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Carbon Credits or Carbon Cover-Ups? Evaluating India's Carbon Footprint Regulation within a Global Legal Framework

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India, the world's third-largest carbon emitter, is setting up a domestic carbon market under its amended Energy Conservation Act (2022). The new Carbon Credit Trading Scheme (CCTS) (approved July 2024) will create an intensity-based emissions trading system for major industries. Meanwhile, voluntary offsets (including renewable energy and afforestation) are being introduced. This analysis reviews global and Indian carbon market mechanisms, the evolving legal framework, and the issue of carbon-offset fraud, commonly referred to as "greenwashing." This paper assesses India's current carbon footprint and policies, highlights design challenges (e.g. data gaps, price volatility, integrity risks), and recommends stronger safeguards (legal clarity, MRV protocols, stringent additionality checks, and transparent registries) to ensure real climate impact. Key legislation (national and international) and select case-law principles are discussed, along with economic data on India's climate finance needs. The goal is to determine whether India's credit schemes can yield genuine emissions cuts or merely provide a green façade. In identifying systemic loopholes and risks of greenwashing, the paper recommends a series of legal reforms, including a clearer statutory definition of carbon credits and offsets, stronger penalties for fraud, blockchain-based credit registries, and an independent carbon market regulator. The inclusion of state-level carbon pricing models and transparent monitoring, reporting, and verification (MRV) mechanisms is crucial for achieving both economic efficiency and environmental justice. Ultimately, this paper argues that without

a robust and enforceable legal framework, India's carbon credit system risks becoming a smokescreen for inaction, perpetuating emissions under the guise of sustainability.

Keywords: *carbon credit trading scheme, environmental law, greenwashing, climate policy, emission trading.*

INTRODUCTION

Carbon credits, sometimes referred to as carbon offsets, are traded commodities. By purchasing one, you are effectively contributing to the reduction of a specific quantity of greenhouse gas emissions. If a corporation emits less than its limit, it receives credits, which can be traded. If more credits must be purchased.

Carbon credits are entering the policy sphere in India, the world's third-largest producer of greenhouse gas emissions, as public disapproval of offsets grows. India is currently moving to domestic credits through its Perform, Achieve and Trade energy-efficiency program and a new carbon market framework. India has long hosted numerous Clean Development Mechanism initiatives. Indian public discourse reflects concerns around the world. Analysts wonder if new credit programs would actually reduce costs or just put up a green front.[1] In order to guarantee that India's carbon credit system produces genuine climate benefits rather than greenwashing, this study will dissect its legal and economic framework, evaluate its advantages and disadvantages, and suggest changes.

DESCRIPTION OF THE TERMS

Carbon Credit: A decrease of one metric tonne of carbon dioxide or its carbon dioxide equivalent (CO2e) is represented by one carbon credit. In simple terms, carbon credits are the slips that permit the company to emit a certain amount of carbon for that particular year.

Carbon Cover-ups: These are the misleading practices done by corporations to hide the actual amount of greenhouse gas (GHG) emissions. They do so to look more sustainable than they are. In simple terms, it is Greenwashing.

[1] 'India's Carbon Market: Regulatory and Institutional Developments' (*International Carbon Action Partnership*, 2024) <https://icapcarbonaction.com/en/ets/indian-carbon-credit-trading-scheme> accessed 01 July 2025

Carbon Footprint: It is the total number of greenhouse gases emitted by an individual, group or company in a particular year.

Calculation of Carbon Credit –

Step 1: Determine Activities that Emit Greenhouse Gases –

The First Scope is Direct Emissions: These are emissions released directly from sources organisation owns or controls. Examples include:

- **Fuel combustion:** (boilers, furnaces, turbines)
- **Owned Transport:** (trucks, trains, ships, aeroplanes, cars)
- **Process Emissions:** (cement, aluminium, waste processing)
- **Fugitive Emissions:** (air conditioning, refrigeration leaks, methane leaks from pipeline)

The Second Scope-Energy Indirect Emissions: Indirect Emissions refer to greenhouse gases released during the production of energy that one's organisation consumes. Though these emissions happen outside your premises (often at a power plant), they're attributed to one because he/she is the end user. Examples include: usage of purchased heat, steam, cooling, and power.

The Third Scope (Other Indirect): These are emissions from activities related to your organisation's operations but not owned or managed by it. Example includes

- **Purchased materials and fuels:** (extraction, processing and production)
- **Transport-related activities:** (commuting, distribution, business travel)
- **Water disposal:** (waste, recycling)
- Leased assets, franchising and outsourcing

Step 2: Measure Sources of Pollution –

The most widely used method to estimate greenhouse gas (GHG) emissions is by applying standard emission factors to your organisation's or household's activity data.

Collect records such as invoices, bills, and receipts that reflect resource usage. Focus on categories like:

- **Use of Electricity:** The total amount of electricity bills' kWh usage
- **Use of Natural Gas:** Total energy consumption from petrol bills in kWh
- **Supply of Water:** Total amount of water provided from the water bill in cubic meters (m^3)
- **Treatment of Water:** Total water treated from water bills, measured in cubic meters (m^3)
- **Fuel for Company-Owned Automobiles:** Litres of fuel bought using receipts and invoices.
- **Passenger travel for Employees:** receipts for travel-related information. Additionally, to find flight, rail and road lengths, utilise distance calculator websites. Recycling and waste disposal of tonnes of rubbish from the waste collection supplier, sorted by waste kind.

Step 3: Get the Emission Factor of Major GHGs –

At this point, calculating carbon credits can get very challenging. This is because the emissions from each of the six main GHGs can be calculated using a formula. However, remember that you should report for a whole year. Ideally, your financial year and emissions year should line up. The majority of your reporting year must fall inside your financial year if they differ.

Emission factors (EF) vary depending on the activity or fuel. This is to illustrate the level of pollution caused by each of the following GHGs:

- Methane (CH_4),
- Carbon dioxide (CO_2),

These include sulphur hexafluoride (SF_6), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), and perfluorocarbons (PFCs). Various fuels and activities can release one or more of them. Therefore, it is essential to know one's EF. There is a formula to determine how much each GHG emits:

- GHG emissions are equal to the activity data emission factor.

- The overall amount of a resource used in a given year is known as activity data.

We get the emissions by multiplying that by the EF of all the GHGs that the activity produces. The EFs for different fuels and resources can be found in the Greenhouse Gas Inventories from the Environmental Protection Agency (EPA). These are coal and coke, biomass, electricity, fossil fuels, natural gas, and oil. The EPA also has a list of EFs for different sectors called AP-42.

Step 4: Change the EF to carbon dioxide equivalent and calculate the total emissions

One important point to remember is that the six main greenhouse gases do not all have the same potential to harm the world, which is known as their Global Warming Potential (GWP). To put it another way, methane has a different warming effect than one unit of CO2. The other GHGs are no different. Finding the overall emissions from your activities and resource use is the final stage. Calculate it by adding up all of the CO2e emissions during 12 months. There is an alternative method to determine your carbon footprint for personal emissions. For example, after entering all the information, you can use an online calculator to determine your overall emissions.

INDIAN CARBON MARKET

The Energy Conservation Act, 2001 (as amended in 2022) and associated programs, which fall under the broad purview of the Environment (Protection) Act 1986[2], are the main drivers of the Indian carbon market. With authority provided by the amended ECA, the Ministry of Power announced the Carbon Credit Trading Scheme, 2023 (CCTS 2023) at the beginning of 2023. The ECA Amendment of 2022 inserted new provisions, including section 14(w) (authorising a carbon credit trading scheme) and section 14AA (allowing the Government or an authorised agency to issue carbon credit certificates to eligible entities).[3] Under section 14AA, a registered entity that 'complies with the requirements of the carbon credit trading scheme' is entitled to receive a certificate and to buy or sell it under the scheme. The Scheme notification (S.O. 2825(E) dated 28 June 2023) establishes a national cap-and-trade system for greenhouse gases, with mandatory emissions-intensity targets for large industrial units and tradable Carbon Credit

[2] Environment (Protection) Act 1986
[3] The Energy Conservation Act 2001

Certificates (CCCs) representing one tonne CO_2e reductions. The central government is required by Section 3 of the Environment (Protection) Act 1986 to take all measures as it deems necessary or expedient for protecting and improving the quality of the environment.[4]

The CCTS establishes two primary mechanisms: a compliance market for obligated entities and an offset mechanism for voluntary participants. Under the compliance mechanism, entities exceeding their emission intensity targets must purchase carbon credits or pay penalties calculated as environmental compensation at twice the average credit price. Those reducing emissions below targets earn tradeable carbon credit certificates, creating financial incentives for emission reductions.[5]

State-Level Implementation: Several Indian states have pioneered carbon market initiatives. Gujarat became the first state to announce a carbon trading market through a memorandum of understanding with the Energy Policy Institute at the University of Chicago. The state's particulate matter trading market in Surat, launched in 2019, achieved a 24% reduction in industrial emissions among 350 participating industries.[6]

Rajasthan has demonstrated leadership in renewable energy with 29,981 MW of installed capacity, while Maharashtra and Kerala have announced net-zero targets.[7] However, within India, Perform, Achieve and Trade (PAT) was an early 'credit' scheme started in 2012 under the Bureau of Energy Efficiency (BEE). PAT set energy-efficiency targets for power plants and factories; overachievers earned 'energy-saving certificates' tradable in power exchanges. PAT succeeded in cutting energy intensity by ~15–25% in covered sectors, but it was not framed as a greenhouse gas market. The new CCTS essentially evolves PAT into a formal *ETS*: under CCTS, BEE will issue Carbon Credit Certificates (CCCs) worth 1 tonne CO_2e for beating intensity targets. Credits will trade on power exchanges, with entities able to bank or buy them to cover

[4] *Indian Council for Enviro-Legal Action v Ministry of Environment, Forest and Climate Change & Ors* [2015] OA No 170/2014 (NGT)
[5] Vandana Pai and Heer Kamdar, 'India's Carbon Credit Trading Scheme: Legal and Investment Perspectives' (*Law Asia*, 22 November 2024) <https://law.asia/indias-carbon-credit-trading-framework/> accessed 01 July 2025
[6] 'State Climate Leadership and Decentralised Action in 2025' (*NetZero India*, 25 May 2025) <https://netzeroindia.org/climate-action-plans-in-india/> accessed 01 July 2025
[7] Tanya Rana and Vibhuti Garg, 'Policy Innovations Driving Renewable Energy Growth in Rajasthan and Gujarat' (*Institute for Energy Economics and Financial Analysis*, 05 November 2024) <https://ieefa.org/resources/cementing-rajasthans-and-gujarats-renewable-energy-leadership> accessed 01 July 2025

deficits. Initially, only CO_2 (and some PFCs) from Scope 1–2 emissions are covered, but provisions exist to expand to other gases and sectors (e.g. coal power).[8]

Carbon Credit Fraud and Corporate Cover-ups (Greenwashing): There are countless ways for companies to offset carbon emissions, like investing in renewable energy by funding solar power generation projects and promoting forest regrowth through tree planting and reforestation projects. Globally, many offset projects have come under fire for exaggerated or non-additional claims. For example, a 2023 Guardian investigation found that 39 of the world's 50 largest offset projects were 'likely junk' due to fundamental flaws. Projects in developing countries (large dams, tree-planting, cookstoves, etc.) often overstate baselines or would have happened anyway. Indeed, all nine Indian projects among the top 50 (five big hydro dams, two solar parks, two wind farms) were classified as 'likely or potentially junk', critics noted that none provided truly additional cuts beyond business-as-usual. Such findings highlight that mere carbon cover-ups (offset scams) allow high emitters to claim false credits while real pollution continues.[9]

The HFC-23 Scandal: The most egregious example of carbon credit fraud involved the production and destruction of HFC-23, a super greenhouse gas with warming potential 14,800 times greater than carbon dioxide. Indian and Chinese companies exploited the Clean Development Mechanism by deliberately increasing HFC-23 production to earn lucrative carbon credits for its destruction. According to the Environmental Investigation Agency, 'Indian producers have recently reported revenue from HFC-23 credits to be double the sales of the actual refrigerant HCFC-22.' This perverse incentive structure generated an estimated $1.6 billion for Chinese companies alone by 2012. The scandal prompted the European Union to reject HFC-23 credits from its emissions trading scheme. In response, the Indian government issued a mandatory order in 2016 requiring companies to urgently and immediately destroy HFC-23 through incineration, internalising the environmental costs. However, monitoring

[8] Deepanshu Kaul Philip, 'India's Carbon Market Reform: Aligning Climate Goals with Economic Ambitions' (*Invest India*, 15 July 2024) <https://www.investindia.gov.in/blogs/indias-carbon-market-revolution-balancing-economic-growth-climate-responsibility> accessed 01 July 2025

[9] Nina Lakhani, 'Revealed: top carbon offset projects may not cut planet-heating emissions' *The Guardian* (19 September 2023) <https://www.theguardian.com/environment/2023/sep/19/do-carbon-credit-reduce-emissions-greenhouse-gases> accessed 01 July 2025

compliance remains challenging, with evidence suggesting continued emissions despite regulatory requirements.

Verra, the world's largest carbon credit certifying body, denied registration to four Indian carbon farming projects, highlighting quality concerns in the domestic market. Similarly, Corporate Accountability classified nine Indian renewable energy projects as 'likely junk,' indicating systematic issues with credit quality.

The economic incentives for carbon credit fraud are substantial. With domestic carbon credit prices in India ranging from $2.35 to $10 per tonne CO2e, compared to international prices of $38 per tonne, significant arbitrage opportunities exist. This price differential creates incentives for over-crediting, false additionality claims, and other fraudulent practices.[10]

LEGAL CHALLENGES AND LOOPHOLES

No Clear Definition: Neither the Energy Conservation Act (ECA) 2001 nor the Carbon Credit trading scheme (2023) provides clear statutory definitions of key terms like 'carbon credit', 'additionality', 'offset', or 'emissions intensity'. The scheme relies on technical reports and guidelines to define calculation methods, but without a legislative glossary, the scope of credits and offsets is uncertain. This ambiguity can impair enforcement. For example, 'additionality' (the core concept that a credit reflects a real extra reduction) is not defined in law, so any challenge to a project's validity must navigate engineering guidelines rather than statutory criteria.

Weak Enforcement Structure: The penalty scheme in the ECA has not been updated for carbon credits. Section 26 of the ECA imposes fines for failure to comply with certain clauses of section 14 (energy audits, labelling, efficiency standards, etc.), but conspicuously omits any reference to the new clause (w) or Sec.14AA. Thus, an entity that fails to surrender required Carbon Credit Certificates (CCCs) or falsifies its emissions reports currently faces no prescribed penalty under the Act. At most, the CCTS procedure allows the Bureau of Energy Efficiency BEE to require an *aggrieved entity* to bear check-verification costs if it is found to have supplied false

[10] Saurav Anand, 'Domestic carbon credit prices may rise with new regulations: Report' *ETEnergyWorld* (17 April 2025) <https://energy.economictimes.indiatimes.com/news/renewable/domestic-carbon-credit-prices-may-rise-with-new-regulations-report/120365392> accessed 01 July 2025

data, which is a weak deterrent.[11] In short, there is no statutory fine or criminal liability for credit fraud or non-compliance, contrary to the robust enforcement regimes under pollution laws. This gap undermines deterrence: in the absence of legal sanctions, non-compliance may be seen as low-risk, as one observer notes the enabling provisions are extremely limited and leave much to implementation choices.

Greenwashing and Double-Counting: The system has few built-in safeguards against misleading claims. Aside from requiring an entity to *undertake* that reductions are not double-counted with renewable energy certificates[12], there is no statutory firewall. For example, a wind farm owner could theoretically earn CCCs for emission reductions while also selling Renewable Energy Certificates for the same MWh – a classic double-count. Likewise, carbon credits sold on India's market could overlap with credits claimed by a foreign buyer under Article 6 or by a company's voluntary pledge, absent strict 'corresponding adjustments.' International analyses warn of this danger: carbon consultants caution that without enforcement, *we might kid ourselves we've achieved net zero when we haven't.*[13] Indeed, global watchdogs have documented cases where both companies and governments counted the same credits. India's rules presently rely on voluntary registry undertakings, not on binding law preventing a credit from being double-sold or double-booked.

Insufficient MRV (Monitoring, Reporting & Verification) basis: The CCTS requires entities to prepare GHG monitoring plans and undergo third-party verification (Forms A, B and C). However, these requirements come only from BEE guidelines, not from a statutory mandate. The ECA/EPA contain no explicit MRV protocols or accreditation standards. Without a firm legal foundation, the MRV regime risks inconsistency and loopholes. For example, there is no statute setting materiality thresholds for emissions data or penalising inspectors for negligence. In effect, the MRV process is governed by subordinate rules that could be amended or ignored

[11] Bureau of Energy Efficiency, *Operational Guidelines for Compliance under India's Carbon Credit Trading Scheme (CCTS)*, Version 1.0 (July 2024) https://beeindia.gov.in/sites/default/files/Detailed%20Procedure%20for%20Compliance%20Procedure%20under%20CCTS.pdf> accessed 01 July 2025

[12] *Ibid*

[13] Dishaa Dand and Krishna Ravishankar, 'India's Carbon Credit Framework and the Risks of Greenwashing' (*India Regulatory and Corporate Law Blog*, 21 June 2023) <https://www.irccl.in/post/india-s-carbon-credit-policy-and-the-greenwashing-conundrum> accessed 01 July 2025

without parliamentary oversight. This lack of a formal MRV framework weakens confidence in the integrity of credits.

CASE LAWS

In Vellore Citizens Welfare Forum v Union of India (1996), the Supreme Court ruled that, by Indian law, the precautionary principle and the polluter pays concept are 'essential features' of sustainable development. It ruled that when an activity is 'hazardous or inherently dangerous,' the operator is *absolutely liable* to remedy any harm, irrespective of fault. This 'absolute liability' doctrine (first articulated in the Oleum Gas Leak case, *M.C. Mehta v UOI,* 1987) means a polluting industry must bear all costs of cleanup. Applying this, courts have required that polluting companies compensate victims and restore the environment, not merely pay nominal fines.[14]

In *Vedanta Ltd. v State of Tamil Nadu* (2024),[15] the Supreme Court reaffirmed these doctrines in the Sterlite Copper Plant case. The Court emphasised that *"economic activities should not be carried out at the cost of environmental degradation"* and that industrial units must balance growth against environmental and public welfare concerns. Justice Chandrachud expressly invoked the polluter pays principle, sustainable development and public trust, and enshrined the right to "breathe clean air, drink clean water, live a life free from disease" as an inviolable right. The Court upheld closure and heavy remedial costs for a repeat offender plant. These precedents underscore that Indian law demands rigorous accountability from emitters. Although these cases arose under general environmental law (Water, Air and EPA 1986), the same principles logically extend to carbon trading: a company that violates its emissions target should be liable to make good any shortfall, and fraudulent credit claims should be treated as unacceptable pollution. In short, Vellore, Oleum/Mehta and Vedanta establish that:

(a) polluters bear all costs of pollution,

(b) uncertainty is no excuse for inaction (precautionary principle), and

[14] *Vellore Citizens Welfare Forum v Union of India* (1996) 5 SCC 647, para 11
[15] *Vedanta Ltd v State of Tamil Nadu* (2024) 2 SCR 1121

(c) environmental due diligence and corporate accountability are paramount. These doctrines support strengthening statutory enforcement in the carbon credit regime.

RECOMMENDATIONS FOR LEGAL REFORM

Clarify Definitions by Statute: Amend the ECA (or its rules) to include clear definitions of "carbon credit", "carbon credit certificate", "offset project", "additionality" and "baseline emission intensity". For example, section 2 of the ECA could define a *Carbon Credit Certificate* as "an instrument equal to one tonne of CO_2 equivalent reduction, issued by notified scheme rules." Explicit legislative definitions would remove interpretive uncertainty and align with global practice. In particular, the ECA should require that carbon credits be limited to *additional* reductions not otherwise mandated or subsidised, echoing Article 6 guidance that credits must be *"real, measurable and additional"*. Definitional clarity will also guard against "gamed" baselines or nebulous "offset" claims.

Institute Strict Enforcement and Liability Provisions: The ECA must be amended to impose explicit penalties and even criminal sanctions for carbon scheme violations. Analogous to Sections 26–27 (penalties and adjudication) of the ECA, the Act should cover failures under Sec.14(w). Penalties should be calibrated to ensure *"the polluter should pay"* for any shortfall or misreporting, consistent with Indian jurisprudence. The law should also specify liability for intermediaries: accredited verifiers or auditors who issue false certificates should face disqualification or penalties. Criminal liability (e.g. imprisonment for fraud) could be introduced for egregious cases of deliberate data fabrication.

Harmonise with International (Article 6) Norms: India should incorporate the Paris Agreement's Article 6 requirements into domestic law. This includes mandating corresponding adjustments in the national greenhouse inventory whenever a carbon credit is exported or used to meet foreign commitments, to prevent double-counting. Likewise, legislative rules should ban issuance of credits for projects that benefit from other subsidies or obligations (e.g. an RE plant enjoying RPO advantages). Drawing on UNFCCC guidelines, the law should require independent baseline setting, third-party validation of additionality, and publication of all carbon project methodologies. A statutory credit registry (modelled on the UNFCCC/CDM registry) is needed, and rules must require transparent online disclosure of CCC issuances, trades and retirements.

These steps would align India's regime with Article 6.4 Mechanism standards (on MRV, avoidance of leakage, etc.) and help India credibly integrate with global carbon markets.

Establish an Independent Carbon Market Regulator: To resolve fragmented oversight, Parliament should consider creating a statutory Carbon Market Commission (or empower an existing regulator) with quasi-judicial powers. This body would set emission targets, accredit verifiers, enforce compliance and manage the central registry. The commission could be empowered by the ECA or EPA to issue binding orders and impose penalties, independent of BEE or the Energy Ministry. In the interim, CERC's role should be formalised: for example, amend the Electricity Act or ECA to make CERC the market regulator, as it already regulates power trading. This would mirror models in other countries where specialised regulators oversee carbon markets. Crucially, the new body must include environmental expertise and should consult the MoEFCC represents the MoEFCC, or the Ministry of Environment, Forests, and Climate Change, but have autonomy from political influence.

Mandate Robust MRV (monitoring, reporting, verification) Protocols and transparency in Law: Finally, the statute or delegated rules should formalise the MRV framework. For instance, amend the ECA to authorise the government to notify MRV standards by rule, specifying allowable methodologies (grid factors, GWP values, verification intervals, etc.). Accreditation criteria for third-party verifiers should be codified (not left to informal approval). The law should require that all monitoring reports and verification statements be filed electronically in the registry. Importantly, any material misstatement discovered in verification should trigger automatic investigation and punitive measures. Transparency provisions could be added (e.g. making the registry public and mandating annual disclosures of credit holdings by obligated entities). These reforms would lock in the procedural guidance in a legally binding form.

CONCLUSION

In sum, while India has taken laudable steps by amending the ECA and launching a carbon trading scheme, the current legal framework contains loopholes that could undermine its effectiveness. The Act and Scheme must be tightened to define key terms, allocate authority clearly, and impose concrete liabilities for non-compliance. Robust monitoring and transparent registries should be anchored in statute. These reforms are consistent with long-standing Indian

environmental jurisprudence: under the precautionary and polluter-pays doctrines, courts have demanded that polluters bear full responsibility for emissions and that regulatory standards be strictly enforced. Strengthening the law in the above ways will align India's carbon market with global best practices (including Paris Agreement rules) and bolster the integrity of its emissions trading. In doing so, it will help ensure that the noble environmental goals of the carbon credit policy are matched by equally rigorous legal mechanisms.