

Best, Frank

Research Report

The EU Carbon Border Adjustment Mechanism and its Influence on Imports from India

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The EU Carbon Border Adjustment Mechanism and its Influence on Imports from India

Prof. Dr. Frank Best¹

¹Dept. of Business, Cultural, and Legal Studies, HTWG Konstanz University of Applied Sciences, Konstanz, Germany. Author e-mail: frank.best@htwg-konstanz.de

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Abstract

In its “Fit for 55” program, the European Union (EU) integrates several instruments with the goal of achieving climate neutrality by 2050. One of the cornerstones of the program is the EU Emissions Trading System (EU-ETS), which imposes a levy on CO₂ and other greenhouse gas (GHG) emissions, thus internalizing external costs, restoring fair competition, incentivizing sustainable investment and efficiently distributing the remaining greenhouse gas budget through a cost-effective, market-oriented mechanism. This carbon pricing scheme, however, only affects companies which emit GHGs within the EU. Imported products thereby achieve a cost advantage over products produced within the scope of the EU-ETS, leading to competitive pressure on EU-ETS companies and the risk that they might move production facilities outside the scope of the EU-ETS (“carbon leakage”).

In order to avoid carbon leakage and encourage cleaner industrial production in partner countries, the EU decided to introduce the Carbon Border Adjustment Mechanism (CBAM) to put a fair price on carbon emissions from the manufacturing of products imported into the EU. The CBAM transitional phase went into effect on October 1, 2023. Initially, it will only apply to selected industrial products and precursors whose production is particularly carbon intensive and which are deemed to have the highest potential risk of carbon leakage. Once the CBAM is fully active, all importing companies will have to declare the embedded emissions for their products and surrender the corresponding amount of CBAM certificates. It is to be expected that importing companies will strongly rely on their international suppliers to provide information on the embedded emissions.

India is both an important trade partner of the EU and, because of its strong reliance on coal power plants, a heavy greenhouse gas emitter both in absolute and relative terms. Importers of products from India into the EU will therefore have to purchase a significant number of carbon allowances under the CBAM regulations. This paper explains the functional mechanism of the CBAM and identifies the product flows from India to the EU for the affected products. It describes the product groups, their importance for Indian companies as well as the future requirements, and is intended to support Indian companies that export to the European Union to prepare for the CBAM requirements both during the transition phase and once the system is fully active.

Keywords: Aluminium, CBAM, Carbon Border Adjustment Mechanism, Carbon Intensity, Emission Trading Scheme, EU, EU-ETS, India, Imports, Iron, Steel

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The EU Carbon Border Adjustment Mechanism and its Influence on Imports from India

Introduction

India has emerged as a global manufacturing hub, with significant contributions from carbon-intensive sectors such as steel, cement, and chemicals, as well as many other goods. As a developing nation with one of the fastest growing economies in the world, India has prioritized economic growth and poverty alleviation, leading to a heavy reliance on fossil fuels and thus high carbon emissions (Singh & Idrisi 2019). Consequently, India's carbon footprint, approximately 7% of global emissions, is substantial (Statista 2023), and makes the country vulnerable to potential implications arising from the European Union (EU) Carbon Border Adjustment Mechanism (CBAM).

The EU is one of India's major trading partners (Hilpert et al., 2023), receiving roughly 17% of the country's exports (Department of Commerce, 2023). Key exports include textiles, machinery, chemicals, metals and automotive components.

In its "Fit for 55" program, the European Union integrates several instruments in order to achieve climate neutrality by 2050. One of the cornerstones of the program is the EU Emissions trading system (EU-ETS), which levies a price on CO₂ and other greenhouse gas emissions, in the following ways:

- Internalizing external costs from greenhouse gas (GHG) emissions
- Creating fairer competition between carbon intensive industries, thereby
- Incentivizing sustainable production and investment and
- Efficiently distributing the remaining greenhouse gas budget via a cost-effective, market-oriented mechanism.

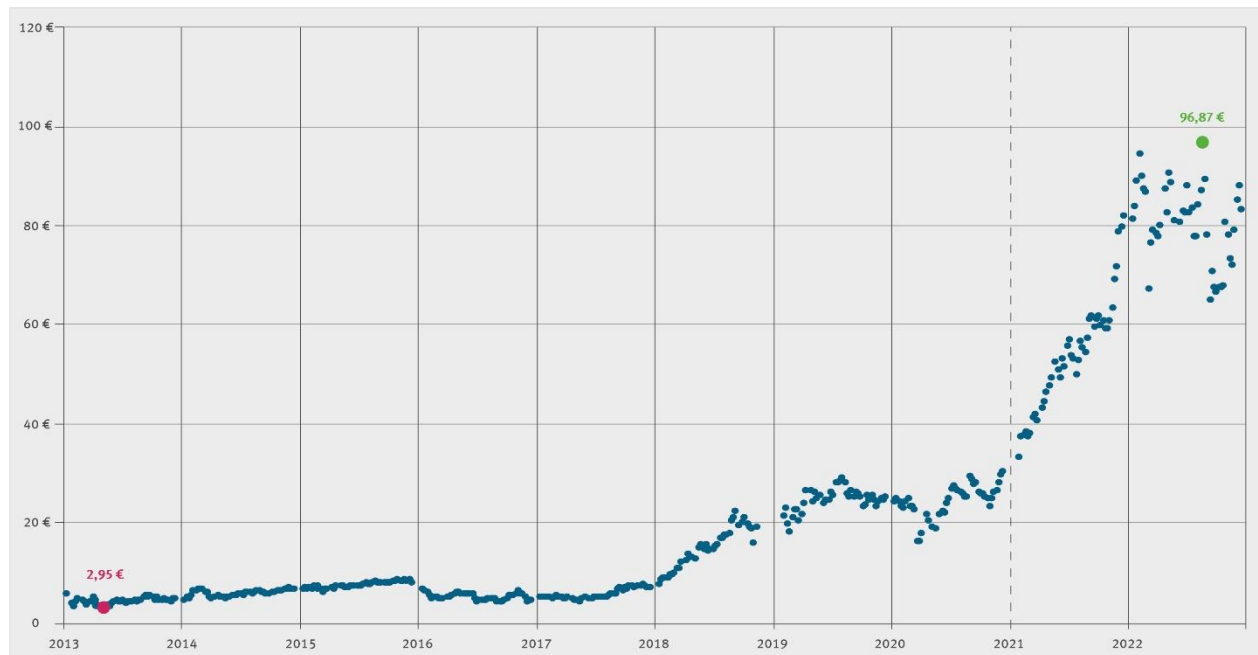


Figure 1: Price development of EU-ETS1 allowance auctions since 2013. Source: DEHST (2023)

The carbon price, however, is currently only valid for companies located in the EU. Imported products thereby achieve a cost advantage over products produced within the scope of the EU-ETS. This leads to competitive pressure on EU-ETS companies and increases the risk that these companies will move supply or even production outside the scope of the EU-ETS, a phenomenon known as “carbon leakage” (Ehrenstein & Neiland, 2021). The decision to move *existing* production capacity outside the EU is not a simple one, however. The cost of dismantling production facilities within the EU and setting them up in foreign countries is significant; therefore, the costs and benefits involved need to be compared. A significantly higher risk arises when the decisions concern *additional* capacities; in this case, the decision to build new production facilities outside the EU is not (or is less) impacted by already existing structures.

India’s power generation today relies heavily on coal power plants. Around 57% of installed power generation capacity in the country is produced by fossil fuel powered plants (Ministry of Power, 2023a), representing a share of electricity generation of almost 80% in April 2023 (CEA, 2023). This

power mix leads to high Scope 2¹ emissions for Indian companies. Industrial production from Indian companies is carbon-intensive (Marcu, 2021) compared to other parts of the world, and the imposition of CBAM measures could thus have far-reaching consequences for India's trade relations with the EU.

The EU Carbon Border Adjustment Mechanism

In order to avoid carbon leakage, the EU issues free allowances to companies in high-risk sectors (Bierbrauer et al., 2021). This assures competitiveness, but does not foster climate neutrality and is incompatible with the union's long-term climate targets. In December 2022, an EU Trilogue² agreed to introduce the CABM to put a fair price on greenhouse gases emitted from the manufacturing of products entering the EU (EU, 2023). The CBAM will go into effect in a transitional phase on October 01, 2023, and is expected to be fully operational by January 2026. The transitional phase will be a reporting phase; importing companies will be required to report the embedded GHG emissions for their products. Once the CABM is fully active, importing companies will have to declare the embedded emissions of their products and surrender the corresponding amount of allowances. The price of the allowances will be tied to the EU-ETS1 allowance price, averaged on a weekly basis.

In the beginning, CBAM will only apply to selected industrial products and precursors whose production is carbon intensive and have the highest risk of carbon leakage. By 2035, CBAM will affect all imports with a value above 300 EUR. In order to avoid double counting, carbon prices already imposed in the exporting country can be deducted from the CBAM allowances.

¹ Scope 1 includes direct emissions from a company's owned or controlled sources; Scope 2 includes indirect emissions from purchased or acquired energy that is generated off-site; Scope 3 includes all indirect emissions that occur in the value chain of a reporting company.

² A trilogue is an informal interinstitutional negotiation bringing together representatives of the European Parliament, the Council of the European Union and the European Commission.

Products Covered under CBAM

During the introduction phase, CBAM will, as mentioned above, only apply to certain carbon intensive products. The exact categories and sub-categories are sorted by the Combined Nomenclature (CN) codes of the EU³. The CBAM relevant product categories with the import volumes from India into the EU are displayed in Table 1:

Product category	Imports into the EU from India	
	2021	2022
Cement	13,334 €	7,970 €
Fertilizers	977,432 €	1,023,619 €
Aluminium	595,449,465 €	1,986,254,489 €
Electricity	0 EUR	0 EUR
Iron & Steel	4,520,193,930 €	5,466,957,514 €
Chemicals (Hydrogen)	0 EUR	0 EUR

Table 1: Imports into from India the EU by CBAM relevant product category 2021 and 2022. Source: EUROSTAT (2023)

As can be seen in Table 1, the product categories “Iron & Steel” and “Aluminium” represent by far the biggest share of imports. The analysis below will therefore focus on these two categories.

³ The six product categories and their CN numbers are listed in detail in ANNEX 1 of the Annexes to the Regulation of the European Parliament and of the Council establishing a Carbon Border Adjustment Mechanism (EU, 2023).

As Figure 2 below shows, imports from India into the EU have risen strongly; for Iron & Steel this started in the mid-2000s; for Aluminium in 2016⁴. India's Iron, Steel and Aluminium industries thus appear to be competitive in the EU both from a cost and from a quality perspective.

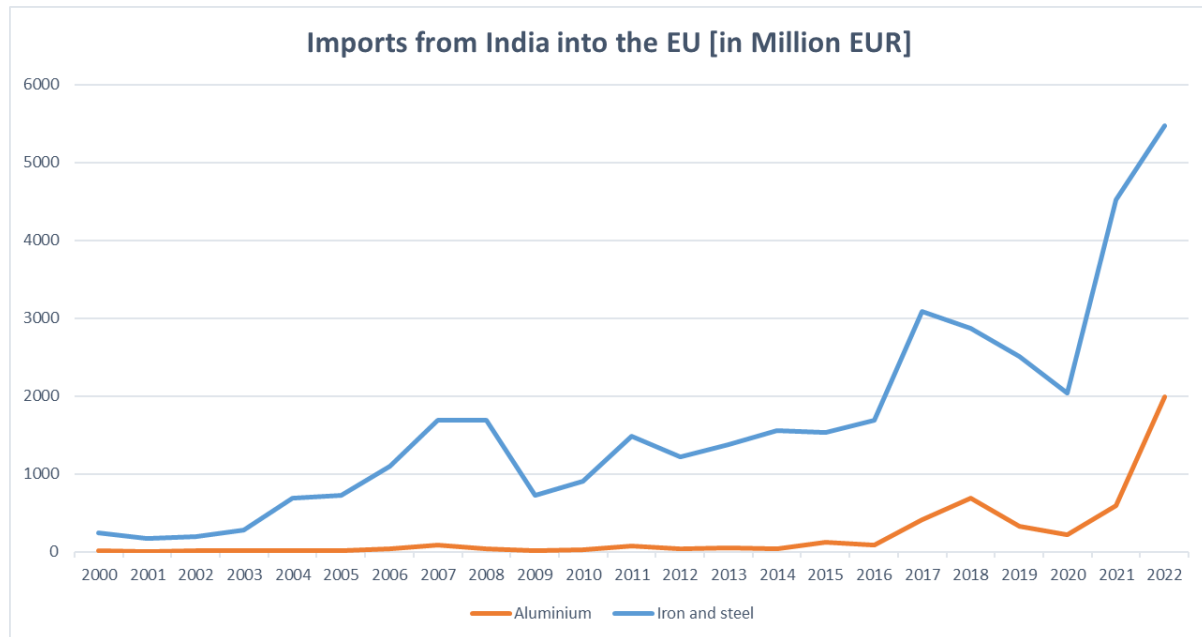


Figure 2: Imports of Iron & Steel and Aluminium subject to CBAM regulations. Source: EUROSTAT (2023)

Potential Effects of CBAM on Indian Companies

The implementation of the CBAM will pose both challenges and opportunities for India's trade competitiveness. Emissions from Iron & Steel production are one of the highest among the EU trading partners: in 2018, 2.97 t CO₂ / tcs⁵ were reported for Scope 1 and Scope 2 emissions (Koolen and

⁴ Note that only CN codes which fall under current CBAM regulations are included.

⁵ tcs: ton of crude steel

Vidovic, 2022); for 2020, around 2.5 t CO₂ / tcs on average were reported (Ministry of Steel, 2022)⁶.

Figure 3 below shows the average emissions for Crude Steel production among major steel producing countries, with EU production at around 1 t / tcs. Figure 3 shows the average CO₂ intensities of the Steel Industry in different countries, with EU production at around 1 t / tcs. Due to its heavy reliance on coal power plants, India emerges as the highest emitter, with average emissions around 2.5 - 3 times higher than Europe's⁷.

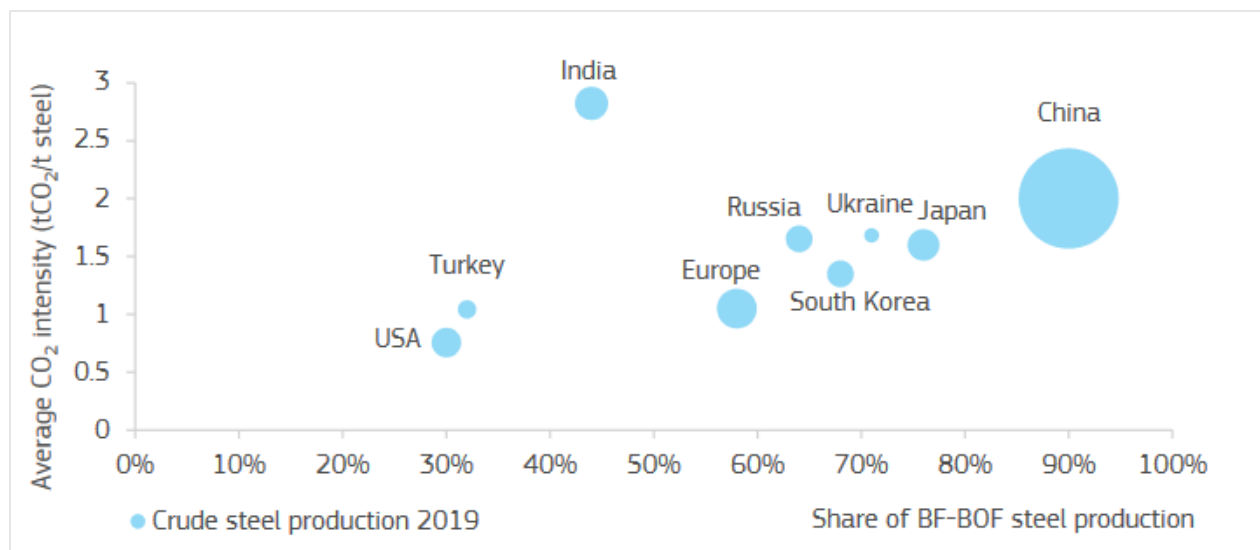


Figure 3: Average CO₂ emission intensity by major country. Source: Crippa et al., 2022.

In terms of Aluminium, emission intensity is reported to be 48% higher than the global average (Mukherjee, 2020; Hasanbeigi, 2021), while EU emission intensity is below the global average (Hasanbeigi, 2021). While the CO₂ Intensity of India's Aluminium is around 15.5 t CO₂ / t, Europe's

⁶ Keeping in mind that 2020 was the first year of the Covid Pandemic

⁷ Note: Average emissions for Europe are not equal to average emissions of the EU; however, the difference appears to negligible.

average emission intensity is around 5.8 t CO₂ / t. Again, it's the high share of coal power plants causing India's emission intensity to be around 2.7 times higher than Europe's on average.

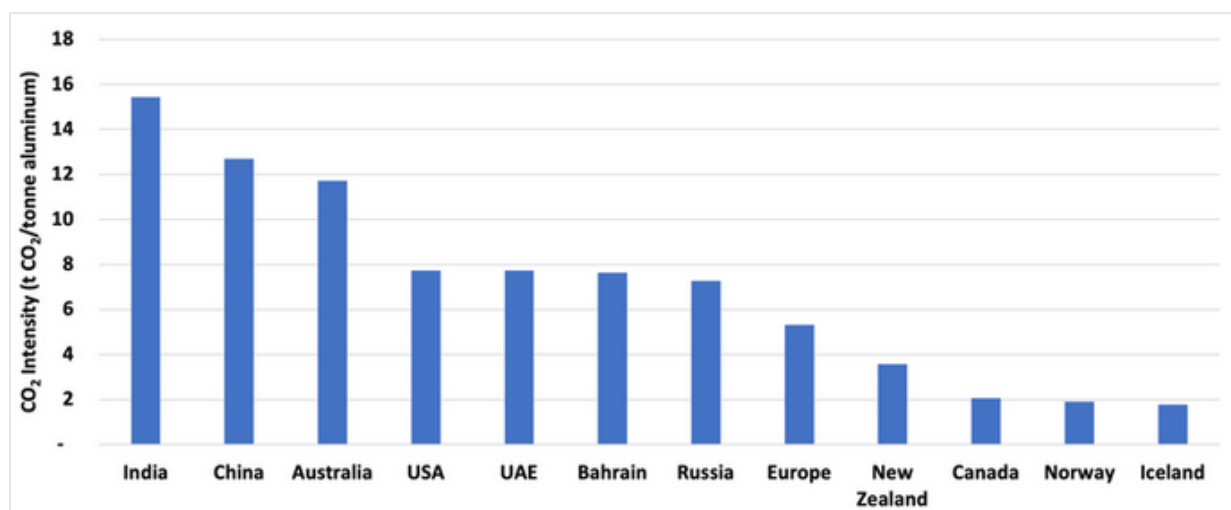


Figure 4: Final energy-related CO₂ intensity of aluminium production in 2019. Source: Somers (2022)

The CBAM relevant imported volumes from India for Iron & Steel and Aluminium in 2021 and 2022 were:

Product category	Imports into the EU from India	
	2021	2022
Aluminium	247,259 tons	633,056 tons
Iron & Steel	4,437,908 tons	3,782,457 tons

Table 2: CBAM relevant imports into the EU from India 2021 and 2022 in tons. Source: EUROSTAT, 2023

The average CO₂ prices of EU-ETS allowances in 2021 and 2022 amounted to 52.50 € / t CO₂ and 80.32 € / t CO₂ respectively (UBA, 2023). Using the intensity factors presented above, the average additional cost for Indian products would have amounted to the following⁸:

2021						
		Emission Intensity [t CO ₂ / t]		CO ₂ Price [€ / t]		Additional cost India [€ / t]
	CO ₂ price [€ / t CO ₂]	Europe	India	Europe	India	Δ Europe / India
Aluminium	52.5	5.8	15.5	304.5	813.75	509.25
Iron & Steel	52.5	1	2.7	52.5	141.75	89.25

2022						
		Emission Intensity [t CO ₂ / t]		CO ₂ Price [€ / t]		Additional cost India [€ / t]
	CO ₂ price [€ / t CO ₂]	Europe	India	Europe	India	Δ Europe / India
Aluminium	80.32	5.8	15.5	465.66	1,244.96	779.10
Iron & Steel	80.32	1	2.7	80.32	216.86	136.54

Table 3: Additional CBAM cost for Aluminium and Iron & Steel from India 2021 and 2022

⁸ It must be stated clearly here that the following calculations are only approximate, using average CO₂ intensity values for all products within the two categories instead of precise values.

Multiplied by the imported amount into the EU, the CBAM would have yielded the values in Table 4 below, where the figures are listed as a percentage of total imported volume:

Product category	Additional Cost of CBAM allowances			
	2021	%	2022	%
Aluminium	201,207,011 €	33.8%	788,129,398 €	39.7%
Iron & Steel	629,073,459 €	13.9%	820,278,755 €	15.0%

Table 4: Additional CBAM cost for Aluminium and Iron & Steel from India in € and %

-This means that the cost of the Indian products for EU customers in a hypothetical CBAM would have been 34% and 40% higher for Aluminium and 14% and 15% higher for Iron & Steel in 2021 and 2022 respectively. The high percentage in the Aluminium sector is due to the high energy intensity of the sector as compared to Iron & Steel. This means that, if CO₂ prices had applied, the Indian products in the Aluminium sector would have been approximately 21-25 percent more expensive. The expected effects can be clustered into the following challenges and opportunities:

Challenges

Increased Costs and Trade Barriers: The CBAM is certainly going to increase the cost of imports from India into the EU, adversely affecting their price competitiveness in the European market. This, in turn, may result in reduced demand for Indian goods, negatively impacting India's export-oriented industries. The carbon pricing imposed will thus put pressure on sales prices and also production costs for Indian industries.

Price Pressure: Reduced demand from within the EU, in combination with expanding capacities in India (IBEF, 2023), might lead to overcapacities in India for the remaining non-EU-ETS markets, further increasing pressure on prices.

Shifts in Global Supply Chains: The CBAM could influence global supply chains by incentivizing companies to relocate their production facilities to regions with lower carbon emissions or to partner with suppliers from countries with lower carbon footprints. Such shifts may disrupt existing supply chains and potentially lead to reduced demand for Indian inputs in global value chains.

Opportunities

Stimulus for Green Transition: The CBAM could serve as a catalyst for India's transition to a low-carbon economy. To maintain competitiveness in the EU market, Indian industries would be encouraged to invest in cleaner technologies and adopt sustainable practices. This could foster innovation, enhance energy efficiency, and promote the development of green products and services, ultimately benefitting India's long-term economic and environmental goals.

Strengthening the Partnership: Companies who proactively provide their importers with extensive and detailed required information will achieve competitive advantage compared to suppliers who do not. They will help their importers to facilitate the processes of declaring the embedded emissions.

Preparing for Domestic Decarbonisation: The planned Carbon Credit Trading Scheme (CCTS) is very likely going to impose a price on various greenhouse gases (Ministry of Power, 2023). Calculating GHG emissions for CBAM will also prepare Indian companies for reporting their emissions in a domestic CCTS.

Increased Income for the Indian Government: If the Indian government goes through with its plans to introduce a CCTS, at least part of the CBAM fees could be retained within India instead of ending up in the EU.

Mitigation of Adverse CBAM Effects

To mitigate the potential adverse effects of the CBAM on India's trade, it is crucial for the Indian government and Indian companies to adopt appropriate strategies and policies. From both an environmental and cost perspective, reducing CO₂-emissions should be given highest priority.

Some key considerations for the Indian *government* include:

a) *Strengthening Domestic Climate Policies:* By implementing robust domestic climate policies, India can reduce its carbon intensity and enhance its competitiveness in the global market. This includes investing in renewable energy sources, promoting energy efficiency, and encouraging sustainable practices across industries. The proposed Indian CCTS could thus accomplish two objectives with a single action. On the one hand, the carbon price of the CCTS would reduce the CBAM price. The revenues from carbon pricing would stay within the country, as opposed to being used to purchase CBAM allowances, in which case the revenue would benefit the EU. On the other hand, the CCTS would incentivize Indian companies to invest more in low-emission production technologies. Of utmost importance is the availability of emission-free renewable energy, both for electricity and process heat. Strong policies with the goal of expanding renewable energies would therefore benefit both Indian companies and help the Indian government reach its climate goals.

b) *Promoting Bilateral and Multilateral Dialogues:* India should engage in constructive discussions with the EU and other trading partners to address concerns and explore avenues for cooperation on climate change mitigation. By actively participating in multilateral forums, India can advocate for fair and equitable trade policies that consider the unique challenges faced by developing countries. Joining the proposed G20 climate club, for example, would expand India's representation in global climate policy; enable it to actively influence the club's direction; make sure historically accumulated emissions are adequately being taken into account; and insist on climate justice for vulnerable countries (Unger & Thielges, 2023).

c) *Facilitating Technological Collaboration:* Collaboration on research and development, technology transfer, and capacity building can accelerate India's transition to a low-carbon economy. Encouraging partnerships with European counterparts and leveraging international funding mechanisms can facilitate access to clean technologies and expertise.

Some key considerations for Indian *companies* include:

a) Short term: In order to still remain suppliers to the EU, Indian exporters need to prepare for the new CBAM regulations. Importers will very likely demand information on embedded GHG emissions from their suppliers. Either Indian companies will provide information on their Product Carbon Footprints (PCF), or their products will be burdened with default values as described in ANNEX III of the CBAM regulation (EU, 2023). Given the high carbon intensity of India's industry, it is to be expected that the default values will be rather on the high side. Indian companies can minimize their burden by calculating PCFs, comparing them with the default values and choosing the lower value. To ensure maximum comparability of the carbon footprint compared to other manufacturers and lend credibility to the emission study, it is advisable to choose a standard that currently has broad recognition and application. The most commonly used and cited standards for calculating the Product Carbon Footprint (PCF) are the GHG Protocol - Product LCA and Reporting Standard, PAS 2050, and DIN EN ISO 14067.

b) Mid-term: Indian companies will need to invest in carbon-free technologies in order to reduce their carbon footprint. Especially industries with high Scope 1 emissions have the ability to influence their emissions directly. The Iron & Steel and Aluminium industries have some of the highest Scope 1 emissions (Teske, 2022). Companies can influence their Scope 2 and Scope 3 emissions only via the selection of their suppliers. Therefore, companies falling under CBAM regulations should at least demand the required information for Scope 2 emissions from their suppliers; if possible also Scope 3 emission values.

Conclusions

The EU CBAM mechanism will affect Indian exporters to the EU short-term mainly in the Iron & Steel and Aluminium Industries. These industries are on average more carbon intensive compared to other countries and are thus more vulnerable to high CBAM fees, which could potentially jeopardize India's competitiveness in the EU. Necessary short-term measures include companies calculating their individual PCFs and, if possible, reducing Scope 1 and Scope 2 emissions. The Indian government can support these industries by accelerating the decarbonization of the power sector, strengthening climate

goals, and joining an international climate club. Imposing a national CCTS would allow India to keep the revenues from carbon pricing in the country while simultaneously reaching its emissions reduction goals.

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List of Abbreviations

CBAM	Carbon Border Adjustment Mechanism
CCTS	Carbon Credit Trading System
CN	Combined Nomenclature
CO ₂	Carbon dioxide
DEHST	Deutsche Emissionshandelsstelle (German Emission Trading Authority)
ETS	Emissions Trading System
EU	European Union
GHG	Greenhouse Gas
PCF	Product Carbon Footprint
t	tons
tcs	Tons of Crude Steel

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