

“A ANALYTICAL STUDY OF INDIA’S CARBON MARKET AND THEIR MECHANISM”

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Abstract:

India’s Carbon market is a developing framework aimed at reducing greenhouse gas emissions by creating a system where companies can trade emission permits or offsets, this market incentivizes industries to lower their carbon footprints and contributes to India’s commitment to achieving net zero emissions by 2070. The key mechanisms include the Emission Trading Scheme (ETS) which focuses on energy efficiency and allows trading of Energy Saving Certificate (ESCerts), and the Renewable Energy Certificate (REC) market that promotes renewable energy usage. Additionally, India participates in Voluntary Carbon markets through carbon offset project.

Challenges include regulatory fragmentation, market liquidity issues, and low awareness, especially among smaller businesses. However, a robust carbon market in India has the potential to attract investment in green technologies, contribute to net-zero goals, and integrate with global carbon trading systems. By establishing a transparent and scalable market structure, India aims to foster sustainable practices across industries while supporting global climate change mitigation efforts.

Keywords : Climate change, Carbon credit, GHG (Green House Gases), PAT (Perform, Achieve and Trade), RECs (Renewable Energy Certificates).

Introduction:

India’s carbon market is a developing framework aimed at reducing greenhouse gas emissions and supporting the country’s commitment to addressing climate change. Established through a combination of policy mechanisms, Voluntary initiatives, and international agreements, the market allows businesses, industries, and other entities to trade emission allowances and carbon credits. These credits correspond to the reduction or removal of one metric ton of carbon dioxide or equivalent greenhouse gases from the atmosphere, aligning India’s economic growth with sustainable environmental practices.

India’s carbon market concept took root as part of global climate agreements, including the Kyoto protocol and the Paris Agreement. The market aligns with India’s Nationally Determined Contributions (NDCs) under the Paris Agreement, which commit to reducing the emissions intensity of it’s GDP by 33-35 by 2030, compared to 2005 levels, and increasing renewable energy capacity in addition, India has set a long-term goal of achieving net-zero carbon emission by 2070.

The carbon market in India currently functions through a blend of Compliance and Voluntary



mechanisms.

1. **Compliance Mechanisms** : These are regulatory frameworks mandating emission reduction in specific sectors. The Perform, Achieve, and Trade (PAT) scheme is one of the primary initiatives, targeting large energy-intensive industries with sector-specific energy consumption goals.
2. **Voluntary Carbon Market (VCM)** : This market allows entities not regulated by emission mission mandates to participate in carbon trading. Many Indian companies, especially in renewable energy, participate in the Voluntary market by generating carbon credit through renewable energy or afforestation projects and selling them to other companies or countries looking to offset emissions.

India has also been major supplier of carbon credits globally, especially through the Clean Development Mechanism (CDM), and has plans for a national carbon market to integrate and regulate carbon trading more systematically. This proposed national market aims to units compliance and voluntary carbon markets under a single framework, enhancing transparency, participation and environmental impact.

Research Methodology :

A research methodology is the way of defining activity of research. In this research, convenience sampling method will be used to collect information. The data can be collected India emerging sector, International Carbon credit trading growing sector, India's carbon credit trading sector, India's seller and purchaser companies etc.

The main population (Scope) of this research is entire part of India. The basic research tool's is questionnaire and research took convenient and random sampling method.

Review of Literature :

Carbon credit concept is very new for India. Some research papers are published on this topic. Research paper published on 2016, by Trivedi S. in this research paper explained about greenhouse gas or carbon market.

Malav M.K, Kumar S. Malav L.C, and Kharia s. (2015) describe some articles about carbon credit trading.

Moukwa M. (2015) explain in his article about the enlisting market forces to the combat climate change in Carbon Credits Trading.

Sthuraman N.R.(2014) explained about the carbon credit trading market and he also talked about the role of various solution providers.

Objectives of Research :

1. To study rules and regulation set by government of India regarding carbon credit.
2. To study current scenario of carbon credit market in India.
3. To study emission reduction target set by authority.

Hypothesis of Research :

1. Government of India trying to regularize carbon credit market in India.
2. Carbon credit market has potentials to growth in India.
3. Government is serious about reduction of emission.

An analytical study of India's carbon market and its mechanisms would examine how India approaches carbon trading as part of its strategy to mitigate climate change here's a breakdown of key aspects to consider:

Overview of Carbon Markets :

Carbon markets are systems through which countries, companies, or entities can trade carbon emission allowances or credits. They are a part of the global efforts to reduce greenhouse gas emissions, as per commitments like the Kyoto protocol and the Paris Agreement.

India's Climate Commitments and Policies :

1. **Nationally Determined Contributions (NDCs) :** India has set ambitious NDCs to reduce its emissions intensity by 33-35% from 2005 levels by 2030 and aims to achieve net-zero emissions by 2070.
2. **Paris Agreement Compliance :** India's commitment to the Paris Agreement involves reducing carbon intensity and increasing renewable energy capacity.
3. **National Action Plan on Climate Change (NAPCC) :** includes eight missions targeting solar energy, energy efficiency, and sustainable agriculture.

Types of Carbon Market in India:

- **Compliance Market :** This market is government regulated, Primarily driven by policies and law's mandating industries to cap or reduce emissions.
- **Voluntary Carbon Market (VCM) :** Operates independently from government mandates, allowing companies or individuals to voluntarily offset emissions, often by investing in carbon offset projects.

India's Key Carbon Market Mechanisms :

- **Perform, Achieve, and Trade (PAT) Scheme :** Managed by the Bureau of Energy Efficiency (BEE), this scheme targets large energy intensive industries by setting sector-specific energy reduction targets.
- **Carbon Credits and Offsets :** Many Indian companies, particularly in renewable energy, generate carbon credits for export to international markets. India has been a large supplier of carbon credits under the Clean Development Mechanism (CDM).
- **Proposed National Carbon Market :** India is working toward establishing a unified national carbon market to standardize and regulate emissions trading across sectors.

Challenges in India's Carbon Market :

- 1 **Regulatory Hurdles :** Establishing a Comprehensive carbon market has regulatory challenges, such as sector-specific emission caps.



2. **Market Transparency** : Ensuring transparency and fair pricing is essential for the success of carbon markets.
3. **Low Awareness and Participation** : Limited awareness and participation, especially among smaller enterprises.
4. **Global Demand Fluctuation** : International demand for carbon credits can impact market stability,

Benefits and Opportunities :

1. **Emission Reduction and Economic Growth** : A structured carbon market could significantly reduce emissions while boosting green economic growth.
2. **Investment Attraction** : A carbon market can attract investments in low-carbon technologies.
3. **Sustainable Development Goals (SDGs)** : India's carbon market supports SDGs, particularly goals related to climate action, sustainable cities, and responsible consumption.
4. **Future Prospects** : India's carbon market will likely evolve with the establishment of a unified national carbon exchange, facilitating larger and more diverse participation across sectors. Additionally, India's growing renewable sector and net-zero commitments will drive carbon market expansion, positioning it as a significant player in the global carbon trading ecosystem.

Conclusion :

India's carbon market is a promising step toward balancing economic growth with sustainable development. Through mechanism like cap-and-trade and carbon credit trading, it provides a structured way for industries to reduce emissions while offering financial incentives for those who invest in cleaner, low-carbon technologies. This market supports India's larger climate goals, including the target of reaching net-zero emissions by 2070 and meeting interim Nationally Determined Contributions (NDCs) under the Paris Agreement.

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