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EDITORIAL ANALYSIS

India's Carbon Credit Market — ₹20,000 Crore Budget, but Is It Solving the Right Problem?

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Business Standard

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GS3

BS Business Standard

 MAINS RELEVANCE: **GS Paper 3**


INTERVIEW ANGLE

"How can India design a carbon market that serves both industrial decarbonisation and equity goals for farmers and rural communities?"

WHY IN NEWS

Union Budget 2026-27 allocated ₹20,000 crore for India's carbon credit scheme, primarily directed at industrial Carbon Capture, Utilisation and Storage (CCUS) pilots in steel, cement, and chemicals — a design choice that has drawn criticism for sidelining nature-based solutions and missing an opportunity to integrate rural livelihoods with climate finance.

A MARKET WITH A MANDATE PROBLEM

India's Carbon Credit Trading Scheme (CCTS), notified under the Energy Conservation (Amendment) Act 2022, represents a genuine institutional step forward. For the first time, India has a statutory basis for a domestic carbon market — one that moves beyond the voluntary, fragmented, and largely donor-driven offset projects that characterised the previous decade. The Budget's ₹20,000 crore commitment signals that the government is treating carbon pricing as a serious policy instrument, not a diplomatic talking point.

And yet the design choices embedded in both the CCTS architecture and the Budget allocation reveal a scheme that is better calibrated to placate heavy industry than to build a carbon market that is functional, credible, and equitable. The concentration of resources on industrial CCUS — a technology that remains expensive, unproven at scale in Indian conditions, and years from commercial viability — raises legitimate questions about whether the public money is being directed at near-term emissions reduction or at a technology subsidy dressed in climate language.

WHAT THE CCTS ACTUALLY DOES

The Carbon Credit Trading Scheme is notified under Section 14A of the Energy Conservation Act, as amended in 2022. It designates the Bureau of Indian Standards (BIS) as the registry and accreditation body for carbon credits, and tasks the Bureau of Energy Efficiency (BEE) — under the Ministry of Power — with implementing the scheme alongside the existing Perform, Achieve and Trade (PAT) mechanism.

PAT, running since 2012-13, is India's most established carbon-adjacent trading scheme. It covers approximately 1,000 Designated Consumers (DCs) — large industrial units in sectors like aluminium, cement, textiles, paper, and railways — setting energy intensity targets and allowing those who over-achieve to sell Energy Saving Certificates (ESCCerts) to those who under-achieve. PAT is, in essence, a white certificate market for energy efficiency, not a carbon market proper. The CCTS is meant to create the carbon credit layer that sits above or alongside PAT.

The distinction matters because the two instruments have different price signals, different verification rigour, and different implications for who benefits. PAT has generated activity but has also been criticised for target-setting that is too lenient to drive genuine efficiency investment. Layering a carbon credit market on an energy efficiency scheme with weak baselines risks creating a market that generates paper credits without real emissions reductions — a problem that plagued the early years of the European Union Emissions Trading System and ultimately destroyed the Clean Development Mechanism's credibility.

THE CDM LESSON INDIA HAS NOT LEARNED

India's history with carbon markets under the Kyoto Protocol's Clean Development Mechanism (CDM) is instructive. India was the world's second-largest host of CDM projects after China, earning hundreds of millions in Certified Emission Reduction (CER) credits. The revenue was real; the additionality — whether the projects would not have happened without carbon finance — was frequently not.

When the European Union stopped accepting CDM credits in its Emissions Trading System after 2012, the CDM market collapsed overnight. India's project developers, many of whom had built business models around CER revenue, were left stranded. The lesson was not that carbon markets are inherently fraudulent, but that a carbon market whose demand is entirely dependent on external buyers and external policy choices is not a market — it is a transfer mechanism vulnerable to unilateral disruption.

The CCTS's current design does not fully reckon with this lesson. The domestic demand for credits is still unclear: which entities are obligated to purchase credits, at what floor price, under what penalty for non-compliance? Without mandatory demand, the "market" is a registry with a price of zero.

THE BUDGET'S CCUS BET

The ₹20,000 crore allocation for carbon credits in Budget 2026-27 is overwhelmingly focused on industrial CCUS pilots — Carbon Capture, Utilisation and Storage in steel, cement, and chemical manufacturing. The rationale is that these hard-to-abate sectors cannot decarbonise through renewable energy alone; they require either process redesign (green hydrogen in steel, for instance) or carbon capture at the stack.

This is technically correct. But CCUS at commercial scale in India remains a distant prospect. The technology requires geological storage sites, dense CO₂ pipeline infrastructure, and ongoing monitoring capacity — none of which India has mapped or developed at meaningful scale. Directing ₹20,000 crore toward CCUS pilots before the enabling infrastructure exists is a bet on a technology trajectory that may not pay off within the current NDC cycle.

Meanwhile, the Budget allocates negligible resources to nature-based carbon solutions — afforestation, wetland restoration, soil carbon sequestration — despite India's NDC explicitly counting forest carbon sinks toward its 2030 targets. More critically, the farmer carbon credit model, which several state governments and private aggregators have been piloting, receives no national policy framework or public finance support.

THE MISSED OPPORTUNITY: FARMER CARBON CREDITS

Soil carbon sequestration through regenerative agriculture practices — zero-tillage, cover cropping, agroforestry — can be measured, monitored, and credited at the farm level using satellite and IoT-based measurement, reporting, and verification (MRV) tools that are now commercially available. India's agricultural land area of approximately 140 million hectares represents a significant potential carbon sink.

More importantly, farmer carbon credits can do something that industrial CCUS cannot: create an income stream for small and marginal farmers that rewards climate-positive land management. In a country where over 80 per cent of farmers hold less than two hectares, a well-designed farmer carbon credit programme could simultaneously advance India's NDC commitments and provide supplementary rural income — a genuine co-benefit.

The Budget's silence on this opportunity is not a minor omission. It reflects a design philosophy that treats decarbonisation as an industrial engineering problem rather than a whole-economy transition that must account for equity.

WHAT A CREDIBLE DESIGN LOOKS LIKE

Three corrections to the current trajectory would significantly improve the scheme's prospects. First, the CCTS must establish mandatory compliance demand — specific industrial sectors must be required to surrender credits for verified emissions above their allocated baseline, with credible penalties for non-compliance. Without this, there is no market.

Second, the ₹20,000 crore should be split: a portion for CCUS technology pilots (with strict additionality verification and sunset clauses), a portion for nature-based solutions MRV infrastructure, and a dedicated allocation for a national farmer carbon credit aggregation platform.

Third, India must engage seriously with Article 6 of the Paris Agreement — both Article 6.2 (bilateral carbon trading) and Article 6.4 (the multilateral mechanism that succeeded the CDM) — to ensure that domestic carbon credits can eventually access international demand without repeating the CDM’s additionality failures.

The carbon credit scheme is a test of whether India’s climate governance can graduate from aspiration to architecture. The Budget’s ₹20,000 crore creates the opportunity. The design must not squander it.

UPSC RELEVANCE

CCTS, Energy Conservation (Amendment) Act 2022, PAT scheme, BEE, BIS, CDM, CER, Article 6 of Paris Agreement, CCUS, ESCerts.

MAINS GS-3:

Carbon markets and climate finance architecture; India’s NDC commitments; Perform Achieve and Trade (PAT) scheme; farmer income and rural livelihood linkages with climate policy; international carbon trading under Paris Agreement.

★ FACTS CORNER — KNOWLEDGEPEDIA
INDIA'S CARBON CREDIT TRADING SCHEME (CCTS):

Notified under Section 14A of the Energy Conservation Act (inserted by Energy Conservation Amendment Act, 2022)

Registry body: Bureau of Indian Standards (BIS) — under Ministry of Consumer Affairs

Implementing agency: Bureau of Energy Efficiency (BEE) — under Ministry of Power

Runs alongside the existing PAT (Perform, Achieve and Trade) scheme

PAT (PERFORM, ACHIEVE AND TRADE) SCHEME:

Launched: 2012-13 (Cycle I)

Designated Consumers (DCs): approximately 1,000 large industrial units

Sectors covered: aluminium, cement, textiles, paper, fertilisers, iron & steel, railways, chlor-alkali, and others

Tradable instrument: Energy Saving Certificates (ESCerts)

Administered by: Bureau of Energy Efficiency (BEE)

BUDGET 2026-27 — CARBON CREDIT ALLOCATION:

Total allocation: ₹20,000 crore

Primary focus: Industrial CCUS (Carbon Capture, Utilisation and Storage) pilots in steel, cement, chemicals

Critics: neglects nature-based solutions and farmer carbon credits

CLEAN DEVELOPMENT MECHANISM (CDM) — HISTORICAL CONTEXT:

Established under Kyoto Protocol

India: 2nd largest CDM host country (after China)

Tradable unit: Certified Emission Reductions (CERs)

Collapse: EU stopped accepting CDM credits in its ETS after 2012; CDM market price fell from ~€15/tonne to near zero

Lesson: Domestic carbon market must have domestic mandatory demand, not solely rely on external buyers

PARIS AGREEMENT — CARBON MARKET ARTICLES:

Article 6.2: Bilateral/plurilateral carbon trading between countries using Internationally Transferred Mitigation Outcomes (ITMOs)

Article 6.4: UN-administered multilateral carbon mechanism (successor to CDM under Kyoto Protocol); rules finalised at COP29 (Baku, 2024)

India's position: active negotiator on Article 6 rules; seeks to protect sovereignty over ITMO transfers

INDIA'S NDC COMMITMENTS (UPDATED, 2022):

45% reduction in emissions intensity of GDP by 2030 (vs 2005 baseline)

500 GW installed non-fossil fuel power capacity by 2030

50% of cumulative electricity from non-fossil fuel sources by 2030

Net zero target: 2070

Forest and tree cover carbon sink: additional 2.5–3 billion tonnes CO₂ equivalent by 2030

CCUS (CARBON CAPTURE, UTILISATION AND STORAGE):

Targets hard-to-abate sectors: steel, cement, chemicals, refining

Requires: geological CO₂ storage sites, pipeline infrastructure, MRV systems

Current status in India: early-stage pilot; no commercial-scale deployment

Global cost: USD 50–100+ per tonne CO₂ captured (higher than most carbon credit prices)

OTHER RELEVANT FACTS:

India's agricultural land: approximately 140 million hectares — significant soil carbon sequestration potential

Soil carbon sequestration through zero-tillage and agroforestry is measurable using satellite + IoT-based MRV tools

Over 80% of Indian farmers are small and marginal (less than 2 hectares); farmer carbon credits could supplement agricultural income

European Union ETS (Emissions Trading System): world's largest mandatory carbon market; launched 2005; price in 2024 ~€55–65/tonne CO₂

India's voluntary carbon market: previously operated through Verra VCS (Verified Carbon Standard) and Gold Standard registries; mostly afforestation and cookstove projects

Quality Council of India (QCI): parent body of NABH; also involved in accreditation frameworks for BIS-linked quality schemes

Sources: Business Standard, PIB

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