

The Cost of CBAM Compliance: Why EU Pressure on Korea's ETS Could Backfire

By ASGEIR BARLAUP | June 2025

Key issues:

- Korea's Emissions Trading System (K-ETS) covers 79% of national emissions, but carbon prices remain low (€6–7/ton) compared to the EU ETS (€60–80/ton). This gap exposes Korean exporters to the EU's Carbon Border Adjustment Mechanism (CBAM) starting in 2026.
- Strengthening Korea's carbon price signal is necessary but risks politically sensitive electricity price hikes and public pushback.
- To balance global pressure and domestic costs, Korea should tighten the K-ETS by reducing free allowances, introducing a carbon price floor, reforming industrial electricity tariffs, and recycling revenues to support decarbonization. This requires better inter-ministerial coordination and EU engagement on CBAM.
- More broadly, for the EU's CBAM to be effective and fair, it should be accompanied by credible technical support and/or compensation to help countries manage the economic fallout of higher carbon prices across the economy.

Introduction

The Republic of Korea's Emissions Trading System (K-ETS), launched in 2015, has evolved into a cornerstone of national climate policy—now covering 79% of the country's greenhouse gas (GHG) emissions.¹ Nearly a decade on, the system's ability to drive GHG reductions is no longer just a domestic issue. The European Union's Carbon Border Adjustment Mechanism (CBAM), set to take effect in January 2026, links access to the EU market to demonstrable carbon pricing at home.² If Korean exports do not reflect a comparable carbon cost, they will face a financial penalty at the EU border. Yet this external pressure also risks backfiring. Raising carbon prices at home through the K-ETS may be necessary, but it runs headfirst into political reality: higher prices could quickly translate into electricity bill

hikes—an outcome that's triggers significant domestic opposition. Korean policymakers thus face a difficult calculus: raise carbon prices too aggressively and risk domestic backlash; do too little and risk losing industrial competitiveness in global markets. This policy brief maps how Korea can navigate the narrow path between international expectations and domestic costs. In conclusion, it draws broader lessons on the implications of the EU's CBAM policy, as indicated by Korea's experience.

1. K-ETS progress a decade in

Since 2015, the K-ETS has required large emitters—those with annual emissions of at least 125,000 tCO₂e across energy, industry, buildings, and transportation—to

regularly surrender allowances covering their total yearly GHGs.³ At the same time, Korea's national GHG emissions have declined. Total GHG emissions reached 481 Mt CO₂ in 2022, marking a 66 Mt (~12%) reduction from the peak of 547 Mt in 2018.⁴ Although it is difficult to disentangle the ETS's specific role in driving emissions reductions across sectors, the K-ETS appears to have had a positive effect in the electricity sector: from 2018 to 2022, Korea's coal-based electricity generation capacity decreased by 22%, alongside corresponding capacity increases in nuclear and liquefied natural gas generation. At least in the electricity generation space, the K-ETS thus seems to coincide with a gradual transition toward lower-carbon technologies.

Other sectors show a less favorable trend. Energy-intensive, trade-exposed (EITE) industries such as steel remain largely shielded from full ETS auctioning, resulting in stagnant emissions trajectory in this sector throughout the same period. This flat trajectory falls well short of the pace required to meet Korea's international climate targets. Estimates suggest Korea's average annual emissions reduction rate between 2018 and 2022 was around 2%, but meeting the 2030 target—a 40% reduction from 2018 levels—demands doubling this to 4% per year.⁵ While the electricity sector has led the way, its progress alone is thus insufficient. Industrial sector decarbonization must accelerate if Korea's climate commitments are to remain within reach.

Adding to the pressure, the EU's CBAM policy, set to take effect in January 2026, will require Korean exporters to either pay for carbon certificates reflecting the embedded emissions in their products or prove that an equivalent carbon price has been paid domestically at the EU ETS rate. For Korea's export-driven sectors like steel and aluminum—which exported goods worth €4.5 billion and €500 million to the EU in 2022 respectively—the message is clear: without a higher carbon price at home, these industries risk being priced out of key global markets.⁶ After peaking at around 40,000 Korean Won (KRW) in 2021, prices have since fallen to around 7,000 KRW—just €6–7 per ton.⁷ Over the same period, EU ETS prices have remained steady between €60 and €80. This wide disparity should raise alarm among Korean manufacturers, who—

absent stronger domestic pricing—will absorb the difference through CBAM-related costs.

2. Responding to CBAM: Raising Carbon Prices and Strategic Engagement

The most immediate lever available to Korean policymakers is raising domestic carbon prices under the K-ETS. The clearest path to increasing the Korean carbon price is to reduce the proportion of free allowances. Currently, about 90% of permits are handed out for free, with EITE sectors receiving full exemptions. This has contributed to low prices and chronic allowance oversupply. As noted in the 4th ETS Basic Plan released in December 2024, allowance supply has exceeded verified emissions in every trading phase thus far: in 2023 alone, the surplus amounted to 70 million allowances—effectively granting 70 million tons of CO₂ emissions without cost.⁹ Curbing free allocations in upcoming compliance cycles would help reintroduce scarcity, strengthen the carbon price signal, and narrow the carbon price gap between Korean and European producers.

In addition to reducing the share of allowance oversupply Korean policymakers could also introduce a formal carbon price floor. They have already experimented with this tool: in response to the post-COVID downturn, the Ministry of Environment temporarily imposed price floors to stabilize the market.¹⁰ A permanent floor, implemented alongside reductions in free allocation, could provide greater certainty for market actors and support a more robust price trajectory over time. Unlike the present volatility, a price floor provides a clear and transparent benchmark—one that is easier to verify and more credible when demonstrating equivalence with the EU ETS price.

These policy shifts must be accompanied by sustained, strategic engagement with the European Commission to chart practical routes toward CBAM compliance. Achieving alignment between systems will depend on sector-specific dialogue and technical cooperation—particularly in carbon-intensive industries such as steel, aluminum, and cement, where CBAM's effects will be most acute. Assuming the EU proceeds with its stated ambition to phase out free allocation under the EU ETS alongside

CBAM implementation, Korean manufacturers will require clarity on how these changes are reflected in the price of CBAM certificates.

For Korea to align its carbon pricing with the EU ETS and avoid costly CBAM penalties, policymakers must also consider difficult domestic political realities however. Raising carbon prices through the K-ETS may seem unavoidable to meet international expectations, but it will inevitably come with trade-offs—most notably in the form of higher energy costs at home. Raising carbon prices under the K-ETS risks translating directly into higher electricity bills – a deeply unpopular move in country where energy affordability is increasingly in the spotlight. Equally important is therefore the need for complementary policies that ease the distributional impacts of higher (carbon/electricity) prices, ensuring fair burden sharing across the Korean economy. If not, the cost of CBAM compliance could severely backfire.

3. Managing Domestic Costs: Tariff Reform, Revenue Recycling and Policy Coordination

The most effective way for Korea to address the economic fallout of higher carbon pricing is to reform industrial electricity tariffs. For years, Korea Electric Power Company (KEPCO), the state-owned utility, has absorbed rising production costs to keep electricity prices artificially low, an arrangement that has shielded industrial consumers from the true cost of energy. While politically expedient, this practice comes at a steep fiscal cost and undermines the effectiveness of the K-ETS. In 2023 alone, KEPCO absorbed 299 billion KRW (€200 million) in K-ETS compliance costs—effectively subsidizing major emitters and blunting the intended impact of carbon pricing.¹¹ Recalibrating tariffs to reflect the full cost of electricity generation, including the carbon price, would restore the credibility of the K-ETS by ensuring carbon costs reach industrial consumers. Without reform, the Korean state risks taking on ever-larger ETS-induced debt – effectively passing the rising cost of ETS compliance onto taxpayers – while prolonging industrial emissions.

Second, reform should be paired with a credible system for revenue recycling. Channeling carbon revenues back into the economy—through direct rebates to households, investment in

green infrastructure, or subsidies for industrial decarbonization—can cushion the blow for sectors most exposed to cost increases. For example, revenues could help offset the impact of higher carbon prices through process innovation in steel and cement or support small and medium-sized enterprises adopting clean technologies. A transparent revenue recycling mechanism would increase the political acceptability of higher carbon prices while showing that climate ambition does not have to come at the expense of economic competitiveness or cost of living. The more ambitious the carbon price, the more revenues can be recycled to support the transition.

Thirdly, deeper reform will require better coordination between ministries to ensure carbon pricing works in concert with broader industrial and energy policy. Currently, ministries with divergent mandates—climate, industry, and energy—operate in administrative silos, often issuing policies that work at cross-purposes. This results in a policy architecture where carbon pricing is insufficiently integrated with adjacent energy and industrial policies. The Ministry of Environment administers the K-ETS, yet it remains largely peripheral to long-term energy planning dominated by the Ministry of Trade, Industry and Energy, which sets the agenda on electricity pricing and power generation. This misalignment leads to inconsistencies, such as continued investment in fossil-fuel-based generation despite the theoretical incentives embedded in the ETS. Institutional alignment is required to construct governance mechanisms that ensure carbon pricing is harmonized with industrial planning and energy market reform.

4. Concluding remarks: CBAM Beyond the Brussels Bubble

From Brussels, the CBAM might appear as an elegant solution to the problem of carbon leakage—a policy designed to safeguard EU climate ambition. On paper, it aligns carbon prices, levels the economic playing field, and secures the integrity of Europe's decarbonization goals. Yet from Seoul, the reality looks far more complex. Complying with the EU's CBAM is not just a technical fix but a tall political order carrying real social and political costs. Rather than accelerating Korea's decarbonization,

the looming cost of CBAM compliance could just as easily knock the country's climate agenda off course.

The previous sections have begun to outline some strategies for managing these tensions and keep Korea's climate ambition on track. To strengthen its carbon pricing regime and ensure that exporters are not penalized under CBAM, Korean policymakers need to phase out free allocations, introduce a carbon price floor, and engage proactively with EU institutions to demonstrate equivalence. At the same time, higher domestic carbon prices must be made palatable at home. This requires reforming industrial electricity tariffs to reflect real costs, recycling carbon revenues to support vulnerable sectors, and aligning policy across ministries to ensure that carbon pricing reinforces—not contradicts—adjacent industrial and energy planning initiatives.

Korea's experience offers a preview of the broader political economy challenge that CBAM presents to non-EU countries. As a wealthy, high-capacity economy with a strong industrial base, Korea is well positioned than most to absorb the shock of compliance. And even here, the prospect of higher carbon prices is politically fraught. For many developing and emerging economies the stakes are higher still, with less capacity to absorb and manage sudden economic shocks. And crucially, these countries have only played only a minor role in causing the climate crisis to begin with. In this situation – where recipient countries have low capacity and low responsibility – EU's CBAM policy risks exporting not just carbon costs but significant political backlash against climate action too.

This necessitates a reorientation in EU climate diplomacy. If the ambition to extend carbon pricing beyond Europe's borders is to succeed, it must be matched with credible, context-sensitive support—recognizing that CBAM compliance is as much a political and social challenge as it is a technical one. Only by helping countries manage CBAM pressures in ways that fit their unique domestic challenges can the policy drive a lasting transition outside the EU.

Recent research suggests that, unlike carbon prices—which frequently encounter political pushback—compensating countries for avoided emissions can offer a more viable and socially acceptable

alternative.¹² Just Transition Partnerships, which link climate ambition to tangible financial and technical support, provide a blueprint for this approach by softening the economic blow of decarbonization and fostering trust. The lesson is clear: if the EU wants CBAM to succeed, it must do more than level the playing field—it must help build the political scaffolding for a *just* transition too.

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