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CARBON BORDER ADJUSTMENT MECHANISM (CBAM) OF THE EU: COMPATIBILITY WITH WTO PRINCIPLES AND IMPLICATIONS FOR DEVELOPING COUNTRIES LIKE INDIA.

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ABSTRACT

This examines potential policy solutions for a seamless transition, such as the viability of instituting a local carbon tax regime or setting up an Emissions Trading System (ETS) in India. According to the findings, India must implement a carbon price system in order to fulfil its international obligations and sustainability targets. Reusing current energy and environmental taxes on exported goods apart from those included in the GST particularly those used to provide data for the Remission of Duties and Taxes on Exported Products (RoDTEP) program, appears to be a possibly trustworthy temporary solution in light of the uncertainties. The tax's proceeds could be wisely allocated as seed money to promote technology development and green projects.

INTRODUCTION

There is a complicated global discussion going on about how to balance climate goals with sustainability. The question of who should be responsible for and own greenhouse gas (GHG) emissions, particularly carbon dioxide (CO₂), which accounts for roughly 75% of emissions and acts as a blanket, trapping heat and raising global temperatures at an alarming rate, is usually controversial (Ritchie et al., 2024). Burning fossil fuels, primarily coal, is necessary for the process of fast industrialization and the ensuing increase in the manufacture of steel, aluminium, cement, and other materials, which raises carbon emissions. As these gases stay in the atmosphere for hundreds if not thousands of years, they act as major drivers of climate change.¹ This phenomenon transcends borders and thus demands a collective global response. Realising the climate urgency, the 2023 United Nations Climate Change Conference (COP28)

¹ The half-life of CO₂ is about 120 years (Tackle, n.d.); Also, Inman (2008) explains the reasons why carbon emissions stay much longer than expected for thousands or hundreds of years.

marked the conclusion of the first “global stocktake” under the Paris Agreement² and signalled the beginning of the end of the fossil-fuel era (UNFCCC, n.d.). The GHG Protocol defines three emission scopes. Environmental consequences are measured by scopes 1, 2, and 3 (see Bhatia et al., 2004). Direct emissions from sources that a business owns or controls, including furnaces and automobiles, are covered under scope 1. The other two address indirect emissions, which could be more difficult to manage. Emissions from electricity purchases are under scope 2, which can be addressed by switching to renewable energy. Indirect emissions from business operations that are outside their control are examined in scope three (e.g., supplier chains, product use, acquired materials).

A key component of the EU's "Fit for 55" climate strategy, the Carbon Border Adjustment Mechanism (CBAM), governs the reporting requirements for all three scopes of emissions (Scope 1 pertains to products covered by the CBAM Regulation, while Scopes 2 and 3 deal with raw materials when those raw materials are also covered by the CBAM Regulation). However, starting in January 2026, the tax will only be applied to direct emissions (Scope 1) and embedded emissions of raw materials that are also subject to the CBAM Regulation (partially Scope 3). CBAM is praised as a daring move to monitor and manage emissions in value chains. The goal of the EU's CBAM is to lower carbon emissions worldwide, with a focus on carbon leakage. A phenomenon known as "carbon leakage" occurs when businesses move their manufacturing to nations with less or no carbon regulations or levies in order to avoid the costs of doing so in one place. This factor was brought to light by the Kyoto Protocol in 1997, and many industrialized economies, particularly the EU, have been concerned about it ever since. In the end, it cleared the path for the implementation of carbon pricing. As the global climate catastrophe worsens, CBAM has become a controversial but potentially revolutionary policy. By 2030, it seeks to cut net GHG emissions by at least 55%, and by 2050, it wants the EU to be climate neutral. CBAM is viewed as a potential stimulus for international environmental action by proponents of GHG emission mitigation. This system would encourage cleaner production methods in nations with weak environmental rules by levying imported goods according to their carbon footprint. However, these issues are still simmering, and CBAM has sparked a convoluted global discussion. Opponents worry of trade wars and economic misery, while supporters praise it as an essential instrument for global

² This international treaty on climate change was adopted by the parties to the United Nations Framework Convention on Climate Change (UNFCCC) in 2015, with the aim of limiting the rise in average global temperature to below two degrees Celsius, possibly 1.5 degrees.

decarbonization. Many nations, including developed ones (especially those with a long history of steel production), are concerned that CBAM would work as a covert trade barrier, reducing their competitiveness and endangering employment. Developing countries fear becoming collateral damage because they are torn between economic realities and environmental concerns. If companies are unable to meet the CBAM requirements, they may experience economic slowness in export markets.

GLOBAL CARBON EMISSION TRENDS AND THE EU-CBAM'S EVOLUTION

The data on CO₂ emissions that is now available determines the necessity of tackling climate change, carbon leakage, reaching net zero emissions, and developing carbon pricing schemes or levies. The descriptive statistics of CO₂ emissions by nation and region (not include land-use change) are shown in this section. Since China and India are two of the markets with the highest population growth, Asia has emerged as the top emitter, followed by North America (headed by the US). Over the past three decades from 1991, Asia's emissions have risen while Europe's have decreased. India is currently among the top emitters overall, despite not historically being a high emitter. China, which had very low emissions before 1914, has seen a sharp rise in emissions since 1991, overtaking India.

They still emit less per person than the US and the EU, though. About 2 tons of carbon are emitted annually per person in India. The EKC hypothesis is an effort to rationalize the trend of carbon emissions by income in various nations. Degradation of the environment tends to decrease after the tipping point or peak is reached. For instance, the UK reached a turning point in 1985 when the relationship between CO₂ emissions and per capita GDP started to decouple (Syed, 2019). It should be noted that the UK's emissions rose from 1915 to 1990 before declining, mostly starting in 1991. The reality of historically high emitters is unaffected by the drop in emissions, though, because CO₂ remains in the atmosphere for hundreds of years. Neither India nor China have yet to reach their tipping thresholds. Naturally, tipping points differ from nation to nation and are impacted by a variety of factors, including advancements in technology. After the Industrial Revolution began in the 1750s, it took the UK more than 200 years to reverse emissions. From 29 million metric tonnes of oil equivalent in 2000 to 1.4 million tonnes in 2022, the UK has decreased its reliance on fossil fuels, primarily coal, with gas accounting for 22 million tonnes of that total. Hydroelectric, solar, wind, and bioenergy

have all increased from their comparatively low levels. India should be given a break because it won't take two centuries like the UK did, especially in light of the tremendous pressure from other countries to do so.

Since 1750, data on carbon emissions have painted a familiar image and frequently told a story. Since the 18th century, pollution has historically been the fault of the Global North, which is made up of the wealthy and industrialized countries of the EU and North America. Only in the last three decades or so has the Global South's share—which is primarily made up of China and India's growing economies—started to increase. Therefore, this reality should be reflected in the burden of adjustment to fulfill global climate targets. Aiming for climate justice is the Common but Differentiated Responsibilities (CBDR) principle. This topic has gained attention after the introduction of the EU's CBAM. The Rio Declaration of 1992 is when it all began. The process of bringing an idea from the lab to the market is reflected in CBAM. Like a start-up, it faced obstacles and defied doomsday predictions. Discussions about CBAM first appeared in the 1990s. Incorporating environmental concerns into its trade policies has long been a goal of the EU. CBAM struggled with carbon leakage and the nuances of trade law. The European Union pledged to stabilize CO₂ emissions at 1990 levels by 2030 and suggested an international carbon price in 1991. The proposed tax was divided into two parts: an energy tax on all fuels based on energy content and a charge on fossil fuels based on the intensity of carbon emissions.

Although proceeds might be kept for local uses, it mandated that member nations apply their own carbon taxes based on a standard rate set by the EU. It faced several political and economic obstacles, including the US's reluctance to agree to binding carbon abatement targets. After deciding to increase energy excise taxes in 1994, the European Commission (EC) eventually ratified the Framework Convention on Climate Change, which was initially drafted during the Rio Summit (Herber & Raga, 1995). Before entering the EU in 1995, Finland and Sweden implemented their own carbon levies in 1991. The 1997 Kyoto Protocol, which set legally binding international carbon reduction objectives for 38 wealthy countries, including those in the EU and Japan, was a significant turning point. The European Union has frequently struggled with the threat of "carbon leakage," which is the concern that more stringent domestic climate policies may encourage businesses to shift their operations to nations with laxer restrictions. The Clean Development Mechanism (CDM) surfaced as a possible remedy for this issue during the Kyoto Protocol discussions (Kainou, 2022). Through investments in energy conservation

and new energy projects in developing nations, CDM enabled industrialized nations to offset emissions. They obtained certified emission reduction credits as a result. CDM prompted worries about perhaps undercutting domestic action and turning into solely an offsetting mechanism, even if it presented chances for carbon reductions in developing nations. Because its industries were subject to more stringent climate regulations, this prompted the EU to look for ways to level the playing field for them. The European Union looked into tax adjustment possibilities in the late 1990s and early 2000s in response to growing worries about carbon leakage and climate change. The voluntary measures have not worked. The EU also actively investigated a number of border carbon adjustment techniques at this time. By placing a carbon price on imports from nations with laxer climate policies, these ideas sought to level the playing field for EU companies subject to more stringent regulations. However, within the framework of the World Trade Organization (WTO), developing nations fiercely opposed these proposals. As discussions centered on trade barriers and an unfair burden on emerging nations, worries about protectionism and the ensuing breach of free trade principles loomed large. However, the EU ETS, the first large-scale carbon market in the world, was the first official step towards CBAM. After the EC released a green paper on GHG emissions pricing inside the EU in March 2000, a number of stakeholders talks helped define the EU ETS. Adopted in 2003, the EU ETS Directive went into effect in 2005. It has gone through several stages (Vlachou, 2014; European Commission, n.d.):

- **Phase 1 (2005–07):** This served as a three-year pilot, covering CO₂ emissions from power and energy-intensive industries. Allowances were largely given for free (at least 95%), with penalties for non-compliance set at €40 per tonne of CO₂ equivalent (tCO₂e). This period saw an overallocation of allowances, and thus aggregate allowable emissions surpassed actual (verified) emissions in the EU-27 by 360 million tonnes of CO₂, leading to a drop in the carbon price to zero.
- **Phase 2 (2008–12, coinciding with the Kyoto Protocol commitments):** This phase saw a lower cap on allowances and the inclusion of new countries (Iceland, Liechtenstein, and Norway) and sectors. The proportion of free allocation decreased to around 90%. Auctions were introduced in a few countries, and the penalties for non-compliance increased to €100 per tonne. Businesses were also permitted to buy international credits. However, the 2008 economic crisis caused greater emissions reductions than anticipated, with lower demand for allowances. Once again, carbon prices dropped significantly.

- **Phase 3 (2013–20):** This brought substantial reforms, including a single EU-wide cap on emissions (which had to decrease each year linearly by a factor of 1.74% as per the total cap of Phase 2), the default method of auctioning allowances, harmonised allocation rules for free allowances, and the establishment of the New Entrants Reserve to fund innovative energy technologies. Concerns about carbon leakage soon surfaced, questioning the effectiveness of the ETS.

The need for effective climate action is evident on a global scale. Carbon pricing strategies for attaining global goals were emphasized in the Stern Review on the Economics of Climate Change (Stern, 2007) (see Box 1 on the concept of carbon pricing). It also emphasized the necessity of attaining energy efficiency and putting cutting-edge low-carbon technologies into practice. Under the UNFCCC framework, the Paris Agreement was ratified in 2015.

The EU's Decadal-Long Initiatives Began to Gain Presence (2019–21): CBAM was part of the EU's climate ambitions as part of the 2019 announcement of Europe's Green Deal, which aimed to make the EU carbon-neutral by 2050. After discussion, the EC announced a formal CBAM proposal in December 2021. It initially targeted five carbon-intensive industries: cement, electricity, fertilizers, aluminium, and I&S. Its goal was to address carbon leakage and ensure fair competition for EU industries that were subject to more stringent domestic regulations by imposing a carbon price on imports.

Intense Negotiations and Compromise (2022): The European Parliament, member states, and the EC engaged in a heated and complex debate on the problems. They were:

- a) Should the original five industries be the only ones covered by CBAM? How might issues raised by particular sectors be resolved?
- b) Should free allowances be given to EU industries to offset the effects of CBAM? This sparked worries about competition distortion.
- c) How can it be made sure that CBAM stays out of trouble with WTO regulations and conforms with international trade rules? This arose because maintaining CBAM's legality required striking a careful balance between environmental objectives and international trade regulations.
- d) Is it possible to use CBAM equitably without placing an undue burden on developing nations?

There are still issues with CBAM's conformance with WTO regulations and possible

effects on poor nations. Notwithstanding these reservations, CBAM's path underwent a sea change when the Provisional Agreement and Beyond phase (December 2022–September 2023) materialized. Among the salient characteristics were:

- i. In order to address carbon leakage and ensure a smooth transition, the scope was expanded to include hydrogen as the sixth sector, reflecting its growing importance;
- ii. free allowances were gradually phased out; and
- iii. countries benefited from a two-step approach that allowed for gradual compliance: a transitional phase (beginning in October 2023) with reporting obligations but no financial adjustments, followed by a full implementation phase with financial adjustments beginning in 2026. On May 10, 2023, the European Parliament and Council introduced the primary CBAM Regulation (EU) 2023/956 (Official Journal of the European Union, 2023), which established CBAM.

The Transitional Phase Begins: From Proposal to Pilot (October 2023–Right Now): A significant milestone was reached on October 1, 2023, when CBAM began its transitioning phase. It is significant because it may signal the start of the creation of a worldwide carbon market. In order to avoid costly adjustments, importers must declare the volume and embedded emissions of their imports during the transition stage, which is centered on data collecting and reporting.

The second phase was made possible at the conclusion of the first reporting period on January 31, 2024. Now in its fourth phase (2021–30), the EU ETS seeks to phase out free allowances in tandem with the introduction of CBAM. The most established carbon market in the world is the EU ETS, although other developed markets like the US and UK are probably going to catch up shortly. However, India's ETS preparation is still in its early phases.

2026: CBAM Takes Flight (with Adjustments): Financial obligations based on the disparity between exporting nations' and the EU's carbon pricing begin at this stage. In 2026, CBAM is anticipated to be fully implemented with financial requirements, requiring importers to buy and turn in "CBAM certificates" that correspond to the embedded emissions of their imports. In the future, this approach will probably be extended to additional manufacturing industries, such as chemicals, textiles, pulp and paper, and plastics. (See Annex I of Directive 2003/87/EC and

Recital 19 of Regulation (EU) 2023/956 [Official Journal of the European Union, 2023]).

CBAM is merely the first step toward combating climate change. It is too soon to tell if it will develop into a useful tool. Like any other policy, it will cause political and economic responses, but they will be global in scope. A number of things determine its success:

- The EU's own climate goals: Tighter EU rules will raise demand for a strong CBAM.
- The effect of CBAM on international trade.
- International collaboration on carbon pricing and climate action.
- Alternative technology development in carbon-intensive industries: Long-term sustainability in carbon-intensive businesses depends on the development of cleaner technologies.
- Handling possible legal issues pertaining to WTO compatibility.
- The rigidity of laws in various nations.
- Modifications and exemptions for underdeveloped nations

TRENDS AND DEVELOPMENT OF CARBON PRICING GLOBALLY AND IN INDIA

Initiatives for carbon pricing, such as an ETS, a carbon tax, or both, are becoming more popular as climate change concerns grow. 42 carbon pricing schemes, including the regional EU ETS, have been put into place, taking into account just national level measures (not sub-national or regional ones). Of these, Canada, Mexico, the UK, and Switzerland have both carbon taxes and ETS. There are now about 25 carbon pricing systems under development. According to Florence et al. (2023), more than 70% of covered GHG emissions are priced below US\$20/tCO₂e. High-income nations have the majority of national carbon pricing schemes (31 out of 41). Although emerging economies must be included in these systems, attention must also be paid to their development issues. Energy crises, economic downturns, and geopolitical upheaval are just a few of the difficulties that carbon pricing schemes have shown resilient to. Governments have given these policies priority through expansion or maintenance, in contrast to previous downturns when they were loosened, eliminated, or scaled back (Pryor & Putti, 2023).

When it comes to carbon markets, the EU has led the world. Operating on a CaT system with an annual lowering cap to reflect new climate targets and guarantee emission reductions, its ETS is the most established. Nearly 40% of the GHG emissions in the EU are covered by it.

The maritime industry, which accounts for 3–4% of the EU's overall carbon emissions, was included to the EU ETS in January 2024 (International Carbon Action Partnership, 2024a). By 2050, the EU wants to be climate neutral, with a 55% net reduction in GHG emissions by 2030 compared to 1990 levels as an intermediate goal (European Commission, 2023). In general, there have been differing reactions around the world to the EU's implementation of the CBAM. Some nations have made their own CBAM plans public, such as the UK. Bipartisan support for carbon border fees is increasing in the United States (United States Joint Economic Committee Democrats, 2024). The significance and efficacy of carbon pricing were reiterated during the EU-Canada Summit in November 2023. At the EU-Canada Summit in 2023, both sides pledged to work together on the EU's CBAM and address concerns about carbon leakage. Canada has also taken action in this regard, mandating that importers of steel products give border officials information about their "country of melt and pour" as of November 5, 2024. The US is the only other nation that has this requirement at the moment (Global Affairs Canada, 2024). Additionally, Australia is weighing its options. It started a review process to evaluate the hazards of carbon leaks in July 2023. Specifically, the evaluation will assess the viability of an Australian CBAM for the cement and steel industries. By October 2024, the findings should be finalized, and they may help shape policy alternatives for the government's Net Zero 2050 Plan (Department of Climate Change, Energy, the Environment and Water, 2023). Concerns about CBAM have been raised by developing countries like China and India, who have called it an unfair trade policy that goes against the CBDR principle. Citing possible yearly expenses of up to US\$25 billion, the African Development Bank has urged for exemptions for African nations (Jessop et al., 2023). Singapore has emphasized that CBAM must be implemented in a non-discriminatory way and adhere to WTO norms (Yin, 2023). Countries around the world are actively planning for a future with border carbon adjustments, regardless of their position on CBAM. The following looks at carbon pricing programs in four significant countries that emit carbon outside of India.

CARBON PRICING: AN INTRODUCTION AND LATEST DEVELOPMENTS

One approach that gives GHG or carbon emissions a monetary cost or price is carbon pricing. The hidden costs that society bears for externalities like flood and heat wave damage are reflected in this cost. The goal of this strategy is to place the blame for emissions on the people who cause them. Additionally, it facilitates the development of a low-carbon economy by

attracting investments in clean technologies and market developments (World Bank, 2023a). Carbon taxes and ETS are the two most prevalent types of carbon pricing. Emissions targets can be met by emitters trading permits through an ETS. A carbon tax, on the other hand, imposes a levy directly on carbon emissions, usually by imposing a fixed tax rate on greenhouse gas emissions or the carbon content of fossil fuels. There are two main approaches to implementing an ETS: (i) cap-and-trade (CaT) systems, which set rigorous absolute limits on total emissions and distribute allowances equal to that cap; and (ii) baseline-and-credit systems, which establish baseline emissions for specific entities and grant credits for reductions below that threshold. The goal of both strategies is to establish a market that encourages decarbonization (World Bank, 2023a). Either free allocations or auctions may be used to distribute emission allowances. The distribution of free allowances may be based on performance metrics or past emissions (grandfathering/grandparenting) (International Carbon Action Partnership, n.d.). These may lessen the motivation to decarbonize, even while they can help balance potential competitiveness issues brought on by carbon levies on domestic products (Burnett et al., 2024). There are two types of carbon markets: regulated and voluntary. In regulated markets, governments impose required compliance and develop a market for pollution permits. Compared to voluntary markets, which are currently valued at about two billion dollars, these regulated markets, which are predicted to be worth one trillion dollars annually, account for a quarter of global emissions and are therefore far larger actors in promoting climate action (Das, 2024). By 2023, carbon pricing schemes will be in place in regions that account for 50% of GHG emissions and more than half of the world's GDP (54%). The ETS is the primary source of the steadily increasing revenues obtained through carbon pricing. Notably, over half of the profits go toward development projects or green efforts, and an additional 10% is used to assist businesses or people affected by carbon pricing. The budgets of the general government receive the remaining 30% to 32%.

Indirect carbon pricing methods like fossil fuel subsidies, fuel excise taxes, and varied value-added tax (VAT) rates have historically been more common, even though carbon taxes and ETS are becoming more popular. According to a 2021 Organization for Economic Co-operation and Development (OECD) study, only 39 of the 71 nations evaluated used carbon taxes or ETS, while 67 of them used fuel taxes for indirect carbon pricing. Indirect carbon pricing from fuel taxes are frequently higher than direct ones from carbon taxes or ETS, according to the World Bank's 2023 State and Trends of Carbon Pricing study. With most ETS and carbon tax prices rising by more than 50% between 2018 and 2021, this disparity is closing,

albeit (World Bank, 2023b).

CONCLUSION

By revising its NDC in August 2022, India reaffirmed its commitment to climate action. According to the updated NDC, India's GDP's emission intensity is expected to drop significantly by 2030, by 45% from 2005 levels. By 2030, it also aims to have 50% of installed capacity for electric power come from non-fossil fuels (Press Information Bureau, 2023d). Carbon Credit Certificates (CCCs) are being traded on the Indian Carbon Market (ICM), which is being established to price GHG emissions (Press Information Bureau, 2023c). Energy Conservation (Amendment) Bill 2022, which went into force on January 1, 2023, serves as the foundation for ICM. In June 2023, notice was sent to the CCTS (Press Information Bureau, 2023b). By appointing the Bureau of Energy Efficiency (BEE) as the ICM's administrator, this notification created the National Steering Committee for the Indian Carbon Market (NSCICM) (Ministry of Power, 2023a). The offset mechanism was introduced in December 2023 by an amendment notification. According to the Ministry of Power (2023b), this method enables non-obligated enterprises to register their initiatives for accounting GHG emission reductions in return for CCCs. businesses that are legally required to limit their carbon footprint to the specified level are registered under the compliance mechanism, whereas non-obligated businesses are not. The BEE (in coordination with pertinent technical committees) has the authority to establish the sectoral scope and methodology for the offset mechanism because non-obligated companies lack allocated emission targets (Ministry of Power, 2023b). Indian firms can validate their carbon credits domestically once the BEE sets these criteria, saving them the time and money needed to use foreign organizations (Ramesh, 2023). Both the voluntary and compliant segments are served by the CCTS. While a precise start date for the voluntary segment has not yet been established, the compliance market is anticipated to begin operations in 2025–2026.