

Obligated Entities under India's Carbon Credit Trading Scheme (CCTS): Sectoral Composition, Geographic Distribution, and Baseline Emissions

Abstract

This paper provides a data-oriented assessment of the population of obligated entities (OEs) under India's Carbon Credit Trading Scheme (CCTS), the country's compliance carbon market. Drawing on the Bureau of Energy Efficiency's (BEE) notifications of emission-intensity targets, it compiles an entity-level dataset of 748 obligated entities across eight industrial sectors and describes their sectoral composition, geographic distribution across states, baseline greenhouse-gas emissions, and the emission reductions implied by the first compliance cycle. Aggregate baseline emissions of the covered entities are approximately 759 Mt CO₂e. If every entity meets its 2026-27 intensity target at baseline production, the implied first-cycle abatement is approximately 33.5 Mt CO₂e, or 4.4% of baseline — a reduction that is highly concentrated, both sectorally (iron and steel alone account for over half) and geographically (the five largest states by entity count hold roughly 58% of baseline emissions). The paper is intended as a descriptive reference on the composition and location of the CCTS obligated-entity base.

Keywords: Carbon Credit Trading Scheme; CCTS; India; carbon market; obligated entities; emission intensity; baseline-and-credit; industrial decarbonisation; baseline emissions; emissions trading.

JEL classification: Q54; Q58; Q52; L60.

1. Introduction and scheme context

India's Carbon Credit Trading Scheme (CCTS) is the country's compliance carbon market. It is a baseline-and-credit (rate-based) system: rather than a single absolute cap, each obligated entity is assigned an entity-specific greenhouse-gas emission-intensity target, and compliance is assessed against that entity's own target. Entities that outperform their target generate carbon credit certificates; those that fall short must acquire and surrender certificates to meet their obligation. Targets are set and notified by the Bureau of Energy Efficiency (BEE).

The obligated-entity base has been notified in stages. Seven sectors — cement, textile, chlor-alkali, pulp and paper, petroleum refining, petrochemicals, and aluminium — comprising 493 entities were finalised in two phases between October 2025 and January 2026. Iron and steel, the largest single sector, was brought into the scheme through a draft notification in June 2026, adding a further 255 units; at the time of writing these targets remain within the statutory objection window and are anticipated to be substantially retained on finalisation. The combined base is 748 obligated entities.

This paper compiles the entity-level target data and provides a descriptive account of the resulting landscape: how obligated entities are distributed across sectors and states, the baseline emissions they represent, and the emission reductions implied by the first compliance cycle.

2. Data

The dataset is assembled at the level of the individual obligated entity from BEE's notifications of targets. Each record identifies the entity, its sector and sub-sector, its registered location (mapped to state), its baseline production, its baseline emission intensity, and its notified target emission intensity. Baseline emissions for an entity are computed as the product of baseline production and baseline emission intensity. The reduction implied by a target is computed as baseline production multiplied by the difference between baseline and target emission intensity; because the CCTS targets are expressed in intensity terms, this is the abatement implied when output is held at its baseline level, and not a projection of realised absolute emissions, which depend on future production. Iron and steel figures are drawn from the June 2026 draft notification. Records were cross-checked for internal consistency, and all 748 entities are retained in the analysis that follows.

3. Geographic distribution

The 748 obligated entities are spread across 25 states and union territories, but the distribution is markedly concentrated. Figure 1 ranks states by entity count. The five largest — Odisha (79), Gujarat (77), Chhattisgarh (73), Rajasthan (64) and Karnataka (55) — together host 46.5% of all obligated entities. Table 1 reports the full distribution.

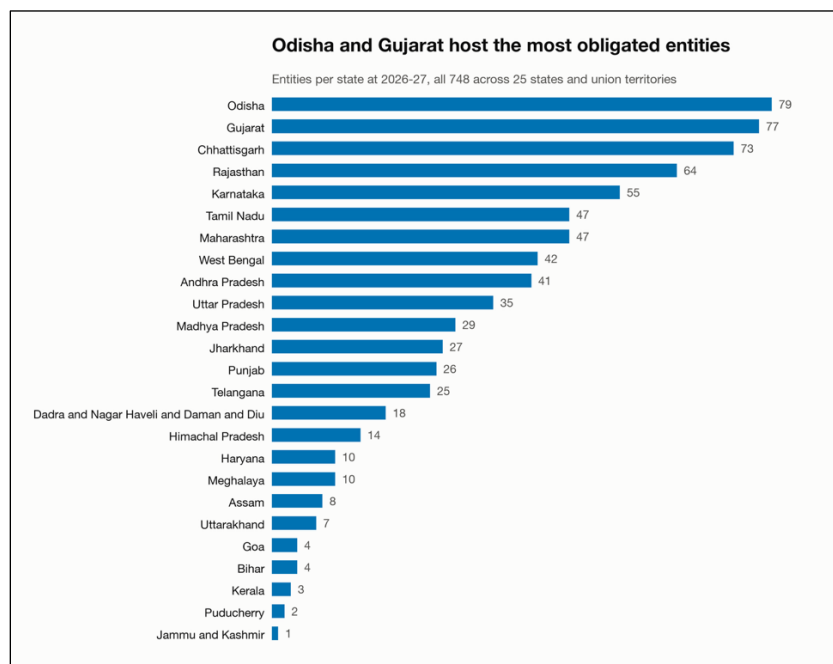


Figure 1. Obligated entities by state, ranked by count (all 748 entities).

Entity count and emissions weight, however, do not coincide. The same five leading states account for roughly 58% of covered baseline emissions, and the ranking shifts substantially when states are weighted by baseline emissions rather than counted (Figure 2). Odisha alone represents close to 19% of baseline emissions. Jharkhand, twelfth by entity count, rises to seventh by emissions, contributing 8.9% of implied first-cycle abatement from 3.6% of entities; Andhra Pradesh similarly rises. Conversely, states such as Tamil Nadu and Punjab fall sharply once emissions weight is applied — Punjab holds 3.5% of entities but under 1% of baseline emissions. The geography of the market's carbon is therefore more concentrated than a count of participants alone would suggest.

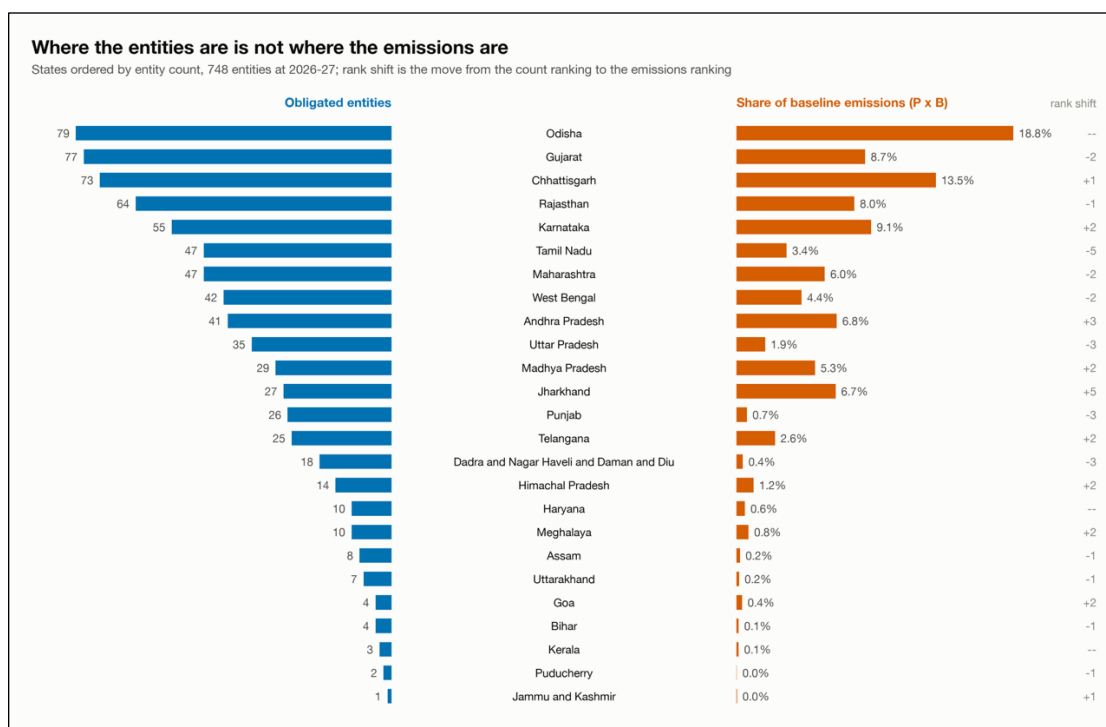


Figure 2. State rankings compared: entity count versus share of baseline emissions.

State / UT	n	State / UT	n
Odisha	79	Telangana	25
Gujarat	77	DNH and Daman & Diu	18
Chhattisgarh	73	Himachal Pradesh	14
Rajasthan	64	Haryana	10
Karnataka	55	Meghalaya	10
Tamil Nadu	47	Assam	8
Maharashtra	47	Uttarakhand	7
West Bengal	42	Goa	4
Andhra Pradesh	41	Bihar	4
Uttar Pradesh	35	Kerala	3
Madhya Pradesh	29	Puducherry	2
Jharkhand	27	Jammu & Kashmir	1
Punjab	26		
Total	748	(25 states / UTs)	

Table 1. Obligated entities by state and union territory (2026-27 basis; n = 748).

4. Sectoral composition and implied abatement

The obligated base spans eight industrial sectors (fertiliser sector would not be part of the first cycle of the CCTS). Iron and steel is the largest by every measure — entity count (255), baseline emissions, and implied first-cycle abatement (54.3% of the total). Cement is the second-largest contributor to implied abatement (21.4%). Together, iron and steel and cement represent roughly four-fifths of covered baseline emissions. Aluminium, though only sixteen entities, is the third-largest source of implied abatement (10.9%), so that these three sectors account for close to 87% of the first-cycle total. Table 2 and Figure 3 report the sectoral breakdown.

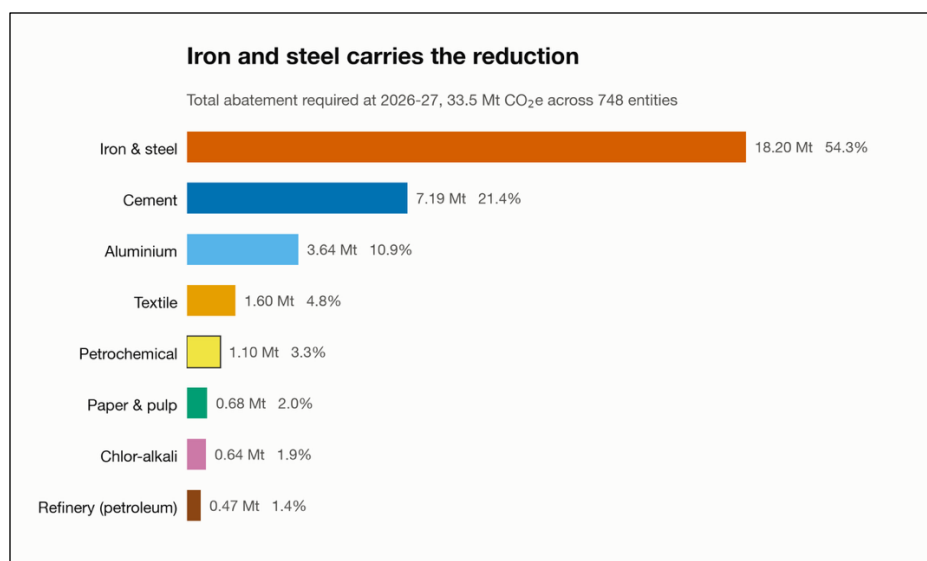


Figure 3. Implied first-cycle abatement by sector (Mt CO₂e, targets met at baseline production).

The rate of reduction implied relative to each sector's own baseline varies more than the absolute figures suggest. Textile carries the highest implied reduction rate (close to 9% of its baseline), while cement carries the lowest (under 3%); iron and steel, despite dominating absolute volume, sits mid-range at around 5%. The sector that contributes most in tonnes is thus not the sector asked to move fastest relative to its own starting point.

Sector	Entities	Baseline emissions (Mt CO ₂ e)	Implied abatement (Mt CO ₂ e)	Reduction (% of baseline)
Iron & steel	255	349.9	18.20	5.2
Cement	188	264.2	7.19	2.7
Aluminium	16	75.3	3.65	4.8
Textile	173	17.9	1.60	8.9
Petrochemical	11	22.0	1.10	5.0
Paper & pulp	54	10.5	0.68	6.5
Chlor-alkali	30	9.8	0.64	6.5
Refinery (petroleum)	21	9.7	0.47	4.8
Total	748	759.3	33.51	4.4

Table 2. Sectoral composition, baseline emissions, and implied first-cycle abatement. Reductions are those implied when output is held at baseline production.

5. The spatial pattern of obligation

Mapping the entities makes the industrial geography of the scheme visible. Figure 4 shows the obligated entities by sector: iron and steel concentrated in the eastern mineral-and-industrial belt, cement and textile clustered further west, and the smaller chemical and metal sectors in their own pockets. Figure 5 weights each entity by its baseline emissions, showing where the obligation — and the abatement pressure — physically concentrates. The two views reinforce the finding of Section 3: obligation is not evenly laid across the country but concentrated in a limited number of industrial clusters.

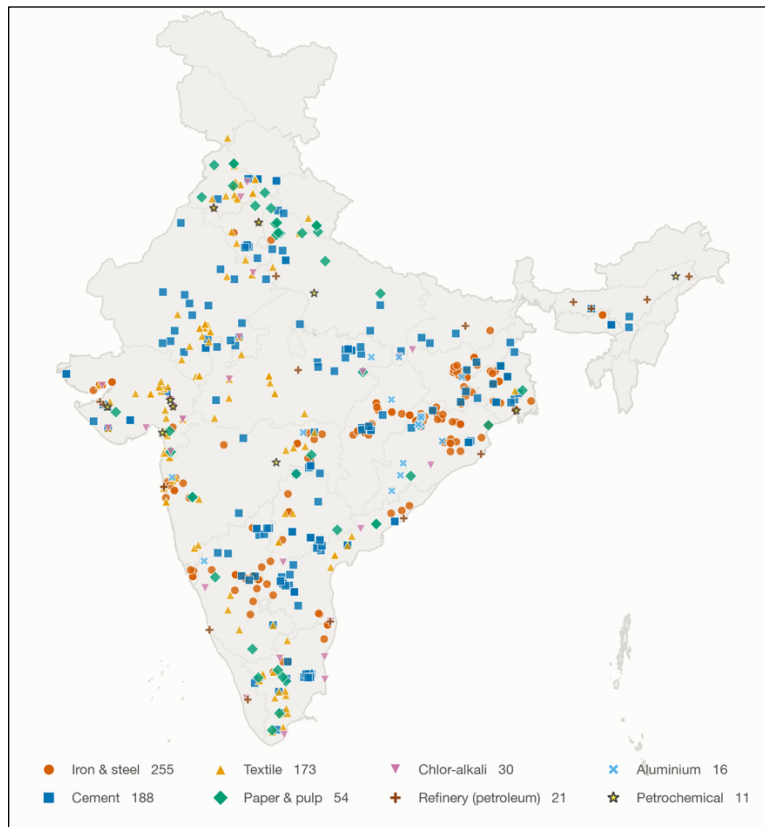


Figure 4. Obligated entities by sector (spatial distribution).

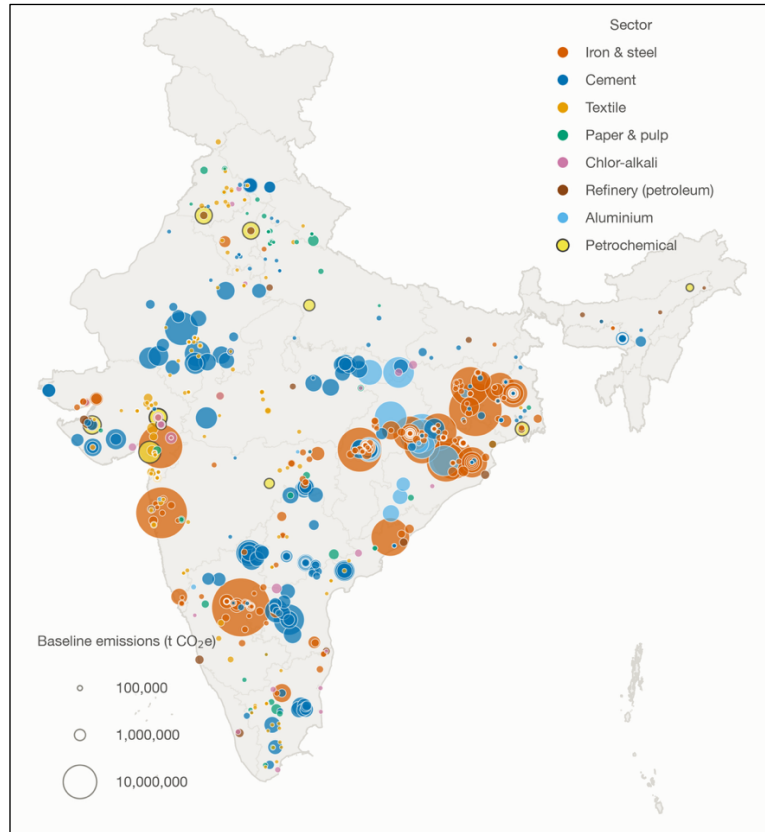


Figure 5. Obligated entities weighted by baseline emissions.

6. Baseline emissions and first-cycle reductions

The covered entities represent aggregate baseline emissions of approximately 759 Mt CO₂e. If every obligated entity meets its 2026-27 target at baseline production, the implied first-cycle abatement is approximately 33.5 Mt CO₂e — 4.4% of baseline emissions. This reduction is highly concentrated at the entity level: the twenty largest contributors account for 47% of the total implied abatement.

One feature of the draft iron and steel notification warrants explicit note. Forty-one steel entities carry 2026-27 target intensities *above* their baseline intensity — that is, targets that permit a higher emission intensity than the baseline. These entities together offset approximately 1.5 Mt CO₂e of the abatement generated elsewhere, so that gross positive abatement across the remaining entities is approximately 35.0 Mt CO₂e before this offset. Because the iron and steel targets remain in draft, this pattern may change on finalisation. Figure 6 places baseline emissions and implied reductions side by side, at a common scale, to convey the magnitude of the first-cycle reduction relative to the emissions base.

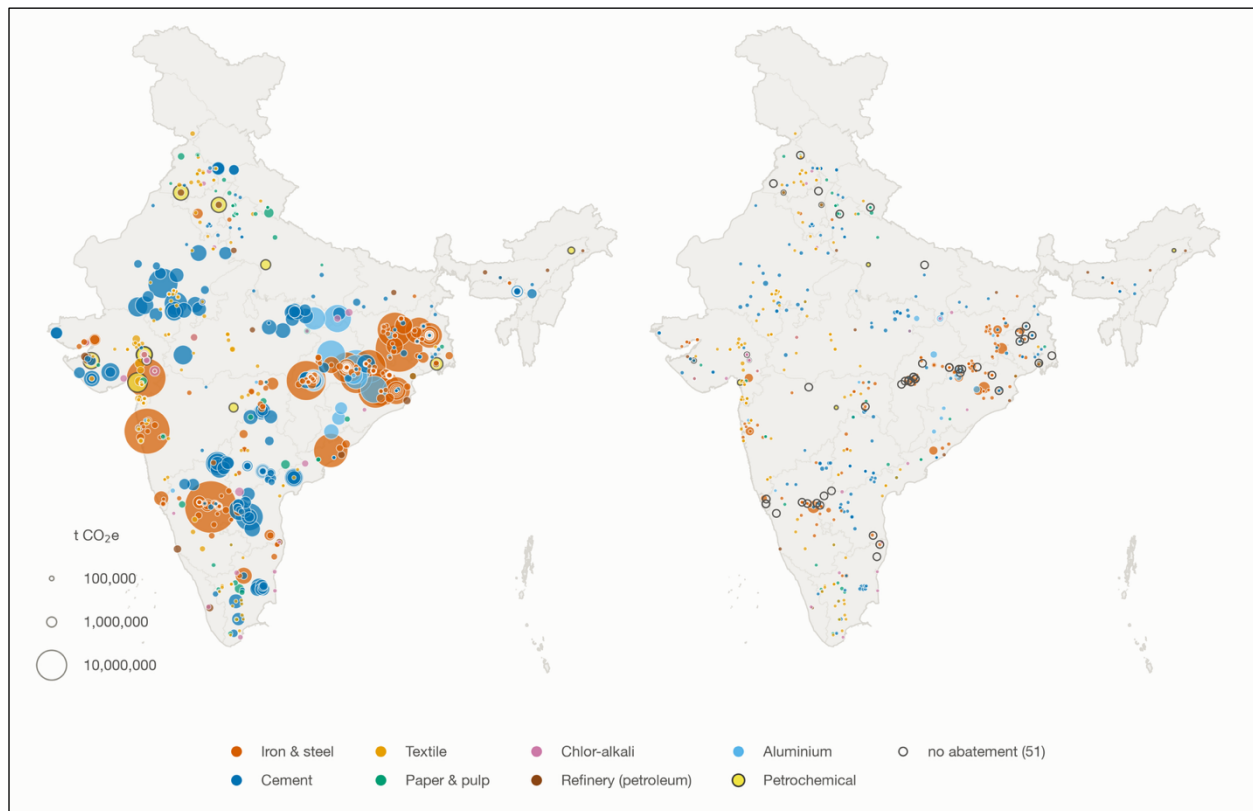


Figure 6. Baseline emissions and implied first-cycle reductions, shown at a common scale.

7. Why the distribution matters

The concentration documented above is not merely descriptive; it bears on how the market is likely to function. Where obligated entities cluster geographically, they tend to share power and fuel markets, suppliers, infrastructure, and regulatory environment — the familiar agglomeration effects of industry. A carbon market adds a further, market-specific dimension: the monitoring, reporting and verification (MRV) capacity on which compliance depends — accredited carbon verification agencies, auditors, and carbon-accounting expertise — tends to build up around dense clusters of demand, so that entities in thinly populated states may face a shallower pool of such capacity even at comparable entity counts.

Because the CCTS is a baseline-and-credit system, the quantity of credits an entity generates or owes is tied to both its intensity gap and its output rather than to a fixed ceiling. Within an industrial cluster that shares

technology, suppliers and fuel access, the diffusion of a new efficiency measure or fuel-switching option can produce correlated intensity improvements across several entities at once. Credit generation and compliance demand may then move together within a cluster rather than evolving independently across the several hundred entities in the scheme — with implications for how concentrated, and how volatile, credit supply and demand ultimately prove to be. The geographic and sectoral concentration of the obligated base is, in this sense, a structural feature of the market worth attending to from the outset.

Note on the data

The iron and steel targets analysed here are drawn from the June 2026 draft notification and remain, at the time of writing, within the objection window; the figures reported for that sector may change on finalisation, though they are anticipated to be substantially retained. Because the scheme's targets are intensity-based, the reductions reported throughout are those implied when output is held at baseline production, and are not forecasts of realised absolute emissions. The draft iron and steel notification includes forty-one entities whose target intensity exceeds their baseline intensity, as noted in Section 6.