

# How the Indian Carbon Credit Trading Scheme (CCTS) Compliance Mechanism Works:

## A Step-by-Step Whitepaper



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# Executive Summary

India's Carbon Credit Trading Scheme (CCTS) establishes a national, compliance-based carbon market aimed at reducing greenhouse gas (GHG) emissions from energy-intensive industries while preserving economic growth. Operational from FY 2026, CCTS introduces emissions-intensity targets, tradable Carbon Credit Certificates (CCCs), and financial penalties for non-compliance. This whitepaper provides a clear, step-by-step explanation of how the CCTS compliance mechanism functions in practice—from sector notification and baseline setting to trading, penalties, and future tightening cycles.

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# Regulatory and Institutional Architecture

CCTS is governed through a multi-layered institutional framework:

- Policy Authority: Central Government (notification of scheme and rules)
- Scheme Administrator: Bureau of Energy Efficiency (BEE)
- Market Regulator: Central Electricity Regulatory Commission (CERC)
- Trading Platforms: Designated power exchanges
- Verification Layer: Accredited Carbon Verification Agencies (ACVAs)

This structure ensures separation between rule-making, market oversight, trading, and verification—critical for credibility and market integrity.

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# Step 1 – Identification of Obligated Entities

## 1. Sector Notification

The government notifies sectors covered under CCTS. In Phase 1, nine energy-intensive sectors are included (e.g., cement, aluminum, iron & steel, refineries).

## 2. Facility Shortlisting

Within each sector, individual facilities are designated as “obligated entities” based on criteria such as: - Energy consumption thresholds - Production capacity - Historical inclusion under PAT Each obligated entity receives a formal compliance notification.

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# Step 2 – Defining the Emissions Boundary

## 1. Gate-to-Gate Coverage

Compliance is assessed on a gate-to-gate basis, covering emissions generated within the facility boundary.

## 2. Emissions Scope

- **Scope 1:** Direct fuel combustion and process emissions
- **Scope 2:** Purchased electricity.
- **Select Scope 3:** Included only where standardized and measurable

This boundary balances environmental integrity with practical measurability.

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# Step 3 – Baseline Emissions & Output Determination

## 1. Baseline Year

FY 2023–24 serves as the baseline year for Phase 1.

## 2. Data Submission

**Facilities submit verified data on:** - Total GHG emissions (tCO<sub>2</sub>e) - Total production/output (sector-specific units),

## 3. Baseline GEI Calculation

**Baseline GHG Emissions Intensity (GEI) is calculated as:**

$GEI = \text{Total GHG Emissions (tCO}_2\text{e)} \div \text{Total Output}$

This baseline becomes the reference point for future compliance.

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# Step 4 – Setting Emissions Intensity Targets

## 1. Target Allocation

**BEE sets facility-specific GEI reduction targets based on:** - Sectoral benchmarks - Technology availability - Historical performance

## 2. Compliance Periods

Targets are assigned for defined compliance cycles (e.g., FY 2025–26 to FY 2026–27).

Targets are intensity-based, not absolute—allowing production growth while incentivizing efficiency.

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# Step 5 – Monitoring, Reporting, and Verification (MRV)

## 1. Continuous Monitoring

**Facilities monitor:** - Fuel use - Electricity consumption - Process emissions - Production volumes

## 2. Annual Reporting

At the end of each compliance year, entities submit emissions and output data through prescribed reporting formats.

## 3. Third-Party Verification

### **Accredited Carbon Verification Agencies**

**(ACVAs):** - Audit data accuracy - Validate emissions calculations - Issue verification statements.

Only verified data is eligible for compliance assessment.

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# Step 6 – Compliance Assessment

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## 1. Actual vs Target GEI

**BEE compares:** - Actual GEI achieved during the period - Target GEI assigned to the facility.

## 2. Compliance Outcomes

**Two outcomes are possible:**

1. Over-achievement (Actual GEI < Target GEI)

2. Under-achievement (Actual GEI > Target GEI)

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# Step 7 – Issuance of Carbon Credit Certificates (CCCs)

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## 1. Eligibility

Facilities that over-achieve their targets become eligible for CCCs.

## 2. CCC Quantification

The number of CCCs issued corresponds to the volume of emissions avoided (tCO<sub>2</sub>e) relative to the target.

## 3. CCC Characteristics

- Each CCC represents 1 tCO<sub>2</sub>e
- Digitally issued and tracked
- Bankable for future compliance periods



# Step 8 – Carbon Credit Trading

## 1. Trading Platforms

CCCs are traded on designated power exchanges under regulatory oversight.

## 2. Market Participants

- Obligated entities (buyers/sellers)
- Voluntary participants (where permitted)

## 3. Price Discovery

**CCC prices are market-determined based on: -**

Demand from under-compliant entities - Supply from over-achievers - Expectations of future target tightening

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# Step 9 – Managing Non-Compliance

## 1. Credit Purchase Option

Under-performing entities may purchase CCCs to offset their compliance gap.

## 2. Financial Penalty

**If an entity fails to surrender sufficient CCCs:**

- A monetary penalty is imposed
- Penalty rate =  $2 \times$  the average CCC trading price (as notified)

This ensures buying credits is always cheaper than ignoring compliance.

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# Step 10 – Banking and Carry-Forward

**A key design feature of CCTS is unlimited banking:**

- Surplus CCCs can be saved for future cycles
- Provides hedge against tighter future targets
- Rewards early and deep decarbonization

Banking creates long-term strategic value beyond short-term compliance.

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# Step 11 – Periodic Review and Target Tightening

## 1. Review Cycle

**Approximately every three years: -**

- Sectoral benchmarks are reviewed - Targets are recalibrated

## 2. Progressive Ambition

**Each cycle increases stringency, aligning CCTS with: -**

- National climate commitments - Net-zero by 2070 trajectory
- This ensures CCTS evolves from an efficiency tool into a deep-decarbonization driver.

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# Strategic Implications for Industry

- Early movers gain surplus credits and financial upside
- Late movers face rising compliance costs
- Internal abatement increasingly outcompetes credit purchases over time

CCTS converts carbon management from a regulatory obligation into a core business strategy.

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# Conclusion

The Indian CCTS compliance mechanism follows a clear, sequential logic:

- Notify sectors and entities
- Define boundaries and baselines
- Set intensity targets
- Monitor, report, and verify
- Assess performance
- Issue or require CCCs
- Enable trading or impose penalties
- Tighten ambition over time

By combining regulatory certainty with market flexibility, CCTS provides India with a scalable pathway to industrial decarbonization rewarding efficiency, penalizing inaction, and embedding carbon into long-term corporate decision-making.

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# ESGPro Mastery Institute

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## Contact

Our HQ:  
104 ShareSpace, #88, Palm Meadows,  
Borewell Road Whitefield, Bengaluru,  
560066, India  
+91 9611 71 7149

