



Bridging the ESG Disclosure Gap: GAED Framework, A Conceptual Model

L R Niranjana¹, Shivakami Rajan²

¹ School of Business and Management, Christ University, Bangalore, India

² Faculty of Management and Commerce, Ramaiah University of Applied Sciences, Bangalore, India.

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Abstract

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The mandatory disclosure by corporates with reference to Environmental, Social, and Governance, especially in the emerging economies is complicated because of the data ecosystems, regulatory infrastructure and institutional capacities remaining uneven. Generative Artificial Intelligence (GenAI) is emerging as a transformative opportunity to bridge these structural lacunae. By automating the data collection process, enabling compliance mapping in real-time and strengthening the assurance of governance, the impact of GenAI is palpable. This work is an attempt to develop a conceptual framework to understand the role of GenAI as an enabler for ESG disclosure. Set in an emerging economy like India, the study is relevant in an evolving Business Responsibility and Sustainability Reporting (BRSR) landscape. A systematic review and thematic synthesis of recent research resulted in four dimensions that explain how GenAI supports ESG disclosure. The authors propose a Generative AI Enabled Disclosure (GAED) framework using the four dimensions of Data Integration, Framework Alignment, Narrative Generation and Governance Assurance. The study offers interventions that regulators and corporate sustainability practitioners may adopt as an intelligent infrastructure and not as replacement of human judgement. This makes ESG disclosure accessible, actionable and accountable.

I. Introduction

In the past decade, there is a paradigm shift in the way companies communicate their Environmental, Social and Governance (ESG) practices to various stakeholders. Earlier it was a voluntary, narrative driven exercise which has now progressed to a structured, data intensive and more so a mandatory obligation to report. The European Union has a Corporate Sustainability Reporting Directive; the International Financial Reporting Standards Foundation has come up with ISSB S1 and S2 standards and various other national level regulatory initiatives have observed that reporting on ESG is transforming into a mainstream corporate accountability. Zaid and Issa (2023) note that this emergency of ESG disclosure standards across the globe is not only used for comparability and investor confidence, but also has escalated the compliance burden on the companies. This is more prevalent in economies where the infrastructure of institutional reporting is still maturing.

India offers a particularly instructive case in this broad storyline. The Securities and Exchange Board of India (SEBI), has introduced the Business Responsibility and Sustainability Reporting framework in 2021. It is a structured and principle-based approach to disclose ESG practices by listed Corporations. Taking cue from the earlier frameworks, BRSR has increasingly become mandatory for the top 1000 listed companies in terms of market capitalisation. Subsequent amendments have been extending their scope to include value chain disclosures, third-party assurance requirements and also align with internationally recognised sustainability standards (Ray, 2025). The BRSR framework is not only known for its regulatory ambition, but also for explicitly linking global benchmarks, such as the GRI (Global Reporting Initiative), Standards and the Task Force on Climate-related Financial Disclosures (TCFD). This makes it one

of the most sophisticated and mandatory ESG reporting framework among all the emerging economies around the world.

It is in this context that the generative artificial intelligence (GenAI) has emerged as a transformational technological force. GenAI is a class of artificial intelligence system that is built on transformer based, large language models (LLM). These architectures are capable of generating coherent text by synthesising data from various sources, classifying and structuring the data and producing output that almost resembles human reasoning and communication. These capabilities have found application in various professional domains, namely legal analysis, medical diagnosis, financial modelling, and corporate sustainability reporting (Gupta et al., 2024). A recent study found that approximately 63% of companies around the globe are already making use or actively planning to use AI tools for data collection, analysis and reporting of their ESG practises (Eco Active, 2025). The market across the globe in ESG and sustainability is valued at USD 1.24 billion and is projected to grow to approximately USD 14.87 billion by the year 2034. This reflects a compound annual growth of 28.2%. This emphasises the growing strategic significance of the technology for reporting sustainability initiatives (Market.us, 2024).

Notwithstanding this momentum academic scholarship on the intersection of AI and ESG disclosure among the emerging economies remains scantily addressed. Most of the research that is published in this domain address the developed market or focus on the technical capabilities of AI systems. They do not adequately account for the institution and realities and structural constraints that are unique to emerging economies and the companies that operate in such economies (Wu et al., 2025). A notable exception is the study by Bag et al. (2026), which applies Organisational Information Processing Theory to examine how GenAI and ESG sensemaking interact in the Indian corporate context, finding that the mere availability of AI-generated ESG data does not automatically improve environmental outcomes unless organisations develop the interpretive and governance capabilities needed to act on AI-produced insights. This finding points to the importance of a more holistic, context-sensitive understanding of how GenAI can be effectively embedded in the ESG disclosure processes of emerging market organisations.

This paper aims to address this gap by developing a conceptual framework for GenAI-enabled ESG disclosure in emerging economies, with India as its primary contextual anchor. The paper pursues three specific objectives: first, to map the landscape of GenAI applications in ESG reporting as documented in the recent literature and practice; second, to identify the structural barriers that limit ESG disclosure quality in emerging economies, with particular reference to India's BRSR context; and third, to propose an original conceptual framework that articulates the functional dimensions through which GenAI can serve as an enabling infrastructure for more credible, efficient, and inclusive ESG disclosure..

II. Methods

This research has adopted a systematic conceptual review methodology. It is a well-established approach which is used for building and proposing theoretical framework in domains that are still developing (Chopra et al., 2024). Instead of generating fresh primary data in the form of survey experiment or case studies, the method adopted involves a systematic identification, selection, appraisal and synthesis of current scholarly work and practitioner literature. Based on this a new conceptual insight and an original framework was. This approach is found to be appropriate in the context of the current research, given the fact that the intersection of GenAI and ESG disclosure, especially in emerging economies represents a domain where the theoretical frameworks are still being constructed and the empirical base is growing rapidly.

a. Literature Search Strategy

Three primary academic databases, namely Web of Science, Scopus and Google scholar were used to conduct literature search. Targeted retrieval of grey literature and practitioner sources which include reports and frameworks that are already published by the International Financial Corporation, the Securities and Exchange Board of India, the Global Report Initiative (GRI) and the likes have supplemented the search. The primary search strings that were used were “generative AI AND ESG disclosure”, BRSR AND India, AI AND BRSR compliance and AI AND sustainability reporting”. Scholarly work between 2020 and early 2026 were chosen to ensure contemporariness to the rapidly evolving state of both GenAI and ESG regulation. A number of foundational theoretical Works that were published prior to 2020 were included in order to offer conceptual depth, retaining the applicability to the studies framework.

With 340 sources yielded in the initial search duplicates and sources that were clearly outside the thematic scope of the study were removed. At the next level, 98 sources were retained for abstract level screening. Based on the full text review and quality appraisal, 42 peer reviewed articles, regulatory documents and substantive practitioner reports were considered for final inclusion. The inclusion criteria primarily focused on the sources that addressed at least one of the three core

themes i.e. 1) AI applications in sustainability, ESG data management or corporate disclosure 2) Challenges and regulatory frameworks in emerging economies, especially in India pertaining to ESG disclosure and 3) Theoretical or empirical contributions to the governance and the ethics of adopting AI in organisational context. Sources that consisted of opinions without grounding evidence and methodological rigour and transparency were excluded.

b. Analytical Approach

The literature so obtained was subject to analysis using thematic synthesis, which is a qualitative analytical technique involving systematic reading across the sources. This is done to identify if there are themes that recurring and patterns that depict agreement or disagreement in the particular field of study (De Villiers et.al.,2024). During an initial open coding phase themes were inductively identified. They were subsequently refined through iterative comparisons with the objectives of the research. This resulted in thematic clusters used to create the GAED framework.

III. Results and discussion

a. Global frameworks and the gap in ESG disclosure among emerging economies.

The ESG disclosure across the globe has undergone a sea change in the way it has gotten consolidated and formalised in the recent years. This is mainly due to the demand from the investors, regulatory ambition, and the continued growth in the belief that the sustainability risks are worth being evaluated from a financial standpoint. The International Sustainability Standards Board, which was established under the IFRS foundation introduced the S1 and S2 standards in 2023. This created a baseline that can be compared across the globe for all sustainability related and climate related financial disclosures. Then on these standards have been endorsed by multiple countries like that of UK, Singapore, and Japan. A significant number of emerging markets are considering adopting these standards in the coming years (ESG book, 2023). The point of view of investors demanding for ESG disclosure is reinforcing the urgency with which countries and companies want ESG disclosure to be made mandatory. The ESG integrated Assets Under Management (AUM) in the emerging markets are expected to grow from USD 18.4 trillion to USD 33.9 trillion by the end of 2026. This demonstrates the investor sensitivity not only to the quality but also to the reliability of sustainability related data from these markets (OMFIF, 2024). Dwibedi et al., (2025) in their empirical study on ESG disclosure and performance among the BRICS nation have found that the relationship between the quality of disclosure and the actual ESG performance are weaker in the context of emerging markets. This points out at the structural constraints on quality of disclosure, which is not a technical expectation but reflects a deeper limitation in terms of organisational sustainability governance.

b. Technical capabilities and reporting applications of generative AI.

Generative AI is an artificial intelligence system that is built on transformer based large language model architecture. They are capable of creating coherent and context relevant output. This includes text, structured data, summaries, and recommendations from dataset that are diverse and voluminous. Li et al., (2024) examined the listed companies in China where the AI adoption is positively associated with improvements across ESG dimensions. This proves the fact that the AI integration and the benefit it offers extends beyond the efficiency in disclosure. This brings to the fore the real sustainability performance outcomes that can be achieved by using generative AI for ESG practises in a company. While the manual workload related to ESG data processing can be reduced by 40% some organisations have reported 70% increase in the speed and quality of data while they used generative AI for ESG disclosure (Hitachi Data Systems, 2026).

c. BRSR, a case in point from the Indian context.

India offers a compelling and timely setting for the examination of the intersection of generative AI and ESG disclosure from emerging economy perspective. This is true both from a regulatory and structural point of view. From the regulatory perspective the BRSR framework has transformed from a voluntary disclosure to a comprehensive mandatory ESG reporting regime among emerging economies since 2021. The BRSR framework aligns with the nine principles of the National Guidelines on Responsible Business Conduct (NGRBC). The BRSR mandates all listed corporations to provide both management and process disclosures and principle wise performance disclosure.

While the former focuses on qualitative evidence of how sustainability principles have been embedded in governance the latter demands quantitative data against the defined indicators encompassing environmental stewardship, consumer welfare, stakeholder engagement, employee well-being and ethical governance. SEBI's amendment has further extended the framework's scope to include supply Chain disclosures, expecting the top 250 listed companies to furnish ESG data from upstream and downstream partners (Seneca ESG, 2025). Kharoka et al., (2025) in their study note that the absence of sector specific standardised collection of data and the templates under the BRSR framework means a company must

develop their own approach to measure. They worry that it may produce significant variation in the comparability of the data that is reported. However, the AI driven framework mapping tools can address this issue well.

d. The GAED model: A conceptual framework

Based on the thematic synthesis of the literature that was reviewed and the contextual analysis of the BRSR landscape in India, this work proposes the Generative AI Enabled Disclosure (GAED) framework. This is a conceptual model to understand the role of AI in enabling ESG disclosure among emerging economies. The GAED framework has four functional dimensions each corresponding to a distinct phase in the process of ESG disclosure, namely data integration, alignment of framework, generation of narrative and governance assurance. These dimensions do not operate in the same sequence. They function as partially overlapping and iterative systems. The output from each dimension will inform and refine the others. The framework is designed to be platform agnostic, neutral to the vendor of the technology and scalable across different sizes of organisations. This reflects the reality that its greatest potential lies in enabling the mid-tier and smaller listed corporations to achieve quality of disclosures that were otherwise previously accessible only to large corporations.

The First dimension that is data integration addresses the fundamental challenge of aggregating data that is relevant for ESG from sources that are fragmented, heterogeneous and more often than not incompatible. This represents the information environment among most of the emerging economies and companies in those countries. In the GAED framework, AI functions as a layer of data orchestration that inputs structured data taken from the ERP and unstructured data from policy documents and operational reports. This also includes the real time feeds from the environmental monitoring systems and data that is externally sourced from the supply chain partners, regulatory filings, and public databases. The maturity of AI driven and environmental data processing from a technical standpoint is evident from adjacent domains as pointed out by Rehman et al., (2025). They demonstrate a multi stage AI fusion approach to a large-scale remote sensing data classification for environmental monitoring. The underlying logic of this capability is the direct transferability to the aggregation of ESG metrics such as emissions, use of water and impact on land.

The Second dimension which is the framework alignment addresses the challenge of mapping aggregated data to the specific indicators, boundary conditions, and definitions and the thresholds that are prescribed by the applicable ESG reporting frameworks. In India, there is a requirement for simultaneous alignment with BRSR, GRI and ISSB standards, which is an acute challenge. In the GAED framework, the GenAI systems are trained on the complete text of all applicable frameworks. This helps perform a real time gap analysis against the consolidated data set produced in the second stage of data integration. This helps identify the gaps in terms of which indicators have been addressed, which remain un addressed and what are the additional data collection or clarification required.

The third dimension is the narrative generation which addresses the qualitative dimension of ESG reporting. The ESG reports not only require quantitative data, but also expect a well-constructed narrative. It must contextualise the performance, articulate the strategy of the management and explain deviations from targets. This can be used to communicate meaningfully with various stakeholders as audience. For this report GenAI tools that are built on LLMS are capable of transforming structured data output and compliance gap analysis into a draft narrative that is tailored to specific sections of the BRSR format. This produces principal wise performance summaries, management, discussion texts and communication pieces that are stakeholder specific from an underlying data set that is common. This reduces the burden on sustainability professionals by making them responsible to edit and validate AI generated content and not as primary authors. By automating routine, cognitive tasks, the practitioners are free for higher order thinking, planning and execution as highlighted by Hachoumi et al., (2023).

Governance assurance, which is the fourth dimension of the GAED framework addresses the verifiability and credibility of the information disclosed. This is increasingly becoming important as SEBI has phased in mandatory third-party assurance requirements under the BRSR framework. As per the framework, GenAI supports the assurance process by executing internal consistency checks across all sections of the disclosure document. By comparing the current period disclosures against the data from the previous years, it identifies the anomalies or variances. By cross referencing reported metrics against publicly available benchmark and the average in the sector it highlights potential outliers.

The GAED framework thus offers a structured and theoretically grounded account of the way GenAI can function across the full life-cycle of ESG disclosure preparation. From raw data to assured publishable reports, it not only streamlines the process but also ensures data driven compliance. The four dimensions address the principal bottlenecks that companies in emerging markets are currently facing in terms of high-quality disclosures. By anchoring the enabler role that AI can play in the most effective and efficient manner to augment than supplant human expertise, GenAI seamlessly integrates institutional knowledge and upholds stakeholder relationship which is essential for credible sustainability reporting.

e. Policy and Managerial Implications

The analysis above generates several concrete implications for the three principal constituencies that will shape the trajectory of GenAI adoption in ESG disclosure: regulators and standard-setters, corporate sustainability managers, and the technology and assurance industries.

For SEBI and comparable regulatory bodies in emerging markets, the growing use of GenAI in ESG reporting creates both opportunity and responsibility. The concern is not just theoretical as highlighted by Envoria (2025). The generative AI language models owing to their opacity can be difficult to justify from a regulatory compliance standpoint. The disclosed data must not only be traceable but also reproduced, underscoring the need for a policy to get ahead of practice. The opportunity is in the potential for AI generated disclosures to be subject to an automated regulatory review. This enables faster and more comprehensive BRSR compliance assessment across the 1000 listed companies as against the current manual review process. The responsibility lies in the form of developing clear evidence based regulatory guidance on the acceptable level of use of AI for ESG disclosure. This must include human validation of AI generated content and the disclosure of use of AI tools for report preparation. The GAED framework positions GenAI as a purpose driven, sequenced and framed capability augmentation initiative than a cost reduction exercise. All said and done the AI assisted ESG disclosure comes at the cost of contradicting the expectation of E in ESG. GNA Institute (2025), highlight the energy and water consumption in the data centres that run large scale GenAI systems, represent a not so trivial sustainability trade-off that must be accounted for while promoting the use case for AI assisted ESG disclosure.

IV. Conclusion

The work contextually anchored in the BRSR mandate in India, has examined the potential, GenAI has in enabling better ESG disclosure. The corporate sustainability practice is at the intersection of global regulatory practices in ESG disclosure and the advanced capabilities of GenAI systems. Future studies may empirically test the GAED framework in various industries and country contexts. Longitudinal studies may be carried out to ascertain the impact of GenAI adoption on the quality and assurance outcomes of ESG disclosure. Examination of the governance mechanisms that fairly balance the efficiency gains promised by the AI enabled disclosure and the accountability, transparency demanded by the regulatory bodies is worth another study. This emerging research agenda is placed well in a country like India that is poised to a rapidly maturing BRSR framework, growing number of listed companies that are subject to mandatory disclosure and a vibrant ecosystem of technology.

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