

THE CARBON BORDER TAX COUNTDOWN: COSTING CBAM AND TURNING INTERNAL CARBON PRICING INTO COMPETITIVE ADVANTAGE

Abstract

On 1 January 2026 the EU Carbon Border Adjustment Mechanism (CBAM) crossed from a reporting exercise into a priced obligation, and Indian exporters of steel, aluminium, cement, fertiliser and hydrogen entered a world where carbon intensity, not price alone, decides market access. This paper cuts through the alarmist headlines with a costed, year-by-year model. Using the first official certificate price (EUR 75.36/tCO₂) and the legislated CBAM factor schedule, it shows that the 2026 cost is almost trivial — about EUR 4.71 per tonne of blast-furnace steel — but ramps to roughly EUR 188 per tonne when free allocation fully phases out in 2034. The decisive management-accounting insight is that most of this cost is controllable: the gap between EU default values and verified actual emissions is worth about a fifth of the bill. The paper argues that an internal or 'shadow' carbon price, long treated as an ESG nicety, becomes a hard competitiveness instrument, links CBAM verification to the cost-audit assurance in which CMAs already specialize, and offers a practical four-step readiness framework.



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The Border Just Learned to Read Carbon

For decades, an exporter's competitiveness depended largely on landed cost i.e., the total cost of delivering goods to the destination port after freight, insurance, duties and other import charges. From 1 January 2026, however, European buyers must consider

a second metric alongside price: the carbon embedded in every tonne of imported goods. During the transitional period (October 2023–December 2025), firms were required only to report these emissions. Under the definitive CBAM regime, those reported emissions translate into a financial obligation, as EU importers must purchase and surrender CBAM certificates corresponding to the embedded emissions of covered imports. Although the legal liability rests with the importer, the economic burden is expected to flow back to exporters through pricing negotiations.

The mechanism covers six carbon-intensive sectors (iron and steel, aluminium, cement, fertilisers, electricity and hydrogen) chosen because they carry both high emissions and a high risk of carbon leakage. For India, the exposure is concrete: according to Global Trade Research Initiative (GTRI) and industry estimates, the country ships an estimated EUR 8–9 billion of CBAM-covered goods to the EU each year, with steel forming the

single largest slice. The GTRI has warned that to hold their EU market position, Indian steel and aluminium exporters may have to concede price reductions of 15–22 per cent as importers pass the carbon cost back up the chain.

Those percentages have generated alarm. But

alarm is not analysis. This paper replaces the headline with a model showing how large the cost is, when it bites, and how much of it a well-run cost function can control. CBAM is, at heart, a measurement-and-assurance problem, and that is the CMA's craft.

How the Charge Is Actually Computed

The charge is built from a simple formula, fixed for 2026 by Regulation (EU) 2025/2083. It multiplies just four things together:

CBAM cost = Tonnes shipped x Emissions per tonne x CBAM factor x Certificate price

Table 1 plugs real 2026 numbers into that formula for one tonne of Indian steel, so the whole calculation is visible in a single line.

Table 1: The formula, worked out for one tonne of Indian steel in 2026

Tonnes	Emissions per tonne (tCO ₂)	CBAM factor (2026)	Certificate price (EUR/tCO ₂)	= CBAM cost
1	2.5	2.5%	75.36	EUR 4.71

So in 2026 the cost is just EUR 4.71 on a tonne of steel worth around EUR 600 which is barely noticeable. But two of the four terms are set to change sharply, and that is where the real story lies.

The first is the certificate price. This is not a separate market. It simply tracks the price of carbon in the EU Emissions Trading System (ETS). The European Commission set the first figure at EUR 75.36 per tonne of CO₂ on 7 April 2026, based on the average EU auction price for the quarter. From 2027 it will be reset every week, so EU carbon-price swings will feed straight into an Indian exporter's cost sheet.

The second is the CBAM factor, the part most commentary misses. The EU is phasing CBAM in slowly, so only a slice of a product's emissions is charged in the early years. That slice grows every year on a fixed schedule: 2.5 per cent in 2026, then 5, 10, 22.5, 48.5, 61, 73.5, 86 and finally 100 per cent by 2034. The lesson for any finance team is blunt: budget from the 2026 cost and you will badly under-estimate the bill waiting at the end of the decade.

A Year-by-Year Cost Model

Consider an Indian producer of blast-furnace/basic-oxygen-furnace (BF-BOF) steel, the route that dominates Indian primary steelmaking and carries the highest carbon intensity. Taking an embedded emission factor of 2.5 tCO₂ per tonne, an illustrative value at the level at which EU default values for such steel sit and holding the certificate price at the Q1-2026 figure, the cost trajectory is set out in Table 1 and Figure 1. Holding the price constant is a deliberately conservative assumption: EU ETS forward prices trend upward, so the real cost path is likely to sit above the one modelled here.

Table 1: Modelled CBAM cost for Indian BF-BOF steel

(illustrative EF 2.5 tCO₂/t; certificate price EUR 75.36/tCO₂ held constant). Author's computation.

Year	CBAM factor	Cost per tonne (EUR)	Annual liability, 100,000 t exporter (EUR)
2026	2.5%	4.71	471,000
2027	5.0%	9.42	942,000
2028	10.0%	18.84	1,884,000
2029	22.5%	42.39	4,239,000
2030	48.5%	91.37	9,137,400

Year	CBAM factor	Cost per tonne (EUR)	Annual liability, 100,000 t exporter (EUR)
2032	73.5%	138.47	13,847,400
2034	100.0%	188.40	18,840,000

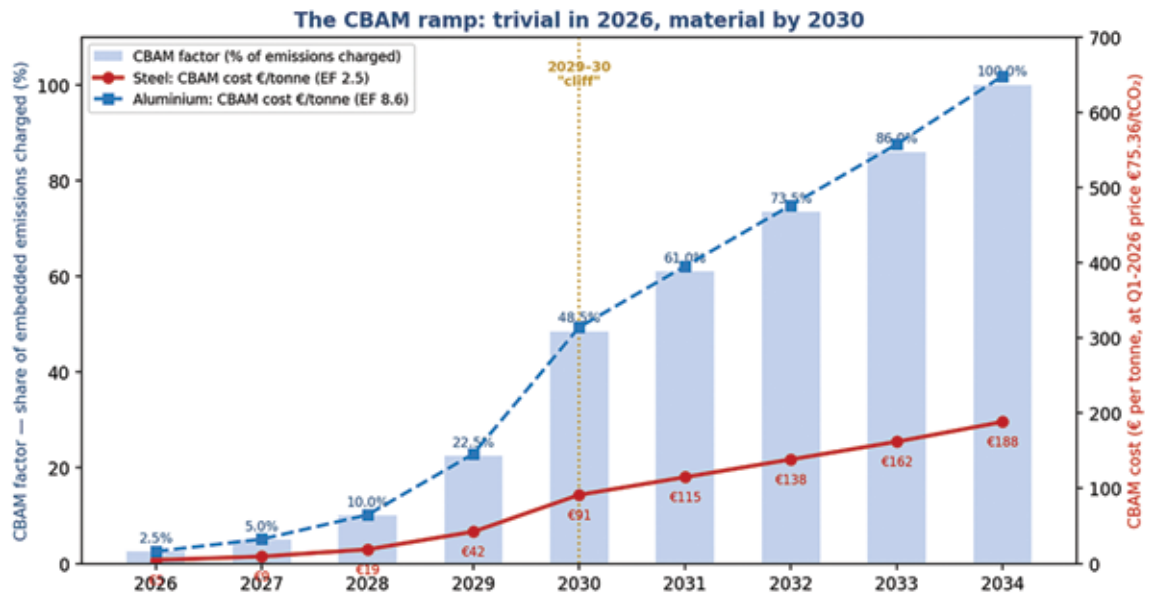


Figure 1: The CBAM ramp for steel and aluminium. Bars show the legislated CBAM factor; lines show cost per tonne. Aluminium's higher emission intensity (illustrative EF 8.6) makes it the more exposed sector. (Source: Author's model; factor schedule per Regulation (EU) 2023/956 and European Parliament Legislative Train; price per European Commission, April 2026)

Two features stand out. First, the 2026 cost of EUR 4.71 on a tonne of steel that might sell for EUR 600, is under one per cent of value. The near-term pain is chiefly in negotiation and compliance, not the certificate bill. Second, the curve steepens sharply after 2028. Between 2029 and 2030 the factor more than doubles, from 22.5 to 48.5 per cent; the per-tonne cost jumps from about EUR 42 to EUR 91. This 2029–30 'cliff' is the planning horizon that matters. Any decarbonisation investment with a three-to-five-year lead time must be decided now to bear fruit before the cliff, not after it. Aluminium, with a far higher emission factor where coal-fired power is used, faces a steeper curve still the reason the GTRI singles out coal-powered aluminium as India's most exposed CBAM segment.

The Data Dividend: Most of This Cost Is Controllable

Here is the insight that turns CBAM from a threat into a management-accounting opportunity. The formula charges embedded emissions and an exporter has two ways to declare them: verified actual data from the installation, or EU default values. The defaults are deliberately punitive, set at the high end of each sector's range, and carry an additional mark-up rising from 10 per cent in 2026 to 20 per cent in 2027 and 30 per cent from 2028. An Indian mill whose true emission factor is 2.0 tCO₂ per tonne but which cannot supply verified data will be charged as if it emits 2.5 or more.

Figure 2 quantifies the gap at the 2030 phase-in level. The difference between paying on a verified factor of 2.0 and an EU default of 2.5 is EUR 18.27 per tonne i.e.m roughly a fifth of the bill available not through any change to the furnace, but simply by measuring and verifying what the furnace already emits. For a 100,000-tonne exporter, that is close to EUR 1.9 million a year in avoidable cost, recoverable through data discipline alone.

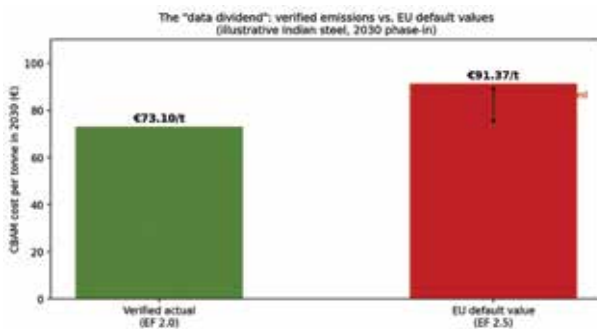


Figure 2: The data dividend. Verified actual emissions versus EU default values for illustrative Indian steel at the 2030 phase-in level. (Source: Author's model)

This reframes the CBAM response as, first, a measurement-and-assurance problem, the CMAs home ground. CBAM's definitive phase demands installation-level emissions accounting verified by accredited third parties, in a process the GTRI likens to a financial audit. This is precisely the discipline of India's own cost-audit and Cost Accounting Standards framework: the CMA who builds an auditable emissions cost record is doing, in a new domain, what cost audit has always done. The exporter who hands an EU buyer a verified, audit-ready CBAM data pack will out-negotiate the competitor who cannot, regardless of who runs the cleaner plant.

From Compliance Cost to Competitive Instrument: The Shadow Carbon Price

The strategic move is to internalise the border price before the border does. An internal or 'shadow' carbon price is a notional per-tonne CO₂ charge applied inside the firm's own cost and investment models, in effect, a carbon target cost against which products and processes are appraised. Long advocated as an ESG signalling device, under CBAM it becomes a hard commercial tool with three concrete uses.

First, in export pricing. Exporters who ignore the CBAM cost that EU buyers must bear risk losing business, a situation the GTRI describes as '**silent exclusion**' from procurement. Using a shadow carbon price helps exporters prepare CBAM-adjusted quotations and negotiate based on verified emissions instead of the buyer's

conservative default values.

Second, in capital allocation. Including a shadow carbon price in investment appraisal helps identify projects that become financially viable because they reduce future CBAM costs. Investments that appear unattractive without a carbon price may become profitable when future CBAM savings are treated as a financial benefit. Evaluating projects under different EU ETS price scenarios also helps companies understand how investment decisions change as CBAM costs increase toward 2030.

Third, in customer positioning. Producers with lower verified emissions become more competitive because their products remain cheaper after CBAM costs are considered. In some cases, they may also earn a **2–5% green premium** from European buyers willing to pay more for certified low-carbon products. In this way, CBAM can become a source of competitive advantage rather than simply an additional cost.

A Four-Step Readiness Framework for CMAs

To help organisations prepare for CBAM, the finance function can lead the following four-step framework:

Step 1 Measure. Build installation-level embedded-emissions accounting for every CBAM-covered product line, aligned with the EU's calculation methodology, and obtain ISO 14065-compliant third-party verification. This is the highest-return early investment because verified emissions data not only reduces CBAM liability but also provides the audit-ready assurance increasingly demanded by European buyers which is most continuous with existing cost-audit practice.

Step 2 Price. Adopt an internal shadow carbon price benchmarked to the EU ETS trajectory and embed it in both export quotations (dual pricing: base and CBAM-adjusted) and investment appraisal. Pricing carbon internally today enables firms to anticipate tomorrow's CBAM costs and identify investments whose financial returns improve once avoided carbon costs are recognised.

Step 3 Contract. Introduce CBAM clauses into EU supply agreements covering cost pass-through, verification obligations and renegotiation triggers linked to EU carbon-price movements, so exposure

is shared rather than absorbed.

Step 4 Abate. Prioritise decarbonisation investments against the 2029–30 cliff, prioritising those whose lead time allows completion before the factor steepens. Model all nine years of the schedule under a range of ETS price scenarios, never a single-year run-rate.

Conclusion

CBAM is neither the catastrophe of the headlines nor a problem that can be deferred. In 2026 it is a rounding error; by 2034 it is a tax approaching a third of the value of high-carbon steel. The distance between those two points is the window in which Indian exporters must act. The mechanism rewards two capabilities above all accurate carbon measurement and disciplined internal pricing and both are the CMA's craft rather than the engineer's. For a self-reliant, globally competitive India marching toward Viksit Bharat 2047, the border that learned to read carbon is not only a barrier to be survived but a benchmark against which the country's cleaner, better-measured producers can finally be recognised as cheaper after carbon. The countdown has started; the response is a costing exercise, and the profession best placed to lead it is our own.

Limitations. *The cost figures use illustrative emission factors and a constant certificate price; actual liabilities depend on each installation's verified emissions and on the EU ETS price path, both of which a firm-specific model should*

substitute. **MA**

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