



### FACTORS INFLUENCING OF CARBON EMISSIONS DISCLOSURE IN ENERGY SECTOR COMPANIES

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#### ARTICLE INFO

##### Article history:

Received:

Revised:

Accepted:

##### Keywords:

Carbon Emissions

Performance

Ownership

Environment

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#### ABSTRACT

This study aims to test and analyze the effect of financial performance, company size, environmental performance, women on the board of directors, institutional ownership and managerial ownership on the disclosure of carbon emissions in energy sector companies listed on the IDX from 2018 to 2022. Purposive sampling is used in this study, with a total sample size of 54 companies and 270 observations. The conclusion of this study shows that financial performance, company size and environmental performance affect carbon emission disclosure. In contrast, women on the board of directors, institutional ownership and managerial ownership do not affect carbon emission disclosure. This study provides implications for the energy sector companies listed on the IDX to pay attention to financial performance and company size and improve environmental performance. This is because companies with good asset management capabilities will affect the disclosure of carbon emissions, and companies that tend to have a large size will affect the disclosure of carbon emissions, and environmental performance by standards will improve the company in disclosing carbon emissions.

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## INTRODUCTION

Every country in the world is increasingly facing the effects of climate change. The majority of the changes in CO<sub>2</sub> emissions globally are caused by changes in forestry and land use. China, Russia, and the United States, as the world's biggest polluters, have physically cut down a significant portion of the earth's forests for fuel and farmland. The actions of several European countries have significantly exacerbated global warming. Settlers cleared rainforests in Brazil and Indonesia for cash crops such as tobacco and rubber in the late 19th and early 20th centuries. Indonesia, with its 102,562 GtCO<sub>2</sub>, ranks fifth in the world in terms of cumulative carbon emissions, thus playing a significant role in global warming. (Mutia, 2022).

According to the Ministry of Environment (2021), greenhouse gases can be CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O, NFs, etc. For example, CO<sub>2</sub> is the discharge gas from the combustion process of gasoline, diesel, wood, leaves, LPG gas and other fuels containing many hydrocarbons. The company's operational activities contribute to it. Based on The International Energy Agency (IEA) report, one of the carbon emissions, namely carbon dioxide (CO<sub>2</sub>), will reach a record high in 2022. This increase in greenhouse gas emissions is due to energy production growing 9% to 36.8 gigatons. International and national fossil fuel companies generate high revenues. However, emissions from fossil fuels hinder efforts to meet global climate targets. Carbon dioxide emissions from fossil fuels power cars, planes, homes and factories. This increase in CO<sub>2</sub> emissions is also due to many Asian communities switching from natural gas to coal and the rise of global aviation. The corporate aviation sector accounts for half of the 2.5% increase in carbon dioxide emissions. This, in turn, has led to global emissions that have risen steadily every year since 1900 and are increasing rapidly over time (Arif, 2023).

Carbon emission disclosure is a growing environmental issue in various countries, including Indonesia. Disclosure of carbon emissions is one of the environmental disclosures that

companies need to make [\(Solikhah, et al., 2018\)](#). Disclosure of carbon emissions includes the concentration of carbon emissions, energy use, company administration, climate change methodology, implementation of carbon emission reductions, and the dangers and opportunities of climate change [\(Kelvin et al., 2017\)](#). However, many companies in Indonesia still do not disclose the carbon emissions because the information is expensive and can reduce company profits.

Another point Suhardi dan Purwanto (2015) revealed is that companies can be assessed for their seriousness in dealing with climate change by disclosing carbon emissions. However, in Indonesia, only a few do so. The importance of carbon emission disclosure has led many researchers to research factors that influence carbon emission disclosure. Several previous studies have examined many factors that influence the disclosure of carbon emissions, including factors in the form of environmental performance Zanra et al. (2020) and (Nastiti & Hardiningsih, 2022), company size (Choi et al, 2013), (Luo et al, 2013), (Borghei-Ghomi dan Leung, 2013), (Hermawan et al. 2018), (Selviana dan Ratmono, (2019), (Hariswan et al, 2022), (Sekarini dan Setiadi, 2022), women on the board of directors (Ben-Amar dan McIlkenny, 2015), (Hariswan et al, 2022) and (Liao, et al, 2015), institutional ownership (Amaliyah & Solikhah 2019) and Zanra et al. (2020) and managerial ownership Wibowo et al. (2022) and Akhiroh & Kiswanto (2016) and showed an influence on the disclosure of carbon emissions.

Carbon emissions in Indonesia are voluntary; not all companies disclose this information in annual reports. Companies are disclosing carbon emissions to stakeholders to increase transparency and accountability [\(Hariswan, et al., 2022\)](#). This disclosure is a way companies communicate and demonstrate responsibility to stakeholders. One of the stakeholders is the community, so thorough disclosure can improve the company's image in the community and show that the company cares about the issue of carbon emissions from mining operations. Conversely, a company's failure to disclose thoroughly shows its indifference to its various stakeholders' demands for information disclosure [\(Anshari & Isnalita, 2020\)](#). This is one of the motivations for researching carbon emission disclosure because carbon emission disclosure is needed to reduce carbon emissions generated by the company. Previous studies that have examined the factors influencing carbon emission disclosure are company size, company age, environmental performance and women on the board of directors. However, the results of previous studies still need to be more consistent, so there is still a research gap in that focus.

This study assesses and tests the impact of institutional ownership, management ownership, profitability, firm size, and board ownership on carbon emissions disclosure. The findings can advance our social and environmental accounting knowledge, particularly corporate carbon emissions disclosure. Another goal of this study is to support governments, companies, and investors in decision-making regarding carbon emissions disclosure.

## LITERATURE REVIEW

### Agency Theory

Agency theory can be interpreted as a relationship between investors who are also called principals and managers who can be called agents (Jensen & Meckling, 1976). The party called the owner of the company authorises or delegates decision-making authority to another party (agent) and then the agent gives responsibility to the owner of the company for the decisions and actions he takes (Razak & Helmy, 2020). Shareholders are principals who delegate their authority to managers as agents in the company to represent shareholders. The problem that arises due to the company's ownership system is that the agent makes decisions whose purpose is not to fulfil the needs of the stakeholders. Thus, the agent acts as the party authorised to make decisions, while the owner is the party who assesses the information (Hariswan et al, 2022).

### Legitimacy Theory

Legitimacy theory according to Lincoln in is a situation that occurs where the value system of a corporate entity is in accordance with the values of the larger social system system which is the place or reference of the entity. Legitimacy theory states that when viewed in terms of organizational systems, disclosure has an important role in connecting between corporate organizations, companies and associations of several groups of companies (Hilmi et al., 2020).

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Legitimacy theory explains that social responsibility disclosures are made by companies in order to gain legitimacy from the community or stakeholders where the company is located and maximize its financial performance for the future (Cahya, 2017). One of the theories that underlies the incentives of entities that voluntarily disclose social and environmental responsibility reports is legitimacy theory (L. Luo et al., 2013). This legitimacy theory discusses the social relationship between companies and society. The existence of company activities in society will lead to public demand for companies to pay attention to environmental problems caused by companies due to company operations (Amaliyah & Solikhah, 2019).

### **Carbon Emissions Disclosure**

The disclosure of carbon emissions, which is voluntary disclosure, is designed for companies that care about the environment through the implementation of accountability for disclosing carbon emissions generated by the company (Presidential Regulation Number 61 of 2011). This is confirmed by Anshari & Isnalita (2020) that the disclosure of carbon emissions in Indonesia is still voluntary because the Indonesian government has not issued a related policy that requires every company to disclose carbon emissions, especially to public companies. Meanwhile, from OJK Circular Letter No.30 / SEOJK.04 / 2016, the obligation of issuers or public companies to include social and environmental responsibility reports in annual reports or sustainable reports. According to Andrew and Cortese (Pratiwi, 2017) disclosure of carbon emissions is often presented as a form of voluntary disclosure that is useful for internal and external decision making. Meanwhile, Carbon Emissions Disclosure itself according to Cahya (2017) is a disclosure to assess an organisation's carbon emissions and set targets for reducing these emissions. Although carbon emission disclosures are still presented voluntarily, Anshari & Isnalita (2020) indicate an increase in carbon emission disclosures made by companies, especially in recent years, with the aim of making internal and external company decisions. Carbon emission reduction focuses on emissions generated by industrial activities. So in the end, information on reduced carbon emissions requires disclosure of carbon emissions.

### **The Effect of Financial Performance (Profitability) on Carbon Emission Disclosure**

According to legitimacy theory, society will put pressure on companies regarding environmental concerns including disclosure of carbon emissions. The greater the financial performance of the company, the more the company will be valued. Conversely, companies with low profitability will focus on increasing profitability and improving performance, thus limiting their actions in efforts to reduce and report carbon emissions because it can increase operational expenses (Nastiti & Hardiningsih, 2022). Companies that have better performance can contribute to maintaining environmental sustainability such as replacing environmentally friendly production machines, participating in tree planting activities, trying to reduce emissions, and making disclosures because they have greater resources (Mujjani et al., 2019). Almuaromah & Wahyono, (2022) state that companies tend to disclose information that they can act well if they have good financial conditions with high profitability. The company's profitability ability concerns the company's various actions to contribute to efforts to reduce carbon emissions. In addition, companies with high profitability tend to be more active in disclosing their environmental activities, one form of disclosure is the disclosure of carbon emissions. Research conducted by Zanra et al., (2020) shows that profitability has a positive effect on disclosure of carbon emissions. Research conducted by Nastiti & Hardiningsih, (2022); Wibowo et al., (2022) also found that profitability has a positive effect on disclosure of carbon emissions. Based on the description above, the hypothesis is as follows:

**H<sub>1</sub> : Financial Performance affects the disclosure of carbon emissions**

### **The Effect of Company Size on Carbon Emissions Disclosure**

The size of the company shows that the size of the company can be seen from the total assets. If the number of assets increases, the size of the company will increase and the invested capital will increase. And if sales increase, the turnover of money in the company also increases (Hariswan et al., 2022). Companies on a large scale are companies that are subject to more public monitoring because the company's shareholders are also large. This encourages companies to make disclosures in order to gain public sympathy by providing information on the

results of corporate social activities (Pratiwi, 2018). Based on stakeholder theory, large companies certainly have considerable pressure. This includes environmental issues, companies must be quick in responding to environmental problems. Therefore, large companies are able to make quality disclosures and make many voluntary disclosures (Wiratno & Muaziz, 2020). Research on the effect of company size on disclosure of carbon emissions has been conducted by Hariswan et al., (2022) the results show that company size affects the disclosure of carbon emissions. This is because the greater the assets of a company, the greater the size of the company, so that the greater the size of the company, the greater the company discloses carbon emissions. This is in line with Abdullah, Musriani, Syariati, & Hanafie, (2020); Sekarini & Setiadi, (2022); Selviana & Ratmono, (2019); Solikhah et al., (2018) show that company size has a significant effect on disclosure of carbon emissions. Based on the previous explanation, the authors formulate a hypothesis, namely:

**H<sub>2</sub> : Company size affects the disclosure of carbon emissions**

### **The Effect of Environmental Performance on the Disclosure of Carbon Emissions**

Environmental performance is one of the company's performances that protect the surrounding environment as a form of corporate responsibility caused by the impact of operating activities such as energy use and processing of raw materials (Rahmawati & Subardjo, 2017). Environmental performance is also a form of warning for companies related to the environment. The better the company's environmental performance, the higher the level of disclosure made by the company. This is because companies that have good enough performance will be more active in solving the problem of carbon emissions produced (Maulidiavitasari & Yanthi, 2021). Legitimacy theory states that social behaviour that occurs in companies must understand the values and rules that apply in the community. This theory is relevant to what Luo et al., (2019) said that companies that disclose environmental information voluntarily aim to avoid bad media reports, this is because it is to maintain the company's good name and maintain company legitimacy. Meanwhile, based on stakeholder theory, it states that companies that make high environmental disclosures have good environmental performance because it will increase support from stakeholders. This is proven by Amaliyah & Solikhah, (2019) Good environmental performance will encourage companies to make environmental disclosures as a form of responsibility. Therefore, good environmental performance will tend to increase the disclosure of corporate carbon emissions. Research on environmental performance on disclosure of carbon emissions was conducted by Maulidiavitasari & Yanthi (2021) which showed that there is an effect of environmental performance on disclosure of carbon emissions. the better the company's environmental performance will increase disclosure of carbon emissions. Other research was also conducted by Ramadhan et al., (2019) which proved that there is an effect of environmental performance on disclosure of carbon emissions. . Based on the previous explanation, the authors formulate a hypothesis, namely:

**H<sub>3</sub> : Environmental Performance affects the disclosure of carbon emissions**

### **The Effect of Women in the Board of Directors on Carbon Emissions Disclosure**

As these boards have responsibility for greenhouse gas emissions strategy and reporting, it is important for companies to structure their boards so that they have the capacity to manage greenhouse gas emissions and other climate change-related issues (Taurigana & Chithambo, 2016). Companies with female directors are more likely to address issues arising from climate change, improve GHG emissions disclosure strategies and be better able to communicate actions to stakeholders (Charumathi & Rahman, 2019). Women are seen as more caring, compassionate and socially responsible Gull et al., (2018). Women directors have cognitive thinking that is different from men, gender diversity makes them tend to consider, discuss and integrate information in making decisions Monica et al., (2021). Thus, Ben-Amar & McIlkenny (2015) state that the number of boards of directors increases, it will affect policies in decision making. Liao et al., (2015) assert that the high scale of women on the board of directors will make environmental disclosure more open. Women on the board of directors can provide an overview for the future regarding disclosure of greenhouse gas emissions. This research was also conducted by He et al., (2021) which states that female directors have an influence on the disclosure of carbon emissions based on the level of education and financial background. This is

relevant to research conducted by Ben-Amar & McIlkenny, (2015); Hollindale et al., (2019); Liao et al., (2015) which state that women on the board of directors have an influence on disclosure of carbon emissions. Based on the previous explanation, the authors formulate a hypothesis, namely:

**H4 : Women in the Board of Directors affects the disclosure of carbon emissions**

#### **The Effect of Institutional Ownership on Carbon Emissions Disclosure**

Institutional ownership will encourage increased supervision that is more optimal for disclosing carbon emissions. The company will be supervised in the hope of providing a good image to the public by carrying out social responsibility in the form of disclosing carbon emissions (Zanra et al., 2020). Ramadhan et al. (2021) stated that institutional shareholders as owners are very interested in improving the company's reputation. High institutional ownership encourages the level of supervision of institutional investors in minimising management's opportunistic actions. This is in accordance with stakeholder theory, where through institutional oversight will make companies more open and disclose carbon emissions. This action is taken to maintain the company's image and maintain the trust of shareholders, so that the company's share ownership is maintained (Amaliyah & Solikhah, 2019). Institutional ownership can act as a party that oversees the company. With institutional ownership, it is hoped that supervision of company management will be more optimal. The higher the institutional ownership of a company, the greater the pressure that will be received by company management. Institutional investors who have large funding tend to pressure companies to disclose carbon emissions. This is done in order to create a positive image for stakeholders and companies as a form of responsibility to the environment and can be a positive signal for new investors (Almuaromah & Wahyono, 2022). Research conducted by Amaliyah & Solikhah (2019) shows that institutional ownership has a positive effect on disclosure of carbon emissions. Research conducted by Zanra et al., (2020) and Ramadhan et al., (2021) also found that institutional ownership has a positive effect on disclosure of carbon emissions. Based on the description above, the hypothesis is as follows:

**H5 : Institutional Ownership affects the disclosure of carbon emissions**

#### **The Effect of Managerial Ownership on Carbon Emissions Disclosure**

Managers who have more control over the company make efforts that can provide benefits to stakeholders. One way is to disclose carbon emissions (Amaliyah & Solikhah, 2019). Companies that have a high percentage of managerial ownership tend to disclose social information if this information can improve the quality of the company. Companies tend to make high voluntary disclosures by disclosing carbon emissions (Almuaromah & Wahyono, 2022). High managerial ownership will reduce the possibility of manager opportunistic behaviour. This is because managers will feel the direct impact of every decision made. Decisions made by managers will determine the impact received by shareholders. Thus, managers will always try to increase the value of the company in order to create prosperity for themselves as part of the shareholders, one of which is regarding the disclosure policy of carbon emissions (Wibowo et al., 2022). Research conducted by Wibowo et al., (2022) shows that managerial ownership has a positive effect on disclosure of carbon emissions. Research conducted by Akhiroh & Kiswanto, (2016); Budiharta & Kacaribu, (2020) also found that managerial ownership has a positive effect on disclosure of carbon emissions. Based on the description above, the hypothesis is as follows:

**H6 : Managerial Ownership affects the disclosure of carbon emissions**

### **RESEARCH METHODS**

This section contains the research design, research goals, and targets. If the research is quantitative, it contains the population and sample, data collection techniques, operational definitions and measurement of variables (if any), and analysis techniques. For Qualitative Research, the research method is adjusted.

Secondary data was used in this quantitative analysis. Documentation data collection was the method used in this investigation. All energy-related businesses listed between 2019 and 2021 on the IDX constituted the population. Purposive sampling was used to select the research sample. The following criteria were used to select energy companies as the research sample: 1) Energy companies listed on the IDX between 2018 and 2022; 2) Energy companies with

sustainability reports, annual reports, and financial statement data for 2018-2022. Sixty companies met the sample requirements based on the predetermined sample specifications. With 270 observations, the sample for this study from 2018 to 2022 consists of 54 companies with a three-year observation period. The variable measurements used in this study are presented in the following table:

**Table 1****Variable Operations**

No	Variable	Measurement
1	Carbon Emissions Disclosure (Y)	Carbon emission checklist (Choi et al., 2013)
2	Financial Performance (X <sub>1</sub> )	Net profit after tax divided by total equity (Wiratno & Muaziz, 2020)
3	Company Size (X <sub>2</sub> )	Logaritma natural dari total aset: Size = Ln Aset  (Septriyawati & Anisah, 2019).
4	Environmental Performance (X <sub>3</sub> )	Environmental performance is measured using the implementation and certification indicators of ISO 14001. - Companies not implementing or certified with ISO 14001 receive 0 points - Companies implementing ISO 14001 receive 1 point - Companies implementing and certified with ISO 14001 receive 2 points. (Amaliyah dan Solikhah, 2019)
5	Women on the Board	Scoring based on the proportion of women on the board of directors (Ben-Amar et al., 2015)
6	Institutional Ownership (X <sub>5</sub> )	The number of shares owned by institutions divided by the number of shares outstanding (Hermawan et al., 2018)
	Managerial Ownership (X <sub>6</sub> )	The number of shares owned by directors and commissioners divided by the number of shares outstanding (Rohmah & Nazir, 2022)

IBM SPSS Statistics 27 was used in this study to perform multiple linear regression analysis. The steps taken in the data analysis process include multiple linear regression analysis, normality test, classical assumption test, determination coefficient test, and hypothesis testing (t-test).

**RESEARCH RESULTS AND DISCUSSION****Descriptive Statistics**

Descriptive analysis is the initial analytical stage in the data testing process, used as sufficient evidence for drawing researcher conclusions.

**Table 2****Descriptive Statistics**

Variable	N	Minimum	Maximum	Mean	Std. Deviation
Financial Performance	270	-1,538	,616	,02690	,195939
Company Size	270	20,542	35,529	28,99225	2,160345
Environmental Performance	270	0	2	1,17	,928
Women on the Board	270	0	3	,44	,664
Institutional Ownership	270	,100	,999	,73440	,230662
Managerial Ownership	270	,000	,674	,03714	,107686
Carbon Emissions Disclosure	270	,000	,944	,38189	,329346

Source: Processed Data, 2024

The descriptive statistical results indicate that for the energy sector companies listed on the Indonesia Stock Exchange for the period 2018-2022, the total number of data points used is 270, based on analysis of 54 companies. The standard errors of the mean determine the population data range for each variable.

**Normality Test Results**

According to Ghozali (2018), the normality test checks if the regression model, disturbances, or residuals are normally distributed

**Table 3**  
**Normality Test Results**

One-Sample Kolmogorov-Smirnov Test		
		Unstandardized Residual
N		262
Normal Parameters <sup>a,b</sup>	Mean	,0000000
	Std. Deviation	,25917060
Most Extreme Differences	Absolute	,048
	Positive	,048
	Negative	-,034
Test Statistic		,048
Asymp. Sig. (2-tailed)		,200 <sup>c,d</sup>

Source: Proses Data, 2024

Based on Table 2.3, the normality test results show an Asymp. Sig. (2 Tailed) value of 0.200, which is greater than 0.05. This indicates that the data in this study are normally distributed and suitable for regression modeling.

### Classic Assumption Test Results

#### Multicollinearity Test Results

Multicollinearity aims to determine if there is a correlation among independent variables in the model or regression form (Ghozali 2018). The tolerance and VIF values for each variable are shown in Table 4 as follows:

**Table 4**  
**Multicollinearity Test Results**

Variabel	Collinearity Statistics	
	Tolerance	VIF
Financial Performance	,816	1,225
Company Size	,865	1,156
Environmental Performance	,829	1,207
Women on the Board of Directors	,874	1,144
Institutional Ownership	,694	1,442
Managerial Ownership	,682	1,467

Source: Processed data, 2024

Based on the **Table 4**, all independent variables have VIF values less than 10 and tolerance values greater than 0.1, indicating no multicollinearity

#### Autocorrelation Test Results

A good regression model should be free from autocorrelation. One method to detect autocorrelation is the Durbin-Watson test (Ghozali, 2018). The Durbin-Watson test results show a statistic of 1.409 ( $1.401 < 1.409 < 2.599$ ), indicating that this research model has no autocorrelation

#### Heteroscedasticity Test Results

According to Ghozali (2018), a good regression model exhibits homoscedasticity. In this research, heteroscedasticity is tested using the Glejser test, as shown Table 5:

**Table 5**  
**Heteroskedasticity Test Result**

Variable	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	,159	,138		1,150	,251
Financial Performance	,012	,071	,012	,172	,863
Company Size	,004	,005	,051	,765	,445
Environmental Performance	,015	,011	,096	1,415	,158
Women on the Board of Directors	-,001	,015	-,005	-,072	,943
Institutional Ownership	-,088	,048	-,136	-1,838	,067
Managerial Ownership	-,124	,105	-,088	-1,183	,238

Source: Processed data, 2024

Based on **Table 5**, the significance values for each variable are greater than 0.05 (>0.05), indicating no heteroscedasticity in this research model.

**Multiple Linear Regression Test Results**

Regression analysis can prove a relationship between two or more variables and determine the direction between independent and dependent variables (Ghozali 2018). The regression test results are as follows:

**Table 6**  
**Multiple Linear Regression Test Results**

Variable	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	-1,350	,245		-5,518	,000
Financial Performance	,450	,125	,196	3,583	,000
Company Size	,055	,008	,350	6,577	,000
Environmental Performance	,103	,019	,292	5,375	,000
Women on the Board of Directors	,033	,026	,068	1,287	,199
Institutional Ownership	-,009	,085	-,006	-,107	,915
Managerial Ownership	-,252	,186	-,081	-1,352	,177

Source: Processed Data, 2024

From **Table 6**, the resulting multiple linear regression equation for this research is as follows:

$$Y = \alpha_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \beta_5X_5 + \beta_6X_6 + e \tag{1}$$

$$Y = -1,350 + 0,450X_1 + 0,055X_2 + 0,103X_3 + 0,033X_4 - 0,009X_5 - 0,252X_6 + e \tag{2}$$

Description :

- Y = Carbon Emission Disclosure
- X1 = Financial Performance
- X2 = Company Size
- X3 = Environmental Performance
- X4 = Women on the Board of Directors
- X5 = Institutional Ownership
- X6 = Managerial Ownership
- a0 = Constant
- β1-β4 = Regression Coefficients
- e = Error

**Hypothesis Testing Results and Discussion**

In regression testing, coefficients, t-statistics, and significance values are assessed. The t-test evaluates the effect of each independent variable individually in explaining the dependent variable's variation (Ghozali, 2018). Hypotheses H1, H2, H3, H4, H5, and H6 are accepted if the regression coefficient a1 is positive, with a t-statistic greater than t-table and a significance value below 0.05. The hypothesis testing results are as follows:

**Table 7**  
**Hypothesis Testing Results**

Variabel	t-table	t-statistic	sig	Result
(Constant)		-5,518	,000	
Financial Performance	1,969	3,583	,000	H1 Accepted
Company Size	1,969	6,577	,000	H2 Accepted
Environmental Performance	1,969	5,375	,000	H3 Accepted
Women on the Board of Directors	1,969	1,287	,199	H4 Rejected
Institutional Ownership	1,969	-,107	,915	H5 Rejected
Managerial Ownership	1,969	-1,352	,177	H6 Rejected

Source: Processed Data, 2024

Based on Table 2.7, the following results and discussion are derived:  
*The Effect of Financial Performance on Carbon Emission Disclosure*

Based on **Table 7**, the t-test results indicate that financial performance positively affects carbon emission disclosure. This finding suggests that **H1 is accepted**. The results show that profitability in energy companies positively impacts carbon emission disclosure. This research supports the legitimacy theory, which asserts that society pressures companies regarding environmental concerns, such as carbon emission disclosure. Nastiti dan Hardiningsih (2022) also state that companies with strong financial performance are more likely to engage in disclosures. Additionally, companies with high profitability will disclose favourable information to the public through mandatory or voluntary disclosures, like carbon emission disclosure. These results align with the studies of Nastiti dan Hardiningsih (2022), Zandra *et al.* (2020), & Almuaromah and Wahyono (2022), which found that profitability positively affects carbon emission disclosure.

#### *The Influence of Company Size on Carbon Emission Disclosure*

According to **Table 7**, the t-test results show that company size influences carbon emission disclosure, indicating that **H2 is accepted**. This implies that company size can predict carbon emission disclosure in the following year. Company size reflects not only the company's resources but also its operational activities. The greater the company's resources, the larger its operational activities (Selviana dan Ratmono, 2019). Large-scale companies are often closely monitored by the public due to their substantial shareholder base, encouraging them to disclose information to gain public support by providing insights into their activities (Pratiwi, 2018). Choi *et al.*, (2013) state that larger companies naturally have significant resources and assets. Companies with substantial assets will also strive to make disclosures, especially in areas like carbon emissions (Sekarini dan Setiadi, 2022). Based on stakeholder theory, larger companies face considerable pressure, including environmental issues, and must respond promptly to environmental concerns. Consequently, large companies can provide high-quality and more voluntary disclosures (Wiratno dan Muaziz, 2020). This research supports the studies by Sekarini and Setiadi (2022), Abdullah *et al.* (2020), Selviana and Ratmono, (2019) and Solikhah *et al.*(2018), showing that company size significantly affects carbon emission disclosure.

#### *The Influence of Environmental Performance on Carbon Emission Disclosure*

Based on **Table 7**, the t-test results reveal that environmental performance affects carbon emission disclosure, indicating that **H3 is accepted**. Therefore, environmental performance can predict carbon emission disclosure in the following year. Environmental performance represents a company's commitment to creating a clean and green environment (Ramadhan, *et al.*, 2019). reating a clean and green environment (Ramadhan *et al.*, 2019). It also encompasses a company's efforts to preserve and improve the environment (Hilmi *et al.*, 2020). This study supports the legitimacy theory, which asserts that a company's social behaviour should align with community values and regulations. This theory aligns with the statement Luo *et al.*, (2019), which notes that companies voluntarily disclosing environmental information aim to avoid negative media coverage, thus preserving the company's reputation and maintaining legitimacy. This study concurs with the research conducted by Ramadhan *et al* (2019), Maulidiavitasari and Yanthi (2021), Prasetya and Yulianto (2018) and Apriliana (2019), which found that environmental performance impacts carbon emission disclosure. Better environmental performance in a company will increase carbon emission disclosure.

#### *The Influence of Women on the Board of Directors on Carbon Emission Disclosure*

Based on **Table 7**, the t-test results indicate that women on the board of directors do not affect carbon emission disclosure, suggesting that **H4 is rejected**. Thus, it can be concluded that women on the board cannot predict carbon emission disclosure in the following year. Women are often seen as more caring and socially responsible (Gull *et al.*, 2018). Board diversity drives climate-related disclosures, but professional women directors focus more on disclosure and transparency (Ararat & Sayedy, 2019). The study's findings indicate that the variable of women on the board does not affect carbon emission disclosure. This may be because, during the study period, many energy sector companies needed more female directors or had only about 44% representation of women on the board. Moreover, the energy sector is typically male-dominated. According to Ararat dan Sayedy (2019), the lack of influence on carbon emission disclosure may also stem from "Gender Marginalization," which describes unfair gender treatment rooted in historical

practices, beliefs, and social structures (Sulistiyowati & Tumirin, 2023). This study aligns with the research by (Sulistiyowati & Tumirin, 2023), (Ararat & Sayedy, 2019) and Kılıç and Kuzey (2019), which found that women on the board do not influence carbon emission disclosure. However, it does not align with the studies by Hollindale *et al.*, (2019), Monica *et al.*, (2021) Hariswan *et al.*, (2022) and Kim (2022), which suggest that women on the board do impact carbon emission disclosure.

#### *The Influence of Institutional Ownership on Carbon Emission Disclosure*

Based on **Table 7**, the t-test results show that institutional ownership does not affect carbon emission disclosure, meaning institutional ownership does not impact carbon emission disclosure. Thus, **H5 is rejected**. The findings indicate that institutional ownership in energy companies does not influence carbon emission disclosure. This contrasts with stakeholder theory, which argues that institutional oversight makes companies more transparent and encourages carbon emission disclosure. Institutional investors may consider carbon emission disclosure less impactful on firm value than other factors, such as liquidity and profitability. Therefore, institutional ownership does not prompt companies to disclose carbon emissions (Pramuditya & Budiasih, 2020). This research is consistent with the studies by Darlis *et al.* (2020), Hermawan *et al.* (2018) & Pramuditya dan Budiasih (2020), which found that institutional ownership does not affect carbon emission disclosure. However, it contradicts Amaliyah dan Solikhah (2019) & Ramadhan *et al.* (2021) studies, which found a positive effect of institutional ownership on carbon emission disclosure.

#### *The Influence of Managerial Ownership on Carbon Emission Disclosure*

Based on **Table 7**, the t-test results indicate that managerial ownership does not affect carbon emission disclosure, leading to the conclusion that **H6 is rejected**. Almuaromah and Wahyono (2022) also state that managerial ownership does not influence carbon emission disclosure. This is because most companies have low managerial ownership, which fails to balance managerial and ownership interests to make the company more attractive to prospective investors. The results are consistent with the studies by Darlis *et al.* (2020), Almuaromah and Wahyono (2022) & Amaliyah and Solikhah (2019), which found that managerial ownership does not affect carbon emission disclosure. However, this finding contradicts the studies by Budiharta and Kacaribu (2020) & Wibowo *et al.* (2022), which found a positive effect of managerial ownership on carbon emission disclosure. This difference arises because Budiharta dan Kacaribu (2020) studied non-financial sectors from 2016 to 2018, while Wibowo *et al.* (2022) examined carbon-intensive industries from 2016 to 2020, resulting in different findings.

#### **Results of the Coefficient of Determination Test (Adjusted R<sup>2</sup>)**

A low R<sup>2</sup> value indicates a limited ability of independent variables to explain the dependent variable variation. Conversely, a value close to one suggests that the independent variables provide almost all the information needed to predict the dependent variable variation (Ghozali, 2018). The coefficient of determination test results indicate an Adjusted R Square value of 0.361 or 36.1%. This means that 36.1% of the carbon emission disclosure variable can be explained by variations in the five independent variables: financial performance, company size, environmental performance, women on the board of directors, institutional ownership, and managerial ownership. The remaining 63.9% is explained by variables not included in this study model.

#### **CONCLUSION**

Based on the data analysis and discussion, it can be concluded that financial performance, company size, and environmental performance affect carbon emission disclosure. Meanwhile, the presence of women on the board of directors, institutional ownership, and managerial ownership do not affect carbon emission disclosure.

Some companies do not publish sustainability reports consecutively, and some reports are inaccessible to researchers. As a result, researchers were unable to obtain relevant information for use as research data. This serves as a limitation for the study in obtaining broader and more comprehensive research data. Additionally, this study encountered challenges in

considering numerous variables affecting carbon emission disclosure, while other relevant variables were not included.

For energy sector companies listed on the Indonesia Stock Exchange, attention should be given to financial performance, company size, and improvement of environmental performance. This is because companies with strong asset management capabilities tend to influence carbon emission disclosure, and larger companies also tend to disclose more carbon emissions. Additionally, companies with environmental performance that meets standards are likely to increase their carbon emission disclosures. For regulators, there is an opportunity to consider policies mandating carbon emission disclosures as a required practice for publicly listed companies.

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