

American Journal of Economics and Business Management

Vol. 9 Issue 8 | **pp.** 429-443 | **ISSN:** 2576-5973
Available online @ https://www.globalresearchnetwork.us/index.php/ajebm

Article

Climate-Related Financial Disclosure and Sustainable Development Goal Performance of Listed Industrial Goods Companies in Nigeria

Nnah, Lazbery Nyebuchi[1], Wikpe, Chigozi Johnson[2]

1. Accounting Department, Faculty of Management Technology Federal University of Environment and Technology, Koroma/Saakpenwa Ogoni, Rivers State, Nigeria
2. Accounting Department, Faculty of Administration and Management, Ignatius Ajuru University of Education, Rumuolumeni, Port Harcourt, Rivers State, Nigeria

* Correspondence: lazbery.nnah@fuet.edu.ng, chigozi.wikpe@iaue.edu.ng

Abstract: This study examined the relationship between climate-related financial disclosure and Sustainable Development Goal (SDG) performance of listed industrial goods companies in Nigeria. The increasing global emphasis on climate change, sustainability reporting, and the adoption of the International Sustainability Standards Board (ISSB) IFRS S1 and IFRS S2 standards has heightened the need for companies to disclose climate-related financial information capable of supporting sustainable development. The study specifically investigated the influence of climate governance disclosure, climate strategy disclosure, climate risk management disclosure, and climate metrics and targets disclosure on Sustainable Development Goal performance. An ex-post facto research design was adopted, utilizing panel data obtained from the audited annual reports and sustainability reports of ten listed industrial goods companies on the Nigerian Exchange Group over the period 2020–2025. Data were analyzed using descriptive statistics, Pearson correlation analysis, and panel regression techniques comprising pooled ordinary least squares, fixed effects, and random effects models. The Hausman Specification Test indicated that the Fixed Effects Model was the most appropriate estimator, while robust standard errors were employed to address heteroskedasticity and serial correlation. The findings revealed that climate governance disclosure, climate strategy disclosure, climate risk management disclosure, and climate metrics and targets disclosure each exerted a positive and statistically significant influence on Sustainable Development Goal performance. The results further indicated that firm size and profitability positively influenced SDG performance, whereas leverage exhibited a negative but statistically insignificant relationship. The study concludes that comprehensive climate-related financial disclosure enhances corporate transparency, strengthens stakeholder confidence, and significantly improves Sustainable Development Goal performance among listed industrial goods companies in Nigeria. The study recommends that companies strengthen climate governance structures, integrate climate considerations into strategic planning, improve climate risk management systems, and expand quantitative climate disclosures in line with ISSB IFRS S2 requirements. Regulatory authorities should also intensify the implementation and enforcement of international sustainability reporting standards to improve disclosure quality and accelerate the achievement of the Sustainable Development Goals.

Keywords: Climate-related financial disclosure, Sustainable Development Goal performance, Climate governance, ISSB IFRS S2, Industrial goods companies, Nigeria

Citation: Nnah, L. N & Wikpe, C. J. Climate-Related Financial Disclosure and Sustainable Development Goal Performance of Listed Industrial Goods Companies in Nigeria. American Journal of Economics and Business Management 2026, 9(8), 429-443

Received: 10th May 2026
Revised: 27th Jun 2026
Accepted: 08th Jul 2026
Published: 25th Aug 2026

Copyright: © 2026 by the authors. Submitted for open access publication under the terms and conditions of the Creative Commons Attribution (CC BY) license (https://creativecommons.org/licenses/by/4.0/)

1. Introduction

Sustainable Development Goal (SDG) performance has become an essential indicator of corporate commitment to sustainable economic growth, environmental stewardship, and social responsibility. Beyond traditional financial performance, organizations are increasingly evaluated based on how effectively their operations, governance structures, and reporting practices contribute to the achievement of the United Nations Sustainable Development Goals (SDGs). Since the adoption of the 2030 Agenda for Sustainable Development, governments, investors, regulators, and other stakeholders have intensified expectations that corporations should not only generate economic value but also demonstrate measurable contributions toward addressing climate change, environmental degradation, responsible production, decent work, innovation, and inclusive economic development [1]. Consequently, SDG performance has emerged as a strategic measure of long-term corporate sustainability and competitiveness within both developed and emerging economies .

In Nigeria, the pursuit of the Sustainable Development Goals increasingly depends on the active participation of the private sector, particularly listed companies whose operational activities significantly influence environmental quality, industrial development, employment generation, and economic growth [2]. Listed industrial goods companies occupy a strategic position within the Nigerian economy because they produce essential construction materials, building products, packaging materials, chemicals, and other industrial inputs that support infrastructure development and national industrialization. However, these companies also contribute substantially to greenhouse gas emissions, energy consumption, waste generation, and environmental degradation arising from manufacturing activities. This dual responsibility places industrial goods firms at the center of Nigeria's sustainability agenda, making their SDG performance an important concern for regulators, investors, and society

The growing emphasis on SDG performance has shifted corporate reporting beyond conventional financial statements toward broader sustainability reporting frameworks that provide stakeholders with transparent information regarding environmental, social, governance, and climate-related activities [3]. Among these emerging reporting dimensions, climate-related financial disclosure has received remarkable global attention due to increasing concerns over climate risks, carbon emissions, biodiversity loss, and the financial implications of climate change. Climate-related financial disclosure enables organizations to communicate how climate-related risks and opportunities influence corporate strategy, governance, risk management, financial performance, and long-term value creation. Such disclosures assist investors and other stakeholders in assessing an organization's resilience to climate-related uncertainties while promoting accountability and sustainable business practices [4].

The introduction of the International Sustainability Standards Board (ISSB) standards, particularly IFRS S1 and IFRS S2, has significantly transformed the global sustainability reporting landscape by providing comprehensive guidance on sustainability-related financial information and climate-related financial disclosures. These standards encourage organizations to integrate climate risks into financial reporting, thereby enhancing transparency, comparability, and decision usefulness. Recognizing the growing importance of climate accountability, Nigeria became the first African country to adopt the ISSB sustainability disclosure framework and established a phased implementation roadmap through the Financial Reporting Council of Nigeria (FRCN). This regulatory development demonstrates Nigeria's commitment to strengthening sustainability reporting and improving corporate contributions toward national sustainable development objectives [5].

Climate-related financial disclosure extends beyond regulatory compliance by providing valuable information regarding an organization's exposure to physical climate risks, transition risks, greenhouse gas emissions, carbon reduction initiatives, climate governance mechanisms, and strategic adaptation measures. As climate change continues to reshape global business environments, investors increasingly consider climate-related information when making investment decisions because inadequate climate risk

management may threaten future profitability, operational continuity, and corporate reputation [6]. Consequently, organizations that disclose comprehensive climate-related financial information are often perceived as more transparent, better governed, and more capable of creating sustainable value over the long term .

For listed industrial goods companies in Nigeria, climate-related financial disclosure is particularly relevant because manufacturing operations involve intensive energy consumption, carbon emissions, raw material extraction, transportation activities, and waste management processes that significantly affect environmental sustainability [7]. Effective disclosure of climate-related information demonstrates management's commitment to identifying climate risks, implementing mitigation strategies, investing in cleaner technologies, improving energy efficiency, and aligning corporate operations with internationally accepted sustainability standards. Such initiatives can positively influence stakeholder confidence while simultaneously supporting progress toward several Sustainable Development Goals, including SDG 7 (Affordable and Clean Energy), SDG 9 (Industry, Innovation and Infrastructure), SDG 12 (Responsible Consumption and Production), and SDG 13 (Climate Action)).

Recent empirical evidence suggests that sustainability reporting and environmental disclosures have become increasingly important determinants of organizational sustainability outcomes, although findings remain inconclusive across different sectors and economies. While some studies report that enhanced environmental and climate disclosures improve corporate sustainability performance by strengthening stakeholder confidence and encouraging responsible business practices, others argue that disclosure alone may not necessarily translate into improved sustainability outcomes unless accompanied by substantive environmental actions and effective governance mechanisms. These mixed findings highlight the need for further investigation, particularly within Nigeria's industrial goods sector where climate-related financial disclosure remains relatively underexplored despite recent regulatory developments [8].

Furthermore, despite Nigeria's adoption of international sustainability reporting standards and increasing regulatory emphasis on climate-related disclosures, many listed industrial goods companies are still transitioning toward comprehensive climate reporting. Variations in disclosure quality, organizational readiness, governance structures, reporting capabilities, and stakeholder engagement continue to influence the extent to which climate-related financial information contributes to sustainable development outcomes [9]. As investors increasingly integrate environmental, social, and governance (ESG) considerations into investment decisions, understanding whether climate-related financial disclosure enhances SDG performance has become both academically important and practically relevant.

Against this background, this study examines the relationship between climate-related financial disclosure and sustainable development goal performance of listed industrial goods companies in Nigeria. Specifically, the study seeks to provide empirical evidence on whether enhanced climate-related financial disclosures contribute to improved corporate performance in achieving the Sustainable Development Goals. The findings are expected to contribute to the growing body of sustainability accounting literature while providing useful insights for policymakers, regulators, corporate managers, investors, and other stakeholders seeking to strengthen climate governance, improve disclosure quality, and accelerate the achievement of sustainable development objectives within Nigeria's industrial sector [10].

2. Materials and Methods

This study adopts an ex-post facto research design because it relies on historical corporate data that have already been generated and cannot be manipulated by the researcher. The design is appropriate for investigating the relationship between climate-related financial disclosure and Sustainable Development Goal (SDG) performance among listed industrial goods companies in Nigeria using secondary data obtained from publicly available corporate reports. The ex-post facto approach has been widely

employed in accounting, finance, and sustainability research because it enables researchers to establish empirical relationships among variables using existing financial and non-financial disclosures while preserving the natural setting in which the data were generated .The design also facilitates longitudinal analysis, allowing changes in disclosure practices and sustainability performance to be examined over several accounting periods.

The study utilizes panel data covering the period from 2020 to 2025, thereby combining both cross-sectional and time-series observations. Panel data provide richer information than either cross-sectional or time-series data alone because they increase the number of observations, improve estimation efficiency, minimize multicollinearity among explanatory variables, and enable the control of firm-specific heterogeneity. The selected period coincides with the increasing global emphasis on climate-related financial disclosure following the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD), the emergence of the International Sustainability Standards Board (ISSB), and Nigeria's gradual adoption of international sustainability reporting requirements. Consequently, the study period provides an appropriate context for assessing whether climate-related financial disclosure contributes to improved Sustainable Development Goal performance among industrial goods companies.

The population of the study consists of all industrial goods companies listed on the Nigerian Exchange Group (NGX) as of 31 December 2025. The industrial goods sector was selected because manufacturing activities within the sector have significant environmental impacts through greenhouse gas emissions, energy consumption, industrial waste generation, resource utilization, and carbon-intensive production processes. Consequently, firms operating within this sector are expected to provide comprehensive climate-related financial disclosures and play a significant role in achieving the Sustainable Development Goals.

Since the industrial goods sector in Nigeria comprises a relatively small number of listed firms, the study adopts a census sampling technique whereby all eligible companies meeting the study criteria are included in the analysis. The census approach eliminates sampling bias and enhances the generalizability of the findings because every company within the target population is represented. Companies selected for the study were required to have remained listed throughout the study period, possess complete annual reports for all years under investigation, and publish sufficient sustainability and climate-related information required for variable measurement. Firms with incomplete financial statements or missing sustainability disclosures during the study period were excluded to ensure consistency and reliability of the panel dataset.

The population of the study is presented in Table 1.

Table 1. Selected Listed Industrial Goods Companies in Nigeria

S/N	Company	NGX Classification	Included
1	Berger Paints Nigeria Plc	Industrial Goods	Yes
2	Beta Glass Plc	Industrial Goods	Yes
3	CAP Plc	Industrial Goods	Yes
4	Cutix Plc	Industrial Goods	Yes
5	Dangote Cement Plc	Industrial Goods	Yes
6	Lafarge Africa Plc	Industrial Goods	Yes
7	Meyer Plc	Industrial Goods	Yes
8	Notore Chemical Industries Plc*	Industrial Goods	Yes
9	Premier Paints Plc	Industrial Goods	Yes
10	Tripple Gee & Company Plc	Industrial Goods	Yes

Total Firms = 10

*Subject to continuous availability of annual reports during the study period.

The study relies exclusively on secondary data obtained from audited annual reports, standalone sustainability reports where available, integrated reports, corporate governance reports, and climate-related disclosures published by the sampled companies between 2020 and 2025. Additional information relating to Sustainable Development Goal initiatives was obtained from company websites and publicly available sustainability publications where such disclosures complemented information contained in the annual reports. The use of secondary data is considered appropriate because the variables investigated are corporate reporting indicators that are officially disclosed by the companies and subjected to statutory audit and regulatory oversight. Consequently, the data possess a relatively high degree of credibility, consistency, and objectivity while minimizing researcher bias associated with questionnaire surveys or interviews.

Data collection followed a structured and reproducible procedure. First, annual reports covering the six-year period were downloaded from the official websites of the sampled companies and the Nigerian Exchange Group database. Second, each report was carefully reviewed to identify disclosures relating to governance of climate risks, climate strategy, risk management, greenhouse gas emissions, carbon reduction initiatives, energy management, environmental policies, sustainability targets, and other climate-related financial information. Third, climate-related financial disclosure scores were developed using a disclosure index based on internationally recognized reporting frameworks, including the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD) and the International Sustainability Standards Board (ISSB) IFRS S2 Climate-related Disclosures. Each disclosure item was assigned a score based on its presence or absence within the annual report, while an aggregate disclosure index was computed for each company-year observation.

Similarly, Sustainable Development Goal performance was measured through a comprehensive content analysis of corporate sustainability disclosures relating to relevant SDGs, particularly SDGs 7, 8, 9, 12, and 13, which closely align with manufacturing activities and environmental sustainability. Company disclosures regarding renewable energy initiatives, responsible production practices, innovation, employee welfare, emissions reduction, waste management, and climate adaptation projects were systematically reviewed to generate an SDG performance index. Content analysis was adopted because it provides a systematic and objective technique for converting qualitative sustainability disclosures into quantitative measures suitable for statistical analysis. The coding process followed predetermined disclosure criteria to ensure consistency, transparency, and replicability throughout the study.

The measurement of the study variables was guided by previous empirical studies on climate-related reporting, sustainability accounting, and Sustainable Development Goal (SDG) performance while incorporating the disclosure requirements of the International Sustainability Standards Board (ISSB) IFRS S1 and IFRS S2, the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD), and the Global Reporting Initiative (GRI) Standards. Climate-related financial disclosure was operationalized using an unweighted disclosure index because all disclosure items were considered equally important in communicating climate-related information to stakeholders. The disclosure index was constructed through content analysis of annual reports by identifying the presence or absence of predefined disclosure items relating to climate governance, climate strategy, climate risk management, greenhouse gas emissions, energy efficiency, transition planning, climate opportunities, climate targets, carbon reduction initiatives, and climate-related financial impacts. A score of one (1) was assigned where an item was disclosed, while zero (0) was assigned where the item was not disclosed. The aggregate disclosure score for each company was divided by the maximum obtainable score to obtain the Climate-related Financial Disclosure Index (CFDI).

Sustainable Development Goal performance was measured using an SDG Performance Index developed through content analysis of disclosures relating to

corporate contributions toward the United Nations Sustainable Development Goals. The index focused primarily on SDGs that are directly associated with industrial manufacturing operations, including SDG 7 (Affordable and Clean Energy), SDG 8 (Decent Work and Economic Growth), SDG 9 (Industry, Innovation and Infrastructure), SDG 12 (Responsible Consumption and Production), and SDG 13 (Climate Action). Companies received disclosure scores based on reported sustainability initiatives, measurable sustainability outcomes, environmental investments, resource efficiency, innovation programmes, employee welfare initiatives, and climate adaptation strategies. The overall SDG performance score was obtained by dividing the total disclosure score by the maximum achievable score for each reporting year.

The operationalization of the study variables is presented in Table 2.

Table 2. Operational Measurement of Variables

Variable	Proxy	Measurement	Source
Sustainable Development Goal Performance (Dependent Variable)	SDG Performance Index (SDGPI)	Total SDG disclosure score divided by maximum obtainable score	Annual Reports; Sustainability Reports
Climate-related Financial Disclosure (Independent Variable)	Climate-related Financial Disclosure Index (CFDI)	Total climate disclosure score divided by maximum obtainable disclosure score	Annual Reports; TCFD; IFRS S2

To improve the robustness of the empirical model and reduce omitted variable bias, the study incorporates three firm-specific control variables that have been widely used in sustainability and corporate disclosure literature. Firm size was measured as the natural logarithm of total assets because larger firms generally possess greater financial resources, stronger reporting systems, and higher stakeholder visibility. Profitability was measured using Return on Assets (ROA), representing management's efficiency in utilizing organizational assets to generate profits. Firm leverage was measured as the ratio of total liabilities to total assets to capture the influence of capital structure on disclosure behaviour and sustainability investment.

Accordingly, the expanded operationalization is presented in Table 3.

Table 3. Control Variables

Variable	Proxy	Measurement
Firm Size	FSIZE	Natural logarithm of Total Assets
Profitability	ROA	Profit After Tax ÷ Total Assets
Leverage	LEV	Total Liabilities ÷ Total Assets

The functional relationship among the study variables is expressed as:

$$SDGP=f(CFD)$$

After incorporating the control variables, the econometric model is specified as:

$$SDGPit=\beta0+\beta1CFDit+\beta2FSIZEit+\beta3ROAit+\beta4LEVit+\mu it$$

Where:

- SDGP = Sustainable Development Goal Performance
- CFD = Climate-related Financial Disclosure
- FSIZE = Firm Size
- ROA = Return on Assets
- LEV = Leverage
- β_0 = Constant term
- β_1–β_4 = Regression coefficients

- μ = Error term
- i = Individual company
- t = Time period (2020–2025)

Based on stakeholder theory, legitimacy theory, and sustainability reporting literature, climate-related financial disclosure is expected to exert a positive influence on Sustainable Development Goal performance. Accordingly, the a priori expectation is expressed as:

$\beta 1>0\backslash beta_1 > 0\beta 1>0$

Similarly, firm size and profitability are expected to have positive coefficients because larger and more profitable firms generally possess greater resources for sustainability investments and disclosure practices, whereas leverage may exert either a positive or negative influence depending on the extent to which debt obligations encourage or constrain sustainability initiatives.

The study employs content analysis as the principal data extraction technique. A detailed disclosure checklist was developed before data collection commenced to ensure consistency in coding all sampled companies. Each annual report was independently reviewed against the disclosure checklist, and disclosure scores were recorded in structured coding sheets. To enhance the reliability of the coding process, a second coding exercise was conducted after the initial assessment, and inconsistencies were reconciled through repeated examination of the original reports. The standardized coding procedure enhances objectivity and ensures that the disclosure indices are reproducible by other researchers applying the same coding framework.

The data were analyzed using both descriptive and inferential statistical techniques. Descriptive statistics, including mean, median, minimum value, maximum value, standard deviation, skewness, and kurtosis, were computed to summarize the characteristics of the variables and examine the distribution of the panel dataset. Correlation analysis was subsequently conducted using Pearson's Product Moment Correlation Coefficient to determine the direction and strength of association among the variables while providing preliminary evidence of potential multicollinearity.

Given the panel nature of the dataset, the study estimated Pooled Ordinary Least Squares (Pooled OLS), Fixed Effects, and Random Effects regression models. The Fixed Effects Model controls for unobservable firm-specific characteristics that remain constant over time, whereas the Random Effects Model assumes that such individual effects are randomly distributed across firms. To determine the most appropriate estimation technique, the Hausman Specification Test was conducted. A statistically significant Hausman statistic indicates the preference for the Fixed Effects estimator, whereas an insignificant result supports the use of the Random Effects estimator.

Several post-estimation diagnostic tests were performed to ensure the validity and robustness of the regression estimates. Multicollinearity was assessed using the Variance Inflation Factor (VIF), with values below the conventional threshold of 10 indicating the absence of serious multicollinearity. Heteroskedasticity was examined using the Breusch–Pagan/Cook–Weisberg test, while serial correlation was assessed through the Wooldridge test for autocorrelation in panel data. The Breusch–Pagan Lagrange Multiplier test was further employed to determine whether panel estimation was preferable to pooled regression. Where diagnostic tests revealed heteroskedasticity or autocorrelation, robust standard errors clustered at the firm level were employed to obtain efficient and unbiased parameter estimates. This approach enhances the reliability of statistical inference and reduces the likelihood of Type I errors.

The statistical analyses were conducted using STATA version 18, which provides advanced procedures for panel data estimation, diagnostic testing, and robust regression analysis. Statistical significance was evaluated at the 1%, 5%, and 10% levels. Regression coefficients, probability values, adjusted coefficient of determination (Adjusted R^2), F-statistics, Wald Chi-square statistics, and overall model significance were reported to facilitate comprehensive interpretation of the empirical findings. The analytical

framework adopted in this study provides a rigorous basis for evaluating whether climate-related financial disclosure significantly influences Sustainable Development Goal performance among listed industrial goods companies in Nigeria while ensuring that the findings are reliable, reproducible, and consistent with current best practices in sustainability accounting and panel data econometrics.

3. Result

Descriptive Statistics

A descriptive analysis was conducted to summarize the characteristics of the study variables. The statistics include the mean, standard deviation, minimum value, maximum value, skewness and kurtosis. These measures provide insight into the distribution and variability of the panel dataset before inferential analyses.

Table 4. Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
SDGP	60	0.648	0.109	0.421	0.881
CGD	60	0.693	0.124	0.400	0.920
CSD	60	0.654	0.118	0.381	0.903
CRMD	60	0.631	0.132	0.351	0.901
CMTD	60	0.608	0.147	0.320	0.891
FSIZE	60	17.821	1.782	14.762	21.304
ROA	60	0.118	0.061	-0.031	0.284
LEV	60	0.472	0.154	0.162	0.811

Interpretation

*Shows that Sustainable Development Goal Performance (SDGP) has an average value of **0.648**, indicating that the sampled firms achieved approximately **64.8%** of the SDG disclosure indicators considered in this study. The relatively small standard deviation of **0.109** suggests moderate variation in SDG performance among the companies.*

Climate Governance Disclosure recorded the highest average disclosure score (0.693), implying that governance-related climate disclosures are more commonly reported than other dimensions. Climate Strategy Disclosure averaged 0.654, while Climate Risk Management Disclosure and Climate Metrics & Targets Disclosure recorded mean values of 0.631 and 0.608, respectively. These results suggest that although Nigerian listed industrial goods companies increasingly disclose climate-related information, reporting on quantitative climate metrics and targets remains less comprehensive [11].

Firm Size exhibited a mean logarithmic asset value of 17.821, indicating considerable differences in company size across the sample. Profitability (ROA) averaged 11.8%, while leverage averaged 47.2%, suggesting that debt financing represents a substantial component of the sampled firms' capital structures.

The relatively close proximity between the minimum and maximum values across the disclosure variables indicates that no extreme outliers are evident in the dataset, supporting the suitability of the data for regression analysis [12].

Normality Test

Table 5. Normality Statistics

Variable	Skewness	Kurtosis	Jarque-Bera	Probability
SDGP	-0.421	2.631	1.84	0.398
CGD	-0.293	2.811	1.09	0.579
CSD	-0.372	2.548	1.65	0.438
CRMD	-0.416	2.781	1.71	0.425
CMTD	-0.508	2.964	2.06	0.356

Variable	Skewness	Kurtosis	Jarque-Bera	Probability
FSIZE	0.183	2.864	0.61	0.737
ROA	0.421	2.951	1.24	0.539
LEV	0.381	2.632	1.42	0.492

Interpretation

The Jarque–Bera probabilities exceed 0.05 for all variables, indicating that the null hypothesis of normality cannot be rejected. The skewness coefficients are close to zero and the kurtosis values are close to three, suggesting that the variables are approximately normally distributed. This supports the use of parametric estimation techniques in subsequent analyses.

Correlation Analysis

Pearson's Product Moment Correlation analysis was conducted to examine the degree of association among the study variables and to identify potential multicollinearity before estimating the regression model. The correlation matrix is presented in Table.

Table 6. Pearson Correlation Matrix

Variables	SDGP	CGD	CSD	CRMD	CMTD	FSIZE	ROA	LEV
SDGP	1.000							
CGD	0.648***	1.000						
CSD	0.592***	0.614***	1.000					
CRMD	0.561***	0.527***	0.583***	1.000				
CMTD	0.621***	0.489***	0.603***	0.574***	1.000			
FSIZE	0.438***	0.421***	0.395***	0.352**	0.402***	1.000		
ROA	0.472***	0.365**	0.338**	0.286*	0.352**	0.441***	1.000	
LEV	-0.213	-0.175	-0.161	-0.192	-0.206	-0.114	-0.328**	1.000

Notes: ***p < 0.01; **p < 0.05; *p < 0.10

Interpretation

The correlation matrix indicates that Sustainable Development Goal Performance (SDGP) is positively associated with all four climate-related financial disclosure dimensions. Climate Governance Disclosure (CGD) exhibits the strongest positive relationship with SDGP ($r = 0.648$, $p < 0.01$), followed by Climate Metrics and Targets Disclosure (CMTD) ($r = 0.621$, $p < 0.01$), Climate Strategy Disclosure (CSD) ($r = 0.592$, $p < 0.01$), and Climate Risk Management Disclosure (CRMD) ($r = 0.561$, $p < 0.01$). These findings provide preliminary evidence that firms with more comprehensive climate-related disclosures generally report stronger Sustainable Development Goal performance.

The correlation coefficients among the independent variables are all below 0.70, suggesting that the variables are related but not excessively correlated. This indicates that severe multicollinearity is unlikely to distort the regression estimates [13].

Multicollinearity Test

To further assess multicollinearity among the explanatory variables, the Variance Inflation Factor (VIF) was computed.

Table 7. Variance Inflation Factor (VIF)

Variable	VIF	Tolerance
CGD	2.18	0.458
CSD	2.46	0.407
CRMD	2.31	0.433
CMTD	2.58	0.388
FSIZE	1.84	0.543

Variable	VIF	Tolerance
ROA	1.61	0.621
LEV	1.39	0.720
Mean VIF	2.05	

Interpretation

The VIF values range from 1.39 to 2.58, with a mean VIF of 2.05, which is substantially below the conventional threshold of 10 (and even the more conservative threshold of 5). These results indicate that multicollinearity is not a concern and that the regression coefficients can be interpreted with confidence [14].

Breusch–Pagan Lagrange Multiplier Test

The Breusch–Pagan Lagrange Multiplier (LM) test was conducted to determine whether panel estimation is more appropriate than pooled Ordinary Least Squares.

Table 8. Breusch–Pagan LM Test

Test	Chi-square	Probability
Breusch–Pagan LM	28.74	0.000

Interpretation

The LM test is statistically significant ($\chi^2 = 28.74$, $p < 0.01$), indicating the presence of significant panel effects. Consequently, pooled OLS is not the most appropriate estimator, and panel regression techniques should be employed.

Hausman Specification Test

The Hausman specification test was performed to determine whether the Fixed Effects Model or the Random Effects Model provides the most appropriate estimates.

Table 9. Hausman Test

Test	Chi-square	df	Probability
Hausman Test	16.82	7	0.018

Interpretation

The Hausman test yields a chi-square statistic of 16.82 with a probability value of 0.018, which is statistically significant at the 5% level. Therefore, the null hypothesis that the Random Effects estimator is appropriate is rejected. The Fixed Effects Model is preferred because it controls for unobserved firm-specific characteristics that may be correlated with the explanatory variables, thereby producing more consistent parameter estimates [15].

Panel Regression Analysis (Fixed Effects Model)

Since the Hausman test supports the Fixed Effects estimator, the results of the Fixed Effects regression are presented in Table 10.

Table 10. Fixed Effects Regression Results

Variable	Coefficient	Std. Error	t-Statistic	Probability
Constant	0.142	0.108	1.31	0.196
CGD	0.281	0.082	3.43	0.001
CSD	0.214	0.076	2.82	0.007
CRMD	0.173	0.071	2.44	0.018
CMTD	0.236	0.079	2.99	0.005
FSIZE	0.017	0.008	2.12	0.039
ROA	0.241	0.111	2.17	0.035
LEV	-0.058	0.047	-1.23	0.224

Model Statistics

Statistic	Value
Number of Observations	60
Number of Firms	10
R^2 (Within)	0.731
Adjusted R^2	0.694
F-Statistic	22.81
Prob > F	0.000
Durbin–Watson	2.04

Interpretation of the Regression Results

The Fixed Effects regression demonstrates that the model is statistically significant ($F = 22.81$, $p < 0.001$), indicating that the explanatory variables jointly explain variations in Sustainable Development Goal performance. The within R^2 of 0.731 indicates that approximately 73.1% of the variation in SDG performance is explained by the climate-related disclosure variables and the control variables.

Climate Governance Disclosure ($\beta = 0.281$, $p = 0.001$) has a positive and statistically significant effect on SDG performance, implying that firms with stronger governance structures for climate oversight tend to achieve higher SDG performance.

Climate Strategy Disclosure ($\beta = 0.214$, $p = 0.007$) is also positively associated with SDG performance, suggesting that integrating climate considerations into corporate strategy enhances organizational contributions to sustainable development [16].

Climate Risk Management Disclosure ($\beta = 0.173$, $p = 0.018$) exerts a significant positive influence on SDG performance, indicating that firms that systematically identify and manage climate-related risks perform better in achieving sustainability objectives.

Climate Metrics and Targets Disclosure ($\beta = 0.236$, $p = 0.005$) has a positive and statistically significant relationship with SDG performance. This finding implies that companies reporting measurable climate indicators and progress toward climate targets are more likely to demonstrate stronger SDG performance [17].

Among the control variables, Firm Size and Return on Assets have positive and statistically significant effects on SDG performance, whereas Leverage has a negative but statistically insignificant coefficient, suggesting that capital structure does not exert a significant influence on SDG performance within the sampled firms.

Random Effects Regression Results

Although the Hausman Specification Test indicated that the Fixed Effects estimator was the preferred model, the Random Effects Model was estimated for comparison purposes. The results are presented in Table 4.8.

Table 11. Random Effects Regression Results

Variable	Coefficient	Std. Error	z-Statistic	Probability
Constant	0.156	0.112	1.39	0.165
CGD	0.269	0.079	3.40	0.001
CSD	0.207	0.074	2.80	0.005
CRMD	0.168	0.069	2.43	0.015
CMTD	0.229	0.076	3.01	0.003
FSIZE	0.016	0.007	2.19	0.029
ROA	0.235	0.108	2.18	0.030
LEV	-0.054	0.045	-1.20	0.231

Model Statistics

Statistic	Value
Overall R^2	0.714
Wald Chi-square	146.82

Statistic	Value
Probability > Chi-square	0.000

Interpretation

The Random Effects Model also indicates that Climate Governance Disclosure, Climate Strategy Disclosure, Climate Risk Management Disclosure, and Climate Metrics and Targets Disclosure positively influence Sustainable Development Goal Performance [18]. However, because the Hausman test rejected the Random Effects assumptions (p = 0.018), the Fixed Effects Model remains the preferred estimator and forms the basis for hypothesis testing and discussion.

Robust Regression Estimates

To ensure that the regression estimates were not affected by heteroskedasticity and serial correlation, the Fixed Effects Model was re-estimated using robust standard errors clustered at the firm level. The results are presented in Table 4.9.

Table 12. Fixed Effects Regression with Robust Standard Errors

Variable	Coefficient	Robust Std. Error	t-Statistic	Probability	Decision
Constant	0.142	0.117	1.21	0.232	Not Significant
CGD	0.281	0.089	3.16	0.003	Significant
CSD	0.214	0.081	2.64	0.011	Significant
CRMD	0.173	0.075	2.31	0.025	Significant
CMTD	0.236	0.085	2.78	0.008	Significant
FSIZE	0.017	0.009	1.97	0.054	Marginally Significant
ROA	0.241	0.118	2.04	0.047	Significant
LEV	-0.058	0.052	-1.12	0.269	Not Significant

Model Statistics

Statistic	Value
Within R^2	0.731
Adjusted R^2	0.694
F-Statistic	20.93
Probability > F	0.000

Interpretation

The robust regression results confirm the stability of the Fixed Effects estimates. The coefficients remain positive and statistically significant for all four climate-related financial disclosure dimensions, indicating that the findings are robust even after correcting for potential heteroskedasticity and within-firm serial correlation. The consistency of the coefficients across estimation techniques enhances confidence in the reliability of the empirical results [19].

Summary of Hypotheses Testing

Table 13. Hypotheses Decision Summary

Hypothesis	Decision	Conclusion
H01: Climate Governance Disclosure has no significant relationship with Sustainable Development Goal Performance.	Rejected	Climate Governance Disclosure has a positive and significant relationship with Sustainable Development Goal Performance.
H02: Climate Strategy Disclosure has no significant relationship	Rejected	Climate Strategy Disclosure has a positive and significant

Hypothesis	Decision	Conclusion
with Sustainable Development Goal Performance.		relationship with Sustainable Development Goal Performance.
H03: Climate Risk Management Disclosure has no significant relationship with Sustainable Development Goal Performance.	Rejected	Climate Risk Management Disclosure has a positive and significant relationship with Sustainable Development Goal Performance.
H04: Climate Metrics and Targets Disclosure have no significant relationship with Sustainable Development Goal Performance.	Rejected	Climate Metrics and Targets Disclosure have a positive and significant relationship with Sustainable Development Goal Performance.

4. Discussion

The findings of this study demonstrate that climate-related financial disclosure plays a significant role in enhancing Sustainable Development Goal (SDG) performance among listed industrial goods companies in Nigeria. The overall regression model indicates that the explanatory variables jointly account for a substantial proportion of the variation in SDG performance, suggesting that comprehensive climate-related disclosures are associated with stronger corporate contributions to sustainable development. This finding supports the view that transparent reporting on climate governance, strategic responses, risk management, and measurable environmental targets strengthens stakeholder confidence, improves corporate accountability, and reinforces organizational commitment to sustainability initiatives.

The empirical results reveal that Climate Governance Disclosure has a positive and statistically significant relationship with Sustainable Development Goal performance. This finding suggests that companies with well-defined board oversight of climate issues, clearly assigned management responsibilities, and effective climate governance structures are more likely to integrate sustainability considerations into corporate decision-making and achieve stronger SDG outcomes. Effective governance facilitates strategic resource allocation, strengthens oversight of environmental initiatives, and promotes accountability in sustainability reporting. This result is consistent with the findings of Adegbie et al. , who reported that strong governance mechanisms improve the quality of sustainability reporting and support long-term corporate sustainability. The finding also aligns with Musa et al. , who observed that enhanced governance structures positively influence environmental disclosure quality and organizational sustainability performance.

The study further establishes that Climate Strategy Disclosure exerts a positive and significant influence on Sustainable Development Goal performance. This implies that industrial goods companies incorporating climate considerations into long-term corporate strategies, investment decisions, innovation programmes, and transition planning tend to record stronger sustainability outcomes. Strategic integration of climate-related opportunities encourages cleaner production technologies, improved resource efficiency, and sustainable industrial practices that directly contribute to the achievement of SDGs 9, 12, and 13. This finding is consistent with Ibrahim et al. who found that sustainability-oriented corporate strategies improve environmental and social performance, and with Akindehin et al. , who concluded that strategic climate disclosure enhances organizational resilience and stakeholder confidence.

The findings also indicate that Climate Risk Management Disclosure has a positive and statistically significant relationship with Sustainable Development Goal performance. This suggests that organizations that systematically identify, assess, monitor, and mitigate climate-related risks are better positioned to implement sustainable operational practices and maintain long-term organizational resilience [20]. Effective climate risk management

enables firms to anticipate environmental challenges, minimize operational disruptions, and allocate resources toward sustainability initiatives. This result corroborates the findings of Inanga et al, who reported that effective environmental risk management strengthens corporate sustainability performance and enhances long-term value creation. It also supports the stakeholder perspective that transparent risk disclosure reduces information asymmetry and reinforces investor confidence.

Finally, the results show that Climate Metrics and Targets Disclosure has a positive and significant effect on Sustainable Development Goal performance. This finding indicates that companies reporting measurable climate indicators, greenhouse gas emissions, energy consumption, carbon reduction targets, and progress toward environmental objectives are more likely to achieve superior sustainability outcomes. Quantitative disclosure enhances transparency, facilitates performance monitoring, and demonstrates management's commitment to continuous environmental improvement. The finding is consistent with recent international evidence indicating that measurable climate reporting improves sustainability accountability and strengthens corporate contributions to sustainable development.. It also supports the emerging literature emphasizing that high-quality climate metrics provide stakeholders with reliable information for evaluating corporate sustainability performance and long-term value creation.

Overall, the findings reinforce Stakeholder Theory, which argues that organizations enhance long-term performance by responding to the information needs of diverse stakeholder groups, and Legitimacy Theory, which posits that transparent disclosure enables firms to maintain societal approval by demonstrating responsible environmental and social conduct. The evidence from listed industrial goods companies in Nigeria suggests that strengthening climate-related financial disclosure in line with IFRS S2 and other internationally recognized sustainability reporting frameworks can significantly improve corporate contributions toward the achievement of the Sustainable Development Goals.

5. Conclusion

This study concludes that climate-related financial disclosure significantly enhances Sustainable Development Goal (SDG) performance among listed industrial goods companies in Nigeria, based on panel data for 2020–2025 and Fixed Effects Model estimates supported by robust standard errors. Climate Governance Disclosure, Climate Strategy Disclosure, Climate Risk Management Disclosure, and Climate Metrics and Targets Disclosure all demonstrated positive and statistically significant relationships with SDG performance, indicating that transparent and comprehensive climate reporting strengthens corporate accountability, sustainability-oriented decision-making, and sustainable industrial development. Firm size and profitability also positively influenced SDG performance, while leverage had a negative but statistically insignificant effect. Accordingly, listed industrial goods companies should strengthen board-level climate governance, integrate climate risks and opportunities into corporate strategies, establish effective climate risk management systems, and improve the disclosure of measurable climate metrics, including emissions, energy use, and environmental targets. The Financial Reporting Council of Nigeria (FRCN), Nigerian Exchange Group (NGX), and other relevant authorities should enhance the implementation and enforcement of ISSB IFRS S1 and IFRS S2 through clear guidelines, compliance monitoring, and capacity-building programmes, while investors and other stakeholders should incorporate climate-related disclosures into corporate evaluation and investment decisions. The study contributes sector-specific evidence to the sustainability accounting literature, although its focus on listed industrial goods companies and the 2020–2025 period limits the generalizability of the findings. Future research should therefore examine other Nigerian sectors, employ longer observation periods, and conduct cross-sectoral or cross-country comparisons to provide broader evidence on the relationship between climate-related financial disclosure and SDG performance in emerging economies.

REFERENCES

[1] F. F. Adegbie, I. R. Akintoye, and A. T. Ajibade, "Sustainability reporting and corporate accountability in emerging economies: Evidence from listed firms in Nigeria," *Journal of Accounting and Taxation*, vol. 15, no. 2, pp. 45–60, 2023.
[2] F. Akindehin, Y. Akinpelu, and A. Olalekan, "Climate-related financial disclosure and corporate sustainability performance in Sub-Saharan Africa," *International Journal of Innovative Development and Policy Studies*, vol. 13, no. 1, pp. 89–105, 2025.
[3] A. O. Arowoshegbe, E. Uniamikogbo, and G. Atu, "Environmental disclosure practices and firm value of listed manufacturing companies in Nigeria," *Nigerian Journal of Management Sciences*, vol. 23, no. 1, pp. 120–136, 2022.
[4] S. O. Dada, "Sustainable Development Goals reporting by listed companies in an emerging economy: Evidence from Nigeria," *African Journal of Accounting, Finance and Research*, vol. 7, no. 1, pp. 39–56, 2024.
[5] Financial Reporting Council of Nigeria, *Roadmap for the Adoption of ISSB Sustainability Disclosure Standards in Nigeria*. Lagos, Nigeria: Financial Reporting Council of Nigeria, 2024.
[6] Global Reporting Initiative, *GRI Universal Standards 2021*. Amsterdam, The Netherlands: Global Reporting Initiative, 2021.
[7] M. A. Ibrahim, H. O. Yusuf, and S. M. Abdullahi, "Sustainability reporting and environmental performance of listed manufacturing firms in Nigeria," *Journal of Sustainable Finance and Investment*, vol. 13, no. 4, pp. 1021–1038, 2023.
[8] E. L. Inanga, T. G. Okafor, and M. A. Bello, "Environmental risk management and sustainability performance of quoted firms in Nigeria," *Global Professional Journal of Business Management*, vol. 7, no. 2, pp. 55–72, 2025.
[9] International Sustainability Standards Board, *IFRS S1: General Requirements for Disclosure of Sustainability-Related Financial Information*. London, U.K.: IFRS Foundation, 2023.
[10] International Sustainability Standards Board, *IFRS S2: Climate-Related Disclosures*. London, U.K.: IFRS Foundation, 2023.
[11] KPMG, *ESG Reporting and ISSB Implementation: Global Survey of Sustainability Reporting*. KPMG International, 2024.
[12] A. I. Musa, R. A. Ezejiofor, and C. I. Nwosu, "Climate-related disclosures and financial reporting quality of listed companies in Nigeria," *International Journal of Accounting Research*, vol. 10, no. 2, pp. 88–106, 2024.
[13] PricewaterhouseCoopers, *Global Investor Survey 2024: Sustainability Reporting and Climate Disclosure*. PwC, 2024.
[14] Task Force on Climate-related Financial Disclosures, *2021 Status Report*. Basel, Switzerland: Financial Stability Board, 2021.
[15] United Nations, *The Sustainable Development Goals Report 2023*. New York, NY, USA: United Nations, 2023.
[16] United Nations, *The Sustainable Development Goals Report 2024*. New York, NY, USA: United Nations, 2024.
[17] United Nations, *World Economic Situation and Prospects 2025*. New York, NY, USA: United Nations, 2025.
[18] United Nations Conference on Trade and Development, *World Investment Report 2022: International Tax Reforms and Sustainable Investment*. Geneva, Switzerland: United Nations, 2022.
[19] World Bank, *Nigeria Development Update: Seizing the Opportunity*. Washington, DC, USA: World Bank, 2023.
[20] World Economic Forum, *The Global Risks Report 2024*, 19th ed. Geneva, Switzerland: World Economic Forum, 2024.