds, possibly sourced from ETS revenue) pays the difference between the actual carbon price and a higher "strike price" needed to make a project viable**. CCfDs can cover both CAPEX and OPEX gaps, de-risking investments in things like green steel plants by ensuring that if the carbon price is too low, the project is financially topped-up. They create a *guaranteed reward for emissions reductions*, which

in effect **mobilizes private capital by hedging carbon market risk**. Germany and the Netherlands are already launching CCfD programs nationally; but this scenario would see an **EU-wide CCfD framework or funding program**.

Another facet is using ETS revenues more strategically. ETS auctions are generating tens of billions per year (especially as free allocation dwindles). The EU could **earmark a significant portion of these revenues for industrial decarbonization projects**, essentially recycling the carbon costs back into the companies undertaking green investments. This could be done via the *European Decarbonization Bank* (a concept floated in EU discussions). The key is to **front-load support** – companies making big investment decisions in the 2020s need to know that help is available now, not just in theory over 10 years. Front-loading might mean using EU budget guarantees or borrowing against future ETS revenues to provide immediate financing for major projects (like several commercial-scale green steel plants, electrolyzers for green hydrogen, CCUS hubs, etc.). By doing so, Europe can accelerate the creation of **lead markets** for low-carbon materials – ensuring there is demand and support for the first movers until costs come down.

In essence, this is about **completing the policy mix**: maintaining the carbon price **stick** to drive change and avoid locking-in high emissions, while massively strengthening the **carrots** so that European industry can invest and remain competitive through the transition. If executed well, this could solve the apparent paradox of climate ambition vs. competitiveness. Firms would face high carbon costs, yes, but they'd also receive substantial help to innovate and to cover the incremental costs of cleaner production. Over time, **as new technologies scale and become cheaper (and as carbon prices globally likely increase), the need for subsidies would taper off, and European firms would emerge as technology leaders**.

The effects on competitiveness in this scenario can actually be positive if the support is adequate. Rather than competing on who can produce the cheapest high-carbon steel, Europe could compete in the arena of low-carbon steel – where being an early mover with mastered technology is an advantage.

Moreover, the combination of a strong carbon price and reinvestment of revenues could be a virtuous cycle: **high carbon price → high ETS revenue → more funds for innovation → faster cost reduction in clean tech → less need for protectionism**. It is a different model of competitiveness – based on innovation and quality, not low energy cost. But it aligns with Europe's high-skilled, high-value industrial tradition.

Of course, this is not without challenges. It requires **political will and financial commitment. Using ETS revenues for industrial support must be agreed by Member States** (who currently receive most of the revenue – though they are supposed to spend at least half on climate-related purposes). It also requires a level of EU coordination on industrial policy that some governments have historically been wary of. However, the landscape is shifting. **There is growing appetite to "match the US and China" in supporting manufacturing on European soil.** Using ETS revenue to fund decarbonization support is politically defensible and economically sensible, rather than having each country race with its own subsidies uncoordinated.

To illustrate, Europe could decide that, for example, 100% of ETS revenues from industry (or an amount commensurate with the needs) are funneled into a dedicated Fund that provides CCfDs and grants. With 2024 ETS revenues from auctions at €25 billion (and potentially more in future as prices rise and free allocation ends), one can envision on the order of hundreds of

billions over a decade being marshaled. This would be enough to fundamentally retool multiple sectors. The payback is not just climate goals met, but **jobs and industrial capacity retained in a future-proof form**.

Europe would be saying: *We are not abandoning our model – we are perfecting it.* The ETS was never meant to work alone; it always was intended to be part of a package. Now that package needs to include robust industrial policy. With that in place, **it turns the narrative from "climate policy vs. industry" into "climate policy driving a new industrial revolution"**. The **systemic competition with the U.S. and China** then looks different: Europe offers a model where carbon is priced (giving clear market signals), and the state partners with industry to achieve innovation at scale. In fact, Europe could leverage its carbon revenues to out-invest others in certain areas – a strategic use of the ETS as a tool not just to penalize (stick) but to fund the future (carrot).

Conclusion – ETS as a Pillar of an Assertive European Model

The choice among these scenarios will define the European model in the face of global systemic competition. Each scenario reflects a different vision of Europe's economic future: **withdrawal, stagnation, or transformation**.

One might ask, can Europe afford this? But the alternative, in scenarios 1 or 2, is arguably **far more costly in the long run** – either in climate damage (if we fail to meet targets) or in lost industrial base. Scenario 3's approach – essentially **"use the stick to generate carrots"** – is in line with the integration of climate and industrial policy.

Indeed, some reforms to the ETS architecture could further bolster this approach. For instance, recognizing early action – companies that invest in decarbonization could perhaps receive temporary advantages or contracts under the new schemes. The notion of **"carbon contracts" or similar mechanisms integrated with the ETS** means that low-carbon investments are explicitly valued within the system's framework, not just left to market risk. The endgame should be that the **ETS is no longer seen as only a cost (a stick), but as part of a bargain that returns value to those who innovate (a carrot)**. When European industry knows that the **revenues from carbon pricing are plowed back** into industrial low-carbon projects, it builds political buy-in and a sense of common purpose in the transition.