

SectorVector

Reading the topical trends

April 2023

Carbon coping

Steel industry faces cost-competitiveness test as EU implements CBAM

The cost of India's steel exports to the European Union (EU) could rise as much as 17% following full implementation of the Carbon Border Adjustment Tax Mechanism (CBAM), which mandates stringent disclosures and purchase of carbon credits to offset the impact of emissions. Accounting for greenflation, which will drive overall steel prices higher, the total impact could be as high as 40%.

Under the mechanism, which the Council of the EU and European Parliament have agreed to implement from October 1, 2023, importing EU nations will seek quarterly disclosures across seven emission-intensive sectors from April 2024, and to gradually penalise emission differentials between 2026 to 2034 through purchase of carbon credits to bridge the cost differential with steel produced in the EU.

The seven sectors – iron and steel, aluminium, cement, fertilisers, electricity, as well as chemicals and polymers — account for ~35% of India's exports to the EU in the merchandise space.

The EU move is a part of a long series of global emission-reduction measures implemented in recent years — such as COP26, under which India committed to Net Zero by 2070, and COP27, under which the milestone targets have been made more aggressive.

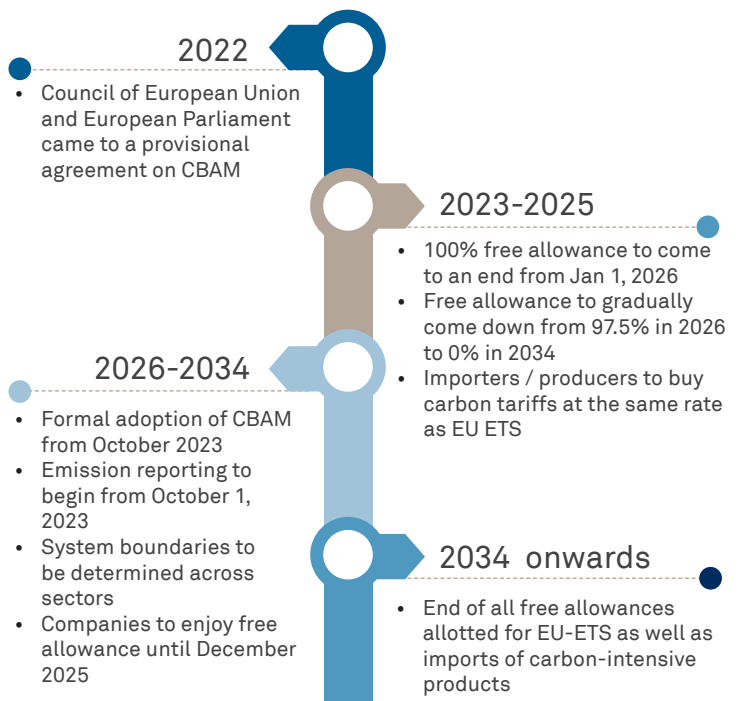
To be sure, the “common but differentiated responsibilities” formalised under United Nations Framework Convention on Climate Change have placed enhanced flexibilities on developing economies, providing them an opportunity to choose differentiated timelines for meeting Net Zero goals.

However, regulations such as CBAM, through which the EU wants to prevent an increase in outsourcing of product manufacturing to countries where implementation linked to carbon emission reduction is slower than in the EU — plugging carbon leakage as it were — may go a step beyond and force

specific industries to expediate implementation or face heightened risk for business loss or cost-competitiveness.

Under CBAM, exporters will need to make quarterly reporting of emissions starting October 1, 2023, and from December 31, 2025, buy Emissions Trading System (ETS) certificates for their greenhouse gas emissions. In the absence of a carbon-neutral technology, industries have been allocated free allowance starting at 100% in 2025 and ending at 0% by 2034. The ETS tax would be gradually applicable to the portion that does not enjoy the allowance.

Peak power demand remained buoyant in March despite contracting base demand



Source: European Commission, CRISIL MI&A Research

Other economies preparing to follow suit account for ~40% of India's steel exports

Several other countries are in different stages of imposing emission-based tariff barriers on the lines of the EU. These include the USA, Canada, and Australia, which together account for ~40% of India's steel exports.

The Clean Competition Act (CCA), introduced by the US Congress in June 2022, for instance, proposes to impose tax of \$55 per tonne of carbon starting 2024 for carbon-intensive industries, along with continued increase in carbon prices over the medium term. The carbon tax would be levied on domestic produce as well as imports of carbon-intensive products such as fossil fuels, refinery products, cement, and iron and steel.

Though the proposals to impose tariffs on carbon-intensive goods and set a carbon price were not approved by the last Congress, they are likely to gain traction over the medium term, especially after the Inflation Reduction Act of 2022 that advocates higher adoption of clean energy.

Implications for steel, which holds a crucial share of India's exports to the EU

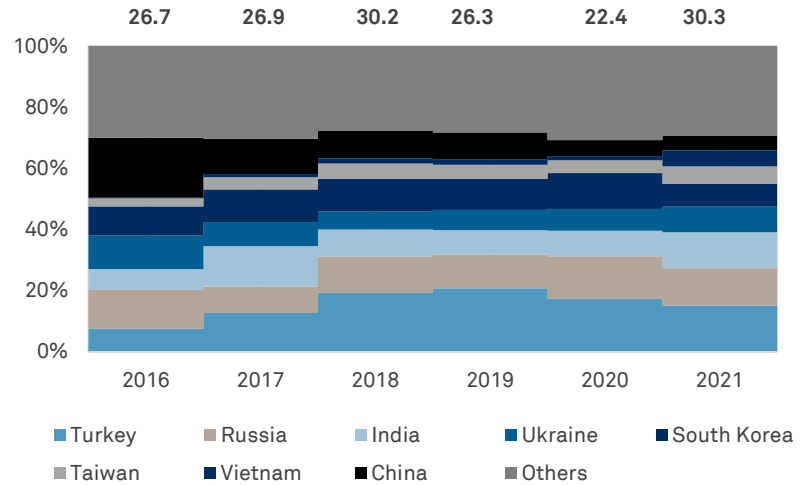
Of the seven major industries shortlisted under CBAM, steel is a major commodity with ~2.5 million tonne in exports to Europe in 2022, accounting for ~3% of India's total merchandise exports to the bloc, which mandates quarterly quotas.

Currently, the Russia-Ukraine conflict has impacted Ukraine's export capability, while the sanctions in its wake have curtailed Russia's exports.

In the milieu, India's steel exports are set to rise post removal of exports duty in November 2022 and close in on its export quota at around 3.2-3.5 million tonne in fiscal 2024, regaining ~10% market share in Europe's overall steel imports.

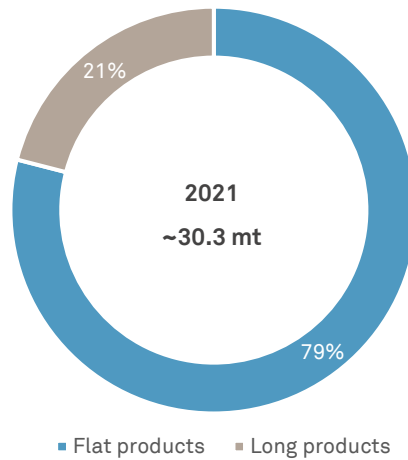
EU's steel import profile

Country-wise imports trend for European Union



Source: CRISIL MI&A Research

Product-wise break-up of imports by EU



Source: CRISIL MI&A Research, The European Steel Association

That said, only ~43% of the total installed capacity of steel in India as of March 2022 is in the basic oxygen furnace (BoF) segment, which is dominated by major integrated players. Large steel mills, which lead India's exports, have average emission (scope 1+2) of 2.2-2.6 tonne of CO2 (tco2) per tonne of crude steel, which is ~70% higher than European average of ~1.4 tco2/tcs.

Unlike India, Europe has a heavy presence of natural-gas-based DRI (NG-DRI), followed by Electric Arc Furnaces, due to better availability of natural gas, leading to significantly lower emissions at ~0.8-1 tco2/tcs. The emission gap of blast furnace (BF)-BoF players in Europe is relatively lower at ~30%, with optimised production processes of European mills leading to average emission at 1.7-1.9 tco2/tcs.

The average emissions difference between integrated steel mills in India and Europe at ~1 tco2/tcs will result in Indian players losing a part of the cost advantage they enjoy from having captive iron ore.

Other exporting countries, such as Japan, Korea and China, are set to bridge the cost gap with India as well in the exports market owing to their better emission profiles.

The ongoing decarbonisation moves and government policies of competing nations such as Japan, China, Korea, and Russia, will play a key role in global iron and steel trade. These countries are better placed than India and have been focusing on reducing emissions through production cuts rather than export reduction. Along with emission intensity, technology mix of capacity, and cost-competitiveness, their ability to pass on increasing costs will also determine India's position in steel exports to the EU.

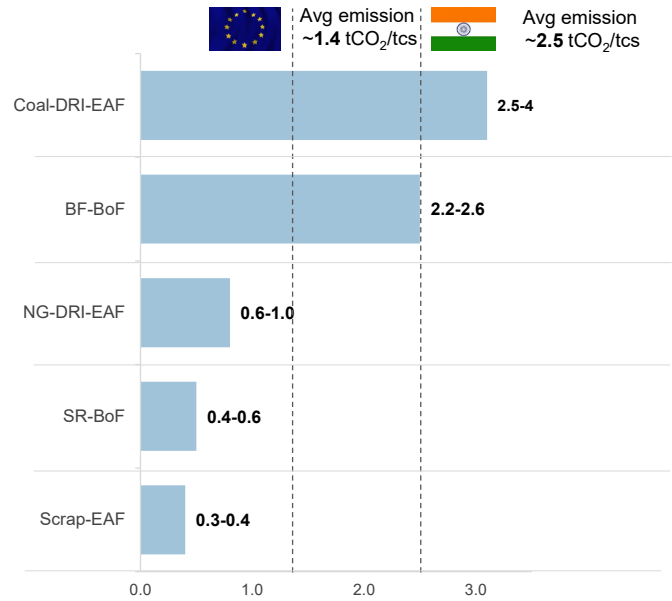
Geography-wise technology mix and emission intensity

	Production route		Emission intensity (tCO ₂ / tcs)
	Oxygen	Electric	
EU 27	56%	44%	~1.4
Japan	75%	25%	~1.4
S. Korea	68%	32%	~1.5
China	89%	11%	~1.8
Russia	62%	38%	~2.2
India	45%	55%	~2.5

Source: CRISIL MI&A Research

In the medium term, given free allowance until 2025 and unavailability of pathbreaking technologies, domestic steel producers will face limited impact of CBAM. However, the longer-term impact bears watching, once free allowance is removed and European steel mills shift towards newer technologies with lower carbon footprint.

Technology-wise assessment of carbon emissions



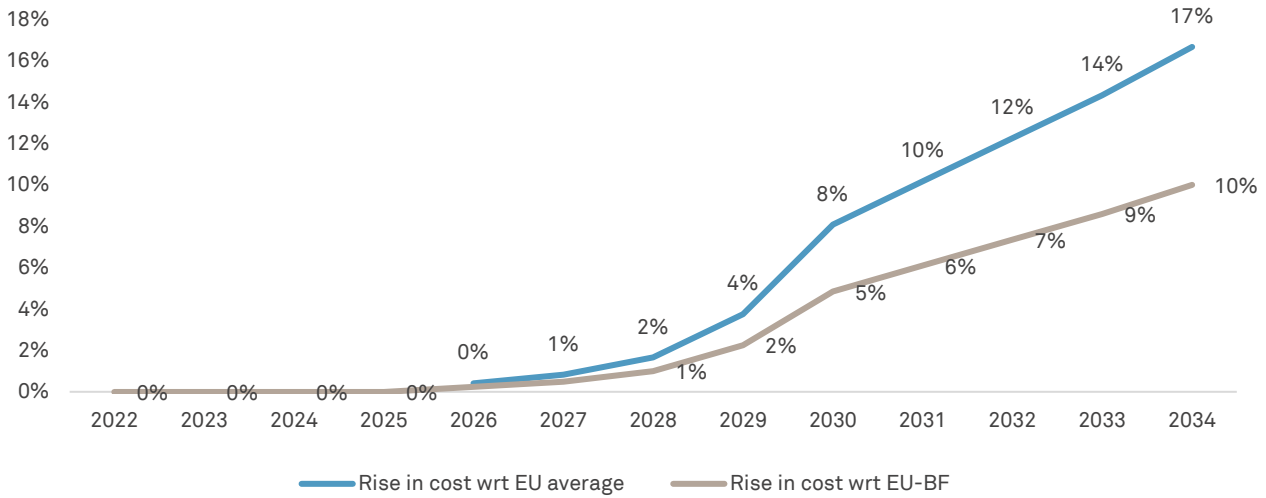
Source: CRISIL MI&A Research

Despite the flurry of measures taken by Indian steel mills to reduce emission intensity, India's benchmark remains below desired levels, largely due to natural resource constraints, particularly of high-grade iron ore and natural gas. The present gap of around 1 tco2/ tcs, on a technology-weighted basis, would lead to a net increase of 16-18% in cost. Further, compared with average emissions by only BF steel producers, the impact would be lower by 9-11% at current carbon price of ~€100/ tonne. While phased taxation and the allowance period will help domestic players catch up, producers are set to face challenges in longer run, where the overall cost impact could be as high as 40%.

Indeed, factoring in current emission levels and average carbon pricing, Indian players may face a staggered impact of 8-9% rise in cost by fiscal 2030, when ~50% of the free limit is waived off. Though the gap with European BF-BoF producers, accounting for over 55% of Europe's steel production, will be relatively lower at ~5%, it will widen amid faster decarbonisation targets and early adoption of pathbreaking technology by European steel producers.

Additionally, greenflation due to current emission levels could lead to a further 15% increase in cost for all the players, which would be passed on through increase in steel prices, resulting in an overall cost impact of 40%.

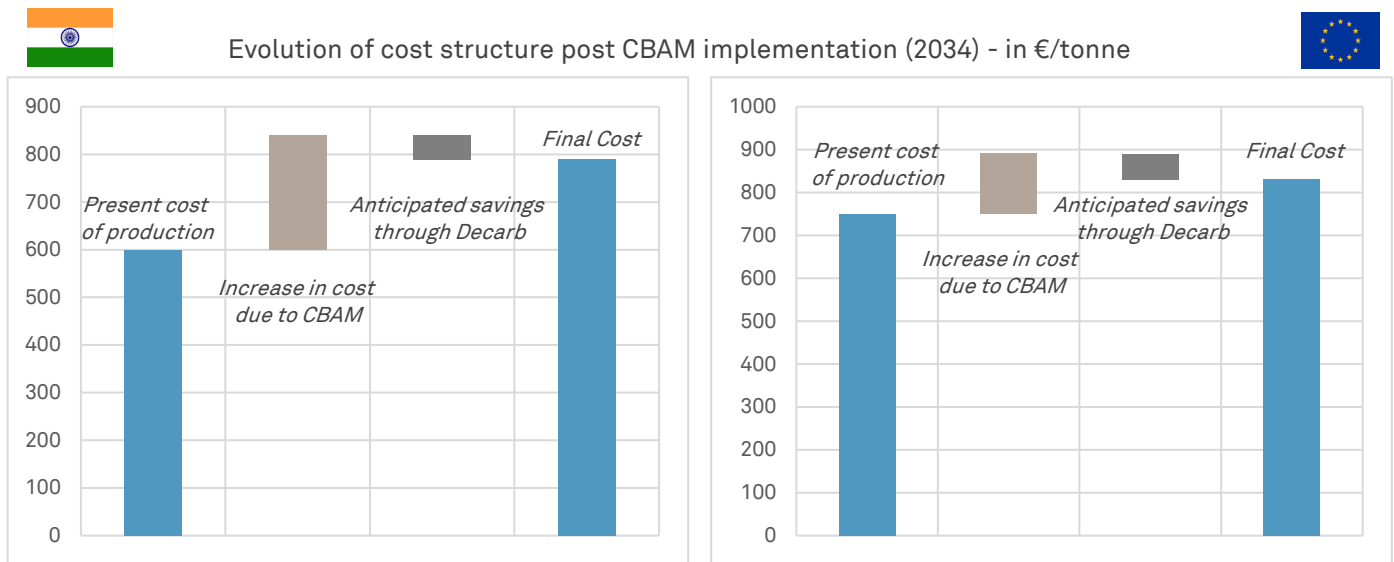
Expected rise in cost of production for Indian steel mills vis-à-vis their EU counterparts



Source: CRISIL MI&A Research

Assumptions: i) Carbon prices kept constant at €100/tonne ii) Cost of production kept constant at €600/ tonne
iii) Present emission levels consider reduction in free allowances each year

Production cost differential to decline following CBAM implementation



Source: CRISIL MI&A Research

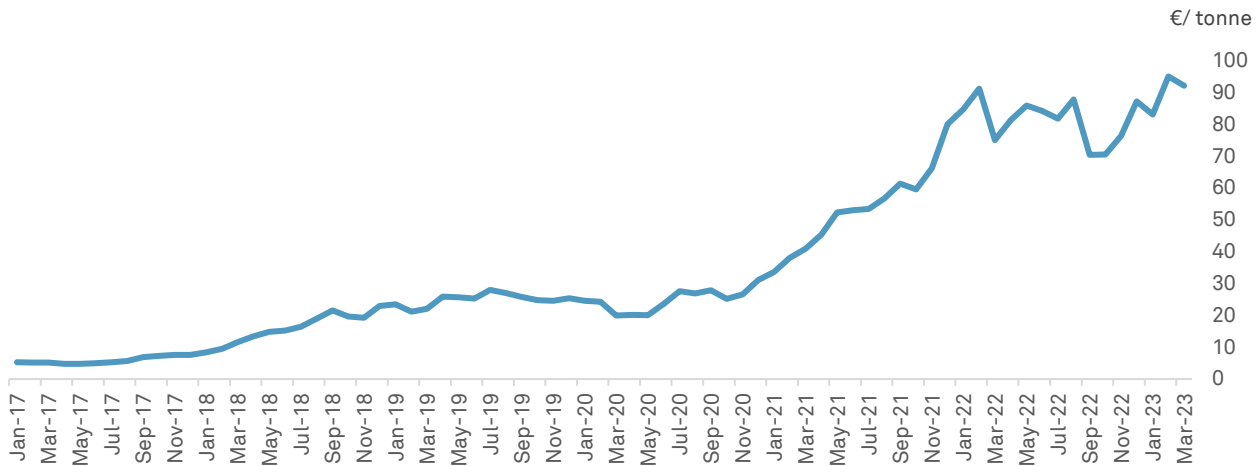
Note: Carbon cost considered at €100/tonne; Average cost of production considered at €600 and €750 for India and the EU, respectively

Given the heavy investments in steel decarbonisation, the pace of emission reduction in the EU is expected to be rapid. As per current estimates, Europe (EU and other countries) will have capacity of over 50 million tonne per annum in pathbreaking technologies by 2030, which will help reduce average emissions in the continent.

In the milieu, the decarbonisation journey of Indian players will be a key monitorable given continued capacity additions and lack of emerging solutions in the domestic BF-BoF space.

Carbon prices, which had almost quadrupled over the last 2.5 years, will remain a key monitorable as well.

Carbon prices on a tear as the green agenda grips Europe



Source: EU ETS, CRISIL MI&A Research

Decarbonisation of domestic steel to bridge the gap with European players

Most integrated steel producers are taking efforts to adopt the best available technologies, in line with India's Net-Zero target and the steel ministry's vision of reducing emission intensity by 20% by 2030.

At current prices of €100 per tonne of carbon, Indian steel exporters would have to pay an incremental €60-80 per tonne vis-à-vis European BF steel producers at zero allowance. Advent of breakthrough technology and pace of adoption by European mills would

determine India's cost competitiveness beyond 2030, when 50% of the free allowance granted is removed. Further, amid a probable removal of the quota system, a 15% rise in the direct cost of Indian steel producers would account for 50-70% of the aggregate FY23 Ebitda per tonne for large integrated players. Hence, the ability to pass on the rise in cost while maintaining competitiveness with other countries will remain a monitorable.

Integrated steel mills on war footing to reduce emission intensity



Set to spend Rs 10,000 crore on cutting emissions; target emission intensity of < **1.95 tCO₂ /tcs** by 2030



Strategic partnership with Greenko Group to reduce emissions from India ops by ~**1.5 million tonne/year**



Target CO₂ emission intensity of < **2 tCO₂ /tcs** by 2025 and < **1.8 tCO₂ /tcs** by 2030



Achieving CO₂ emission intensity of < **2 tCO₂ /tcs** by 2030 and **Net-Zero** by 2035



Target intensity of **2.3 tCO₂ /tcs** by 2030

Source: CRISIL MI&A Research, Company Sustainability Report, Company Annual Reports

On a positive note for Indian steel producers, considering BF-BoF accounted for 55-60% of Europe's crude steel production over the last five years, its complete phasing out by 2030 is unlikely, leaving enough room for competitive exports from India and developing countries.

Furthermore, it may be a while before the EU can start aggressively reducing emissions for sectors such as steel, considering only 50-70 million tonne of new capacity in pathbreaking technology is likely to be added by 2030 against current capacity of 200-220

million tonne. This would ensure the BF-BoF capacity continues beyond 2030, providing an extended window for competitive exports.

In the longer run, steel prices will guide the export trajectory. While flat steel (hot-rolled coil) prices in India were lower by ~€100/ tonne than those of West Europe over the last five years, players will lose incremental realisations through exports to Europe after 2026, when purchase of carbon credits becomes mandatory.

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