

The background of the journal cover features a top-down view of a desk. On the left, a pair of black leather brogue shoes is partially visible. In the center, an open notebook with lined pages and a silver pen lies on a light-colored wooden surface. To the right, a black leather bag with a zipper is partially shown, and a black leather watch with a silver dial is resting on the desk. A large, semi-transparent white rectangular box is centered over the image, containing the journal's title and ISSN information.

INTERNATIONAL LAW
JOURNAL

**WHITE BLACK
LEGAL LAW
JOURNAL**
**ISSN: 2581-
8503**

Peer - Reviewed & Refereed Journal

The Law Journal strives to provide a platform for discussion of International as well as National Developments in the Field of Law.

WWW.WHITEBLACKLEGAL.CO.IN

DISCLAIMER

No part of this publication may be reproduced, stored, transmitted, translated, or distributed in any form or by any means—whether electronic, mechanical, photocopying, recording, scanning, or otherwise—without the prior written permission of the Editor-in-Chief of *White Black Legal – The Law Journal*.

All copyrights in the articles published in this journal vest with *White Black Legal – The Law Journal*, unless otherwise expressly stated. Authors are solely responsible for the originality, authenticity, accuracy, and legality of the content submitted and published.

The views, opinions, interpretations, and conclusions expressed in the articles are exclusively those of the respective authors. They do not represent or reflect the views of the Editorial Board, Editors, Reviewers, Advisors, Publisher, or Management of *White Black Legal*.

While reasonable efforts are made to ensure academic quality and accuracy through editorial and peer-review processes, *White Black Legal* makes no representations or warranties, express or implied, regarding the completeness, accuracy, reliability, or suitability of the content published. The journal shall not be liable for any errors, omissions, inaccuracies, or consequences arising from the use, interpretation, or reliance upon the information contained in this publication.

The content published in this journal is intended solely for academic and informational purposes and shall not be construed as legal advice, professional advice, or legal opinion. *White Black Legal* expressly disclaims all liability for any loss, damage, claim, or legal consequence arising directly or indirectly from the use of any material published herein.

ABOUT WHITE BLACK LEGAL

White Black Legal – The Law Journal is an open-access, peer-reviewed, and refereed legal journal established to provide a scholarly platform for the examination and discussion of contemporary legal issues. The journal is dedicated to encouraging rigorous legal research, critical analysis, and informed academic discourse across diverse fields of law.

The journal invites contributions from law students, researchers, academicians, legal practitioners, and policy scholars. By facilitating engagement between emerging scholars and experienced legal professionals, *White Black Legal* seeks to bridge theoretical legal research with practical, institutional, and societal perspectives.

In a rapidly evolving social, economic, and technological environment, the journal endeavours to examine the changing role of law and its impact on governance, justice systems, and society. *White Black Legal* remains committed to academic integrity, ethical research practices, and the dissemination of accessible legal scholarship to a global readership.

AIM & SCOPE

The aim of *White Black Legal – The Law Journal* is to promote excellence in legal research and to provide a credible academic forum for the analysis, discussion, and advancement of contemporary legal issues. The journal encourages original, analytical, and well-researched contributions that add substantive value to legal scholarship.

The journal publishes scholarly works examining doctrinal, theoretical, empirical, and interdisciplinary perspectives of law. Submissions are welcomed from academicians, legal professionals, researchers, scholars, and students who demonstrate intellectual rigour, analytical clarity, and relevance to current legal and policy developments.

The scope of the journal includes, but is not limited to:

- Constitutional and Administrative Law
- Criminal Law and Criminal Justice
- Corporate, Commercial, and Business Laws
- Intellectual Property and Technology Law
- International Law and Human Rights
- Environmental and Sustainable Development Law
- Cyber Law, Artificial Intelligence, and Emerging Technologies
- Family Law, Labour Law, and Social Justice Studies

The journal accepts original research articles, case comments, legislative and policy analyses, book reviews, and interdisciplinary studies addressing legal issues at national and international levels. All submissions are subject to a rigorous double-blind peer-review process to ensure academic quality, originality, and relevance.

Through its publications, *White Black Legal – The Law Journal* seeks to foster critical legal thinking and contribute to the development of law as an instrument of justice, governance, and social progress, while expressly disclaiming responsibility for the application or misuse of published content.

NAVIGATING ESG COMPLIANCE IN THE DIGITAL AGE: A CRITICAL STUDY OF INDIA'S POSITION

AUTHORED BY - TORSHA DATTA CHOUDHURI

Abstract

With the unleashing of the global digital technology wave in the 21st century, corporate governance is at a transition phase. The digital age has changed the way the companies comply with the regulatory frameworks. The changing landscape of the environmental concerns globally have redefined the contours of environmental compliance. Similarly, the extensive integration of the corporations into the society and its allied factors have led companies to shape their business operations aligning with the societal needs. Further, with the increasing financial and managerial mismanagement all around, the companies are conscious of their internal governance system along with the financial regulators being strictly monitoring the compliances of the companies. The Environment, Social and Governance (ESG) goals, in the light of all these, become crucial for the companies. The Indian legal framework around the ESG goals have evolved since its inception with the market regulator SEBI, the banking sector regulator RBI devising frameworks of ESG compliance for the companies.

The emerging technologies have, however, changed the whole approach to ESG reporting. Artificial Intelligence (AI), Big Data Analytics and Blockchain have strengthened the ESG reporting, risk management and corporate sustainability disclosures. This paper critically examines the current Indian legal framework for the ESG reporting and how far it conforms to the requirements and challenges of the transforming digitization. It explores how regulatory mandates such as the Business Responsibility and Sustainability Report (BRSR) and the regulation of ESG rating providers by the Securities and Exchange Board of India (SEBI) have institutionalized ESG practices across corporate India. While India has made significant regulatory efforts, inconsistencies in reporting metrics, poor digital literacy, and fragmented data ecosystems hinder full ESG integration. The paper argues that leveraging digital infrastructure, coupled with standardized ESG data and independent assurance mechanisms, can position India as a leader in ESG innovation. This study underscores that the integration of ESG and digitalization is not merely a compliance necessity but a strategic step towards India's sustainable growth in the global economy.

Keywords: ESG, Digitization, Artificial Intelligence, Big Data Analytics, Blockchain.

Introduction

Environmental, Social and Governance (ESG) reporting has been a milestone in the corporate governance era. The need for financial reporting by the companies across the countries was felt in the early 2000s following the fall of the big empires due to irregularities in their auditing and financial accounts. That phase was marked by extreme scrutiny into the financial reports of the companies and stricter compliances with regard to the roles and duties of the Board of a company. With the passage of time, the compliances of financial reporting became the culture of the big corporations and all the stakeholders were on the advantageous side. The requirement for the non-financial disclosure was felt with increased intersection of the society and environment with that of the business corporations. The businesses were so integrally associated with the society and the environment that the reporting of the impact of the operations of the business in the society and environment became the need of the hour. These words by Elon Musk, CEO of SpaceX depict the mindset of the conglomerates towards ESG disclosure and also highlight the need for them, “ESG disclosure is essential for driving innovation and creating a sustainable future. By being transparent about their sustainability practices, companies can attract investors, talent and customers, who are committed to a better world.” His words show that today the motive behind any business is not only profit-making but creating an impact and leaving a footprint in the society.¹

Environmental, Social and Governance (ESG) reporting has long been used as a tool to promote sustainability. Scholars recognized its potential to improve businesses’ human rights performances, to further environmental policy goals and to foster better stakeholder relations. While sustainability was earlier understood as an ancillary issue to the functioning of the businesses and undertaken voluntarily as a part of Corporate Social Responsibility (CSR) initiatives, they are now being mandated across jurisdictions. Ensuring compliance with sustainability goals allows the corporation to retain credibility and perception in a highly competitive market.² It seeks to allocate the capital towards those investments which contribute to a sustainable future, at the same time reducing the risk related to climate-change and social inequality. The businesses today are more concerned about their long-term sustainability goals

¹ Parth Birla & Chirag Motwani, Beyond BRSR: Charting India's Path to ESG Leadership, 12 RGNUL FIN. & MERCANTILE L. REV. 204 (2025).

² Adam Sulkowski & Ruth Jebe, Evolving ESG Reporting Governance, Regime Theory, and Proactive Law: Predictions and Strategies, 59 AM. BUS. L.J. 449 (Fall 2022).

which includes complying with the required environmental parameters and also engage in the social cause. The ESG strategies form an integral part of any business. These strategies are not only beneficial to the businesses in terms of the investors attracted by the business but also benefit the environment and the society they operate in.

The Indian corporate governance era has been marked by the changing regulatory landscapes backed by the recommendations of various committees formed for checking on the sound financial practices in the market. The Indian regulatory agencies, the Securities and Exchange Board of India (SEBI) and the Reserve Bank of India (RBI), have taken adequate steps in the direction of ensuring and putting the frameworks underlining the improvement of accountability and transparency in the financial sector, integrating financial risks and bringing India's regulatory regime in compliance with the international standards. In respect of the reporting and from the governance perspective, the principles of corporate governance aligned with robust sustainability strategies and the international standards have helped shape the sound corporate governance practices in India.

With the technological wave, the ESG reporting has seen an upheaval through Artificial Intelligence, Big Data Analytics and Blockchain crucially enhancing the reporting efficiency. While it might help increase the transparency and accountability in the ESG reporting, this has also posed concerns with respect to the inadequate framework for governing these complex technologies. Integrating these technologies with the ESG disclosure has been a growing concern within the corporations with these technologies still at their nascent stage of growth. The use of these technologies in this digital age for ESG compliance poses a great challenge to the business corporations with respect to data management, technology and regulation.

Pillars of Environment, Social and Governance (ESG) reporting³

The three pillars of ESG are the Environmental, Social and Governance which becomes the basis of evaluation of a company's responsibility and sustainability in its operations. The is the non-profit part of the company which looks at the ethical and sustainable treatment of the planet and the people around. The first pillar of ESG focuses on the environmental aspect - it evaluates how the company through its initiatives are able to minimize the environmental harm. In simple terms, it is about how the company, by using its resources, contributes to a sustainable environment. This environmental factor has become a major challenge for the companies while

³ Shruti Satam, "The 4 Pillars of ESG and Their Role in Business Success", Digital Regenesys Awakening Potential, last visited on Dec 10, 2025 11:00 AM <https://www.digitalregenesys.com/blog/4-pillars-of-esg>

aligning its goal with that of the national goals of sustainable development. The companies are highly dependent on the environment for their various operations and the evaluation of this factor becomes even more crucial with so much stress given on environmental protection at an international level. Every business, whether small or big, leaves a carbon footprint. The main idea behind disclosing the environmental impact is to see that the companies have the least carbon footprints which in turn would encourage them to use renewable energy, cut down on carbon emissions, improve waste management and procure products that are eco-friendly. 'Unilever', to take an example, has set sustainability targets to reduce its environmental impacts. By cutting the use of plastic, improving energy efficiency and sourcing raw materials responsibly, Unilever has built a strong reputation for environmental leadership. These strategies align with the global climate goals and strengthen its market position.

The second pillar of ESG focuses on the people, the society that helps build the responsible communities. It evaluates how the company interacts with the communities around while operating its business. The people in the society by virtue of being in the society itself becomes a part of the business. The business has a direct impact on the various communities and they are one of the stakeholders to it. A socially responsible company does not only create a job, it also ensures that the human relations and the working conditions of the people involved in the business are satisfied. It values diversity, promotes equal opportunities and listens to stakeholder needs. The social pillar is a reminder to the businesses that the company can only grow when all the stakeholders are equally benefitted. The companies are highly investing in human resources with the intent that the efficiency of any business is directly impacted by the workforce in the company. 'Patagonia', the outdoor clothing brand, is setting an example by supporting fair trade practices, donating a portion of its profits for environmental causes and ensuring ethical treatment across the supply chain. These actions show the true intent and motive behind the social pillar, caring for the people and the planet.

The third and the last pillar of ESG stands for governance. It focuses on how the company is managed in respect of its doing business, how the decisions are made by the Boards and how much the interests of all the stakeholders are taken care of. Here comes the principles of corporate governance which becomes a standard for the companies to establish and run its businesses ethically. The governance is based on the pillars of transparency and accountability. These two factors determine the longevity of any business. Any company intending to start a business always aims to continue its operations and expand it to the fullest. The principles of accountability and transparency helps the business to mark its presence in the market and establish itself in the long run. Good governance ensures that a business organization runs with

the best ethical practices and with utmost honesty and fairness. It includes a strong and responsible team of leaders making business decisions in the best interest of the company as well as all the stakeholders. Good governance is ultimately responsible for the environmental and social impact as well. The principles of good governance when applied in the conduct of the business will result in the formation of ethical and sustainable environmental and social strategies which will automatically create stability and attract customers, investors and add to the goodwill of the business. 'Tata Group' is known for its strong governance principles. With a long history of ethical leadership, transparent communication and fair treatment of employees and shareholders, the company has built trust across generations. Its governance model has become a benchmark for responsible corporate management in India and beyond.

ESG reporting is no longer an option today with the companies. It has become an essential tool for the businesses to attract more investors and build stronger reputations. The investors are keen on investing in companies that are sustainable and have followed the ethical practices in doing their business. The investors are deciding on the investments into the companies which align with the principles of socially responsible investments (SRI) which denotes an investment strategy that integrates the personal values of the investors and the ethical principles into the financial decision with the aim to generate both financial returns and positive impact on the environment and the society. The ESG reporting by the company, thus not only benefits the environment and the society but also benefits the business as the ESG framework becomes the basis for the investors in making their investment decisions.

Indian Regulatory Landscape within the ESG Framework⁴

The Indian regulatory landscape governing sustainable and responsible business practices has seen tremendous growth in the last two decades. While the mandatory Corporate Social Responsibility (CSR) was already in place to ensure the philanthropic activities for the large commercial corporations through the 2013 Amendment to the Companies Act, the ESG disclosure and reporting has been a new framework. ESG considerations differ from the CSR initiatives in the involvement of environmental, social and governance considerations in the value chain of the product itself as opposed to an ancillary function. It mainly focuses on the overall impact of the business and aims to streamline the same towards a low carbon economy.

⁴ Vidushi Jaiswal & Swadha Chandra, From Opaque to Accountable: Revolutionizing Climate-Related Financial Disclosures in the ESG Era by Integrating Sustainability and Transparency, 12 RGNUL FIN. & MERCANTILE L. REV. 284 (2025).

1. Reserve Bank of India's climate related disclosure

RBI has been revising its climate-related guidelines which shows the scope for assessment of the prevailing norms and improving them which aligns with the international standards. The key components of the Basel Committee on Banking Supervision's ("BCBS") planned Pillar 3 climate risk disclosure framework are incorporated into the RBI's proposed framework.⁵ The one of its Discussion paper on Climate Risk and Sustainable Finance, RBI asserts that Climate change is increasingly recognized globally as a significant financial risk for financial institutions as well as posing a threat to the safety, soundness, and resilience of individual Regulated Entities (REs), which in turn impacts the stability of the entire financial system. Therefore, it is essential for REs to proactively manage the risks and opportunities arising from climate change and environmental degradation. The Financial Stability Board (FSB) has acknowledged that climate-related financial risks could jeopardize global financial stability and has developed a roadmap to ensure these risks are adequately reflected in all financial decisions. This roadmap promotes international coordination by unifying the efforts of international organizations and national authorities across various initiatives. FSB's focus is on four key pillars: disclosures, data, vulnerability analysis, and regulatory and supervisory approaches.

Based on the suggestion of the paper, RBI came up with the Draft guidelines on the disclosure framework for climate-related financial risks for regulated entities (REs). While the Draft Disclosure Framework tries to mirror the BCBS in terms of its adoption of certain metrics and targets concomitant with climate change risks, it lacks the indication of the bank's actual risk exposure. The Draft Disclosure Framework contains in its rationale and purpose that REs should disclose about their climate-related financial risks, they merely provide an assessment or methodology which shall be suited for them in light of fostering market discipline.

2. The SEBI Business Responsibility and Sustainability Report (BRSR)

The Securities and Exchange Board of India (SEBI) has introduced the ESG metrics known as the Business Responsibility and Sustainability Report (BRSR)⁶ under the SEBI (Listing Obligations and Disclosure Requirements) Regulations, 2015. This reporting standard was introduced in the year 2021 which was later replaced with the Business Responsibility Report

⁵ Bank of International Settlements, 'Consultative Document: Disclosure of climate-related financial risks' (BIS 2023).

⁶ BRSR Core-Framework for Assurance and ESG Disclosures for Value chain, 2023, Securities and Exchange Board of India, SEBI/HO/CFD/CFD-SEC-2/P/CIR/2023/122.

(BRR). The introduction of the BRR in 2023 can be attributed to the increasing demand for the sustainability-centric disclosures for investors as well as other stakeholders. These guidelines elevate the Indian ESG reporting landscape to align with the globally practiced standards to cater to the growing demand for sustainability-centric financial products. The BRSR is based on the nine principles, each of which has essential and leadership indicators, where the former is mandatory in nature the latter are voluntary. Under the environmental aspect of this framework, the companies are required to disclose the important information like the greenhouse gas emissions (GHG), water and energy footprints while also mentioning how they are implementing more sustainable practices such as the waste management and the preservation of biodiversity into their business operations and value and supply chains. Within the social considerations, the companies must provide enough information regarding the employee welfare initiatives, actions taken in ensuring the health and safety, community development as well as suppliers. Finally, under the governance practices, organisations must reveal relevant information like executive compensation, board structures and initiatives to resolve conflict of interests.

Recently, the recommendations given by the Expert Committee that were subsequently adopted were brought before for public consultation.⁷ One of the defining key changes brought about through the recommendation is the redefining of upstream and downstream value chain partnerships with an entity to concisely demarcate the extent of compliance mandated. Furthermore, they have introduced the Green Credits system in line with the suggestions of the Ministry of Environment, Forest and Climate Change (MoEFCC), which will assess the number of Green Credits by both the company as well as its value chain partners. Finally, there has been a shift from a voluntary assurance to a mandatory assessment regime. This ensures that there is a uniformity in the data while at the same time also allowing for a flexibility where the stakeholders demand specific assurance.

Digital Transformation of ESG Compliance

1. Impact of Artificial Intelligence (AI) on ESG Reporting and Compliance⁸

As the businesses continue to mull over the best ways to adopt Artificial Intelligence (AI), one cannot overlook its role in helping streamline the key processes across various sectors. When

⁷ Securities and Exchange Board of India, Consultation Paper on the Recommendations of the Expert Committee for Facilitating Ease of Doing Business with Respect to Business Responsibility and Sustainability Report (BRSR) (2024)

⁸ Eco Active, <https://ecoactivetech.com/revolutionizing-esg-reporting-with-ai-opportunities-and-challenges/> last visited on Dec 10, 2025

applied mindfully, AI can be immensely useful in aiding companies to meet their environment, social and governance (ESG) goals for a long-term impact. With the growing importance of the ESG reporting for ensuring business goals and long-term sustainability. There are many ways in which AI tools can help to achieve s businesses' ESG ambitions. Collating large quantities of data on ESG metrics, forecasting emissions, linking emissions to growth numbers and undertaking climate risk assessments are just a few of them. Accuracy and reliability are critical when it comes to ESG reporting, especially with evolving regulations across regions. AI excels in this area by automating data validation processes. AI-powered systems can cross-check information, validate ESG data and identify inconsistencies or anomalies. Automated validation ensures data integrity, reduces errors and enhances credibility of ESG reporting. More importantly it can monitor regulatory changes, helping companies stay updated and adapt their practices accordingly. As a result, investors and stakeholders can confidently disclose ESG information.

With the positive impact that AI has with respect to the ESG reporting, it is quite ironic that the AI's environmental footprints have adverse effects on the environment itself. AI models, due to their complexity, require substantial computational power. This demand results in high energy use, particularly during the training phase, which can be extensive for more sophisticated models. The significant energy required for powering AI systems often leads to considerable GHG emissions, especially if the energy is sourced from non-renewable power plants. Large data centres - core infrastructure required to train and deploy increasingly advanced AI models - require cooling systems that consume vast amounts of water to prevent overheating and sustain performance. The hardware underlying AI, including servers, GPUs and other specialised equipment also has an environmental impact. The production and disposal of these devices involve significant resource extraction, manufacturing emissions and e-waste which can lead to environmental degradation and pollution.

While AI offers significant advantages in ESG reporting, its implementation comes with notable challenges. Firstly, many AI systems heavily rely on high-quality, consistent and comprehensive data to generate accurate insights. However, ESG data often differs in format, completeness and reliability posing a major hurdle to effective AI deployment. Secondly, many AI models operate as 'black boxes' making it difficult to understand how specific decisions or predictions are made. In ESG reporting, where the accountability and reliability are non-negotiable, this can be an issue where the outputs are audited and trusted by stakeholders. Thirdly, as the ESG regulations evolve globally, AI systems must be designed and managed to comply with legal, ethical and industry-specific standards. Misalignment can result in

compliance risks, reputational damage and even legal penalties. Lastly, implementing AI in ESG reporting often requires significant investment in technology, infrastructure and skilled personnel. Smaller organizations may face barriers due to limited resources, slowing adoption and innovation in ESG reporting practices. Artificial Intelligence is transforming ESG reporting by improving accuracy, streamlining data collection, and delivering real-time, strategic insights. These capabilities enable organizations to go beyond regulatory compliance and embrace impact-driven sustainability reporting. Yet, successful integration of AI requires overcoming key challenges including data quality, algorithmic transparency, and evolving regulatory demands through ethical governance and thoughtful investment.

2. Opportunities and Challenges of Big Data Analytics in ESG Reporting⁹

The integration of Big Data Analysis into ESG reporting holds significant potential to revolutionize clean energy initiatives. Big Data Analytics refers to the process of examining large and varied datasets, commonly known as big data, to uncover hidden patterns, correlations, market trends and other useful information. Big Data Analytics offers advanced techniques, including machine learning, artificial intelligence, predictive analytics and real-time data processing. These techniques can address the ESG reporting challenges like data collection and integration, data quality, regulatory compliance, transparency and standardization. Big Data Analytics can significantly enhance carbon footprints analysis by integrating data from various sources, including energy consumption records, transportation logs and production data. It can improve the monitoring and evaluation of labour practices and conditions by analysing structured survey responses and unstructured feedback to assess worker satisfaction and identify areas for improvement. Further, it can enhance the evaluation of corporate governance practices by analysing data on board member demographics, skills and experience to ensure diversity and effectiveness, ensuring governance risks through data on board activities, meeting attendance and decision-making process. In summary, Big Data Analytics plays a crucial role in enhancing ESG reporting by leveraging diverse data sources, employing advanced analytics techniques, and applying these insights to assess environmental impact, social responsibility and governance practices.

While the benefits of the integration of Big Data Analytics is immense, the concerns lie with the challenges in its integration. Data privacy security is critical while leveraging Big Data

⁹ Omowonuola Ireoluwapo Kehinde Olanrewaju 1, Gideon Oluseyi Daramola and Olusile Akinyele Babayeju "Harnessing big data analytics to revolutionize ESG reporting in clean energy initiatives", World Journal of Advanced Research and Reviews, 2024, 22(03), 574–585

Analytics for ESG reporting. The big volumes of data collected from the various sources often include sensitive information about the employees, customers and business operations. Ensuring the protection of this data is essential to avoid the breach and maintain trust. The adoption of Big Data Analytics requires significant technological and infrastructural investments including scalable storage solutions and high-performance computing infrastructure to store and process big data efficiently. The effective use of Big Data Analytics in ESG reporting requires specialized skills and expertise who can interpret complex data sets and develop advanced models for extracting actionable insights. The use of Big Data Analytics raises serious ethical considerations with regard to biases in the ESG reporting. The integration of Big Data Analytics poses significant challenges. Many companies rely on legacy systems that may not be compatible with modern analytics platforms and upgrading or integrating these systems can be complex and costly.

3. Blockchain-based Approaches to ESG Transparency and Accountability¹⁰

The blockchain technology, known for its decentralization, immutability and transparency, presents a unique opportunity to these issues in ESG reporting relating to being non-standardized, unauditible and sometimes deliberately inflated. By offering verifiable records of environmental performance, labour practices and governance measures, blockchain can significantly improve the trustworthiness and compatibility of ESG disclosures. One of the primary benefits of blockchain is the assurance of data integrity. Blockchain's immutability ensures that once ESG-related data is recorded it cannot be altered retrospectively which combats greenwashing and allows the stakeholders to trust the authenticity of disclosures. Blockchain enables real-time tracking of ESG-related metrics. By leveraging smart contracts and decentralized data protocols, blockchain can promote consistency in ESG data collection and disclosure. Blockchain demarcates access to ESG data, enabling investors, regulators and consumers to independently verify claims.

Despite its benefits, it poses several challenges in the ESG context. Firstly, the environmental impact of blockchain itself contradicts ESG goals. Secondly, integrating blockchain with existing corporate reporting systems is technically and logistically demanding. Many companies lack the expertise or infrastructure to deploy blockchain platforms effectively. Moreover, data privacy laws may conflict with blockchain's immutability, raising questions

¹⁰ Sammu, Josh & Russell, Amanda (2025). Blockchain's Role in Enhancing ESG (Environmental, Social, and Governance) Reporting.

about the right to modify or erase sensitive ESG data. Lastly, blockchain is not a panacea for poor ESG performance. It can ensure that data is accurate and traceable but it cannot guarantee that the underlying actions are ethical or sustainable. There is a risk that firms may focus on technical compliance rather than meaningful impact.

Conclusion

The convergence of ESG compliance and digital transformation represents a significant shift in the understanding and management of corporate sustainability in India. As demonstrated in this study, technologies such as Artificial Intelligence, Big Data Analytics, and Blockchain can substantially enhance the accuracy, transparency, and credibility of ESG reporting by addressing persistent challenges in data management, risk assessment, and regulatory compliance. India's regulatory initiatives, particularly the Securities and Exchange Board of India's Business Responsibility and Sustainability Report framework and the Reserve Bank of India's evolving climate-related disclosure norms, reflect a stronger institutional commitment to integrating sustainability within corporate governance.

Despite these advancements, the integration of digital technologies into ESG compliance faces several limitations. Fragmented data ecosystems, disparities in digital literacy, high implementation costs, and unresolved ethical and environmental concerns continue to hinder widespread adoption. Furthermore, while technological tools can enhance disclosure quality, they cannot replace a genuine commitment to sustainable and responsible business practices. Strong governance frameworks, standardized metrics, and independent assurance are essential to prevent superficial compliance and greenwashing.

Looking ahead, India's ability to use its growing digital infrastructure and align ESG standards will determine its global sustainability role. A balanced regulatory approach that encourages innovation, ensures accountability, and protects environmental and social interests can turn ESG compliance into a strategic driver. This shift could support long-term, inclusive, and sustainable economic growth.