

**Imran Khan\***

Hamdard University Bangladesh  
Email: [ikimran05@gmail.com](mailto:ikimran05@gmail.com)

**Dr Anup Kumar Saha, PhD**

Keele University, United Kingdom  
Email: [a.saha1@keele.ac.uk](mailto:a.saha1@keele.ac.uk)

**Md. Anisul Islam Sajib**

Globe Investment &  
Fintech Company Limited  
Email: [anisul.sajib@gife.com.bd](mailto:anisul.sajib@gife.com.bd)

**Md. Mahbulul Alam Siddiqui**

Investors Development Club  
Learning Centre  
Email: [mahbululsiddiqui@gmail.com](mailto:mahbululsiddiqui@gmail.com)

**Keywords:**

ESG, Corporate Governance,  
Board Attributes, Regulatory  
Influence, Stakeholders' Theory

**JEL Classification:**

D22, G30, G31, G32, G35, L25,  
L22, F23, M10, M41

**Manuscript number**

JFMG-202409-00081

Received: 29 September, 2024  
First Revision: 17 April, 2025  
Second Revision: 03 August, 2025  
Accepted: 17 August, 2025  
Published Online: 18 August, 2025  
Published in Print: 30 August, 2025

ISSN (Online): 2958-9290

ISSN (Print): 2958-9282

\*Corresponding Author

© Bangladesh Institute of Capital Market

## Environmental, Social, and Governance (ESG) Integration in Bangladesh: Revealing the Role of Corporate Governance Nexus

Environmental, social, and governance (ESG) considerations have become increasingly integral to the modern business environment as stakeholders place greater emphasis on accountability and sustainability. This study examines the interaction between ESG integration and corporate governance structures in an emerging market, focusing on firms listed on the Dhaka Stock Exchange (DSE) that operate in environmentally sensitive industries during the period 2014–2021. Employing content analysis of annual and sustainability reports, we constructed an ESG disclosure index grounded in the Global Reporting Initiative (GRI) standards. The results indicate that larger boards, the inclusion of foreign directors, and the existence of audit committees are positively associated with enhanced ESG practices, whereas frequent board meetings are negatively related to ESG disclosure. Furthermore, the enforcement of corporate governance guidelines by the Bangladesh Securities and Exchange Commission has strengthened ESG reporting, although the proportion of firms engaging in such disclosure remains limited. These findings highlight the need for stakeholders—including regulators, policy-makers, and academics—to promote the consistent integration of ESG principles within corporate governance frameworks.

### 1. Introduction

Environmental, Social, and Governance (ESG) disclosures are increasingly important for businesses, particularly those in environmentally sensitive industries (Khurshid & Islam, 2024). Recently, firms have faced growing pressure from stakeholders—such as customers, suppliers, and regulators—to integrate sustainable practices into their corporate governance (CG) frameworks (Alsaifi et al., 2019; Saha and Khan, 2024). Stakeholders primarily influence firms through regulations and guidelines. In emerging markets, the adoption/ integra-

tion of ESG practices is frequently voluntary, aimed at fulfilling stakeholder expectations (Saha & Khan, 2024b). Thus, without regulatory enforcement, however, there is a risk that ESG information may be misrepresented or falsified (Briem & Wald, 2018; Saha and Khan, 2024). In response to this concern, several countries, including Brazil, China, Denmark, Malaysia, South Africa, and Spain have mandated ESG disclosures, reflecting a global trend towards more stringent ESG regulations (Saha & Khan, 2024a; Simpson et al., 2021).

Firms are more motivated to adopt ESG practices and communicate their ESG efforts when faced with increased regulatory demands (Datt et al., 2019). In an organizational framework, corporate governance guidelines encourage companies to significantly contribute to the improvement of ESG adoption (Helfaya et al., 2019). As a result, an intriguing question arises regarding whether regulatory measures provide an additional enhancement to ESG adoption. Nevertheless, the regulatory impact of governance issues in the emerging country is yet to be explored (Haque & Ntim, 2018; Saha and Khan, 2024b). Therefore, it is more important than ever to analyse the phenomena from the regulators' viewpoints since the effect of regulators' recommendations surrounding ESG is disregarded and under-represented in emerging nations (Brooks & Oikonomou, 2017; Saha and Khan, 2024b). In the context of Bangladesh, such discussion is quite limited while earlier studies focused on the influence of corporate board on firm performance in the financial industry (Khan et al., 2025); the effect of board attributes specific climate disclosures (Saha & Khan, 2024c); the effect of corporate social responsibility (CSR) spending and board structure on firm's financial performance in the pharmaceutical industry (Nath et al., 2015); relationship between corporate governance and voluntary disclosure practices of financial and non-financial sector companies (Saha & Akter, 2013); relationship between environmental reporting and corporate profitability (Saha & Akter, 2012); and CSR disclosures by the Bangladeshi banks (Saha, 2019). Thus, to bridge the gap, this paper tends to explore this unexplored area by examining the board's response to regulatory enforcement related to ESG integration (i. e. adaptation) in their routine activities.

Given, in emerging nations, the prevalence of climate-related issues such natural disasters, air and water pollution, soil erosion, and uncontrolled industrial

leftover, research on ESG adaptation is still vital (Outmane et al., 2024). Previous studies indicate that Bangladeshi firms remain skeptical about embracing ESG practices (Belal & Cooper, 2011; Khan et al., 2013; Saha & Khan, 2024b). In response, Bangladeshi regulatory bodies, including the Ministry of Environment & Forest and the Bangladesh Securities and Exchange Commission (BSEC), have introduced several restrictive measures, such as the Bangladesh Environment Conservation Act and the Corporate Governance Guidelines of 2012\*, aimed at encouraging better environmental practices. However, weak enforcement has resulted in the inadequate implementation of these policies. To effectively adopt climate-friendly strategies, companies must bolster their internal governance structures (García-Martín & Herrero, 2020) including the participation of an audit committee, increased gender diversity, independent and foreign directors, a suitable board size, and board experience (Saha and Khan, 2024a). Although governance plays a vital role in encouraging compliance with eco-friendly practices, there is a notable deficiency in empirical studies examining how regulators impact ESG within responsible companies; therefore this discrepancy provides a great chance to add fresh perspectives to the current body of literature (Nguyen et al., 2021).

This paper intentions to specifically investigate the impact of regulatory influence, mediated through CG, on the ESG disclosures of Dhaka Stock Exchange (DSE)-listed industrial companies (Saha and Khan, 2024a). Bangladesh affords a unique context for this examination for several reasons. First, Bangladesh's economy is one of the fastest-growing in Asia, driven primarily by substantial manufacturing and production activities (Siddiqui & Uddin, 2016). However, this notable economic growth has arguably led to considerable ecological and public health issues

\* See for details [https://sec.gov.bd/slaws/Notification\\_on\\_CG-07.8.12-Amended.pdf](https://sec.gov.bd/slaws/Notification_on_CG-07.8.12-Amended.pdf)

(Elmagrhi et al., 2019). Second, the global attention on Bangladesh particularly after the textile factory<sup>1</sup> tragedy has heightened concerns about foreign investment and the stability of contracts in the ready-made garments industry (Siddiqui & Uddin, 2016; Khan et al., 2013). Additionally, Bangladesh is also focused on tackling climate-related challenges, as seen by its commitment to the UN Sustainable Development Goals (World Bank, 2012).

Although most of the earlier research on the impact of board landscapes on sustainability disclosure has been done in affluent nations, (Al-Shaer & Zaman, 2019; Hussain et al., 2018; Tang, 2019), this study contributes indication from an emerging economy. Previous research in Bangladesh has explored the relationships between firm size, profitability, board diversity, and corporate social responsibility disclosure (Muttakin et al., 2015) as well as firm performance (Khan et al., 2025), but ESG practices remain underexplored. By incorporating the institutional role through regulatory influence on ESG among DSE-listed firms, this study enriches the existing literature. Additionally, we use content analysis with a emphasis on the Global Reporting Initiative (GRI) to achieve particular outcomes. Therefore, our study addresses a previously unexplored area within the context of an emerging economy, bridging the gap in understanding the regulatory influence on ESG practices among environmentally sensitive firms.

The remainder of this study is prepared into four segments. The next segment analyses the relevant literature, establishing the theoretical framework and formulating the hypotheses. The third section details the research methodology, counting the sample size, data collection, and specification of model. The fourth section presents the empirical findings of the study. Finally, the paper concludes with a argument of the results, implications for practice and policy, and propositions for future research.

<sup>1</sup> TheTragedy of Rana Plaza, Bangladesh

## 2. Theoretical Background, Literature Review and Hypotheses Development

ESG ratings are the most extensively used indices for evaluating business responsibility to sustainability initiatives (Howard-Grenville, 2022; Saha and Khan, 2024a, Saha et al., 2019). One of a firm's primary objectives is to achieve sustainable performance, which helps maintain transparency in reporting, reduce information asymmetry, manage stakeholder perceptions, and meet the growing demand for non-financial data. ESG initiatives play a critical role in enhancing firm results (Al-Shaer et al., 2018). Numerous theoretical models have been used to analyze research findings about how CG affects ESG efforts, with stakeholder theory being one of the most widely applied (Diez-Cañamero et al., 2020). This theory emphasizes the association between a company and all of its stakeholders, including those related to ESG issues. In a study, Abdi et al., (2022) noted that integration of ESG initiatives positively impacts the firm's overall results. Over the years, firms are under increasing pressure from partners and stakeholders to embed environment friendly practices into their corporate frameworks (Helfaya et al., 2019). Conferring to stakeholder theory, there are two primary ways that ESG initiatives benefit companies: by boosting cash flow levels and maximizing shareholder utility through investments in sustainable companies, and by raising shareholder value (Gillan et al., 2021; Saha and Khan, 2024a).

ESG is commonly perceived as a company's choice decision to include these practices into their operations and engagement with stakeholders (Saha & Khan, 2024a). Businesses that are sustainable harmonize all stakeholders' interests, transforming ESG measures into KPIs that represent stances on matters important to many stakeholders, including investors (Crifo et al., 2015; Saha et al., 2021a). Key indicators of a company's ESG commit-

ment include reducing carbon emissions, mitigating climate impact, and ensuring the physical and mental well-being of employees (Saha et al., 2021b). Furthermore, ESG factors like gender equality, workplace safety, and job security have a big impact on business performance (Wang & Sarkis, 2017). ESG points of a firm provided by accredited agencies helps the company to assess their excellence, identify market response, and refine their operational functions (Saha and Khan, 2024a).

In the context of emerging nations, organizational experts have extensively discussed and investigated the intricate link between ESG and CG (Saha & Khan, 2024b). This area of inquiry has spurred numerous studies that scrutinise the link between ESG initiatives and firm performance, ranging from large-scale empirical analyses to more focused investigations considering specific countries. Results from lessons on the relationship between ESG and CG have been uneven, which reflects the variety of settings and approaches used (Saha & Khan, 2024b).

In many emerging economies, ESG practices often reflect national and social traditions, with companies imitating the practices of successful and reputable firms due to institutional pressure (Grecco et al., 2013). But in 2008, the EU's Competitiveness Report made clear how important ESG is to businesses, which paved the way for a more thorough integration of ESG into corporate frameworks and strategies (European Commission, 2021; Saha et al., 2021b). Furthermore, the other global guidelines—such as the Global Reporting Initiative (GRI), the United Nations Global Compact (UNGC), the United Nations Principles for Responsible Investment (UNPRI), the OECD Guidelines for Multinational Enterprises, and the International Labour Organization (ILO)—have played a critical role in shaping a robust ESG culture

(Bjørnåli and Sannes, 2020; Saha and Khan, 2024a). Such institutional emphasis on ESG influence the organization's official structures that help it effectively engage with its stakeholders (Meyer and Rowan, 1977). As ESG disclosure is voluntary, firms are driven by mimetic pressure, which is perceived to follow those fellow novel firms who are doing well in that field of practice and are considered successful (Palmer et al., 1993).

The stakeholder theory suggests a commitment to greater climate accountability can improve a company's status and reduce external pressures by fostering a strong corporate network with influential external stakeholders (Greenwood et al., 2013). An efficient board configuration—characterized by a board with more members, independent directors, and board expertise—can exert greater pressure on companies to implement sound climate-related measures (Karim et al., 2021; Saha and Khan, 2024a).

Although Bangladesh is an emerging economy, it ranks low on the Global Sustainable Competitiveness Index, positioned at 130th with a score of 39.6 out of 180 countries (SolAbility, 2024). According to the literature, a sizable number of research have looked at how corporate governance affects ESG disclosures (Beekes and Brown, 2013; Saha and Khan, 2024a).

The unique contribution of this article is its examination of the specific relationship among regulatory effects, board makeup, and ESG practices in an emerging market. By concentrating on this context, the research advances knowledge of how board dynamics and regulatory considerations affect ESG-related information disclosure in businesses operating in emerging economies. The following subsections discuss existing literature on board characteristics and climate reporting, with the aim of developing our hypotheses.

4. The Challenges of Trade Financing", World Trade Organization, at [https://www.wto.org/english/thewto\\_e/other\\_e/challenges\\_e.htm](https://www.wto.org/english/thewto_e/other_e/challenges_e.htm)

## 2. 1 Board Size

One essential element of the corporate governance structure is the size of the board that significantly influencing the operational excellence (Al Amosh & Khatib, 2022; Khan et al., 2025; Wang et al., 2022). According to stakeholder theory, larger boards exert pressure on firms to establish well-structured governance systems that support climate-friendly activities, setting a sustainable plan and allocating necessary resources to warrant robust ESG practices (Jizi, 2017).

Previous studies suggest that larger boards are positively and pointedly associated with ESG performance, as they enhance management's access to diverse skills, experiences, and resources, thereby improving decision-making and advisory capabilities (Khan et al., 2025; Katmon et al., 2019; Saha et al., 2019; Khan et al., 2015; Amran et al., 2014). Moreover, a board with more directors is better equipped to address the diverse benefits of stakeholders, which can help legitimize the company's activities and facilitate more comprehensive disclosure of financial, social, and environmental information (Ntim et al., 2013; Chang et al., 2017).

In Bangladesh, CG guidelines impose regulatory requirements for maintaining a specific range in the number of board members (Bangladesh Securities and Exchange Commission, 2018). While some studies have originate a positive correlation between the size of the board and ESG disclosures (Ntim et al., 2013), the evidence from emerging economies is mixed. For instance, Nicolo' & Andrades-Peña (2024) identified a negative effect of board size on ESG, while García-Sánchez et al. (2015) found no significant impact.

More research is required in light of the contradictory data about the effect of board size on ESG. Based on the positive correlations identified in prior studies, we hypothesize that:

**H<sub>1</sub>:** There is a positive association between board size and the level of ESG disclosures.

## 2. 2 Independent Directors

The independent director serves as a crucial pillar of the governance mechanism, representing the board's level of independence and aligning the benefits of various stakeholders (Khan et al., 2025; Xinjian et al., 2020). Researchers have argued that independent directors act as an effective tool for minimizing the legitimacy gap between a firm and its stakeholders, particularly by overseeing management decisions related to ESG (Alkayed & Omar, 2022; Wang et al., 2022).

According to stakeholder theory, external directors are essential in monitoring and preventing opportunistic management practices, proving responsibility and improving the company's standing in the marketplace (Greenwood et al., 2013). The theory further suggests that independent directors are likely to apply greater pressure on the board to adopt sound climate policies and strategies, which can have a positive impact on the firm's ESG performance.

Empirical evidence generally supports this view, with prior studies finding a positive relationship between independent directors and ESG practices in the context of emerging economies (Fernandes et al., 2019). There is evidence to the reverse, though; for example, Alnabsha et al. (2018) discovered that in certain situations, social networks and personal connections have a greater influence on the nomination of non-executive directors than do professional credentials, which can have a detrimental effect on ESG.

Given these insights, we hypothesize that:

**H<sub>2</sub>:** There is a positive association between the number of independent directors and the level of ESG disclosures.

### 2.3 Foreign Directors

Despite being a marginal group on the board, recent studies partake demonstrated the significant positive influence that foreign directors can have on corporate governance (Alkayed & Omar, 2022; Khan et al., 2025). Research shows that foreign directors contribute to enhancing transparency, accountability, and the promotion of diverse perspectives, which can substantially improve a company's ESG practices (Khan et al., 2019). Estelyi and Nisar (2016) and Khan et al. (2025) found a strong association between firm performance and the presence of a higher percentage of foreign directors.

Conflicting results are shown by other studies, though, emphasizing problems including higher expenses, inadequate monitoring, and communication problems brought on by cultural differences (Katmon et al., 2019). Additionally, some research indicates no noteworthy connection between the presence of foreign directors and ESG performance (Barako & Brown, 2008).

In Bangladesh, the Corporate Governance guidelines do not provide specific directives regarding foreign directors. Nevertheless, firms often incorporate foreign directors on their boards due to perceived stakeholder pressure.

Based on these insights, we put forth the following hypothesis:

**H<sub>3</sub>:** There is a positive association between the presence of foreign directors and the level of ESG disclosures.

### 2.4 Board Female Directors

The participation of both male and female members on corporate boards is known as gender diversity who bring varied viewpoints, backgrounds, and experiences enhance management performance and have a big impact on business choices, especially when it comes to enterprise ESG disclosures (Katmon et al., 2019;

Khan et al., 2025). Haque (2017) claims that having more female directors on the board can enhance communication about stakeholders' ESG concerns by ensuring that issues within the business environment are addressed promptly. Furthermore, a board with diverse female representation is more likely to recognize and prioritize stakeholders' interests (Alodat & Hao, 2025, Harjoto et al., 2014; Khan et al., 2025) and may be more supportive of social, ethical, and climate-related disclosures (Isidro & Sobral, 2014).

However, prior literature grants mixed findings regarding the effects of gender diversity on decision-making and ESG practices. Some studies show a positive correlation between the presence of female directors and environmental disclosure practices (Liao et al., 2015; Lu & Herremans, 2019). Conversely, other studies have found minimal impact of gender diversity on ESG outcomes (Al Kurdi et al., 2023; Cucari et al., 2018).

Given these insights, we suggest the following hypothesis:

**H<sub>4</sub>:** There is a positive association between gender diversity and the level of ESG disclosures.

### 2.5 Board Expertise

Board expertise, often reflected by the number of meetings held by board members, is a key indicator of their diligence and commitment (Al Amosh & Khatib, 2021; Alnabsha et al., 2018; Khan et al., 2024). However, the affiliation between board expertise and ESG practices is complex, with scholars divided on its implications. Some contend that more frequent meetings enhance board efficiency, improve supervision, and increase organizational transparency, particularly during crises or periods of uncertainty. Frequent board meetings can also help align company performance with shareholder expectations (Al Amosh & Khatib, 2021; Khan et al., 2025). Conversely,

other scholars suggest that too many meetings may indicate an ineffective and overly intrusive board, which could be detrimental to ESG practices (Frias-Aceituno et al., 2013). Furthermore, other research indicates that there is no meaningful correlation between board meeting frequency and ESG practices (Hussain et al., 2018; Wang et al., 2022).

From the viewpoint of stakeholder theory, frequent board meetings are a strategic response to increased competition, operational intricacy, and vagueness, aimed at addressing diverse stakeholder concerns. A minimum number of board meetings is required in Bangladesh per the Corporate Governance rules (Bangladesh Securities and Exchange Commission, 2018). Thus, we hypothesize that regular board meetings are vital for effective oversight and the integration of ESG considerations within a company's governance structure. Thus, we put up the following theory:

**H<sub>5</sub>:** There is a positive association between the number of board meetings and the level of ESG disclosures.

### 2.6 CEO Duality

CEO duality denotes to the practice where one individual holds both the roles of managing director and chairman of the board, or serves as both the chief executive officer and chairman. This practice can centralize power, compromise governance, and undermine board independence, potentially leading to decision-making that prioritizes personal utility over organizational interests (Dalton & Dalton, 2005). When the CEO also acts as the chairperson, their dominance can reduce the board's ability to effectively oversee management, negatively affecting the company's sustainability, quality, and accountability practices (Hussain et al., 2018; Li et al., 2016). Theoretically, it is suggested that the chairperson should play a crucial role in monitoring the CEO and other top execu-

tives to ensure effective management (Greenwood et al., 2013). According to corporate governance norms in Bangladesh, the CEO, Managing Director, and Chairperson of the Board should all be held by distinct people (Bangladesh Securities and Exchange Commission, 2018). Nevertheless, there are contradictory opinions in the literature regarding the necessity of this separation. Some argue that CEO and chairperson roles can be successfully combined without adverse effects (Wang et al., 2022). Conversely, Nicolo' & Andrades-Peña (2024) found that CEO duality negatively associated with ESG performance. Given these mixed results, further research is needed to clarify the relationship between CEO duality and ESG practices. Therefore, we propose the following hypothesis:

**H<sub>6</sub>:** There is a negative association between CEO duality and the level of ESG disclosures.

### 2.7 Audit Committee

Earlier studies highlight the crucial role of audit committees in overseeing the financial affairs (Alkayed & Omar, 2022). Audit committees are primarily responsible for protecting against dubious management reporting decisions (Alkayed & Omar, 2022). Although traditionally focused on financial matters, audit committees may also offer valuable oversight of ESG practices. Existing documentation suggests a connection between audit committees and ESG, although the impact has not been extensively researched (Saha et al., 2019). An audit committee's existence can increase management accountability (Abbott et al., 2004). Stakeholder theory states that in order to reduce financial disunity and improve ESG reporting, regulatory pressure pushes businesses to create audit committees with individuals knowledgeable in accounting and finance. In Bangladesh, corporate governance regulations mandate an audit committee for every

listed company (Bangladesh Securities and Exchange Commission, 2018). In general, empirical evidence indicates that audit committees and ESG are positively correlated (Alkayed & Omar, 2022), though some studies indicate a negative relationship (Al Kurdi et al., 2023). Overall, previous studies and guidelines suggest that, in addition to their financial oversight duties, audit committees should also oversee ESG practices. Thus, we put forth the following hypothesis:

**H<sub>7</sub>:** There is a positive association between the existence of an audit committee and the level of ESG disclosures.

### 3. Methodology

#### 3.1 Data and Sample

We examined the annual reports of every manufacturing company listed on the Dhaka Stock Exchange (DSE) from 2014 to 2021, since they are considered the primary contributors to climate degradation. Financial institutions are not included due to their specific accounting requirements, distinct governance structures, and varied legal contexts (Luo & Tang, 2021).

Table 1's Panel A describes our sample assortment procedure. Initially, we identified 167 manufacturing companies listed on the DSE, resulting in 1,336 firm-years.

After verifying the availability of relevant data, we narrowed this down to 100 firms with complete information, yielding 800 firm-years. Panel B of Table 1 displays the industry distribution within our sample. In addition, Panel C of Table 1 displays the yearly breakdown of sample selection.

To collect ESG data, we performed content analysis on different parts of the annual reports, including CG disclosures, directors' statements, chairman's reports, CSR reports, and relevant notes (Cui et al., 2020). Usually, annual reports are regarded as a trustworthy source of ESG data and are essential for informing stakeholders about a business, according to disclosure literature (Saha et al., 2019; Saha et al., 2020). An independent code expert meticulously reviewed every item, identifying and fixing any inconsistencies to guarantee accuracy and consistency. Following this, the second coding expert diligently assessed the variables, verifying that no inconsistencies were present and validating the integrity and dependability of the coding process. Our data collection is in line with our research goal, which is to clarify the connexion between CG performance and ESG criteria in the context of developing countries that are recognized for their emphasis on sustainability (See Appendix A).

**Table 1: Details of the sample selection**

#### *Panel A Sample selection procedure*

	Firms	Percentage (%)*
No. of firms	167	100
Less: Firms without the necessary information	67	40
Total Final sample	100	60

#### *Panel B Industry representation in the sample*

Industries	Firms	Percentage (%)*
Engineering	28	28
Textile	20	20
Pharmaceuticals & Chemicals	19	19
Fuel and Power	18	18
Cement	7	7
Ceramic	3	3
Tannery	3	3
Jute	2	2
<b>Total</b>	<b>100</b>	<b>100</b>

**Panel C Yearly breakdown of sample firms**

Year	Industries							
	Engineering	Textile	Pharmaceuticals & Chemicals	Fuel and Power	Cement	Cermic	Tannery	Jute
2014	28	20	19	18	7	3	3	2
2015	28	20	19	18	7	3	3	2
2016	28	20	19	18	7	3	3	2
2017	28	29	19	18	7	3	3	2
2018	28	20	19	18	7	3	3	2
2019	28	20	19	18	7	3	3	2
2020	28	20	19	18	7	3	3	2
2021	28	20	19	18	7	3	3	2
<b>Firm Year</b>	<b>224</b>	<b>160</b>	<b>152</b>	<b>144</b>	<b>56</b>	<b>24</b>	<b>24</b>	<b>16</b>

\*% is rounded up

**3. 2 Variable Definition**

Our study hypotheses were tested using the variables listed in Table 2. Using accepted techniques, we used text analysis to determine the ESG score (Ntim et al., 2013; Saha & Khan, 2024b). To identify ESG disclosure items, we referenced the GRI framework (GRI, 2021), building on the approaches of Clarkson et al. (2008) and Saha & Khan (2024b). The disclosure items evaluated include air and water management, disposal of waste, green

energy, carbon management policies, CSR committee activities, green policies, tree plantation, environmental education, and global warming issues (Saha & Khan, 2024b).

Firms receive a score of 1 for each checklist item revealed in their annual report and a score of 0 if the item is not revealed. The ESG index is calculated by dividing the total score of each company by the extreme possible score of 12 (Saha & Khan, 2024b).

**Table 2: Variable Measurement**

Name of Variable	Symbol	Definition and measurement	Expected Relation
<i>Dependent Variable</i>			
Environmental, social and governance Score	ESGS	Total Disclosure Score. The ESG disclosure score is calculated on a binary scale, where each item from our checklist is assigned a score of 1 if it is disclosed in the annual report and a score of 0 if it is not disclosed.	
<i>Independent Variable</i>			
Board Size	BFSIZE	Natural logarithm of the total number of directors on the board.	+
Board Independence	INDIR	The proportion of the independent non-executive directors on the number of directors on the board.	+
Foreigners on Board	FORDIR	The proportion of foreign directors on the number of directors sitting on the board.	+
Gender Diversity	GENDER	The ratio of female directors on the number of directors sitting on the board.	+
Board Expertise	BOMEET	Natural logarithm of the number of board meetings held in a year.	+
CEO Duality	DUALITY	This variable is measured on a binary scale, where a value of 1 indicates that the same person holds both the chairman and CEO positions, and a value of 0 indicates that the positions are held by different individuals.	-
Audit Committee	ADCOM	The natural logarithm of the total number of members on the audit committee.	+

<i>Control Variable</i>			
Size	SIZE	The natural logarithm of the net asset value per share.	+
Profit ratio	ROA	This variable is calculated by dividing earnings before interest and taxes (EBIT) by total assets.	+
Leverage	LEV	This variable is calculated by dividing total debt by total assets.	
Industry	INDUS	This is a dummy variable indicating industry affiliation, where each industry is assigned a binary value (0 or 1) to represent membership or non-membership in a specific industry category.	
Year	YEAR	This is a dummy variable representing each year in the sample period. Each year is assigned a binary value (0 or 1) to indicate its presence or absence in the dataset.	

Source: Developed by the authors

### 3.3 Econometric Model

The following model looks at how corporate governance and ESG disclosures

relate to one another. We examine our suggested research hypotheses 1 through 7 using Model (1):

$$ESGS_{i,t} = \beta_0 + \beta_1 BSIZE_{i,t} + \beta_2 INDIR_{i,t} + \beta_3 FORDIR_{i,t} + \beta_4 GENDER_{i,t} + \beta_5 BOMEET_{i,t} + \beta_6 DUALITY_{i,t} + \beta_7 ADCOM_{i,t} + \sum Controls + \sum Year + \sum Industry + \varepsilon_{i,t} \dots (1)$$

where *i* and *t*, respectively, represent the firm and the period;  $\beta_0$  = Intercept;  $\beta_1$  through  $\beta_7$  = Coefficient of slope parameters, and  $\varepsilon$  = Error term. ESG indicate the disclosure score. The definitions of the remaining independent, dependent, and control variables are summarized in Table 2.

## 4. Result and Discussion

### 4.1. Descriptive Statistics

Detailed descriptive statistics for ESG, board composition, and control variables of the sampled companies are presented in Table 3. For the period from 2014 to 2021, According to Table 3, ESG values are greater than those found in earlier research, with an average of 46%, ranging from 0% to 100% (Muttakin et al., 2015). The majority of boards satisfy corporate governance standards, with an average of eight members and a minimum of four to a maximum of twenty (BSEC, 2018).

During this period, the percentage of independent directors on boards' ranges from 0% to 50%, with an average of 25%, aligning with the corporate governance guidelines that require at least 20% independent directors (BSEC, 2018). The average

size of the audit committee is four members, which is equivalent to the global average of 3.24 reported in the currently published literature and meet the Bangladesh CG's requirement of at least three members (Katmon et al., 2019; BSEC, 2018).

Although there are no lowest standards for the number or percentage of women and foreign directors in the corporate governance rules, the average percentages during the period are 16% for women directors and 6% for foreign directors. Additionally, companies hold an average of nearly nine board meetings per year. The data also show that the corporate governance guideline on duality is being followed, indicating that distinct people usually serve as chairman of the board and managing director or CEO, with an average duality value of 0.01.

**Table 3:** Descriptive statistics

Variable names	Minimum	Maximum	Mean	Standard deviation
ESGS	0	100	46	27
BSIZE	4	20	8	3
INDIR	0	50	25	7
FORDIR	0	70	6	17
GENDER	0	67	16	16
BOMEET	4	30	9	5
DUALITY	0	1	0.01	0.10
ADCOM	2	7	4	1
SIZE	0.15	508	58.58	66.70
ROA	-4.1	11.45	0.1	0.53
LEV	0	11.86	0.29	0.78

Source: Developed by the authors

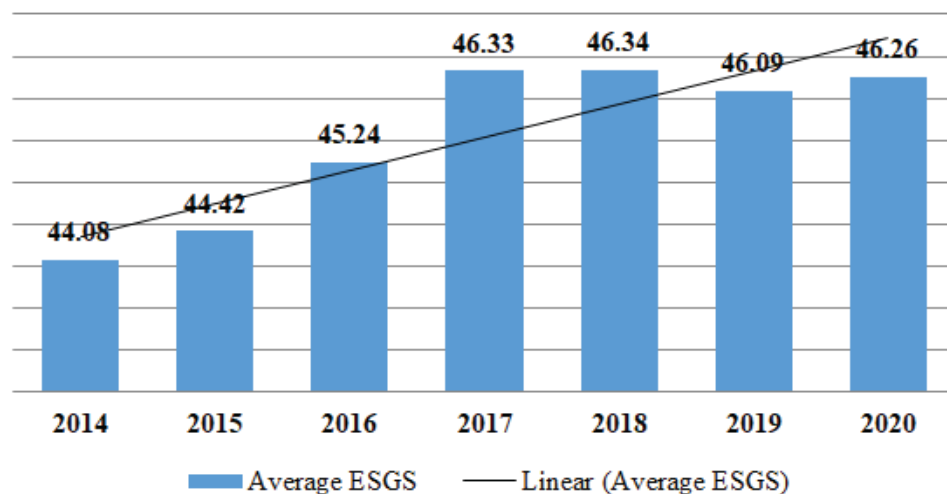
Note: See Table 2 for definitions of the variables. The sample comprises 800 firm-years.

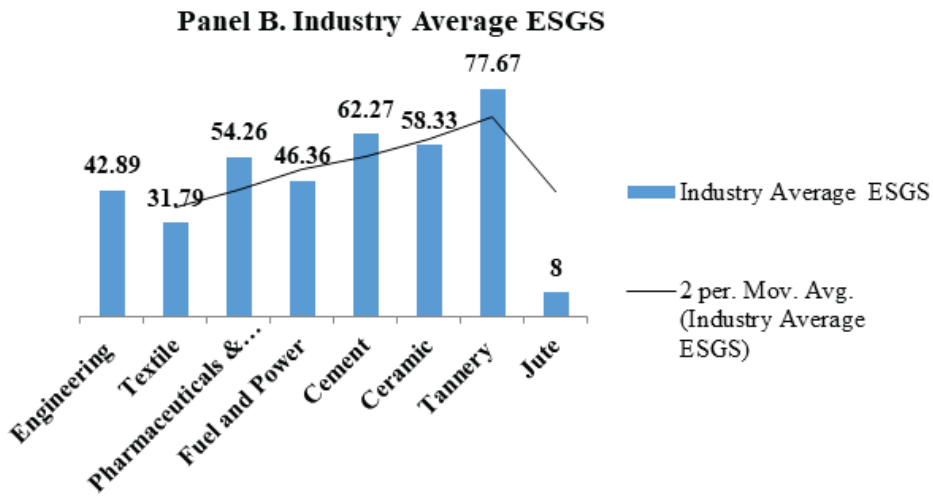
#### 4.2 Trend of ESGS disclosures (2014–2021).

Panel A and Panel B of Figure 1 illustrate the trend of average ESGS and industry average ESGS from 2014 to 2021. The figure emphasizes that overall ESGS consistently increasing throughout the study period. Panel B's industrial average ESGS indicates that the cement sector came in

second with 62.27% and the tanning business came in first with 77.67%, indicating the need to address serious air pollution issues. However, at only 8%, the jute business disclosed the least amount of air pollution, which might be a sign that stakeholders or regulations aren't putting much pressure on this industry.

**Panel A. Average ESGS**





Source(s): Authors' own work

**Figure 1.** Trend of ESGS disclosures from the year 2014–2021

### 4.3 Correlations

The variance inflation factors (VIF) and Pearson correlations for our independent variables are shown in Table 4. There are no notable multicollinearity problems, according to the correlation coefficients (Tabach-

nick, 2001). Furthermore, all VIF values were below 2, confirming the lack of multicollinearity (Neter, 1985). Therefore, all variables are deemed suitable for regression analysis.

**Table 4:** Variance inflation factors (VIF) and correlations

Independent variables	VIF	BSIZE	INDIR	FORDIR	GENDER	BOMEET	DUALITY	ADCOM	SIZE	ROA	LEV
BSIZE	1.11	1.00									
INDIR	1.18	-0.23***	1.00								
FORDIR	1.21	-0.02	0.25***	1.00							
GENDER	1.06	-0.15***	-0.01	-0.11***	1.00						
BOMEET	1.04	0.04	0.01***	-0.05	-0.05*	1.00					
DUALITY	1.02	-0.02	0.05	-0.03	0.08**	0.00	1.00				
ADCOM	1.16	0.08**	-0.6*	0.28***	0.00	0.00	-0.09**	1.00			
SIZE	1.05	0.03	0.07*	0.07*	0.04	-0.08*	-0.01	-0.12***	1.00		
ROA	1.02	0.00	-0.00	0.04	-0.03	0.03	-0.01	0.08**	0.00	1.00	
LEV	1.03	0.08**	-0.01**	-0.02	0.00	0.09	-0.01	0.05*	-0.02	0.08**	1.00

Source: Developed by the authors

Notes: (1) \*, \*\*, \*\*\* significance at 10%, 5%, and 1% confidence levels, respectively.

(2) See Table 2 for variable definitions.

**4.4 Regression Results Board Size:** Hypothesis 1 is supported by Models 1 and 8, which show a strong positive correlation between board size and ESG. Higher levels of ESG disclosure are linked to larger boards, active audit committees, and international directors. This suggests that the larger board is a key governance mechanism that has significant roles in promoting ESG transparen-

cy. This result is consistent with our theoretical predictions, suggesting that larger boards tend to disclose more ESG information to secure resources and maintain strong relationships with key stakeholders (Al Kurdi et al., 2023; Nguyen et al., 2021; Saha & Khan, 2024b; Zou et al., 2019). Moreover, our finding aligns with the prior findings of

Ntim et al.. (2013), Al-Shaer and Zaman (2018), and Estelyi and Nisar (2016).

**Independent Directors:** Hypothesis 2 is validated by Models 2 and 8, which show a high positive correlation between the percentage of independent directors and ESG disclosures. The finding indicates that the independence of the board is an essential governance tool that plays a crucial role in enhancing ESG disclosure. This result is consistent with our theoretical expectations, highlighting the role of independent directors in promoting ESG transparency (Fernandes et al., 2019; Saha & Khan, 2024b). The outcome demonstrates that an independent director is an vital constituent of the governance mechanism, reflecting the degree of independence of the board and coordinating the interests of different stakeholders (Khan et al., 2025; Xinjian et al., 2020). Similarly, our finding is reinforced by the earlier studies of Fernandes et al.. (2019) Ibrahim and Hanefah (2016).

**Foreign Directors:** Hypothesis 3 is supported by Models 3 and 8, which show a strong positive association between the presence of foreign directors and ESG disclosures. The finding signifies that FORDIR has statistically significant positive effects on ESG disclosures. Previous studies indicate that international board members play a noteworthy role in increasing transparency, responsibility, and the inclusion of varied viewpoints, which can greatly enhance a company's ESG performance (Khan et al., 2019). This is in line with previous research and theoretical assumptions that foreign directors help enhance ESG disclosure to improve the company's reputation and stakeholder relationships (Khan et al., 2019; Saha & Khan, 2024b). Both Estelyi and Nisar (2016) and Khan et al. (2024) found a strong correlation between a board with higher percentage of foreign directors and the performance the company.

**Gender Diversity:** Models 4 and 8 present mixed results regarding gender diversity's

impact on ESG. Model 4 shows a negative association with ESG, These divergent results suggest that gender diversity's effect on ESG may be influenced by factors such as regulatory pressure and the tokenistic inclusion of women directors (Elmagrhi et al., 2019; Saha & Khan, 2024b; Kanter, 2008). The result reflects that in Bangladesh the contribution of female directors is limited and consistent with the socio-economic perspective. However, over the horizon women are stepping into corporate leadership and the incremental contribution will be positive following the other emerging economics interests (Alodat & Hao, 2025, Harjoto et al., 2014; Khan et al., 2025).

**Board Expertise:** Hypothesis 5 is refuted by Models 5 and 8, which show a negligible inverse association between board expertise and ESG. This finding contradicts theoretical predictions that regular board meetings should improve ESG performance. The discovery suggests that a high frequency of meetings could point to a board that is inefficient and excessively interfering, potentially harming ESG practices (Frias-Aceituno et al., 2013). The absence of significance could be accredited to regulatory obligations that require a minimum quantity of meetings, which may not adequately tackle ESG issues (Hussain et al., 2018; Saha & Khan, 2024b; Wang et al., 2022; Yusoff et al., 2019).

**CEO Duality:** Hypothesis 6 is supported by Models 6 as well as 8, which show that CEO duality has a major detrimental effect on ESG. This result confirms our theoretical assumptions and earlier research that combining the chairman and CEO positions could result in a concentration of power, jeopardize governance, and erode board independence, possibly influencing decision-making that puts more emphasis on personal benefit than ESG (Hussain et

al., 2018; Li et al., 2016; Saha & Khan, 2024b). The result is consistent with Nicolò & Andrades-Peña (2024) found that CEO duality negatively affects ESG performance. In Bangladesh, corporate governance guidelines recommend that distinct individuals should occupy the roles of Chairperson and Managing Director and/or CEO (BSEC, 2018).

**Audit Committee:** Hypothesis 7 is well supported by Models 7 and 8, which demonstrate an extremely significant positive association between the existence of an audit committee and ESG disclo-

tures. The result highlights how crucial robust audit committees are for providing insightful supervision of ESG policies, keeping an eye on the financial reporting process, and guarding against questionable management reporting (Alkayed & Omar, 2022). This result is unswerving with prior research and Bangladesh's CG regulations, which mandate audit committees to enhance governance and ESG transparency (Al-Shaer et al., 2018; Bangladesh Securities and Exchange Commission, 2018).

**Table 5:** Regression results showing the relationship between CG and ESGS

Dep. variable	ESGS	ESGS	ESGS	ESGS	ESGS	ESGS	ESGS	ESGS
Model	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<b>Independent variables (CG Matrix):</b>								
BFSIZE	1.58***							1.7***
INDIR		0.28**						0.28**
FORDIR			0.46***					0.37***
GENDER				-0.12**				0.00
BOMEET					-0.30			-0.31
DUALITY						-0.28**		-0.22**
ADCOM							6.72***	3.9***
<b>Control variables:</b>								
SIZE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	0.02*
ROA	Yes	Yes	Yes	Yes	Yes	Yes	Yes	4.3**
LEV	Yes	Yes	Yes	Yes	Yes	Yes	Yes	-1.9
Year fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
No of firm year obs.	800	800	800	800	800	800	800	800
R2	0.01	0.02	0.01	0.02	0.02	0.03	0.06	0.016

Source: Developed by the authors

Notes: (1) \*, \*\*, \*\*\* significance at 10%, 5%, and 1% confidence levels, respectively. (2) See Table 2 for variable definitions.

**4.5 Robustness tests:** Analyzing robustness is an essential part of empirical study since it confirms the dependability and uniformity of results across various estimation techniques and assumptions (Elmghaamez et al., 2024). To confirm that our results are consistent, we do robustness analysis in this section.

**4.5.1 Industry fixed effect:** Given the longitudinal nature of our dataset and our objective of examining the intricate relationship between CG and ESGS, we expand our analysis using industrial fixed-effects regression, as indicated in

Table 6. This additional study confirms the statistical relevance of the Audit Committee and Gender Diversity with regard to ESGS in Models 1, which is consistent with our main findings. This robustness assessment, however, shows that board meetings, independent directors, foreign directors, and board size have no discernible impact on ESGS. Interestingly, Model 1 showed no result from CEO Duality. Our initial findings are supported and strengthened by this extra study, which offers more proof of the consistent correlations found across several analytical techniques.

**Table 6:** Fixed effect results on the relationship between CG and ESGS

Dep. variable	Fixed effect
Model	(1)
Independent variables (CG Matrix):	
BFSIZE	-0.06
INDIR	-0.03
FORDIR	-0.1
GENDER	0.23***
BOMEET	0.08
DUALITY	
ADCOM	2.15***
Control variables:	
SIZE	-0.04***
ROA	0.03
LEV	-0.29
Year fixed effect	Yes
Industry effect	Yes
No of firm year obs.	800
R2	0.02

Source: Developed by the authors

Notes: (1) \*, \*\*, \*\*\* significance at 10%, 5%, and 1% confidence levels, respectively.

(2) See Table 2 for variable definitions.

**4.5.2 Endogeneity Test:** Following Saha & Khan (2024b) and Khan et al. (2019), we took into account the interaction between CG factors in order to address any endogeneity concerns in our study. According to these researches, businesses may purposefully choose members of their boards or subcommittees to fit with their corporate culture (Saha & Khan, 2024b). To take this into account, we employed the two-stage least squares (2SLS) technique, which is detailed in Table 6.

Using this approach, we addressed Cho and Kim (2003) by treating the number of independent directors as an endogenous variable that depended on the company's

overall size. BSEC (2018) mandates that listed firms have a minimum of 20% independent directors.

The 2SLS results, shown in Table 7, approve the validity and consistency of our conclusions by addressing potential endogeneity issues. We find that foreign directors and the audit committee remain statistically significant, supporting our main findings from Table 5. The results for CEO duality are also consistent with our primary results. Furthermore, the statistics of Durbin-Wu-Hausman, which range from 1.5 to 2.5, show that our model is appropriate (Ullah et al., 2018).

**Table 7: 2SLS regression results on the relationship between CG and ESGS**

<i>Dependent variable</i>	ESGS
<i>Independent variables (CG Matrix):</i>	
BFSIZE	-0.90
FORDIR	0.37***
GENDER	-0.06
BOMEET	-0.22
DUALITY	-22**
ADCOM	4.5***
<i>Control variables:</i>	
SIZE	0.03**
ROA	4.15*
LEV	-1.32
Year fixed effect	Y
Industry effect	Y
No of firm year obs.	800
R2	0.09
<u>Durbin–Wu– Hausman</u>	2.27

Source: Developed by the authors

Notes: (1) \*, \*\*, \*\*\* significance at 10%, 5%, and 1% confidence levels, respectively. (2) See Table 2 for variable definitions.

## 5. Conclusion

The importance of examining sustainability disclosures from the viewpoints of stakeholders and regulators is growing as ESG research advances. However, such analyses are notably scarce in developing countries (Braam & Peeters, 2018; Saha & Khan, 2024b). Bangladesh, a rapidly growing emerging economy, has achieved significant economic progress through export-led industrialization. Nonetheless, this growth comes at a considerable environmental cost, as reflected in its lower rankings in the Global Climate Risk Index 2021 (GCRI, 2021) and the Global Environmental Performance Index 2020 (Wendling et al., 2020; Saha & Khan, 2024b). Consequently, ESG issues are drawing attention from the broader community, including government and regulatory bodies, which are now focusing on legislative measures to exert pressure on firms (Boiral et al., 2019; Chang et al., 2015; Saha & Khan, 2024b). In response, BSEC has recently

updated regulations to promote good governance and climate-friendly practices (BSEC, 2018).

This paper examines the regulatory influences on ESG practices in environmentally sensitive firms, which contribute significantly to climate degradation (Elmagrhi et al., 2019; Saha & Khan, 2024b). According to the study, ESG disclosures are positively impacted by board size, audit committees, independent directors, international directors, and female directors. On the other hand, CEO duality has a detrimental effect on ESG disclosures, which is consistent with theory. Our study complements to the existing literature on business strategies, environmental management, and policy implications within emerging economies by offering empirical evidence regarding the effect of corporate governance on ESG in Bangladesh, a nation that has limited enforcement of climate regulations (Chang

et al., 2015; Saha & Khan, 2024b). Using content analysis based on the GRI framework, this study offers treasured understandings for policymakers and regulators like BSEC is responsible for developing CG guideline. It also highlights areas where certain corporate governance variables (i. e. board meeting and gender diversity) show weak connections with ESG disclosures.

There are various constraints on this study. Firstly, it concentrates solely on environmentally conscious companies listed on DSE, which may restrict the applicability of the results to other settings. Secondly, future studies should explore additional variables such as ownership structure, family influence, educational backgrounds of both male and female directors, cultural diversity, firm age, categories of firms, affiliations within business groups, and prevailing economic conditions. Moreover,

### Authors' Contribution

All authors contributed to the study. Imran Khan and Dr Anup Kumar Saha carried out conceptualisation. The data collection was performed by Mr Khan, Md. Anisul Islam Sajib, and Md. Mahbulul Alam Siddiqui. The methodology and formal analysis were

while our dataset encompasses companies from 2014 to 2021 that consistently report ESG information, the inclusion of specifics regarding ESG investments and qualitative research—such as interviews and case studies with corporate leaders and investors—could yield richer insights into the motivations and perceptions behind ESG reporting. In addition, we the most recent data were not incorporated and the future research can be carried out accommodating most recent data.

In conclusion, this study represents a step forward in considerate the complex relationship between ESG disclosures and corporate governance. It illuminates the crucial role of corporate governance in ESG practices and offers practical guidance for corporations and regulatory bodies, promoting more robust, transparent, and responsible reporting in the context of sustainable corporate practices.

carried out by Mr Khan, with all authors contributing to the writing of the original draft. The responses to review comments and subsequent updates were carried out by Mr Khan and Dr. Saha. Finally, all the authors read and approved the final manuscript.

### References

Abbott, L. J., Daugherty, B., Parker, S., & Peters, G. F. (2016). Internal audit quality and financial reporting quality: The joint importance of independence and competence. *Journal of Accounting Research*, 54(1), 3–40.

Abdi, Y. , Li, X. , & Càmara-Turull, X. (2022). Exploring the impact of sustainability (ESG) disclosure on firm value and financial performance (FP) in airline industry: The moderating role of size and age. *Environment, Development and Sustainability*, 24(4), 5052–16.

Al Amosh, H., & Khatib, S. F. (2021). Corporate governance and voluntary disclosure of sustainability performance: The case of Jordan. *SN Business & Economics*, 1(12), 1–22.

Al Kurdi, A. , Al Amosh, H. , & Khatib, S. F. (2023). The mediating role of carbon emissions in the relationship between the board attributes and

ESG performance: European evidence. *Euro Med Journal of Business*.

Alkayed, H., & Omar, B. F. (2022). Determinants of the extent and quality of corporate social responsibility disclosure in the industrial and services sectors: the case of Jordan. *Journal of Financial Reporting and Accounting*.

Alnabsha, A., Abdou, H. A. , Ntim, C. G. , & Elamer, A. A. (2018). Corporate boards, ownership structures and corporate disclosures: Evidence from a developing country. *Journal of Applied Accounting Research*, 19(1), 20–41.

Alodat, A. Y., & Hao, Y. (2025). Environmental, social and governance (ESG) disclosure and firm performance: moderating role of board gender diversity and sustainability committee. *Sustainable Development*, 33(1), 636–651.

Alsaifi, K. , Elnahass, M. , & Salama, A. (2019). Carbon disclosure and financial performance:

- UK environmental policy. *Business Strategy and the Environment*, 29(2), 711–726.
- Al-Shaer, H., & Zaman, M. (2019). CEO Compensation and Sustainability Reporting Assurance: Evidence from the UK. *Journal of Business Ethics*, 158(1), 233–252.
- Amran, A., Lee, S. P., & Devi, S. S. (2014). The influence of governance structure and strategic corporate social responsibility toward sustainability reporting quality. *Business Strategy and the Environment*, 23(4), 217–235.
- Bangladesh Securities and Exchange Commission. (2018). Corporate Governance Code. [https://www.sec.gov.bd/slaws/Corporate\\_Governance\\_Code\\_10.06.2018.pdf](https://www.sec.gov.bd/slaws/Corporate_Governance_Code_10.06.2018.pdf) (accessed 15 March 2023).
- Beekes, W., & Brown, P. (2013). Do better-governed Australian firms make more informative disclosures?. In *Financial Accounting and Equity Markets* (pp. 233–261). Routledge.
- Belal, A. R., & Cooper, S. (2011). The absence of corporate social responsibility reporting in Bangladesh. *Critical Perspectives on Accounting*, 22(7), 654–667.
- Bjørnåli, E., & Sannes, R. (2020). The Nordic model of corporate social responsibility. In *Handbook of Research on Corporate Social Responsibility and Sustainability in Contemporary Capitalism* (pp. 272–290). IGI Global.
- Boiral, O., Heras-Saizarbitoria, I., & Brotherton, M. C. (2019). Nature connectedness and environmental management in natural resources companies: an exploratory study. *Journal of Cleaner Production*, 206, 227–237.
- Braam, G., & Peeters, R. (2018). Corporate sustainability performance and assurance on sustainability reports: Diffusion of accounting practices in the realm of sustainable development. *Corporate Social Responsibility and Environmental Management*, 25(2), 164–181.
- Briem, C. R., & Wald, A. (2018). Implementing third-party assurance in integrated reporting: Companies' motivation and auditors' role. *Accounting, Auditing & Accountability Journal*, 31(5), 1461–1485.
- Brooks, C., & Oikonomou, I. (2017). The effects of environmental, social and governance disclosures and performance on firm value: A review of the literature in accounting and finance. *The British Accounting Review*, 50(1), 1–15.
- Cho, D. S., & Kim, J. (2003). Determinants in introduction of outside directors in Korean companies. *Journal of International and Area Studies*, 10(1), 1–20.
- Clarkson, P. M., Li, Y., Richardson, G. D., & Vasvari, F. P. (2008). Revisiting the relation between environmental performance and environmental disclosure: An empirical analysis. *Accounting, Organisations and Society*, 33, 303–327.
- Crifo, P., Forget, V. D., & Teysier, S. (2015). The price of environmental, social and governance practice disclosure: An experiment with professional private equity investors. *Journal of Corporate Finance*, 30, 168–194.
- Cucari, N., Esposito De Falco, S., & Orlando, B. (2018). Diversity of board of directors and environmental social governance: Evidence from Italian listed companies. *Corporate Social Responsibility and Environmental Management*, 25(3), 250–266.
- Cui, X., Peng, X. Jia, J., & Wu, D. (2020). Does board independence affect environmental disclosures by multinational corporations? Moderating effects of national culture. *Applied Economics*, 52(52), 5687–5705.
- Dalton, C. M., & Dalton, D. R. (2005). Boards of directors: Utilising empirical evidence in developing practical prescriptions. *British Journal of Management*, 16(1), 91–97.
- Datt, R. R., Luo, L., & Tang, Q. (2019). The Impact of Legitimacy Threat on the Choice of External Carbon Assurance: Evidence from the United States. *Accounting Research Journal*, Vol. 32(2), 181–202.
- Diez-Cañamero, B., Bishara, T., Otegi-Olaso, J. R., Minguez, R., & Fernández, J. M. (2020). Measurement of corporate social responsibility: A review of corporate sustainability indexes, rankings and ratings. *Sustainability*, 12(5), 21–53.
- Elmagrhi, M. H., Ntim, C. G., Elamer, A. A., & Zhang, Q. (2019). A study of environmental policies and regulations, governance structures and environmental performance: The role of female directors. *Business Strategy and the Environment*, 28(1), 206–220.
- Elmghaamez, I. K., Nwachukwu, J., & Ntim, C. G. (2024). ESG disclosure and financial performance of multinational enterprises: The moderating effect of board standing committees. *International Journal of Finance & Economics*, 29(3), 3593–3638.
- Estelyi, K. S., & Nisar, T. M. (2016). Diverse boards: Why do firms get foreign nationals on their boards? *Journal of Corporate Finance*, 39, 174–192.

- European Commission. (2021). Corporate social responsibility. Retrieved from [https://ec.europa.eu/info/business-economy-euro/growth-and-investment/corporate-social-responsibility\\_en](https://ec.europa.eu/info/business-economy-euro/growth-and-investment/corporate-social-responsibility_en)
- Fernandes, S. M., Bornia, A. C., & Nakamura, L. R. (2019). The influence of boards of directors on environmental disclosure. *Management Decision*, 57(9), 2358–2382.
- Frias-Aceituno, J. V., Rodriguez-Ariza, L., & Garcia-Sanchez, I. M. (2013). The Role of the Board in the Dissemination of Integrated Corporate Social Reporting. *Corporate Social Responsibility and Environmental Management*, 20(4), 219–233.
- García-Martín, C. J., & Herrero, B. (2020). Do board characteristics affect environmental performance? A study of EU firms. *Corporate Social Responsibility and Environmental Management*, 27(1), 74–94.
- García-Sánchez, I. M., Rodríguez-Domínguez, L., & Frías-Aceituno, J. V. (2015). Board of Directors and ethics codes in different corporate governance systems. *Journal of Business Ethics*, 131(3), 681–698.
- GCRI(2021).<https://www.germanwatch.org/en/19777>(accessed 24 May 2024).
- Grecco, M. C. P., Milani Filho, M. A. F., Segura, L. C., Sanchez, I. M. G., & Dominguez, L. R. (2013). The Voluntary Disclosure of Sustainable Information: A Comparative Analysis of Spanish and Brazilian Companies. *Journal of Accounting and Organisations*, 7(17), 45–55.
- Greenwood, R., Oliver, C., Suddaby, R., & Sahlin, K. (2013). *The Sage Handbook of Organizational Institutionalism*. SAGE.
- GRI (2021). GRI Standards.<https://www.global-reporting.org/how-to-use-the-gri-standards/gri-standards-english-language/> (accessed 15 March 2024)
- Haque, F. (2017). The effects of board characteristics and sustainable compensation policy on carbon performance of UK firms. *The British Accounting Review*, 49(3), 347–364.
- Haque, F., & Ntim, C. G. (2018). Environmental Policy, Sustainable Development, Governance Mechanisms and Environmental Performance. *Business Strategy and the Environment*, 27(3), 415–435.
- Harjoto, M., Laksmana, I., & Lee, R. (2014). Board diversity and corporate social responsibility. *Journal of Business Ethics*, 132, 1–20.
- Helfaya, A. , Whittington, M. & Alawattage, C. (2019). Exploring the quality of corporate environmental reporting: Surveying preparers' and users' perceptions. *Accounting, Auditing and Accountability Journal*, 32(1), 163–193.
- Hussain, N., Rigoni, U., & Orij, R. P. (2018). Corporate Governance and Sustainability Performance: Analysis of Triple Bottom Line Performance. *Journal of Business Ethics*, 149(2), 411–432.
- Ibrahim, A. H. , & Hanefah, M. M. (2016). Board diversity and corporate social responsibility in Jordan. *Journal of Financial Reporting and Accounting*, 14(2), 279–298.
- Isidro, H. , & Sobral, M. (2014). The effects of women on corporate boards on firm value, financial performance, and ethical and social compliance. *Journal of Business Ethics*, 132, 1–19.
- Jizi, M. (2017). The influence of board composition on sustainable development disclosure. *Business Strategy and the Environment*, 26(5), 640–655.
- Kanter, R. M. (2008). *Men and women of the corporation*. Basic books.
- Karim, A. E., Albitar, K., & Elmarzouky, M. (2021). A novel measure of corporate carbon emission disclosure, the effect of capital expenditures and corporate governance. *Journal of Environmental Management*, 290, 112581.
- Katmon, N., Mohamad, Z. Z., Norwani, N. M., & Farooque, O. A. (2019). Comprehensive board diversity and quality of corporate social responsibility disclosure: Evidence from an emerging market. *Journal of business ethics*, 157, 447–481.
- Khan, A., Muttakin, M. B., & Siddiqui, J. (2013). Corporate governance and corporate social responsibility disclosures: evidence from an emerging economy. *Journal of Business Ethics*, 114(2), 207–223.
- Khan, I., Khan, I., & Saeed, B. B. (2019). Does board diversity affect quality of corporate social responsibility disclosure? Evidence from Pakistan. *Corporate social responsibility and environmental management*, 26(6), 1371–1381.
- Khan, I., Saha, A. K., Kamal, Y., & Islam, M. S. (2025). Do ownership structure and board composition matter in firm performance? Regulatory influence in developing economy. *International Journal of Disclosure and Governance*, 22(1), 263–283.

- Khurshid, R., & Islam, A. U. (2024). ESG literature mapping: insights from bibliometric analysis. *International Journal of Disclosure and Governance*, 1-28, 00(0), 00-00.
- Kim, C. H., Amaeshi, K., Harris, S., & Suh, C. J. (2013). CSR and the National Institutional Context: The Case of South Korea. *Journal of Business Research*, 66(12), 2581-2591.
- Liao, L., Luo, L., & Tang, Q. (2015). Gender diversity, board independence, environmental committee and greenhouse gas disclosure. *British Accounting Review*, 47(4), 409-424.
- Lu, J., & Herremans, I., M. (2019). Board gender diversity and environmental performance: An industries perspective. *Business Strategy and the Environment*, 28(7), 1449-1464.
- Luo, L., & Tang, Q. (2021). Corporate governance and carbon performance: Role of carbon strategy and awareness of climate risk. *Accounting & Finance*, 61(2), 2891-2934.
- Meyer, J. W., & Rowan, B. (1977). Institutionalized organizations: Formal structure as myth and ceremony. *American journal of sociology*, 83(2), 340-363.
- Muttakin, M. B., Khan, A., & Subramaniam, N. (2015). Firm, board diversity and corporate social responsibility: Evidence from Bangladesh. *Pacific Accounting Review*, 27, 353-372.
- Nath, S. D., Islam, S., & Saha, A. K. (2015). Corporate board structure and firm performance: the context of pharmaceutical industry in Bangladesh. *International Journal of Economics and Finance*, 7(7), 106-115.
- Neter, J., Wasserman, W. & Kutner, M. H. (1985). *Applied Linear Statistical Models*. Mc-Graw-Hill.
- Nguyen, T. H. H., Elmagrhi, M. H., Ntim, C., & Wu, Y. (2021). Environmental performance, sustainability, governance and financial performance: evidence from heavily-polluting industries in China. *Business Strategy and the Environment*, 30(5), 2313-2331.
- Nicolo', G., & Andrades-Peña, F. J. (2024). Does corporate governance influence environmental, social and governance disclosure practices of state-owned enterprises? An international study. *Corporate Social Responsibility and Environmental Management*.
- Ntim, C. G., Lindop, S., & Thomas, D. A. (2013). Corporate governance and risk reporting in South Africa: A study of corporate risk disclosures in the pre- and post-2007/2008 global financial crisis periods. *International Review of Financial Analysis*, 30, 363-383.
- Outmane, F., Zouhair, H., & Hamza, B. (2024). Environmental, Social, and Governance (ESG) Communication in the Annual Reports of Financial Institutions: Evidence From Morocco. In *The Emerald Handbook of Ethical Finance and Corporate Social Responsibility: A Framework for Sustainable Development* (pp. 227-246). Emerald Publishing Limited.
- Palmer, D. A., Jennings, P. D., & Zhou, X. (1993). Late adoption of the multidivisional form by large US corporations: Institutional, political, and economic accounts. *Administrative science quarterly*, 100-131.
- Saha, A. K. (2019). Relationship between corporate social responsibility performance and disclosures: commercial banks of Bangladesh. *Social Responsibility Journal*, 15(4), 451-468.
- Saha, A. K. and Khan, I. (2024a). Sustainable Prosperity: Unravelling the Nordic Nexus of ESG, Financial Performance, and Corporate Governance. *European Business Review*, 00(0), 00-00.
- Saha, A. K. and Khan, I. (2024b). Regulatory influence, board characteristics and climate change disclosures: Evidence from environmentally sensitive firms in developing economy context, *Corporate Governance: The International Journal of Business in Society*, 00(0), 00-00.
- Saha, A. K., & Akter, S. (2012). Relationship between Environmental Reporting in Corporate Annual Reports & Corporate Profitability in Bangladesh. *Independent Business Review*, 5(2), 91-111.
- Saha, A. K., & Akter, S. (2013). Corporate Governance and Voluntary Disclosure Practices of Financial and Non-Financial Sector Companies in Bangladesh. *Journal of Applied Management Accounting Research*, 11(2).
- Saha, A. K., & Khan, I. (2024c). Disaggregating air, water and renewable energy disclosures in developing economies: the role of regulatory impact and board characteristics. *Journal of Applied Accounting Research*, (ahead-of-print).
- Saha, A. K., Al-Shaer, H., Dixon, R., & Demirag, I. (2021b). Determinants of carbon emission disclosures and UN sustainable development goals: The case of UK higher education institutions. *Australian Accounting Review*, 31(2), 79-107.
- Saha, A. K., Dunne, T., & Dixon, R. (2021a). Carbon disclosure, performance and the green reputation of higher educational institutions in the UK. *Journal of Accounting & Organizational Change*, 17(5), 604-632.

- Saha, A. K., Saha, B., Choudhury, T., & Jie, F. (2019). Quality versus volume of carbon disclosures and carbon reduction targets: Evidence from UK higher education institutions. *Pacific Accounting Review*, 31(3), 413-437.
- Saha, B., Saha, A. K., & Khan, M. (2019). Research on social and environmental accounting: Current trends and future approaches. *Indonesian Journal of Sustainability Accounting and Management*, 3(2), 119-136.
- Siddiqui, J., & Uddin, S. (2016). Human rights disasters, corporate accountability and the state: Lessons learned from Rana Plaza. *Accounting, Auditing and Accountability Journal*, 29(4), 679-704.
- Simpson, N. Y., Aboagye-Otchere, F., & Ahadzie, R. (2021). Assurance of environmental, social and governance disclosures in a developing country: perspectives of regulators and quasi-regulators. *Accounting Forum*, 46(2), 109-133.
- SolAbility. (2024). Global Sustainable Competitiveness Index (GSCI). Retrieved from <https://solability.com/the-global-sustainable-competitiveness-index> (accessed 20 March 2025).
- Tabachnick, B. G. , & Fidell, L. S. (2001). *Using Multivariate Statistics*, Allyn and Bacon.
- Tang, Q. (2019). Institutional Influence, Transition Management and the Demand for Carbon Auditing: The Chinese Experience. *Australian Accounting Review*, 29(2), 376-394.
- Ullah, S., Akhtar, P., & Zaefarian, G. (2018). Dealing with endogeneity bias: The generalized method of moments (GMM) for panel data. *Industrial Marketing Management*, 71, 69-78.
- Wang, Y., Yekini, K., Babajide, B., & Kessy, M. (2022). Antecedents of corporate social responsibility disclosure: evidence from the UK extractive and retail sector. *International Journal of Accounting & Information Management*, 30(2), 161-188.
- Wang, Z., & Sarkis, J. (2017). Corporate social responsibility governance, outcomes, and financial performance. *Journal of cleaner production*, 162, 1607-1616.
- Wendling, Z. A. , Emerson, J. W. , de Sherbinin, A. , & Esty, D. C. (2020). *Environmental Performance Index (Yale Center for Environmental Law & Policy)*.
- World Bank. (2012). *Bangladesh: Towards accelerated, inclusive and sustainable growth—opportunities and challenges*. Report 67991. Poverty Reduction and Economic Management Unit, South Asia Region.
- Yusoff, H., Ahman, Z., & Darus, F. (2019). The influence of Corporate Governance on corporate social responsibility disclosure: A focus on accountability. *Academy of Accounting and Financial Studies Journal*, 23(1), 1-16.
- Zou, H., Xie, X., Qi, G., & Yang, M. (2019). The heterogeneous relationship between board social ties and corporate environmental responsibility in an emerging economy. *Business Strategy and the Environment*, 28(1), 40-52.

## Appendix A

Table A: GRI Standards-based ESG

GRI Standards	Codes	GRI disclosures
11, 12, 13, 305	E1	Information related to the level of air pollution and control.
3, 12, 13, 303	E2	Information related to the level of water pollution and control.
11, 12, 306	E3	Information related to the level of waste management and investment.
3, 302	E4	Information related to the level of energy savings and improvements.
3, 302	E5	Information related to renewable energy and investment.
2,11	E6	Information related to the implementation of environmental, ecological and carbon management policy and strategy.
11	E7	Information related to gaining environmental certification, honour, award, or appreciation for environmental initiatives and protections.
3	E8	Information related to the environmental committee, separate department of environment and CSR.
2, 3	E9	Information related to important environmental initiatives and events, policy, strategy and implementation.
2,11	E10	Information related to community initiatives including tree plantation and forestry.
3,13, 401,404	E11	Information related to important environmental events, training and awareness programs.
3,13	E12	Information related to climate changes and global warming.