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Between Disclosure and Integrity: Corporate Carbon Accountability,Regulatory Bifurcation, and the Greenwashing Liability Cascade in India's Emerging ESG framework

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Between Disclosure and Integrity: Corporate Carbon Accountability, Regulatory Bifurcation, and the Greenwashing Liability Cascade in India's Emerging ESG framework

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Abstract

India's corporate climate governance architecture rests on two principal regulatory pillars: the Securities and Exchange Board of India's Business Responsibility and Sustainability Reporting (BRSR) framework, which imposes mandatory greenhouse gas disclosure obligations on the largest listed companies, and the Carbon Credit Trading Scheme (CCTS) 2023, which establishes the country's domestic carbon market. This article argues that these two instruments measure the same physical phenomenon—corporate greenhouse gas emissions—through structurally incompatible frameworks, producing a regulatory bifurcation that generates concrete legal liability rather than merely administrative inconvenience. By applying the functional equivalence methodology drawn from comparative law, the article evaluates the extent to which India's aggregate ESG regulatory architecture achieves the disclosure quality, methodological rigour, and enforcement coherence established by the UN Greenhouse Gas (GHG) Protocol, the globally dominant standard for corporate carbon accounting. The analysis demonstrates three principal findings: first, that the BRSR's silence on organisational boundary methodology creates systematic underdisclosure that survives formal compliance; second, that the absence of legally defined additionality standards in the CCTS creates conditions for greenwashing liability simultaneously implicating three regulatory authorities—SEBI, the Bureau of Energy Efficiency, and the National Green Tribunal; and third, that Life Cycle Assessment, when embedded within the compliance framework, provides a legally superior basis for substantiating carbon neutrality claims before each of these forums. The article concludes with targeted structural reforms to harmonise India's corporate carbon framework with the GHG Protocol standard and with the EU Carbon Border Adjustment Mechanism.

Keywords: *GHG Protocol, BRSR, Carbon Credit Trading Scheme, greenwashing, ESG disclosure, Life Cycle Assessment, Indian environmental law, corporate climate liability, SEBI, CCTS.*

I. Introduction: The Legal Stakes of Carbon Accounting

Climate change has ceased to be merely a problem of atmospheric science and has become, unambiguously, a problem of law. For corporations operating in India, this transformation occurs along two parallel tracks that have not yet been formally reconciled. The first is the mandatory disclosure track, where the Securities and Exchange Board of India's Business Responsibility and Sustainability Reporting framework has, since financial year 2022–2023, required the top one thousand listed companies to quantify and disclose their greenhouse gas emissions as part of their annual reporting obligations.[1][2] The second is the carbon market track, where the Carbon Credit Trading Scheme 2023—notified by the Ministry of Environment, Forest and Climate Change pursuant to the Energy Conservation (Amendment) Act 2022—has established a domestic framework for the issuance, trading, and retirement of carbon credit certificates.[3][4]

The premise that these two tracks constitute a coherent regulatory system for corporate carbon accountability is, on examination, insupportable. They are administered by different regulatory authorities—SEBI and the Bureau of Energy Efficiency respectively—with different measurement methodologies, different assurance standards, different enforcement powers, and, critically, different rules for determining which emissions fall within the reporting entity's organisational boundary. The same physical quantity of greenhouse gas, emitted from the same industrial facility, may be reported in materially different amounts across the two frameworks without any disclosure to the investor, the regulator, or the market of the methodological reason for the discrepancy.

This regulatory bifurcation is not a technical peculiarity confined to accounting specialists. It has concrete legal consequences. A company that exploits the boundary ambiguity to report lower emissions in its BRSR than are verified in its CCTS submission may be liable for material misstatement under the Securities Contracts (Regulation) Act 1956[5] and SEBI's Prohibition of Fraudulent and Unfair Trade Practices Regulations 2003.[6] A company that uses carbon credits of uncertain additionality to claim carbon neutrality in its advertising and annual

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[1] SEBI Circular SEBI/HO/CFD/CMD-2/P/CIR/2021/562 dated 10 May 2021 (BRSR Framework); SEBI Circular SEBI/HO/CFD/PoD-2/P/CIR/2023/123 dated 12 July 2023 (BRSR Core).

[2] Mandatory for the top 1,000 listed companies by market capitalisation from financial year 2022–2023: SEBI Circular SEBI/HO/CFD/CMD-2/P/CIR/2021/562 (n 1) para 3.

[3] MoEFCC Notification S.O. 2306(E) dated 28 June 2023 (Carbon Credit Trading Scheme 2023).

[4] Energy Conservation (Amendment) Act 2022, inserting s 14A into the Energy Conservation Act 2001; the 2022 Amendment empowers the Central Government to establish a carbon credit trading scheme and prescribe energy consumption norms for designated consumers.

[5] Securities Contracts (Regulation) Act 1956, s 36B (civil liability for misstatements in securities documents).

[6] SEBI Prohibition of Fraudulent and Unfair Trade Practices relating to Securities Market Regulations 2003, Reg 3 (prohibition on misleading statements in connection with securities).

report simultaneously faces enforcement exposure from the Central Consumer Protection Authority under the Consumer Protection Act 2019,[7] from SEBI under the LODR Regulations 2015, and potentially from the National Green Tribunal under the polluter-pays principle.[8] These exposures do not arise sequentially or alternatively—they cascade.

The purpose of this article is to map that cascade and to identify the structural reforms necessary to prevent it. Section II analyses the GHG Protocol's architecture and its de facto regulatory authority in the Indian commercial context. Section III diagnoses the BRSR-CCTS bifurcation and its legal consequences through a worked example. Section IV examines the greenwashing liability cascade across India's three principal climate enforcement authorities. Section V addresses the role of Life Cycle Assessment as a legally superior tool for substantiating carbon claims. Section VI proposes targeted reforms. Section VII concludes.

II. The GHG Protocol and Its Authority in Indian Law

2.1 The Protocol's Normative Architecture

The Greenhouse Gas Protocol Corporate Accounting and Reporting Standard, developed jointly by the World Resources Institute and the World Business Council for Sustainable Development and first published in 2001,[9] has achieved a form of global de facto legal authority through network effects rather than treaty ratification. It is not an instrument of public international law; compliance with it creates no rights or obligations under the UNFCCC framework. Its authority derives instead from the fact that it has been adopted, referenced, or incorporated by more than ninety national regulatory frameworks, and that major voluntary disclosure platforms treat GHG Protocol alignment as a baseline expectation.[10]

The Protocol's most significant methodological contribution is its three-scope taxonomy for classifying corporate greenhouse gas emissions. Scope 1 emissions arise directly from sources owned or controlled by the reporting company. Scope 2 emissions arise from the generation of purchased energy consumed by the reporting entity, occurring physically at the facility of the energy supplier. Scope 3 encompasses all other indirect emissions across the reporting company's value chain, upstream and downstream, divided into fifteen categories by the Protocol's

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[7] Consumer Protection Act 2019, ss 2(28) (definition of misleading advertisement), 18 (CCPA powers), 21 (penalties).

[8] National Green Tribunal Act 2010, ss 14 (original jurisdiction over substantial environmental questions), 15 (remedial powers including compensation, restitution and restoration).

[9] GHG Protocol Corporate Accounting and Reporting Standard (World Resources Institute and World Business Council for Sustainable Development, first published 2001, revised ed 2004) (GHG Protocol Corporate Standard).

[10] The GHG Protocol is referenced as the primary or exclusive GHG accounting standard in over ninety national and sub-national regulatory frameworks: see WRI, 'GHG Protocol Corporate Standard: Summary of Uses' (WRI, 2023).

2011 Scope 3 Standard.[11] For most manufacturing companies, Scope 3 emissions dwarf Scope 1 and Scope 2 emissions combined—a fact with profound regulatory consequences as mandatory Scope 3 disclosure approaches.[12]

2.2 The Protocol's Emerging Legal Authority in India

The GHG Protocol's authority in the Indian regulatory context is growing through three channels. First, SEBI's October 2023 consultation paper on value-chain ESG disclosures explicitly references the GHG Protocol Scope 3 Standard as the appropriate methodology for supply-chain emission accounting, signalling that the Protocol is on the trajectory from informal reference to formal mandatory adoption.[13] Second, the EU's Carbon Border Adjustment Mechanism, which enters full operation in January 2026, requires that the embedded carbon content of specified industrial products exported to the EU be reported using a methodology consistent with the GHG Protocol. For Indian exporters in steel, cement, aluminium, fertilisers, hydrogen, and electricity, GHG Protocol compliance is therefore not a matter of voluntary best practice but of market access.[14]

Third, and most consequentially for the analytical framework of this article, the National Green Tribunal's growing willingness to apply quantitative environmental measurement methodologies in compensation proceedings[15] creates conditions in which the GHG Protocol's accounting framework becomes relevant as forensic evidence. A tribunal that must quantify the atmospheric burden attributable to a specific corporate defendant's activities cannot avoid asking how those emissions were measured and whether the measurement methodology is reliable. The GHG Protocol, constitutionalised in normative terms by the Supreme Court's reception of the polluter-pays principle in Vellore Citizens Welfare Forum v Union of India,[16] provides the most widely accepted technical answer to both questions.

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[11] GHG Protocol Scope 3 Standard (WRI and WBCSD, 2011) (identifying fifteen standard Scope 3 categories, divided into upstream and downstream emission sources).

[12] P Griffin, D Lont and Y Sun, 'The Relevance to Investors of Greenhouse Gas Emission Disclosures' (2017) 22 Contemporary Accounting Research 1438, 1441 (noting that Scope 3 emissions typically represent 70 to 90 per cent of total corporate GHG footprints in manufacturing sectors).

[13] SEBI Consultation Paper on ESG Disclosures for the Value Chain (October 2023) 12–14 (explicitly referencing the GHG Protocol Scope 3 Standard as the appropriate methodology for supply-chain emission accounting).

[14] EU Regulation 2023/956 establishing a carbon border adjustment mechanism (CBAM), Art 3 et seq; EU Implementing Regulation 2023/1773 (CBAM transitional period reporting methodology). The CBAM entered its transitional phase on 1 October 2023 and becomes fully operational from 1 January 2026.

[15] Indian Council for Enviro-Legal Action v Union of India (1996) 3 SCC 212 (establishing polluter-pays liability and reliance on scientific measurement methodologies in compensation proceedings).

[16] Vellore Citizens Welfare Forum v Union of India (1996) 5 SCC 647 (constitutionalising the precautionary principle and the polluter-pays principle as part of Indian customary international law).

III. The Regulatory Bifurcation: BRSR, CCTS, and the Boundary Problem

3.1 Organisational Boundary: The Critical Methodological Variable

The most significant gap in the BRSR framework—and the one with the most acute legal consequences—is its silence on organisational boundary methodology. The GHG Protocol provides three approaches for determining which entities and operations are consolidated into a corporate GHG inventory: the equity share approach, which consolidates emissions proportionate to ownership interest; the financial control approach, which consolidates all emissions of entities over which the company has financial control; and the operational control approach, which consolidates all emissions of entities over which the company has operational control.[17] The choice is not merely technical: for companies with complex group structures, joint ventures, or partially owned subsidiaries, the three approaches can produce materially different emission totals from the same underlying set of physical operations.[18]

The BRSR framework requires only that disclosures be provided on a consolidated basis where the listed entity has subsidiaries, without specifying which consolidation methodology governs the treatment of non-wholly-owned entities.[19] The CCTS framework, by contrast, imposes its compliance obligations on the operational entity and requires reporting of one hundred per cent of direct operational emissions, regardless of the ownership structure of the legal entity that controls it—functionally equivalent to the GHG Protocol's operational control approach applied at project level.[20]

3.2 The Bifurcation: A Worked Example

The legal consequences of this methodological divergence are most clearly illustrated through a concrete example. Consider a publicly listed conglomerate—Company X—that holds a sixty per cent equity stake in a cement manufacturing subsidiary, Subsidiary Y. The subsidiary operates an integrated cement plant classified as a designated consumer under the PAT scheme and subject to CCTS compliance obligations. The plant emits 500,000 tonnes of CO_2 equivalent (tCO_2e) per annum from direct operations. Without any mandatory specification of boundary methodology in the BRSR, Company X elects the equity share

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[17] GHG Protocol Corporate Standard (n 9) ch 3 (equity share approach), ch 4 (financial control approach), ch 5 (operational control approach), with detailed guidance on the treatment of joint ventures, minority interests, and outsourcing arrangements.

[18] M Brander and others, 'Comparative Analysis of Attributional Corporate GHG Accounting Methods' (2011) 3 International Journal of Life Cycle Assessment 431, 436–438 (demonstrating that boundary methodology choice can produce materially different emission totals for the same corporate entity).

[19] SEBI Listing Obligations and Disclosure Requirements Regulations 2015, Reg 34(2)(f) (requiring annual report to include BRSR); the BRSR template specifies that GHG disclosures be provided on a consolidated basis where subsidiaries exist, without specifying the consolidation methodology for minority-owned entities.

[20] The CCTS compliance obligations apply to the operational entity—the designated consumer classified under the PAT scheme—and require reporting of 100 per cent of direct operational emissions, irrespective of ownership structure: MoEFCC Notification S.O. 2306(E) (n 3) cl 4.

approach, consolidating sixty per cent of Subsidiary Y's direct emissions. Its BRSR Scope 1 disclosure records 300,000 tCO_2e—accurate as a mathematical application of the chosen methodology, but representing only sixty per cent of the physical emissions from the cement plant. Simultaneously, Subsidiary Y, as a CCTS designated consumer, is required to report 100 per cent of its operational emissions—500,000 tCO_2e—to the Bureau of Energy Efficiency, verified independently to ISO 14064-3 by a BEE-accredited verifier.

An investor or regulator comparing these two regulatory submissions encounters a 200,000 tCO_2e discrepancy between the BRSR-consolidated Scope 1 figure and the CCTS-verified direct emission total for the same cement plant. Without an explicit disclosure in Company X's BRSR of the equity share boundary methodology and its arithmetical effect on the consolidated figure, this discrepancy creates a materially misleading impression that the conglomerate's total Scope 1 footprint is lower than it physically is.

3.3 Legal Consequences of the Bifurcation

The legal exposure created by this scenario operates on three planes. On the first plane, SEBI can characterise the omission of the boundary methodology disclosure as a material misstatement under Regulation 34(2)(f) of the LODR Regulations, which requires annual report sustainability disclosures to be accurate.[21] On the second plane, a shareholder who sold Company X shares on the basis of the understated Scope 1 figure could allege misrepresentation under Section 36B of the Securities Contracts (Regulation) Act 1956,[22] and SEBI could initiate enforcement under the PFUTP Regulations.[23]

On the third plane, the bifurcation creates a risk of simultaneous enforcement by two regulatory authorities—SEBI and BEE—for what is substantively the same methodological failure. Indian administrative law provides no clear doctrine of issue estoppel between regulatory authorities acting under different statutory mandates, and the current CCTS and BRSR frameworks contain no formal coordination mechanism that would cause a penalty imposed by one regulator to inform or reduce the other's enforcement action.[24] This absence of coordination transforms a methodological ambiguity into a source of potentially duplicative liability—the regulatory analogue of double jeopardy.

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[21] SEBI LODR Regulations 2015 (n 19), Reg 34(2)(f); the omission of boundary methodology disclosure would render the Scope 1 figure misleading by omission under the materiality standard applicable to annual report disclosures.

[22] Securities Contracts (Regulation) Act 1956, s 36B; for the reliance element, see SEBI v Rakhi Trading Pvt Ltd, Civil Appeal 1969/2011 (Supreme Court) (setting out the elements of misrepresentation in the Indian securities law context).

[23] SEBI Prohibition of Fraudulent and Unfair Trade Practices Regulations 2003 (n 6), Reg 3(a) (prohibition on misleading statements in securities transactions).

[24] The Energy Conservation Act 2001, s 26 (penalties for non-compliance with energy consumption norms, extended by the 2022 Amendment to carbon credit obligations) and the SEBI Act 1992, s 15C (securities law penalties) operate under separate statutory mandates with no formal coordination mechanism.

IV. The Greenwashing Liability Cascade

4.1 The Architecture of Cascade Liability

The bifurcation problem is a specific instance of a broader structural flaw in India's corporate carbon governance: the absence of an integrated enforcement architecture that treats a corporate actor's carbon accounting obligations as a single coherent system. The consequences of this absence are most acute in the context of carbon neutrality claims. Such claims simultaneously engage the jurisdiction of at least three regulatory authorities—the Central Consumer Protection Authority, SEBI, and the National Green Tribunal—none of which has full visibility of the others' proceedings.[25]

Consider a consumer goods company that makes a carbon neutrality claim in its advertising (engaging the CCPA under the Consumer Protection Act 2019); includes the same claim in its BRSR disclosure (engaging SEBI under the LODR and PFUTP Regulations); and substantiates the claim using CCTS carbon credit certificates of uncertain additionality (engaging BEE under the Energy Conservation Act). A single flawed carbon neutrality claim cascades across three regulatory perimeters simultaneously, with no coordinated enforcement response.

4.2 The CCPA Dimension: Substantiation and the Standard of Proof

The CCPA's Guidelines for Prevention of Misleading Advertisements 2022 require that environmental claims be 'truthful, substantiated and not misleading.'[26] The standard of substantiation is not defined with reference to any specific carbon accounting methodology, leaving the Authority with considerable discretion in determining what evidence is adequate. In its most coherent formulation, the standard requires that the claiming entity be able to produce, on demand, a reproducible and independently verified evidence base for the claim. A carbon neutrality assertion resting on in-house emission estimates prepared without a defined functional unit, without a specified system boundary, and without third-party review cannot satisfy this standard, because the truth conditions of the claim are undefined.

Under Section 21 of the Consumer Protection Act, the CCPA may declare such a claim misleading and impose penalties of up to ten lakh rupees for a first violation, rising to fifty lakh rupees for subsequent violations.[27] The Advertising Standards Council of India's updated Guidelines for Advertising of Environmental Claims (2023) reinforce this standard by requiring that carbon neutrality claims specify the scope, methodology, certification, and timeline for

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[25] Consumer Protection Act 2019 (n 7); MoEFCC Notification S.O. 2306(E) (n 3); SEBI LODR Regulations 2015 (n 19).

[26] CCPA Guidelines for Prevention of Misleading Advertisements and Endorsements for Misleading Advertisements 2022, cl 5 (standard of substantiation for environmental claims: 'truthful, substantiated and not misleading').

[27] Consumer Protection Act 2019, s 21(1)(a) (penalty of up to Rs 10 lakh for first violation of misleading advertisement prohibition, rising to Rs 50 lakh for subsequent violations).

genuine emission reductions beyond offsets. While not legally binding, ASCI rulings are administratively influential and may be relied upon by the CCPA in determining whether a claim is misleading.[28]

4.3 The SEBI Dimension: Materiality and the Securities Market

In the capital markets context, a carbon neutrality claim included in a BRSR annual report disclosure is a statement made 'in connection with' the issuer's securities within the meaning of Regulation 3 of the PFUTP Regulations 2003.[29] Liability under the PFUTP Regulations requires, in addition to the nexus with securities trading, that the statement be false or misleading and material to investors. Materiality—the requirement that the information be significant to a reasonable investor's decision—is now established in the climate context by the integration of ESG performance data into equity research, index methodology, and institutional investment mandates. The Supreme Court's analytical framework in SEBI v Rakhi Trading Pvt Ltd[30] asks whether the information would have been significant to a reasonable investor; given that major ESG rating agencies assign carbon performance scores that directly affect index eligibility and, through passive investment mandates, share price, an inaccurate carbon neutrality claim satisfies this threshold.

SEBI's maximum penalty for non-compliance with listing obligations is twenty-five crore rupees or three times the profit from the violation, whichever is higher.[31] Directors who sign off on BRSR disclosures containing material climate misstatements face personal exposure under Section 447 of the Companies Act 2013 for fraud, and under Section 131 where the BRSR is treated as part of the financial reporting package requiring revision on grounds of material misstatement.[32]

4.4 The NGT Dimension: Polluter-Pays and Environmental Compensation

The National Green Tribunal's jurisdiction over corporate carbon conduct arises through its power under Section 14 of the NGT Act 2010 to hear civil cases involving substantial environmental questions under the laws listed in Schedule

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[28] Advertising Standards Council of India, Guidelines for Advertising of Environmental Claims (2023) cl 3.2 (requiring specification of scope, methodology, verification, and reduction timeline for carbon neutrality claims).

[29] SEBI PFUTP Regulations 2003 (n 6), Reg 3 (elements of liability: false or misleading statement, nexus with securities trading, and materiality to a reasonable investor).

[30] SEBI v Rakhi Trading Pvt Ltd (n 22) (Supreme Court's analytical framework for materiality: information is material if it would have been significant to a reasonable investor's decision).

[31] SEBI Act 1992, s 15C (maximum penalty for non-compliance with listing obligations: Rs 25 crore or three times the profit from the violation, whichever is higher). ESG-rating-driven materiality: major ESG rating agencies—MSCI, Sustainalytics—assign carbon performance scores that directly affect index eligibility and, through passive investment mandates, share price.

[32] Companies Act 2013, s 447 (punishment for fraud, applicable to directors who knowingly sign off on false disclosures); s 131 (revision of financial statements on grounds of material misstatement, applicable where BRSR is treated as part of the financial reporting package).

I.[33] A civil society organisation challenging a false carbon neutrality claim before the NGT would argue that the company's unabated emissions constitute environmental harm for which it is liable to pay compensation under the polluter-pays principle, constitutionalised in Vellore Citizens Welfare Forum v Union of India and consistently applied in NGT compensation proceedings.[34]

The precautionary burden in NGT proceedings shifts to the respondent where environmental harm is prima facie established.[35] A company that claims carbon neutrality while maintaining unverified emission estimates cannot demonstrate, under that burden, that its claimed offset purchases have in fact prevented the atmospheric harm asserted. The NGT's remedial powers under Section 15, which include the power to award compensation computed on the basis of the polluter-pays principle, are therefore engaged.[36] As climate attribution science matures—following the ICJ advisory opinion on states' climate obligations, oral hearings for which were conducted in December 2024—the methodological basis for quantifying atmospheric damage attributable to a specific company's emissions will become available to NGT proceedings, progressively exposing unverified carbon neutrality claims to quantified financial liability.[37]

V. Life Cycle Assessment as a Legal Defence Instrument

5.1 The Methodological Basis

Life Cycle Assessment, standardised under ISO 14040 and ISO 14044 and adopted as Indian Standards by the Bureau of Indian Standards,[38] provides a systematic methodology for quantifying the environmental impacts associated with all stages of a product's life—from raw material extraction through manufacture, distribution, use, and end-of-life disposal. Its relevance to the legal analysis of carbon claims arises through two channels. First, the GHG Protocol Product Life Cycle Accounting and Reporting Standard (2011) explicitly integrates LCA methodology into product-level Scope 3 accounting, providing

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[33] National Green Tribunal Act 2010, s 14 (original jurisdiction over civil cases involving substantial questions relating to the environment arising from laws in Schedule I, which includes the Environment Protection Act 1986 and the Energy Conservation Act 2001).

[34] Vellore Citizens Welfare Forum (n 16) (polluter-pays principle and evidentiary framework); MC Mehta v Union of India (1987) 1 SCC 395 (precautionary principle applied in industrial pollution context; burden of proof in environmental compensation proceedings).

[35] Sterlite Industries (India) Ltd v Union of India (2013) 4 SCC 575 (precautionary principle justifying precautionary closure pending final causation determination; NGT compensation quantum linked to extent of harm under polluter-pays).

[36] The precautionary burden in NGT proceedings shifts to the respondent to demonstrate compliance once environmental harm is prima facie established: Indian Council for Enviro-Legal Action (n 15); NGT Act 2010, s 20 (power to apply precautionary principle and sustainable development principles).

[37] UNGA Resolution 77/276 (29 March 2023) (requesting ICJ advisory opinion on states' obligations concerning climate change); oral hearings conducted before the ICJ in December 2024; advisory opinion in preparation as of May 2026. Indian courts have consistently treated ICJ advisory opinions as highly persuasive authority: see Vellore Citizens (n 16) (relying on ICJ Gabcikovo–Nagymaros reasoning).

[38] ISO 14040:2006 Environmental Management—Life Cycle Assessment—Principles and Framework; ISO 14044:2006 Environmental Management—Life Cycle Assessment—Requirements and Guidelines; both adopted as Indian Standards (IS/ISO 14040:2006 and IS/ISO 14044:2006) by the Bureau of Indian Standards.

conversion rules that translate ISO 14044-compliant LCA inventory data into GHG Protocol-compliant Scope 3 emission figures.[39] Second, ISO 14044's critical review requirement—which mandates independent expert panel review of any LCA that will be used to support public comparative assertions—creates an audit trail that simultaneously satisfies the substantiation standard applicable in CCPA proceedings, the evidentiary standard in NGT compensation proceedings, and the disclosure quality standard applicable in SEBI enforcement.[40]

5.2 LCA Superiority Across Three Enforcement Forums

The legal superiority of an LCA-backed carbon claim over an unsubstantiated offset-based claim can be demonstrated concretely for each of the three principal enforcement forums.

Before the CCPA, the ISO 14044 documentation provides a complete, reproducible evidence base; a critical review report from an independent panel confirming methodological compliance; a clear statement of what the claim covers and what it does not; and offset documentation linking each purchased credit to a specific verified project. Even if a complainant challenges the scope of the claim, the transparent boundary statement pre-empts the misleading-by-omission allegation. A company without a defined boundary cannot make this defence, because it has no defined boundary to disclose. The LCA-backed claim's legal superiority in the CCPA context is structural rather than contingent.[41][42]

Before the NGT, the ISO 14044 LCA inventory—having been subjected to independent third-party critical review—functions as expert evidence in compensation proceedings. The critical review report is the precise equivalent of the independent expert evidence that NGT proceedings place at the centre of environmental causation and quantum determinations. A company can deploy this evidence base to demonstrate that its claimed emission reductions are real, quantified, and independently verified, and that it has taken genuine abatement steps rather than substituting offset purchasing for reduction. This substantially reduces NGT compensation exposure under the polluter-pays quantification methodology.

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[39] GHG Protocol Product Life Cycle Accounting and Reporting Standard (WRI and WBCSD, 2011) ch 5 (providing conversion rules for translating ISO 14044-compliant LCA inventory data into GHG Protocol-compliant Scope 3 emission figures, bridging the methodological gap between the two frameworks).

[40] ISO 14044:2006, cl 6.2 (critical review requirement: any LCA intended to support public comparative assertions must be reviewed by an independent expert panel or third party, whose review findings must be included in the study documentation).

[41] Indian Council for Enviro-Legal Action (n 15); Sterlite Industries (n 35); in both cases the NGT and Supreme Court relied on expert scientific evidence to establish causation and quantify environmental compensation.

[42] CCPA Guidelines 2022 (n 26); SEBI PFUTP Regulations 2003 (n 6).

Before SEBI, the ISO 14044 documentation defeats the 'false or misleading' element of a PFUTP enforcement action. A statement supported by a complete, peer-reviewed, independently verified evidence base is not false; and a statement that explicitly discloses its scope, methodology, and residual uncertainty is not misleading. The legal risk of PFUTP enforcement is structurally different between an LCA-backed claim and an unsubstantiated one: for the former, it is a managed and largely mitigated exposure; for the latter, it is an unmanaged one.

5.3 LCA's Limitations in Indian Legal Contexts

The legal superiority of LCA-backed claims is real but conditional. LCA results are only as reliable as the underlying inventory data, and the substitution of generic European or North American database values for India-specific process data—common among Indian companies—introduces systematic uncertainty that may be difficult to defend in adversarial proceedings.[43] The methodological discretion inherent in LCA—the numerous choices required in defining the functional unit, system boundary, allocation method, and characterisation factors—means that two technically compliant LCAs of the same product may produce substantially different results.[44] The legal superiority of LCA over ad hoc offset purchasing therefore depends on the rigour and transparency of the LCA process, not on the mere fact of its completion.

VI. Reforms: Toward a Coherent Carbon Governance Architecture

The analysis above points to six structural reforms necessary to resolve the bifurcation problem, close the greenwashing enforcement gap, and align India's corporate carbon framework with the GHG Protocol standard and with the EU CBAM requirements taking full effect from January 2026.[45]

First, harmonisation of organisational boundary methodology. SEBI and the Ministry of Power should jointly prescribe the operational control approach as the mandatory consolidation methodology for both BRSR and CCTS reporting, eliminating the boundary ambiguity that enables the bifurcation worked example in Section III. Where a company adopts an alternative approach for specific disclosures, it should be required to provide a reconciliation table showing the difference between the operational control total and the reported figure.

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[43] The ecoinvent database—the world's leading LCA inventory database—is based predominantly on European industrial data. Systematic errors arising from its application to Indian industrial conditions have been documented in: A Zamagni and others, 'Life Cycle Assessment and Environmental Product Declaration' (2012) 17 International Journal of Life Cycle Assessment 1159, 1164–1166.

[44] ISO 14044:2006, cls 4.2.3 (functional unit), 4.2.3.3 (system boundary), 4.3 (life cycle inventory analysis allocation procedures), 4.4.2 (characterisation factors)—each requiring documented methodological choices that can produce substantially different results across technically compliant studies.

[45] EU Regulation 2023/956 (n 14); EU Implementing Regulation 2023/1773 (CBAM reporting methodology), Arts 4–8 (embedded carbon data requirements for steel, cement, aluminium, fertilisers, hydrogen, and electricity exports to the EU).

Second, mandatory Scope 3 disclosure in a phased programme. SEBI should implement mandatory Scope 3 reporting beginning with GHG Protocol Categories 1 (purchased goods and services) and 2 (capital goods) for the top 250 listed companies from FY 2026–2027, extending to all fifteen categories on a limited assurance basis from FY 2027–2028, and to reasonable assurance for material categories from FY 2028–2029. The GHG Protocol Scope 3 Standard should be formally prescribed as the mandatory methodology, with India-specific emission factor guidance developed by BEE.

Third, ISO 14064 alignment of BRSR assurance. SEBI, in consultation with ICAI, should amend the BRSR Core assurance requirement to specify that Scope 1 and Scope 2 verification must be conducted in accordance with ISO 14064-3 or ISAE 3410.[46] The ICAI Guidance Note on Sustainability Information Assurance should be updated to incorporate ISO 14064-3's specific procedural requirements, including the competency requirements for GHG assurance practitioners.[47]

Fourth, legally defined additionality standards for CCTS offset projects. The Bureau of Energy Efficiency should publish finalised sector-specific offset methodologies that include: a legally defined additionality test specifying the procedures for demonstrating that claimed emission reductions would not have occurred under business-as-usual; a permanence risk assessment for projects involving biological carbon storage; a standardised leakage accounting methodology; and a monitoring, reporting and verification protocol ensuring consistency between project developer reports and verifier certifications. The Gold Standard and Verra VCS additionality frameworks provide directly applicable models for adaptation to Indian regulatory conditions.[48][49] The risk of issuing hot-air credits—analogous to the EU ETS Phase I over-allocation

[46] ISO 14064-3:2019 Greenhouse Gases—Validation and Verification of GHG Statements (specifying the competency requirements, procedures, and standards of care applicable to GHG data verifiers).

[47] ICAI, Guidance Note on Audit and Certification of Sustainability Information (ICAI, 2022) (providing a general assurance framework for sustainability disclosures but not incorporating the specific methodological requirements of ISO 14064-3 for GHG data verification).

[48] M Gillenwater and others, 'Policing the Voluntary Carbon Market' (2007) 1 Nature Reports Climate Change 85 (additionality standards for offset projects); Forest (Conservation) Act 1980; Forest Rights Act 2006 (existing legal obligations mandating forest preservation independent of carbon market incentives, raising additionality challenges for Indian REDD+ projects).

[49] Verified Carbon Standard (Verra VCS) Methodology Requirements (Verra, 2022); Gold Standard for the Global Goals, Principles and Requirements (Gold Standard Foundation, 2022)—both providing established additionality test frameworks directly adaptable to Indian regulatory conditions.

problem—is the CCTS's most significant medium-term vulnerability to regulatory and reputational damage.[5051]

Fifth, formal integration of LCA into the BRSR value-chain framework. SEBI's value-chain BRSR disclosure framework should formally recognise ISO 14044-compliant LCA as an acceptable basis for substantiating Scope 3 emission claims, particularly for manufacturing sector companies. BEE should develop India-specific life cycle inventory databases for key industrial sectors—steel, cement, aluminium, petrochemicals, textiles—to reduce dependence on European data sources that do not accurately reflect Indian industrial conditions.

Sixth, a consolidated greenwashing enforcement framework. SEBI, in coordination with the CCPA, should develop a joint enforcement framework applicable to listed companies' environmental claims, specifying the standard of substantiation required for claims of different types, the documentation that must be retained, and the investigation and penalty procedures applicable to inadequately substantiated claims. The ASCI Guidelines for Advertising of Environmental Claims (2023) should be incorporated by reference, providing consistency between advertising regulation and securities regulation.

VII. Conclusion

This article has argued that India's corporate carbon governance framework suffers from a structural bifurcation—between the BRSR's market-facing disclosure obligations and the CCTS's energy-law-rooted compliance mechanism—that generates concrete legal liability rather than merely administrative complexity. The bifurcation arises primarily from the BRSR's silence on organisational boundary methodology, which allows companies to report emissions in amounts that are materially inconsistent with their verified CCTS submissions without any disclosure of the methodological reason for the difference.

The greenwashing liability cascade that results from this bifurcation is not hypothetical. A single carbon neutrality claim made on the basis of inadequately verified offset credits simultaneously implicates CCPA enforcement under the Consumer Protection Act, SEBI enforcement under the PFUTP Regulations, and NGT compensation proceedings under the polluter-pays principle—with no coordinated regulatory response and no mechanism for preventing duplicative

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[50] A D Ellerman, F J Convery and C de Perthuis, Pricing Carbon: The European Union Emissions Trading Scheme (Cambridge University Press, 2010) ch 2 (documenting how over-allocation of allowances in Phase I of the EU ETS produced a carbon price collapse undermining environmental integrity—an analogous risk facing India's CCTS if baseline emission factors are set at insufficiently demanding levels).

[51] A Shrivastava and R Tiwary, 'India's Carbon Credit Trading Scheme 2023: A Legal Analysis' (2023) 5 NUJS Law Review 221, 238 (identifying the absence of a clear offset quality standard as the CCTS's most significant legal vulnerability).

exposure across enforcement authorities. India's Paris Agreement commitments[52] and its constitutionalised environmental jurisprudence[53] both demand better.

The analysis of Life Cycle Assessment demonstrates that LCA, when integrated into the regulatory compliance framework, provides a legally superior basis for carbon neutrality claims across all three enforcement forums.[54] Its superiority is structural: it provides a complete, reproducible, independently verified evidence base that satisfies the substantiation standard applicable before each forum, while an unsubstantiated offset-based claim satisfies none of them.

The six reforms proposed in Section VI would, if implemented, produce a corporate carbon governance architecture achieving functional equivalence with the GHG Protocol standard across scope coverage, disclosure transparency, assurance quality, offset integrity, and enforcement coherence. Their implementation would also position India's listed sector to meet the EU CBAM's embedded carbon reporting requirements from January 2026—a market access imperative whose commercial stakes dwarf the domestic regulatory consequences of non-compliance.

Corporate climate accountability is no longer aspirational in India. The BRSR makes it mandatory, the CCTS prices it, the NGT enforces it, and the CBAM will monetise it. The question is no longer whether Indian companies must account for their carbon—it is whether the regulatory architecture within which they do so is coherent enough to make that accounting meaningful. Alignment with IFRS S2[55] and the GHG Protocol should be the target; the reforms proposed in this article are the minimum structural measures necessary to reach it. Early, voluntary alignment—beyond what the BRSR currently requires—is not merely good corporate citizenship. It is sound legal risk management, and the risk it manages is already live.[56]

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[52] Paris Agreement 2015, Arts 4, 6; India's Updated Nationally Determined Contribution (MoEFCC, 2022) (committing to reduce emissions intensity of GDP by 45 per cent by 2030 relative to 2005 levels and achieve 50 per cent cumulative electric power installed capacity from non-fossil sources by 2030).

[53] Vellore Citizens Welfare Forum (n 16); Goa Foundation v Union of India (2014) 6 SCC 590 (sustainable development and intergenerational equity as constitutional principles applicable to resource exploitation and industrial activity).

[54] ISO 14044:2006 (n 38); GHG Protocol Product Standard (n 39).

[55] ISSB, IFRS S2 Climate-related Disclosures (IFRS Foundation, 2023) (explicitly cross-referenced to the GHG Protocol and TCFD framework, requiring disclosure of all three scopes and industry-specific metrics derived from SASB standards; being adopted or referenced in over forty jurisdictions as of May 2026).

[56] Ridhima Pandey v Union of India, NGT OA No. 187/2017 (establishing climate action as a justiciable matter and the Paris Agreement as having normative relevance in Indian proceedings, notwithstanding the NGT's Schedule I jurisdictional constraint).

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