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Carbon Credit Quality in India's Voluntary Market

An Integrity Assessment of Renewable Energy, Cookstove and Land-Use Credits

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88%
Share of India's issued voluntary credits from renewable energy projects

<16%
Share of credits in a 2,346-project meta-analysis that represent real reductions

~10×
Average over-crediting across the five main cookstove methodologies

$0.65
Record-low price for Indian renewable energy credits, October 2025

Abstract

India hosts more registered voluntary carbon projects than any other country and accounts for about 16 per cent of the credits issued worldwide. Its portfolio is unusually concentrated: renewable electricity generated 88 per cent of Indian credits, household and community projects, mainly cookstoves, about 7 per cent, and forestry and land use under 1 per cent. This paper assesses the integrity of that portfolio against three criteria: additionality, conservative quantification and permanence, together with the safeguards that determine whether projects retain their social licence.

The evidence points in one direction for the largest category. Grid-connected renewables in India have been commercially viable without carbon revenue for a decade; a peer-reviewed meta-analysis finds no statistically significant reductions from wind credits, and the Integrity Council for the Voluntary Carbon Market (ICVCM) rejected the legacy renewable energy methodologies in August 2024. Cookstove credits under legacy methodologies are over-credited by a factor of about ten, although methodologies with metered monitoring perform far better and three have since been approved with conditions. Land-use credits are few, but survey evidence from Indian carbon farming projects shows weak inclusion, minimal payments to farmers and high drop-out rates.

India's domestic offset mechanism under the Carbon Credit Trading Scheme, its Article 6 authorisations and the reopening of renewable energy eligibility under Verra's VMR0017 methodology make the next two years decisive. The paper recommends excluding standalone grid-connected solar, wind and hydropower from domestic offset eligibility, admitting cookstove credits only with metered or equivalent monitoring, requiring ex post crediting and statutory benefit sharing for land-based projects, and publishing project-level documentation from the outset.

Keywords: voluntary carbon market; additionality; over-crediting; cookstoves; renewable energy; carbon farming; Core Carbon Principles; Carbon Credit Trading Scheme; Article 6; India

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KEY FINDINGS

1. Renewable electricity generated 88 per cent of India's voluntary credits. For standalone grid-connected solar, wind and hydropower, the evidence and the standard-setters both point against additionality.
2. Legacy cookstove methodologies over-credit by about tenfold. Metered monitoring performs far better, and the ICVCM's 2025 conditions now define the benchmark.
3. Land-based credits are under 1 per cent of supply. Indian survey evidence shows weak inclusion, almost no payments to farmers and 28 per cent practice drop-out.
4. The market now prices quality: CCP-labelled credits carry a premium, while Indian renewable credits hit a record low of US$0.65 in October 2025.
5. India's offset mechanism admits only projects starting from 2025 and its Article 6 list excludes cookstoves. Eligibility, monitoring and transparency rules will decide the quality of the next generation of Indian credits.

1 Introduction

The voluntary carbon market rests on a simple proposition: a tonne of carbon dioxide reduced or removed in one place can compensate for a tonne emitted elsewhere, through a tradable instrument and at lower cost. A decade of empirical work has tested that proposition project type by project type. The most comprehensive synthesis to date, covering 2,346 projects and about one-fifth of all credits issued, estimates that less than 16 per cent of those credits represent real emission reductions[1].

India is central to this question. It hosts more registered voluntary carbon projects than any other country, about 375 million credits had been issued to Indian projects by April 2025, and around 215 million of them had been retired[2,3]. Indian supply is also unusually concentrated: renewable electricity generated 88 per cent of Indian credits[3]. The integrity of Indian credits is therefore a material question for the credibility of the global market, for the corporate buyers that have retired them, and for India's own carbon market architecture, which is now taking shape.

This paper offers a structured integrity assessment of Indian voluntary credits. It applies three criteria, additionality, conservative quantification and permanence, together with the safeguards that govern a project's social licence, to the three categories that define Indian supply: grid-connected renewable energy, cookstoves and land use. It draws on peer-reviewed research, decisions of the Integrity Council for the Voluntary Carbon Market (ICVCM), independent project reviews and Indian regulatory documents to November 2026.

Three developments since early 2025 give the assessment practical weight. India's domestic offset mechanism under the Carbon Credit Trading Scheme (CCTS) has approved methodologies and is preparing to issue credits. India has signed its first Article 6 agreements and has narrowed the activities it will authorise for export. And in April 2026 the ICVCM approved a revised renewable energy methodology that reopens registration for wind and solar projects in middle-income countries, India among them. Each decision will determine whether India's next generation of credits repeats or corrects the record of the last.

Section 2 describes India's position in the market. Section 3 sets out the integrity framework and Section 4 the evidence base. Sections 5 to 7 assess the three project categories. Section 8 synthesises the findings and their market consequences. Section 9 examines India's domestic and international architecture, Section 10 sets out recommendations and Section 11 concludes.

2 India in the Voluntary Carbon Market

India's role in project-based crediting predates the voluntary market. Indian developers were among the most active participants in the Clean Development Mechanism (CDM), and many voluntary projects still use CDM methodologies or are CDM activities that migrated to independent standards. That history explains both the depth of India's developer base and the composition of its supply.

Registry data compiled by the Berkeley Carbon Trading Project show that India hosted 1,720 of the 9,921 projects listed on the four principal voluntary registries at the end of 2024, more than the United States (1,640) or China (1,509)[3]. By April 2025, about 375 million credits had been issued to Indian projects, roughly 15.7 per cent of the global total, and about 215 million had been retired[2]. Retirement data attributable to named corporate buyers

show that Indian credits are overwhelmingly an export: about 61 million were retired by foreign companies over the past decade, against about 0.6 million retired by Indian companies[4].

TABLE 1

India in the voluntary carbon market: key indicators

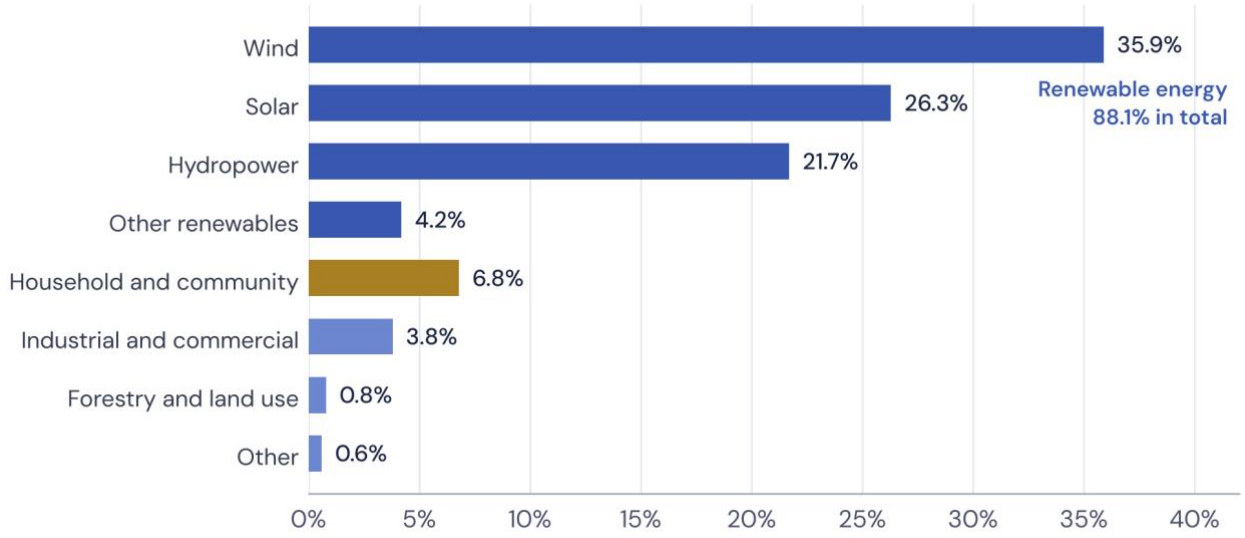
Indicator	Value	Reference date
Projects listed on the four principal registries	1,720 of 9,921 worldwide (largest of any country)	December 2024
Credits issued to Indian projects	About 375 million (about 15.7% of global issuance)	April 2025
Credits retired	About 215 million	April 2025
Share of Indian issuance from renewable energy	88.1%	December 2024
Share from household and community projects	6.8%	December 2024
Share from forestry, land use and agriculture	1.0%	December 2024
Corporate retirements by foreign and Indian buyers	About 61 million and 0.6 million	Past decade, 2025
Platts assessment for Indian renewable energy credits	US$0.65 per tonne (record low)	31 October 2025

Source: Berkeley Carbon Trading Project data compiled by Priyanka et al. (2026); Rubix Data Sciences (2026); BeZero Carbon (2025); S&P Global Commodity Insights (2025).[2,3,4,5]

The sectoral composition sets the terms of any integrity assessment. Figure 1 shows that wind, solar and hydropower together generated about 84 per cent of Indian credits, with household and community projects, mainly cookstoves, a distant second and land-based projects a marginal category[3]. Data to August 2025 confirm the pattern, with renewables at about 87 per cent, against about 30 per cent of credits globally, where forestry and land use is the largest category at about 37 per cent[6]. An integrity assessment of Indian supply is therefore, in the first instance, an assessment of renewable energy credits.

FIGURE 1

Composition of credits issued to Indian projects, by project type (% of cumulative issuance)



Source: Berkeley Carbon Trading Project, Voluntary Registry Offsets Database, records to 31 December 2024, as compiled by Priyanka et al. (2026). "Other" combines agriculture, waste, chemical processes and transport.[3]

Prices now reflect that composition. Platts assessed Indian renewable energy credits at a record low of US$0.65 per tonne at the end of October 2025, with Indian buyers the main source of demand while European buyers looked to cheaper alternatives[5]. Global retirements fell from 257 million tonnes in 2024 to 230 million in 2025[7]. Demand has not disappeared, but it is moving towards credits that can demonstrate quality.

3 The Integrity Framework

A carbon credit functions as a unit of mitigation only if it satisfies conditions that are individually demanding and jointly stringent. This paper applies four, consistent with the ICVCM's Core Carbon Principles and the Article 6.4 standards.

- **Additionality.** The activity would not have occurred without the incentive created by carbon revenue. The empirical record on this criterion is long: an assessment for the European Commission found that about 85 per cent of the CDM projects sampled had a low likelihood of being additional or were over-credited[8].
- **Conservative quantification.** Baselines, emission factors and monitoring parameters are set so that reductions are not overstated. Over-crediting can occur in additional projects, and it is the dominant failure in cookstoves and avoided deforestation.
- **Permanence.** Removals and avoided emissions endure, or reversals are fully compensated. The risk is physical for trees and soils and behavioural where results depend on continued practice.
- **Safeguards and co-benefits.** Projects respect land and resource rights, obtain free, prior and informed consent, and share benefits on fair terms. These are legitimacy conditions: a project that is additional and permanent but harms or excludes host communities loses its social licence and, increasingly, its buyers.

A fifth issue, double claiming, has become more prominent with Article 6. Where India authorises credits for use against another country's targets, it must apply a corresponding adjustment to its own accounts. Credits sold without authorisation remain usable for voluntary claims but not for compliance purposes abroad. The distinction matters for the domestic architecture discussed in Section 9.

4 Evidence Base and Method

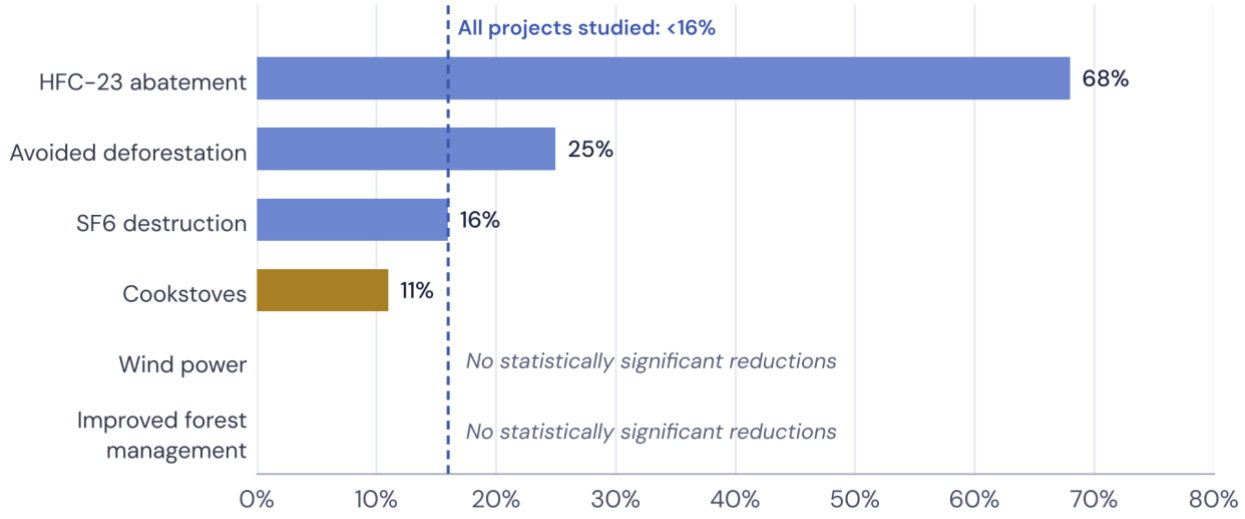
The assessment draws on four strands of evidence. The first is peer-reviewed research using experimental or rigorous observational methods, led by the meta-analysis of Probst and colleagues[1], the cookstove assessment of Gill-Wiehl, Kammen and Haya[9], the synthesis of REDD+ evaluations by Swinfield and colleagues[10], the study of corporate demand by Trencher and colleagues[11] and the survey of Indian carbon farming by Cariappa and Krishna[12].

The second is the body of ICVCM assessment decisions, which translate research into market labels. The third is independent project-level review, principally Corporate Accountability's 2025 analysis of the largest projects by retirements[13]. The fourth is Indian regulatory documentation on the CCTS and Article 6. Registry data are used to establish the composition of Indian supply.

Figure 2 summarises the central quantitative finding of the meta-analysis. Achieved reductions are a small fraction of credits issued in most categories, and the two categories most relevant to India, wind power and cookstoves, sit at the bottom of the range[1].

FIGURE 2

Estimated real emission reductions as a share of credits issued, by project type (%)



Source: Probst et al. (2024), synthesis of 14 studies covering 2,346 projects and about one-fifth of all credits issued. Wind and improved forest management show no statistically significant reductions.[1]

The paper synthesises published evidence and does not verify individual projects. Where it names projects, it reports the findings of the cited reviews. The registry data on sectoral composition run to the end of 2024; more recent issuance has continued the same pattern.

5 Grid-Connected Renewable Energy

Indian renewable energy credits have been issued mainly under the CDM methodologies ACM0002 and AMS-I.D. and equivalent provisions of the Gold Standard. The projects include large wind farms, utility-scale solar parks and hydropower stations, many developed by well-capitalised independent power producers and conglomerates. A Down To Earth and Centre for Science and Environment investigation found that about 90 per cent of credits issued to Indian projects were from renewable energy, including 28 million issued to Jaiprakash Hydropower's projects and 15 million to Adani solar projects[14].

5.1 The additionality problem

The core problem is additionality. India has built renewable capacity at a pace that leaves little room for the claim that carbon revenue was decisive. Non-fossil capacity reached 300.5 GW by July 2026, including 164.6 GW of solar and 58.1 GW of wind, after a record 55.3 GW was added in 2025-26[15]. That build-out has been driven by competitive auctions, renewable purchase obligations, transmission investment and falling equipment costs. CSE found that carbon revenue covered only 3 to 4 per cent of project costs in several Indian renewable projects it examined[16,17].

Standard-setters reached the same conclusion. Verra restricted new grid-connected renewable projects to least developed countries when it launched version 4 of its standard in 2019[18]. On 6 August 2024 the ICVCM determined that eight renewable energy methodologies, covering about 236 million unretired credits or 32 per cent of the market, were insufficiently rigorous in assessing whether projects would have proceeded without carbon revenue[19]. It identified deficiencies in the CDM additionality tools and the grid emission factor tool[20].

TABLE 2

ICVCM decisions on renewable energy methodologies

Methodology	Scope	Decision
ACM0002 (v21.0 and earlier)	Grid-connected electricity generation from renewable sources	Not approved, Aug 2024
AMS-I.D. (v18.0 and earlier)	Grid-connected renewable electricity generation, small scale	Not approved, Aug 2024
AMS-I.A. (v19.0 and earlier)	Electricity generation by the user	Not approved, Aug 2024
AMS-I.L. (v4.0 and earlier)	Electrification of rural communities using renewable energy	Not approved, Aug 2024
ACM0006 (v16.0 and earlier)	Electricity and heat generation from biomass	Not approved, Aug 2024
AM0072 (v3.0 and earlier)	Fossil fuel displacement by geothermal resources for space heating	Not approved, Aug 2024
ACM0018 (v6.0 and earlier)	Electricity generation from biomass in power-only plants	Not approved, Aug 2024
AM0036 (v7.0 and earlier)	Use of biomass in heat generation equipment	Not approved, Aug 2024
VMR0017 v1.0 (Verra)	Grid-connected renewable generation, revised ACM0002 with new additionality test	Approved, 30 Apr 2026

Source: ICVCM (2024); Verra (2024, 2026).[19,20,21]

The empirical evidence is consistent with the standard-setters' judgement. The Probst meta-analysis found no statistically significant emission reductions from wind power projects[1]. Corporate Accountability's review of the

largest projects by 2024 retirements identified nine Indian renewable energy projects, in hydropower, solar and wind, as producing problematic credits; together they accounted for 7.7 million credits retired in 2024[13,17]. They included bundled solar projects by ACME and solar projects by ReNew, SB Energy and Greenko[17].

5.2 The 2026 reopening

The policy environment changed in 2026. Verra published VMR0017, a revision of ACM0002, in April 2026, and the ICVCM approved it on 30 April as the only grid-connected renewable methodology to receive the CCP label[21]. VMR0017 extends eligibility for wind, solar and geothermal projects to low-, lower-middle- and upper-middle-income countries, which includes India. It also replaces the CDM additionality tool with a new assessment, VT0008, that applies to every project; positive lists and first-of-its-kind exemptions no longer confer automatic additionality, and hydropower remains confined to least developed countries[21].

This is a material shift. For Indian developers it creates a route back to the international market for new wind and solar projects that can pass a stricter, project-specific investment test. For Indian policy it raises the question that matters most for the domestic offset mechanism: whether additionality in Indian grid-connected renewables should be tested project by project, or whether the commercial conditions of the Indian power market justify a presumption against it. Section 10 argues for the second approach for standalone generation, with a narrow window for configurations where a genuine financing gap can be shown.

6 Cookstoves and Household Energy

Household and community projects, mainly improved and clean cookstoves and biogas, account for about 7 per cent of Indian credits[3]. The development case is strong: household air pollution from solid fuels remains a leading health risk in India, and the burden of fuel collection falls mostly on women. Additionality is also more plausible than for grid renewables, because carbon finance can lower the upfront cost of stoves for poor households. The integrity problem lies in quantification.

6.1 Evidence of over-crediting

Gill-Wiehl, Kammen and Haya compared the five major cookstove methodologies with published field evidence. For a sample covering 40 per cent of cookstove credits they estimated over-crediting by a factor of 9.2; extrapolated to all credits under the five methodologies, the factor was about 10.6[9]. The Gold Standard metered methodology, which monitors fuel use directly, was the closest to their estimates, at 1.5 times over-credited[9]. The Probst meta-analysis independently estimated that only 11 per cent of cookstove credits represent real reductions[1].

TABLE 3

Principal sources of over-crediting in cookstove methodologies

Parameter	Mechanism of overestimation
Fraction of non-renewable biomass (fNRB)	Default values exceed geographically resolved empirical estimates.
Stove adoption	Distribution is treated as sustained use; survey-based adoption rates are prone to social desirability bias.
Usage intensity	Self-reported daily use is overstated; direct measurement is rarely applied.
Stove stacking	Continued use of the baseline stove alongside the new stove is understated.

Parameter	Mechanism of overestimation
Fuel consumption	Laboratory efficiency values are applied to field conditions without adjustment.

Source: Synthesised from Gill-Wiehl, Kammen and Haya (2024).[9]

6.2 The ICVCM decisions of 2025

The ICVCM concluded its assessment of cookstove methodologies in 2025. In March it rejected the CDM methodologies AMS-II.G and AMS-I.E and the Gold Standard simplified methodology, and conditionally approved the Gold Standard metered methodology, the Gold Standard TPDDTEC methodology version 4 and Verra's VM0050[22]. In June it extended conditional approval to earlier TPDDTEC versions 2 to 3.1, with conditions requiring alignment with version 4; about 62 million credits had been issued under the approved TPDDTEC versions[23]. The conditions centre on conservative, science-based fNRB values and tighter monitoring.

The decisions establish a workable benchmark. Legacy credits issued under rejected methodologies cannot carry the CCP label, and approved methodologies yield credits only where projects meet stricter accounting conditions. For India the significance is twofold: much of the existing Indian cookstove stock was issued under methodologies now rejected or approved only with conditions, and any domestic cookstove methodology will be judged against the conditions the ICVCM has set.

6.3 Indian baselines and policy signals

Indian baselines carry a specific complication. The Pradhan Mantri Ujjwala Yojana has released more than 10 crore subsidised LPG connections since 2016[24]. Projects that distribute improved biomass stoves in areas where households are transitioning to LPG under the scheme must account for that counterfactual, or they will credit transitions that public policy is already financing.

The Government has already drawn a line. In 2025 the Ministry of Environment, Forest and Climate Change removed clean cooking from the list of activities eligible for authorisation under Article 6, trimming the list from 14 to 13 categories[25,26]. Cookstove credits can still be sold for voluntary claims, but they will not carry the authorisation and corresponding adjustment needed for use against other countries' targets.

7 Forestry, Agriculture and Land Use

Land-based projects account for about 1 per cent of Indian issuance[3], but they are the category most likely to grow. Developers are reviving CDM afforestation methodologies to meet demand for nature-based removals, and Platts reported in March 2026 that Indian supply of afforestation and reforestation credits is scarce enough for developers to seek a premium[27]. The integrity questions differ from those in energy: additionality is more plausible, while permanence and benefit sharing are the binding concerns.

7.1 Avoided deforestation and the case for ex post crediting

India's role in REDD+ crediting has been limited, because most forests are under state control and community rights are recognised under the Forest Rights Act, 2006. The international evidence still shapes Indian design. A synthesis of six independent ex post evaluations covering 44 first-generation REDD+ projects found that most projects reduced deforestation, but claimed an aggregate of 10.7 times more avoided deforestation than was justified; the authors trace the gap to selection bias in control areas and modelling, and conclude that ex post certification against credible counterfactuals is necessary[10]. The ICVCM has approved Verra's consolidated

REDD methodology VM0048 and the jurisdictional and nested REDD+ framework, while excluding Verra's older REDD methodologies from the CCP label[28].

7.2 Removals and permanence

For removals, the ICVCM approved Verra's afforestation, reforestation and revegetation methodology VM0047 in December 2024[29] and version 2.2 of VM0042 for improved agricultural land management in October 2025[30]. Approval addresses methodology design; it does not remove the physical risk of reversal. The most detailed actuarial analysis of a buffer pool, for California's forest offsets programme, found that wildfires depleted nearly one-fifth of the total buffer in less than a decade, equivalent to at least 95 per cent of the contribution intended to cover fire risk for 100 years[31]. Indian forests and farmland face their own correlated risks, from cyclones on the eastern coast to fire in central India and drought in arid districts.

The Article 6.4 mechanism now provides a reference framework. Its standard on activities involving removals entered into force on 9 October 2024[32], and its Supervisory Body adopted a standard on addressing non-permanence and reversals at its eighteenth meeting in October 2025[33]. Both require monitoring after the crediting period and compensation for reversals, which domestic rules can adopt directly.

7.3 Inclusion and benefit sharing

The strongest Indian evidence on land-based projects comes from Cariappa and Krishna's survey of 841 farmers in seven carbon farming project areas in Haryana and Madhya Pradesh[12]. Participants were predominantly large holders from non-marginalised castes; only 4 per cent were women; around 99 per cent had received no monetary benefit; and 28 per cent had discontinued the practices, raising concerns about permanence[12]. Some practices, such as alternate wetting and drying and zero tillage, passed the authors' additionality tests, so the problem lies less in the practices than in project governance.

Statutory benefit sharing is one response. Kenya's Climate Change (Amendment) Act, 2023 requires community development agreements for land-based projects and annual social contributions of at least 40 per cent of aggregate earnings for land-based projects and 25 per cent for others[34]. The specific percentage matters less than enforceability: payment schedules, disclosure of carbon revenue and a grievance route that farmers can use.

Blue carbon is a smaller but promising segment. Mangrove afforestation and reforestation is among the methodologies approved for India's domestic offset mechanism[35]. Coastal ecosystems fall under several authorities, including the environment ministry, state coastal zone management authorities and forest departments, so clear lead responsibility will determine whether the category scales with integrity.

8 Synthesis and Market Consequences

The three categories present a consistent but differentiated picture. Table 4 summarises the assessment.

TABLE 4

Integrity assessment by project category

Criterion	Grid-connected renewables (about 84% of Indian credits)	Cookstoves and household energy (about 7%)	Land use (about 1%)
Additionality	Fails for most projects: commercially viable without carbon revenue; legacy methodologies rejected by the ICVCM.	Plausible: carbon finance can lower household barriers, subject to the LPG counterfactual.	Generally plausible: carbon revenue is often decisive for practice change.
Quantification	Grid factor and additionality tools found deficient.	Over-credited about tenfold under legacy methods; metered monitoring far closer to reality.	REDD+ baselines overstated tenfold; soil carbon measurement uncertain.
Permanence	Not applicable to avoided fossil generation.	Depends on sustained use and limited stacking.	Binding constraint: reversal risk and 28% practice drop-out in Indian survey.
Safeguards	Limited co-benefits beyond the emission claim.	Health benefits unrealised where stoves fall short of clean-cooking standards.	Weak inclusion and almost no payments to farmers in the Indian survey.
Policy priority	Exclude standalone generation from domestic offsets.	Require metered or equivalent monitoring.	Ex post crediting; statutory benefit sharing.

Source: SCRF synthesis of Sections 5 to 7.

The market is now pricing these differences. CCP-labelled credits rose from under 3 per cent of issuance in 2023 to 18 per cent in the first quarter of 2026, and their price premium more than doubled to US$3.83 per credit[36]. Estimates of the premium vary with method; an analysis of more than 70,000 price observations places it between 8 and 14 per cent[37]. Indian renewable credits, at the other end of the quality spectrum, reached a record low of US$0.65 in October 2025[5].

Demand-side evidence explains how low-quality supply persisted. Trencher and colleagues found that 87 per cent of the offsets retired by the twenty largest corporate buyers between 2020 and 2023 carried a high risk of not providing real and additional reductions[11]. Cheap credits served buyers seeking low-cost claims, and the same buyers are now the market's most exposed reputational risk. For Indian developers, the transition from legacy to approved methodologies will decide whether their considerable capacity is absorbed into high-integrity supply or confined to a shrinking, low-price segment.

9 India's Domestic and International Architecture

India is building the institutions through which its next generation of credits will be issued. Table 5 records the main milestones.

TABLE 5

India's carbon crediting architecture: milestones to November 2026

Milestone	Date	Significance
Offset mechanism procedure and first methodologies	March 2025	Eight methodologies, including renewable energy with hydro and pumped storage, green hydrogen, industrial efficiency, landfill methane and mangrove restoration; projects must start on or after 1 January 2025
India-Japan Joint Crediting Mechanism	7 August 2025	India's first Article 6.2 agreement; rules of implementation adopted 8 June 2026
Article 6 eligible activities revised	2025	List narrowed to 13 activities; clean cooking removed
Compliance targets	October 2025 to January 2026	490 entities in seven sectors; a further 255 steel units in a revised draft from FY2026-27
CERC trading regulations	27 February 2026	Exchange trading of Carbon Credit Certificates, with a floor and forbearance price band for compliance trades
India-Korea agreement	April 2026	Second bilateral Article 6 agreement
BEE trading procedure	October 2026	Monthly trading sessions on power exchanges

Source: ICAP (2025, 2026); Columbia CGEP (2026); Ministry of the Environment, Japan (2026); IETA (2026); Carbon Pulse (2025); JSA (2026); Energetica India (2026); Down To Earth (2026).[25,26,35,38,39,40,41,42,43,44]

Two features of this architecture bear directly on integrity. First, renewable energy generation is among the approved offset methodologies, which makes the eligibility question in Section 5 a live design choice for the Bureau of Energy Efficiency[35]. Second, the start-date rule confines the offset mechanism to new projects, so legacy voluntary credits cannot migrate into the domestic system[38]. That rule is a strength and should be preserved.

Internationally, India has taken a selective approach to Article 6, authorising a defined list of activities and concluding bilateral agreements with Japan and Korea[26,39]. The exclusion of cookstoves signals that the Government will not authorise categories where quantification is contested. The same logic can be applied consistently across the domestic offset mechanism, so that credits issued in India carry a single, credible standard whether they are used at home or abroad.

10 Recommendations

The recommendations below are addressed to the Bureau of Energy Efficiency as administrator of the CCTS, the National Steering Committee for the Indian Carbon Market, the Ministry of Environment, Forest and Climate Change as Article 6 authority, and the Central Electricity Regulatory Commission as market regulator.

1. **Exclude standalone grid-connected solar, wind and hydropower from domestic offset eligibility.** India's auction prices, purchase obligations and record capacity additions establish a strong presumption against additionality for standalone generation. A narrow window can remain for configurations with a demonstrable financing gap, such as storage-integrated or firm renewable supply, subject to a project-specific investment test with published benchmarks at least as strict as VT0008 under VMR0017.

2. **Admit cookstove credits only with metered or equivalent monitoring.** Domestic methodologies should meet or exceed the ICVCM conditions of 2025: science-based fNRB values, measured usage, explicit adjustment for stove stacking and a baseline that accounts for LPG adoption under Ujjwala.

3 **Require ex post crediting and pooled buffers for land-based projects.** Credits should be issued only after results are measured. Buffer contributions should be pooled across projects and calibrated to Indian reversal risks, with monitoring and compensation obligations aligned with the Article 6.4 reversals standard.

4 **Codify benefit sharing and consent for land-based projects.** Rules under the Energy Conservation Act or dedicated legislation should require written agreements with participating farmers and communities, disclosure of carbon revenue, minimum payment schedules, recognition of Forest Rights Act entitlements and an accessible grievance mechanism.

5 **Publish project-level documentation from the outset.** The Indian Carbon Market portal should make project documents, monitoring reports, verification reports and issuance records public, with conflict-of-interest rules for verification agencies and independent expert review of methodologies.

6 **Seek international benchmarking of domestic methodologies.** Submitting CCTS offset methodologies for ICVCM assessment, and aligning authorisation and corresponding adjustment procedures with Article 6 guidance, would let Indian credits compete on quality in voluntary, CORSIA and bilateral markets.

11 Conclusion

The integrity problems in India's voluntary carbon market follow the global pattern; what distinguishes India is scale and concentration. With about 375 million credits issued and close to nine in ten from renewable electricity, India's supply has been dominated by the category that the evidence and the standard-setters treat as least likely to be additional. Cookstove credits rest on genuine development needs but have been heavily over-credited under legacy methods. Land-based credits are few, and the Indian evidence shows that their main weakness lies in governance and permanence rather than in the practices themselves.

The domestic architecture now under construction gives India the means to set a higher standard than the market from which it is emerging. The offset mechanism admits only new projects, the Article 6 list already excludes contested categories, and the trading rules provide for price discovery under regulatory oversight. The choices that remain are about eligibility, monitoring, crediting timing, benefit sharing and transparency. Each has a clear evidential basis, and together they would make Indian credits a reference point for quality among emerging markets.

Further SCRF research will examine project-level integrity in the CCTS offset pipeline, the interaction between the CCTS and the EU Carbon Border Adjustment Mechanism, and CCP eligibility for Indian projects under the new methodologies.

Methodological Note

- **Scope and data cut-off.** The paper synthesises published evidence and regulatory documents available to 15 November 2026. It does not verify individual projects; named projects are reported as identified in the cited reviews.
- **Registry data.** Sectoral shares use the Berkeley Carbon Trading Project's Voluntary Registry Offsets Database, covering Verra, Gold Standard, the American Carbon Registry and the Climate Action Reserve, with records to 31 December 2024. Aggregate issuance and retirement figures are as of April 2025. Credits issued under national or domestic programmes are excluded.
- **Meta-analytic estimates.** The shares in Figure 2 are the achieved-reduction ratios reported by Probst et al. (2024) for the project categories with sufficient evidence. They are estimates for the projects studied and should not be applied mechanically to individual projects.

- **Prices.** Price references are point-in-time assessments and analyses from S&P Global Platts, Sylvera and Abatable; they differ in coverage and method.

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