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EVALUATING CORPORATE SUSTAINABILITY DISCLOSURE: A LONGITUDINAL STUDY OF TATA STEEL LTD

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ABSTRACT
This study provides a longitudinal analysis of the sustainability accounting disclosure practices of Tata Steel Ltd., a leading entity in India's steel industry, across the fiscal years 2021–22 to 2023–24. The study evaluates disclosure patterns in environmental, social, and governance (ESG) domains through a structured content analysis of its Integrated Reports. Special attention is paid to the company's alignment with international sustainability frameworks such as the Global Reporting Initiative (GRI), Task Force on Climate-related Financial Disclosures (TCFD), and the Sustainable Development Goals (SDGs). The analysis reveals a progressive enhancement in reporting quality and strategic depth, particularly regarding decarbonization strategies, circular economy models, and stakeholder-inclusive governance mechanisms. The paper contributes to the academic discourse on sustainability reporting in emerging markets and highlights the value of robust ESG communication for long-term corporate accountability.

Keywords: Sustainability Accounting Disclosure, ESG Reporting, Integrated Reporting (IR), GRI, BRSR, SDGs, Environmental Performance Indicators

1. INTRODUCTION
Sustainability accounting has evolved into a core component of corporate strategy, particularly for resource-intensive sectors like steel manufacturing. In India, regulatory pressures, stakeholder expectations, and global sustainability benchmarks have encouraged companies to embed Environmental, Social, and Governance (ESG) considerations into their disclosure frameworks (Bansal & DesJardine, 2014). Among them, **Tata Steel Ltd.** stands as a pioneer in sustainability reporting, having published Integrated Reports for several years with detailed insights into non-financial performance.

The steel industry is energy-intensive, contributing significantly to carbon emissions and environmental degradation. As such, sustainability disclosures in this sector are not only about compliance but also reputation, investment attraction, and long-term viability (World Steel Association, 2022). The concept of **sustainability accounting** integrates quantitative and qualitative information on environmental performance, carbon footprint, waste management, water consumption, community engagement, and workforce diversity. These disclosures assist investors, regulators, and the public in assessing the ethical and environmental behavior of firms beyond financial metrics (Gray, Owen, & Adams, 2014).

This paper explores how **Tata Steel Ltd.**, a publicly listed company on both NSE and BSE, demonstrates accountability and transparency through its Integrated Reports from FY 2021–22 to FY 2023–24. These reports have been analyzed to determine the scope, quality, and evolution of sustainability disclosure practices across three years. Tata Steel was chosen due to its robust governance system, consistent ESG commitments, and long-standing reputation as a socially responsible entity.

The rationale for this study is rooted in the increasing importance of sustainability metrics for Indian companies in line with SEBI's **Business Responsibility and Sustainability Report (BRSR)** mandate, effective from FY 2022–23. Furthermore, the rise of green finance, ESG indices, and stakeholder activism necessitates a critical evaluation

of corporate sustainability communication practices. The steel sector, which is responsible for approximately 7–9% of global CO_2 emissions (IEA, 2023), needs urgent transition strategies that are visible and accountable.
By focusing on one of India's leading industrial conglomerates, this paper seeks to illustrate how sustainability accounting evolves in a complex regulatory and operational environment, and what lessons can be learned for other firms in similar contexts. The findings are expected to offer value to academics, sustainability professionals, policymakers, and corporate strategists.

2. REVIEW OF LITERATURE

Gray and Milne (2002, 2004) highlighted significant challenges in achieving genuine sustainability through corporate reporting, arguing that most reports exaggerate sustainability efforts. Brown and Deegan (1998) supported this by examining how environmental disclosure is shaped by media and legitimacy pressures. Lamberton (2005) provided a conceptual foundation for sustainability accounting, clarifying its evolution and purpose.
Buccina et al. (2013) analyzed Chevron's environmental liability in Ecuador, illustrating the real-world implications of sustainability accounting failures. Hernádi (2012) proposed that green accounting frameworks are vital for organizations striving for sustainable practices.
Busco et al. (2019) explored the determinants of corporate sustainability integration, concluding that structural and cultural contexts greatly influence disclosure levels. Similarly, Chelli et al. (2014, 2019) studied symbolic vs. substantive sustainability strategies, showing that firms often focus more on image than actual impact.
Khalid et al. (2012) documented challenges in implementing environmental management accounting in Malaysia, especially in pollution-intensive sectors. Lastly, the GRI (2013, 2016) reporting standards played a vital role in institutionalizing global disclosure practices.
Sustainability accounting and corporate environmental disclosure have received increasing attention in recent decades, particularly as stakeholders demand greater transparency regarding a company's environmental and social impact. The literature on sustainability disclosure is expansive and evolving, covering theories, frameworks, best practices, and cross-country comparisons. This section outlines key studies and theoretical perspectives that provide the academic foundation for the current investigation.

2.1 THEORETICAL UNDERPINNINGS

Two major theories often underpin sustainability disclosure research: **Legitimacy Theory** and **Stakeholder Theory**. Legitimacy Theory suggests that companies disclose environmental and social information to align themselves with societal norms and expectations (Suchman, 1995). In contrast, Stakeholder Theory posits that companies are accountable to a wide range of stakeholders—including investors, regulators, employees, and communities—and must communicate how they address their concerns (Freeman, 1984).
Additionally, the **Triple Bottom Line** (Elkington, 1997) approach has framed the sustainability agenda as encompassing three key dimensions: economic, environmental, and social performance. This holistic approach informs Integrated Reporting (IR), now widely used by global companies, including Tata Steel.

2.2 GLOBAL SUSTAINABILITY DISCLOSURE PRACTICES

Various global initiatives, such as the **Global Reporting Initiative (GRI)**, **Sustainability Accounting Standards Board (SASB)**, **Integrated Reporting (IR)**, and **Task Force on Climate-related Financial Disclosures (TCFD)**, provide frameworks for standardizing disclosures. Studies show that companies adopting these frameworks often report more systematically and attract long-term investors (KPMG, 2020).
According to Adams (2017), integrated reporting has enhanced the quality of sustainability disclosures by linking non-financial data with financial outcomes, thus offering a more comprehensive view of organizational performance. Eccles and Krzus (2018) argue that mandatory sustainability disclosure regulations, such as those being introduced by the Indian regulatory body SEBI, improve comparability and trust.

2.3 INDIAN CONTEXT

In India, sustainability reporting was initially voluntary and largely driven by multinational corporations or large domestic firms like Tata Group. However, the introduction of the **Business Responsibility Report (BRR)** in 2012 and its evolution into the **Business Responsibility and Sustainability Report (BRSR)** in 2021 made non-financial reporting mandatory for the top 1,000 listed companies on BSE and NSE.
Empirical studies have revealed mixed results. While some firms adopt a strategic approach to sustainability, others display a compliance-oriented or symbolic reporting culture (Mukherjee & Baruah, 2020). Chatterjee and Mir (2008) emphasized that although companies like Tata Steel show leadership in sustainability reporting, many Indian

firms lack depth and consistency in disclosures.

2.4 SUSTAINABILITY DISCLOSURE IN THE STEEL SECTOR

The steel sector is of particular interest due to its high carbon footprint. Research by the World Bank (2021) and IEA (2023) indicates a pressing need for decarbonization and resource efficiency in the steel industry. Scholars such as Liu and Anbumozhi (2009) emphasize the role of environmental disclosures in mitigating regulatory risks and enhancing firm reputation in the heavy industries.

In this context, Tata Steel has often been cited in the literature as a case of relatively advanced sustainability practices among emerging economy firms (Sinha & Gupta, 2019). Nevertheless, detailed longitudinal content analyses focusing on specific disclosures and evolution over time remain limited, which this paper aims to address.

3. RESEARCH METHODOLOGY

3.1 Research Objective

The primary aim of this research is to assess the sustainability accounting disclosure practices of leading Indian steel companies using content analysis. Specifically, this study examines Tata Steel's integrated annual reports from FY 2021–22 to FY 2023–24 to evaluate how environmental and sustainability information is disclosed, structured, and aligned with established frameworks such as GRI, BRSR, and IR.

3.2 Research Design

This study adopts a qualitative content analysis approach, a widely recognized method for systematically identifying the presence of specific words, themes, or concepts in qualitative data. The research is descriptive and interpretative in nature.

3.3 Sample Selection

Tata Steel Limited, a top-tier steel manufacturer listed on both BSE and NSE, was chosen for this case study due to its industry leadership and consistent publication of Integrated Reports (IRs). The three most recent reports covering:

- FY 2021–22
- FY 2022–23
- FY 2023–24

were collected and analyzed. These reports were uploaded and verified.

3.4 Data Sources

The primary data source comprises the company's official integrated annual reports for the respective years, which contain financial, environmental, and social information.

The disclosure index used in coding was developed using supplemental references such as SEBI's BRSR guidelines, GRI Standards, and academic studies.

3.5 Analysis Technique

The analysis employed a manual **content coding process** using a predefined **Sustainability Disclosure Index (SDI)** consisting of 20 themes categorized into:

1. **Environmental Metrics** (e.g., GHG emissions, water use, energy consumption, waste management)
2. **Sustainability Governance** (e.g., board-level committees, ESG goals)
3. **Stakeholder Engagement** (e.g., community, employees, investors)
4. **Framework Compliance** (e.g., GRI, IR, BRSR mapping)
5. **Narrative and Visual Indicators** (use of visuals, targets, KPIs)

Each theme is scored on a scale of:

- **0** – Not mentioned
- **1** – Mentioned without detail
- **2** – Mentioned with moderate detail
- **3** – Mentioned with KPIs, targets, visual data or benchmarking

3.6 Reliability and Validity

To ensure reliability, the same coding framework was applied consistently across the three reports. Triangulation with academic benchmarks and SEBI guidelines helped validate the categorization and scoring.

3.7 Scope and Limitations

While the study provides a detailed view of one prominent steel company, its findings may not generalize across the entire industry. Expanding the analysis to other steel manufacturers like JSW Steel, SAIL, and Jindal Steel would offer a more comprehensive picture.

Comparative Sustainability Disclosure Table (Tata Steel: FY 2021–2024)

No.	Disclosure Theme	FY 2021–22	FY 2022–23	FY 2023–24
1	GHG Emissions	3	3	3
2	Water Usage	3	3	3
3	Energy Consumption	3	3	3
4	Waste Management	2	3	3
5	Sustainability Goals	2	3	3
6	ESG Governance	3	3	3
7	Stakeholder Engagement	2	3	3
8	Biodiversity Initiatives	1	2	3
9	Sustainable Supply Chain	2	2	3
10	Employee Wellbeing	2	3	3
11	GRI Compliance	3	3	3
12	BRSR Alignment	2	3	3
13	Integrated Reporting (IR)	3	3	3
14	KPI Disclosure	2	3	3
15	Target Setting	2	2	3
16	Circular Economy Efforts	1	2	3
17	Climate Risk Disclosure	2	2	3
18	Carbon Neutrality Roadmap	2	3	3
19	Visual Infographics	2	3	3
20	Third-Party Assurance	1	2	3

❖ Interpretation

The comparative analysis of Tata Steel's sustainability disclosures over three financial years—2021–22, 2022–23, and 2023–24—reveals a steady and structured enhancement in the company's reporting practices. The evaluation, based on 20 key sustainability themes, indicates a transition from basic compliance-level disclosures to a more strategic and comprehensive sustainability communication approach. Each theme was assessed on a scale from 0 to 3, where a score of 3 signifies detailed reporting supported by key performance indicators (KPIs), visual data representations, and alignment with recognized frameworks.

Tata Steel demonstrated consistently strong performance in core environmental indicators, including greenhouse gas (GHG) emissions, energy consumption, and water usage, all of which scored a 3 across the three-year period. This consistency highlights the company's robust systems for measuring, managing, and transparently reporting its environmental footprint. These disclosures were typically supported by quantitative data, annual comparisons, and clear environmental targets, reflecting a mature understanding of environmental accountability.

Several disclosure areas showed significant improvement over time. For instance, waste management progressed from a moderate level of detail to a fully detailed disclosure, indicating improved reporting on waste reduction, recycling, and reuse initiatives. Biodiversity initiatives, which were relatively underreported in FY 2021–22, received increasing attention in subsequent years, culminating in a comprehensive overview by FY 2023–24. Similarly, disclosures related to circular economy efforts and third-party assurance advanced meaningfully, signaling Tata Steel's growing commitment to resource efficiency and independent ESG verification.

In terms of governance and strategic alignment, there was a marked enhancement in areas such as ESG governance, stakeholder engagement, and the company's carbon neutrality roadmap. The integration of Board-level ESG committees and the articulation of long-term climate targets reflect an evolving shift from tactical reporting to strategic sustainability leadership. Furthermore, improvements in GRI compliance, BRSR alignment, and Integrated Reporting (IR) illustrate the company's increasing adherence to both international and domestic reporting frameworks, enhancing the standardization and comparability of its disclosures.

Another key area of progress was the incorporation of visual and narrative tools. Tata Steel's reports for FY 2023–24 included infographics, icons, and dashboard-style visuals that summarized key ESG data, making the reports more accessible and informative for a diverse stakeholder base. The use of visuals also enhanced the clarity of KPIs and goal tracking, contributing to greater transparency and engagement.

Tata Steel has significantly strengthened its sustainability disclosures year over year.

- By FY 2023–24, all key areas scored 3, indicating high transparency with KPIs, targets, visual data, and external frameworks.
- Notable improvements were observed in:
- **Biodiversity Initiatives**
- **Circular Economy**
- **Third-Party Assurance**
- The company increasingly aligned with **GRI**, **BRSR**, and **IR** frameworks, reflecting a maturing sustainability accounting practice.

4. Results and Discussion

The comparative content analysis conducted over the three-year period (2021–2024) of Tata Steel's integrated and annual reports reveals a progressive and methodical enhancement in the company's sustainability accounting disclosure practices. These improvements are aligned with global reporting frameworks such as the Global Reporting Initiative (GRI), the Business Responsibility and Sustainability Reporting (BRSR) format mandated by SEBI, and Integrated Reporting (IR) principles.

4.1 Maturity and Consistency in Core Metrics

From 2021 to 2024, the company demonstrated sustained excellence in key environmental performance indicators such as **GHG emissions**, **energy consumption**, and **water usage**. Across all three fiscal years, Tata Steel scored a consistent '3' in these categories, indicating detailed quantitative disclosures, year-on-year performance comparisons, and target tracking mechanisms. This reflects a mature understanding and operational integration of environmental metrics into corporate strategy—a hallmark of advanced sustainability accounting (Gray, Owen & Adams, 2014).

4.2 Strategic Integration of ESG Governance

The company's ESG governance disclosures evolved from baseline compliance to comprehensive stakeholder-driven accountability. By FY 2023–24, disclosures around **stakeholder engagement**, **employee wellbeing**, and **climate risk** matured significantly. For instance, Tata Steel adopted a dual materiality perspective, incorporating both financial and non-financial risks, as emphasized in contemporary literature (Eccles & Krzus, 2018). The formation of Board-level ESG Committees and independent assurance mechanisms were also disclosed, suggesting alignment with SDG 12 (Responsible Consumption and Production) and SDG 13 (Climate Action).

4.3 Transition to Narrative and Visual Transparency

A noteworthy shift was the incorporation of **infographic-based disclosures** and improved narrative storytelling in the latest reports (2023–24). This transition indicates an effort to enhance accessibility and stakeholder comprehension, aligning with the stakeholder theory of accounting (Freeman, 1984). The inclusion of dashboards, icons, and summarized ESG scorecards has made the reports more digestible for a broader audience including investors, regulatory bodies, and civil society.

4.4 Gradual Embrace of Biodiversity and Circular Economy

While Tata Steel initially lagged in areas such as **biodiversity**, **circular economy**, and **third-party assurance** (with scores of 1 in 2021–22), these categories saw substantial improvement by 2023–24. This trajectory indicates a shift from compliance-based disclosure to a more strategic and integrated environmental outlook. For example, the latest report emphasizes circularity in materials use, waste reuse, and land reclamation efforts—closely aligning with the EU Taxonomy and India's national sustainability roadmap.

4.5 Framework Compliance and Regulatory Alignment

Tata Steel's increasing alignment with **GRI standards**, **BRSR format**, and **IR principles** confirms a proactive approach to evolving regulatory landscapes. The firm has disclosed GRI Index Tables and adopted SEBI's mandatory BRSR format with considerable detail. Further, disclosures relating to **carbon neutrality** and **target-setting** are not only aspirational but also time-bound and measurable, reflecting commitment beyond greenwashing—addressing concerns often raised in sustainability assurance literature (Boiral, 2013).

4.6 Observations on Assurance and Accountability

The company has made visible efforts to enhance credibility through **third-party verification** and **limited assurance statements**—both of which are critical in legitimizing ESG disclosures (Simnett, Vanstraelen, & Chua, 2009). Notably, DNV and other reputed agencies have provided assurance on environmental KPIs in the latest reports, indicating a maturation of internal control systems for ESG reporting.

5. CONCLUSION

This research explored the evolution and comprehensiveness of sustainability accounting disclosure practices at Tata Steel from FY 2021–22 to FY 2023–24. The results affirm a consistent, proactive, and increasingly sophisticated approach to environmental and ESG disclosures. Tata Steel has embraced global sustainability frameworks and responded to the mandates of Indian regulatory bodies by enhancing transparency, traceability, and accountability in their environmental reports.

The longitudinal content analysis revealed that Tata Steel not only maintained high standards in traditional areas like GHG emissions and energy consumption but also improved significantly in emerging areas such as biodiversity protection, circular economy integration, and stakeholder engagement. This suggests a shift from compliance-oriented to strategy-oriented sustainability reporting. The company's increasing alignment with frameworks such as GRI, BRSR, and IR indicates an evolving understanding of sustainability as a core element of corporate identity and resilience.

Overall, the study validates that Indian companies—particularly in heavy industries like steel—are capable of integrating sustainability into long-term value creation, aligning business performance with planetary boundaries.

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