

Issue Brief | April 2025

The Indian Carbon Market: Institutional, Regulatory, and Market Considerations

Introduction

India is at a critical juncture in its climate policy journey. In the near-term, it aims to reduce the emissions intensity of its GDP by 45% below 2005 levels by 2030.¹ Its longer-term goal is to reach net-zero emissions by 2070.² Meeting these targets will require a combination of policy interventions, technological advancements, regulatory mechanisms, and financial support.

As part of this broader transition, India is developing a national carbon market under the Energy Conservation (Amendment) Act 2022 (See Fig. 1 for a timeline of developments around the Carbon Credit and Trading Scheme (CCTS)). The CCTS, notified by the Ministry of Power (MoP) in June 2023, lays the foundation for a carbon market that seeks to balance economic growth with climate goals.

1 <https://unfccc.int/sites/default/files/NDC/2022-08/India%20Updated%20First%20Nationally%20Determined%20Contrib.pdf>

2 <https://pib.gov.in/PressReleaseIframePage.aspx?PRID=1945472>

Fig. 1: Key Milestones in India's Carbon Market Development

Source: Compiled by the author based on a presentation at PRAKRITI 2025 by the Bureau of Energy Efficiency (BEE), The Indian Carbon Market: Pathway Towards an Effective Mechanism, CSE (2024), and author's inputs.



The effectiveness of the CCTS will depend on several interlinked factors- clear governance structures, credible price signals, transparent processes, institutional capacity, and harmonisation with existing domestic programs and global frameworks. Recognising the complexity of these issues, Prayas Energy Group (PEG) and Sustainable Futures Collaborative (SFC) convened a closed-door roundtable under the Chatham House rules on March 20, 2025 in New Delhi, which brought together participants from across policy think tanks, regulatory consultancies, industry, industry associations, and civil society organisations. It served as a platform to exchange diverse perspectives on the institutional, regulatory, and market-related elements of the CCTS. *This brief reflects the key insights that emerged from the discussion, highlighting seven broad yet interconnected issues central to the design and operationalisation of the CCTS.*

1. Institutional Structure and Capacity

Participants discussed the evolving institutional structure of the CCTS and its implications for bureaucratic coordination, administrative capacity to implement and manage the carbon market, and policy credibility. Currently, multiple entities including the Bureau of Energy Efficiency (BEE) under the MoP, Ministry of Environment, Forest and Climate Change (MoEFCC) and the Central Electricity Regulatory Commission (CERC) are involved in various aspects of the scheme (See Fig. 2). BEE, the nodal agency for the scheme, brings operational experience from the Perform, Achieve and Trade (PAT) scheme, while MoEFCC has historically overseen carbon-related matters. *Participants raised concerns that the involvement of multiple decision-making entities, unclear lines of authority, and BEE's limited implementation capacity relative to the requirements of a typical carbon market may potentially compromise*

effective bureaucratic coordination and result in fragmented policy implementation, which in turn will reduce market confidence and policy credibility.

The roles of state-level institutions also remain unclear. State Designated Agencies (SDAs), which were instrumental in PAT implementation, have yet to be clearly positioned within the CCTS framework, though their capacity is also limited. These concerns were undergirded by the poor compliance enforcement in the PAT scheme, which has similar design features. Participants further raised questions about the regulatory capacity of State Pollution Control Boards (SPCBs), which function as key State Regulatory Agencies, and the extent of compliance expectations from them.

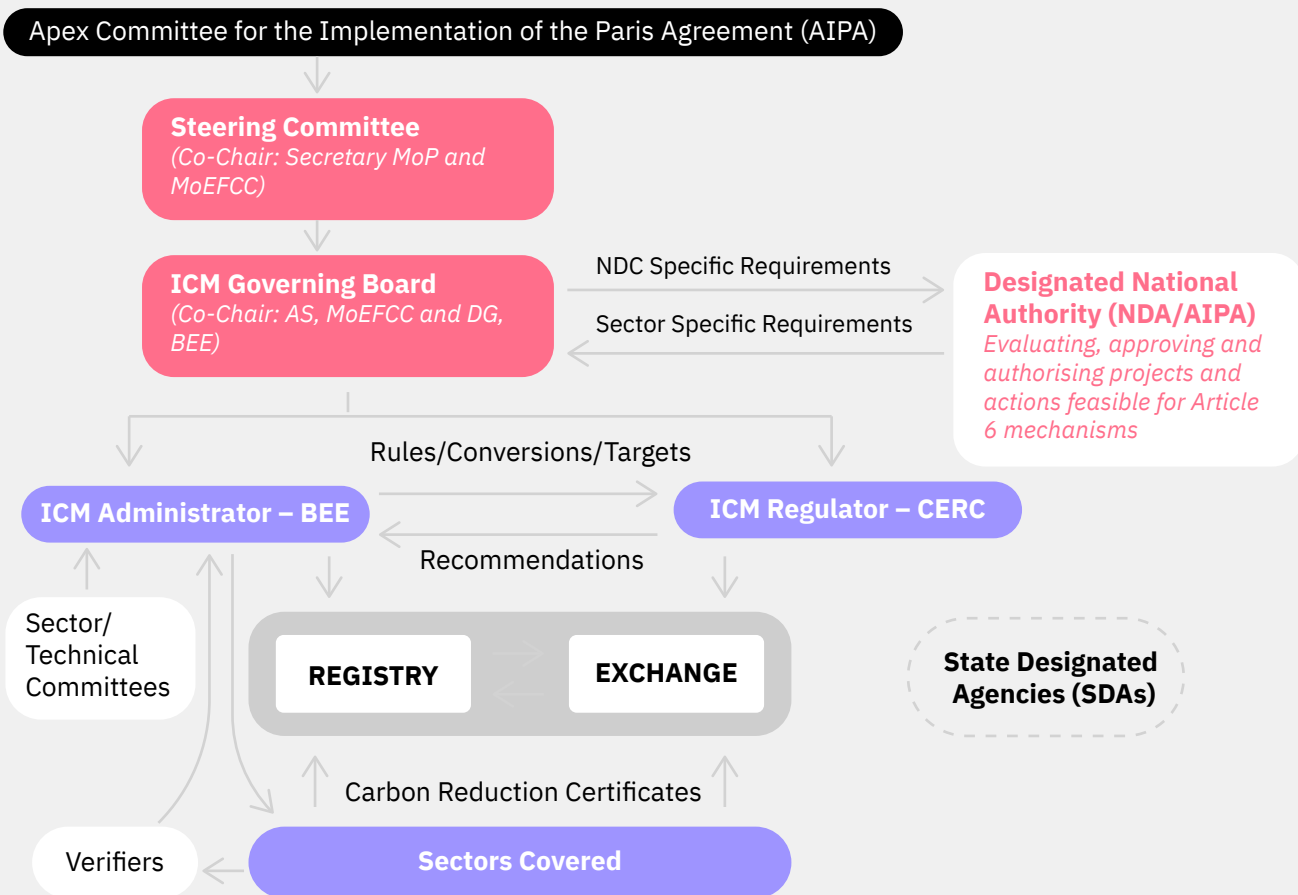


Fig. 2: Governance Structure - Indian Carbon Market

Source: Adapted from Draft Policy Paper on Indian Carbon Market, BEE, 2022

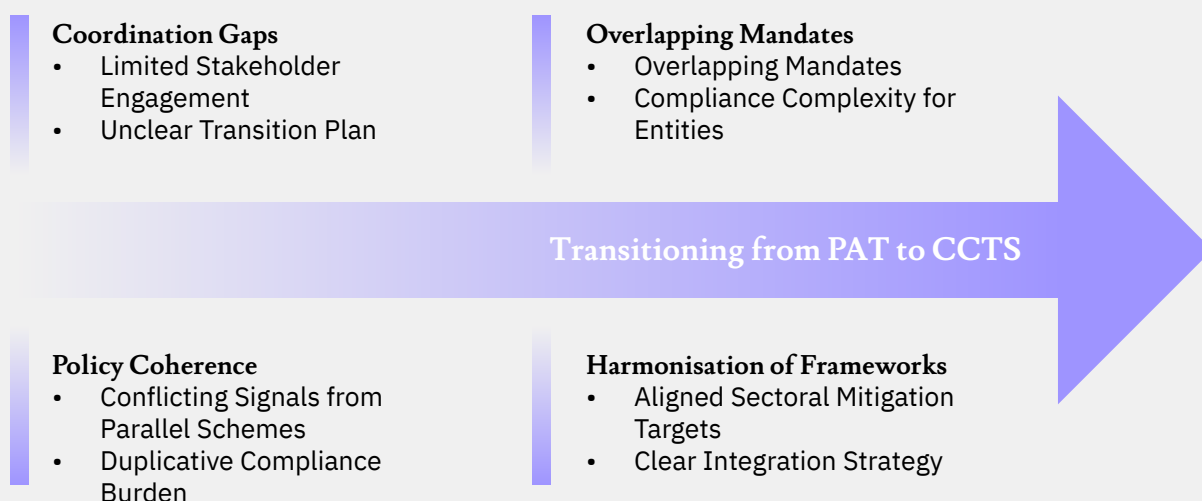
These governance and capacity challenges led to reflections on the need for stronger coordination mechanisms. A dedicated cross-cutting coordinating body, possibly housed in a centrally placed agency such as MoEFCC, NITI Aayog, or the Prime Minister’s Office (PMO) was suggested as one way to streamline governance. It was also noted that limitations

in BEE's technical capacity may be temporarily addressed by contracting technical functions such as MRV and compliance while they build in-house capacity to manage the carbon market in the longer term.

2. Policy Coherence and the PAT Transition

In addition to questions around institutional coordination, participants raised concerns about broader policy coherence, particularly the interaction between the CCTS and other schemes such as PAT. While PAT currently covers thirteen energy-intensive sectors, nine of these—including refineries, iron and steel, and textiles—are expected to transition to the CCTS by 2026–27. The remaining four, including thermal power plants, will continue under PAT.³ Figure 3 illustrates some of the key challenges that may arise as sectors transition from PAT to the CCTS. While BEE has initiated consultations with ministries and sector stakeholders to explore how this transition could be managed, a clear roadmap has yet to emerge. This has left industries unsure about how to navigate overlapping compliance obligations.

Fig. 3 : Navigating Policy Coherence in Energy Transition



The future of Energy Saving Certificates (ESCerts) generated under PAT is also yet to be clarified. While it appears unlikely that these will be converted into Carbon Credit Certificates (CCCs) in the near term, the lack of an established methodology or formal position on their treatment has added to industry uncertainty.

Participants highlighted that PAT focuses on energy efficiency, while the CCTS addresses broader greenhouse gas (GHG) mitigation goals. As such, relying too heavily on the PAT framework may not fully capture the

³ <https://pib.gov.in/PressReleaseIframePage.aspx?PRID=2038503#:~:text=Currently%2C%20designated%20consumers%20under%20thirteen,be%20covered%20under%20PAT%20scheme.>

scope and intent of the CCTS. Additional overlap with other regulatory mandates, such as Renewable Purchase Obligations (RPOs) and Renewable Consumption Obligations (RCOs), could lead to mixed signals and complicate compliance for obligated entities. *Participants opined that a unified framework to align these instruments will improve policy coherence and may lead to better emission intensity reduction.*

3. Targeting Approach and Market Scope

India's intensity-based approach was recognised as a pragmatic choice given the country's development priorities and institutional limitations. The CCTS follows a baseline-and-credit design, where entities are assigned emissions intensity targets. Those that outperform their targets generate credits, while those that underperform must buy them. This design avoids the complexities associated with the cap-and-trade model where emissions allowances are allocated or auctioned under a fixed cap. Figure 4 offers a visual comparison between cap-and-trade and baseline-and-credit systems, underscoring how entity behavior and credit generation differ under the two models.

However, baseline-and-credit systems also have implications for market functioning. There is no upfront allocation of allowances, which means auctioning is not possible. As a result, the carbon price that emerges reflects only the incremental effort required to exceed an assigned emissions intensity target. This not only limits the strength of the price signal but also removes the possibility of generating public revenue through allowance auctions. In contrast, many international cap-and-trade systems auction allowances and use the proceeds to fund clean energy, adaptation, and broader climate transition investments.

The current design covers over 800 units across nine hard-to-abate sectors. Participants highlighted that while benchmarks were set using performance data, the methodologies and datasets used have not been made public. They also emphasised that the absence of a phased rollout or piloting may affect implementation consistency across sectors.

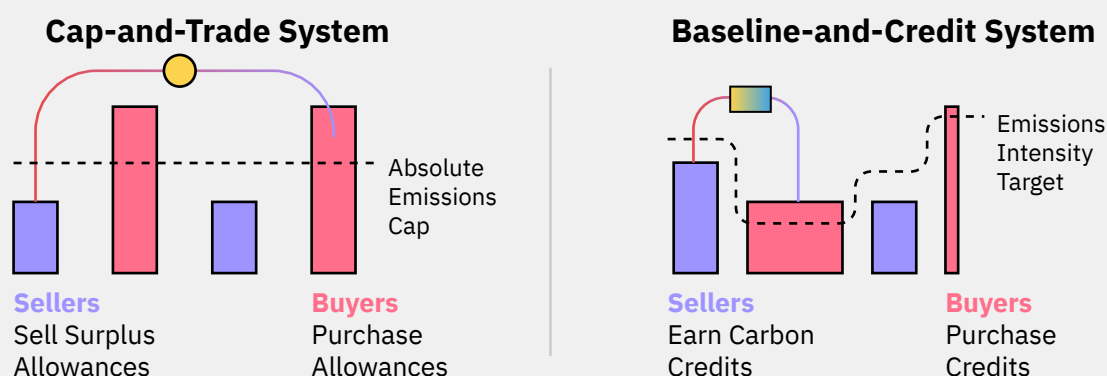


Fig. 4: Cap-and-Trade vs Baseline-and-Credit Systems

The exclusion of the power sector from the initial phase of the CCTS was also noted at the roundtable raising questions around how sectors were prioritised. As India's largest emitting sector, and one with relatively mature data systems and regulatory oversight, its omission was seen by many as a missed opportunity. In contrast, countries such as China began their carbon markets with the power sector, using it to establish early credibility and build operational experience before expanding coverage.

Further, questions remain about the best way to monitor, verify, and ensure the credibility of emissions reporting under the CCTS. Carbon Accreditor Agencies are expected to lead MRV processes, including data verification and compliance oversight. Their effectiveness will depend on adequate technical capacity, institutional independence, and consistent implementation across sectors.

4. Incentives and Sectoral Inclusion

Another challenge debated was around designing a system that drives sector-wide improvements while recognising early action. Under the PAT scheme, many sector leaders have already deployed the best available technologies. *With benchmarks now set relative to these high-performing entities, questions were raised about how lagging performers can be incentivised without creating disincentives for those who have already invested in cleaner processes.*

The participation of Micro, Small, and Medium Enterprises (MSMEs) is another emerging area of concern. While it is understood that they may not have compliance obligations in the initial rounds of the CCTS, their limited financial and technical capacity may still pose barriers to future engagement. Without targeted support, there is a risk that MSMEs could be excluded or disproportionately burdened, potentially undermining the inclusiveness and overall effectiveness of the market.

5. Trading Framework and Price Discovery

Effective market functioning depends on sufficient liquidity and transparent price discovery. *Past experience with ESCerts revealed persistent issues of low trading volumes, oversupply and under-compliance, prompting concerns that similar dynamics could re-emerge under the CCTS, particularly if elements of the PAT model are carried over without adjustment.* An oversupply of CCCs relative to demand could suppress prices and weaken incentives for mitigation.

The structure of the trading platform remains under discussion, with particular focus on the choice between a Market Clearing Price (MCP) model and continuous trading. While continuous trading is commonly used in more mature markets, India is likely to adopt an MCP model in its early phases, with trading expected to occur on a periodic basis rather

than in real-time. Participants noted that a shift from MCP to continuous auctioning would represent a significant structural transition that may require further assessment.

With no live trading yet, carbon pricing remains uncertain. Pilots may serve as a way to test market dynamics and support real-world price discovery. Participants also questioned the utility of a market stabilisation fund in the Indian context, suggesting instead that early credit guarantees could improve liquidity and participant confidence.

6. Finance and Market Participation

The engagement of financial institutions was seen as critical to the long-term development of a robust carbon market. However, carbon is not yet treated as a tradable financial asset, and current market activity is largely confined to target-setting and benchmarking with minimal participation from the financial sector. Early-stage uncertainty and the absence of risk mitigation instruments were cited as key barriers to deeper financial sector engagement. These factors collectively hinder capital flows into decarbonisation efforts.

Participants highlighted the need to strengthen the role of financial institutions in the carbon market by developing risk mitigation tools and enabling mechanisms including credit guarantees or other de-risking instruments. A recurring theme was the timing mismatch between when decarbonisation investments are needed and when credit revenues are realised. Under the current system, finance flows are likely to occur ex-post, once credits are generated. However, enabling decarbonisation at scale will require financial support to be mobilised ex-ante, to underwrite the upfront costs of low-carbon transitions.

7. Global Alignment and Trade Implications

The interoperability of India's CCTS with emerging international frameworks, such as Carbon Border Adjustment Mechanisms (CBAM), was also discussed. While the baseline-and-credit approach is suited to domestic priorities and institutional capacity, it differs from the cap-and-trade or explicit carbon pricing systems that CBAM policies are typically designed to recognise.

As a result, the current design may offer limited protection for Indian exporters facing future CBAM-related exposure, particularly in emissions-intensive trade-exposed sectors. *Participants noted that complementary policies and a long-term roadmap will likely be required to strengthen the alignment of the CCTS with international carbon pricing regimes and evolving global norms.*

Conclusion

The CCTS represents an important step toward establishing a market-based framework for emissions mitigation in India. As the scheme evolves, its credibility and effectiveness will depend on how key design and implementation challenges are addressed. The insights captured in this brief reflect a shared understanding among participants that institutional clarity, transparency, market readiness, and inclusive participation will be essential to shaping a carbon market that is both functional and fair. Continued dialogue, learning from global experience, and iterative refinement will be important as India builds its carbon market architecture.

Acknowledgment

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About SFC

SFC is an independent research organisation analysing frontier issues in climate change, energy, and environment. We focus on the systemic changes required for India's transition to a sustainable, just, and resilient economy and society.

<https://www.sustainablefutures.org/>



About Prayas

Prayas (Energy Group) is a non-governmental organisation working towards furthering public interest in the energy sector through analysis-based approach. Over past 30 years, it has made significant contributions to promoting public interest in India's energy sector and has established its credibility among various actors in the sector through its comprehensive and analytically sound approach to issues.

<https://energy.prayaspune.org/>

