Ekuitas: Jurnal Ekonomi dan Keuangan **p-ISSN 2548 – 298X**
Akreditasi No. 158/E/KPT/2021 **e-ISSN 2548 – 5024**
DOI: 10.24034/j25485024.y2024.v8.i4.6670

FACTORS AFFECTING CARBON EMISSION DISCLOSURE: GOOD CORPORATE GOVERNANCE AS A MODERATING VARIABLE

Jaenudin
zjaenudin4@gmail.com
Endang Ruhiyat
Sugiyanto
Universitas Pamulang

ABSTRAK

Penelitian ini bertujuan untuk menguji pengaruh strategi hijau, investasi hijau dan kinerja lingkungan terhadap pengungkapan emisi karbon dengan tata kelola perusahaan yang baik sebagai varibel moderasi. Penelitian ini menggunakan pendekatan kuantitatif dengan menggunakan data sekunder. Metode penelitian yang digunakan adalah metode dokumentasi dengan pengumpulan data berdasarkan laporan tahunan dan laporan keberlanjutan perusahaan. Sampel dalam penelitian ini adalah perusahaan non keuangan yang terdaftar di Bursa Efek Indonesia pada tahun 2020-2022 dengan metode pengambilan sampel menggunakan purposive sampling. Jumlah sampel yang diperoleh adalah 91 perusahaan dari 772 perusahaan yang digunakan sebagai populasi. Teknik analisis data yang digunakan dalam penelitian ini adalah model analisis regresi linear berganda. Hasil penelitian menunjukkan bahwa variabel strategi hijau dan kinerja lingkungan memiliki pengaruh positif terhadap pengungkapan emisi karbon, sedangkan investasi hijau tidak berpengaruh terhadap pengungkapan emisi karbon. Dalam pengujian MRA, tata kelola perusahaan yang baik tidak memoderasi hubungan antara strategi hijau dan kinerja lingkungan dengan pengungkapan emisi karbon sedangkan tata kelola perusahaan yang baik memperlemah hubungan antara investasi hijau dengan pengungkapan emisi karbon.

Kata kunci: pengungkapan emisi karbon, strategi hijau, tata kelola perusahaan yang baik.

ABSTRACT

This study examines the influence of green strategy, green investment, and environmental performance on carbon emission disclosure, with good corporate governance as a moderating variable. The research adopts a quantitative approach using secondary data. The research method employed is documentation, with data collected from annual and company sustainability reports. The sample in this study consists of non-financial companies listed on the Indonesia Stock Exchange from 2020 to 2022, using a purposive sampling method. The sample obtained includes 91 companies out of a population of 772 companies. The data analysis technique used in this study is multiple linear regression analysis. The results show that the variables of green strategy and environmental performance have a positive influence on carbon emission disclosure, while green investment does not affect carbon emission disclosure. In the MRA testing, good corporate governance does not moderate the relationship between green strategy and environmental performance with carbon emission disclosure. In contrast, good corporate governance weakens the relationship between green investment and carbon emission disclosure.

Key words: carbon emission disclosure, green strategy, good corporate governance.

,

INTRODUCTION

Global warming is recognized as a significant issue that needs to be addressed due to its escalating impacts (Afni et al., 2018). Human activities, particularly the combustion of fossil fuels, are identified as the primary cause of global warming, with the majority of the warming in the last 50 years attributed to human activities, including 90% from fossil fuel combustion (IPCC, 2021).

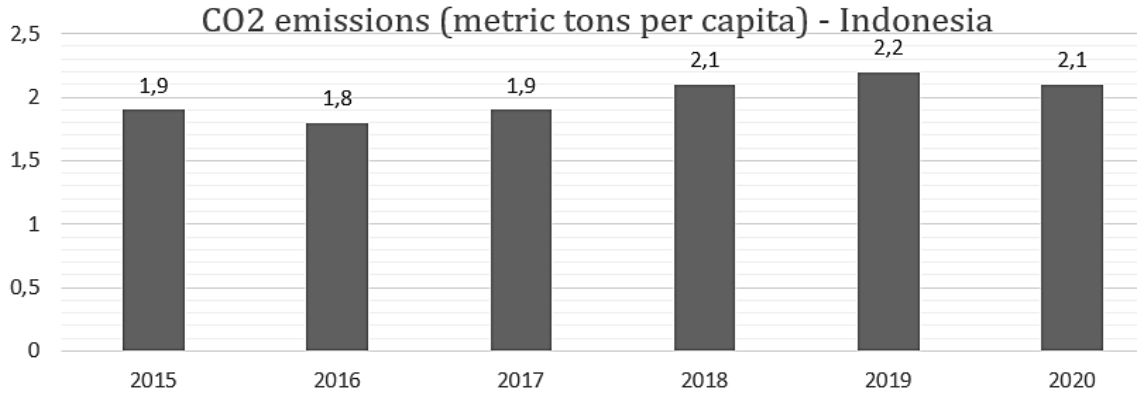

Figure 1
CO2 Emissions - Indonesia
Source: Climate Transparency Report on Indonesia (2021)

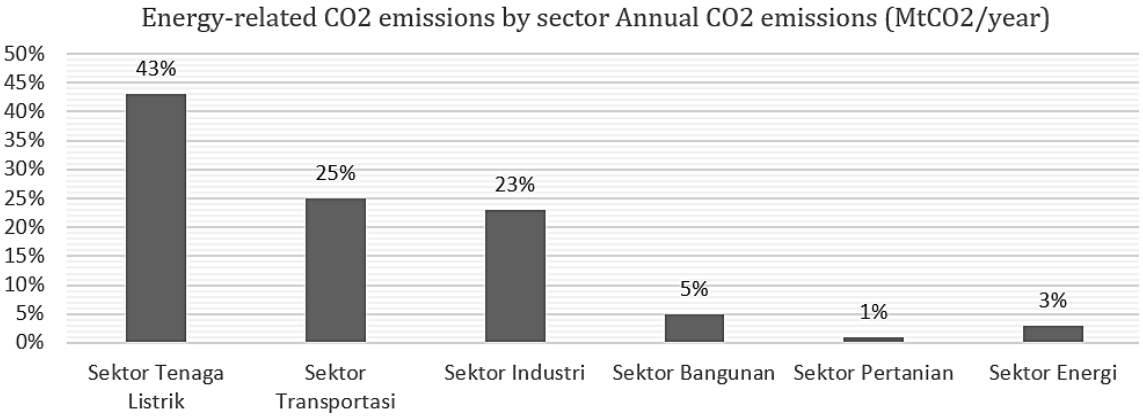

Figure 2
Indonesia's Annual CO2 Emissions Per Sector
Source: Climate Transparency Report on Indonesia (2021)

According to the World Research Institute (WRI), Indonesia is among the top ten countries contributing the most carbon emissions globally.

Indonesia experienced fluctuations in carbon emissions from 2015 to 2020 shown in figure 1. In 2015, carbon emissions were recorded at 1.9 metric tons, then decreased to 1.8 metric tons in 2016. However, the figures rose again to 1.9 metric tons in 2017, 2.1 metric tons in 2018, and reached 2.2 metric tons in 2019. A decline was observed in 2020, with emissions dropping to 2.1 metric tons, primarily due to the impact of the COVID-19 pandemic. These fluctuations highlight the need for a transition to renewable energy and more consistent implementation of environmentally friendly practices.

According to data from climate-transparency.org, the following are the contributions of various sectors to carbon emissions in Indonesia in 2021.

Figure 2 describe about the largest contributor to CO2 emissions in Indonesia is the electricity sector, accounting for 43% of total emissions. This is due to the heavy reliance on coal-fired power plants. The transportation sector contributes 25%, influenced by the growing number of motor vehicles. Meanwhile, the industrial sector accounts for 23% of emissions, mainly from fossil fuel combustion and industrial processes. The building sector contributes 5%, mostly from household energy use such as electricity and gas, while other energy sources contribute 3%, including activities

like mining and fuel processing. The agricultural sector is the smallest contributor at 1%, stemming from activities such as forest burning and chemical fertilizer use. Therefore, efforts to reduce emissions should focus on energy transition, transportation efficiency, and environmentally friendly energy management.

This condition pressures companies to enhance their environmental responsibility, as more investors are divesting from companies deemed harmful to the environment. According to the research by Maulidiavitasari and Yanthi (2021), there is evidence that companies with good environmental performance tend to be more transparent in disclosing their carbon emissions. Currently, stakeholders demand financial accountability from companies and pay attention to the company's responsibility towards the environment and climate change. Corporate activities are considered one of the causes of environmental damage due to the presence of chemicals and emissions originating from raw materials and various equipment used (Dani and Harto, 2022). Manufacturing companies in Indonesia account for only about 10% of the information on carbon emissions in annual or sustainability reports (Afni et al., 2018).

Thus, disclosing carbon emissions triggers costs and threats that the emitters cannot easily control. According to the International Monetary Fund (IMF), green investment is essential for adapting to a changing climate by reducing carbon emissions. Green investment is used to confront climate change without significantly reducing non-energy production and consumption (Desai, 2022). In essence, green investment aims to maintain a sustainable economy and life in terms of social aspects, the environment, and governance. Research by (Tila and Augustine, 2019; Sari and Susanto, 2021) states that a green strategy positively affects carbon emission disclosure. A green strategy is a step towards reducing carbon emissions, allowing for the disclosure of carbon emissions in annual and sustainability reports. So, the better a company's green strategy is, the higher the level of disclosure of carbon emissions. Studies conducted by Afni et al., (2018) and Syabilla et al., (2021) show that green strategy and investment positively influence carbon emission disclosure. When companies provide financing for environmental impact, it can encourage better disclosure of carbon emissions by the company.

Previous research has examined the influence of green strategy, green investment, and environmental performance on carbon emission disclosure. The update in this research includes the addition of a moderating variable, namely good corporate governance, measured based on the Circular Letter of The Financial Services Authority Number 32/SEOJK.04/2015 regarding Guidelines for Public Company Governance. Good corporate governance is essential in ensuring transparency, accountability, and sound governance in corporate management that helps companies become more responsible toward the environment and comply with sustainability-related regulations.

Although some empirical studies have examined the impact of corporate governance on carbon emission disclosure, most have used variables such as institutional ownership, managerial ownership, board independence, and audit committees. However, these studies have not considered good corporate governance, as measured by Circular Letter of The Financial Services Authority Number 32/SEOJK.04/2015, as a moderator that could enhance carbon emission disclosure. For example, Sari and Susanto (2021) only examined corporate governance variables without using SEOJK-based measurements.

This study aims to provide a deeper understanding of how green strategy, green investment, and environmental performance influence companies' level of carbon emission disclosure. Additionally, this research will identify the crucial role of good corporate governance (measured by Circular Letter of The Financial Services Authority

Number 32/SEOJK.04/2015) as a moderating variable that could strengthen these relationships. With this understanding, companies are expected to become more transparent in their environmental responsibilities, thus supporting sustainable development goals and helping mitigate the impact of climate change.

THEORETICAL REVIEW

Research on carbon emission disclosure has rapidly increased with the growing global concern about climate change caused by business activities, especially in the United States, Canada, and Australia. In Indonesia, attention to carbon emission disclosure is rising, and it is linked to support for the 0% emissions movement by 2050. The voluntary implementation of emission disclosure is considered a positive action in the market economy. It lets companies voluntarily disclose pollution information, sending positive signals about their future performance. Carbon emission disclosure also serves as a form of communication between companies and stakeholders, aiming to garner support for social responsibility.

Agency Theory

The agency theory, conceptualized by Jensen and Meckling (1976), shows that an agency relationship is a contract between the company owner, i.e., the investor (principal), and the manager (agent), whereby the manager is given some authority for decision-making as a representative of the investor in the company. Corporate governance mechanisms help enhance company disclosure and minimize information asymmetry gaps (Chithambo and Tauringana, 2017).

The main goal of agency theory is to minimize agency costs. Agency costs arise due to conflicts of interest between the principal and the agent. These conflicts can occur due to various factors, such as differences in information, goals, and risks. The agency theory argues that agency costs can be reduced by designing the proper contract between the principal and the agent. This contract should incentivize the agent to act in the principal's interest. Corporate governance mechanisms are one way to minimize agency costs. These mechanisms can help improve company disclosure and minimize information asymmetry gaps. Adequate disclosure can assist the principal in assessing the agent's performance and taking necessary actions to address conflicts of interest.

Stakeholder Theory

Stakeholder theory, first developed by Freeman (1984), emphasizes that companies operate not only for their interests but also to benefit their stakeholders. This theory highlights how corporate leadership meets or manages stakeholders' expectations, including in the disclosure of environmental, social, and intellectual performance (Cahya, 2017).

The main goal of this theory is to provide long-term value to stakeholders, ensuring continuous support and resources for the company. Effective stakeholder management ensures the company gains full support and understands organizational objectives. Environmental reporting is crucial to avoiding negative impacts on the company (Hanifah and Wahyono, 2018).

Legitimacy Theory

The legitimacy Theory, introduced by Dowling and Pfeffer (1975), discusses the "Legitimacy gap" as the difference between corporate and societal values. If not, the note will appear between the legitimacy gap expectations and how to behave and act in the organization. Organizations need to adopt a strategy to eliminate these disparities and change public perception through environmental and social disclosure of information (Afni et al., 2018). Industries often become the leading cause of natural disasters due to using raw materials with various chemicals and air-polluting emissions. In response, companies issue environmental responsibility reports, including information on greenhouse gas emissions, to

gain legitimacy from the public and ensure long-term operational sustainability.

Legitimacy Theory highlights the concept of a "social contract" between business and society, where companies commit to responsibly using economic resources to build credibility and meet environmental demands. In this framework, corporate operations, especially those owned by institutional investors, are closely monitored to maintain sustainability and credibility. According to this theory, companies must comply with the norms and standards of the community in which they operate to gain legitimacy. Creating an environmentally friendly environment becomes a crucial step in gaining recognition from the public. The board of directors plays a significant role in ensuring the company obtains legitimacy from all stakeholders, including the community.

Hypothesis Development

Green Strategy on Carbon Emission Disclosure

Companies that report carbon emission information have the ability to identify risks and opportunities related to climate change, which can be integrated into green strategies. Research conducted by Afni et al., (2018); Sari and Susanto, (2021); Andrian and Kevin, 2021) yielded results that the green strategy has a positive impact on carbon emission disclosure. The arguments align with stakeholder theory, where for a company to gain support, it must strive to meet stakeholders' interests through openness regarding its performance, such as carbon emission disclosure generated by the company.

H_1: Green strategy has an impact on carbon emission disclosure.

Green Investment on Carbon Emission Disclosure

Green Investment is a company's effort to manage environmental issues and reduce the negative impact of business activities (Adi and Wardi, 2022). According to legitimacy theory, companies with legitimacy will care about the environment because their social responsibility extends to society and the environment in which the company operates, influencing its sustainability (Yasrawan and Werastuti, 2022).

Research by Afni et al., (2018) supports the findings that green investment positively and significantly influences carbon emission disclosure. Legitimacy theory also asserts that companies concerned about the environment will strive to maintain their legitimacy in society, as it will impact the acceptance of the company's performance.

H_2: Green investment has an impact on carbon emission disclosure.

Environmental Performance on Carbon Emission Disclosure

Environmental performance reflects a company's ability to create a clean and green environment. According to legitimacy theory, to be accepted by society, companies must comply with social norms, including environmental preservation. Companies with good environmental performance tend to disclose environmental information to demonstrate their environmental commitment and gain societal legitimacy (Murniati, 2021).

Research of Saptiwi (2019) found that good environmental performance has a positive impact on carbon emission disclosure. Maulidiavitasari and Yanthi (2021) as well as Purnayudha and Hadiprajitno (2022) argue that the higher a company's environmental performance, the greater the carbon emission disclosure by the company.

H_3: Environmental performance has an impact on carbon emission disclosure.

Good Corporate Governance Moderating the Relationship between Green Strategy and Carbon Emission Disclosure

The Organisation for Economic Co-operation and Development (OECD) in 1999 stated that Good Corporate Governance includes principles and practices designed to promote transparency, accountability, and corporate responsibility towards various stakeholders, including the environment.

Companies with good governance are more likely to focus on achieving long-term goals and sustainability rather than just short-term financial gains. With good corporate governance, company management is more likely to adopt a green strategy as part of the company's vision and mission. This green strategy may involve reducing carbon emissions, energy efficiency, sustainable resource use, and various other measures to reduce the company's negative environmental impact (Kustina, 2023).

Agency theory investigates the relationship between the principal and agent, considering the conflict of interest between them because agents tend to pursue their personal goals, including profit maximization and job convenience, which may not always align with the long-term goals of company owners. In this context, good corporate governance reduces conflicts of interest between owners and company management. With the effective implementation of good corporate governance, company management becomes more responsible to stakeholders, including owners. It may be more motivated to adopt a green strategy and honestly report carbon emissions. Afni et al., (2018); Sari and Susanto, (2021); Syabilla et al., (2021); Andrian and Kevin, (2021); Ramadhani and Astuti, (2023) argue that a green strategy has an impact on carbon emission disclosure because companies implementing a green strategy can encourage better disclosure of carbon emissions.

H_4: Good corporate governance moderates the relationship between green strategy and carbon emission disclosure.

Good Corporate Governance Moderating the Relationship between Green Investment and Carbon Emission Disclosure

Good Corporate Governance is crucial in directing company policies related to green investment and the level of carbon emission disclosure. With the strong implementation of good corporate governance practices, companies become more transparent, accountable, and responsible for green investment and disclosing information related to carbon emissions Ramadhani and Astuti (2023). Agency theory highlights the potential conflict of interest between company owners (shareholders) and management as agents. Jensen and Meckling (1976) state that good corporate governance practices are essential to address this conflict, reducing the risk of agent behavior not in line with the owners' interests, such as investments that only benefit management or disregard environmental impact. The robust implementation of Good Corporate Governance promotes financial and non-financial reporting transparency, including carbon emission disclosure (Syabilla et al., 2021). This transparency allows shareholders to monitor and evaluate the company's efforts in managing green investments and reducing carbon emissions.

This hypothesis argues that Good Corporate Governance can strengthen the relationship between Green Investment and carbon emission disclosure through supervision mechanisms, management incentives, and increased transparency and accountability of the company. With good corporate governance, companies are expected to be more committed to sustainable development by reducing their negative impact on the environment. (Afni et al., 2018; Sari and Susanto, 2021; Syabilla et al., 2021; Andrian and Kevin, 2021; Ramadhani and Astuti, 2023) show that Green Investment has an impact on carbon emission disclosure because it encourages companies to implement such disclosure.

H_5: Good corporate governance moderates the relationship between green investment and carbon emission disclosure.

Good Corporate Governance Moderating the Relationship between Environmental Performance and Carbon Emission Disclosure.

Good corporate governance strengthens the relationship between a company's envi-

ronmental performance and a higher level of carbon emission disclosure. Furthermore, the relationship between good corporate governance, environmental performance, and carbon emission disclosure can be explained by agency theory. Good corporate governance encompasses principles and practices that promote transparency, accountability, and corporate responsibility towards various stakeholders, including environmental aspects. Companies with good governance are more likely to focus on achieving long-term goals, including better environmental performance, rather than just short-term financial gains. With good corporate governance, company management is likelier to implement environmentally friendly business practices, initiate efforts to reduce negative environmental impacts and adopt more sustainable technologies or production methods.

Overall, this hypothesis states that good corporate governance is crucial in strengthening the relationship between a company's environmental performance and the level of carbon emission disclosure. With the effective implementation of good corporate governance, companies are expected to be more committed to positive and sustainable environmental performance and more transparent in reporting their impact on climate change. Research conducted by Saptiwi, (2019); Amaliyah and Solikhah, (2019); Maulidiavitasari and Yanthi, (2021); Dani and Harto, (2022); Purnayudha and Hadiprajitno, (2022) states that environmental performance has a positive impact on carbon emission disclosure. Therefore, companies with good environmental performance can encourage better disclosure of carbon emissions.

H_6: Good corporate governance moderates the relationship between environmental performance and carbon emission disclosure

From the explanation of the hypothesis development above, the researcher created a model in figure 3.

Figure 3
Research Model
Source: The Authors, 2023

RESEARCH METHOD

Population and Sample

The population of this study consists of non-financial companies listed on the Indonesia Stock Exchange, totaling 772 companies. The research sample was selected based on several criteria. The sample companies must be listed on the IDX during 2020–2022, consistently publish annual and sustainability reports, disclose environmental costs, and issue disclosures by the Circular Letter of The Financial Services Authority Number 32/SEOJK.04/2015 during 2020–2022. After the selection process, the research sample consisted of 91 companies with 273 observations.

Operasionalisasi Variabel

The dependent variable in this study is carbon emission disclosure, measured using content analysis. This method uses the sample's annual and sustainability reports from the selected companies. The independent variables in this study are green strategy, green investment, and environmental performance. The moderating variable used in this research is good corporate governance.

Variables and Measurements

Variables dependent Carbon Emissions Disclosure (CED)

Carbon emissions disclosure measures the extent to which a company discloses

information regarding its carbon emissions based on certain criteria. The disclosure standard is from (Choi et al., 2013).
Measurements:

$$\text{CED} = \frac{\text{Items disclosed}}{\text{Total items disclosed}}\ x\ 100\%$$

Explanation:
Items Disclosed refers to the number of disclosure items that the company has revealed regarding its carbon emissions.
Total Items refers to the total number of items in the disclosure checklist used.

The result is in percentage form, indicating the level of disclosure.

Variables Independent Green Strategy (GS)

Green strategy is the approach a company takes to support sustainable practices, measured by green strategy indicators. The disclosure standard is from (Olson, 2008).
Measurements:

$$\text{GS} = \frac{\text{Items disclosed}}{\text{Total items disclosed}}\ x\ 100\%$$

Explanation:
Items Disclosed refers to the number of green strategies implemented and disclosed by the company.
Total Items refers to the total number of green strategies measured using specific indicators.

The percentage shows how far the company has implemented green strategies in its operations.

Variables Independent Green Investment (GI)

Green investment measures a company's commitment to environmental expenditures relative to the total assets owned by the company.
Measurements:

$$\text{GI} = \frac{\text{Total environmental expenditure}}{\text{Total Assets}}$$

Explanation:
Total Environmental Expenditure refers to all expenditures made by the company for environmental programs or projects.
Total Assets refers to the total assets owned by the company.

This ratio shows how much the company allocates to environmental investments compared to its total assets.

Variables Independent Environmental Performance (EP)

Environmental performance measures the extent to which a company complies with environmental performance indicators as defined by the Global Reporting Initiative (GRI) 300 Standards.
Measurements:

$$\text{EP} = \frac{\text{Total GRI indicators disclosed}}{\text{Total GRI indicator criteria}}\ x\ 100\%$$

Explanation:
Total GRI Indicators Disclosed refers to the number of environmental performance indicators from the GRI 300 that the company has disclosed.
Total GRI Indicator Criteria refers to the total number of criteria in the GRI 300 standards.

This percentage reflects the level of compliance the company has with environmental performance reporting standards.

Variables Moderating Good Corporate Governance (GCG)

Good corporate governance measures the extent to which a company applies governance criteria based on the OJK Circular Letter No. 32/SEOJK.04/2015.
Measurements:

$$\text{GCG} = \frac{\text{Number of GCG values applied}}{\text{Number of GCG implementation criteria}}\ x\ 100\%$$

Explanation:
Number of GCG Values Applied refers to the number of governance values that the company has implemented.
Number of GCG Implementation Criteria refers to the total number of governance criteria that must be met according to OJK regulations.

This ratio indicates the level of implementation of good corporate governance by the company in percentage form.

Table 1
Descriptive statistics

Variable	Minimum	Maximum	Mean	Std. Dev.
CED	0.055556	0.944444	0.676842	0.151054
GS	0.600000	0.900000	0.764835	0.064238
GI	1.92E-07	6.448032	0.111735	0.597540
EP	0.066667	1.000000	0.940049	0.146834
GCG	0.400000	1.000000	0.961758	0.086142

Source: Eviews Output 12, 2023

Research Methodology

This research employs a quantitative approach and utilizes E-views 12 software to test the formulated hypotheses. The research data consists of secondary data from annual and sustainability reports. The following is the research model that will be tested:

Research Model

$ECD = \alpha + \beta 1GS + \beta 2GI + \beta 3EP + \beta 1GS*GCG + \beta 2GI*GCG + \beta 3EP*GCG + E$

Information:

CED = Carbon Emission Disclosure; α = Constant; β = Regression coefficient; GS = Green Strategy; GI = Green Investment; EP = Environmental Performance; GCG = Good Corporate Governance; e = Standard error.

Descriptive statistics will first be used to understand the characteristics of the sample data. Subsequently, a model fitness test will be performed to determine the sample's most suitable panel data regression model. Following that, classical assumption tests will be carried out, including normality test, multicollinearity test, heteroskedasticity test, and autocorrelation test. Afterward, hypothesis testing will be conducted, followed by a moderation regression analysis test.

ANALYSIS AND DISCUSSION

Descriptive Statistics

Table 1 presents the results of the descriptive analysis of the research samples. Each variable has 273 observations, indicating that the research sample is strongly balanced. Variable CED (Carbon Emission Disclosure) is the dependent variable with a mean of 0.676842. The median is 0.666667, and the maximum value is 0.944444, which is the value of PT. Jasa Marga (Persero) Tbk in 2022. The minimum value is 0.055556, achieved by PT. Prodia Widyahusada Tbk in 2020. The standard deviation, representing data dispersion, is 0.151054. The standard deviation in this study is smaller than the mean, indicating low variability in the data.

The assessment of variable GS (Green Strategy) reveals an average value of 0.764835 with a median of 0.800000. The minimum value is 0.600000, which was reached by five companies in 2020. The maximum value is 0.900000, achieved by six companies in 2021 and ten in 2022. The standard deviation is 0.064238, indicating that the standard deviation is lower than the mean, suggesting low data dispersion for the green strategy variable.

The variable GI (Green Investment) assessment yields an average value of 0.111735. The median is 0.000822, and the maximum value is 6.448032, achieved by PT. Jaya Real Property Tbk in 2022. The minimum value is 1.92E-07, reached by twelve companies in 2020, thirteen in 2021, and seven in 2022. The standard deviation is 0.597540, indicating that the standard deviation is higher than the mean, suggesting variability in the data.

The variable EP (Environmental Performance) assessment shows an average value of 0.940049 with a median of 1.000000. The maximum value is 1.000000, achieved by fifty-seven companies in 2020, 2021, and 2022. The minimum value is 0.066667, achieved by PT. Bakrie and Brothers Tbk. in 2020, 2021, and 2022. The standard deviation

is 0.146834, which is lower than the mean, suggesting low data dispersion for the environmental performance variable.

The result for Good Corporate Governance, the moderating variable (GCG), shows an average value of 0.961758. The median is 1.000000, and the maximum value is 1.000000, achieved by sixty-one companies in 2020, forty-eight companies in 2021, and sixty-one companies in 2022. The minimum value is -0.400000, achieved by PT. Phapros Tbk. in 2020 and 2021. The standard deviation is 0.086142, indicating that the standard deviation is lower than the mean, suggesting low data dispersion.

Hypothesis Testing

Hypothesis testing using the p-value method follows these criteria: if the p-value is less than 0.05 ($p < 0.05$), the alternative hypothesis is accepted. Conversely, if the p-value is greater than or equal to 0.05 ($p \geq 0.05$), the alternative hypothesis is rejected (Hair et al., 2019).

Table 2
Chow Test

Redundant Fixed Effects Tests			
Pool: DPANEL			
Test cross-section fixed effects			
Effects Test	**Statistic**	**d.f.**	**Prob.**
Cross-section F	7.940317	(90,179)	0.0000
Cross-section Chi-square	438.957893	90	0.0000

Source: Eviews 12 Output, 2023.

Model Fit Test Results

Based on the three model tests used-namely the Chow test, Hausman test, and lagrange multiplier test-the following results were obtained shown in table 2. The results of the Chow Test in table 2 show that the Probability value is 0.0000, which is smaller than 0.05. This indicates that the appropriate model is the fixed effect model. Therefore, the Hausman test needs to be conducted to determine whether the fixed effect model or the random effect model is more suitable.

The results of the Hausman Test in table 3 show a probability value of 0.5176, which is greater than 0.05. Therefore, it can be concluded that the best model is the Random Effect Model. Based on these results, the Lagrange Multiplier Test needs to be conducted.

Table 3
Hausman Test

Correlated Random Effects - Hausman Test			
Pool: DPANEL			
Test cross-section random effects			
Test Summary	**Chi-Sq. Statistic**	**Chi-Sq. d.f.**	**Prob.**
Cross-section random	2.273761	3	0.5176

Source: Eviews 12 Output, 2023.

Based on table 4, the Breusch-Pagan (BP) Probability is 0.0000, which is smaller than 0.05. It can be concluded that the most suitable and best model is the random effect model.

Table 4
Lagrange Multiplier

	Cross-section	**Test Hypothesis Time**	**Both**
Breusch-Pagan	130.0170	9.017731	139.0347
	(0.0000)	(0.0027)	(0.0000)
Honda	11.40250	3.002954	10.18619
	(0.0000)	(0.0013)	(0.0000)
King-Wu	11.40250	3.002954	4.651340
	(0.0000)	(0.0013)	(0.0000)
Standardized Honda	11.63817	5.444315	4.844275
	(0.0000)	(0.0000)	(0.0000)

Standardized King-Wu	11.63817	5.444315	4.258753
	(0.0000)	(0.0000)	(0.0000)
Gourieroux, et al.,	--	--	139.0347
	--	--	(0.0000)

Source: Eviews 12 Output, 2023.

Table 5
Random Effect Model 1

Variable	Coefficient	Std. Error	t-Statistic	Prob.
GS	0.744966	0.091462	8.145105	0.0000
GI	0.020024	0.018378	1.089546	0.2769
EP	0.201720	0.091228	2.211177	0.0279
C	-0.084196	0.111181	-0.757292	0.4495
Effects Specification				
			S.D.	Rho
Cross-section random			0.120072	0.7010
Idiosyncratic random			0.078428	0.2990
Weighted Statistics				
R-squared	0.218296	Mean dependent var		0.239099
Adjusted R-squared	0.209578	S.D. dependent var		0.088105
S.E. of regression	0.078331	Sum squared resid		1.650504
F-statistic	25.04003	Durbin-Watson stat		1.820001
Prob(F-statistic)	0.000000			
Unweighted Statistics				
R-squared	0.118705	Mean dependent var		0.677619
Sum squared resid	5.456054	Durbin-Watson stat		0.550566

Source: Eviews 12 Output, 2023.

After conducting three stages of model selection tests, namely the Chow test, Hausman test, and Lagrange Multiplier (LM) test, it was determined that Model 1 is most appropriate for analysis using the Random Effect Model, as presented in table 5.

Table 6
Chow Test (Moderated Regression Analysis)

Redundant Fixed Effects Tests
Equation: Untitled
Test cross-section fixed effects

Effects Test	Statistic	d.f.	Prob.
Cross-section F	8.161265	(90,176)	0.0000
Cross-section Chi-square	448.682345	90	0.0000

Source: Eviews 12 Output, 2023.

The results of the Chow Test (Moderated Regression Analysis) in table 6 show a Probability value is 0.0000, which is smaller than 0.05. This indicates that the appropriate model is the Fixed Effect Model. Therefore, the Hausman test needs to be conducted to determine whether the Fixed Effect Model or the Random Effect Model is more suitable.

The results of the Hausman Test (Moderated Regression Analysis) in table 7 show a probability value is 0.4253, which is greater than 0.05. Thus, it can be concluded that the best model is the Random Effect Model. Based on this result, the Lagrange Multiplier Test needs to be performed.

Based on Table 8, the Breusch-Pagan (BP) Probability is 0.0000, which is smaller than 0.05. It can be concluded that the most suitable and best model is the Random Effect Model.

Table 7
Hausman Test
(Moderated Regression Analysis)

Correlated Random Effects-Hausman Test
Equation: Untitled
Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	5.981131	6	0.4253

Source: Eviews 12 Output, 2023.

Table 8
Lagrange Multiplier Test
(Moderated Regression Analysis)

Null (no rand. effect)	Cross-section	Period	Both
Alternative	One-sided	One-sided	
Breusch-Pagan	130.2917	7.741535	138.0332
	(0.0000)	(0.0054)	(0.0000)
Honda	11.41454	2.782361	10.03872
	(0.0000)	(0.0027)	(0.0000)
King-Wu	11.41454	2.782361	4.434934
	(0.0000)	(0.0027)	(0.0000)
Standardized Honda	11.76711	5.069771	4.737531
	(0.0000)	(0.0000)	(0.0000)
Standardized King-Wu	11.76711	5.069771	3.921749
	(0.0000)	(0.0000)	(0.0000)
Gourieroux, et al.,	--	--	138.0332
	--	--	(0.0000)

Source: Eviews 12 Output, 2023.

After conducting three stages of model selection tests, namely the Chow test, Hausman test, and Lagrange Multiplier (LM) test, it was determined that model 2 is most appropriate for analysis using the Random effect model, as presented in table 9.

Normality Test

Based on figure 4, the Jarque-Bera test results in a value of 3.583849 with a probability value of 0.166639, which means this value is more significant than 0.05. Therefore, the data is typically distributed.

Based on table 10, the coefficient of determination test (R^2 test) shows an Adjusted R-squared value of 0.209578 or 20.95%. From the results of the coefficient of determination test (R^2 test) above, it can be interpreted that the independent variables, namely green strategy, green investment, and environmental performance, can explain or describe the dependent variable, carbon emission disclosure, by 20.95%. The remaining 79.05% is explained or described by other variables not included in this study.

According to table 10, the F-statistic value is 25.04003 with a probability value of 0.000000, which is significantly smaller than 0.05 (0.000000 < 0.05). This result indicates that the independent variables, namely green strategy, green investment, and environmental performance, simultaneously and significantly influence the dependent variable, carbon emission disclosure. With this result, it can also be concluded that the model used is valid for testing the research.

Table 9
Random Effect Model 2 (Moderated Regression Analysis)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
GS	0.764462	0.735577	1.039268	0.2996
GI	11.17012	3.244473	3.442814	0.0007
EP	0.284536	0.518772	0.548479	0.5838
GSXGCG	-0.005843	0.758496	-0.007703	0.9939
GIXGCG	-11.14862	3.244277	-3.436396	0.0007
EPXGCG	-0.096449	0.509923	-0.189143	0.8501
C	-0.094402	0.112045	-0.842532	0.4002
Effects Specification				
			S.D.	Rho
Cross-section random			0.120429	0.7141
Idiosyncratic random			0.076197	0.2859
Weighted Statistics				
R-squared	0.257501	Mean dependent var		0.232505
Adjusted R-squared	0.240753	S.D. dependent var		0.087445
S.E. of regression	0.076195	Sum squared resid		1.544293
F-statistic	15.37497	Durbin-Watson stat		1.868276
Prob(F-statistic)	0.000000			
Unweighted Statistics				
R-squared	0.131782	Mean dependent var		0.677619
Sum squared resid	5.375097	Durbin-Watson stat		0.536766

Source: Eviews 12 Output, 2023.

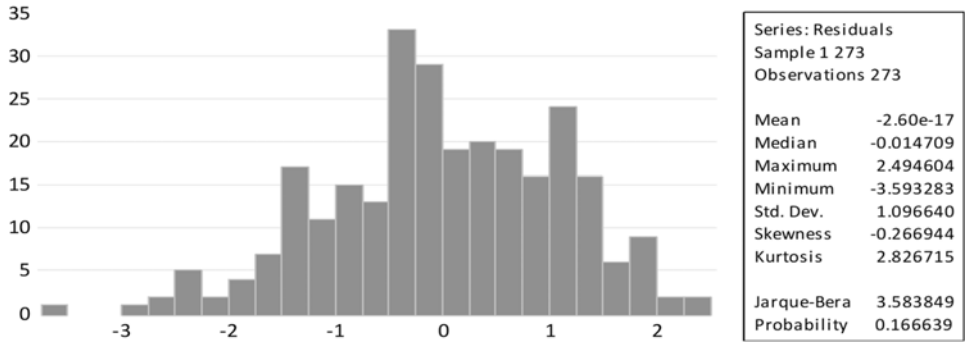

Figure 4
Normality Test

Source: Eviews Output 12, 2023.

Table 10
Determination Coefficient Test (R^2)

R-squared	0.218296	Mean dependent var	0.239099
Adjusted R-squared	0.209578	S.D. dependent var	0.088105
S.E. of regression	0.078331	Sum squared resid	1.650504
F-statistic	25.04003	Durbin-Watson stat	1.820001
Prob(F-statistic)	0.000000		

Source: Eviews Output 12, 2023.

Table 11
Partial Significant Test (t Statistical Test)

Variable	Coefficient	Std. Error	t-Statistic	Prob.	Result
C	-0.084196	0.111181	-0.757292	0.4495	-
GS	0.744966	0.091462	8.145105	0.0000	Significant
GI	0.020024	0.018378	1.089546	0.2769	Not significant
EP	0.201720	0.091228	2.211177	0.0279	Significant

Source: Eviews Output 12, 2023.

Table 11 shows the results of the partial regression test (t-test) on the variable Green Strategy, which shows a coefficient value of 0.744966 and a probability value of the t-statistic, indicating that the probability value is smaller than the significance level of 0.05 or 0.0000 < 0.05. Therefore, H1 is accepted, and it can be concluded that the green strategy influences carbon emission disclosure. This result is consistent with stakeholder theory, which suggests that companies are responsible not only to shareholders but also to other stakeholders such as employees, consumers, suppliers, and the general public. These stakeholders are interested in the company's performance, including its environmental performance. By implementing a green strategy, a company demonstrates its commitment to reducing negative environmental impacts, which can enhance stakeholder trust. Stakeholders who trust the company are more likely to support the company, including in terms of carbon emission disclosure. This result aligns with studies conducted by (Afni et al., 2018; Sari and Susanto, 2021; Syabilla et al., 2021; Andrian and Kevin, 2021; Ramadhani and Astuti, 2023) stating that green strategy influences carbon emission disclosure.

Results of the partial regression test (t-test) on the variable Green Investment show a coefficient value of 0.020024 and a probability value of the t-statistic, indicating that the probability value is greater than the significance level of 0.05 or 0.2769 > 0.05. Therefore, H2 is rejected, and it can be concluded that Green Investment does not influence carbon emission disclosure. Green investment involves high initial costs and limited short-term financial impacts, making companies more focused on short-term interests. Management prioritizes immediate profits and stock value increases rather than green investment, which requires time to see positive financial results. This result does not support legitimacy theory because carbon emission disclosure is not the sole legitimacy tool for companies, and green investment is not a factor that increases carbon emission disclosure. This result aligns with studies by Dani and Harto, (2022); Ramadhani and Astuti, (2023), stating that green investment does not influence carbon emission disclosure. However, it contradicts studies conducted by Afni et al., (2018); Sari and Susanto, (2021); Syabilla et al., (2021); Andrian and Kevin, (2021), stating that green investment influences carbon emission disclosure.

Results of the partial regression test (t-test) on the variable environmental performance show a coefficient value of 0.201720 and a probability value of the t-statistic, indicating that the probability value is smaller than the significance level of 0.05 or 0.0279 < 0.05. Therefore, H_3 is accepted, and it can be concluded that environmental performance influences carbon emission disclosure. This result aligns with legitimacy theory, which suggests that organizations tend to disclose information related to carbon emissions to maintain and enhance their legitimacy in the eyes of the public and stakeholders. This result is consistent with studies conducted by Saptiwi, (2019); Yanthi and Maulidiavitasari, (2021); Purnayudha and Hadiprajitno, (2022), which found that environmental performance significantly influences carbon emission disclosure.

Table 12
Partial Significant Test (t Statistical Test) (MRA)

Variable	Coefficient	Std. Error	t-Statistic	Prob.	Result
C	-0.094402	0.112045	-0.842532	0.4002	-
GS*GCG	-0.005843	0.758496	-0.007703	0.9939	Not moderating
GI*GCG	-11.14862	3.244277	-3.436396	0.0007	Moderating (-)
EP*GCG	-0.096449	0.509923	-0.189143	0.8501	Not moderating

Source: Eviews Output 12, 2023.

Table 12 shows the interaction between good corporate governance and green strategy; the probability value is 0.9939 > 0.05, indicating that good corporate governance does not moderate the relationship between green strategy and carbon emission disclosure. This result suggests that H_4 is rejected. The main reason good corporate governance does not moderate the relationship between green strategy and carbon emission disclosure is the low implementation or effectiveness of good corporate governance practices. According to Sari and Susanto (2021), good corporate governance can reduce conflicts of interest between owners and company management, encourage the adoption of green strategy, and transparently report carbon emissions. However, if the implementation is suboptimal, good corporate governance is ineffective in reducing conflicts and encouraging companies to adopt a green strategy. In enhancing good corporate governance moderation, it is necessary to improve management commitment, allocate adequate resources, and raise stakeholders' awareness of good corporate governance.

In the interaction between good corporate governance and green investment, the probability value is 0.0007 < 0.05, indicating that good corporate governance weakens the relationship between green investment and carbon emission disclosure. This result suggests that H_5 is rejected. Green investment aims to reduce negative environmental impacts and is considered financially beneficial in the long term. Although it can help companies save costs and improve efficiency, green investment has high initial costs and limited short-term financial impacts. In agency theory, conflicts of interest between owners and management can affect a company's motivation for green investment because management focuses more on short-term interests. Strong good corporate governance practices can reduce the risk of conflicts of interest and reduce a company's motivation for green investment by emphasizing the long-term interests of shareholders.

In the interaction between good corporate governance and environmental performance, the probability value is 0.8501 > 0.05, indicating that good corporate governance does not moderate the relationship between environmental performance and carbon emission disclosure. This result suggests that H_6 is rejected. The research findings differ from the theory, stating that good corporate governance will strengthen the relationship between environmental performance and the level of carbon emission disclosure. Agency theory states that good corporate governance acts as a mechanism for reducing conflicts of interest between owners and management. While good corporate governance can drive environmental performance and carbon emission transparency, the research results indicate several possible explanations. First, companies with good environmental performance may naturally be more inclined to disclose their carbon emissions due to environmental awareness or stakeholder pressure. Second, good corporate governance may not significantly influence carbon emission disclosure due to resource limitations, disclosure complexity, or stakeholders' lack of awareness.

CONCLUSION AND SUGGESTIONS

This study aimed to address the shortcomings of previous research by specifying carbon emission disclosure, especially in the context of the non-financial sector. The research focus was narrowed down to this sector because it is believed that the non-financial sector is more likely to utilize carbon emissions significantly. Thus, this study is expected to provide a more in-depth and specific contribution to understanding carbon emission disclosure in the context of the non-financial sector.

Based on the hypothesis tests conducted, green strategy and environmental performance positively impact carbon emission disclosure. The higher the company's commitment to both factors, the higher the level of carbon emission disclosure. Green investment does not affect carbon emission disclosure; even though companies engage in green investment, it does not significantly influence the level of carbon emission disclosure. Companies may engage in green investment to meet stakeholder expectations, such as investors and customers, but this is only sometimes related to carbon emission disclosure.

The first interaction indicates that good corporate governance does not moderate the relationship between green strategy and carbon emission disclosure due to the level of implementation or the effectiveness of good corporate governance practices. According to the study by Sari and Susanto (2021), good corporate governance reduces conflicts of interest between owners and company management. With effective implementation, management can be more accountable to stakeholders, including owners, and is more likely to be motivated to adopt a green strategy and honestly report carbon emissions. However, if the implementation is optimal, good corporate governance effectively reduces conflicts of interest. This results in the non-moderation of the relationship between green strategy and carbon emission disclosure.

The second interaction highlights the role of good corporate governance in weakening the relationship between green investment and carbon emission disclosure. Green investment is considered financially beneficial in the long term but can have high initial costs and indirect impacts on financial performance. Agency theory suggests that conflicts of interest between owners and management can affect a company's motivation for green investment, primarily if management focuses more on short-term interests. Therefore, if ineffective, good corporate governance can strengthen the influence of conflicts of interest, weakening the relationship between green investment and carbon emission disclosure.

In the third interaction, the research results indicate that good corporate governance does not moderate the relationship between environmental performance and carbon emission disclosure, contrary to agency theory. Possible explanations for these results include the fact that companies with good environmental performance are more inclined to disclose carbon emissions transparently. Other factors may involve the complexity of carbon emission disclosure, company resource limitations, or a need for stakeholder awareness of the influence of good corporate governance in this context.

In this study, several limitations could be improved or considered in future research on similar topics. First, this study assumes that the factors under investigation have a linear impact on carbon emission disclosure. However, in practice, the interaction between these factors may be complex and mutually influence each other in more dynamic ways. Therefore, future research could consider a more holistic approach or a nonlinear model to understand better the relationship between green strategy, environmental performance, green investment, and good corporate governance with carbon emission disclosure.

Second, this study limits its focus to the non-financial sector, but this sector can have significant variations. Further research may

break down the non-financial sector into more specific sub-sectors to understand the differences in characteristics and the impact of carbon emission disclosure among them.

Third, the measurement of good corporate governance in this study could be expanded or formulated in more detail. Good corporate governance involves many dimensions, such as transparency, accountability, and fairness. Understanding how each of these dimensions can moderate the relationship between research variables will provide further insights.

Fourth, this study is based on data from a specific period, and the business environment can change over time. A longitudinal study involving data from multiple periods can provide a more dynamic picture of the relationship between the studied factors.

Fifth, considering companies' geographical and cultural context can add value to understanding variability in carbon emission disclosure. Differences in regulations, business norms, and stakeholder demands can shape a company's practices related to carbon emissions.

Finally, this study touches on specific aspects of carbon emission disclosure. Future studies can explore other dimensions, such as disclosure of mitigation efforts or sustainable innovations, which can provide a more comprehensive understanding of a company's commitment to environmental responsibility.

Considering these limitations, future research is expected to contribute more broadly and deeply to our understanding of factors influencing carbon emission disclosure in the non-financial sector.

REFERENCES

Afni, Z., Gani, L., Djakman, C. D., and Sauki, E. 2018. The Effect of Green Strategy and Green Investment toward Carbon Emission Disclosure. *The International Journal of Business Review (The Jobs Review), 1*(2): 93–108. https://doi.org/https://doi.org/10.17509/tjr.v1i2.13879.

Andrian, T. and Kevin. 2021. Determinant Factors of Carbon Emission Disclosure in Indonesia. *Journal of Southwest Jiaotong University, 56*(1): 346–357. https://doi.org/10.35741/issn.0258-2724.56.1.32.

Adi, S. and Wardi, A. 2022. Apa yang Meningkatkan Kinerja Lingkungan Perusahaan? Model Konseptual Berbasis Investasi Hijau dan Tata Kelola Perusahaan. *EKOMBIS REVIEW: Jurnal Ilmiah Ekonomi Dan Bisnis*, *10*: 237–250. https://doi.org/10.37676/ekombis.v10iS1.2030.

Amaliyah, I. and Solikhah, B. (2019). Pengaruh Kinerja Lingkungan dan Karakteristik Corporate Governance terhadap Pengungkapan Emisi Karbon. *Journal of Economic, Management, Accounting, and Technology (JEMATech), 2*(2), 129-141. https://doi.org/10.32500/jematech.v2i2.720.

Cahya, B. T. 2017. Carbon Emission Disclosure: Ditinjau aari Media Exposure, Kinerja Lingkungan aan Karakteristik Perusahaan Go Public Berbasis Syariah ai Indonesia. *Nizham: Jurnal Studi Keislaman*, *5*(2): 171-188.

Chithambo, L. and Tauringana, V. 2017. Corporate Governance and Greenhouse Gas Disclosure: A Mixed-Methods Approach. *Corporate Governance (Bingley), 17*(4), 678–699. https://doi.org/10.1108/CG-10-2016-0202.

Choi, B. B., Lee, D., and Psaros, J. 2013. An Analysis of Australian Company Carbon Emission Disclosures. *Pacific Accounting Review, 25*(1): 58–79. https://doi.org/10.1108/01140581311318968.

Climate Transparency. 2021. Climate Transparency Report on Indonesia: Comparing G20 Climate Action towards Net Zero. *https://www.climate-transparency.org/media/indonesia-country-profile-2021*.

Dani, I. M. and Harto, P. 2022. Pengaruh Kinerja Lingkungan dan Green Investment terhadap Pengungkapan Emisi Karbon. *Diponegoro Journal of Accounting, 11*(4): 1–10. http://ejournal-s1.undip.ac.id/index.php/accounting.

Dowling, J. and Pfeffer, J. 1975. Organizational Legitimacy: Social Values and Organizational Behavior. *Pacific Sociological Journal Review, 18*:122-136. https://doi.org/10.2307/1388226.

Desai, R. 2022. Determinants of Corporate Carbon Disclosure: A Step towards Sustainability Reporting. *Borsa Istanbul Review, 22*(5): 886–896. https://doi.org/10.1016/j.bir.2022.06.007.

Freeman RE. *Strategic Management: A Stakeholder Approach.* Cambridge University Press; 2010.

Hanifah, U. and Wahyono. 2018. Diskursus Urgensi Carbon Emission Disclosure pada Perusahaan Perusahaan Publik di Indonesia. *Jurnal Penelitian, 12*(1): 111-136. https://journal.iainkudus.ac.id/index.php/jurnalPenelitian/article/view/4139/pdf.

Hair, J.F., Risher, J.J., Sarstedt, M. and Ringle, C.M. (2019), "When to use and how to report the results of PLS-SEM", European Business Review, Vol. 31 No. 1, pp. 2-24. https://doi.org/10.1108/EBR-11-2018-0203

Intergovernmental Panel on Climate Change (IPCC). 2021. *The Physical Science Basis, Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change*. Cambridge University Press. Cambridge, United Kingdom and New York.

Jensen, M. C. and Meckling, W. 1976. Theory of the Firm: Managerial Behavior, Agency Cost and Ownership Structure. *Journal of Finance Economic 3:* 305-360. https://doi.org/10.1016/0304-405X(76)90026-X.

Kustina, K. 2023. *Green Management Strategy*. Media Sains. Bandung. Indonesia.

Maulidiavitasari, J. and Yanthi, M. D. 2021. Pengaruh Kinerja Lingkungan terhadap Carbon Emission Disclosure dengan Dewan Komisaris sebagai Variabel Moderasi. *Akuntabilitas,* 15(1):1-18. https://doi.org/10.29259/ja.v15i1.11849

Murniati. 2021. Penerapan Green Accounting terhadap Profitabilitas Perusahaan Makanan dan Minuman di Bursa Efek Indonesia (BEI) Tahun 2015-2019. *Jurnal Ekonomi dan Bisnis Dharma Andalas,* 23(1):109–122. DOI https://doi.org/10.47233/jebd.v23i1.208.

Purnayudha, N. A. and Hadiprajitno, P. B. 2022. Pengaruh Karakteristik Tata Kelola Perusahaan dan Kinerja Lingkungan terhadap Pengungkapan Emisi Karbon. *Diponegoro Journal of Accounting,* 11(1): 1-11. https://ejournal3.undip.ac.id/index.php/accounting/article/view/33065.

Olson, E. G. (2008). Creating an Enterprise-Level "Green" Strategy. *Journal of Business Strategy, 29*(2): 22–30. https://doi.org/10.1108/02756660810858125.

Otoritas Jasa Keuangan. (2015). Circular Letter Number 32 /SEOJK.04/2015 on Guidelines for Public Company Governance. *https://www.ojk.go.id/id/regulasi/otoritas-jasa-keuangan/surat-edaran-ojk-dan-dewan-komisioner/Pages/seojk-Nomor-32-SEOJK-04-2015-Pedoman-Tata-Kelola-Perusahaan.aspx*.

Organization for Economic Co-operation and Development (OECD). (1999). International Symposium on Measuring and Reporting Intellectual Capital: Experience, Issues and Prospects. Amsterdam, 9-11 June 1999. *https://www.jstor.org/stable/42785220*.

Ramadhani, K. and Astuti, C. D. 2023. Pengaruh Green Strategy dan Green Investment terhadap Carbon Emission Disclosure dengan Media Exposure sebagai Variabel Pemoderasi. *Jurnal Informasi, Perpajakan, Akuntansi, dan Keuangan Publik, 18*(2): 323-338. https://doi.org/10.25105/jipak.v18i2.17244.

Sari, K. P. and Susanto, B. 2021. Green Strategy, Corporate Social Responsibility Disclosure, Good Corporate Governance terhadap Pengungkapan Emisi Karbon. *4th Prosiding Business and Economics Conference in Utilizing of Modern Technology 2021*, 642-657.

https://journal.unimma.ac.id/index.php/conference/article/view/6006/2776.

Syabilla, D., Wijayanti, A., and Fahria, R. 2021. Pengaruh Investasi Hijau dan Keragaman Dewan Direksi terhadap Pengungkapan Emisi Karbon. *Konferensi Riset Nasional Ekonomi Manajemen Dan Akuntansi, 2*(1): 1171–1186.

Saptiwi, N. W. T. 2019. Pengungkapan Emisi Karbon: Menguji Peranan Tipe Industri, Kinerja Lingkungan, Karakteristik Perusahaan dan Komite Audit. *Jurnal Akuntansi Bisnis, 17*(2): 227-240. https://doi.org/10.24167/jab.v17i2.2343.

Tila, S. M. and Agustine, Y. 2019. The Effect of Corporate Governance, Green Strategy and Carbon Risk Management toward Carbon Emission Disclosure (Listed Company in and out on Calculation Indeks Sri Kehati in IDX Periode 2016–2017). *European Journal of Business and Management, 11*(23): 41-51. https://doi.org/10.7176/EJBM/11-23-06

Yasrawan, K. T. and Werastuti, D. N. S. 2022. Bagaimana Peran dan Penerapan Akuntansi Hijau di Indonesia? *Jurnal Akuntansi Kontemporer, 14*(3), 151-161. https://doi.org/10.33508/jako.v14i3.3514.