EFFECT OF BOARD DIVERSITY ON CARBON EMISSION DISCLOSURE OF LISTED ENERGY COMPANIES IN NIGERIA

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Abstract

Growing recognition of the firm's role in environmental change has drawn diverse stakeholders' interest. This has led to increasing pressure on firms to operate in an environmentally accountable manner and to disclose their environmental impacts. This study investigates the effect of board diversity on carbon emission disclosure of listed energy companies in Nigeria, using board independence, board gender diversity, board nationality and board expertise as the independent variables while carbon emission disclosure is the dependent variable. The study uses panel data from seven sampled energy firms listed on the Nigerian Exchange Group (NGX) from 2014 to 2023. The study is grounded on stakeholder theory. Data used were collected via annual and sustainability reports of the sampled firms. The results showed that board independence, board gender diversity and board nationality have significant positive impact on carbon emission disclosure. This aligns with stakeholder theory that a more independent and diversified board is better positioned to address various stakeholders' expectations. This study offers several policy implications for corporate boards, policymakers and other stakeholders with respect to improving corporate governance mechanisms and reducing the carbon emission footprint. Considering the findings of the study, it is recommended that corporate governance code regulators should increase the minimum number of independent directors in corporate boards of the energy sector in Nigeria, and policymakers should ensure that carbon emission disclosure is mandatory in order to improve the incidence of transparency and accountability.

Keywords: Carbon Emission Disclosure, Board Independence, Board Gender Diversity, Board Nationality, Board Expertise, Listed Energy Companies. Nigeria

1. Introduction

Globally, the energy industry employs millions, with projections suggesting that the renewable energy sector could create about 300,000 jobs and add approximately US$7.4 billion annually to GDP by 2030 (Ogunniyi et al., 2023). As the world increasingly pursues sustainable development, the environmental and sustainability implications of energy sector activities have become more pronounced. The energy sector remains a vital contributor to Nigeria's economy, driving economic growth and employment generation. In 2025, the sector accounted for a significant proportion of the country's GDP, with the oil sector alone contributing about 4.05% to GDP in the second quarter of 2025, representing a 20% year-on-year growth (Umeji et al., 2023). Despite Nigeria's vast natural resource endowment, including oil wealth and other strategic advantages, the country has struggled to translate these endowments into sustainable development outcomes, largely due to weak governance structures and institutional deficiencies (Bello & Sagagi, 2017). As Nigeria aims to achieve 30% renewable energy penetration by 2030, the environmental sustainability implications of energy sector operations have therefore become increasingly critical.

The continuous global expansion of economic activities by companies and the attendant consequences on the environment have generated widespread concern over unsustainable business practices. These activities have contributed significantly to global environmental degradation and pose serious threats to climate stability and ecosystem sustainability. Environmental challenges arising from climate change remain among the most pressing issues confronting policymakers, regulators, investors, and academics in the 21st century. The United Nations Framework Convention on Climate Change (UNFCCC) has emphasized that human activities resulting in carbon emissions—such as carbon dioxide (CO_2), nitrogen oxide (N_2 O), methane (CH_4), chlorofluorocarbons, and other greenhouse gases (GHGs)—as well as the depletion of blue carbon ecosystems, play a critical role in global warming and climate change. In this context, corporate accountability, transparency, and disclosure have become central to addressing environmental externalities, particularly in emerging economies characterized by governance challenges (Bello & Sagagi, 2017).

In recent times, there have been sustained agitations by various stakeholder groups for companies to disclose climate-related risks and governance practices, especially within energy-intensive sectors whose operations are highly carbon-intensive. Disclosure is viewed as a mechanism for reducing information asymmetry between firms and stakeholders, thereby enhancing accountability and informed decision-making (Ramalan, Kurfi, Bello, & Saifullahi, 2021). It is noteworthy that

emissions from the transport sector alone accounted for approximately 47.76% of CO_2 emissions in Nigeria between 2000 and 2014 (International Energy Agency, 2015), underscoring the urgency for transparent environmental reporting and effective governance mechanisms within carbon-intensive industries.

The World Economic Forum (2020) stressed that failure to mitigate the adverse effects of climate change significantly heightens environmental and economic risks. In response to increasing stakeholder pressure, many firms—particularly in developed economies—have demonstrated greater willingness to disclose the environmental impacts of their operational activities and to implement mitigation strategies (KPMG, 2022). This aligns with the growing emphasis on Corporate Social Responsibility (CSR), which has evolved into a core element of corporate strategy, as firms are increasingly evaluated not only on financial performance but also on ethical conduct, environmental stewardship, and social contributions (Felicia, Aliyu, & Bello, 2025). Similarly, global efforts to mitigate carbon emissions have intensified in line with the Paris Agreement targets (IPCC, 2018).

In Nigeria, a developing economy with notable environmental challenges, various policy efforts have been undertaken following its identification as a country facing significant environmental risks. The World Bank's 2022 Global Gas Flaring Tracker Report ranked Nigeria as the ninth highest gas-flaring country globally, while the World Resources Institute reported that Nigeria ranked 90th among global carbon emitters in 2019. According to Omaliko et al. (2021), the energy sector is among the most carbon-sensitive industries in Nigeria, with estimated carbon emissions of about 90 million metric tons in 2010, largely attributable to gas flaring. These environmental challenges further highlight the need for robust governance frameworks and enhanced corporate disclosure practices (Bello, Kurfi & Tijjani, 2021).

Nigeria ratified the Kyoto Protocol on December 10, 2004, covering the first commitment period of 2008–2012, and subsequently ratified the Doha Amendment representing the second commitment period (2013–2020). Nigeria further ratified the Doha Amendment on October 2, 2020, marking the third ratification. The core objective of the Kyoto Protocol is to reduce carbon emissions, which constitute a major driver of environmental degradation and climate change. In line with these international commitments, the Nigerian government enacted the Climate Change Act, 2021, to align domestic climate policy with the UNFCCC and Kyoto Protocol, support the achievement of the Sustainable Development Goals (SDGs), and contribute to global efforts to reduce greenhouse gas emissions.

Currently, carbon emissions disclosure in Nigeria remains largely voluntary.

However, there are indications of a gradual shift towards mandatory environmental sustainability reporting. This is reflected in the Financial Reporting Council of Nigeria's (FRCN) 2024 roadmap for the adoption of IFRS S1 and IFRS S2 Sustainability Disclosure Standards. Phase 3 of the adoption framework introduces mandatory sustainability reporting for all public interest entities—excluding government entities—effective from January 1, 2028, while Small and Medium-Sized Enterprises (SMEs) are expected to adopt mandatory reporting from January 1, 2030. This transition reinforces the role of disclosure as a governance mechanism for reducing information asymmetry and strengthening stakeholder confidence (Ramalan, Kurfi, & Bello, 2021).

In view of the foregoing, the role of corporate governance mechanisms, particularly board diversity, has been widely acknowledged as having significant implications for carbon emissions disclosure. The board of directors, as the apex decision-making body, is responsible for setting strategic direction, overseeing management actions, and ensuring compliance with regulatory and societal expectations (Bello, Kurfi, & Tijjani, 2021). Board diversity in terms of independence, gender composition, nationality, and professional expertise is believed to influence firms' commitment to transparency and sustainability reporting. Independent directors enhance objectivity and accountability in disclosure decisions, while gender-diverse boards tend to place greater emphasis on sustainability and risk management. Similarly, board members with diverse national backgrounds and environmental or technical expertise bring global perspectives on climate regulation and best practices, thereby strengthening carbon emissions disclosure and environmental governance.

Carbon Emissions Disclosure (CED) represents a critical dimension of environmental reporting, yet it remains underdeveloped among Nigerian firms relative to advanced economies. Empirical evidence in this area remains limited, making Nigeria a compelling context for examining CED practices. Moreover, CED provides insight into the strategic oversight role of boards of directors in promoting transparency and effective monitoring mechanisms. Scholars have argued that strengthening corporate governance structures constitutes a key strategy for achieving decarbonization targets, with board diversity playing a central role in fostering sustainable development and enhanced disclosure practices. Prior studies have examined the relationship between financial performance and CED (Abubakar et al., 2021; Alsaifi et al., 2019; Onyebuenyi et al., 2023), the association between firm value and CED (Issa et al., 2024; Kurnia et al., 2020), and the influence of earnings management on CED (Astari et al., 2020). In view of the aforementioned, some previous studies have also investigated the relationship between board diversity (board independence, board gender

diversity, board nationality and board expertise) and carbon emission disclosure. In fact, Amissah, (2025) argue that board independence can contribute to board diversity by bringing external perspectives and reducing groupthink. These have been carried out by Bedi and Singh (2024), Chakraborty and Dey (2023), Mardini and Lahyani (2024) and Saadah et al. (2024). However, most of these studies were conducted in Asian countries. Limited evidence exists on the relationship between board diversity and carbon emission disclosure in African countries like Nigeria. Also, less attention has been given how board expertise affects CED by prior studies.

Moreover, this study aims to address the gaps of few studies in Nigeria that have considered the impact of board diversity on CED. Therefore, the study contributes to the empirical literature on factors influencing carbon emissions disclosure in emerging markets, with reference to Nigeria. Thus, adding fresh insights on the subject matter and extending the frontiers of knowledge. The findings of the study would benefit stakeholders, including shareholders, regulatory bodies, managers, policymakers, and practitioners. It would also be of benefit to academics, students and future researchers, as it would serve as good reference material and a benchmark for future research.

The main objective of this study is to ascertain the effect of board diversity on carbon emission disclosure of listed energy firms in Nigeria. The specific objectives are to examine the effect of board independence, board gender diversity, board nationality and board expertise on carbon emission disclosure of listed energy firms in Nigeria. The hypotheses of the study was that there is no significant impact of board diversity on carbon emission disclosure of listed energy companies in Nigeria.

2. Literature Review

The study discussed conceptual meaning, review empirical studies and the underpinning theory.

2.1 Conceptual Review

Recent studies define board independence as directors' ability to make decisions without undue influence, with Amo-Navas et al. (2025) noting independent directors meet formal independence criteria. Al-Shaer et al. (2023) highlight board independence's impact on company performance. Board gender diversity refers to the mix of men and women in decision-making (Terjesen et al., 2016), with Onatuyeh and Ukolobi (2020) defining it as the proportion of female directors. Board nationality diversity involves directors from different countries (Nielsen & Nielsen, 2011). Board expertise is the collective knowledge and experience of directors (Kor & Sundaramurthy, 2009).

2.2 Empirical Review

This study provides a review of relevant literature on board diversity and carbon disclosure. For example, Lahyani (2022)

investigated how board diversity impacts carbon disclosure in France. Data used were extracted on 120 non-financial listed companies in France covering 2010 to 2019. GMM results show that board independence and nationality have significantly and positively impact carbon disclosure, while gender diversity showed no statistically significant effect. Similarly, Kılıç and Kuzey (2019) found board independence and board nationality increase the likelihood of disclosing carbon emission information. Gender diversity, however, has insignificant influence on carbon disclosure. The study utilized data drawn from Turkish non-financial companies spanning the years 2011 to 2015. Stakeholder and legitimacy theory were employed as the study's theoretical basis.

Bedi and Singh (2024) conducted a study on how corporate governance influences CED in India. Board independence and gender diversity were among the corporate governance attributes examined, drawing upon agency and stakeholder theories. Panel data were collected on 500 listed Indian companies covering 2016 to 2022. Findings shows that board independence and gender diversity had a statistically significant impact on CED.

In addition, Chakraborty and Dey (2023) also examined how corporate governance mechanisms influences carbon disclosure from legitimacy, agency and stakeholder theory viewpoint. Panel data was collected from Bangladesh firms covering 2015 to 2019, totalling 250 firm-year observations. Findings indicate that board independence significantly and positively impacts corporate CED, while gender diversity was found to have an insignificant impact on corporate carbon disclosure. Mardini and Lahyani (2024) examined how board attributes impact carbon disclosure using cross-sectional data from 120 French quoted firms. The study was anchored in stakeholder theory. Findings from the GMM analysis show that board independence positively influences carbon disclosure, whereas board gender diversity does not exhibit a significant influence on carbon disclosure. Saadah et al. (2024) explore the influence of female representation in top management on CED through the lens of upper echelon theory. The study used regression analysis to analyze data from 146 ASEAN banks covering the period 2018 to 2022. The findings indicate that female directors significantly and positively impact CED. Similarly, Caby et al. (2024) explored how board gender diversity affects carbon disclosure, utilizing data from 138 technology companies between 2014 and 2020. Their results also reveal that women's participation on boards significantly enhances both the extent and quality of CED.

2.3 Research Framework/Model and Underpinning Theory

Stakeholder theory, introduced by Freeman (1984), asserts that company's accountability and responsibilities go beyond only shareholders but to various other stakeholders, such as regulators, consumers, and employees. The theory

assumes that long-term survival is linked to effectively managing these relationships, particularly when stakeholders apply pressure related to environmental concerns. The board is responsible for addressing and balancing diverse stakeholders' needs and interests. Thus, the diversity of the board can enhance its capacity in identifying and addressing diverse stakeholders' needs and interests. Stakeholder theory highlights the importance of board members' independence in addressing and safeguarding various stakeholders' rights and interests (Gul & Leung, 2004). Independent directors can be seen as effective monitors for overseeing management opportunistic behavior and enhancing firms' engagement in environmental disclosure practices. In this context, board diversity, such as gender, nationality and expertise, can be seen as strategic resources that allow the board to have access to diverse perspectives, values, knowledge, skills and networks, which can enhance environmental responsiveness and disclosure practices. The research framework is shown below:

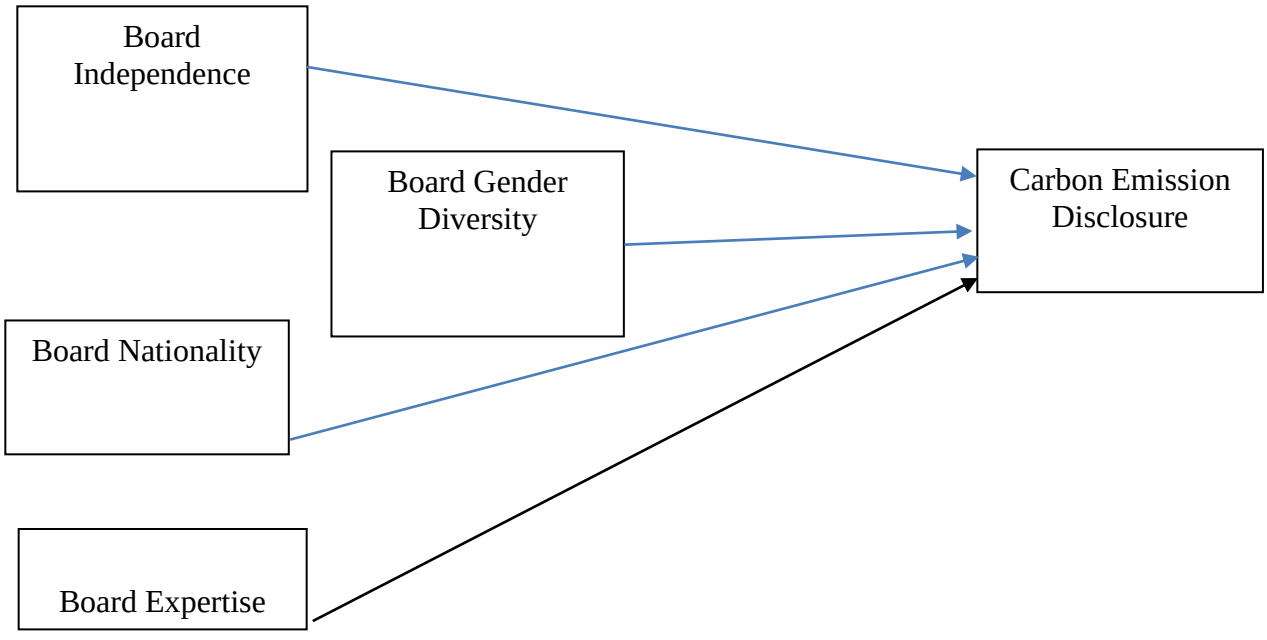

Fig. 1: Conceptual framework

3. Method

This study employed causal research design to examine the impact of board diversity on CED. Causal research design is used to identify cause-and-effect relationships between variables. Therefore, board diversity and carbon emissions disclosure, a causal design can help determine whether changes in board independence, gender diversity, nationality, or expertise directly influence carbon emissions disclosure. The population includes all seven (7) listed energy firms on the Nigeria Exchange Group. The population are Aradel Holdings Plc, Oando Plc, Seplat Energy Plc, TotalEnergies Marketing Nigeria Plc, Conoil Plc, Eterna Plc and Geregu Power Plc. They are into downstream, upstream activities as well as power generation. This study covered 10 years, 2014 to 2023. The scope of the study is justified by several factors. This period marks a time of recovery from the global financial crisis, allowing for a relatively stable economic context. It also coincides with an increased global focus on sustainability and environmental concerns, such as the Paris Agreement in 2015. Additionally, Nigeria implemented various economic reforms during this time, impacting the energy sector and corporate governance. The 10-year period provides sufficient data for analysis, capturing trends and changes in board diversity and carbon emissions disclosure, while remaining relevant to current policies and regulations.

Companies with incomplete data on the variables of the study were filtered out. The final sample comprises seven listed energy firms in Nigeria. The measurements of the variables are explained in table 1 below.

Table 1. Variables Measurements

Variables	Measurements	Data	Sources
Dependent variable			
Carbon Emission Disclosure	A disclosure index score based on a checklist derived from GRI 305.	Annual/Sustainability Report	Omaliko, et. al. (2021), Lahyani, (2022), Kurnia, et. al. (2020)
Independent variables			
Board Independence	Ratio of independent directors to the overall board size	Annual Report	Caby, et. al. (2024). Gul, & Leung, (2004).
Board Gender	Ratio of female board members to the overall board size	Annual Report	Caby, et. al. (2024). Gul, & Leung, (2004).
Board Nationality	Ratio of foreign directors to the overall board size	Annual Report	Caby, et. al. (2024). Gul, & Leung, (2004).
Board Expertise	Number of directors with financial expertise divided by overall board members	Annual Report	Caby, et. al. (2024). Gul, & Leung, (2004).
Control variables			
Profitability	Profit after tax divided by total assets	Annual Report	Idamoyibo (2024), Chukwu & Efanga (2025)
Leverage	Ratio of total liabilities to total assets	Annual Report	Akinninyi (2025)
Firm Age	Number of years from incorporation	NGX	Idamoyibo (2024), Chukwu & Efanga (2025)

Source: Authors Compilation (2025)

The following model is constructed to examined the impact of board diversity on CED.
Model:

$$CED_{it} = \beta_0 + \beta_1 BIND_{it} + \beta_2 BGEN_{it} + \beta_3 BNAT_{it} + \beta_4 BFEXP_{it} + \beta_5 ROA_{it} + \beta_6 LEV_{it} + \beta_7 FAGE_{it} + €_{it}$$

β_0 denotes a constant, β_1-$\beta 4$ stands for coefficients of the explanatory variables, and β_5-β_7 stand for control variables coefficients. CED stands for carbon emission disclosure, BIND for board independence, BGEN for board gender diversity, BNAT for board nationality, BEXP for board expertise, ROA for profitability, LEV for leverage, FAGE for firm age and € is for the error term.

4. Result and Discussion

The study presents the following result and discussions.

Table 2 Descriptive Statistics

Variables	Obs	Mean	Std. Dev.	Min	Max
CED	70	0.073	0.175	0.000	0.857
BIND	70	0.150	0.181	0.000	0.545
BGEN	70	0.164	0.101	0.000	0.375
BNAT	70	0.188	0.207	0.000	0.636
BEXP	70	0.155	0.087	0.000	0.375
ROA	70	0.006	0.249	-.716	1.763
LEV	70	0.764	0.297	.359	2.478
FAGE	70	39.071	17.410	5.000	67.000

Source: Survey (2025)

Based on the descriptive statistics above, the findings revealed that the average carbon emission disclosure is 7.3%, with a standard deviation (SD) of 0.175, signifying relatively low disclosure of carbon emission information among the sampled energy firms. The CED has a minimum of 0%, indicating some firms did not disclose any related carbon information during the period covered. The average of board independence is 15%, indicating a relatively low percentage of independent directors among the sampled firms. The SD of 18.1% signifies that the sampled firms' board independence clusters together. The lowest and highest values are 0 and 0.545. The average of board gender diversity is 16.4%, indicating a relatively low representation of female directors among the sampled companies. The standard deviation is 10.1%, suggesting a moderate variation from the mean. The min and max values are 0 and 0.374.

Board nationality has a mean and SD value of 18.8% and 20.7%, showing a low variance from the mean. The min and max values are 0 and 0.636. Board expertise has a mean and SD value of 15.5% and 8.7%, showing a moderate variation from the mean. The min and max values are 0 and 0.375. The average return on assets is 0.006 with SD of 0.249. The min and max values are -0.716 and 1.763. The mean score for leverage measured by total liabilities to total assets is 0.764, with SD of 0.297. The min and max values are 0.359 and 2.478. The min and max values of firm age are 5 and 67.

Table 3 Correlations Matrix

VARIABLES	CED	BIND	BGEN	BNAT	BEXP	ROA	LEV	FAGE
CED	1.000							
BIND	0.327	1.000						
BGEN	0.374	0.115	1.000					
BNAT	0.372	0.060	0.210	1.000				
BEXP	0.079	0.439	0.176	-0.049	1.000			
ROA	0.039	-0.057	0.111	0.084	-0.065	1.000		
LEV	-0.143	-0.336	-0.149	-0.292	-0.189	-0.280	1.000	
FAGE	-0.066	-0.545	0.164	0.230	-0.160	0.058	0.147	1.000

Source: Survey (2025)

Table 3 shows the correlations among the explained, explanatory and control variables. Findings indicate that all the four independent variables (board independence, gender diversity, nationality and expertise) have positive relationship with CED. Profitability also has positive relationships, while the other two control variables (leverage and firm age) have a negative relationship with CED. The table also displayed the correlation among the explanatory variables. A correlation coefficient that exceeds 0.80 is deemed to be excessive (Gujarati, 2004). Table 3 shows that all the correlation coefficients among the explanatory variables are higher than 0.8. This signifies that harmful multicollinearity does not exist. However, this study uses Variance Inflation Factor (VIF) to further confirm the multicollinearity problem. The result is displayed in table 4 below.

Table 4. Variance Inflation Factor

	VIF	1/VIF
BIND	1.982	.504
BGEN	1.150	.87
BNAT	1.261	.793
BEXP	1.312	.762
ROA	1.132	.883
LEV	1.377	.726
FAGE	1.690	.592
Mean VIF	1.415	.

Source: Survey (2025)

Absence of multicollinearity is one of the main assumptions of the classical linear regression model (CLRM). High VIF values indicate a strong correlation between independent variables, which can negatively impact the regression model's accuracy and interpretation. The result in table 4 above indicates that all the VIF values are less than the acceptable threshold of 5, indicating no issue of multicollinearity. In addition, the mean VIF is 1.415, which further suggests no

multicollinearity in the model. The results of other pre-estimation tests are shown in table 5 below .

Table 5. Pre-estimations

Test	F/Chi - Statistics	P-value
Hausman (1978) specification test.	53.720	0.000
Modified-Wald test for group-wise heteroskedasticity.	1828.350	0.000
Wooldridge test for autocorrelation.	145.642	0.000

Source: Survey (2025)

The study conducted the Hausman test to choose which is more suitable between fixed-effect and random-effect models. The p-value of the Hausman test is significant, signifying that the fixed model is more appropriate. The study also tests for autocorrelation. The result shows a significant prob-value of 0.000. This implies there is presence of autocorrelation issues in the model. This study also tested for heteroscedasticity, which is another important assumption of CLRM. Heteroscedasticity means unequal variance in the errors. It contradicts the assumption of homoscedasticity and may result in incorrect conclusions. The result shows a prob-value of 0.000, which is significant at 1%, indicating presence of heteroscedasticity.

This makes the fixed-effect regression not suitable, as the presence of heteroskedasticity and autocorrelation can cause biased panel regression estimators. The study addressed this issue by using the Panel-Corrected Standard Errors (PCSE) regression, as recommended by prior studies. The standard errors provided by PCSE are robust, ensuring valid statistical inference when dealing with the complex errors structure in panel data (Chen et al., 2010). The PCSE result is in table 6 below.

Table 6: PCSE Regression

CED	Coef.	St.Err.	t-value	p-value
BIND	0.3107	0.133	2.33	0.020
BGEN	0.5255	0.206	2.55	0.011
BNAT	0.2721	0.138	1.97	0.049
BEXP	-0.1750	0.142	-1.23	0.218
ROA	0.0149	0.034	0.45	0.656
LEV	0.0596	0.035	1.69	0.091
FAGE	-0.0005	0.001	-0.47	0.640
Constant	-0.1110	0.049	-2.26	0.024
Number of observations				70
R-Squared				0.3215
Chi-square				33.91
Prob > chi2				0.0000

Source: Survey (2025)

The PCSE model has a chi-square statistic of 33.91, and it is significant at 1%, indicating that the model is fit to estimate the relationship in the model. The R-square value of 32.15% means that the explanatory variables account for 32.15% of the variation in CED of the sampled firms. Based on the above PCSE regression results, board independence has a coefficient and p-value of 0.3107 and 0.020. The result denotes that board independence significantly and positively impacts CED. This indicates that an increase in the percentage of independent directors increases disclosure of carbon emission information. This aligns with the proposition of stakeholder theory that independent directors can effectively oversee management and ensure that the reporting of climate-related information aligns with shareholder interests. It is also in line with the results of Lahyani (2022), who found that board independence positively influences CED. But it contradicts the result of Bedi and Singh (2024) who found that board independence has an insignificant effect on CED. Hence, hypothesis one is supported.

Board gender diversity significantly and positively impacts CED, as indicated by the coefficient and prob-value of 0.5255 and 0.011. This implies that having female representation on the board will likely improve CED in energy firms. This result aligns with resource dependency theory and the results of Saadah et al. (2024) who found that board gender diversity positively influences CED. But it contradicts the result of Bedi and Singh (2024) and Lahyani (2022), who found board gender diversity to have an insignificant effect on CED. Hence, hypothesis two is supported.

Similarly, board nationality significantly and positively impacts CED, evidenced by the coefficient and p-value of 0.2721 and 0.049. Hence, hypothesis three is supported. This implies that increase in the proportion of foreign directors enhances CED in energy firms. This aligns with resource dependency theory and the findings of Kılıç and Kuzey (2019) and Lahyani (2022), who found that board independence positively influences CED. However, board expertise was found to have an insignificant impact on CED, evidenced by the prob-value of 0.218. This means that the number of financial experts on board has no influence on carbon emission disclosure. Given that the p-value exceeds 5%, this study rejects the fourth hypothesis.

5. Conclusion

In recent decades, there has been growing stakeholder pressure on companies to report carbon emission information. This research examined the impact of board diversity on CED. The diversity examined includes board independence, gender diversity, board nationality, and board expertise. PCSE regression has been employed for hypotheses testing using 70 firm-year observations. The results show

that board independence, board gender diversity and board nationality significantly and positively impact CED. However, board expertise has an insignificant effect on carbon emission disclosure. This study contributes to evolving knowledge and literature on corporate CED practices. It highlights the importance of diversity of board members in terms of independence, gender and nationality. The results have implications for policymakers, the board of directors, and other stakeholders. The corporate nomination committee can also get rich insights and understanding of which diversity is relevant for enhancing disclosure practices of the firm. The results will aid corporate governance code setters in setting the minimum composition of corporate boards.

6. Implications/recommendations

The study recommends that energy companies prioritize board independence, gender diversity, and nationality diversity to enhance carbon emissions disclosure. Regulatory bodies should develop guidelines on board diversity to promote transparency and accountability in carbon emissions reporting.

Policy implications arise from these findings. Policymakers can leverage these insights to develop targeted guidelines promoting board diversity, particularly independence, gender, and nationality, to drive carbon emissions disclosure. This could involve incentivizing companies to adopt diverse boards and disclose emissions data, aligning with global sustainability goals.

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