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From Transparency to Sustainability: The Role of Climate Change and Social Responsibility Disclosure in Enhancing Sustainable Performance

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ABSTRACT

This study examines the impact of climate change disclosure (CCD) and corporate social responsibility (CSR) on sustainable performance in Asian companies from 2018 to 2023, highlighting the growing demand for transparency in corporate environmental and social practices. Based on a sample of 1,623 companies and 9,738 firm-year observations, the study uses multiple regression analysis to evaluate the relationship between CCD, CSR, and sustainable performance. Firms with incomplete data were excluded to ensure accuracy. Results show that high-quality CCD and CSR significantly improve economic, social, and environmental performance. Better disclosure is linked to stronger outcomes across all sustainability dimensions. The focus on Asian firms between 2018 and 2023 may limit the applicability of results to other regions. The study provides empirical support for policymakers to enhance sustainability reporting standards. It also promotes investor confidence and encourages responsible corporate behaviour aligned with sustainable development goals. This research enriches the literature by exploring CCD and CSR as drivers of sustainability in emerging Asian markets, emphasizing transparency as a strategic path to long-term value.

Keywords: Accounting Disclosure, Climate Change, Social Responsibility, Sustainable Performance, Risk Governance.
JEL Classification: M14, M40, M41, Q56.

1. INTRODUCTION

In light of the increasing environmental challenges our world faces today due to societal issues and environmental disasters related to climate risks, climate change has garnered significant attention as one of the most challenging and complex issues confronting the world today (Demers et al., 2024). Climate action failure is among the top ten most severe and complex risks worldwide. “Climate change” refers to climate variations attributed directly or indirectly to human activities that alter the composition of the global atmosphere, in addition to “observed natural climate changes over similar periods (Mondal and Bauri, 2024).” Excessive greenhouse gas (GHG) emissions have been considered the primary contributor to human-induced global climate change (Demers et al., 2024; Jameel et al., 2025). The international community, through its leaders, warns that climate change poses risks to the planet and its inhabitants, and therefore must be addressed through intensified efforts at the global level (Batruch, 2017). The effects of climate change will continue to worsen as greenhouse gas emissions rise, emphasizing the increasing need to anticipate and understand the impact of climate change risks on corporate performance (Liu et al., 2024).

Climate change disclosure (CCD) and social responsibility (SR) constitute fundamental pillars that reflect corporate commitment to transparency and sustainability (Song et al., 2025). The quality of these disclosures is not merely a technical metric but also an indicator of corporate awareness of their ethical duties

and roles in addressing environmental and social changes. Companies committed to environmental, social, and governance (ESG) disclosures achieve better performance across all three sustainability dimensions (Alsayegh et al., 2020).

Climate-related considerations have become a key concern for sustainable investors. Addressing the lack of high-quality and comparable climate risk information available to investors, The International Sustainability Standards Board (ISSB), in collaboration with the International Organization of Securities Commissions (IOSCO) and various individual securities regulators around the world, recently issued the IFRS S2 Climate Risk Disclosures Standard (Demers et al., 2024). However, a constraint on this type of disclosure is that the cost incurred in producing high-quality climate change information may exceed the benefits of disclosure (Park et al., 2023). Additionally, the material impact of climate change has significant economic costs at both national and global levels. Climate change can impose various emerging risks on corporate operational and financial activities (Bauri et al., 2024).

Sustainable development has followed a similar path and represents an evolution of sustainable development, which emerged in the 1970s. The Brundtland Commission argued that sustainable development means achieving progress and development that meets the needs of the present without compromising the ability of future generations to meet their own needs. Although this concept has faced criticism, it captures the fundamental temporal aspect of human impacts on the natural environment (Guest, 2010; Guo et al., 2022). Climate change has also been identified as an emerging threat to sustainability. Researchers worldwide have found that climate risks are a key consideration for investors and other stakeholders in decision-making processes (Mondal and Bauri, 2024).

Given the scarcity of literature on measures to improve CCD quality, many previous studies have addressed the management approach, relying on the Global Reporting Initiative (GRI) guidelines as a reference for assessing the quality of environmental disclosure, despite some fundamental limitations within this framework. In contrast, other studies have focused on the importance of governance mechanisms and their role in driving companies to improve the quality of their disclosures. (Abdullah et al., 2020). Therefore, there is an urgent need for research on climate, environment, and society in Asian countries. Due to the gap in accounting literature in this field, this study aims to provide in-depth insights into these issues by highlighting evidence from the Asian context through a comprehensive analysis. Furthermore, this study seeks to clarify how CCD quality impacts sustainable performance while also examining the influence of SR on sustainable performance. This, in turn, enriches the scientific discourse and paves the way for developing policies and strategies that support comprehensive sustainable development.

This study provides new contributions to regulators and policy makers regarding the drivers of interest in climate change initiatives in Asia. Additionally, it contributes to achieving sustainability goals, including climate action and the adoption of clean energy. The novelty of this research lies in the methods used to describe CCD quality, which is crucial for stimulating sustainable investments, climate finance, and improving corporate reporting.

2. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

2.1. Climate Change Disclosure (CCD) and Sustainable Performance (SP)

Some studies have explored the relationship between climate change and sustainability (MacDonald, 2010), but little attention has been paid to the link between CCD and SP. There are already some synergies between CCD policies and sustainable development agendas in developing countries, such as policies related to renewable energy, transportation, and sustainable land use. Although policymakers have paid limited attention to this issue so far, climate change policies could provide substantial co-benefits for the local environment. (Beg et al., 2002). Therefore, enhancing adaptive capacity, as a tool to reduce climate risks, complements mitigation efforts, improves socio-economic stability, and expands attractive investment opportunities, thereby strengthening sustainable development prospects (Yohe et al., 2006). Climate change has garnered significant attention from academics, stakeholders, and investors in understanding the role of companies in managing and disclosing climate change-related information. There is an urgent need to formulate a climate change governance and disclosure theory to enhance sustainability reporting by exploring agency, institutional, legitimacy, stakeholder, resource dependence, and signaling theories (Alam and Costa, 2024).

One of the consequences of keeping climate change and sustainable development as separate discourses is the difference in emission scenarios and economic development trajectories generated by each. Another consequence is that strategies aimed at reducing greenhouse gas emissions are designed and evaluated within a narrowly defined technical context, separate from the underlying economic and social forces (Cohen et al., 1998:1). Integrating approaches, concepts, and methods from climate change and sustainable development fields may yield significant benefits (Robinson and Herbert, 2001).

The interconnection between climate science and sustainability science is crucial. If climate change is addressed in isolation from sustainability issues, the broader picture is overlooked. Climate change cannot be ignored in the pursuit of sustainability science; rather, it provides an opportunity for the practical application of sustainability science (Pachauri, 2008). The magnitude of observed impacts and expected future consequences of climate change has drawn public and policymaker attention not only to climate change adaptation and mitigation but also to current development concepts. It is increasingly recognized that CCD and SP interact in a circular manner. Specifically, climate change vulnerability and its impacts affect development prospects (Pelikanova et al., 2024). Climate changes resulting from human activities have created significant challenges for sustainability by depleting natural resources (Agovino et al., 2019). The impact of sustainability reporting on corporate performance in developing climates has also been studied. Findings indicate a positive relationship between sustainability reporting and corporate performance, with

sustainability disclosure levels being lower in developing climates than in other advanced climates (Aifuwa, 2020).

Arian and Sands (2024) provided evidence of limited climate risk disclosure among companies, suggesting that organizations have yet to fully acknowledge climate-related risks. Their findings further support a link between higher corporate environmental disclosure and greater corporate resilience to financial and environmental risks, as opposed to comprehensive sustainability risk disclosure.

Zhang et al. (2023) claimed that lower returns on assets indicate relatively weaker financial performance among companies in countries facing high climate risks. Companies in high-risk countries tend to hold more long-term debt, whereas those in lower-risk countries hold less long-term debt. Dawkins and Fraas (2011) found a positive relationship between environmental performance and voluntary CCD, demonstrating that corporate vision and climate change perspectives interact with environmental performance to influence voluntary disclosure levels. Similarly, Maji and Kalita (2022) identified a positive relationship between CCD and corporate financial performance. Based on the findings of previous studies, the following primary hypothesis is formulated:

H_1: There is a positive impact of climate change disclosure on corporate sustainable performance in emerging Asian markets.

2.2. Social Responsibility (SR) and Sustainable Performance (SP)

Social responsibility (SR) can be distinguished from sustainability, explaining that the former reflects voluntary practices at the company level, while sustainability is a more comprehensive concept that integrates economic, social and environmental dimensions, in order to avoid any potential confusion (Chang and Yoo, 2023; Ionaşcu et al., 2022; Liu and Jung, 2021; Zhang and Su, 2023). Corporate social responsibility (SR) and sustainability are often debated as either synonymous or distinct concepts. While SR typically focuses on social issues, sustainability is linked to environmental concerns (Strand et al., 2015). Despite their differing origins, both terms influence decision-making in investment, policy, and strategy. Their interchangeable use has caused confusion among managers, regulators, and the public. SR applies to individual organizations, "corporate sustainability" to environmental strategies within firms, "sustainable development" to public policy, and "sustainability" to all levels—local to global (Sheehy and Farneti, 2021).

Corporations are increasingly responsible—voluntarily or by expectation—for sustainable development goals such as climate action, resource management, and community well-being (Ratnawati et al., 2024). SR practices reduce waste and promote resource efficiency (Madanaguli et al., 2022). While the social dimension is often the weakest, the environmental dimension of SR greatly contributes to sustainable environmental performance (Meseguer-Sánchez et al., 2021). Murray et al. (2010) found a positive link between SR and sustainability, advocating for inter-agency collaboration toward global environmental responsibility. Sustainable management also requires internal focus, such as employee well-being. Organizations are expected to engage directly with the sustainable development agenda through SR (Sánchez-Hernández et al., 2021).

Integrating SR disclosures with environmental and social initiatives supports sustainable development. Li et al. (2023) reports that shareholder and employee responsibilities correlate positively with financial outcomes, and higher environmental responsibility in SR disclosures drives green innovation. Belas et al. (2021) confirm that SR implementation enhances all sustainability factors in SMEs in Central Europe. Thus, corporate sustainable performance is shaped by internal and external factors, including disclosure and environmental-social aspects. Waris and Din (2024) highlights that high SR disclosure and climate policy uncertainty negatively affect ROA, while SR disclosure increases social (SC) and governance (GOV) scores. Climate policy uncertainty (CPU) also reduces ROE. Alsayegh et al. (2020) found that disclosure of social responsibility practices is positively related to economic, social, and environmental sustainability in Asian firms, which generally perform better when adopting ESG standards. In light of previous studies, the following hypothesis is proposed:

H_2: There is a positive effect of corporate social responsibility on sustainable performance of in Asian firms.

Furthermore, the conceptual framework of the study's hypotheses and variables can be illustrated in Figure 1.

3. RESEARCH DESIGN

3.1. Sample and Data

A sample of companies operating in Asia from 2018 to 2023 was selected from the World Bank Database, Thomson Reuters Database, and Bloomberg Database. Currently, there are 49 countries in Asia, based on the official indicators of the United Nations. A sample of 20 countries was chosen based on the availability of complete data. A comprehensive analysis of data sources was conducted, and after excluding firms with missing data, a final sample of 1,623 companies was identified across various sectors, comprising 9,738 firm-year observations. The details are presented in Table 1.

Table 1: Research sample for the period 2018-2023

Country	No. of firms	Percentage of firms	No. of observations	Percentage of observations
China	180	11.09	1080	11.09
Japan	380	23.41	2280	23.41
South Korea	110	6.78	660	6.78
Malaysia	45	2.77	270	2.77
Hong Kong	125	7.70	750	7.70
Indonesia	40	2.46	240	2.46
India	20	1.23	120	1.23
Singapore	33	2.03	198	2.03
Taiwan	110	6.78	660	6.78
Thailand	30	1.85	180	1.85
Iraq	140	8.63	840	8.63
Qatar	20	1.23	120	1.23
Kuwait	16	0.99	96	0.99
Saudi Arabia	140	8.63	840	8.63
UAE	28	1.73	168	1.73
Jordan	22	1.36	132	1.36
Oman	8	0.49	48	0.49
Iran	160	9.86	960	9.86
Bahrain	10	0.62	60	0.62
Syria	6	0.37	36	0.37
	1623	100.00	9738	100.00

Table 2 presents the distribution of companies in the research sample according to their respective industries. The industrial sector is the most represented in the sample, accounting for 31.47%, followed by the financial sector at 21.61%. In contrast, the least represented sectors include the agricultural sector at 2.90%, followed by the tourism and hotel sector at 3.04%, as shown in Table 2.

Data on CCD and SR are collected from the Bloomberg database and the World Bank database, which provide economic, environmental, social, governance (ESG), and climate-related information from financial and non-financial reports as well as corporate websites. Meanwhile, data on sustainable performance are obtained from the Thomson Reuters database and the World Bank database, which contain environmental and social sustainability information on over 5,000 companies worldwide (Alsayegh et al., 2020; Ali et al., 2024; Ghose et al., 2025). Given the different institutional and economic contexts across countries and sectors, it has been observed that emissions-intensive sectors, such as industry and energy, tend to disclose more environmental and climate indicators, while the financial and service sectors tend to focus on social and governance disclosure. The level of disclosure also varies across countries, depending on differences in legislation, financial market requirements, and the extent of governments' commitment to sustainability issues. These factors combined explain the variations that will be discussed in subsequent analyses.

3.2. Variable Measurement

Table 2: Classification of sample companies by industry

Sector	No. of observations	Percentage of observations
Industrials	3065	31.47
Financial	2104	21.61
Technology	910	9.34
Telecommunications	733	7.53
Real estate	688	7.07
Insurance	477	4.90
Investment	729	7.49
Services	454	4.66
Hotels and tourism	296	3.04
Agriculture	282	2.90
Total	9738	100.00

First: Climate change disclosure (CCD): is measured through content analysis based on the TCFD framework, which includes four dimensions (Ghose et al., 2025; Jameel et al., 2025): Each disclosed element scores 1, while non-disclosed elements score 0.

- Governance (GCC): Climate governance practices (4 elements)
- Strategy (SCM): Climate strategy and planning (4 elements)
- Risk management (MRC): Climate risk management (6 elements)
- Metrics and goals (MG): Climate-related data and targets (4 elements).

Second: Social responsibility (SR): the SR index evaluates a company's engagement in social responsibility based on disclosures in financial and non-financial reports. It includes 32 indicators across four dimensions: Environmental (ED), social (SD), human resources (HRD), product and service (PSD). Each disclosed indicator scores 1, and non-disclosed scores 0. The SR level is calculated by dividing the number of disclosed indicators by the total (32). This approach follows Ali et al. (2022; 2024).

Third: Sustainable performance (SP): is assessed across three dimensions (Alsayegh et al., 2020; Jitmaneeroj, 2016): Each dimension is scored from 0 to 100, with higher scores indicating better sustainability performance.

- Economic (ECN): Reflects financial health, resource efficiency, and long-term value through indicators like shareholder and employee loyalty.
- Social (SOC): Measures impact on people and society using data such as employee turnover, gender diversity, injury rates, customer complaints, and community investment.
- Environmental (ENV): Evaluates environmental impact through metrics on emissions, waste, resource use, renewable energy, and pollution control.

4. EMPIRICAL TESTS AND RESULTS

4.1. Descriptive Analysis

Table 3 displays the results of the descriptive analysis for all variables used in the study and the total recorded observations in the sample. The weighted total score ranges between 0 and 1 to minimize outliers.

Table 3: Descriptive analysis of research variables

Variable	Mean	Median	Standard deviation	Skewness	Kurtosis	Minimum	Maximum
CCD	0.439	0.487	0.180	−0.124	−0.084	0.108	0.781
GCC	0.412	0.450	0.176	0.134	0.284	0.100	0.775
SCM	0.405	0.450	0.165	−0.104	0.041	0.100	0.725
MRC	0.526	0.600	0.206	−0.490	−0.602	0.133	0.850
MG	0.412	0.450	0.176	0.134	0.284	0.100	0.775
SR	0.453	0.476	0.094	−0.205	−0.629	0.281	0.625
ED	0.472	0.500	0.152	−0.286	0.182	0.125	0.750
SD	0.415	0.438	0.130	−0.100	−0.871	0.188	0.625
HRD	0.396	0.375	0.123	0.314	−0.841	0.250	0.625
PSD	0.528	0.500	0.155	0.133	0.347	0.250	0.875
SP	0.476	0.477	0.134	−0.059	0.300	0.192	0.760
ECN	0.543	0.566	0.204	0.072	−0.021	0.200	0.900
SOC	0.425	0.429	0.135	−0.129	0.244	0.143	0.714
ENV	0.460	0.483	0.146	−0.106	−0.870	0.200	0.700

Results are interpreted based on the mean and median values. Additionally, Skewness and Kurtosis coefficients indicate that the data approximates a normal distribution, which justifies the selection of parametric statistical methods for further analysis (Khalaf and Hussein, 2024).

Table 3 presents the descriptive statistics for the study variables. The average CCD score is 0.439 (Median: 0.487), ranging from 0.108 to 0.781, indicating variation in the data, as reflected by a standard deviation of 0.180.

The Management of Climate-Related Risks (MRC) dimension has the highest mean value, followed by GCC (Climate Governance), MG (Metrics and Targets), and SCM (Climate Strategy).

The MRC dimension emerges as the strongest component of CCD, with a mean score of 0.526, as it pertains to risk management strategies that identify, analyze, and mitigate climate-related risks.

Regarding Corporate SR, Table 3 indicates that the average SR score is 0.453 (Median: 0.476), with values ranging between 0.281 and 0.625, suggesting low variance in the data, as indicated by the low standard deviation of 0.094.

The product and service dimension (PSD) has the highest mean score (0.528), followed by the environmental dimension (ED) at 0.472, the social dimension (SD) at 0.415, and lastly, the human resources dimension (HRD) at 0.396. Therefore, the PSD dimension is considered the strongest component of corporate SR since it directly relates to employee protection (safety, security, and insurance), as well as fostering communication and relationships between employees and the company.

The table also shows that the sustainable performance (SP) score is 0.476 (Median: 0.477), ranging from 0.192 to 0.760, reflecting variation in the data with a standard deviation of 0.134.

The economic performance (ECN) dimension has the highest mean score (0.543), followed by the environmental performance (ENV) at 0.460, and the social performance (SOC) at 0.425. Thus, ECN is the strongest component of sustainable performance, contradicting Alsayegh et al. (2020:11), who found that the environmental performance (ENV) dimension was the most significant in sustainable performance, with a mean score of 0.545.

Table 4 presents the descriptive statistics for the companies in the sample, classified by industry.

4.2. Correlation Analysis Results

Table 5 shows Pearson's linear correlation coefficients between all variables in the model. The results indicate no concerns regarding multicollinearity, as no strong correlation exists between independent variables.

Table 5 shows the initial analysis results, indicating a significant and positive correlation between CCD across all its dimensions (GCC, SCM, MRC, MG) and sustainable performance (SP) at a rate of 80%. The correlation with sustainable economic performance (ECN) reached 79%, with sustainable social performance (SOC) at 60%, and finally, the correlation with sustainable environmental performance (ECP) was 52%.

Table 5 also demonstrates the initial analysis results indicating a significant and positive relationship between SR in its two dimensions (SD, PSD) and sustainable performance (SP) at a rate of 86%. The correlation with sustainable economic performance (ECN) was 81%, with sustainable social performance (SOC) at 52%, and finally, the correlation with sustainable environmental performance (ECP) was 81%.

4.3. Regression Analysis Results

A multiple regression analysis is conducted to predict the relationship between the dependent variable (sustainable economic, social, and environmental performance) and the independent variables (CCD and SR) to test the main hypotheses (H_1, H_2).

H_1: There is a positive effect of CCD on Sustainable Performance (SP). This hypothesis is divided into three sub-hypotheses, based on the three dimensions of sustainable performance:

- H1.a: CCD positively affects Sustainable Economic Performance.
- H1.b: CCD positively affects Sustainable Social Performance.
- H1.c: CCD positively affects Sustainable Environmental Performance.

Table 6 presents the results of the regression analysis used to predict the extent to which the CCD impacts sustainable economic performance. The column "Variable" lists the independent variable (CCD) and its four dimensions (GCC, SCM, MRC, MG). The

Table 4: Descriptive analysis of companies by industry

Variable	Mean	Median	Standard deviation	Skewness	Kurtosis	Minimum	Maximum
Industrials	0.470	0.460	0.182	−0.053	−1.108	0.197	0.742
Financial	0.419	0.438	0.131	−0.305	−0.054	0.188	0.625
Technology	0.400	0.375	0.153	0.431	−1.461	0.250	0.625
Telecommunications	0.518	0.500	0.078	−0.283	−0.068	0.375	0.625
Real Estate	0.514	0.553	0.151	−0.181	−1.944	0.333	0.700
Insurance	0.435	0.429	0.170	0.042	0.141	0.143	0.733
Investment	0.449	0.460	0.113	−0.517	−0.005	0.233	0.611
Services	0.406	0.449	0.134	−0.150	−1.397	0.210	0.610
Hotels and Tourism	0.402	0.450	0.157	−0.565	−0.779	0.125	0.603
Agriculture	0.525	0.600	0.219	−0.698	−0.580	0.133	0.805

Table 5: Pearson correlation matrix

Coefficient	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. CCD	1													
Sig.	----													
2. GCC	0.997**	1												
Sig.	0.000	---												
3. SCM	0.998**	0.996**	1											
Sig.	0.000	0.000	---											
4. MRC	0.990**	0.978**	0.984**	1										
Sig.	0.000	0.000	0.000	---										
4. MG	0.997**	1.000**	0.996**	0.978**	1									
Sig.	0.000	0.000	0.000	0.000	---									
6. SR	0.812**	0.821**	0.811**	0.784**	0.821**	1								
Sig.	0.000	0.000	0.000	0.000	0.000	---								
7. ED	0.316	0.325	0.312	0.299	0.325	0.455*	1							
Sig.	0.175	0.162	0.181	0.201	0.162	0.044	---							
8. SD	0.619**	0.631**	0.619**	0.588**	0.631**	0.842**	0.081	1						
Sig.	0.004	0.003	0.004	0.006	0.003	0.000	0.735	---						
9. HRD	0.439	0.430	0.452*	0.436	0.430	0.627**	−0.249	0.796**	1					
Sig.	0.53	0.058	0.046	0.055	0.058	0.003	0.289	0.000	---					
10. PSD	0.802**	0.812**	0.792**	0.779**	0.812**	0.788**	0.261	0.501*	0.309	1				
Sig.	0.000	0.000	0.000	0.000	0.000	0.000	0.266	0.025	0.185	---				
11. SP	0.800**	0.807**	0.790**	0.783**	0.807**	0.865**	0.439	0.719**	0.429	0.898**	1			
Sig.	0.000	0.000	0.000	0.000	0.000	0.000	0.053	0.000	0.059	0.000	---			
12. ECN	0.796**	0.802**	0.782**	0785**	0.802**	0.816**	0.186	0.648**	0.472*	0.818**	0.898**	1		
Sig.	0.000	0.000	0.000	0.000	0.000	0.000	0.433	0.002	0.035	0.000	0.000	---		
13. SOC	0.608**	0.617**	0.615**	0.578**	0.617**	0.523*	0.267	0.896**	0.632**	0.739**	0.818**	0.656**	1	
Sig.	0.004	0.004	0.004	0.008	0.004	0.000	0.255	0.000	0.003	0.000	0.000	0.002	---	
14. ENV	0.527*	0.530*	0.513*	0.524	0.530*	0.812**	0.697**	0.244	−0.064	0.800**	0.739**	0.468*	0.408	1
Sig.	0.017	0.016	0.021	0.018	0.016	0.000	0.001	0.300	0.789	0.000	0.000	0.38	0.074	--

*Correlation is significant at the 0.05 level (2-tailed), **significant at the 0.01 level (2-tailed)

Table 6: The impact of CCD on sustainable economic performance (ECN)

Variable	Coefficient	Standard error	t-stat	Sig.	VIF values
CCD	0.901	0.161	5.583	0.000	1.000
GCC	0.926	0.163	5.687	0.000	1.000
SCM	0.965	0.181	5.331	0.000	1.000
MRC	0.778	0.144	5.384	0.000	1.000
MG	0.926	0.163	5.687	0.000	1.000
R- Square			0.697		
Adjusted R- Square			0.641		
F- statistic			12.297		
Sig. (F- statistic)			0.000		

Table 7: The impact of CCD on sustainable social performance

Variable	Coefficient	Standard error	t-stat	Sig.	VIF values
CCD	0.458	0.141	3.250	0.004	1.000
GCC	0.474	0.143	3.322	0.004	1.000
SCM	0.505	0.153	3.309	0.004	1.000
MRC	0.381	0.127	3.008	0.008	1.000
MG	0.474	0.143	3.322	0.004	1.000
R-square			0.401		
Adjusted R-square			0.289		
F- statistic			3.574		
Sig. (F-statistic)			0.038		

stability of the regression model is confirmed by the F-value, which amounted to 12.297 at a statistical significance level of <5%. Additionally, the absence of multicollinearity among the variables is indicated by the VIF values, suggesting that sustainable economic performance can be estimated based on CCD.

The t-statistic value of 5.583 at a significance level of <5% indicates the significance of this impact. The positive Coefficient value of 0.901 reflects the positive nature of this impact. Furthermore, the R-Square value of 0.697 indicates that CCD explains 70% of the variations in sustainable economic performance.

Accordingly, the first sub-hypothesis (H1.a) is accepted, which states: "There is a significant and positive impact of CCD on sustainable economic performance." Therefore, Asian companies with strong governance policies prioritize CCD, work to enhance their sustainable economic performance, and contribute to poverty reduction.

Table 7 presents the results of the regression analysis predicting the impact of CCD on sustainable social performance. The column (Variable) specifies the independent variable (CCD) and its four dimensions (GCC, SCM, MRC, MG). The stability of the regression model is confirmed by the value of (F), which is 3.574 at a statistical significance level of <5%, indicating the feasibility of estimating sustainable social performance based on CCD. The (t)-statistic value of 3.250 at a statistical significance level of <5% further supports the significance of this effect. The positive coefficient value of 0.458 indicates a positive impact, and the (R)-Square value of 0.401 shows that CCD explains 40% of the changes in sustainable social performance.

Thus, the second sub-hypothesis (H1.b) which states that "there is a significant and positive impact of CCD on sustainable social performance" can be accepted. This implies that high disclosure of climate-related standards reduces companies' exposure to future

risks and improves their long-term social performance through sustainability, social justice, and human rights.

Table 8 also presents the results of the regression analysis predicting the impact of CCD on sustainable environmental performance. The column (Variable) specifies the independent variable CCD and its four dimensions (GCC, SCM, MRC, MG). The instability of the regression model is evident from the (F)-value of 2.699 at a statistical significance level >5%, indicating the infeasibility of estimating sustainable environmental performance based on CCD. Therefore, the third sub-hypothesis (H1.c): There is no significant impact of CCD on sustainable environmental performance) can be rejected. Therefore, rejecting Hypothesis H1.c does not necessarily contradict scientific logic, but rather reflects the specificity of the Asian context and the time period under study. Some studies (e.g., Alsayegh et al., 2020) indicate variation in the results of the relationship between climate disclosure and environmental performance, as the relationship may depend on the severity of regulation or the maturity of sustainability practices in the market.

Finally, Table 9 presents the results of the regression analysis predicting the impact of CCD on overall sustainable performance. The column (Variable) specifies the independent variable, CCD. The stability of the regression model is confirmed by the (F)-value of 11.414 at a statistical significance level of <5%, indicating the feasibility of estimating sustainable performance based on CCD. The (t)-statistic value of 5.654 at a statistical significance level of <5% confirms the significance of this effect. The positive coefficient value of 0.595 indicates a positive impact, and the (R)-Square value of 0.682 shows that CCD explains 68% of the changes in sustainable performance.

Table 8: The impact of CCD on sustainable environmental performance (ENV)

Variable	Coefficient	Standard error	t-stat	Sig.	VIF values
CCD	0.428	0.163	2.629	0.017	1.000
GCC	0.440	0.166	2.652	0.016	1.000
SCM	0.454	0.179	2.535	0.021	1.000
MRC	0.372	0.143	2.608	0.018	1.000
MG	0.440	0.166	2.652	0.016	1.000
R- Square			0.336		
Adjusted R- Square			0.212		
F- statistic			2.699		
Sig. (F- statistic)			0.081		

Table 9: The impact of CCD on sustainable performance (SP)

Variable	Coefficient	Standard error	t- stat	Sig.	VIF values
CCD	0.595	0.105	5.654	0.000	1.000
GCC	0.613	0.106	5.790	0.000	1.000
SCM	0.641	0.117	5.470	0.000	1.000
MRC	0.510	0.095	5.345	0.000	1.000
MG	0.613	0.106	5.790	0.000	1.000
R-square			0.682		
Adjusted R-square			0.622		
F-statistic			11.414		
Sig. (F-statistic)			0.000		

Therefore, the primary hypothesis (H1) which states that "there is a significant and positive impact of CCD on sustainable performance" can be confirmed and accepted. This result aligns with the study of Mondal (2024) and but contradicts the study of Waris (2024).

The positive impact of CCD on the sustainable economic, social, and environmental performance of Asian companies indicates that companies addressing climate change risks and disclosing them in their financial and non-financial reports, with robust governance policies, manage their environmental challenges by reducing emissions, thereby achieving sustainable performance. This result aligns with the "Climate Change as Opportunity" theory, which suggests that companies leverage CCD to create new opportunities, including sustainable development and economic innovation. This theory emphasizes the potential positive effects of climate change in enhancing sustainable performance (Guest, 2010; Guo et al., 2022). It also aligns with the Sustainability Theory, which emphasizes the role of CCD in achieving sustainability across all aspects of a company—economic, social, and environmental—while mitigating negative impacts (Dyllick and Hockerts, 2002).

H_2: There is a positive impact of SR on sustainable performance.

Table 10 presents the results of the regression analysis predicting the impact of SR on sustainable economic performance. The column (variable) specifies the independent variable (SR) and its four dimensions (ED, SD, HRD, PSD). The stability of the regression model is confirmed by the (F)-value of 11.329 at a statistical significance level of <5%, indicating the feasibility of estimating sustainable economic performance based on SR. The (t)-statistic value of 5.430 at a statistical significance level of <5% supports the significance of this effect. The positive coefficient value of 1.699 indicates a positive impact, while the (R)-Square value of 0.751 shows that SR explains 75% of the variations in sustainable economic performance.

Therefore, the first sub-hypothesis (H2.a): There is a significant and positive impact of SR on sustainable economic performance) can be accepted. This suggests that environmentally friendly and socially responsible companies enhance their sustainable economic performance, which positively reflects on improving profitability, increasing investments, and reducing costs.

Table 11 presents the results of the regression analysis predicting the impact of SR on sustainable social performance. The column

Table 10: The impact of SR on sustainable economic performance (ECN)

Variable	Coefficient	Standard error	t- stat	Sig.	VIF values
SR	1.699	0.313	5.430	0.000	1.000
ED	0.249	0.310	0.802	0.433	1.000
SD	1.015	0.281	3.610	0.002	1.000
HRD	0.779	0.343	2.274	0.035	1.000
PSD	1.083	0.177	6.129	0.000	1.000
R-square			0.751		
Adjusted R-square			0.685		
F-statistic			11.329		
Sig. (F-statistic)			0.000		

Table 11: The impact of SR on sustainable social performance (SOC)

Variable	Coefficient	Standard error	t-stat	Sig.	VIF values
SR	1.172	0.195	5.998	0.000	1.000
ED	0.238	0.203	1.176	0.255	1.000
SD	0.935	0.109	8.575	0.000	1.000
HRD	0.694	0.200	3.462	0.003	1.000
PSD	0.415	0.182	2.282	0.035	1.000
R-square			0.844		
Adjusted R-square			0.802		
F-statistic			20.218		
Sig. (F-statistic)			0.000		

(variable) specifies the independent variable (SR) and its four dimensions (ED, SD, HRD, PSD). The stability of the regression model is confirmed by the (F)-value of 20.218 at a statistical significance level of <5%, indicating the feasibility of estimating sustainable social performance based on SR. The (t)-statistic value of 5.998 at a statistical significance level of <5% supports the significance of this effect. The positive coefficient value of 1.172 indicates a positive impact, while the (R)-Square value of 0.844 shows that SR explains 84% of the variations in sustainable social performance.

Accordingly, the second sub-hypothesis (H2.b): There is a significant and positive impact of SR on sustainable social performance) can be accepted. This indicates that socially responsible companies enhance their sustainable social performance, which positively reflects on improving healthy and safe working conditions and supporting community projects.

Table 12 presents the results of the regression analysis predicting the impact of SR on sustainable environmental performance. The column (Variable) specifies the independent variable (SR) and its four dimensions (ED, SD, HRD, PSD). The stability of the regression model is confirmed by the (F)-statistic value of 4.903 at a statistical significance level of <5%, indicating the feasibility of estimating sustainable environmental performance based on SR. The (t)-statistic value of 2.603 at a statistical significance level of <5% supports the significance of this effect. The positive coefficient value of 0.810 indicates a positive impact, while the (R)-square value of 0.567 shows that SR explains 56% of the variations in sustainable environmental performance.

Thus, the third sub-hypothesis (H2.c): There is a significant and positive impact of SR on sustainable environmental performance) can be accepted. This implies that corporate SR contributes to reducing environmental impacts, thereby enhancing sustainable environmental performance. This positive effect reflects on reducing environmental pollution through lower gas emissions, the use of renewable energy, and effective waste management.

Finally, Table 13 presents the regression analysis results for predicting the degree to which SR impacts overall sustainable performance. The column "Variable" highlights the independent variable (SR). The stability of the regression model is confirmed by the F-statistic value of 13.684 at a statistical significance level of <5%, indicating that sustainable performance can be estimated based on SR.

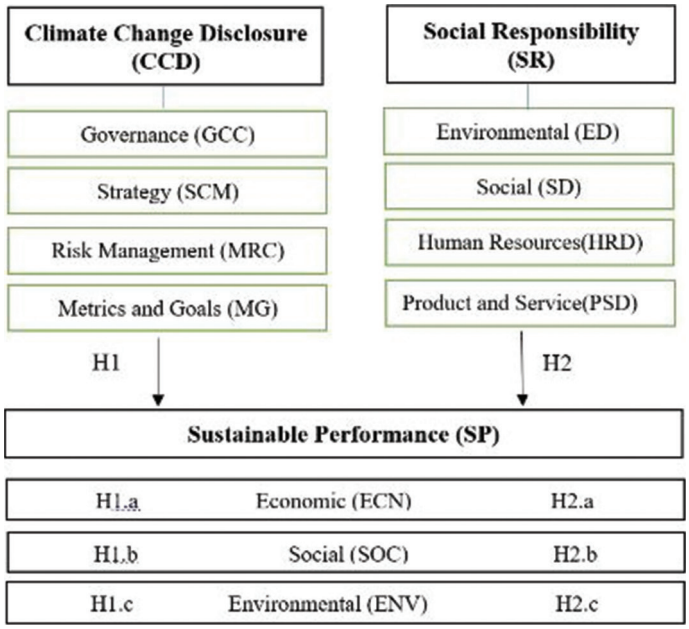
Table 12: The impact of SR on sustainable environmental performance

Variable	Coefficient	Standard error	t-stat	Sig.	VIF values
SR	0.810	0.311	2.603	0.018	1.000
ED	0.671	0.163	4.128	0.001	1.000
SD	0.275	0.257	1.068	0.300	1.000
HRD	−0.076	0.279	−0.272	0.789	1.000
PSD	0.414	0.200	2.067	0.053	1.000
R-square			0.567		
Adjusted R-square			0.451		
F-statistic			4.903		
Sig. (F-statistic)			0.010		

Table 13: The impact of SR on sustainable performance (SP)

Variable	Coefficient	Standard error	t-stat	Sig.	VIF values
SR	1.226	0.168	7.318	0.000	1.000
ED	0.386	0.187	2.071	0.053	1.000
SD	0.741	0.169	4.395	0.000	1.000
HRD	0.466	0.231	2.017	0.059	1.000
PSD	0.637	0.138	4.606	0.000	1.000
R-square			0.785		
Adjusted R-square			0.728		
F-statistic			13.684		
Sig. (F-statistic)			0.000		

Figure 1: Conceptual framework



The t-statistic value of 7.318 at a significance level of <5% confirms the significance of this effect, while the positive Coefficient value of 1.226 reflects the positive nature of the effect. Furthermore, the R-Square value of 0.785 suggests that SR explains 78% of the variations in sustainable performance.

Therefore, the second main hypothesis (H_2), which states, *"There is a significant positive impact of SR on sustainable performance,"* can be confirmed and accepted. This result aligns with the studies of Meseguer-Sánchez et al. (2021), Murray et

al. (2010), Li et al. (2023), and Alsayegh (2020), but contrasts with Waris (2024).

The positive impact of SR on the economic, social, and environmental sustainable performance of Asian companies indicates that environmentally friendly and socially responsible companies with strong social policies address their economic, environmental, and social challenges effectively. This leads to sustainable performance through improved corporate reputation, strengthened stakeholder relationships, reduced risks, and enhanced innovation in clean technology and renewable energy sectors.

This conclusion is supported by the SR theory, which asserts that companies are responsible for their social and environmental impacts (Carroll, 1991), and the Stakeholder Theory, which emphasizes that companies should consider the interests of all stakeholders, not just shareholders (Freeman, 2022).

5. CONCLUSION

Climate change disclosure (CCD) and social responsibility (SR) are essential indicators of corporate transparency and commitment to sustainability. They reflect not only compliance, but also ethical awareness and strategic engagement in environmental and social issues. Firms that actively disclose climate-related and SR information tend to achieve stronger performance across economic, environmental, and social dimensions.

This study, based on a comprehensive dataset of Asian companies (2018-2023), provides empirical evidence of the positive influence of both CCD and SR on sustainable performance. Specifically, climate governance, strategy, risk management, and metric disclosures (TCFD framework) significantly enhance sustainability outcomes. Similarly, SR dimensions—environmental, social, human resources, and product responsibility—directly contribute to long-term value creation.

Two core findings emerge:

- CCD significantly improves sustainable performance by promoting transparency, reducing environmental risks, and integrating sustainability into core business strategies.
- SR positively impacts sustainability by enhancing corporate reputation, investor trust, innovation, and alignment with global sustainability goals.

This study offers practical guidance for companies and policymakers. Firms should embed CCD and SR into their core strategies through innovation, employee development, and sustainable investments. Policymakers should implement standardized reporting frameworks and support capacity-building programs to strengthen corporate resilience in the face of climate challenges.

The study's findings indicate that climate change risk disclosure and social responsibility contribute to enhancing transparency, reducing risk, and stimulating innovation. These findings are even more important in light of global trends toward standardized disclosure standards (such as IFRS S2). Practically speaking, governments and regulators can support these trends by adopting specific policy tools, such as tax incentives that encourage companies to invest in green projects and regulatory enforcement mechanisms that ensure companies adhere to sustainability standards. Integrating these tools with standardized frameworks will enhance the effectiveness of disclosure and translate its impact into tangible economic, environmental, and social outcomes.

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