https://doi.org/10.56975/ijcrt.v13i8.292457

IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

From Emissions To Equity: The Global Governance Of Carbon Credit Trading

***Dr.O.A.R.Kishore, Lecturer in Commerce, SRR & CVR Govt Degree College(A), Vijayawada.**

***Dr.D.S.V.S.Balasubrahmanyam, Lecturer in Political Science, SRR & CVR Govt Degree College(A), Vijayawada.**

Abstract

Carbon credit trading has become a key component of global climate policy, offering a market-based approach to reducing greenhouse gas emissions. This paper explores the evolution, governance, and equity implications of carbon markets, with a particular focus on India's experience and emerging domestic frameworks. While international mechanisms like the Kyoto Protocol and Paris Agreement have provided structural foundations, challenges such as fragmented markets, weak verification, and inequitable benefit-sharing persist. The study highlights the need for stronger governance, digital innovation, and inclusive policies to ensure that carbon credit systems contribute not only to emissions reduction but also to climate justice and sustainable development.

Keywords

Carbon credits, Carbon trading, Climate governance, Paris Agreement, Climate justice, Sustainable development, Emissions reduction, Market-based mechanisms, India carbon market, Environmental equity

1. Introduction

Climate change has emerged as one of the most pressing global challenges of the 21st century, primarily driven by the accumulation of greenhouse gases (GHGs) in the atmosphere due to human activities such as fossil fuel combustion, deforestation, and industrial processes. The Intergovernmental Panel on Climate Change (IPCC, 2022) warns that limiting global warming to 1.5°C requires a 45% reduction in global emissions from 2010 levels by 2030. Traditional regulatory approaches, including command-and-control measures and environmental taxes, have proven insufficient in addressing the scale and urgency

https://doi.org/10.56975/ijcrt.v13i8.292457

of the crisis (Stavins, 2008). In response, the global community has increasingly turned to market-based mechanisms that offer greater flexibility and cost-effectiveness.

One such mechanism is the use of carbon credits, which are tradable certificates representing the reduction or removal of one metric ton of carbon dioxide equivalent (CO_2e) from the atmosphere. These credits are central to both compliance markets—established under legal mandates—and voluntary markets, which are often driven by corporate climate commitments (World Bank, 2023). Carbon trading allows entities with lower abatement costs to sell excess reductions to those with higher costs, thus incentivizing widespread participation in climate mitigation (Mehling, Metcalf, & Stavins, 2019).

This paper introduces the framework of "From Emissions to Equity", capturing the evolution of global climate governance from a narrow focus on pollution control to a broader emphasis on justice, inclusivity, and equitable benefit-sharing. While the primary aim of carbon markets is to reduce emissions efficiently, there is growing recognition of the need to ensure fair access and participation for developing countries, Indigenous communities, and vulnerable populations (Okereke, 2010; Caney, 2010). Equity concerns encompass not only the distribution of financial flows and technological benefits but also the governance structures that influence who gets to participate and under what terms.

The primary objective of this paper is to examine the global governance of carbon credit trading with a particular focus on its equity dimensions. It analyzes the institutional mechanisms that regulate carbon markets at both international and national levels, assesses the environmental integrity of these systems, and evaluates how they promote—or hinder—equitable outcomes. The study also contextualizes India's evolving role in carbon markets, from its early involvement in Clean Development Mechanism (CDM) projects to its current efforts in establishing a domestic carbon credit trading scheme (Bureau of Energy Efficiency [BEE], 2023; SEBI, 2023).

2. Carbon Credits and the Architecture of Global Climate Governance

The concept of carbon credits emerged as a core component of global efforts to address climate change through market-based mechanisms. These instruments allow entities to either earn or purchase certificates equivalent to one metric ton of carbon dioxide (or its equivalent in other greenhouse gases) that has been reduced, avoided, or removed from the atmosphere. The carbon credit system operates on the principle of cap-and-trade or baseline-and-credit, offering flexibility to polluters while encouraging innovation and cost-efficient abatement (Tuerk et al., 2009; Stavins, 2008).

https://doi.org/10.56975/ijcrt.v13i8.292457

2.1 Evolution through International Agreements

The foundation of carbon credit trading was laid by the Kyoto Protocol (1997), which introduced three market mechanisms: International Emissions Trading (IET), Clean Development Mechanism (CDM), and Joint Implementation (JI) (UNFCCC, 1998). Under CDM, developed countries could invest in emission reduction projects in developing countries and receive certified emission reduction (CER) credits, helping both parties meet their emission targets. This system incentivized renewable energy, energy efficiency, and afforestation projects in countries like India, Brazil, and China (Kossoy & Guigon, 2012).

The Paris Agreement (2015) marked a shift in climate governance by adopting a more inclusive and flexible framework based on Nationally Determined Contributions (NDCs). It introduced Article 6, which lays the groundwork for a new generation of international carbon markets. Article 6.2 provides for cooperative approaches, while Article 6.4 establishes a centralized crediting mechanism intended to replace CDM (UNFCCC, 2015). The emphasis has shifted from rigid targets to global collaboration, with a stronger focus on environmental integrity and sustainable development (Schneider & La Hoz Theuer, 2019).

2.2 Types of Carbon Markets: Compliance and Voluntary

Carbon markets can broadly be categorized into compliance markets and voluntary markets. Compliance markets are regulated by laws or international treaties, such as the European Union Emissions Trading System (EU ETS) and California's Cap-and-Trade Program. These systems allocate a cap on total emissions and distribute allowances accordingly, with the option to buy or sell them (World Bank, 2023).

Voluntary carbon markets (VCMs), on the other hand, are driven by corporations and individuals seeking to offset their carbon footprints beyond legal requirements. These markets often support renewable energy, forest conservation, and community-based projects in the Global South. Standards such as Verra's Verified Carbon Standard (VCS) and The Gold Standard ensure transparency and credibility (IETA, 2022).

Over time, the volume of carbon traded globally has increased substantially, particularly under the EU ETS and CDM mechanisms. The growth of the Voluntary Carbon Market (VCM) in recent years also highlights the rising role of private sector climate initiatives. Table 1 provides a historical overview of carbon trading volumes across key markets.

https://doi.org/10.56975/ijcrt.v13i8.292457

Table:1 Historical Volume of Carbon Trading

Year	EU ETS	CDM (CERs issued)	Voluntary Carbon Market (VCM)	California ETS	Total Traded Volume (Approx.)*
2005	322	45	4	–	371
2010	6,325	745	128	90	7,288
2015	6,200	1,575	84	160	8,019
2020	7,000	2,060	188	250	9,498
2022	8,700	–	500	355	11,755

Source: **International Carbon Action Partnership (ICAP)** report

(*in $MtCO_2e$ – million metric tonnes of CO_2 equivalent)

EU ETS = European Union Emissions Trading System; CDM = Clean Development Mechanism ; VCM = Voluntary Carbon Market ; CER = Certified Emission Reduction

2.3 Credit Generation and Verification

For a project to issue carbon credits, it must demonstrate that the emission reductions are real, measurable, additional, and verifiable. This is ensured through Measurement, Reporting, and Verification (MRV) protocols. Independent third-party verification is essential to avoid issues like double counting or non-additionality, which can undermine environmental goals (Schneider & La Hoz Theuer, 2019).

The emergence of digital tools such as blockchain, satellite-based monitoring, and remote sensing is expected to enhance transparency and scalability in credit verification and trading (World Bank, 2023).

2.4 Critiques and Reforms

While carbon credit trading has unlocked financial flows for climate projects and spurred green innovation, it has also faced criticism. Studies point out risks of greenwashing, market manipulation, and the displacement of local communities in the name of conservation (Dooley & Kartha, 2018). Furthermore, the uneven geographic distribution of carbon finance—concentrated in large emerging economies—has raised concerns about the equity and inclusiveness of global markets (Okereke, 2010).

Recent reforms under the Paris Agreement's Article 6 framework aim to address these issues by enhancing transparency, standardization, and benefit-sharing mechanisms, especially for least developed countries and Indigenous peoples (UNFCCC, 2022).

https://doi.org/10.56975/ijcrt.v13i8.292457

3. Governance of Carbon Credit Markets

The effectiveness of carbon credit trading depends largely on the governance structures that regulate, monitor, and enforce market activities. Good governance in this context ensures environmental integrity, equitable access, and economic efficiency. It involves a multi-layered system of international treaties, national policies, private standards, and institutional oversight. As carbon markets expand in scale and complexity, the need for robust and transparent governance mechanisms becomes more critical (Mehling, Metcalf, & Stavins, 2019).

3.1 International Institutions and Frameworks

Global governance of carbon trading is rooted in international climate agreements, particularly the Kyoto Protocol and the Paris Agreement. The United Nations Framework Convention on Climate Change (UNFCCC) oversees the implementation of these agreements and sets the guidelines for emissions trading. Under the Kyoto Protocol, the Clean Development Mechanism (CDM) Executive Board was responsible for approving projects and issuing Certified Emission Reductions (CERs) (UNFCCC, 1998).

The Paris Agreement's Article 6 mechanism now provides the foundation for a new global carbon market structure. The Supervisory Body for Article 6.4, established by the UNFCCC, is tasked with defining standards for project approval, credit issuance, and tracking to ensure transparency and avoid double counting (UNFCCC, 2022). It also includes safeguards for sustainable development and human rights, although these have yet to be operationalized in practice (Schneider & La Hoz Theuer, 2019).

3.2 Legal and Regulatory Frameworks

Beyond international treaties, national governments play a critical role in regulating domestic carbon markets. Countries such as the European Union, China, the United States, and New Zealand have enacted cap-and-trade programs with legal enforceability and market oversight. These systems typically involve government agencies that allocate permits, monitor emissions, and penalize non-compliance (World Bank, 2023).

In the Indian context, the Ministry of Power and the Bureau of Energy Efficiency (BEE) are key regulators of the Perform, Achieve and Trade (PAT) scheme, which operates as a sectoral energy efficiency trading program. Recently, India has introduced the Carbon Credit Trading Scheme (2023) under which the Securities and Exchange Board of India (SEBI) will regulate voluntary carbon markets, ensuring proper price discovery, market infrastructure, and investor protection (BEE, 2023; SEBI, 2023).

https://doi.org/10.56975/ijcrt.v13i8.292457

3.3 Verification, Monitoring, and Market Oversight

A central feature of governance is the Measurement, Reporting, and Verification (MRV) process. Carbon projects are required to undergo third-party audits to validate that claimed emission reductions are real, measurable, and additional. International standards such as the Gold Standard, Verified Carbon Standard (VCS), and Climate Action Reserve (CAR) ensure the credibility of voluntary market credits (IETA, 2022).

Governance bodies also oversee the registration and retirement of credits, maintain central registries, and coordinate with other actors such as brokers, exchanges, and environmental NGOs. Transparency is a key principle of effective governance, and platforms such as the Carbon Offset Transparency Initiative (COTI) and open-access credit registries are being developed to improve public scrutiny (World Bank, 2023).

3.4 Governance Challenges

Despite advances, carbon market governance faces several challenges:

- Fragmentation: There is no single global carbon market. Instead, a patchwork of national and regional schemes exists, leading to inconsistent rules and standards (Mehling et al., 2019).
- Lack of capacity in developing countries: Many low-income nations struggle to meet the technical and institutional requirements for participating in international markets (Okereke, 2010).
- Market manipulation and double counting: Without rigorous oversight, there is a risk of credits being sold multiple times or projects being credited for reductions that would have happened anyway (Schneider & La Hoz Theuer, 2019).
- Weak enforcement: Especially in voluntary markets, there is limited recourse if standards are violated or environmental integrity is compromised.

To overcome these limitations, scholars and policy bodies have called for a more harmonized global governance architecture, stronger capacity-building for low-income countries, and improved institutional transparency and accountability (Stavins, 2008; Tuerk et al., 2009).

4. The Equity Dimension in Carbon Credit Trading

The global carbon market, while offering flexibility and efficiency in emission reduction, has been widely criticized for perpetuating inequities between developed and developing countries. The equity dimension refers to how benefits, risks, and responsibilities are distributed across different regions, communities, and income groups. Achieving climate justice within carbon credit trading mechanisms

https://doi.org/10.56975/ijcrt.v13i8.292457

involves ensuring that vulnerable populations are not marginalized and that the distribution of carbon finance contributes meaningfully to sustainable development (Caney, 2010; Okereke, 2010).

Table 2: Clean Development Mechanism (CDM) Projects by Region

Region	No. of Projects	Share of Global Projects (%)
China	3,764	47.6
India	1,735	21.9
Brazil	408	5.2
Mexico	194	2.4
Africa (Total)	201	2.5
Other countries	1,615	20.4
Global Total	**7,917**	**100%**

Source: UNFCCC CDM Registry (2022)

4.1 Disparities in Market Access and Participation

One of the key equity concerns is the unequal access to carbon markets. High transaction costs, technical complexity, and regulatory barriers often prevent least developed countries (LDCs) and small project developers from participating in carbon trading schemes. A large share of Clean Development Mechanism (CDM) projects, for example, was concentrated in a few emerging economies like China, India, and Brazil, while many African and island nations were left out (Kossoy & Guigon, 2012).

Even within participating countries, access to carbon finance is skewed in favor of large industrial or renewable energy projects, leaving smallholder farmers, tribal communities, and decentralized projects underrepresented (Bond, 2012). This undermines the potential of carbon trading to act as a tool for inclusive development.

4.2 Environmental Justice and Local Impacts

Carbon offset projects, particularly in land-use and forestry sectors, have sometimes resulted in the displacement of Indigenous peoples, restriction of community access to natural resources, and erosion of traditional land rights (Dooley & Kartha, 2018). These consequences highlight the need for stronger safeguards and Free, Prior and Informed Consent (FPIC) for local communities before project approval.

Moreover, there is concern that "carbon colonialism"—where rich nations outsource their emissions reductions to poor nations—allows developed countries to delay domestic decarbonization while placing the burden of mitigation on the Global South (Okereke, 2010). In the absence of rigorous social safeguards, carbon markets can reproduce historical patterns of environmental injustice.

https://doi.org/10.56975/ijcrt.v13i8.292457

4.3 Inequities in Revenue and Benefit Sharing

Projects that generate carbon credits can offer co-benefits like employment, infrastructure, and access to clean energy, but the distribution of these benefits is often unequal. Intermediaries, consultants, and project developers may capture a disproportionate share of the financial returns, while communities providing land or labor may receive only nominal compensation (Caney, 2010). This raises ethical concerns about the commodification of carbon and the moral legitimacy of offsetting mechanisms.

To address this, standards like the Gold Standard and Plan Vivo have incorporated sustainable development indicators and community participation requirements. However, the effectiveness of these measures remains mixed due to inconsistent enforcement and weak monitoring (IETA, 2022).

4.4 Toward Equitable Market Design

Moving from emissions control to equity in climate governance requires a shift in market architecture and policy orientation. This includes:

- Prioritizing projects in least developed and climate-vulnerable regions through preferential access or subsidies.
- Strengthening transparency and accountability in credit issuance and benefit-sharing.
- Encouraging community-led projects with local ownership and decision-making.
- Mandating social impact assessments alongside environmental audits.

The Paris Agreement's Article 6.4 mechanism includes provisions for sustainable development and adaptation co-benefits, but operationalizing these goals requires global cooperation and national-level commitment (UNFCCC, 2022).

India, with its vast rural population and rich biodiversity, stands at a critical juncture. It can champion equity by promoting community-based offset projects, designing inclusive MRV frameworks, and ensuring that carbon revenues contribute to local development goals (BEE, 2023; TERI, 2020).

5. India's Participation in the Carbon Credit Ecosystem

India has played a prominent and evolving role in the global carbon credit landscape. From its early success under the Clean Development Mechanism (CDM) to its recent push to develop a regulated domestic carbon market, India's trajectory reflects both opportunities and challenges in aligning carbon trading with sustainable development. As a developing country with high emissions potential and extensive renewable energy resources, India stands at the intersection of climate mitigation, economic development, and social equity (TERI, 2020).

https://doi.org/10.56975/ijcrt.v13i8.292457

Table 3: India's Domestic Carbon Market Instruments

Scheme	Launched	Sector Focus	Key Metric
PAT (Perform, Achieve, and Trade)	2012	Industrial energy efficiency	17.8 $MtCO_2$ saved in PAT Cycle IV (2022)
REC (Renewable Energy Certificates)	2010	Renewable energy compliance	48 million RECs traded since inception
CCTS (Carbon Credit Trading Scheme)	2023	Nationwide emissions reductions	National carbon market under development

Sources: BEE (2023), SEBI (2023), Ministry of Power

India is expanding from sector-specific mechanisms (PAT, REC) to a comprehensive national carbon market under CCTS 2023, regulated by SEBI, aiming to unify and scale carbon trading.

5.1 Early Engagement through the Clean Development Mechanism

India was among the largest beneficiaries of CDM projects under the Kyoto Protocol. By 2012, it had registered over 1,500 CDM projects, accounting for nearly 20% of global CDM project numbers, second only to China (Kossoy & Guigon, 2012). These projects included renewable energy (wind, hydro, solar), energy efficiency, methane capture, and biomass utilization. CDM brought in substantial foreign investment and introduced carbon finance to Indian businesses.

However, the benefits were unevenly distributed. Most projects were led by private corporations in high-growth sectors, with limited community-level participation (Bond, 2012). Small-scale and rural projects struggled to access the carbon market due to high upfront costs and complex documentation requirements.

5.2 Domestic Schemes: PAT, RECs, and ESG Push

Recognizing the importance of domestic market-based mechanisms, India launched the Perform, Achieve and Trade (PAT) scheme in 2012, administered by the Bureau of Energy Efficiency (BEE). The PAT scheme covers energy-intensive sectors such as cement, steel, and aluminum, setting specific energy-saving targets for each unit. Units exceeding their targets earn Energy Saving Certificates (ESCerts), which can be traded (BEE, 2023). This is a sector-specific, intensity-based carbon market, making it distinct from cap-and-trade models.

Additionally, India introduced Renewable Energy Certificates (RECs) to promote renewable power generation and fulfill renewable purchase obligations (RPOs). The REC market, though well-intentioned, has faced issues related to liquidity, pricing, and enforcement (TERI, 2020).

https://doi.org/10.56975/ijcrt.v13i8.292457

More recently, India's regulatory bodies, including the Securities and Exchange Board of India (SEBI), have emphasized Environmental, Social, and Governance (ESG) disclosures, prompting corporations to invest in carbon offsets and cleaner technologies (SEBI, 2023).

5.3 Carbon Credit Trading Scheme, 2023

In a significant development, the Indian government notified the Carbon Credit Trading Scheme (CCTS) in 2023. This initiative aims to consolidate various emissions reduction efforts under a unified framework. It provides for the creation of a National Carbon Market, involving accreditation of carbon reduction projects, issuance of carbon credits, and their trading on recognized platforms (Ministry of Power, 2023). The framework integrates both voluntary and compliance mechanisms and aligns with global carbon pricing trends.

SEBI has been designated as the regulator for the voluntary carbon market, tasked with ensuring transparency, market integrity, and investor protection (SEBI, 2023). The Grid Controller of India Ltd. and the Central Electricity Authority will serve as technical bodies to verify projects and track reductions.

5.4 Opportunities for India

India has immense potential to generate carbon credits through renewable energy, energy efficiency, reforestation, and sustainable agriculture. Its updated Nationally Determined Contributions (NDCs) and commitment to net-zero emissions by 2070 position it as a major player in the global carbon market (UNFCCC, 2022). Emerging sectors such as electric mobility, green hydrogen, and carbon capture also open new avenues for project development.

Furthermore, India can serve as a climate justice advocate, promoting community-led carbon projects, tribal participation, and equitable revenue-sharing models. Capacity-building for rural stakeholders and robust monitoring systems will be crucial to ensure that carbon markets contribute to both mitigation and socio-economic development (TERI, 2020).

5.5 Challenges to Address

Despite its progress, India faces several challenges:

- Institutional readiness: Coordinated functioning among regulators, verifiers, and exchanges is still evolving.
- Low awareness: Many businesses and communities remain unaware of carbon finance opportunities.

https://doi.org/10.56975/ijcrt.v13i8.292457

- Standardization: Project methodologies need to be harmonized with global standards for credit acceptance.
- MRV Infrastructure: Reliable, cost-effective tools for measurement and verification are essential, especially for small-scale projects (World Bank, 2023).

Addressing these issues will determine how successfully India can transition from being a carbon credit supplier to a global leader in equitable carbon governance.

6. Challenges and Opportunities in Global and Indian Contexts

The global carbon credit market, while offering potential as a tool for climate mitigation and sustainable development, faces several interlinked challenges that hinder its scalability, environmental integrity, and inclusiveness. For India and other developing countries, these challenges are compounded by institutional limitations, low awareness, and lack of technological capacity. At the same time, there are emerging opportunities to improve governance, integrate innovation, and expand participation in a way that aligns with national development goals and global climate objectives (World Bank, 2023; Mehling, Metcalf, & Stavins, 2019).

Table 4: Voluntary Carbon Market (VCM) Growth and Projections

Year	Market Value (USD Billion)	Project Type Dominance
2015	0.5	Renewable Energy
2020	1.3	Forest & Nature-Based Offsets
2022	2.0	Forestry, Cookstoves, Blue Carbon
2030 (Projected)	50.0	Mix of tech-based and nature-based solutions

Source: McKinsey & Company (2021); Ecosystem Marketplace (2023)

The VCM is rapidly evolving, with a projected 25x growth by 2030. Nature-based and community-led projects are becoming central, offering potential for low-income and tribal participation.

6.1 Key Challenges

a) Fragmentation and Lack of Harmonization: Global carbon markets are highly fragmented. There is no unified carbon price, and trading rules vary across jurisdictions. While the Paris Agreement's Article 6 provides a foundation for coordination, implementation remains incomplete (UNFCCC, 2022). This creates uncertainty for investors and limits cross-border trading (Tuerk et al., 2009).

b) Measurement, Reporting and Verification (MRV) Gaps: Accurate MRV systems are critical for establishing the credibility of carbon credits. However, many developing countries, including India, lack

https://doi.org/10.56975/ijcrt.v13i8.292457

standardized protocols and adequate infrastructure, particularly at the grassroots level (Schneider & La Hoz Theuer, 2019). This poses a barrier for community-based or small-scale projects.

c) Additionality and Double Counting Risks: Projects must demonstrate "additionality"—that emissions reductions would not have occurred without carbon finance. Weak verification mechanisms can lead to double counting or overestimation of reductions, undermining environmental integrity (Mehling et al., 2019).

d) Equity and Inclusiveness: As noted earlier, vulnerable groups such as Indigenous communities, smallholders, and women are often excluded from the benefits of carbon trading. Without robust safeguards, carbon markets may reinforce existing social inequities rather than reduce them (Caney, 2010; Okereke, 2010).

e) Domestic Regulatory and Technical Barriers: In India, challenges include lack of market liquidity, weak enforcement of Renewable Purchase Obligations (RPOs), and low participation in REC trading. Furthermore, coordination among ministries, regulators, and market participants needs strengthening (TERI, 2020; BEE, 2023).

6.2 Emerging Opportunities

a) Digital Technologies and MRV Innovation: Emerging tools like blockchain, remote sensing, and AI-based monitoring can dramatically improve the accuracy, transparency, and cost-efficiency of MRV systems. These tools can enable real-time tracking and verification of emissions reductions, opening the door to more decentralized and inclusive market participation (World Bank, 2023).

b) Article 6 Operationalization: If effectively implemented, Article 6.4 of the Paris Agreement can provide a standardized, globally recognized framework for credit issuance and trading. It also allows for cooperative approaches under Article 6.2, offering flexibility and broader country participation (UNFCCC, 2022).

c) Integrating Co-benefits and Sustainable Development Goals (SDGs): Carbon credits can be aligned with broader development goals such as energy access, biodiversity conservation, and rural livelihoods. Standards like the Gold Standard and Plan Vivo are already embedding SDG indicators into credit certification (IETA, 2022).

d) India's Policy Momentum: The Carbon Credit Trading Scheme (2023) provides a strong legal and institutional foundation for a national carbon market in India. The alignment of this market with global standards, improved governance by SEBI, and growing interest from Indian industries in ESG compliance signal a major shift in domestic carbon governance (SEBI, 2023).

https://doi.org/10.56975/ijcrt.v13i8.292457

e) South-South Collaboration: India can lead South-South knowledge exchange on carbon market design, especially with African and Southeast Asian countries. Collaborative initiatives can promote regional carbon markets, capacity building, and technology transfer.

7. Policy Recommendations

To ensure that carbon credit trading contributes effectively to both emissions reduction and environmental justice, a comprehensive set of policy recommendations is necessary. These must address regulatory, institutional, technological, and social dimensions of carbon governance—globally and in the Indian context. A well-governed carbon market should balance efficiency, transparency, and equity, while aligning with long-term sustainability goals (Mehling, Metcalf, & Stavins, 2019; Okereke, 2010).

7.1 Strengthen Multilateral Coordination and Global Standards

There is an urgent need to harmonize carbon market rules across jurisdictions under the Paris Agreement's Article 6 framework. Global bodies such as the UNFCCC, World Bank, and International Emissions Trading Association (IETA) should work together to:

- Finalize Article 6.4 operational guidelines
- Develop standardized MRV protocols
- Support mutual recognition of credits This will enhance cross-border trading, ensure credit quality, and reduce market fragmentation (UNFCCC, 2022; World Bank, 2023).

7.2 Enhance Domestic Governance and Institutional Capacity

India should accelerate efforts to build institutional and regulatory capacity for managing its national carbon market. This includes:

- Strengthening coordination between SEBI, BEE, MoEFCC, and state governments
- Expanding the capacity of third-party verifiers and registries
- Establishing an independent market oversight body to prevent manipulation and ensure compliance (SEBI, 2023; BEE, 2023)

7.3 Promote Community Participation and Equity

To ensure equitable benefit sharing, policies must actively support the inclusion of:

- Smallholder farmers
- Tribal and Indigenous communities

https://doi.org/10.56975/ijcrt.v13i8.292457

- Women-led enterprises Incentivizing community-based projects, lowering entry barriers, and mandating local benefit-sharing mechanisms can make carbon finance more just and inclusive (Caney, 2010; Bond, 2012).

7.4 Invest in Digital MRV Infrastructure

Public-private investment in digital infrastructure—including blockchain registries, AI-powered monitoring, and satellite-based verification—can lower the cost of credit certification and improve transparency. These tools are especially important for scaling up small-scale and distributed projects, such as agroforestry or rural solar initiatives (World Bank, 2023).

7.5 Link Carbon Markets with Sustainable Development Goals

Carbon market design should be aligned with national development priorities and SDGs, ensuring that projects not only reduce emissions but also:

- Improve health outcomes
- Conserve biodiversity
- Generate local employment Adopting co-benefit metrics in credit certification—similar to the Gold Standard—can ensure long-term social and environmental gains (IETA, 2022).

7.6 Support Regional and South-South Cooperation

India should promote regional carbon market cooperation with other developing nations, particularly in Asia and Africa. This can include:

- Joint capacity-building programs
- Regional project registries
- South-South climate finance platforms Such initiatives would help distribute market benefits more equitably and reduce dependency on Northern markets and methodologies (TERI, 2020).

8. Conclusion:

Carbon credit trading has evolved into a pivotal mechanism for addressing climate change through market-based solutions. However, its effectiveness depends not only on environmental impact but also on equity and inclusivity. Ensuring fair participation, benefit-sharing, and transparency—especially for developing countries like India—is essential for transforming carbon markets into tools of climate justice. With the right governance, technology, and policy support, these markets can align emissions reduction with sustainable development goals. India's emerging carbon market reforms and global

https://doi.org/10.56975/ijcrt.v13i8.292457

cooperation under Article 6 of the Paris Agreement present a timely opportunity to reshape carbon trading from a financial mechanism into an equitable climate solution.

References

1. Bureau of Energy Efficiency (BEE). (2023). Perform, Achieve and Trade (PAT) Scheme. https://beeindia.gov.in/content/pat
2. Bond, P. (2012). Politics of climate justice: Paralysis above, movement below. University of KwaZulu-Natal Press.
3. Caney, S. (2010). Climate change and the duties of the advantaged. Critical Review of International Social and Political Philosophy, 13(1), 203–228. https://doi.org/10.1080/13698230903326331
4. Dooley, K., & Kartha, S. (2018). Land-based negative emissions: Risks for climate mitigation and impacts on sustainable development. International Environmental Agreements: Politics, Law and Economics, 18(1), 79–98. https://doi.org/10.1007/s10784-017-9382-9
5. Intergovernmental Panel on Climate Change (IPCC). (2022). Climate Change 2022: Mitigation of Climate Change. Contribution of Working Group III to the Sixth Assessment Report. https://www.ipcc.ch/report/ar6/wg3/
6. International Emissions Trading Association (IETA). (2022). The World's Carbon Markets: A Case Study Guide to Emissions Trading. https://www.ieta.org
7. Kossoy, A., & Guigon, P. (2012). State and Trends of the Carbon Market 2012. World Bank. https://documents.worldbank.org/en/publication/documents-reports/documentdetail/164241468178754790/state-and-trends-of-the-carbon-market-2012
8. Mehling, M. A., Metcalf, G. E., & Stavins, R. N. (2019). Linking climate policies to advance global mitigation. Science, 359(6379), 997–998. https://doi.org/10.1126/science.aar5980
9. Ministry of Power, Government of India. (2023). Carbon Credit Trading Scheme, 2023. https://powermin.gov.in
10. Okereke, C. (2010). Climate justice and the international regime. Wiley Interdisciplinary Reviews: Climate Change, 1(3), 462–474. https://doi.org/10.1002/wcc.52
11. Schneider, L., & La Hoz Theuer, S. (2019). Environmental integrity of international carbon market mechanisms under the Paris Agreement. Climate Policy, 19(3), 386–400. https://doi.org/10.1080/14693062.2018.1521332
12. Securities and Exchange Board of India (SEBI). (2023). Framework for Carbon Credit Trading in India. https://www.sebi.gov.in
13. Stavins, R. N. (2008). A meaningful U.S. cap-and-trade system to address climate change. Harvard Environmental Law Review, 32(2), 293–371.
14. TERI. (2020). India's Progress in Climate Action: Achievements and Opportunities. The Energy and Resources Institute. https://www.teriin.org

https://doi.org/10.56975/ijcrt.v13i8.292457

15. Tuerk, A., Mehling, M., Flachsland, C., & Sterk, W. (2009). Linking carbon markets: Concepts, case studies and pathways. Climate Policy, 9(4), 341–357. https://doi.org/10.3763/cpol.2009.0621
16. United Nations Framework Convention on Climate Change (UNFCCC). (1998). Kyoto Protocol to the United Nations Framework Convention on Climate Change. https://unfccc.int/kyoto_protocol
17. UNFCCC. (2015). The Paris Agreement. https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement
18. UNFCCC. (2022). Guidance on cooperative approaches referred to in Article 6.2 of the Paris Agreement. https://unfccc.int/documents
19. World Bank. (2023). State and Trends of Carbon Pricing 2023. https://openknowledge.worldbank.org/handle/10986/39755