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India's Patchy Industrial Climate Strategy: Closing the Coverage Gaps in PAT, CCTS and the Road to Net-Zero

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 **The Hindu** 24 June 2026 **GS3**

Source: ujyari.com — researched, fact-checked & UPSC-mapped



INTERVIEW ANGLE

"Should India make carbon pricing mandatory and economy-wide, or will a sector-by-sector compliance market better suit a developing economy still pursuing growth and industrialisation?"

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WHY THIS EDITORIAL MATTERS

India has placed an ambitious bet on the global climate stage. At COP26 in Glasgow in 2021, the Prime Minister announced the Panchamrit (<https://ujyari.com/terms/panchamrit-climate-goals/>), five commitments that culminate in net-zero emissions by 2070. Translating that pledge into reality depends overwhelmingly on what happens inside India's factories, furnaces and kilns. The Hindu's editorial makes an uncomfortable but essential point: the country's industrial climate strategy is patchy. A large share of industrial emissions sits in poorly-defined, non-specific or unclassified industries that fall outside the reach of the instruments meant to drive decarbonisation. If the coverage gaps are not closed, the net-zero target risks becoming an aspiration that the policy machinery cannot actually deliver.

A climate target is only as strong as the share of emissions its instruments can actually measure, price and reduce. India's problem is not the absence of carbon policy, but the emissions that slip through the cracks between policies.

THE ARCHITECTURE: HOW INDIA CURRENTLY GOVERNS INDUSTRIAL EMISSIONS

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To assess the gaps, an aspirant must first hold the architecture clearly in mind. India does not yet have a single, economy-wide carbon price. Instead it runs a layered set of instruments, each with a different legal basis, metric and coverage.

PAT: The Energy-Efficiency Foundation

The Perform, Achieve and Trade (PAT) scheme is the older pillar. It is administered by the Bureau of Energy Efficiency (BEE), the **statutory** (<https://ujjiyari.com/vocab/statutory/>) body created under the Energy Conservation Act, 2001, under the Ministry of Power. PAT assigns specific energy-consumption reduction targets to designated consumers in energy-intensive sectors. Units that overachieve earn tradable Energy Saving Certificates (ESCs); those that fall short must buy them.

The crucial conceptual point: PAT measures **energy intensity**, not absolute greenhouse-gas emissions. It rewards using less energy per unit of output, which is valuable, but a unit can improve energy efficiency while its total emissions still rise as production grows. PAT also covers only a defined list of designated consumers, leaving large parts of the industrial base untouched.

CCTS: The Shift to a Carbon Market

The Carbon Credit Trading Scheme (CCTS) is the newer and more ambitious instrument. Its legal foundation is the Energy Conservation (Amendment) Act, 2022, which empowered the government to establish a carbon market and issue Carbon Credit Certificates (CCCs). The CCTS itself was notified in 2023.

CCTS marks a decisive shift from energy intensity to **greenhouse-gas emission intensity**, that is, emissions per unit of output. It is designed with two limbs: a **compliance mechanism**, under which obligated entities must meet emission-intensity benchmarks, and an **offset mechanism**, under which non-obligated entities can earn credits for voluntary **mitigation** (<https://ujjiyari.com/vocab/mitigation/>). Governance sits with the National Steering Committee for the Indian Carbon Market, co-chaired by the Ministry of Power and the Ministry of Environment, Forest and Climate Change (MoEFCC), with BEE as administrator. In its early compliance phase, however, CCTS will cover only around 800 industrial units across roughly nine sectors.

The Green Credit Programme

Running alongside is the Green Credit Programme (<https://ujjiyari.com/schemes/green-credit-programme/>) (GCP), a voluntary, market-based mechanism notified by MoEFCC in 2023. It incentivises positive environmental actions such as tree plantation, water conservation and sustainable agriculture. It is conceptually distinct from carbon credits, and the editorial's deeper worry is that these instruments are not yet harmonised into one coherent system.

THE CORE ARGUMENT: WHERE THE EMISSIONS HIDE

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INSTRUMENT	LEGAL BASIS	METRIC	COVERAGE
PAT	Energy Conservation Act, 2001 (BEE)	Energy intensity	Designated consumers, select sectors
CCTS	EC (Amendment) Act, 2022 (notified 2023)	GHG emission intensity	~800 units, ~9 sectors initially
Green Credit Programme	EC (Amendment) Act, 2022 (notified 2023)	Environmental actions	Voluntary, eight activity categories

The editorial's central claim is that the sum of these instruments still leaves a yawning gap. A substantial share of industrial emissions originates in industries classified as "non-specific" or "unclassified" in official accounting, a residual category that captures the long tail of smaller and diverse units. These units are precisely the ones least likely to be designated consumers under PAT or obligated entities under CCTS. The result is a strategy that looks comprehensive on paper but, in emissions terms, polices only a fraction of the problem.

How to Think About This

When you analyse any carbon-pricing system, run a three-part test:

- 1 **Coverage**, what proportion of total emissions falls within the instrument's scope?
- 2 **Stringency**, how tight are the benchmarks, and do they ratchet (<https://ujjiyari.com/vocab/ratchet/>) down over time?
- 3 **Metric integrity**, is the system measuring the right thing (absolute emissions or true emission intensity, not merely energy use)?

India's frameworks score reasonably on emerging design but poorly on coverage. The unclassified-industries problem is fundamentally a coverage failure, and coverage is the variable that most directly determines whether a target is reachable.

THE HARD-TO-ABATE CHALLENGE

The coverage gap is sharpened by the nature of the sectors involved. Steel and cement are the archetypal **hard-to-abate** sectors: their emissions come not only from energy use but from the chemistry of the process itself (for example, the calcination of limestone in cement releases CO₂ regardless of the fuel used). Globally, iron, steel and cement together account for roughly a fifth of carbon emissions. For these sectors, efficiency

tweaks alone cannot reach deep cuts; they need green hydrogen, electrification of heat, and Carbon Capture, Utilisation and Storage (CCUS). A carbon market that does not firmly obligate and adequately support these sectors will not move the needle on India's hardest emissions.

THE COUNTER-VIEW: WHY A PHASED APPROACH IS DEFENSIBLE

A balanced answer must engage the strongest case for the status quo. A developing economy cannot simply switch on an economy-wide carbon price overnight.

- **Data and MRV first.** Pricing carbon requires credible Monitoring, Reporting and Verification (MRV) and defensible baselines. Extending obligations to thousands of small, unclassified units before that capacity exists would produce unreliable credits and legal disputes.
- **Carbon-leakage and competitiveness risk.** A premature, stringent mandate (<https://ujiyari.com/vocab/mandate/>) could push energy-intensive production abroad or burden firms facing the EU's Carbon Border Adjustment Mechanism, without cutting global emissions.
- **Growth and equity.** India's per-capita emissions remain low, and the country legitimately prioritises industrialisation and energy access. A phased rollout, learning from PAT's limitations, is a reasonable sequencing choice rather than a failure of will.

The honest verdict is that phasing is justified, but the pace and the eventual destination matter. A phase-in that never widens its coverage is indistinguishable from neglect.

WAY FORWARD: STITCHING THE PATCHWORK TOGETHER

- 1 **Widen CCTS coverage progressively** to the unclassified and MSME-heavy segments, with simplified compliance pathways and capacity support so smaller units can participate.
- 2 **Strengthen MRV and baselines** with digital monitoring, third-party verification and sector-specific emission factors, the foundation of any credible carbon price.
- 3 **Harmonise the instruments** so that PAT, CCTS and the Green Credit Programme interlock rather than overlap, with clear rules on transition from ESCerts to Carbon Credit Certificates.
- 4 **Back the hard-to-abate sectors** through the National Green Hydrogen Mission, CCUS deployment, and green public procurement that creates demand for low-carbon steel and cement.
- 5 **Build a credible price signal** with a floor price and predictable benchmark trajectory (<https://ujiyari.com/vocab/trajectory/>), giving industry the long-horizon certainty needed for capital-intensive decarbonisation investment.

DIAGRAM IN WORDS

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Picture India's industrial emissions as a large reservoir. PAT draws from one channel (energy-intensive designated consumers), CCTS from another, newer channel (nine sectors, ~800 units), and the Green Credit Programme from a small voluntary stream. Between and beyond these channels lies a wide, untapped basin labelled "unclassified industries." Net-zero by 2070 requires draining the whole reservoir; today's instruments are pumping from only a few corners of it.

UPSC RELEVANCE AND PYQ LINKAGE

This editorial maps squarely onto **GS Paper 3** (environment and economy) and connects to ethics-flavoured GS3 debates on intergenerational (<https://ujjiyari.com/vocab/intergenerational/>) equity. It is a strong source of examples for questions on carbon markets, energy efficiency and India's climate commitments.

- **2023 (GS3):** "Explain the purpose of the Green Grid Initiative... What are the main constraints in the development of solar and wind energy in India?", use CCTS and PAT as the demand-side, industrial counterpart to such supply-side renewable questions.
- **2022 (GS3):** "Describe the major outcomes of the 26th session of the Conference of the Parties (COP) to the UNFCCC (<https://ujjiyari.com/terms/unfccc/>). What are the commitments made by India in this conference?", Panchamrit and net-zero-by-2070 link directly here.
- **2020 (GS3):** Questions on India's energy security (<https://ujjiyari.com/terms/energy-security/>) and the trade-off between development and the environment.

Mains takeaway: Frame the answer around the coverage-stringency-metric triad, acknowledge the legitimacy of phased sequencing, and conclude with concrete harmonisation and hard-to-abate solutions. The examiner rewards candidates who can hold both the climate ambition and the developmental constraint in the same answer.

FACTS CORNER

- **PAT:** Perform, Achieve and Trade; run by the Bureau of Energy Efficiency (BEE); legal basis Energy Conservation Act, 2001; metric is energy intensity; tradable unit is the Energy Saving Certificate (ESCert).
- **CCTS:** Carbon Credit Trading Scheme; legal basis Energy Conservation (Amendment) Act, 2022; notified 2023; metric is GHG emission intensity; has compliance and offset mechanisms; tradable unit is the Carbon Credit Certificate (CCC); administered by BEE under the National Steering Committee for the Indian Carbon Market (Ministry of Power and MoEFCC).
- **Green Credit Programme:** Voluntary, market-based; notified by MoEFCC in 2023; covers eight activity categories including tree plantation and water conservation.

- **Net-zero pledge:** India committed to net-zero by 2070 under the Panchamrit announced at COP26, Glasgow, 2021.
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- **Panchamrit:** 500 GW non-fossil capacity by 2030; 50 percent energy from renewables by 2030; reduce projected emissions by one billion tonnes by 2030; cut carbon intensity by 45 percent over 2005 levels by 2030; net-zero by 2070.
- **Hard-to-abate sectors:** Steel and cement, where process emissions (not just fuel) make decarbonisation (<https://ujjari.com/vocab/decarbonisation/>) difficult; iron, steel and cement together account for roughly a fifth of global emissions.

Source: India's Patchy Industrial Climate Strategy: Closing the Coverage Gaps in PAT, CCTS and the Road to Net-Zero — Ujjari.com | Free UPSC & State PCS Editorial Analysis

KEY ARGUMENTS AT A GLANCE

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India's industrial climate strategy is patchy because a large share of industrial emissions sit in unclassified or non-specific industries that lie outside the coverage of existing instruments like PAT and CCTS, undermining the pathway to net-zero by 2070.

 **SUPPORTING**

- PAT, run by the Bureau of Energy Efficiency under the Energy Conservation Act 2001, targets energy intensity in a fixed set of designated consumers, leaving many emitting units uncovered.
- The Carbon Credit Trading Scheme, notified in 2023 under the Energy Conservation (Amendment) Act 2022, will initially cover roughly 800 units across nine sectors, so coverage remains partial in its early compliance phase.
- Hard-to-abate sectors such as steel and cement, plus a long tail of small and unclassified industries, contribute heavily to emissions yet face weak or absent compliance obligations.

 **COUNTER**

A phased, sector-by-sector rollout is defensible for a developing economy: building robust monitoring, reporting and verification capacity and credible baselines first avoids the price volatility and carbon-leakage risks that a premature economy-wide mandate could trigger.

 **WAY FORWARD**

Progressively widen CCTS coverage to unclassified and MSME-heavy segments, strengthen MRV and baseline data, harmonise PAT, CCTS and the Green Credit Programme, and back hard-to-abate sectors with green hydrogen, CCUS and demand-side green procurement.


MAINS ANSWER FRAMEWORK

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QUESTION

India's industrial emissions reduction architecture remains fragmented, with a significant share of emissions originating from poorly-defined and unclassified industries that fall outside frameworks such as Perform, Achieve and Trade (PAT) and the Carbon Credit Trading Scheme (CCTS). In this context, critically examine the gaps in India's industrial decarbonisation strategy and suggest measures to align it with the net-zero-by-2070 target. (250 words)

INTRODUCTION

India has pledged net-zero by 2070 under the Panchamrit commitments made at COP26 in Glasgow, yet its industrial decarbonisation effort remains a patchwork of instruments with uneven coverage.

BODY

The Perform, Achieve and Trade (PAT) scheme, administered by the Bureau of Energy Efficiency under the Energy Conservation Act 2001, drives energy-efficiency gains but applies only to designated consumers in selected energy-intensive sectors, measuring energy intensity rather than absolute emissions. The Carbon Credit Trading Scheme (CCTS), notified in 2023 under the Energy Conservation (Amendment) Act 2022, marks a shift to a greenhouse-gas-intensity compliance market with offset and compliance mechanisms, but in its early phase covers only about 800 units across nine sectors.

A significant share of industrial emissions therefore sits in unclassified or non-specific industries that neither framework reaches. Hard-to-abate sectors such as steel and cement, together with a long tail of small units, escape firm obligations.

The voluntary Green Credit Programme and carbon market design remain loosely integrated. Without wider coverage, credible baselines and robust monitoring, reporting and verification, the architecture cannot deliver economy-wide decarbonisation at the pace net-zero demands.

CONCLUSION

Closing these coverage gaps, harmonising PAT, CCTS and the Green Credit Programme, and supporting hard-to-abate sectors with green hydrogen and CCUS is essential to convert India's net-zero pledge into a coherent industrial transition.


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