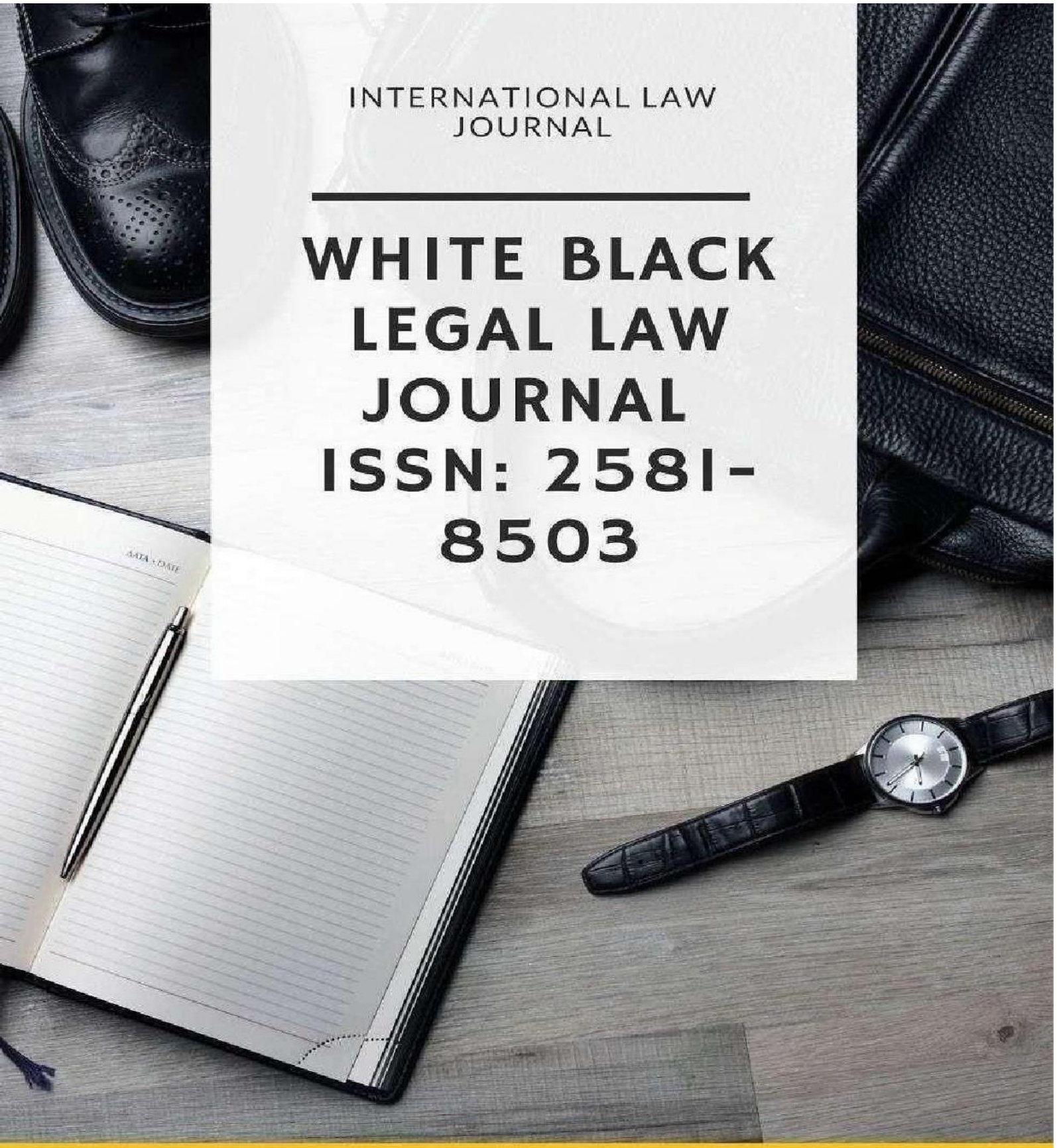

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BUILDING THE INDIAN CARBON MARKET: LEGAL, INSTITUTIONAL, AND POLICY PATHWAYS FOR A SUSTAINABLE LOW-CARBON ECONOMY

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Abstract

In essence, it argues that India must orchestrate these disparate factors of legal transparency, institutional surveillance, fiscal ingenuity, and institutional elasticity into an institutional construct that is cognizant of both imperatives for sustainable development and the practicalities of its federal structure. The ICM, wielding significant leverage across both environmental and economic jurisdictions, can be the architect for institutionalizing the practice of establishing carbon pricing regimes through which the instrument of a carbon price will be fundamental to stimulating the low carbon transition of the region, consequently affirming the status of India as the principal player within the green economy. While essay intends to dissect at length the juridical genesis and process evolution of the Indian carbon market regime - examining its movement from Clean Development Mechanism (CDM), to domestically anchored instruments such as the Perform, Achieve and Trade (PAT) scheme and the Renewable Energy Certificates (REC), to the yet-to-be-established Indian Carbon Market (ICM) Regime, a manifestation envisaged in the Energy Conservation (Amendment) Act, 2022 – based on formal policies issued by relevant authorities as well as research critical Scholarship emerging around the policy.

It scrutinizes the institutional framework underpinning the ICM, with a particular focus on the responsibilities of the Bureau of Energy Efficiency and the Central Electricity Regulatory Commission in guiding a market-based trading framework for emissions that will operate in a open and compliant and price based mechanism manner.

Drawing on contemporaneous scholastic discourse in the field of policy development, this article delves into the various statutory barriers to the effective operationalization of ICM: range from intricacies in their design to problems regarding enforceability and compliance; it also examines both ecological benefits and economic advantages from using coordinated

pricing instruments for carbon. Last, it asserts that the success of India would be predicated upon effective harmonization of the legal framework, the transparency mechanisms,fiscal innovations, and institutional dexteritywithin a scheme mindful of both imperatives for sustainability and the constraints posed by its federal setup. By leveraging its constitutional authority over environmental and economic spheres to make way for institutionalization of carbon price regime, for implementing policy aimed at improving environmental outcomes in the region; it has the capacity to propel low carbon transition and secure India's leadership position in the green economy.

I. Introduction

Climate change; it is truly one of the most iconic and signature challenges for the 21st century, bearing implications – social, economic, environmental – which are vast, far-ranging, and significant. In recent years, the rising incidents of extreme weather events, rising global temperatures and a rapid depletion of natural resources have necessitated the international community to take concerted global actions to counter the emissions from greenhouse gases (GHGs). Among them, carbon market has emerged as one prominent economic means, intended to materialize the external costs of carbon emissions; it attempts to place the price on them, which would incentivize reductions. The theoretical rationale for the introduction of a carbon market was based on a 'cap and trade' approach whereby an organization had the authorization to trade allowances in emissions if their organizations are able to achieve less-than maximum allowed emissions. It creates cost effective emission reductions and directs finance towards sustainable technologies.

The concept to introduce carbon market started way back in1997 with a protocol known as the Kyoto Protocol where the three flexible mechanisms - IET (International Emissions Trading), JI (Joint Implementation) and CDM (Clean Development Mechanism) were devised in the protocol negotiated under UNFCC.[1] Among the various flexible mechanisms introduced, the Clean Development Mechanism (CDM) was unique in it; as per the CDM, any Annex I(industrialized) country could invest in projects in Non-Annex I(developing) countries, the goal of these projects were to reduce GHGs emissions and they could earn Certified emission

[1] *Kyoto Protocol to the United Nations Framework Convention on Climate Change, arts. 6, 12 & 17, Dec. 11, 1997, 2303 U.N.T.S. 162* (establishing, respectively, Joint Implementation, the Clean Development Mechanism, and International Emissions Trading as the three flexible mechanisms); United Nations Framework Convention on Climate Change, *The Kyoto Protocol – Mechanisms*.

reductions(CER) that they could utilize against their prescribed target on total GHGs emissions. India a long with Brazil and China became one among the top global players to get it registered with some hundreds of projects on renewable energy, industrial energy-efficiency, solid waste and waste-heat recovery. The contribution of Indiato global CERs stood approximately at 12.6% between 2005 and 2012.[2]

However, the good run of CDM was short-lived as the European Union, the major buyer of CER, imposed restrictions on their use to projects in only least-developed countries post-2012. That lead to the severe slump in demand and thus in price, which fell from a high level of about USD 20 to less than USD 0.5.[3] The drop in prices resulted in most of the project assets being stranded and hence discouraged the private sector engagement in CDM market. In spite of the eventual collapse of CDM, it helped to identify certain requirements for the functioning of carbon markets; the importance of robust MRV (monitoring, reporting and verification) systems and stable regulatory environment for market mechanisms.

The change from the old regime of Kyoto Protocol to the Paris Agreement (2015), has led to a changed global architecture of climate regulation. While in Kyoto Protocol only developed countries were given obligation for the reductions of greenhouse gas emissions, the Paris Agreement put forth in the year 2015 the National Determined Contributions (NDCs); all nations, to devise their own plans for reducing emission. The core issue for our context rests under Article 6of the Paris Agreement that, once again, validates the use of market mechanisms for achieving climate targets through collective action and International Mitigations Outcome (ITMO), which is used to transfer emission-reductions. This means that any one country can contribute towards achieving another nation's emissions reduction goal, but only if this outcome is verifiable and not counted more than once towards a country's total emissions target.[4]

[2] *See* United Nations Framework Convention on Climate Change, CDM Registry, *Issuance of CERs*; Factly, *Review: What is the Status of Clean Development Mechanism (CDM) Projects?* (Apr. 29, 2022) (placing India's cumulative share of issued CERs at approximately 12.7 per cent, next only to China).

[3] World Bank, *State and Trends of Carbon Pricing* (Washington, D.C., annual editions); *see also* International Carbon Action Partnership, *Emissions Trading Worldwide: ICAP Status Report* (noting that CER prices fell from approximately USD 20 per tonne in 2008 to under USD 1 by 2013, following the European Union's restriction of CER imports to least-developed-country projects).

[4] *Paris Agreement to the United Nations Framework Convention on Climate Change, art. 6, Dec. 12, 2015, T.I.A.S. No. 16-1104*; United Nations Framework Convention on Climate Change, *Article 6 of the Paris Agreement: Article 6 Mechanisms*.

In this scenario, India's climate action strategy also witnessed substantial revision. The NDC introduced by India in 2015, had suggested a reduction of its GDP emission intensity by 33-35 per cent of the 2005 level by 2030, and achieving a 40 per cent share of non-fossil fuel-based capacity of total installed capacity and additionally creating of another 2.5–3 Gt of carbon dioxide equivalent carbon sink by adding more of forest and tree cover.[5] These goals have been further reaffirmed by the COP 26held in Glasgow in 2021; India pledged for reducing emission intensity of GDP by 45% by 2030, achieving 50% of its installed capacity based on non-fossil fuels and set a path towards net zero by 2070.[6] These announcements marked India's transition toward a net-zero trajectory by 2070.

Domestically, the instruments developed for such purpose were mainly through command and control, and as such through market based approaches. Under latter approach, PAT programme that was the first instrument related to domestic carbon market established under the National mission on enhanced energy efficiency (NMEEE), has been the main initiative launched by the Indian Government in 2012 to promote energy efficiency through the sectoral mechanism. Administered by the Bureau of Energy efficiency (BEE), the scheme had targets for energy saving for energy-intensive sectors; sectors like steel and aluminium etc. The programme set specific targets of energy savings for the designated consumers (DCs) which if exceeded them would be provided with energy savings certificates (ESCert). These certificates are tradeable on exchanges; those who could not achieved the targets bought these ESCert. PAT had successfully provided a framework for introducing the tradable energy saving instruments but has suffered with issues like oversupply of ESCert, lack of intermediaries, and the seasonality of trading activities.[7]

By analogy, the Renewable Energy Certificate (REC) scheme – created to facilitate compliance with Renewable Purchase Obligations (RPOs) – had allowed obligated entities, such as distribution companies and bulk captive power consumers, to offset their fossil fuel consumption by purchasing RECs. Although innovative, the REC market too faced liquidity

[5] Government of India, Ministry of Environment, Forest and Climate Change, *India's Intended Nationally Determined Contribution: Working Towards Climate Justice* (Oct. 2, 2015), submitted to the UNFCCC Secretariat.

[6] Ministry of External Affairs, Government of India, *National Statement by Prime Minister Shri Narendra Modi at COP26 Summit in Glasgow* (Nov. 1, 2021); Government of India, *India's Updated Nationally Determined Contribution: Working Towards Climate Justice* (Aug. 2022).

[7] Bureau of Energy Efficiency, Ministry of Power, Government of India, *Perform, Achieve and Trade (PAT) Scheme*, notified under the National Mission for Enhanced Energy Efficiency (2012).

problems and regulatory risks, predominantly because of the poor financial health of distribution companies and irregular enforcement between states. This showed that any future national carbon market infrastructure would need robust governance structures, flexible trading opportunities and strict compliance protocols.[8]

Acknowledging these gaps, the Indian government has started to integrate the experience of PAT, REC and CDM into the Indian Carbon Market (ICM). The Draft Carbon Market Policy Document (2022) proposed the establishment of a domestic emissions-trading system in line with India's NDCs and Paris Agreement commitments. The envisioned market seeks to pool obligated entities in high-emissions sectors, implement robust MRV systems, and build a regulated trading platform comprising compliance and voluntary components. The goal of the ICM is to attract investment and innovation into low-carbon solutions by implementing a phased approach, targeting the steel, cement, petrochemicals and power generation industries initially.[9]

The benchmark for India's carbon-market design are the European Union Emissions Trading System (EU-ETS), China's National ETS and Korea's ETS, which account for a significant share of global emissions. The EU-ETS, operational since 2005, is currently the largest and most mature carbon market globally, covering about 45 per cent of the bloc's emissions and raising over €70 billion through allowance auctions.[10] Its success hinges on efficient MRV processes, a transparent register system and consistently stricter emission limits. China's ETS was nationalised in 2021 with initial focus on power, but it has been expanded to other sectors, while Korea's ETS, started in 2015, encompasses both direct and indirect emissions.[11] All these examples demonstrate that carbon markets are effective instruments for emissions reductions when supported by sound institutional control, a clear legislative mandate, and consistent policy direction.

[8] *Central Electricity Regulatory Commission (Terms and Conditions for Recognition and Issuance of Renewable Energy Certificate for Renewable Energy Generation) Regulations, 2010*.
[9] Bureau of Energy Efficiency, Ministry of Power, Government of India, *Approach Paper for the Establishment of Carbon Market in India* (2022).
[10] European Commission, *EU Emissions Trading System (EU ETS)*, Climate Action (describing the EU ETS as historically covering approximately 45 per cent of the European Union's greenhouse gas emissions); European Environment Agency, *Use of Auctioning Revenues Generated Under the EU Emissions Trading System* (2025).
[11] International Carbon Action Partnership, *Emissions Trading Worldwide: ICAP Status Report* (noting that China's national emissions trading scheme began operating in 2021 and the Republic of Korea's emissions trading scheme has operated since 2015).

Legally, India's carbon-market framework is grounded in the Energy Conservation Act, 2001, and the Environment (Protection) Act, 1986. A 2022 amendment to the Energy Conservation Act specifically authorises the government to introduce a carbon-credit trading scheme, providing explicit statutory backing to carbon pricing in India. Under this amendment, the Bureau of Energy Efficiency has been designated as the nodal agency for managing the carbon credit exchange, while the Central Electricity Regulatory Commission (CERC) functions as the market administrator.[12] Further, a National Steering Committee oversees the implementation of policy guidelines, and State Designated Agencies (SDAs) ensure compliance within respective states.

The theoretical underpinnings of establishing a carbon market in India revolve around three core principles: achievement of cost-effective mitigation by enabling emissions reductions where they are cheapest; stimulation of innovation and technological transformation in carbon-intensive sectors; and, facilitating access to international climate finance and trade through potential linkages with other countries under Article 6 of the Paris Agreement. Despite India contributing around 7% of global greenhouse gas (GHG) emissions and having one of the lowest per capita emissions in the world, a functioning carbon market presents a pragmatic solution to reconciling the country's developmental aspirations with its climate commitments.[13]

In this regard, the design of the ICM is not only an environmental policy but an ongoing institutional and legal reform to embed sustainability in the economic architecture of the country. A carbon market design has to deliver on both environment as well as economy, as well as being dynamic enough to adapt to the practices of the rest of the world as well as the specific realities of the Indian economy – different sector growth rates, fossil fuel dependency and the federal nature of India. Indian carbon markets have to price carbon in a meaningful way and foster green investment while also levelling the field across various sectors – keeping in mind the constitutional promise for a good environment and for future generations.

[12] *The Energy Conservation Act, 2001, § 14, as amended by the Energy Conservation (Amendment) Act, 2022, § 8 (inserting § 14AA)*; The Environment (Protection) Act, 1986; Bureau of Energy Efficiency, Ministry of Power, Government of India, *Carbon Market*.

[13] International Energy Agency, *World Energy Outlook 2022*; *see also* Shashank Mohan, *Assessing India's Ambitious Climate Commitments*, Center on Global Energy Policy, Columbia University SIPA (2023) (estimating India's share of global CO2 emissions at approximately 7 per cent as of 2021, against one of the lowest per-capita emission rates among major economies).

I. Evolution of the Carbon Market Framework in India

The Indian experience with a carbon market is indicative of slow but sure movement toward hardening of the framework governing climate action. It is an evolutionary move from scattered voluntary efforts to a comprehensive, legislated scheme for emissions trading in its own climate architecture. It's quite a story of how Environmental regulation, economic planning and International commitments can be integrated into one while making a reconciliation between Development exigencies and Sustainability requirements.

The transformation wasn't overnight; it has been more a sequence of practical policy responses guided by the impulses of global markets and shaped by national energy conditions.

India's current direction of establishing an Indian Carbon Market (ICM) reflects a recognition that Climate policy must no longer be defined as non binding commitments but rather through a enforceable market based mechanism to drive carbon efficiency. India's foray into the carbon trade arena started with the Clean Development Mechanism (CDM) under the Kyoto Protocol in 1997. Under the mechanism, Annex I industrialized nations can invest in emission reduction projects in non – annex countries and receive Certified Emission Reductions(CER) or tradable emission credits. In the ensuing years, India, after China became the largest recipient of CDM projects across a whole spectrum of activities-ranging from renewable energy to afforestation to waste management and even to efficiency gains in processes of existing industrial installations-not only generated substantial flow of foreign investment and adoption of cleaner technologies but also initiated domestic entities into a regime of internationally recognized emission counting and verification systems.

Yet, once, the global carbon market imploded around 2012 on account of sharp decline in the value of CER and strict EU regulations, Indian policy makers realised the vulnerability of over-dependence on global factors which necessitated the design of a self contained national market.

Learning from experience, India started experimenting with nationalistic schemes that attempt to internalise the notion of carbon trading within the domestic milieu. The initial big leap was the Performance, Achievement and Trade (PAT) scheme launched in 2012 under the aegis of National mission for Enhanced energy efficiency (NMEEE). Under the PAT programme, tradable ES Certs (Energy Savings Certificates) are issued for companies who exceed the reduction targets in energy consumption.

Initiated under the jurisdiction of the Bureau of energy efficiency(BEE), this scheme was initially targeted at the seven large energy intensive sectors of economy such as Iron and Steel, Cement, Fertilizers, Paper, etc., in the Indian economy. However, though the logic of the programme is perfectly designed, the programme faces operational hurdles, including lopsided participation, oversupply of Certificates, and inadequate price signals because of low trading volumes. But still the programme provided valuable experience and has led to building the necessary regulatory infrastructure for a nationwide carbon trading regime.

The year of implementation for the PAT Scheme coincided with the establishment of India's Renewable Energy Certificate (REC) in 2010. Renewable energy producers could earn certificates, one for each unit of clean energy produced. The certificates would be traded by obligated parties such as the various State electricity boards to satisfy Renewable Purchase Obligations (RPOs) set by regulation.

Despite varying levels of trade owing to fiscal issues with State distribution companies and an inconsistent track record on the compliance and enforcement of this regulation, the REC system perpetuated the market-based environmental regulation doctrine.

Altogether, PAT and RECs provided the foundational building blocks (baseline data collection, accredited verifiers, and exchange trading) necessary for a successful, and future, ICM. The PAT programme also led to an enhanced system of reporting; state governments were now reporting data to a national level on a level that no prior policy had enforced. The implementation of PAT necessitated data collection. Along with the PAT system being implemented, in 2010 India created a Renewable Energy Certificate (REC) system, which gave renewable energy producers the opportunity to generate certificates corresponding to each unit of clean electricity they generated.

State owned electricity distribution companies were mandated with using these certificates to demonstrate compliance with the renewable energy quotas (Renewable Purchase Obligations or RPOs).

This encouraged the development and institutional strengthening of the existing institutions. For instance, the existing MRV systems in the renewable sector were given additional responsibilities for monitoring and reporting data associated with generation which has earned

RECs. The increased volume and standardization required as a result of the MRV of renewable energy sources under the REC received more institutional strengthening.

A, to date significant aspect, which was part of both these initial steps towards a possible carbon trading regime was the development of data infrastructure in sector specific data generation, the standardizing of measurement methods and procedures and the setting up of the machinery needed for verification and for enabling of the trading. As these developments unfold, other important factors were also transforming the Indian policy landscape for the climate. The National Action Plan on Climate Change (NAPCC) was adopted by the country in 2008, following a country wide consultative process to outline various missions across various sectors, such as for sustainable energy (by promoting energy efficiency, developing solar power etc.), water conservation, and for a sustainable Agriculture, to be implemented across different regions to mitigate the effects of climate change.[14]

One successful conclusion from these missions has been the highlighting of the need of an overall framework or a carbon-trading system, covering various sector specific activities.

Under this thinking, the plan to set up an Indian carbon market (ICM), which would coordinate the activities of the existing such mechanisms and set up one national framework, was developed and is still on its way to realization. Draft Carbon Market Policy to put an India Carbon Market (ICM) in to Action through various Phased Mechanisms. The first is establishment of Data Infrastructure (establishment of sectoral baselines), the second is to develop a robust Monitoring Reporting and Verification System (MRV), the third is to establish an effective Indian Carbon market mechanism, and four this the integration of the MRVs and trading into global markets through Article 6 of the Paris Agreement. The idea behind this approach is to develop the system in an iterative, organic, and phase-specific way that allows stakeholders to learn about climate action from an economic and policy perspective without economic shocks or a dramatic disruption.

This transition is centered around the Energy Conservation (Amendment) Act, 2022, which gives India's home-grown carbon market a legal backbone. In a move that added the controversial Section 14AA into the parent legislation, the amendment gives Central

[14] Government of India, Prime Minister's Council on Climate Change, *National Action Plan on Climate Change* (2008).

Government the authority to: 'specify a carbon-credit trading scheme' and; mandate respective operating and regulatory authorities.[15] The mandate to operate the scheme was given to the BEE, whereas the role of regulatory body was assigned to the Central Electricity Regulatory Commission (CERC) with the mandate of creating a level-playing-field in the market.

Such a bifurcated operational and regulatory approach is along similar lines to that of successful economies like the EU-ETS.

Two distinct agencies with jurisdiction well-defined are used to avoid conflicts of interest. India has benefited extensively from international best practices in the setup of India's domestic Carbon Market. The regulators of India's domestic carbon market had the fortune to observe the structural outcomes of EU-ETS, Korea's Carbon Market, China's Carbon Market which confirm the efficacy of gradual rolling out, high data standards and adjustable regulations. As against the overall cap in the EU scheme which was based on allocation with overall allocation for each member nation; as has proved subject to price collapses at early stage of implementation, the present design of the ICM employs cautious baseline settings along with capacity-building before enforcing any cap.

This implies a realistic assessment on the effectiveness of the market instruments along with the strength of institutions. The ICM by virtue of the flexibility in the proposed setup will be in tune with evolutions of international carbon frameworks, and can also interconnect with other International Trading systems with eventual attainment of maturity and creditability of the institution. Thus the Indian Carbon Market is an outcome and a move-the outcome of gradual policy development over two decades and the move of shifting the focus to institutional environmental governance. This outcome leverages experience from the CDM, PAT and RECs while creating a robust Legal, administrative and economic institution in pursuit of market based transformation towards low carbon growth.

Not only is an institution more than mere an exchange; rather an embodiment of India's strategic shift toward economic instruments for the pursuit of equity, justice and international climate diplomacy.

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[15] *The Energy Conservation (Amendment) Act, 2022, § 8 (inserting § 14AA into the Energy Conservation Act, 2001)*; *see also* Library of Congress, Global Legal Monitor, *India: Energy Conservation (Amendment) Act, 2022, Allowing for a Carbon Credit Trading System, Comes into Force* (Jan. 18, 2023).

II. Governance, Regulation, and Market Design of the Indian Carbon Market

India's Carbon Market (ICM) overall architecture reflects an intended balance between economic feasibility and environmental responsibility. Rather than just another policy reform in itself, ICM is rather a structural policy reform to climate governance, which leverages national cooperation, market mechanisms, and the legal system. A legal structure to regulate emissions trading will be realized for the first time in India under the provisions of The Energy Conservation (Amendment) Act 2022. A structural blueprint comprises of a multi-tiered governance of ICM by which to shape policy, oversee the market and execute policy.

The first tier includes the National Steering Committee (NSC), chaired by the Secretary in the Ministry of Power. It comprises senior officials from the Ministry of Environment, Forest and Climate Change (MoEFCC), the Ministry of Finance, and relevant ministries in the power sector.[16] The NSC will guide policy and oversee the coordination of all ministries; it will also review the overall functioning of the market on a regular basis. The second tier is entrusted to the Bureau of Energy Efficiency (BEE), responsible for implementing and managing various elements of the market; it will be responsible for collecting data from the sectoral stakeholders, setting emission baselines for each industry or activity, and issuing the carbon credits.

Finally, the third tier consists of the CERC to govern the trading market with clarity, price-rigor, and procedural discipline, acting as the market manager and regulator.

Although there are a multitude of participants, the architecture inbuilt checks and balances while allowing some flexibility at administrative layers. Among the distinguishing features is the prominence afforded to State Designated Agencies (SDAs), each of which operates as a nexus of verification and compliance for the state governments. These agencies collect emission inventories and carry out on-site checks and validation of performance claims by industrial units located within their territorial jurisdiction.

Taking in to account this context, the policy also extends verification responsibility to subnational governments, while enabling and ensuring enforcement of the national targets,

[16] Bureau of Energy Efficiency, Ministry of Power, Government of India, *Carbon Market* (describing the constitution and composition of the National Steering Committee for the Indian Carbon Market under the Carbon Credit Trading Scheme, 2023).

making prudent use of subnational capacities, federal in manner.1 An important element in the Indian design is placing the full responsibility with the State Designated Agencies (SDAs). Thus, the SDAs have been tasked to take ownership of the ecosystem for compliance and verification within their domains, to obtain information about individual firms' emissions and activities on sites, to verify the compliance statement made by such individual enterprises within their operating jurisdiction and in turn use such information to collectively verify and ensure compliance to national level obligations. It diffuses the responsibilities for such verification to subnational bodies making it an inclusive and 'whole of government' approach while leveraging the unique Indian tradition of competitive federalism.1 In fact, in the overall framework, it also represents the federal character of our institutions, where we take inputs from various states to pursue a single national vision.

The India Carbon Market will be comprised of two main interconnected market components: compliance market and voluntary market. With regard to the compliance segment, it would mainly revolve around enterprises with regulatory and legally imposed obligations to bring down their overall carbon emissions. Those obligations would in fact evolve from their sector wise baseline and emission intensity benchmark. These credits, if validly earned through certified reductions, may then be used to meet obligation commitments or held, transacted and/or surrendered.

On the contrary, in the voluntary part, organisations/communities/individuals will have an incentive to trade for credits arising out of climate action initiated voluntarily by them, without any obligation, to reduce, avoid or remove carbon dioxide or equivalent emissions, from voluntary action such as tree plantation, organic waste management, energy efficient lighting/fans and rural community level renewable energy solutions. The inclusion of both parts into one common Indian Carbon Market helps broaden the scope of participation and also enables synergy across different sectors with private and public stakeholder participation being aligned for national climate goals.

The proposed registry is an ambitious improvement in our institutional capacity. For the first time in similar regimes (e.g. PAT, REC), it uses a continuously updating, technology-backed platform. In comparison to the old practice of submitting report(s) to government authorities in periodical and often manual manner, the registry system offers real-time view of credits issued, traded and retired making the market behaviour more predictable and transparent.

Moreover, use of blockchain inspired technical verification process with data analytics, enhance the reliability and assurance of the carbon credits representing actual emissions reduction. Trading in carbon credits will take place through authorized power exchanges such as the Indian Energy Exchange (IEX) and Power Exchange India Ltd (PXIL) regulated by the CERC.[17] The strategy adopts the approach to leverage the existing exchange infrastructure which lowers administrative costs and also builds on existing market conventions. Such approach is aligned to the Indian experience under the Perform, Achieve and Trade (PAT) scheme in India which resulted in the trading of energy-saving certificates in similar exchanges.

However, carbon credits as trading assets have more sophisticated pricing inputs in as much as their price determination will be influenced by not just compliance buying but also the sentiment of the investors, sector performance and world carbon pricing trends. To ensure credibility, measures have been instituted within the framework to shield the market from excessive price volatility and manipulative speculation.

Trading in these certificates will be under CERC to monitor and detect noncompliance and punishing those that engage in fraudulent acts. The system provides for the conduct of regular market reviews of performance, volume, liquidity and rates of credit utilisation every year. BEE in consultation with MoP will issue periodic reports to ensure consistency in policy and dynamic regulation. These all forms a closed loop system. Another crucial element to this system of governance is the legal clarity in trading.

The Energy Conservation (Amendment) Act, 2022 recognizes carbon credits as trading property but denies them the status of 'securities' coming under the Securities and Exchange Board of India (SEBI).[18]

The framework clearly envisages to bring the carbon credits under the purview of environmental and energy legislation instead of financial law so as to keep jurisdiction clear from environmental legislation to the Indian financial regulator.

[17] *Central Electricity Regulatory Commission (Power Market) Regulations, 2021*.
[18] *The Energy Conservation (Amendment) Act, 2022, § 14AA*; *see also* Cyril Amarchand Mangaldas, *The Energy Conservation (Amendment) Act, 2022: Key Highlights* (2023).

III. Challenges and Prospects for the Indian Carbon Market

ICM set to integrate India's ambition with economic development The launching of India's Carbon Market (ICM) is an important stepping stone for synchronising India's efforts against climate change with its overall economic development goals. As anticipated, however, operationising an in-country national market to trade carbons is not without its own share of complications-be they financial, corporate, or lawful. While the preliminary strategy document issued by the Bureau of Energy efficiency (BEE) presents a well-considered outlook, the effectiveness of the system will eventually be determined by the manner in which these various aspects align in conjunction with India's political and regulative surroundings.

Among the core issues from an institutional point of view would be the division of authority across many bodies and governing authorities such as BEE, CERC, the Ministries for Environment, Forest and Climate Change and Power will be given.

Unless distinct roles have been established, there are chances of coordination issues, resulting in process delay, similar to those encountered with the Perform, Achieve and Trade (PAT) scheme, and Renewable Energy Certificates (RECs). Also critical will be enhancing the capabilities of the State designated Agencies, which are at the helm of dealing with validation and adherence. How efficiently these agencies run, would be pivotal in determining consistency of accurate, real time data on the ground at each and every sector state-wise through MRV processes. The legal aspect would also need an approach where the existing legal provisions clarify the exact nature of the traded carbons.

The ability of the Central government to issue and oversee tradable credit as authorised by The Energy Conservation (Amendment) Act 2022 is a fact.

However, it does not explicitly say whether tradable carbons constitute 'securities'. This overlap, if un addressed, could invite concerns and intervention from SEBI as these traded credits will soon land on stock market exchanges. A fully developed subordinate legislation would have to elaborate on each of the details like credits being issued, sold or transmitted.

Economically, ICM must have to take care about the market liquidity-which mean sufficient number of buyers of credits should be available, to determine transparent price-discovery.

Previous efforts to establish carbon trading in India had failed because the markets suffered from an over-availability of certificates, coupled with low demand. India must not repeat this mistake and must adopt a phase-wise policy whereby the free issuance of credits is phased out gradually to be replaced by an auction, which will reflect prices that are on par with carbon prices in reality. Europe's Emission Trading system gives an idea on how significant a real value can be commanded by rigorous and sustained cap reductions and by taking appropriate steps to managing the register of carbons effectively to maintain stability in prices, to lure further investments in such sectors as energy efficiency, hydrogen and green industries.

Just like economics, environment integrity would also necessitate special care. If we aim for a stronger credit, a robust monitoring reporting and verification (MRV) scheme as well as baselines of Indian efforts would definitely be required. If some reports appear inconsistent or overstated or with overuse in crediting, this would reduce credibility in the Indian carbon credits both domestically and International."

We may see more emphasis on on real-time auditing of data and use of digital verification tools, as a step towards ensuring Accountability.

As part of the endeavour towards seamless integration with International Markets, consistency with International MRVs under Article 6 of the Paris Agreement would become an absolute necessity." Constitutional and legal underpinnings Given that Environment is in the Concurrent list it necessitates centre-state harmony and thus the need for coordination. Such balance is to be sought between central diktats and autonomy of states in devising and implementing their respective plans for this transition. Moreover the Indian Supreme Court pronouncement about a right to a healthy Environment (Article 21) does grant constitutional sanctity for emission reductions, though one would like to have a defined process for redressal of grievances to industries for any infringement resulting from this exercise, along with a clear due process in case of penalizing actions.

Though currently the role is performed by the Appellate Tribunal for Electricity, it can change in future given prominence of this instrument.

Despite these challenges the Indian carbon market offers enormous promise. It could unlock new avenues for green technology financing, drive innovation in carbon abatement

technologies and provide an impetus for India to move ahead towards fulfilling its target of achieving net zero-carbon emissions by 2070. The phased manner in which the carbon market policy has been framed-starting with data gathering, and proceeding with market compliant trading-- allows it scope to review the cap reductions at regular intervals while ensuring that the country does not suffer economically. Over time, India can leverage the Indian Carbon Market to offer highly credible and significant contributions to global emission mitigation and further strengthen its diplomatic standing.

In the last analysis, India's carbon market future hinges on three interconnected goals: developing the required institutional capacity, retaining the environmental credibility of credits, and maintaining the economic inclusivity of firms from developing sector sectors. So long as these roots are nurtured with legislation transparency, stringent implementation, and co-operative federalism, the ICM has the potential to be the most meaningful climate governance instrument in the developing south.[19]

IV. Conclusion and the Road Ahead

In essence, the move towards developing an Indian carbon market is a mental leap and strategic stride for India's 21st century strategic thinking process towards the resolution of the country's dual concerns of environment protection and economic development. Starting with participating in the Clean Development Mechanism (CDM), moving on to envisioning a domestic carbon market and trading system this journey mirrors India’s attempts over years of balancing sustainability with industrial prowess and equitable growth. Making the switch from an externally governed mechanism to a well-structured and effective, internally driven system signals an increased trust in India's own ability to devise its own creative and successful environmental strategies.

Essentially, it is a means to re-thinking development on the premise of decarbonisation – a step toward creating a self-correcting mechanism whereby economic signals would spur innovations on technologies, efficiency and more.

[19] *See* KNM & Partners, *India’s Carbon Credit Trading Scheme: A New Carbon Market Framework* (2025); IMPRI India, *India’s Carbon Market Framework: What It Means For Industry And Climate Governance* (2026) (discussing India’s potential to serve as a carbon-trading hub for the Global South).

Instead of relying on the old age method of command and control measures to get 'correct' behaviour with regard to emissions, an Indian carbon market will ensure that economics and environmental objectives go hand in hand – changing environmental negativities and externalities to traded value of emissions and making positive externalities a source of economic gain.

However, although we might think that road to a successful carbon market may be a straight and well-lit one, it actually isn't one. India's complex energy-intensive economy, growing, and having significant variations regionally across capabilities of environmental actions, will necessitate a flexibility and a policy design that is capable of adapting across sectors while ensuring compliance with overall environmental goals at the nation.

Efforts by Central Electricity Regulatory Commission, Bureau of Energy Efficiency and Ministry of Environment and Forest and Climate Change on coherent policy development is critical to eliminate the ambiguities in the overall framework. The reliability and soundness of monitoring and reporting mechanism of emission reduction is equally important to gain the confidence of the carbon market. In this, India's digital register and reporting will come very handily. In the long term, even more useful might be linking the MRV system with financial sector technologies so it can allow for real-time monitoring and diminish opportunities for gaming or fraud.

While the country has to ensure to meet the commitments made to the Indian community through MRV mechanism but in addition, by connecting to market access like the Article 6 countries, it signals efficiency and capacity for Indian businesses. MRV should not just assure India's reliability but also make India attractive if the country connects to market access as defined under Article 6 of the Paris Agreement. With appropriate price that encourages the industry for less emissions than it punishes, the Indian Carbon Market can become an effective driver for green transformation by the businesses by investing in technologies that improves their energy efficiency and the process to connect them with renewable resources.

In addition to its economic and technical dimensions, the Indian Carbon Market is embedded in a richer, normative rationale. It signifies the norm of environmental justice as incorporated in the constitutional architecture of sustainable development. By making producers internalize the social costs of their pollution, the market aligns state action with the constitutional

exhortations of environmental protection and the protection of life, liberty and happiness of its people. It has been functioning as another illustration of the constitutional provision for cooperation of the center and the states to tackle global environmental issues at a localized level of policy response and accountability, and is indeed not a novelty of regulatory response but another confirmation of India's constitutional guarantee of intergenerational equity.

The development of transnational carbon trading schemes under Paris Agreement gives India an opportunity to link this market to international markets, however on condition that transparency and double-counting is duly addressed.

Establishing a robust institutional and accounting framework of good governance standards consistent with the requirements of accounting standards is an investment in Indian industry so that it gains access to international financing, encourages FDI, and acquires cost competence in a carbon constrained global economic paradigm. It also offers an opportunity to position India to act as a major regional hub for carbon trading for the Global South, enabling both technology transfer and South- South co-operation in low-carbon development.

To convert this ambition to reality requires that we focus on three areas: First, that we consolidate the institutional and legal structure, clarifying property rights, trade mechanisms and rules governing their trade and their monitoring and enforcement; Second, encourage policy and innovative financial products and technologies for carbon financing for a range of sectors and industries and not necessarily ones in size ; and third, encourage inclusive public participation and consultation in the pricing carbon not as punishment but a collective duty .

Ultimately, the Indian Carbon market will be a market based policy mechanism designed to address the balance between two inherently conflicting goals - development and sustainability. The effectiveness derives from its dynamically adjustable features - being legal based, yet driven by markets and inclusive and equitable in approach. Transparent, coherent and comprehensive, the ICM can redefine Indian approach to environment and provide its leadership role in the future in the global greener transition. It needs robust diplomacy and inclusive policy effort, but the foundations of economic prosperity and ecological stability would be in sync.