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BUILDING INDIA'S SCOPE 3 ARCHITECTURE

A Phased Roadmap for Credible, Interoperable, and Equitable Emissions Accounting



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Research Article

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Abstract

Scope 3 emissions accounting has moved from the periphery of corporate sustainability to the centre of global climate governance. For industry, it is a business imperative; for climate advocates, a tool of accountability. For India, the question is not whether to disclose. The Securities and Exchange Board of India's (SEBI's) mandate for the top 1,000 listed companies from FY2026–27 and external pressures on exporters have settled the matter. The critical question is how India builds a credible reporting architecture that is equitable and aligned with its industrial structure. This research paper examine India's current Scope 3 landscape, its strengths and gaps, and the costs of action and inaction in implementing Scope 3 mandates. Using a mixed-methods design – combining analysis of existing literature, empirical analysis of Business Responsibility and Sustainability Reporting (BRSR) filings, and stakeholder interviews and roundtables – this study triangulates documentary evidence, quantitative disclosures, and expert perspectives.

This paper argues that the answer lies not in the mandate itself, but in the surrounding architecture. Findings show significant gaps: methodological inconsistency across companies; a lack of nationally validated emission factors; and, most consequentially, a vast micro, small, and medium-sized enterprise (MSME) supplier base with limited capacity to participate in any disclosure ecosystem. The picture is clear that the mandate has arrived before the infrastructure is ready and closing that gap is the defining policy challenge of the next decade. Furthermore, weak interoperability between frameworks such as BRSR, Perform, Achieve and Trade (PAT), and the Carbon Credit Trading Scheme (CCTS) add to the complexity of reporting for the companies.

The paper therefore sets out a phased roadmap. Phase 1 prioritises methodology – standardising boundary protocols, identifying material categories via a sector-cluster approach, establishing interoperability across reporting systems, and integrating financial data infrastructure. Phase 2 focuses on capacity – formalising anchor-firm-led supply chain coverage, building MSME support mechanisms, strengthening the third-party audit cadre, and embedding Scope 3 quality in market incentives such as National Stock Exchange (NSE) environmental, social, and governance (ESG) ratings. Phase 3 moves to enforcement – compulsory third-party verification, legally binding disclosure, and carbon market integration. The guiding principle is clear: mandating disclosure before the methodology is settled yields numbers without credibility; building infrastructure first yields a regime that is enforceable and meaningful.

Beyond India, this roadmap has wider relevance. Designing Scope 3 systems for large, diverse, MSME-heavy economies is a shared Global South challenge, as international disclosure pressures outpace domestic readiness. The phased approach proposed here offers a transferable model for developing economies seeking to balance global climate expectations with domestic capacity constraints.

Keywords: *Scope 3 emissions; emissions accounting; climate governance; Business Responsibility and Sustainability Reporting (BRSR); micro, small, and medium-sized enterprises (MSMEs); supply chain transparency; interoperability; carbon markets; India; Global South*

1. Introduction

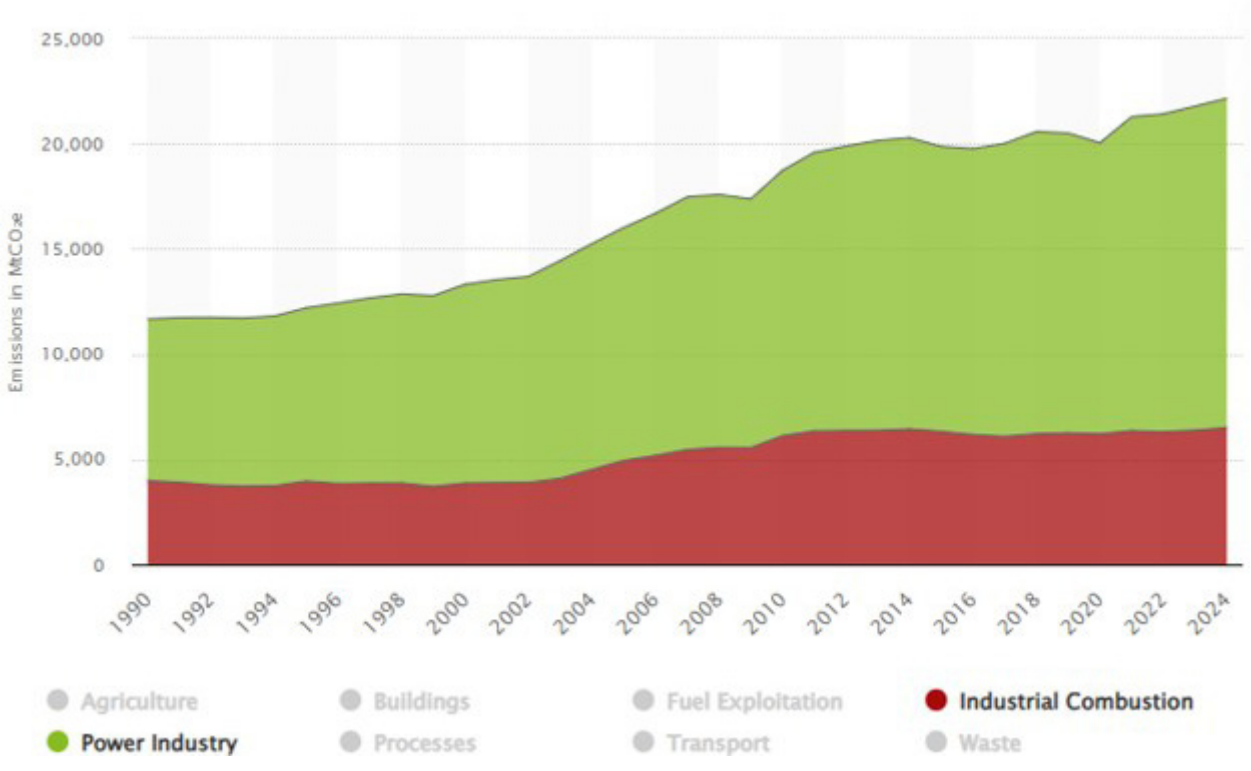
1.1 Background

The Paris Agreement, an international treaty on climate change, was adopted by 196 countries in 2015 to drive collective climate action. Ten years after the treaty, global greenhouse gas (GHG) emissions continue to rise, with year-on-year emissions increasing by 2.3% in 2024, compared with 1.6% in 2023 (Crippa M. et al. 2025). Compared with the average annual emissions growth rate in the 2010s (0.6%), this reflects robust growth, with energy use in industry and emissions from industrial processes among the major contributors, as shown in Figure 1. According to the United Nations Environment Programme (UNEP) (2025), delays in reducing cumulative emissions during the 2020s have already breached the Intergovernmental Panel on Climate Change (IPCC) 1.5°C target, rendering it unfeasible. This is attributable to the lack of sufficiently stringent emissions-reduction strategies since 2020. Global temperatures are rising at 0.27°C per decade due to anthropogenic activities. If efforts are not substantially intensified, a 1.5°C rise above pre-industrial levels will be reached in the next decade (Forster et al. 2025). Therefore, it becomes critical to account for and reduce GHG emissions.

In the evolving global business landscape, businesses need to account for their emissions, as environmental, social, and governance (ESG) factors have gained influence over corporate performance, both in reporting to governments and in building stakeholder and investor trust. An important tool underpinning ESG performance is carbon emissions accounting, which helps businesses measure and manage their emissions to reduce their carbon footprint (Institute of Chartered Accountants in England and Wales [ICAEW] 2023). This is achieved by translating activities across business operations into carbon dioxide equivalent (CO_2e) emissions.

The GHG Protocol, developed by the World Resources Institute (WRI) and the World Business Council for Sustainable Development (WBCSD), is the leading international framework that defines how to measure, manage, and report GHG emissions

Figure 1: Annual Greenhouse Gas (GHG) Emissions Worldwide from 1990 to 2024 – Industry



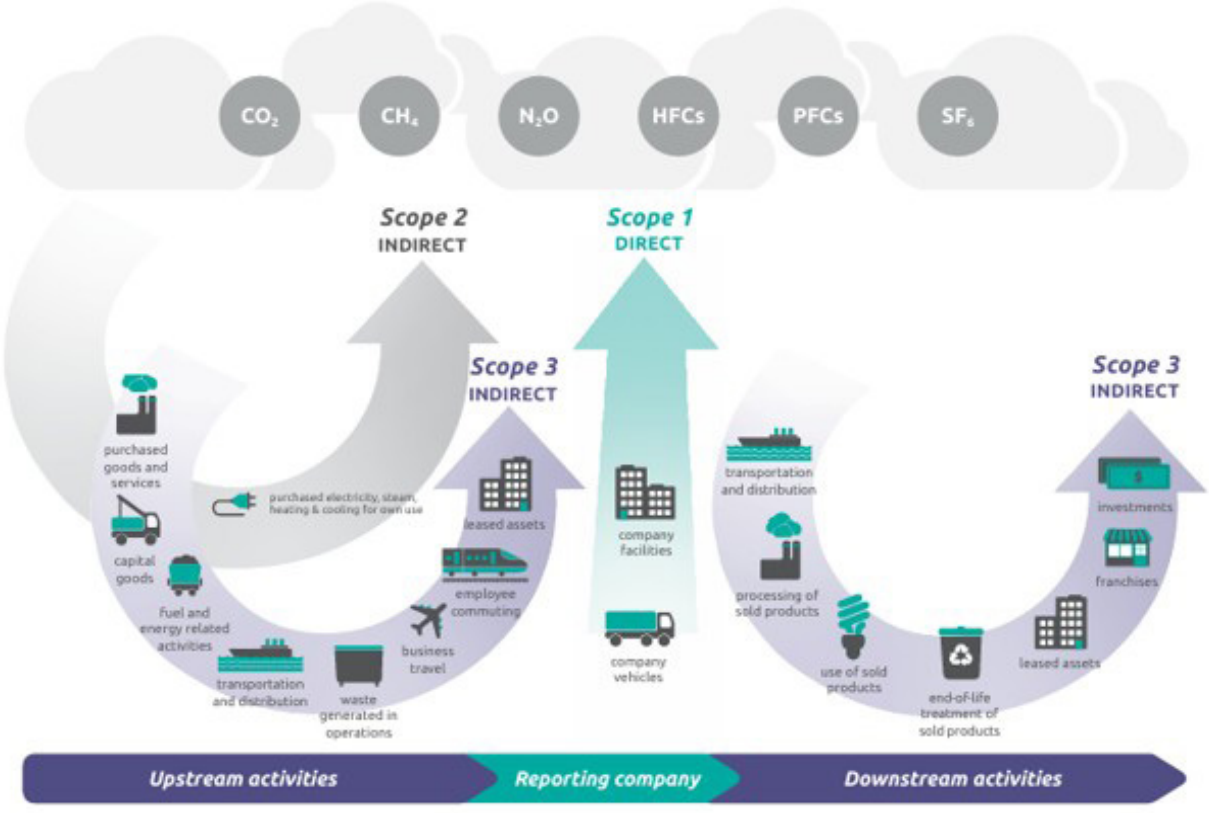
Source: The Emissions Database for Global Atmospheric Research (EDGAR)

from business activities. This framework covers emissions arising from a business's own operations and across its value chain (World Resources Institute 2024). It divides these emissions into three categories. Scope 1 covers direct emissions from business activities owned and controlled by the business; Scope 2 covers indirect emissions from the generation of energy consumed by the business, where the emissions occur at sources not owned or controlled by it. Further, given that over 70–80% of companies' total GHG impact arises from the value chain, the GHG Protocol (2011) established the Corporate Value Chain (Scope 3) Accounting and Reporting Standard, which covers emissions across the value chain. This standard divides Scope 3 emissions into 15 categories (Figure 2), spanning both upstream and downstream business activities. These categories are important to account for as they provide a comprehensive understanding of a company's full carbon footprint, which in turn can support effective emissions-reduction and mitigation strategies.

Among the G20 economies in 2024, India recorded the highest total increase in GHG emissions volume, at a growth rate of 3.6% (Tandon 2025). In India, carbon emissions have been high for decades, with a year-on-year increase of 4.9% per year since 1990, and annual growth of 4–11% during 2021–24. Notably, in 2025, the rates have been the slowest in the decade since 2001, with an average increase in emissions of about 0.7% (Staff 2026). However, given India's developmental requirements and energy security needs, emissions are expected to continue to rise. To keep emissions growth in check, it is imperative to monitor and mitigate GHG emissions more rigorously.

Over the years, GHG emissions disclosure has expanded globally, driven by national climate commitments and the emergence of mandatory sustainability reporting regimes. In India too, companies are increasingly disclosing their GHG emissions (12% in India against the global average of 9%). The top 500 companies listed on the National Stock Exchange (NSE) accounted for approximately

Figure 2: Scope of the GHG Protocol and Different Categories Across the Value Chain of a Business



Source: GHG Protocol (2011)

45% of India's total emissions in 2023, with emissions having risen since then (Sharma 2025). Further, 24% of Indian companies have completed emissions target-setting, compared with a global average of 16%, with 15% of companies meeting their targets, compared with 11% globally (ANI 2024). However, it is important to note that these reported emissions account only for Scope 1 and Scope 2, excluding Scope 3 emissions, which account for 70% of a firm's total emissions. Therefore, it becomes even more crucial to account for Scope 3 emissions to establish a clear picture of the GHG emissions generated by anthropogenic activities.

This advancement is driven primarily by improved reporting maturity and years of regulatory frameworks. India has advanced its corporate governance framework since 2009, recognising that robust standards centred on fairness, transparency, accountability, and responsibility are vital not only for healthy and vibrant corporate sector growth, but also for inclusive economic growth. With this objective, the Ministry of Corporate Affairs (MCA) introduced the 'Corporate Governance – Voluntary Guidelines 2009', setting out good practices that listed companies could adopt voluntarily. Larger private companies were also encouraged to follow these guidelines. What started as voluntary reporting has gradually evolved into mandatory disclosure. In May 2021, the Securities and Exchange Board of India (SEBI) introduced a more defined system, the Business Responsibility and Sustainability Reporting (BRSR) framework, to focus on the disclosure of emissions from indirect operations. With comparable parameters and quantitative indicators, the framework required the top 1,000 listed companies to disclose their ESG performance in a standardised format, mandatorily from the financial year (FY) 2022–23.

SEBI further introduced BRSR Core in 2023 to strengthen the BRSR framework and improve the reliability of ESG disclosures, mandating reporting for Scope 1 and Scope 2 emissions, with Scope 3 disclosure initially remaining voluntary before becoming mandatory for the top 250 listed companies in FY 2025–26. From FY 2026–27, Scope 3 reporting becomes mandatory for the top 1,000 listed companies. It is expected that industries and companies extend accountability for GHG emissions beyond their traditional operational boundaries, as sectors including manufacturing, retail, and technology account for more than 70 per cent of an entity's total emissions. Therefore, to achieve meaningful emissions reductions, companies must account for Scope 3 emissions and identify their principal sources (Singha 2024).

Globally, countries such as Canada, Japan, New Zealand, Hong Kong, and the UK have transitioned towards mandatory Scope 3 disclosures by large companies. With carbon regulations like the EU's Carbon Border Adjustment Mechanism (CBAM), it becomes important for India to recognise the development of Scope 3 inventories as a competitive advantage – one that can strengthen its position in global markets, attract investors, and help protect over US$6.4 billion in Indian exports that are currently at stake (Prabhu and Majumdar 2026). However, for a developing country like India, it is important to determine whether Scope 3 disclosure should be mandatory and, if so, how India's existing Scope 3 architecture can support the transition to mandatory reporting. Existing literature on corporate emissions accounting in India either addresses Scope 1 and 2 reporting within broader ESG frameworks or treats Scope 3 as a peripheral concern. This study is among the first to examine Scope 3 emissions accounting exclusively and comprehensively in the Indian context. It combines primary stakeholder research with empirical analysis of corporate disclosures to propose a phased, India-specific implementation roadmap.

1.2 Objective of the Study

This study aims to evaluate whether and how India can build a credible Scope 3 emissions reporting architecture, moving beyond the question of whether to mandate disclosure to address a practical roadmap for how that mandate can be made meaningful, equitable, and enforceable. To this end, the research paper aims to answer the following questions:

(a) What is the existing regulatory framework for Scope 3 accounting in India, and what challenges impede its adoption?

(b) What are the costs of action and inaction associated with mandating Scope 3 emissions disclosure in India?

(c) What systemic interventions are required to cultivate a credible and operationally viable Scope 3 inventory ecosystem in India?

1.3 Methodology

This study adopts an empirical mixed-methods research design, combining qualitative primary research with desk-based quantitative and qualitative secondary analysis to evaluate the state of Scope 3 emissions accounting in India.

(a) Primary Data Collection

Primary research was designed to capture real-world operational, technical, and regulatory perspectives from key actors in the corporate reporting ecosystem:

- **Semi-Structured Consultations:** One-on-one consultations were conducted with key industry stakeholders across three target groups: industry sustainability leads, auditing/assurance partners, and academic/policy researchers. The consultations focused on identifying current reporting practices, supply chain data constraints, cost burdens, and technical capacity gaps.
- **Multi-Stakeholder Roundtable:** To complement the research through individual consultations, as part of this study, Chintan Research Foundation (CRF) organised a closed-door multi-stakeholder roundtable as part of this study. The session convened representatives from corporate sustainability divisions, regulatory advisory bodies, assurance providers, and industry associations to deliberate on the practical challenges, interoperability issues, and governance frameworks required for building a scalable Scope 3 architecture in India. Key themes from the roundtable were transcribed and categorised using thematic analysis.

(b) Secondary Data Analysis

Secondary research focused on examining real-world corporate disclosure trends following recent regulatory mandates:

- **BRSR Sample Selection:** A desk-based review was conducted on 30 BRSR reports from companies listed among the top 150 by market capitalisation. These companies fall under the SEBI July 2023 mandate requiring Scope 3 disclosures with reasonable assurance under the BRSR Core framework.
- **Sectoral Coverage:** The sample was selected from six major and diverse sectors to ensure cross-industry representation, capturing distinct supply chain configurations and carbon intensities.

(c) Data Triangulation

Insights gathered from the primary consultations and roundtable discussions were triangulated with empirical findings from the 30 BRSR report analyses. This integrated approach allowed the study to cross-verify the policy and technical challenges identified by stakeholders against actual corporate disclosures.

2. Scope 3 Architecture in India

2.1 Evolution of Scope 3 Accounting in India

Over the years, GHG emissions disclosure has expanded globally, driven by national climate commitments and the emergence of mandatory sustainability reporting regimes. India has advanced corporate sustainability reporting since 2009, when the voluntary guidelines were issued as a first step towards mainstreaming the concept of business responsibility. After extensive consultations with business, academia, civil society organisations, and the government, the MCA revised the guidelines and issued the National Voluntary Guidelines (NVGs) on Social, Environmental and Economic Responsibilities of Business in July 2011 (MCA 2019). The NVGs were built on nine core principles[1] to provide a foundational framework for Indian companies to conduct business responsibly towards people, planet, and profit.

In August 2012, the SEBI introduced ESG reporting in India through the Business Responsibility Report

[1]The nine principles of NVGs are ethics, transparency, and accountability; product life-cycle sustainability; employee well-being; stakeholder engagement; human rights; environmental protection; policy advocacy; inclusive growth; and customer value.

(BRR), making it mandatory for the top 100 listed companies in India by market capitalisation to submit BRRs. The report comprised 59 questions, most of them qualitative, organised into five sections: general information, financial details, other details, BR information, and principle-wise performance. It was to be submitted as part of the Annual Report (EY 2025; Vinod Kothari & Company 2025). This was extended to the top 500 companies in FY 2015–16.

In March 2019, the MCA revised the 2011 NVGs on Social, Environmental and Economic Responsibilities of Business to align corporate conduct with the United Nations Sustainable Development Goals (SDGs) and the United Nations Guiding Principles on Business and Human Rights, resulting in National Guidelines on Responsible Business Conduct (NGRBC). The NGRBC set out nine principles:

1. Businesses should conduct and govern themselves with integrity in a manner that is ethical, transparent, and accountable.
2. Businesses should provide goods and services in a manner that is sustainable and safe.
3. Businesses should respect and promote the well-being of all employees, including those in their value chains.
4. Businesses should respect the interests of and be responsive to all their stakeholders.
5. Businesses should respect and promote human rights.
6. Businesses should respect and make efforts to protect and restore the environment.
7. Businesses, when engaging in influencing public and regulatory policy, should do so in a manner that is responsible and transparent.
8. Businesses should promote inclusive growth and equitable development.
9. Businesses should engage with and provide value to their consumers in a responsible manner.

Most consequentially, building upon the NGRBC, the corporate disclosure evolved further in May 2021, when SEBI introduced the BRSR framework. The BRSR is now India's principal mechanism for corporate sustainability disclosure, with reporting mandated for the top 1,000 listed companies by market capitalisation, based on the rankings reported by either stock exchange, under the SEBI (Listing Obligations and Disclosure Requirements) Regulations, 2015. The MCA proposed two BRSR formats for ESG disclosures in India: (i) BRSR Comprehensive, mandatory for obligated entities; and (ii) BRSR Lite, intended for non-obligated entities without prior sustainability-reporting experience. The BRSR has three reporting sections: general disclosures, management and processes, and principle-wise performance. Section C reports a company's performance against each NGRBC principle. The template has 140 questions, with around 98 questions on essential indicators (mandatory) and around 42 on leadership indicators. Unlike the BRR, the BRSR includes both qualitative and quantitative questions. It provides a standard format for ESG-related disclosures and is published as an integral part of companies' annual reports (EY India 2025).

Further, in June 2023, SEBI amended the 2015 Regulations to introduce BRSR Core, with the aim of improving business reporting and enhancing the reliability of ESG disclosures. The BRSR Core is significant as it requires mandatory independent third-party assurance, either from the company's statutory auditor or a SEBI-accredited assurance provider, to improve data validity, comparability, and credibility. While the full BRSR allows wider narrative disclosure, BRSR Core requires structured, verifiable, and assurance-ready ESG data. The BRSR Core features 49 key performance indicators (KPIs) across nine ESG attributes specifically customised for the Indian and emerging-market context. Furthermore, to improve global comparability, intensity ratios based on revenue adjusted for purchasing power parity (PPP) were introduced. Most notably, the BRSR Core mandates the reporting of Scope 1 and Scope 2 greenhouse gas emissions and requires independent reasonable assurance of these disclosures. Starting in FY 2023–24, the top 150 companies by market capitalisation had to report under the BRSR Core format. In FY 2024–25, the top 250 companies were advised to begin value chain reporting on a comply-or-explain basis. The requirements were also to be phased in, extending to 500 companies by FY 2025–26 and to the top 1,000 listed companies by FY 2026–27

(GreenSutra 2026). However, in December 2024, the BRSR Core requirement for Scope 1 and Scope 2 emissions disclosure by the top 1,000 listed entities was deferred to FY 2025–26 due to concerns about cost and data readiness.

Regulatory action on Scope 3 reporting, which covers value-chain emissions, has been gradual. In July 2023, SEBI took a significant step by introducing value-chain ESG disclosures for the top 250 listed companies, with third-party assessment or assurance to apply on a comply-or-explain basis from FY 2025–26 (Dubey, 2024). From FY 2026–27, the requirement is scheduled to extend to the top 1,000 listed Indian companies. In an attempt to alleviate compliance pressures, an Expert Committee tasked with reviewing Scope 3 disclosures recommended in May 2024 that value-chain ESG reporting for FY 2024–25 shift from a mandatory 'comply-or-explain' framework to a fully voluntary model, allowing companies to disclose information from previous years at their discretion. Additionally, the requirement for 'assurance' will be downgraded to an 'assessment'. Crucially, the committee established a specific threshold for determining which value-chain partners warrant evaluation within a corporation's disclosures, restricting this requirement to upstream and downstream partners individually accounting for 2% of purchases in the case of upstream vendors (suppliers) and 2% of sales in the case of downstream partners (customers). The 2% threshold serves as a criterion for identifying significant value-chain partners.

During its board meeting in December 2024, SEBI approved these recommendations and issued a further circular introducing the Industry Standards on Reporting of BRSR Core, developed in collaboration with industry bodies such as the Associated Chambers of Commerce and Industry of India (ASSOCHAM), the Federation of Indian Chambers of Commerce and Industry (FICCI), and the Confederation of Indian Industry (CII) (Cyrill 2025). The key changes recommended by the Industry Standards entailed deferring Scope 3 reporting by one year, with compliance regarding 'assessment or assurance' now slated to commence in FY 2026–27. As per SEBI's Guidance Note on BRSR, an organisation's value chain is defined as the full range of its upstream and downstream activities that convert inputs into outputs by adding value. It includes entities with which the organisation has a direct or indirect business relationship and which either (a) supply products or services that contribute to the organisation's own products or services, or (b) receive products or services from the organisation (Vinod Kothari & Company 2025). However, the Industry Standards on Reporting of BRSR Core narrowed the definition of the value chain to the leading upstream and downstream partners of a listed entity that collectively account for 75% of its purchases and sales by value, respectively. They also introduced 'Green Credits' under Principle 6 of the BRSR to track the green credits generated or procured by the listed entity and its top 10 value-chain partners (Cyrill 2025).

2.2 Global Disclosures

Globally, various climate disclosure frameworks and standards have emerged to improve corporate transparency and support the establishment of emission reduction targets. Among these, the International Sustainability Standards Board (ISSB), established by the International Financial Reporting Standards (IFRS) Foundation (2021), seeks to develop a globally consistent baseline for sustainability-related disclosures. By providing investors with comparable information on climate-related risks, opportunities, and corporate performance, the ISSB standards can help integrate sustainability considerations into investment decisions and encourage greater corporate accountability for emissions reduction.

The IFRS S2 standard requires companies to disclose all scopes of GHG emissions subject to materiality. This includes reporting for Scope 3 emissions irrespective of the organisational structure, calculation methods, or sector of operation (IFRS Foundation 2025). One of the key aims of the ISSB standard is to ensure and facilitate interoperability across stakeholder groups and jurisdictions, which is why it is being actively adopted by countries such as the UK, Australia, Singapore, Japan, and Canada.

Table 1: Global Climate Disclosures and Scope 3 Mandate Pressures

Framework & Issuing Body	Companies Covered	Scope 3 Mandates
IFRS S2 (Climate-related Disclosures) Issued by: ISSB (International Sustainability Standards Board)	Listed companies in jurisdictions that have adopted IFRS S2. As of May 2026: More than 21 jurisdictions have adopted or are adopting, including Australia, Brazil, Hong Kong, Mexico, Nigeria, Singapore, and most ASEAN economies.	Companies must disclose Scope 3 emissions if they are material to the business. Measurement must follow the GHG Protocol. All 15 Scope 3 categories apply.
CSRD (Corporate Sustainability Reporting Directive) Issued by: European Commission Applicable: European Union Scope 3 governed by ESRS E1 (Climate Change standard under CSRD)	Includes: • EU companies with more than 1,000 employees and more than €450 million in annual turnover • Non-EU companies (including Indian firms) with more than €450 million in EU revenue and at least one EU subsidiary Reporting timeline: • Wave 1 (largest companies already reporting): FY2025 data, published 2026 • Wave 2 (other large EU companies): FY2027 data, published 2028 • Wave 3 (non-EU groups): FY2028 data, published 2029	Scope 3 disclosure is required for all in-scope companies where value chain emissions are material. This covers all 15 Scope 3 categories under the GHG Protocol. Key 2026 update: Companies may now use estimates and proxy data for Scope 3; the requirement for direct supplier data has been removed to make compliance more achievable.
California Climate Laws (SB 253 / SB 261) Issued by: State of California (CARB)	California SB 253 (active state law): • Public and private companies with more than $1 billion in annual California revenue • Covers both domestic and foreign companies operating in California California SB 261: • Companies with more than $500 million in California revenue • Requires climate financial risk reporting (currently under a court-ordered pause)	California SB 253 (active): • Scope 3 mandatory from 2027 • Five categories required initially: purchased goods and services; fuel and energy; waste; business travel; employee commuting • Remaining ten categories proposed as voluntary for now • Scope 1 and 2 already required from August 2026 California SB 261: Does not explicitly mandate Scope 3.
CBAM (Carbon Border Adjustment Mechanism) Issued by: European Commission	EU importers of covered goods are the formally obligated party – they must purchase carbon certificates. A de minimis threshold applies: importers bringing in less than 50 tonnes per year in most covered goods are exempt. Despite this, approximately 99% of embedded emissions remain covered.	CBAM is not a formal Scope 3 mandate – but it is functionally equivalent for covered sectors. For some products (fertilisers, certain chemicals): embedded emissions from upstream raw material inputs – this is effectively Scope 3 Category 1 From January 2026: all embedded emissions data must be independently verified by an accredited third party.

Source: Author's Analysis

Countries that do not adopt these standards have a higher chance of risking their capital markets being perceived by global institutional investors as less transparent and less attractive for investment. For emerging economies like India, adoption signals credibility to foreign investors.

Table 1 shows outlines comparable standards adopted globally, the associated Scope 3 mandates, and their potential direct implications for Indian companies operating in these regions. India therefore needs to account for these considerations when assessing the rolling out of Scope 3 reporting.

3. Analysing the BRSR Reports

3.1 Rationale for Using BRSR Reports

Scope 3 emissions, the indirect footprint embedded in a company's entire value chain, are analytically distinct from Scope 1 and 2 in one important respect – firms do not directly control their suppliers' operations. However, firms can influence the associated Scope 3 emissions through their procurement decisions and choice of suppliers – thereby assuming responsibility for emissions arising across their value chains. This creates a genuine tension between the case for disclosure (investor demand, trade exposure, and systemic climate accounting) and the case for caution (data reliability, compliance costs, and capacity constraints among suppliers who are frequently micro, small, and medium-sized enterprises [MSMEs]).

BRSR Reports are the most definitive, single-source record of corporate GHG emissions for listed companies. The primary objective of using the BRSR report was to establish an empirical baseline of the current state, structural maturity, and distribution of value-chain disclosures across the top listed Indian companies. By evaluating how major corporate entities across diverse industries navigate the complexities of indirect emissions tracking, this section provides the foundational data required to analyse the core tensions of this research paper. Specifically, it offers the groundwork needed to weigh the economic and operational trade-offs of Scope 3 disclosures, identify points of friction in existing regulatory frameworks, and assess the practical viability of scaling value chain accounting across India's developing market ecosystem. Hence, this tracking mechanism serves as a diagnostic tool.

3.2 Framework for the Data Analysis

The data compiled for this tracker are sourced from the BRSRs submitted to BSE/NSE by the top 30 listed companies in their Annual Reports. This BRSR report was analysed across six high-exposure sectors, namely Capital Goods, Healthcare, Automobile & Auto Components, Fast Moving Consumer Goods, Metals & Mining, and Oil Gas & Consumable Fuels. To provide a standardised benchmark for comparison, these company-disclosed metrics are then paired with the official ESG ratings published by the NSE. Pairing disclosure data with ESG ratings serves a specific analytical purpose: it allows the study to test whether Scope 3 transparency is actually rewarded or required by the market, or whether it functions as a largely independent factor. However, the inferences are not intended to be generalised, given the limited sample size.

Each parameter in the dataset is selected to serve the following function:

- **Sector & Sector Rank (by company count, top 150):** Establishes each industry's weight in the market, helping to distinguish between sector-wide patterns and outlier firms. It is also useful for identifying which sectors are responding to disclosure mandates.
- **Company:** Enables firm-level tracking to analyse feasibility constraints and assess whether these constraints vary significantly within the same sector.
- **Scope 3 Disclosed? (Yes/No):** The status of disclosure or non-disclosure may indicate companies' capacity or preparedness to track Scope 3 emissions.
- **Methodology Used (GHG Protocol / Spend-based / Other):** Captures the accounting methodology applied. This is a direct proxy for feasibility: spend-based methodologies are typically a lower-cost, lower-precision starting point, while primary-data-based GHG Protocol

methods are more resource-intensive and harder for smaller suppliers to support.

- **Categories Covered:** Evaluating how many out of the 15 Scope 3 categories have been covered indicating the extent to which a company's reporting boundary captures its value chain. Partial coverage (e.g., only purchased goods and services) versus fuller coverage (including use-of-sold-products) reflects marked differences in operational complexity.
- **Emissions Factor:** Identifies the emission factor databases used (e.g., IEA, DEFRA, IPCC). This bears on data reliability and on whether India-specific emission factors exist at all, which helps to identify a lack of standard methodologies and standards.
- **Assurances:** Flags whether reported data has undergone external verification and by whom, thereby addressing questions of credibility.
- **Foreign Portfolio Investors (FPI):** Tracks institutional investment presence, often cited as an external driver of ESG compliance. While FDI involves long-term, structural asset ownership with fixed operational commitments (making it less sensitive to short-term ESG disclosures), FPI represents highly liquid, institutional capital that reacts swiftly to corporate sustainability ratings and governance signals. Consequently, FPI is a sharper metric for testing whether disclosure correlates with capital market pressure specifically, rather than with regulation or sector norms.
- **ESG Rating (NSE):** The exchange's composite score, used here to test whether, and to what extent, ESG ratings correlate with the depth of Scope 3 disclosure.
- **YOY Scope 3 Emissions Change:** Captures whether growth and emissions are decoupling over time and whether reporting patterns correlate with changes in emissions.

3.3 Data Analysis and Findings

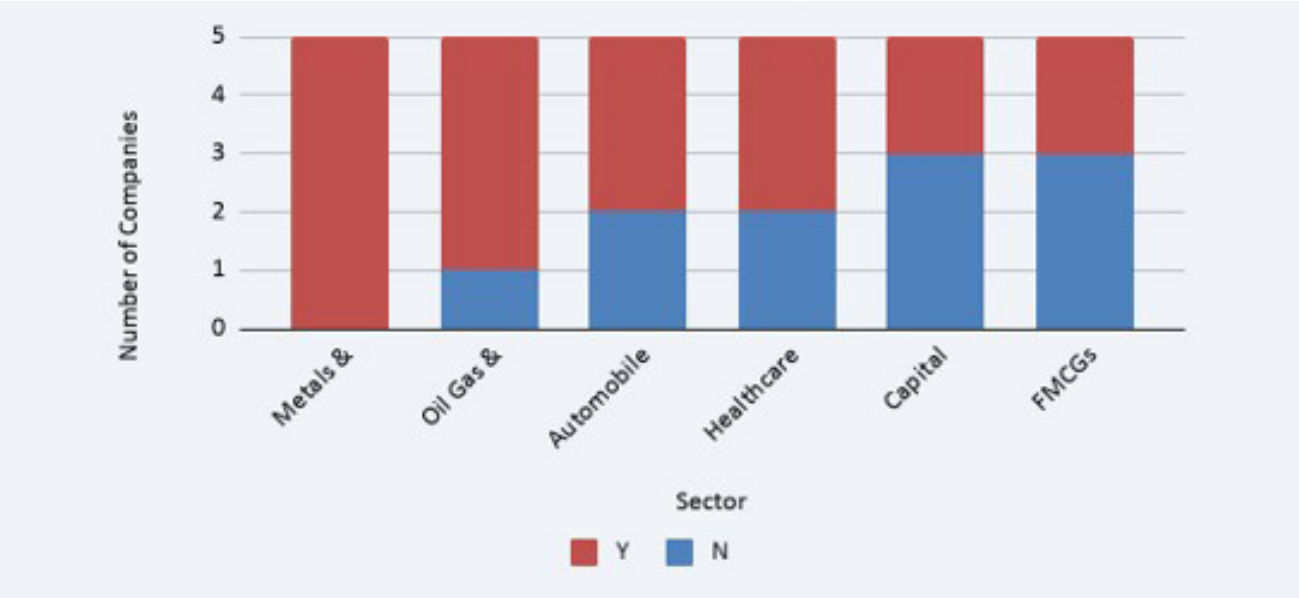
The analysis of the data yields the following findings:

(a) Sectoral Variations in Scope 3 Emissions Disclosure

Finding: Scope 3 disclosures are more prevalent among heavy industries, such as metals and oil & gas, while sectors such as consumer goods and capital goods sectors lag.

Explanation: Of the 30 companies studied across six sectors, 19 (63.3%) disclose their Scope 3 emissions (albeit partially), whereas 11 (36.7%) do not. A sectoral analysis shows that the disclosure rate stands at 100% (5 of 5 companies) for metals &

Figure 3: Sector-Wise Scope 3 Emission Disclosure Status



Source: From data analysis conducted

mining and 80% (4 out of 5) for Oil, Gas & Consumable Fuels, while the Healthcare and Automobile & Auto Components sectors each record a disclosure rate of 60% (3 out of 5 companies). However, the Capital Goods and Fast-Moving Consumer Goods (FMCG) sectors record disclosure rates of just 40% (2 out of 5 companies).

This pattern may be explained by two factors: the maturity of extractive and energy sectors, supported by decades of environmental compliance infrastructure, and external pressures arising from international trade and carbon border mechanisms. However, while carbon border mechanisms strongly influence globally integrated industries, they do not account for the behaviour of domestically oriented firms in the sample, such as Apollo Hospitals. The observed pattern may therefore reflect a combination of established environmental management practices and trade-related pressures that vary considerably across companies and sectors.

(b) Divergent Reporting Standards

Finding: Among reporting entities, Scope 3 accounting exhibits severe methodological fragmentation, relying inconsistently on the GHG Protocol, GRI Standards, ISO 14064, or vague SEBI guidelines.

Explanation: Among the 19 companies that disclose Scope 3 data, methodologies remain far from standardised. Unlike strict regulatory schemes such as the PAT, which enforced rigid, uniform compliance, companies reporting Scope 3 have been given the flexibility to choose their own reporting framework. Consequently, while the GHG Protocol is used by companies such as ABB India, ITC, Britannia, Tata Steel, Hindalco, and BPCL, the Global Reporting Initiative (GRI)[2] Standards are widely used by companies such as Cipla, Dr. Reddy's, Mahindra & Mahindra, Adani Enterprises, JSW Steel, and Indian Oil. Some companies adopt ISO 14064[3] or make only vague references to SEBI-specific guidance. As these frameworks differ in their accounting boundaries, emission factors, and calculation methodologies, they produce widely divergent emissions figures across firms – highlighting the lack of standardisation in Scope 3 reporting.

(c) Selective versus Comprehensive Reporting

Finding: Scope 3 disclosure in India remains selective as reporting entities prioritise materiality and feasibility over comprehensive value-chain coverage.
Explanation: Out of the 19 companies disclosing Scope 3 data, only 12 specified the exact categories reported, and none reported across all 15 categories. This is expected, as not all Scope 3 categories are universally applicable or material to every business model. In practice, firms appear to select categories based on materiality, data availability, and reporting feasibility. This suggests that Scope 3 reporting in India is still evolving and is driven more by practical considerations than by comprehensive value-chain accounting.

Among the 12 companies, the most frequently reported category is Upstream Transportation & Distribution (Category 4; 83%), followed by Purchased Goods & Services (Category 1; 67%). These categories represent the core components of manufacturing and industrial value chains and thereby suggest that materiality considerations influence the category selection. Other prominent categories are Fuel- and Energy-related Activities (Category 3), Business Travel (Category 6), Downstream Transportation & Distribution (Category 9), and Use of Sold Products (Category 11) – all at 58%. This suggests that companies prioritise categories for which data is relatively accessible or in which reporting channels are more mature. Companies thus

[2]GRI Standards: A broad, multi-stakeholder framework for general sustainability reporting. It covers a wide range of ESG topics (labour practices, human rights, and waste) and uses standard GRI 305 for emissions reporting. GRI is designed to promote general public and investor transparency.

[3]ISO 14064: An international, principles-based specification developed by the International Organization for Standardization. It establishes standardised processes for quantifying, reporting, and third-party audit or verification of organizational GHG emissions. ISO 14064 is primarily built for external compliance auditors.

Table 2: Category-wise Reporting in the Data

Category	Scope 3 Category Name	Frequency (out of 12 companies)	Percentage
1	Purchased Goods & Services	8	67%
2	Capital Goods	3	25%
3	Fuel- and Energy-related Activities (not included in Scope 1 or 2)	7	58%
4	Upstream Transportation & Distribution	10	83%
5	Waste Generated in Operations	6	50%
6	Business Travel	7	58%
7	Employee Commuting	5	42%
8	Upstream Leased Assets	0	0%
9	Downstream Transportation & Distribution	7	58%
10	Processing of Sold Products	2	17%
11	Use of Sold Products	7	58%
12	End-of-Life Treatment of Sold Products	1	8%
13	Downstream Leased Assets	0	0%
14	Franchises	0	0%
15	Investments	0	0%

appear to focus their accounting on categories that capture their primary operational impacts and for which data is readily accessible or reporting channels are well established, rather than pursuing exhaustive data collection across lower-impact areas.

Categories such as Purchased Goods & Services (Category 1) and Use of Sold Products (Category 11) are among the largest contributors to total Scope 3 emissions across many sectors. Among companies in the metals and mining sector, such as JSW Steel, Tata Steel, and Hindalco, the highest Scope 3 emissions are reported under Category 1. Similarly, around 97% of emissions reported by companies in the capital goods sector, such as ABB and Siemens, are attributable to Category 11. In such cases, recording the dominant Scope 3 categories allows companies to capture the majority of their value-chain emissions while gradually building the institutional capacity required to expand reporting across additional categories over time. This approach could also help prioritise interventions where emissions reductions are likely to deliver the greatest impact.

Categories such as Business Travel (Category 6), Employee Commuting (Category 7), and Waste Generated in Operations (Category 5) are also relatively common because organisations already possess much of the underlying administrative data through travel records, HR systems, and waste management contracts, while reporting on these categories also requires less engagement with external stakeholders. However, reporting a category does not, in itself, establish its significance within a company's emissions profile. While Categories 6 and 7 are frequently reported, their actual significance to a company's overall emissions profile is typically negligible. In contrast, Category 5 represents a potentially significant source of emissions requiring rigorous operational management.

(d) Imbalance in Value Chain Reporting

Finding: Disclosures show strong visibility into upstream networks, whereas complex downstream post-sale categories remain largely unmeasured.

Explanation: Among the most frequently reported categories (1, 3, 4, and partly 6), all relate to the upstream supply chain. This implies that Indian

companies appear to have greater visibility into supplier-side emissions. Although Use of Sold Products (Category 11) appears in 58% of companies, other downstream categories, particularly Processing of Sold Products (Category 10) and End-of-Life Treatment of Sold Products (Category 12), are reported infrequently. This reflects the difficulty of tracking emissions once products move beyond companies' direct influence, entering the stages of customer use and end-of-life disposal. Furthermore, no company in the sample reported Upstream Leased Assets (Category 8), Downstream Leased Assets (Category 13), Franchises (Category 14), or Investments (Category 15). This could indicate that these categories have limited relevance for the sectors studied, that the necessary data are unavailable, or that companies follow inconsistent reporting practices.

(e) Scope 3 Assurance Adoption

Finding: Increasing adoption of third-party Scope 3 verification signals rising market demand for credible data, but nearly a third of reporting companies remain unverified, highlighting an ongoing credibility gap.

Explanation: The analysis indicates that independent assurance has become a common practice among companies disclosing Scope 3 emissions, with over two-thirds (68.4%) obtaining external verification from assurance providers such as DNV, Bureau Veritas, KPMG, Intertek, and S.R. Batliboi. There is a growing recognition that emissions disclosures must be credible, and this shift may have been driven by the increasing consciousness of investors, regulators, and global customers. However, nearly one-third continue to report emissions without third-party validation, suggesting that assurance is not yet universal and pointing to a credibility gap that needs to be bridged. Nevertheless, it suggests credible Scope 3 reporting requires the parallel development of assurance infrastructure – meaning that any future mandate would need to reckon with India's limited domestic pool of qualified assurance providers, rather than focusing solely on companies' willingness to disclose.

(f) FPI and Emissions Reporting

Finding: FPI shows no correlation, indicating that Scope 3 transparency is driven by export exposure and regulation rather than foreign equity ownership.

Explanation: Average FPI holdings among disclosers are 17.65%, compared with 18.22% among non-disclosers, suggesting negligible differences between the two groups. For example, Apollo Hospitals, with 41.5% FPI, does not disclose Scope 3 emissions, while Siemens, with 6.8% FPI, discloses them. The correlation between FPI holdings and disclosure status is around 0.03, indicating a weak positive relationship that could undercut the assumption that foreign capital drives Indian companies towards Scope 3 transparency. Nevertheless, the findings suggest that Scope 3 reporting is concentrated among firms facing external pressures, such as export requirements, multinational customers, or emerging regulations. However, given the extremely low correlation (0.03) and the small sample size of 30 companies from a population of 1,000, this should be viewed primarily as an exploratory indicator rather than a definitive pattern.

(g) Scope 3 Disconnect from NSE ESG Ratings

Finding: Current market sustainability scores fail to reflect or reward transparency in Scope 3 emissions reporting.

Explanation: The average NSE ESG rating for disclosers (66.42) is virtually indistinguishable from that of non-disclosers (66.55). The clearest illustration of this is at the individual company level: ABB India (rating 76) discloses Scope 3, while Hindustan Unilever (rating 74) does not. These two companies have comparably high overall ESG standing but display opposite disclosure behaviour.

This is corroborated at a more granular level by the group of companies sharing an identical ESG rating of 71: Siemens (Capital Goods, discloser), Cummins India (Capital Goods, non-discloser), and Apollo Hospitals (Healthcare, non-discloser), for

which identical overall scores coexist with entirely different Scope 3 practices. Rather than reading this as evidence that ESG ratings are 'wrong', it is more appropriate to conclude that Scope 3 disclosure is currently disconnected from the market's existing sustainability ratings. NSE's ESG methodology does not appear to assign substantial weight to Scope 3 transparency, and governance or social-pillar factors may dominate the composite score instead. This is a structural gap directly relevant to the paper's research question concerning the existing regulatory framework: if the market's own rating apparatus does not currently reward Scope 3 transparency, that alters the calculus of what would actually drive voluntary adoption absent a mandate.

(h) Inconclusive Year-on-Year Emissions

Finding: Year-on-year (YoY) fluctuations in Scope 3 emissions reflect methodological refinements and expanded reporting boundaries rather than operational decarbonisation performance.

Explanation: YoY Scope 3 changes vary widely across companies and are primarily driven by evolving reporting boundaries rather than underlying performance. In these early stages of Scope 3 adoption, companies are refining methodologies, expanding boundaries, and incorporating more Scope 3 categories over time, resulting in fluctuations that may reflect improvements in accounting practices rather than changes in emissions.

This creates a structural reporting paradox: as accounting practices improve and boundaries expand, a company's reported emissions may artificially increase. Companies that expand reporting boundaries or improve data collection may appear to perform worse environmentally, even though they are providing a more complete representation of their carbon footprint. For example, ITC reported a 335.25% increase, but this surge resulted from an expanded reporting boundary (the inclusion of supply chain partners, embedded raw material emissions, and end-of-life plastics) rather than an actual surge in emissions. By contrast, Vedanta (-8.10%), Dr. Reddy's (-7.70%), and BPCL (-0.28%) reported decreases, while Adani Enterprises (+32.27%), ONGC (+30.13%), and Mahindra & Mahindra (+23.40%) reported significant increases. The findings underscore that cross-company and inter-temporal comparisons remain unreliable without standardised approaches to boundary setting, category selection, and calculation methodologies. This does not imply that Scope 3 reporting lacks decarbonisation value; rather, this inability to discern whether emission changes arise from operational performance or methodological revisions highlights a significant Monitoring, Reporting, and Verification (MRV) challenge.

An underlying risk is that companies may become reluctant to expand reporting boundaries, if doing so leads to a sharp increase in reported emissions as it could be interpreted negatively by investors or other stakeholders. This creates a potential disincentive for more comprehensive reporting. Therefore, in the absence of standardised boundary-setting conventions and transparent disclosure of methodological revisions, changes in reported emissions cannot be reliably interpreted as indicators of decarbonisation progress.

3.4 Inferences from the Data Analysis

These findings do not resolve the question of whether Scope 3 accounting is necessary or feasible for India; they sharpen it. Most tracked companies already disclose Scope 3 emissions, but disclosure quality (in terms of methodology, category coverage, assurance, and boundaries) varies so widely that the practice has yet to coalesce into a single, comparable standard. The findings also indicate that voluntary market mechanisms alone have been insufficient to drive high-quality disclosures. The absence of any discernible relationship between ESG ratings and the extent or quality of Scope 3 reporting suggests that current reporting frameworks alone have not consistently rewarded more comprehensive disclosures. The implication is that India's challenge is no longer simply increasing the number of companies reporting Scope 3 emissions, but also improving the quality, credibility, and comparability of those disclosures. Whether this cost is worth bearing at scale and what systemic interventions

would be needed to strengthen the Scope 3 ecosystem are precisely the questions addressed in the remainder of this paper.

4. Results and Discussions

Below are the key findings and core discussion areas that emerged from the research undertaken, including the literature review and stakeholder consultations, which identified the existing strengths and gaps in the Scope 3 accounting framework of India.

4.1 Strengths and Gaps of India's Scope 3 Framework

BRSR compliance for listed companies has evolved from a documentation exercise into an audited disclosure regime that materially affects investor relations and the broader cost of capital. Reasonable assurance[4] on the nine BRSR Core attributes was applicable to the top 150 listed entities from FY 2023–24, expanded to the top 250 from FY 2024–25, the top 500 from FY 2025–26, and is scheduled to cover all top 1,000 listed entities from FY 2026–27. Value chain disclosures, covering suppliers and customers individually contributing 2% or more of purchases or sales, and collectively 75% of aggregate purchases and sales value, are to be reported. In 2025, 15% of companies globally disclosed their Scope 3 emissions. Under BRSR, this figure stands at 27% in India, exceeding the global average. This suggests that India is performing relatively well in terms of the prevalence of Scope 3 disclosures.[5] Yet it is essential to examine the strengths and gaps in the current Scope 3 regulatory framework in India to future-proof India's export readiness and enhance its competitiveness.

(a) Mandatory and Assurance Standards

While global standards like the US SEC climate rules have retreated from mandatory Scope 3 disclosure requirements or made such disclosures optional, India's SEBI-mandated BRSR Core requires reasonable assurance on key metrics, including Scope 3 GHG emissions. When EU standards under the CSRD initially mandated only limited assurance, India adopted a higher assurance bar early in its rollout path. This demonstrates India's ambition and commitment to achieving net zero by 2070. Although this is commendable, India adopted Scope 3 reporting and assurance before companies were fully equipped to report these emissions and assurance providers were sufficiently mature to support the process. The effectiveness of reasonable assurance depends on the existence of a mature, sufficiently large assurance-provider market. Among the companies that disclose Scope 3 emissions today, only one-third report having independent third-party assurance, while the remaining companies report without assurance. At this stage, mandating assurance risks outpacing the delivery capacity of India's audit system. This reflects an ambition to advance emissions-reduction goals that remains constrained by implementation capacity.

(b) Methodology and Boundary

The BRSR provides a standard template of 140 questions, spanning 98 essential indicators (mandatory) and 42 leadership indicators (voluntary). However, a standard methodology remains lacking; companies disclosing Scope 3 emissions today draw on an overlapping but non-identical mix of the GHG Protocol, the GRI 305-series, ISO 14064, and SEBI's own BRSR Core guidance. These are frequently used within a single report, with no requirement to specify the emission factors or category definitions used across them. Scope 3 emissions reporting rose from 114 companies in FY23 to 153 in FY25. Yet, around three-fourths of these companies continue to report sustainability information on a standalone, rather than consolidated basis (Sharma 2026).

This is compounded by a deeper problem: companies often know what they are required to report but not how to calculate it consistently. A methodology gap is more consequential than a template gap, and India is clearly at this point. The framework currently solved the question of 'which template' while leaving 'how to calculate' as an implementation detail for

[4] A rigorous audit standard akin to financial auditing

[5] The disclosure figures represent the proportion of companies reporting Scope 3 emissions at the company level. They do not reflect the number of Scope 3 categories reported, the completeness of emissions coverage, or the quality and accuracy of the reported data.

each company, even though the evidence suggests that regulatory attention needs to be allocated in the reverse order. This produces large inconsistencies in reported figures.

Boundary incoherence also runs across India's separate emissions instruments, not just within BRSR. In the current voluntary Scope 3 reporting landscape, the boundary is defined by the intent and the extent to which an entity assumes responsibility for its activities and the emissions they produce. Consequently, boundary setting is entirely discretionary, allowing entities to dictate how much of their value chain they account for. Although the Scope 3 framework should ideally aim for complete accounting of all value-chain emissions, leaving boundaries to discretion creates significant reporting bias. As demonstrated in Chapter 3, companies expanding their boundaries systematically disclose higher Scope 3 figures, while those applying restrictive boundaries report lower baseline emissions. Consequently, companies with more comprehensive value chain coverage may report higher emissions, reflecting greater transparency and more extensive emissions accounting rather than an actual increase in their emissions.

Another methodological asymmetry sits between upstream and downstream accounting. Upstream emissions benefit from routine procurement and purchasing records that companies already gather for financial audits, giving them a reliable and verifiable data foundation. By contrast, downstream emissions, specifically the use of sold products, which constitutes the bulk of emissions for manufacturing and energy sectors, lack an automatic data trail once goods leave corporate control. While companies can approximate downstream emissions by pairing point-of-sale revenue with known consumer usage patterns, this approach remains an ad hoc workaround, and regulatory frameworks have failed to institutionalise it across industries.

This measurement uncertainty is further compounded by the absence of a single, mandated national emissions database in India. Reporting entities must select among an assortment of voluntary, domestic, and international databases, such as the IEA, DEFRA, USEEIO, or IPCC AR6. The companies' final reported figures often reflect the choice of emission-factor database rather than actual operational performance, introducing significant variance that frameworks neither standardise nor require companies to disclose.

(c) Leveraging Existing Financial Data Infrastructure

There are two primary methods used to calculate Scope 3 emissions – spend-based and activity-based. The spend-based method estimates emissions based on expenditure on goods and services, whereas the activity-based method calculates emissions using activity data from across a business's supply chain. As activity-based methods require extensive data collection from raw material procurement to end-of-life treatment, they are less popular; large companies predominantly rely on spend-based methods to account for Scope 3 emissions, drawing on readily available financial metrics and data (Eco Matters 2026). The spend-based method is recognised under the GHG Scope 3 Standard and offers a feasible starting point for companies reporting Scope 3 emissions while they develop a credible framework for calculating them using the activity-based method.

The emissions calculation formula set out in the GHG Protocol is as follows:

Emissions (kg CO_2e) = Financial Spending × Emission Factor (kg CO_2e per currency unit)[6]

Stakeholders suggest that, to streamline spend-based Scope 3 reporting, revenue expenditure data and Goods and Services Tax (GST) data are two feasible existing data sources for reporting, as shown in Table 3. The revenue expenditure approach can be the first focus for companies starting to report, as the data are available immediately for all listed companies and the approach requires only a standardised mapping protocol and an emissions intensity database (UL Solutions 2026). The second component is to enhance

[6]For the Indian context, Scope 3 emissions per Indian rupee are calculated using the emission factor database chosen by the reporting company

Table 3: Revenue Expenditure and GST Data for Spend-Based Scope 3 Accounting

Dimension	Revenue Expenditure Data	GST Transaction Data
Source	Audited annual report	GSTN (real-time transaction records)
Granularity	Aggregated by expense category	Transaction-level, by supplier and commodity (HSN code)
Supplier identification	No – only total spend by category	Yes – GSTIN identifies each supplier
Commodity classification	Broad (e.g. "raw materials")	Detailed (HSN code level)
Verification	Statutory audit	Cross-matched between buyer and seller
Availability	Publicly available for listed companies	Restricted – requires regulatory access
Coverage	All expenditure including exempt items	Only GST-registered transactions
Timeliness	Annual	Real-time/quarterly
Applicability	All listed companies immediately	Requires a policy framework for data sharing

GST data, adding supplier-level granularity and real-time verification. This would require an institutional framework for data sharing.

Using the two components, large companies can cover Scope 3 Categories 1–7, as shown in Table 4. However, Categories 8–15 (downstream) are harder to capture through either source since they involve emissions outside the company's direct expenditure – although the upstream categories, which tend to account for the bulk of Scope 3 emissions for Indian manufacturing companies, are well covered by combining both sources.

Therefore, to use the existing financial database for spend-based Scope 3 reporting, three layers should be considered:

- Developing a National Emissions Database mapped to the expense categories and Harmonised System of Nomenclature (HSN) codes, to enable the derivation of a credible conversion (emission) factor– a crucial component of the emissions formula.
- A Standardised Mapping Protocol should be developed for revenue expenditure data by business and industry type, specifying which financial statement should be used for each category. This could be developed by SEBI in consultation with ICAI (the Institute of Chartered Accountants of India), since these institutions operate at the intersection of financial reporting and emissions accounting.
- A Data Governance Framework should govern access to GST data and specify the extent to which, and the conditions under which, companies can use GSTN data for Scope 3 accounting. This could also support the development of national-level baseline emissions data, provided inter-ministerial coordination is undertaken.

Table 4: Scope 3 Categories Covered Under Both Components

Scope 3 Category	Revenue Expenditure Line Item	GST Data
Cat 1: Purchased goods and services	Raw materials, stock-in-trade, consumables	HSN-coded purchase invoices – most granular
Cat 2: Capital goods	Capital expenditure (from balance sheet)	HSN-coded capital goods purchases
Cat 3: Fuel and energy	Power and fuel expenses	Partial – energy purchases in GST
Cat 4: Upstream transport	Freight inward, logistics costs	Transport service invoices (SAC codes)
Cat 5: Waste generated	Waste disposal expenses	Partial coverage
Cat 6: Business travel	Travel and conveyance expenses	Partial – some travel outside GST
Cat 7: Employee commuting	Partial – shuttle services, etc.	Limited

Integrating GST data into the Scope 3 architecture would require consultations with the Ministry of Finance (MoF), Ministry of Environment, Forest and Climate Change (MoEFCC), and Bureau of Energy Efficiency (BEE), to help build a reliable mechanism.

(d) Interoperability

The strength of India is that it already has meaningful pieces of ESG, embedded in instruments such as PAT and CCTS, alongside company-level BRSR disclosure. Yet these systems operate largely in parallel. While both PAT and CCTS adopt a gate-to-gate approach to energy efficiency and emissions intensity, respectively, they do not cover value chain emissions. BRSR, in contrast, provides for company-level Scope 3 disclosure, which is cradle-to-grave. The absence of common methodologies, shared datasets, and cross-validation limits the ability to use corporate Scope 3 disclosures for broader policy objectives such as national emissions accounting, carbon market implementation, or industrial decarbonisation planning. As a result, corporate emissions disclosures remain isolated datasets rather than components of a unified national carbon accounting framework. This highlights the need to formalise a common methodology for Scope 3 accounting that can complement existing frameworks while recognising their distinct reporting boundaries and objectives. Notably, this structural friction is not unique to India; early implementation of the EU's CSRD reveals similar divergence in methodology, boundary scope, and granularity despite operating under a single directive. This suggests that the market no longer suffers from a shortage of disclosures, but rather from a shortage of comparable data (Sharma 2026).

A further challenge lies in the growing gap between India's voluntary approach (so far) to Scope 3 reporting and the increasingly mandatory expectations of global markets. Although frameworks such as the EU's CBAM and IFRS S2 do not explicitly require companies to report Scope 3 emissions as defined under the GHG Protocol, they effectively require much of the same information. Companies are expected to disclose embedded emissions, understand their supply chains, track supplier-level emissions, and demonstrate credible decarbonisation pathways. Moreover, companies may satisfy Indian disclosure norms while still having to develop additional reporting systems to meet global market demands. In practice, this pushes firms towards developing Scope 3 reporting capabilities regardless of whether domestic regulations require them to do so. This creates an uneven reporting landscape, in which the quality of Scope 3 disclosure is driven less by environmental materiality and more by exposure to international markets.

(e) Extent of Value Chain

The framework's strength lies in having established a benchmark rule for setting whom to survey: its 2%-of-purchases-or-sales materiality threshold and 75%-by-value aggregate rule together concentrate mandatory disclosure on the value chain partners that matter most by volume, rather than demanding equal reporting intensity from every vendor regardless of size. This pool includes an entity's largest vendors and typically accounts for the large majority of its Scope 3 footprint. Thus, concentrating reporting effort there captures most of the material impact without demanding disproportionate effort from the long tail of small suppliers.

However, the weakness is the same design choice. By requiring disclosure of upstream and downstream partners individually accounting for 2% or more of purchases or sales by value, while reporting up to 75% of aggregate value, SEBI built a mechanism specifically designed to aid companies in disclosing only the most convenient, best-performing fraction of their supply chain. This is precisely where India's MSME base sits, and most MSMEs fall outside the perimeter not because of capacity failure alone, but also by design. Although this threshold is intended to make the mandate administrable, its side effect is to give listed companies leeway to include the most convenient value chain partners rather than adhere to environmental materiality or to MSME readiness. With the top 1000 listed companies now mandated to report, the compliance perimeter is expanding well beyond the directly regulated entities, and even mid-size unlisted suppliers to listed companies

will increasingly need to report ESG data in BRSR-compatible formats. This means MSMEs that are able to produce credible ESG data gain a competitive commercial edge, while those unable to do so risk being excluded from large companies' supply chains regardless of whether any formal mandate currently applies to them.

Another issue is that the tiered structure of 'value chain' itself has an unresolved internal sequencing problem. Tier 1 supplier data collection remains incomplete for companies managing several thousand vendors; Tier 2 and Tier 3 tracing is not currently achievable under any existing guidance, despite being conceptually part of what the term 'value chain' is meant to capture. This leaves a structural gap between the theoretical scope of the framework's own definition and what is practically being measured today.

(f) MRV System

Finally, the framework's most structurally underdeveloped element may be verification infrastructure rather than disclosure rules themselves. PAT and CCTS operate at the facility level, whereas BRSR applies at the company level, reflecting their distinct regulatory objectives and reporting boundaries. However, the absence of clear linkages between these frameworks and a common national emissions reference makes it difficult to reconcile facility-level data with corporate disclosures and independently assess the consistency of reported emissions. The implication is that India has invested considerable effort in improving corporate disclosure, but much less in building the institutional infrastructure required to validate, aggregate, and utilise those disclosures for broader policy purposes.

5. Why It Matters: The Strategic Choice for Scope 3 in India

Over the last four years, voluntary disclosure among top-listed companies has steadily grown (Fig. 4), with the proportion of NSE Top 200 companies reporting Scope 3 emissions rising from 38 per cent in FY2022 to 60 per cent in FY2025. Yet, stakeholders emphasise that transitioning to a mandatory regime could prove operationally disruptive unless accompanied by targeted regulatory guidance, capacity building, and financial support for smaller supply-chain partners. As Scope 3 disclosures become mandatory under the BRSR Core framework for India's top-listed entities from FY2026–27, the debate over Scope 3 accounting has shifted from whether to adopt it to evaluating the trade-offs between the costs of action and the risks of inaction.

5.1 Evaluating the Trade-Offs

(a) Capital Markets and ESG Ratings

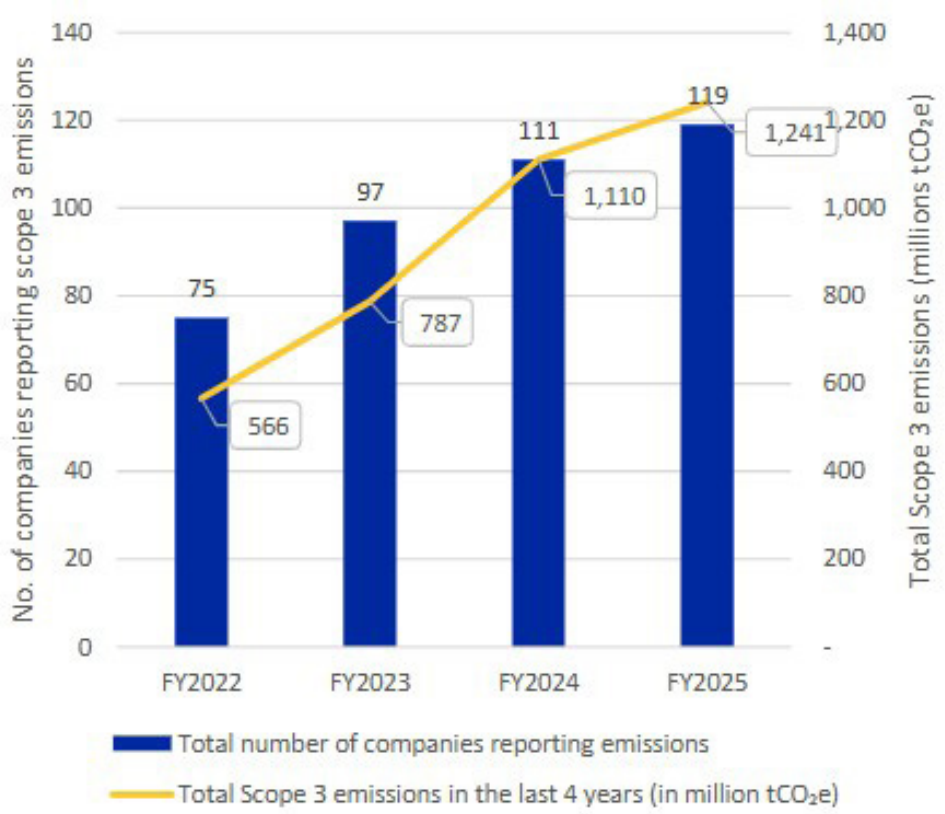
Dalal and Thaker (2019), while analysing 65 Indian firms from the NSE top 100, concluded that ESG performance enhances a company's financial performance in both accounting and market-based measures. According to Yadav and Behera (2023), who assessed the impact of ESG ratings on the stock returns of Indian companies from 2017 to 2022, an improvement in ESG ratings leads to statistically significant positive returns of 0.7 per cent per month. On the other hand, when a company's ESG rating declines, the effect on stock performance is both larger in magnitude and more consistent, with declines associated with approximately -1.7 per cent per month in risk-adjusted returns. This suggests that capital markets are more sensitive to ESG deterioration, as the financial cost is more than twice the financial gain.

However, our empirical data analysis reveals no direct correlation between a company's overall ESG rating and its level of Scope 3 disclosure. While market ratings heavily penalise declines in overall ESG performance (the cost of general inaction), high ESG ratings currently fail to reward or incentivise comprehensive Scope 3 accounting. Relying solely on market ratings without mandating value-chain disclosures leaves companies exposed to unpriced climate risks and investor scrutiny.

(b) The Invisible Tariff

A second major driver is that firms in India with export exposure report Scope 3 emissions to meet buyer demands and supply-chain requirements imposed by global firms. In 2021, when the US Securities and

Figure 4: Scope 3 Emissions Reporting by Companies (NSE Top 200/Last 4 Years)



Source: ICRA ESG Ratings (2026)

Exchange Commission (SEC) announced a request for input on climate-related disclosures, including Scope 3 emissions, firms began to focus on their supply chain management. Carter, Lee, and Yu (2026) studied this effect and found that mandating Scope 3 disclosures would not only change what the companies report but also how they structure their operations. The mere anticipation of a Scope 3 mandate led affected companies to reduce imports and bring more production in-house to gain greater control over supply chain emissions in the US. This has significant policy implications for Indian exporters that supply goods and services to large US and EU firms. These exporters might already be at risk of being excluded from these supply chains as large US firms (buyers) are restructuring their operations to reduce disclosure burdens associated with foreign outsourcing. Therefore, establishing a Scope 3 inventory for Indian exporters is critical to maintaining global trade and market access. This economic imperative can incentivise firms to account more accurately for their emissions, thereby encouraging positive decarbonising initiatives.

Therefore, the financial risks associated with Scope 3 reporting have led to emissions disclosure no longer being voluntary for large companies. They are actively managing upstream and downstream emissions because these have become a business risk rather than a compliance choice. During the stakeholder consultations, the ESG teams of large companies also reported that they were asking their suppliers to disclose their emissions. A few companies are also investing in providing adequate ESG training and support to the suppliers and helping them build emissions inventories. Standardised accounting standards, such as the GHG Protocol Scope 3 Standard, are designed to help individual firms track their emissions footprints over time rather than enable cross-organisational comparisons. Because different sectors prioritise different categories and utilise varying emission-factor databases, direct baseline comparisons across organisations remain inherently imprecise. Nevertheless, establishing a robust Scope 3 inventory offers significant strategic value. Higher Scope 3 emissions can signal resource instability, high energy costs, future resource scarcity, greater

Table 5: Scope 3 Global Disclosures and their Implications for Indian Companies

Framework	Current Status& Timeline	Implicationfor India
IFRS S2	Effective for annual periods beginning 1 January 2024 – but adoption timeline varies by country. Key dates: • Australia: mandatory from 2025 • UK: mandatory from January 2027 • Singapore, Japan, Canada: adoption in progress India: SEBI is monitoring developments. No adoption date has been announced.	**Direct exposure:** Indian companies listed overseas or operating in adopting jurisdictions (e.g., UK, Australia, Singapore) face IFRS S2 obligations directly. **Indirect exposure:** As more of India's major trading and investment partners adopt IFRS S2, Indian companies face growing pressure from foreign investors and lenders to align their disclosures. If India adopts IFRS S2, all companies currently covered by BRSR Core would come in scope.
CSRD	Omnibus I (February 2026) narrowed its scope but kept Scope 3 mandatory. Simplified ESRS reporting standards are in final consultation and expected to apply from FY2027.	**Direct exposure:** Large Indian multinationals with more than €450 million in EU revenue – such as major IT, pharmaceutical, and manufacturing companies – fall directly within CSRD scope from 2029. **Indirect (and more immediate) exposure:** Even Indian companies outside CSRD scope are affected because their EU buyers – who are in scope – must report Scope 3 Category 1 (purchased goods and services). This means EU buyers will request emissions data from their Indian suppliers regardless of whether those suppliers are covered by CSRD. This supply chain effect is the primary channel through which CSRD reaches Indian MSMEs.
California Climate Laws (SB 253 / SB 261)	California SB 253: Active law. Scope 1 and 2 due August 2026. Scope 3 due from 2027. California SB 261: Under a temporary court stay – enforcement paused, but companies advised to stay prepared.	**Direct exposure:** Indian IT, pharmaceutical, and manufacturing companies with significant California or US revenue may cross the $1 billion SB 253 threshold, bringing them into direct scope. **Indirect exposure:** The anticipation of US Scope 3 rules has already changed behaviour – research shows that US companies began reducing imports when Scope 3 disclosure became likely, to gain greater control over their supply chain emissions. Indian exporters supplying US firms may already face supply chain restructuring risk as a result. The SEC's retreat at the federal level reduces direct pressure, but California's laws – covering the world's fifth-largest economy – remain a significant and active driver.
CBAM (Carbon Border Adjustment Mechanism)	**Timeline:** • 2023–2025: Transitional phase – quarterly emissions reporting required but no payment • January 2026 onwards: Verified emissions data required and CBAM certificates must be purchased (priced at EU ETS rates) • First annual declaration deadline: 31 May 2026 • Proposed 2028 expansion: ~180 additional downstream products	**Direct exposure:** • Steel: India exports approximately 3.7 million tonnes to the EU annually • Aluminium: approximately 2 million tonnes exported globally, significant share to Europe • Fertilisers: over $1.2 billion exported to the EU (2022)

Source: Author's Analysis

regulatory scrutiny from investors, and reputational risks for stakeholders. On the other hand, managing an effective Scope 3 inventory can help businesses prepare for potential carbon regulations, identify market opportunities to produce goods and services with lower GHG emissions, and secure investor trust. Therefore, Scope 3 reporting and management not only delivers environmental benefits but is also a profitable parameter for businesses.

(c) Global Disclosures and Inaction Pressure

A third and increasingly urgent source of inaction cost is the sheer density of overlapping international disclosure regimes now converging on Scope 3, several of which reach Indian companies indirectly even without direct jurisdictional coverage. The EU is the second-largest trading partner of India, accounting for almost 11.5% of India's trade in goods. Over the past two decades, EU imports from India have grown by approximately 140% (The Council of the EU and the European Council 2024). Given the EU's contribution to India's economic growth, developments in its climate-disclosure requirements warrant close monitoring and analysis.

The EU's Corporate Sustainability Reporting Directive (CSRD) came into effect in January 2023 and has a proposed timeline: in FY 2028 (reporting 2029), it will be mandatory for non-EU parent companies with substantial activity and presence in the EU to disclose Scope 1, 2, and 3 emissions (European Parliament and Council of the European Union 2022). Table 5 shows the timeline for when Scope 3 emissions reporting is due to become mandatory under each standard and how it would affect Indian companies. While standards such as IFRS S2 and CSRD apply to all sectors, other measures, such as the EU's Carbon Border Adjustment Mechanism (CBAM), are sector-specific and cover 6 sectors, including iron and steel, aluminium, cement, fertilisers, hydrogen, and electricity. CBAM includes levying a carbon tax on imports into the EU with higher embedded carbon emissions and produced in countries with fewer environmental regulations in a bid to favour locally produced goods. Although CBAM does not have a direct Scope 3 mandate, for some products, embedded emissions from upstream raw material inputs (Category 1) will have to be reported by companies exporting those products to the EU.

(d) Investor Pressure

Foreign Institutional Investors (FIIs), particularly ESG-focused funds and large asset managers, increasingly consider sustainability disclosures, including Scope 3 emissions, when making investment decisions. FII holdings in large Indian companies compound the pressures above. As of July 2026, 99 out of the NIFTY top 500 companies, covering different sectors, have FII holdings of more than 20% of their total share capital (The Economic Times 2026). With a large number of foreign investors, Indian companies will have to comply with regulatory and disclosure requirements as investors become subject to their domestic mandates.

As frameworks such as IFRS S2 and CDP place greater emphasis on Scope 3 reporting, Indian companies with significant FII holdings may face greater pressure to improve disclosure to maintain investor confidence and access to capital. FII exposure therefore provides a channel through which global sustainability expectations can influence corporate reporting practices and potentially affect financing costs and investment decisions.

Another parameter that helps corporates demonstrate their sustainability pledges is their commitment to targets validated by the Science Based Targets initiative (SBTi). SBTi targets are science-based emission-reduction goals developed through a partnership between CDP, the UN Global Compact, the World Resources Institute, and the World Wide Fund for Nature (WWF) that align corporate action with the Paris Agreement. SBTi validation helps reduce the cost of capital by potentially securing lower interest rates and facilitating access to sustainability-linked loans. Under SBTi rules, any company whose Scope 3 emissions exceed 40% of total GHG emissions must set and report Scope 3 targets. In India, 580 companies, including large corporates and small and medium-sized enterprises (SMEs), have set or committed to SBTi targets (SBTi 2025). This means that many firms are already

obligated to report Scope 3 emissions regardless of SEBI mandates, underscoring the need for a credible national Scope 3 reporting framework. By working on reducing their supply chain emissions, companies also benefit from improving their operational efficiency. For SMEs, SBTi validation can provide a streamlined route to remaining part of the global supply chains (Amran 2026).

Multinational investor companies also undertake net-zero portfolio commitments and incorporate them into their investment strategies. Such strategies involve clear emission reduction targets and shifting capital away from high-emitting companies towards those pursuing emissions reductions and aligned with the transition to a low-carbon economy (Sustainability Directory 2025). The main objective of a portfolio commitment is to provide a structured plan to reduce carbon emissions and offset existing emissions through carbon removal investments. Therefore, Scope 3 inventory has become a basic requirement for many entities operating in global markets.

(e) The MSME Burden

Even though establishing a Scope 3 inventory is necessary to avoid trade disruption and regulatory non-compliance under the FY26-27 mandate, the immediate costs of action are also substantial.

According to the registrations on the Ministry of Micro, Small and Medium Enterprises (MoMSME) (2026) portal, as of July 2026, India has approximately 9 crore registered MSMEs under the Udyam scheme and Udyam Assist Platform (UAP), including nearly 4 crore informal micro enterprises (IMEs). Accounting for 31.1% of the country's GDP and 48.58% of Indian exports, MSMEs play an integral role in strengthening the economy and meeting strong global demand for goods and services produced by small vendors (India Brand Equity Foundation [IBEF] 2026).

Scope 3 emissions accounting involves measuring and reporting value chain emissions associated with a business entity. The value chain of large companies mostly comprises Indian MSME vendors. For instance, large automobile manufacturers depend on small local suppliers for sheet-metal and plastic parts. These suppliers fall into two groups: Tier 1 suppliers that deliver finished parts directly to the manufacturer, and Tier 2 suppliers that produce smaller subcomponents for Tier 1 firms, supplying them as needed to meet the manufacturer's orders (Sanghvi and Jain 2015). These vendors have limited technical and financial capacity, which can h[SR1.1] inder the integration and management of Scope 3 emissions accounting. Primary research studies, such as those conducted by the Small Industries Development Bank of India (SIDBI 2025), identify the lack of awareness of benefits, affordability, and implementation complexity as major barriers to the adoption of sustainable technologies by MSMEs in India. These MSMEs are a core component of the Scope 3 emissions of large companies; therefore, they should be central to the design of any model mandating Scope 3 emissions reporting in India.

Stakeholder consultations with sustainability teams of large companies highlighted the impact that Scope 3 mandates would have on the small-scale vendors. Most MSMEs, especially MSEs in large companies' supply chains, do not have dedicated sustainability teams, adequate GHG inventories, or the technical capacity to account for and report Scope 3 emissions. Therefore, mandating Scope 3 reporting in this context is expected to sharply raise compliance costs and make small suppliers less competitive. Compliance costs are already a major operating burden for MSMEs. On average, MSMEs incur 13–17 lakhs per annum in compliance costs, covering requirements relating to labour, taxation, environmental regulations, and local permits. For environment, health, and safety (EHS) alone, an MSME has to obtain 17 approvals and permits on average, costing around 3 lakhs per annum, including central and state-level compliance requirements (Teamlease Regtech 2025). Without adequate support, MSMEs risk remaining ill-equipped to adapt to or maintain competitiveness amid the tightening ESG requirements in the market, so any mandatory disclosure requirements should be accompanied by targeted support for MSMEs.

The support given to MSMEs can be provided through two channels:

- Larger companies typically engage with a large and diverse base of small suppliers, most of which fall under Tier 1. Given that Tier 1 suppliers often account for the bulk of supply-chain emissions, large companies are well-positioned to lead supplier mapping exercises, segmenting suppliers into tiered groups and prioritising those linked to the highest-impact materials procured. Once this mapping is complete, large companies can organise targeted training and capacity-building programmes for their Tier 1 suppliers to improve emissions data collection and reporting. Industry associations can serve as powerful change agents in this process, as they have considerable influence and direct access to industry leaders. This makes them ideal partners to promote collective awareness, set sectoral benchmarks, and scale capacity-building initiatives across MSME clusters.

  A stakeholder cited a company's approach as an illustrative example in which the company required suppliers to report emissions through a structured system. Rather than attempting to trace all materials simultaneously, it adopted a hotspot-traceability approach, initially focusing on a few critical, high-impact materials. As supplier reporting systems matured, the company progressively expanded this approach to cover additional suppliers and materials. For large companies, the incentive to spearhead such initiatives is closely tied to securing ESG-linked capital access and satisfying disclosure requirements for investors seeking a fully reported, transparent supply-chain emissions profile.

- The government already runs multiple schemes to support MSMEs in the areas of finance, regulation, and quality assurance (Goel 2025). With SEBI's new Scope 3 reporting requirements exposing MSMEs' centrality in corporate supply-chain emissions, a targeted initiative is needed to help these firms comply. This could include free training and access to standardised emissions-calculation tools, a unified portal for MSME emissions data collection, and complementary support (technical assistance, template ESG inventories, and facilitating access to finance for low-carbon upgrades) to build robust ESG and emissions-reporting capacity across the supply chain. Financial institutions and regulators should also consider introducing tangible financial incentives, such as increased working capital margin limits for MSMEs that demonstrate measurable improvements in ESG performance. Furthermore, support could be leveraged from multilateral institutions and developed-country partners to transfer the capabilities and technology needed to comply with global market standards.

However, from a decarbonisation point of view, it is important to understand that the Scope 3 emissions of the large companies are nothing but the Scope 1 and 2 of the MSMEs. Looking at it from a bottom-up approach, to become environmentally competitive, these MSMEs have to build their operations focusing on reducing emissions. This coupled with the correct and optimum reporting capacity would help them in surviving the competitive system. The government and industry associations should therefore try to focus on reducing Scope 1 & 2 of the MSMEs.

5.2 Weighing the Trade-Offs

Read together, these sections offer no straightforward answer to the question of whether Scope 3 accounting is worth adopting; rather, they clarify what is actually being traded off and against whom. The cost of inaction falls primarily on large, listed, export-exposed companies, in the form of capital market risk, trade and buyer-relationship risk, regulatory contagion from multiple overlapping international regimes, and investor and lender pressure – all of which are already live, irrespective of whether a mandate is in place. The cost of action, by contrast, falls disproportionately on a different and much larger population: India's MSME base, which lacks the technical capacity, dedicated teams, and financial headroom to absorb new reporting obligations without support. Hence, sequencing methodology

harmonisation and capacity-building ahead of a binding mandate is not merely a matter of pacing but a pragmatic response to the fact that the entity bearing the cost of inaction and the entity bearing the cost of action are more or less balanced.

5.3 SMEs in the Global South: Experiences and Approaches to Scope 3 Emissions Reporting

Brazil's national GHG Protocol (2017) programme provides a standardised framework for emissions accounting, supported by calculation tools, capacity-building, and a public registry. Bursa Malaysia has introduced its Centralised Sustainability Intelligence (CSI) platform to facilitate corporate sustainability reporting and supply-chain engagement. The platform provides tools for emissions estimation, supplier identification, and engagement, alongside capacity-building support. Its approach is particularly relevant to Scope 3 accounting because it enables companies to begin with estimated emissions and progressively engage suppliers to improve the quality of reported data (The Edge Malaysia 2025). Thailand has combined emissions reporting infrastructure with technical assistance for SMEs, while international supply-chain requirements in Vietnam are incentivising exporters to strengthen their emissions-reporting capabilities, although significant capacity gaps remain (Nam and Cuong 2024). These experiences highlight the importance of combining standardised methodologies with digital infrastructure, technical assistance, and proportionate reporting requirements to facilitate SME participation in Scope 3 accounting.

The experiences of SMEs in the Global South offer useful insights into the practical challenges of Scope 3 emissions accounting, particularly limited technical capacity, financial constraints, and dependence on larger value chain partners. Emerging initiatives in developing economies demonstrate how simplified emissions accounting tools, supplier engagement, and capacity-building programmes can facilitate participation in corporate emissions reporting. Examining these approaches can help inform policies that make Scope 3 reporting more accessible to SMEs while improving the availability and reliability of value chain emissions data.

A supplier development programme implemented by Part of the Solution (POTS), in collaboration with the Otto Group, provides an example of how smaller suppliers can progressively develop their emissions reporting capabilities. Initiated in 2023, the pilot involved eight Bangladeshi garment factories. It used a carbon management maturity matrix covering GHG inventories, emissions reduction targets, mitigation measures, and reporting practices. Suppliers received individual assessments and recommendations, alongside support to identify local service providers (POTS 2023). This approach illustrates how buyer-led technical assistance and structured assessments can help SMEs close gaps in emissions accounting and reporting, particularly in export-oriented industries.

6. Policy Roadmap

India does not face a binary choice between mandating Scope 3 disclosure immediately or deferring it indefinitely. What the evidence presented in this research paper supports is a sequenced roadmap – one that front-loads the methodological and institutional groundwork the current framework lacks, builds capacity and market incentives before compliance becomes compulsory, and only then moves to a legally binding regime once the underlying data and verification infrastructure can credibly support it. A roadmap that mandates disclosure before the methodology is settled risks repeating the credibility gaps already visible in BRSR Core reporting; one that defers the mandate indefinitely risks leaving Indian exporters permanently exposed to CBAM and comparable regimes without domestic infrastructure to draw on.

It is worth acknowledging that SEBI has already taken a significant step by making Scope 3 disclosure mandatory for the top 1,000 listed companies from FY2025–26. This is a consequential policy signal. However, given the methodological inconsistencies, weak interoperability across reporting systems, and limited MSME capacity documented in this research paper, the immediate reporting cycle is unlikely to yield the volume or quality of disclosures that policymakers and investors need. The mandate

has arrived before the infrastructure is ready. The roadmap proposed below is therefore not a case for delaying the mandate – it is a case for building, urgently and in sequence, the foundations that will make that mandate effective.

This study does not contradict SEBI's direction – the mandate to disclose Scope 3 emissions is correct and necessary. What the study recommends is a significant amendment to the sequencing and architecture of that mandate across four specific points, as outlined in Table 6:

This study's findings thereby suggest a phased roadmap for Scope 3 disclosures to be mandated in India. This approach can also be used by other developing nations with similar market structures and conditions to gradually implement and evaluate Scope 3 emissions accounting. The proposed roadmap is as follows:

Phase 1 should prioritise rigorous stakeholder consultation before any attempt to expand disclosure volume. The immediate need is not a greater volume of reporting – it is better reporting. This requires settling four unresolved foundational questions that SEBI's current framework has left open: how reporting boundaries are defined across joint ventures and multi-entity groups; which Scope 3 categories are material for each sector cluster; which intensity metrics will be used consistently across companies; and critically, what emission factors companies should apply in their calculations.

- The absence of a nationally validated emission factor database is perhaps the single most consequential infrastructure gap in India's current Scope 3 architecture. SEBI's CAP methodology, introduced in December 2024, provides a spend-based estimation framework but offers no guidance on which emission intensity factors to apply. Without a nationally validated database – mapped to both HSN commodity codes and standard financial expenditure categories – companies will continue to use incompatible global databases that do not reflect Indian production realities,

Table 6: Proposed Reforms to SEBI's Scope 3 Disclosure Framework in India

Dimension	SEBI's Current Position	Recommendation
1) Sequencing	Disclosure mandate first, methodology guidance after	Methodology and boundary protocols first, then expand disclosure mandate
2) Methodology	GHG Protocol recommended but not mandatory; Carbon Accounting Proxy (CAP) method introduced without supporting data infrastructure	Mandate GHG Protocol; commission a nationally validated emission factor database mapped to HSN codes as a precondition; and adopt the spend-based method initially, gradually transitioning to activity-based data collection.
3) Category coverage	Demands disclosure from upstream/ downstream categories comprising 75% of purchases/sales by value.	Begin with material categories only through sector-specific cluster approach; treat materiality as a pathway to comprehensiveness
4) Supply chain	No direct mechanism for supplier or MSME coverage	Formalise anchor-firm model; link listed company obligations to Tier 1 supplier disclosure in Phase 2
5) Assurance	Downgraded to assessment or assurance	Maintain the trajectory toward stronger assurance; begin voluntary third-party verification in Phase 2 and make it compulsory in Phase 3
6) Institutional ownership	SEBI alone	Formalise MCA as a nodal agency for establishing a joint working group with SEBI, MoEFCC, BEE, Ministry of Commerce and Industry (MoC&I), and MoF to manage and regulate GHG reporting.

rendering reported numbers inconsistent and internationally indefensible. BEE or MoEFCC should therefore commission and maintain such a database as a Phase 1 priority, with annual updates and free access for all reporting entities.

- Scope 3 reporting need not begin with all fifteen categories. Where emissions are overwhelmingly concentrated in one or two categories, reporting these material sources (adding up to at least 70% of total Scope 3 emissions) provides a credible and practical starting point. Such an approach enables companies to account for the bulk of their indirect emissions while progressively expanding category coverage as reporting methodologies mature and data quality improves. Materiality here should be viewed as a pathway to comprehensiveness, not an alternative to it.
- The methodologies adopted should align with international and domestic sustainability frameworks, ensuring interoperability between mechanisms. Until reporting systems such as BRSR, PAT, CCTS, GST-linked supply chain data, and emerging digital MRV platforms are linked through common methodologies, interoperable databases, and national reference baselines.
- Scope 3 reporting will remain primarily a firm-level compliance exercise rather than a reliable input into national emissions accounting or carbon market governance. To ensure this integration is operationalised rather than merely recommended, the joint working group led by MCA and comprising SEBI, MoEFCC, BEE, MoF, and others should be constituted through a formal gazette notification with a time-bound mandate and clear deliverables – India's experience with inter-ministerial committees suggests that without such formalisation, coordination intentions rarely translate into institutional action.

Phase 2 shifts the focus to capacity and coverage.

- The anchor-firm model – under which large listed companies take structured responsibility for bringing Tier 1 suppliers into the disclosure ecosystem – is the most viable mechanism for extending Scope 3 coverage without overwhelming MSMEs. This should be formalised through supply chain contracts, due diligence requirements, and government-supported capacity building programmes.
- BEE should develop a free, simplified digital emissions calculation tool for MSME suppliers, alleviating the compliance burden at the base of the supply chain without requiring MSMEs to build independent reporting infrastructure.
- Simultaneously, NSE and BSE ESG ratings should be revised – under SEBI's direction – to explicitly factor in Scope 3 disclosure quality, creating a financial market incentive that operates independently of regulatory compulsion. Naming SEBI as the institutional driver of this reform is deliberate: without regulatory direction, stock exchanges are unlikely to revise rating methodologies on their own initiative, and this recommendation will otherwise remain unimplemented.
- Phase 2 should also mark the commencement of a voluntary third-party assurance programme for the top 250 listed companies. SEBI's March 2025 decision to downgrade the assurance requirement from reasonable assurance to assessment or assurance moves in the wrong direction relative to what India's exporters need – credibly verified Scope 3 data is a precondition for recognition under CBAM and IFRS S2. Initiating voluntary assurance in Phase 2, jointly standardised by SEBI and ICAI, should build the institutional capacity and professional auditor cadre required for Phase 3's compulsory verification. Because manual third-party verification is highly vulnerable to compromise without rigorous oversight, this phase must simultaneously establish formal training, certification, and accreditation mechanisms to safeguard integrity.

Phase 3 marks the transition to a fully enforceable regime:

- Compulsory third-party verification, mandatory Tier 1 and Tier 2 supplier coverage.
- Formal integration with India's CCTS.
- Concurrently, implementing Digital Monitoring, Reporting, and Verification systems – including automated data feeds and blockchain-backed

audit trails – will reduce human bias, lower verification costs, and secure data integrity over time.

- By combining digital MRV architecture with a qualified verification cadre, the methodological foundations laid in Phase 1 and the capacity built in Phase 2 should make compliance both credible and achievable across the reporting universe.

7. Recommendations

The central recommendation of this study is the establishment of a dedicated nodal agency under the Ministry of Corporate Affairs (MCA) – modelled on BEE's role under the Ministry of Power – to coordinate and harmonise corporate GHG reporting in India. This agency's first mandate should be to constitute and convene a Joint Working Group comprising SEBI, MoEFCC, BEE, Ministry of Commerce, and Ministry of Finance, responsible for aligning India's fragmented reporting landscape into a coherent Scope 3 architecture.

Once constituted, the nodal agency should drive the following actions:

- **Define Scope 3 Materiality** – Establish explicit quantitative thresholds and qualitative criteria (supply chain risk, regulatory exposure, spend volume, stakeholder interest) for determining which Scope 3 categories are material under BRSR, removing the discretion that currently produces incomparable disclosures.
- **Commission a National Emission Factor Database** – BEE, drawing on CEA grid factors and existing industrial data, should develop a nationally validated, product-level emission intensity database mapped to HSN codes, bringing consistency to Scope 3 calculations across sectors.
- **Standardise Reporting Boundaries** – SEBI should prescribe sector-specific boundary protocols to prevent companies from being disincentivised to improve boundary coverage due to artificially higher year-on-year reported emissions.
- **Integrate Existing Reporting Systems** –The Joint Working Group should issue explicit mapping rules aligning PAT and CCTS factory-level data with BRSR corporate-level reporting, eliminating duplicate disclosure burdens.
- **Adopt a Phased Methodological Pathway** – Companies should begin with spend-based methods using HSN-mapped data before transitioning to activity-based methods as supplier data matures.
- **Formalise the Anchor-Firm Model** — Large listed companies should be required to support Tier 1 supplier disclosure through supply chain contracts and government-backed capacity building, making MSME inclusion structural rather than voluntary.
- **Embed Scope 3 in Market Incentives** – SEBI should direct NSE and BSE to explicitly weight Scope 3 disclosure quality in ESG ratings, creating financial market pressure independent of regulatory compulsion.
- **Connect Disclosures to Carbon Markets** – Baseline data from Phases 1 and 2 should feed directly into CCTS, ensuring Scope 3 disclosures serve climate governance beyond the reporting exercise.
- **Build a Domestic Verification Ecosystem** – SEBI and ICAI should jointly develop a Scope 3 assurance standard, beginning with voluntary verification and transitioning to mandatory third-party assurance in Phase 3, supported by an accredited auditor cadre and digital MRV systems.

The core amendment this study proposes is not to delay SEBI's mandate but to build, urgently and in sequence, the institutional and methodological infrastructure that makes that mandate meaningful. Without it, India will continue to generate Scope 3 filings without credibility – and lose the very leverage that robust disclosure would provide in CBAM negotiations, carbon market governance, and international climate diplomacy. •

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