



CANCELING CARBON: THE GLOBAL CONTEXT OF INDIA'S NEW NATIONAL CARBON MARKET

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INTRODUCTION

In December of 2022 with its approval by its upper house the Rajya Sabha, the Indian parliament passed The Energy Conservation (Amendment) Bill.¹ The legislation represents a cornerstone of the Indian government's efforts to reduce greenhouse gas emissions to meet India's climate goals, including its nationally determined contribution under the Paris Agreement. The legislation paves the way for an array of climate and energy policies covering major sectors across the Indian economy including allowing the central government to implement an energy conservation code for buildings, more stringent standards for vehicles and vessels, and stronger renewable energy procurement standards -- including a regulation that requires entities to source a specified percentage of their electricity from renewable sources.² One of the most significant provisions of the bill grants the central government approval to develop a National Carbon Market (NCM), an efficient, market-driven incentive for the largest emitters and hard-to-abate industrial sectors to decarbonize. Around the time of the bill's introduction in August of 2022, the Bureau of Energy Efficiency (BEE) within the Ministry of Power released a draft report of its NCM proposal providing a blueprint for implementation and a discussion of the lessons learned from existing carbon markets around the world.³

This analysis will explain how the Indian government plans to implement the NCM based on previous energy policies, primarily the market based Perform Achieve and Trade (PAT) scheme. It will also examine the policy design questions associated with the NCM as well as lessons learned from other countries' experiences. Finally, this analysis will examine the NCM in the global context. It will analyze how the NCM will impact India's exports and trade, how the NCM coincides with the European Union's (EU) Carbon Border Adjustment Mechanism (CBAM), and how the NCM aligns India's climate and geopolitical objectives. It concludes that, despite challenges, India's NCM goals are achievable and will benefit the country.

1. EMISSIONS TRADING SCHEMES, PREVIOUS INDIAN EXPERIENCES, AND LESSONS LEARNED

THE ECONOMIC RATIONALE OF EMISSIONS TRADING SCHEMES

In broad terms, carbon pricing is one of the best established climate policy tools. The logic is simple: emitting greenhouse gases has negative environmental and other repercussions whose costs are not reflected in the price of fossil fuels. This, in turn, makes fossil fuels artificially less expensive relative to low carbon alternatives. By putting a price on carbon emissions, the market price reflects the energy source's true social cost and carbon emissions fall as markets shift towards low carbon energy sources.⁴ Thus, higher carbon prices generally incentivize greater emissions reductions. One way to price carbon is to impose a tax on every ton of carbon dioxide emissions. Another is to place a declining cap on total emissions, issue a limited number of emissions permits, and create a permit market, where covered entities (entities subject to the carbon price) buy and sell permits to cover their emissions. This incentivizes covered entities to reduce their emissions so that they can sell their excess permits or purchase fewer permits. This policy is often known as cap-and-trade or emissions trading scheme. These schemes reduce emissions less effectively in three scenarios: when an oversupply of permits drives prices below the cost of reducing emissions, when the overall emissions reduction target (the cap) is too high, or when large sectors of the economy are not covered by the market and not subject to the carbon price.⁵ In addition, loopholes and corruption can also undermine an ostensibly robust carbon price.

¹ The Energy Conservation (Amendment) Bill, 2022," PRS Legislative Research, accessed March 3, 2023, <https://prsindia.org/billtrack/the-energy-conservation-amendment-bill-2022>.

² "The Energy Conservation (Amendment) Bill, 2022."

³ "National Carbon Market," (Bureau of Energy Efficiency, Ministry of Power of India, 2022), <https://beeindia.gov.in/sites/default/files/publications/files/NCM%20Final.pdf>.

⁴ What Is Carbon Pricing? | Carbon Pricing Dashboard," The World Bank, accessed April 5, 2023, <https://carbonpricingdashboard.worldbank.org/what-carbon-pricing>.

⁵ How Cap and Trade Works," Environmental Defense Fund, accessed April 5, 2023, <https://www.edf.org/climate/how-cap-and-trade-works>.

LESSONS FROM THE PERFORM ACHIEVE AND TRADE (PAT) ENERGY EFFICIENCY SCHEME

The NCM is based on the Perform Achieve and Trade (PAT) scheme, a similar, ongoing, and moderately successful national program that has been in effect since 2012. PAT is a market-based energy use trading scheme covering entities in 13 sectors including metals, cement, and fertilizer which account for around 50% of India's primary energy consumption.⁶ Under PAT, after auditing industrial sectors, the government issues mandatory energy use reduction targets for covered entities. It then issues energy usage allowances (energy savings certificates or ESCerts) to covered entities based on their energy efficiency performance which over- and underperforming entities trade during multi-year cycles. Since implementation, the scheme has decreased energy use by over 26 million tons of oil equivalent (Mtoe), equivalent to 2.8% of India's 2021 annual energy use and 4.5% of India's 2008 annual use, the year PAT was announced. The most recent, completed sixth cycle saw energy use decrease by 5.5% among covered entities.⁷

While laying the groundwork and institutional capacity for the NCM, PAT has, however, also experienced several challenges and shortcomings. PAT's primary shortcoming is simply the lack of greater reductions, especially in the power sector. Though the covered entities in most other sectors saw 5-10% reductions in energy use over the first two cycles, the program only achieved a reduction of less than 3% in the power sector.⁸ In the fifth cycle, reductions were just over 3% across all sectors.⁹ This shortcoming stems from a major structural challenge of PAT, an oversupply of permits, which BEE acknowledges in its analysis of the NCM.¹⁰ This resulted both from the previous cycle's excess permits carrying over to the next cycle and because energy use reduction targets were not stringent enough.¹¹ Nonetheless, the fact that energy use dropped before the permit oversupply is a strong proof of concept for market-based trading schemes in India.

BEE's plan for the NCM can be summarized as follows: use and modify the existing PAT infrastructure to create a wider carbon market, then set up a much more rigorous and detailed accounting and monitoring system, and finally, on that basis, transition to a national, more sophisticated, and mandatory market. In the first phase, the government will create a Voluntary Carbon Market (VCM) wherein the ESCerts traded in PAT will be made fungible to create emission-based equivalents called emission reduction units (ERUs).¹² This will allow the markets to merge and will help address PAT's permit oversupply issues.

The first phase, which will reportedly last three years, will also see entities including airlines and some local government agencies added to the market and provide the opportunity for companies in sectors not currently in the market to participate voluntarily. The market will be operational starting in 2026.¹³ In the second phase, specific projects and their resulting emissions would be registered and verified. In the third phase, the expanded VCM will become mandatory and both sectors and specific actors will have emission caps which they cannot exceed.¹⁴ Consequently in the third "cap-and-trade" phase, the NCM will come to resemble the emissions trading schemes in parts of the United States, EU, and the People's Republic of China.¹⁵

⁶ "National Carbon Market."

⁷ "National Carbon Market,"; "India Energy Outlook 2021," (IEA), accessed March 16, 2023, <https://www.iea.org/reports/india-energy-outlook-2021>; "India Energy Information," Enerdata, accessed March 16, 2023, <https://www.enerdata.net/estore/energy-market/india/>. Other reports show significantly lower (100-150 Mtoe) overall energy consumption in which case PAT's relative achievements are more impressive.

⁸ Nivit Kumar Yadav et al., "Perform, Achieve and Trade (PAT) Scheme in Thermal Power Plants: A Critical Analysis," (New Delhi: Centre for Science and Environment, 2021), <https://www.cseindia.org/perform-achieve-and-trade-pat-scheme-of-thermal-power-plants-a-critical-analysis-11070>.

⁹ "National Carbon Market."

¹⁰ "National Carbon Market."

¹¹ Yadav et al., "Perform, Achieve and Trade (PAT) Scheme in Thermal Power Plants: A Critical Analysis"; Gopal Krishna Sarangi and Farhad Taghizadeh-Hesary, "Unleashing Market-Based Approaches to Drive Energy Efficiency Interventions in India: An Analysis of the Perform, Achieve, Trade (PAT) Scheme," (Asian Development Bank, August 27, 2020), India, <https://www.adb.org/publications/unleashing-market-based-approaches-drive-energy-efficiency-interventions-india>.

¹² "National Carbon Market."

¹³ Sarita Chaganti Singh and Mohi Narayan, "Exclusive: India to Bolster Carbon Trading Market with Stabilisation Fund," Reuters, December 22, 2022, sec. Sustainable Business, <https://www.reuters.com/business/sustainable-business/india-bolster-carbon-trading-market-with-stabilisation-fund-2022-12-21/>.

¹⁴ "National Carbon Market."

¹⁵ "California Cap and Trade," Center for Climate and Energy Solutions (blog), accessed March 9, 2023, <https://www.c2es.org/content/california-cap-and-trade/>; Renato Roldao, "Carbon Trading the Chinese Way," Energy Monitor (blog), January 5, 2022, <https://www.energymonitor.ai/policy/carbon-markets/carbon-trading-the-chinese-way/>; "EU Emissions Trading System (EU ETS)," Government, European Commission, accessed March 9, 2023, https://climate.ec.europa.eu/eu-action/eu-emissions-trading-system-eu-ets_en.

Phase-1 (Short Term)	→ Phase-2 (Medium Term)	→ Phase-3 (LongTerm)
Objective		
Increase demand in the VCM	Increase supply in the VCM	Progress toward a Cap & Trade System
Steps to be taken		
<ul style="list-style-type: none"> • Escerts and RECs to Indian Carbon Credits • SBTi and CDP compliant companies to participate in the VCM • Allowing SDAs as participants • Inclusion of Airlines to participate 	<ul style="list-style-type: none"> • Incorporating project-based registration (based on globally accepted principles) 	<ul style="list-style-type: none"> • In the third phase, the program would evolve to an emissions-based cap and trade system wherein sectors and individual companies are given specific emission limits

Figure 1. The three phases of the NCM envisioned by its regulator, the BEE. Source: “National Carbon Market.”¹⁶

CHALLENGES OF IMPLEMENTING THE NATIONAL CARBON MARKET IN INDIA

Successful and on-schedule implementation of the BEE NCM plan will be challenging because designing an effective carbon market on the first attempt is difficult. Building the government infrastructure needed to facilitate and enforce it is also demanding. Having the EU, China, and other models will be extremely helpful for India (Box 1). Avoiding the mistakes of other jurisdictions will help India achieve the emissions price it desires years sooner after initial implementation. With regards to administering the NCM effectively, the lack of greater state and private sector capacity as well as the relative informality of India's economy are significant challenges.

Box 1. European and Chinese experiences with emissions trading schemes

Since 2005 when the EU carbon market first went into effect, the market has been plagued by low allowance prices, hitting \$9-10 per ton of emissions between 2012 and 2018, far below the estimated social cost of carbon (\$185 per ton).¹⁷ In the EU system, this was due to a combination of falling demand for permits as the economy slowed during the Great Recession of 2008, not adjusting the number of permits accordingly, and giving permits to trade-exposed industrial emitters at no cost. At the end of 2022, the EU overhauled its cap-and-trade scheme providing a model for India of how to improve an existing carbon market and pioneering a new method to subject non-EU imports to its carbon pricing. These changes will lower the overall emissions cap by reducing the number of permits, create a second emissions trading scheme starting in 2027 for road transport fuels and buildings which had not previously been covered, and implement a carbon border adjustment mechanism, or CBAM, which charges foreign entities for imports to the EU which were made in countries without an equivalent carbon price.¹⁸ In doing so, the EU demonstrated reforms that can be enacted to address weaknesses in an existing cap and trade scheme. Once phase three of the NCM has been implemented, India would also be able to explore implementing a similar border mechanism.

China's cap and trade experience is cautionary and instructive. On one hand, China successfully, and in the course of four years, implemented the state infrastructure necessary for a cap and trade system covering 40% of its total emissions and achieved stable emission permit prices (\$8-9 per ton of carbon in 2022).¹⁹ On the other hand, political decisions, such as not including some high emitting sectors and granting too many permits to minimize compliance

¹⁶ “National Carbon Market.”

¹⁷ “National Carbon Market,” Kevin Rennett et al., “Comprehensive Evidence Implies a Higher Social Cost of CO₂,” *Nature* 610, no. 7933 (October 2022): 687–92, <https://doi.org/10.1038/s41586-022-05224-9>.

¹⁸ Sabine Siebold and Kate Abnett, “EU Strikes Deal to Boost Carbon Market, Europe's Biggest Climate Policy,” *Reuters*, December 18, 2022, sec. Environment, <https://www.reuters.com/business/environment/eu-reaches-agreement-pivotal-carbon-market-deal-czech-eu-presidency-2022-12-18/>; Frédéric Simon, “EU Agrees Carbon Market Overhaul in Bid to Hit 2030 Climate Goal,” www.euractiv.com, December 18, 2022, <https://www.euractiv.com/section/emissions-trading-scheme/news/eu-agrees-carbon-market-overhaul-in-bid-to-hit-2030-climate-goal/>; Tim Schauenberg, “EU Reforms Emissions Trading System: What You Need to Know,” *dw.com*, accessed March 9, 2023, <https://www.dw.com/en/eu-reforms-emissions-trading-system-what-you-need-to-know/a-64236135>.

¹⁹ Heesu Lee and Sheryl Tian Tong Lee, “Carbon Trading in China Isn't Helping Tackle Climate Change,” *Bloomberg*, December 9, 2022, <https://www.bloomberg.com/news/articles/2022-12-09/china-s-carbon-market-falls-far-short-of-making-a-climate-impact>.

costs for companies amid larger economic concerns, have dramatically reduced the scheme's emissions reductions compared to what more ambitious targets could have achieved.²⁰ China does plan to eventually increase the number of covered sectors and can easily, technically speaking, decide to restrict the permit supply by regulators simply issuing fewer.²¹ China is also taking measures to reduce fraud and bolster emissions monitoring.²² Thus, the qualified Chinese success story wherein important foundational cap and trade infrastructure was created is an important proof of concept.

Challenges in policy design for the NCM include ensuring the right number permits at the appropriate price and sectoral coverage. As seen with the PAT scheme and as economic theory suggests, when there are too many permits, their price drops, not providing a high enough price signal (cost) to incentivize emissions reductions. To address this, the Indian government is reportedly designing a “stabilization fund” to buy excess permits in the market so that the price to emit does not drop too low.²³ While the approximately \$100 million stabilization fund's design and funding are still being worked out, the World Bank will support the fund with an \$8 million grant and other international institutions as well as the Indian government are expected to finance the rest.²⁴

Another challenge in policy design is which sectors come under the scheme. India, in contrast to China and the EU, starts with a broad range of industrial sectors such as metals and cement already involved in PAT. Not having to go back and include these sectors in the carbon market afterward removes many hurdles related to political economy and technical capacity just now being addressed in China and Europe. While China and especially the EU do have greater state capacity to bring to bear when adding these sectors, their addition still requires new, concerted policy changes and political buy-in from industry.

2. INDIA'S NCM IN THE INTERNATIONAL CONTEXT

India's NCM will have significant implications far beyond its borders. These include impacts on international Indian enterprises and international trade, impacts on how India and Indian climate ambition are perceived by other countries, and how India's NCM interacts with carbon pricing border adjustment mechanisms in other countries.

All else equal, the NCM will decrease the competitiveness of Indian exports by increasing their relative price in the world market compared to exports from other countries that do not face a carbon price.²⁵ However, the exact price of carbon in the NCM will determine how significant this effect is because a domestic Indian carbon price would have an effect similar to imposing an import duty abroad on Indian exports like steel.²⁶ Despite the negative theoretical effects of unilateral carbon pricing, some studies show that carbon pricing actually boosts economic performance by increasing innovation and creating new industries.²⁷ Furthermore, demand for low-carbon production inputs like steel and aluminum is projected to increase rapidly enough to create supply shortages, in turn creating a dividend for

²⁰ Ivy Yin, “Commodities 2023: China's Carbon Market to Slow in 2023 as Energy Security, Economy Take Priority,” SP Global, January 12, 2023, <https://www.spglobal.com/commodityinsights/en/market-insights/latest-news/energy-transition/011223-chinas-carbon-market-to-slow-in-2023-as-energy-security-economy-take-priority>.

²¹ Yin.

²² “Data Fraud Is Focus To Bolster China's Lackluster Carbon Market,” Bloomberg, March 5, 2023, <https://www.bloomberg.com/news/articles/2023-03-05/data-fraud-is-focus-to-bolster-china-s-lackluster-carbon-market>.

²³ Singh and Narayan, “Exclusive: India to Bolster Carbon Trading Market with Stabilisation Fund.”

²⁴ Singh and Narayan.; Ruchira Singh and Agamani Ghosh, “India Works on Market Stabilization Fund Details for Upcoming Carbon Market,” February 17, 2023, <https://www.spglobal.com/commodityinsights/en/market-insights/latest-news/energy-transition/021723-india-works-on-market-stabilization-fund-details-for-upcoming-carbon-market>.

²⁵ Marco Fugazza, “Carbon Pricing: A Development and Trade Reality Check,” (United Nations Conference on Trade and Development, 2022), <https://unctad.org/publication/carbon-pricing-development-and-trade-reality-check>; “World Trade Report 2022: Carbon Pricing and International Trade” (WTO, 2022), https://www.wto.org/english/res_e/publications_e/wtr22_e.htm.

²⁶ “A European Union Carbon Border Adjustment Mechanism: Implications for Developing Countries,” (United Nations Conference on Trade and Development, 2021), https://unctad.org/system/files/official-document/sginf2021d2_en.pdf.

²⁷ Jane Ellis, Daniel Nachtigall, and Frank Venmans, “Carbon Pricing and Competitiveness: Are They at Odds?” (Organisation for Economic Co-operation and Development, November 13, 2019), [https://one.oecd.org/document/ENV/WKP\(2019\)11/En/pdf](https://one.oecd.org/document/ENV/WKP(2019)11/En/pdf); “Report of the High-Level Commission on Carbon Pricing and Competitiveness” (World Bank Group, 2019), <https://openknowledge.worldbank.org/server/api/core/bitstreams/e49473de-ad98-5d26-8add-102687e9dc80/content>; “What Is the Impact of Carbon Pricing on Competitiveness?” (Carbon Pricing Leadership Coalition, June 2016), <https://pubdocs.worldbank.org/en/759561467228928508/CPLC-Competitiveness-print2.pdf>.

low-carbon products.²⁸ Thus, decarbonizing Indian industry also carries with it financial opportunities in international markets.²⁹

The international carbon pricing landscape is also undergoing a fundamental transformation. Carbon pricing is expanding globally, buoyed by Article 6 agreements at COP 26 in Glasgow on carbon offset markets and emissions trading between countries.³⁰ Countries are also beginning to price emissions for imports. Through 2021, no middle-income developing countries were considering carbon pricing. That changed in 2022 when India, Pakistan, Brazil, and Nigeria, among others, began considering implementing carbon pricing.³¹ For a long time, carbon pricing covered the entities within the implementing jurisdiction. Accordingly, to protect the competitiveness of domestic industries, governments had an incentive not to enact too high a carbon price. As climate ambition has increased globally, especially in Europe, the imperative to set higher carbon prices and simultaneously protect domestic industry has grown.³² This led the EU to include a CBAM in its 2022 reform of its Emission Trading System (ETS).³³ Under border adjustment mechanisms, governments that price carbon charge foreign entities for emissions associated with their exports if those entities hadn't already paid a carbon price in their home country. This constitutes a large financial transfer from non-carbon pricing economies to countries with border adjustments and carries a strong incentive for countries to enact carbon pricing to retain that border adjustment revenue.³⁴

Given record global trade, the expansion of carbon pricing to major developing economies, and CBAM, which exerts considerable pressure on other countries to follow suit since the EU's economy is the world's third largest, calls for global carbon markets where all countries have carbon prices linked through border adjustments are growing.³⁵ U.S. policy makers are considering carbon border adjustments and China's carbon price lays the groundwork for it to eventually enact the same.³⁶ All movement in that direction would increase the effects of carbon border adjustments on India beyond those of CBAM.

CBAM alone is projected to have substantial effects on India's export industries given that India is the EU's third largest trading partner and the EU is the second largest destination for Indian exports.³⁷ India's steel and aluminum industries will be India's two most heavily impacted.³⁸ India, the world's third largest aluminum exporter, has seen its exports quintuple over the last decade.³⁹ More than 20%

²⁸ Pradeep S Mehta, Vinay Piparsania, and Julius Waller, "EU's CBAM - How Will It Impact Indian Industry and Exports?," AFT Media (blog), November 23, 2022, <https://autofintechs.com/eus-cbam-how-will-it-impact-indian-industry-and-exports/>.

²⁹ Aashima Sawhney, "Carbon Tax – An Indian Perspective," Vidhi Centre for Legal Policy (blog), July 15, 2021, <https://vidhilegalpolicy.in/blog/carbon-tax-an-indian-perspective/>.

³⁰ Charles E. Di Leva and Scott Vaughan, "The Paris Agreement's New Article 6 Rules," International Institute for Sustainable Development, December 13, 2021, <https://www.iisd.org/articles/paris-agreement-article-6-rules>.

³¹ "Carbon Pricing Dashboard | Up-to-Date Overview of Carbon Pricing Initiatives," The World Bank, accessed March 29, 2023, https://carbonpricingdashboard.worldbank.org/map_data; "GDP per Capita (Current US\$)," The World Bank, accessed March 30, 2023, https://data.worldbank.org/indicator/NY.GDP.PCAP.CD?most_recent_value_desc=false.

³² Jean Chateau, Florence Jaumotte, and Gregor Schwerhoff, "Why Countries Must Cooperate on Carbon Prices," IMF, May 19, 2022, <https://www.imf.org/en/Blogs/Articles/2022/05/19/blog-why-countries-must-cooperate-on-carbon-prices>; Aaron Cosbey, Michael Bernstein, and Seton Stiebert, "Enabling Climate Ambition: Border Carbon Adjustment in Canada and Abroad," International Institute for Sustainable Development, accessed March 17, 2023, <https://www.iisd.org/publications/enabling-climate-ambition-border-carbon-adjustment-canada>.

³³ Emily Benson et al., "Analyzing the European Union's Carbon Border Adjustment Mechanism," CSIS, February 17, 2023, <https://www.csis.org/analysis/analyzing-european-unions-carbon-border-adjustment-mechanism>.

³⁴ "Carbon Border Adjustments," Center for Climate and Energy Solutions (blog), accessed March 17, 2023, <https://www.c2es.org/content/carbon-border-adjustments/>.

³⁵ Rob Dellink et al., "Towards Global Carbon Pricing Direct and Indirect Linking of Carbon Markets," OECD Journal: Economic Studies 2013, no. 1 (2014); "Evolution of Trade under the WTO: Handy Statistics," WTO, accessed April 4, 2023, https://www.wto.org/english/res_e/statis_e/trade_evolution_e/evolution_trade_wto_e.htm; Florian Misch, "Carbon Pricing: What Role for Border Carbon Adjustments?," Staff Climate Notes 2021, no. 004 (September 27, 2021), <https://doi.org/10.5089/9781513594545.066.A001>.

³⁶ Emma Dumain, "Senate Chatter Grows Louder on Carbon Tariff," E&E News, March 8, 2023, <https://www.eenews.net/articles/senate-chatter-grows-louder-on-carbon-tariff/>.

³⁷ Sanjay Notani, "The EU Carbon Border Adjustment Mechanism – Implications For India," mondaq, accessed March 17, 2023, <https://www.mondaq.com/india/international-trade-amp-investment/1166146/the-eu-carbon-border-adjustment-mechanism-implications-for-india>; "EU Trade Relations with India. Facts, Figures and Latest Developments.," European Commission, February 6, 2023, <https://policy.trade.ec.europa.eu/eu-trade-relationships-country-and-region/countries-and-regions/india-en>.

³⁸ "A European Union Carbon Border Adjustment Mechanism: Implications for Developing Countries.," Notani, "The EU Carbon Border Adjustment Mechanism – Implications For India."

³⁹ Daniel Workman, "Top Aluminum Exporters by Country 2021," World's Top Exports, accessed March 29, 2023, <https://www.worldstopexports.com/top-aluminum-exporters-by-country/>.

of Indian aluminum exports are to the EU.⁴⁰ Similarly, India is the world's second largest steel producer and sixth largest exporter.⁴¹ Thus, the steel industry is critical to the Indian economy, accounting for 2% of India's gross domestic product and supporting over two million jobs.⁴² More than 30% of Indian iron and steel exports are purchased by the EU, and the EU has become an even more important destination for Indian steel imports following Russia's invasion of Ukraine.⁴³ Indian steel is, on average, more carbon intensive than that of other producers, putting Indian exports at a further competitive disadvantage in the context of CBAM.⁴⁴ Accordingly, CBAM is projected to add the equivalent to a 13% tariff on Indian steel and a 6% tariff on Indian aluminum, costing India between \$1-1.7 billion in income.⁴⁵ A report by the Global Trade Research Initiative in Delhi found that the effects of CBAM on India's steel and aluminum industries would be severe.⁴⁶

Just as the economic effects of CBAM are significant, so too are the political effects. The circumstances surrounding the Energy Conservation (Amendment) Bill's passage strongly suggest that India's choice to move forward with a carbon market at the time it did was influenced by CBAM. Some in India had called for domestic carbon pricing as a response to CBAM.⁴⁷ The alignment between the enactment and implementation timelines of CBAM and India's NCM is striking. The European Parliament moved forward with the EU's plan when it adopted a version of CBAM in July 2022 and approved the final version in December.⁴⁸ In August 2022, the Energy Conservation (Amendment) Bill was first introduced and then passed the Rajya Sabha in December.⁴⁹ Just before the bill's introduction, BEE released its report presenting its NCM plans which drew heavily on the EU's ETS.⁵⁰

On the implementation side, phase one of the NCM is planned to take three years, the same amount of time as CBAM's initial transition phase wherein firms are required to report their emissions but are not charged the border adjustment fee.⁵¹ Thus, the voluntary carbon market (VCM), phase two, would begin in 2026 exactly when CBAM goes into effect, initially covering aluminum, cement, electricity, fertilizers, hydrogen, and iron and steel, all industries initially covered by the VCM.⁵² Finally, the VCM would gradually transition to its mandatory phase three, covering much more of India's economy just as CBAM fully goes into effect and covers all industries exporting to the EU by 2034.⁵³ The NCM has been described as being "EU-style" and the BEE report itself states, "the proposed scheme in Phase 3 is similar in design as EU ETS."⁵⁴

⁴⁰ "India Aluminium; Unwrought, Alloys Exports by Country in 2021," World Integrated Trade Solution, accessed March 29, 2023, <https://wits.worldbank.org/trade/comtrade/en/country/IND/year/2021/tradeflow/Exports/partner/ALL/product/760120>.

⁴¹ "2021 World Steel in Figures," (World Steel Association, 2021), <https://aceroplatea.es/docs/StainlessSteelFigures2021.pdf>.

⁴² "Export Attractiveness of India's Steel Sector," India Brand Equity Foundation, accessed April 5, 2023, <https://www.ibef.org/blogs/export-attractiveness-of-india-s-steel-sector>.

⁴³ Ravi Dutta Mishra and Subhash Narayan, "India May Hit Back at EU's Carbon Tax," *mint*, March 20, 2023, <https://www.livemint.com/economy/india-may-hit-back-at-eu-s-carbon-tax-11679335500441.html>; Abhishek Law, "Indian Steel-Makers Step up Exports to Europe," *Mint*, March 29, 2022, <https://www.thehindubusinessline.com/markets/commodities/indian-steel-makers-step-up-exports-to-europe/article65270682.ece>.

⁴⁴ Ali Hasanbeigi, "Steel Climate Impact - An International Benchmarking of Energy and CO2 Intensities," Global Efficiency Intelligence, 2022, <https://www.globalefficiencyintel.com/steel-climate-impact-international-benchmarking-energy-co2-intensities>.

⁴⁵ "A European Union Carbon Border Adjustment Mechanism: Implications for Developing Countries."

⁴⁶ "The Carbon Border Adjustment Mechanism: EU's Climate Trojan Horse to Obstruct Imports," (Global Trade Research Initiative, March 2023), <http://www.gtri-in.com/gtriRep6.pdf>.

⁴⁷ "The Carbon Border Adjustment Mechanism: EU's Climate Trojan Horse to Obstruct Imports," Aaiysha Topiwala, "EU Carbon Border Tax Mechanism: A Potential Boon or Bane for India," Official Blog of UNIO (blog), October 20, 2022, <https://officialblogofunio.com/2022/10/20/eu-carbon-border-tax-mechanism-a-potential-boon-or-bane-for-india/>.

⁴⁸ "EU Carbon Border Adjustment Mechanism," Deloitte Netherlands, accessed March 17, 2023, <https://www2.deloitte.com/nl/nl/pages/tax/articles/eu-carbon-border-adjustment-mechanism-cbam.html>.

⁴⁹ "The Energy Conservation (Amendment) Bill, 2022."

⁵⁰ "National Carbon Market."

⁵¹ Benson et al., "Analyzing the European Union's Carbon Border Adjustment Mechanism.," "National Carbon Market."

⁵² Benson et al., "Analyzing the European Union's Carbon Border Adjustment Mechanism.," "National Carbon Market."

⁵³ Rakesh Nangia and Sandeep Jhunjhunwala, "Carbon Border Tax – Why It May Have Adverse Impact on India's Exports to the EU,"

The Economic Times, February 3, 2023, <https://economictimes.indiatimes.com/small-biz/trade/exports/insights/carbon-border-tax-why-it-may-have-adverse-impact-on-indias-exports-to-the-eu/articleshow/97571575.cms?from=mdr>; "Climate Change: Deal on a More Ambitious Emissions Trading System (ETS)," *News European Parliament*, December 18, 2022, <https://www.europarl.europa.eu/news/en/press-room/20221212IPR64527/climate-change-deal-on-a-more-ambitious-emissions-trading-system-ets>; Benson et al., "Analyzing the European Union's Carbon Border Adjustment Mechanism."

⁵⁴ "National Carbon Market.," Vikash Tripathi, "What Is Energy Conservation Bill. How It Will Create Carbon Trade Market In India | Explained," *ADP*, December 20, 2022, <https://news.abplive.com/business/what-is-energy-conservation-amendment-bill-how-it-will-create-carbon-trade-market-in-india-explained-1570654>.

No Indian government would want it to appear as if the motivation in enacting the NCM were influenced by CBAM. Enacting policy under economic pressure from the Global North are not desirable optics and India is one of the most outspoken of many Global South countries which opposed CBAM and is even considering retaliatory tariffs.⁵⁵ So what are the Government of India's exact motivations? Domestic reasons that the Indian government might want to implement a carbon price include reducing emissions, raising revenue, and bolstering the environmental competitiveness of Indian industry. The imminency of CBAM, however, increased the urgency and the opportunity for India. Urgency increased because Indian industries face an obligation to pay the EU for their emissions so long as India does not have an equivalent carbon price. The opportunity increased because, in order to comply with CBAM, India's exporting firms, including its most influential, like Hindalco Industries which is a top aluminum exporter, would already need to develop the technical capacity to measure their emissions and would already pay a carbon price for a significant portion of their production.⁵⁶

Given that emissions trading allows for the most economically efficient emissions reduction where firms can either reduce emissions, buy emissions permits, or a combination of both, paying for their emissions under the NCM would be a smaller burden than paying the inflexible CBAM fee which these Indian firms have no input in designing. Having the EU already impose many of these costs could let the central government enact a policy it wanted to put in place without as much internal industry opposition.

Another set of dynamics is geopolitical. Among the world's ten largest emitters, India stands out as having one of the latest carbon neutrality goals, aiming to reach net-zero emissions by 2070. The United States and the EU have set 2050 targets while China has a 2060 target.⁵⁷ India's later decarbonization timeline is fully in keeping with the Common But Differentiated Responsibility principle of the 1992 United Nations Framework Convention on Climate Change and reaffirmed in the Paris Agreement, which states that while all countries should work to reduce their emissions, the measures they should take depend on their "national circumstances," their level of development and economic capacity.⁵⁸ Nevertheless, there is a tension between India's later target and its desire to be seen as a global climate leader, especially since as the 2023 G20 host nation, India has made climate change a primary focus of its presidency.⁵⁹ Introducing new, major climate policy just as India was inheriting the G20 host was a way to accomplish that.

For India's international partners, especially in Washington, the NCM should underscore Delhi's ambition and seriousness. For a developing economy with state capacity challenges to undertake such an administratively challenging national policy is no small thing. Coupled with its ambitious net-zero emissions by 2070 target, and, despite frequent criticism of its climate policy which has been rated "highly insufficient," India is making progress.⁶⁰ Here, the NCM and even the Energy Conservation (Amendment) Bill are only part of the story alongside India's updated and increased Nationally Deter-

⁵⁵ "India, Other BASIC Nations Oppose Carbon Border Adjustment Mechanism," accessed March 17, 2023, <https://www.manoramayearbook.in/current-affairs/india/2022/11/17/carbon-border-adjustment-mechanism-cbam.html>; Mishra and Narayan, "India May Hit Back at EU's Carbon Tax."

⁵⁶ Workman, "Top Aluminum Exporters by Country 2021."

⁵⁷ Omri Wallach, "Race to Net Zero: Carbon Neutral Goals by Country," Visual Capitalist, June 8, 2021, <https://www.visualcapitalist.com/sp/race-to-net-zero-carbon-neutral-goals-by-country/>; Isabelle Gerretsen, "India Approves Climate Plan with Increased Ambition, Clarifying Energy Goals," Climate Home News, August 3, 2022, <https://www.climatechangenews.com/2022/08/03/india-approves-climate-plan-with-increased-ambition-clarifying-energy-goals/>.

⁵⁸ Climate, "Common but Differentiated Responsibilities and Respective Capabilities (CBDR-RC)," Climate Nexus (blog), July 30, 2015, <https://climatenexus.org/climate-change-news/common-but-differentiated-responsibilities-and-respective-capabilities-cbdr-rc/>; "The Explainer: The Paris Agreement," UNFCCC, February 26, 2021, <https://unfccc.int/blog/the-explainer-the-paris-agreement>.

⁵⁹ Mohit Anand, "Opportunities and Challenges of India's G20 Presidency," POLITICO (blog), December 27, 2022, <https://www.politico.eu/article/opportunities-and-challenges-of-india-pm-narendra-modi-g20-presidency/>; Aarti Betigeri, "Will India's G20 Deliver More than Hot Air?," TheInterpreter | Lowy Institute, February 21, 2023, <https://www.loyinstitute.org/the-interpreter/will-india-s-g20-deliver-more-hot-air/>; Manjeet Kripalani and Rajiv Bhatia, "G20 Today: India's Opportunity To Lead – Analysis," Eurasia Review, November 14, 2022, <https://www.eurasiareview.com/14112022-g20-today-indias-opportunity-to-lead-analysis/>.

⁶⁰ "India: Policies & Action," Climate Action Tracker, accessed March 29, 2023, <https://climateactiontracker.org/countries/india/policies-action/>; Parul Kumar and Abhayraj Naik, "India's Domestic Climate Policy Is Fragmented and Lacks Clarity," Economic & Political Weekly (blog), February 14, 2019, <https://www.epw.in/engage/article/indias-domestic-climate-policy-fragmented-lacks-clarity>; Tara Subramaniam, "The World Needs India to Avert Climate Catastrophe. Can Modi Deliver?," CNN, November 8, 2022, <https://www.cnn.com/2022/11/07/india/india-climate-change-efforts-cop27-intl-hnk/index.html>; Al Jazeera Staff, "COP27: Are India's Climate Pledges a Lot of Hot Air?," Al Jazeera, November 18, 2022, <https://www.aljazeera.com/news/2022/11/18/india-modi-and-the-environment>.

mined Contribution and the Green Hydrogen Mission.⁶¹ The speed of India's decarbonization trajectory will be crucial to how quickly the world can achieve net-zero emissions.⁶² Therefore, other countries and international institutions should invest in India's climate success and support the implementation of India's climate policies where possible. The Just Energy Transition Partnership that is currently being negotiated between India and leading industrialized countries is one such policy opportunity.⁶³

CONCLUSION

India's NCM represents an ambitious policy. Successful implementation will face a variety of challenges, many of which India must solve as its economy develops in the coming decades. Nevertheless, PAT provides an important proof of concept of the Indian government's ability to administer an effective allowance trading scheme. By starting now, India has given itself more time to improve its carbon market. As formalization of the economy and state capacity improve, the effectiveness of India's NCM can improve with them.

Internationally, enacting the NCM has both economic and political benefits. Economically, it aligns India with many of the world's other largest economies, most of which (except for the United States) price carbon at the national level. This alignment helps ensure that Indian industry will be environmentally competitive as low carbon value chains rise in importance. Specifically, the NCM seemingly seeks to align India with its third largest trading partner, the EU, as the bloc moves forward with CBAM. Because businesses will already measure emissions domestically, the costs of entering international markets with carbon prices for Indian firms will be lower. Politically, the NCM bolsters India's climate credentials as well as outside perceptions of the government's capabilities which will pay dividends this year as India hosts the G20 and beyond. For these reasons, the Indian government has chosen a sound course in pursuing the NCM.

⁶¹ Sarita Chaganti Singh, "India OKs \$2 Bln Incentive Plan for Green Hydrogen Industry," Reuters, January 4, 2023, sec. Environment, <https://www.reuters.com/business/environment/india-approves-2-billion-incentive-plan-green-hydrogen-industry-2023-01-04/>; Gerretsen, "India Approves Climate Plan with Increased Ambition, Clarifying Energy Goals."

⁶² Viraj Mehta, "India Holds the Key to Hitting Global Climate Change Targets," World Economic Forum, January 19, 2023, <https://www.weforum.org/agenda/2023/01/india-holds-the-key-to-hitting-global-climate-change-targets-here-s-why/>; Justin Worland, "How India Became the Most Important Country in the Climate Fight," Time, January 12, 2023, <https://time.com/6246057/india-coal-solar-power-climate-fight/>.

⁶³ Sandeep Pai, "The G7 and Indian Just Energy Transition Partnership Roadmap," CSIS, October 11, 2022, <https://www.csis.org/analysis/g7-and-indian-just-energy-transition-partnership-roadmap>; Roli Srivastava, "Analysis-India Wants a Clean Energy Transition Deal - and Its Coal Too," Reuters, February 24, 2023, sec. Oil report, <https://www.reuters.com/article/india-energy-transition-idINL8N34P0HT>.

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