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Carbon Emission Disclosure in Indonesia: Perspective of Stakeholder Theory

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Abstract

As part of the company, stakeholders play an essential role in the long-term survival of the company. Companies are required to be able to meet various stakeholder needs. The practice of disclosing carbon emissions is considered one of the critical factors for companies fulfilling these responsibilities. The primary purpose of this study was to determine how ownership structures, including institutional ownership, managerial ownership, and foreign ownership, affect the disclosure of carbon emissions. Using a quantitative approach, this research focuses on mining, basic industry, and the chemical sector listed on the Indonesia Stock Exchange from 2020 to 2022; 31 companies were obtained as research objects based on a purposive sampling technique. A multiple linear regression analysis is used to validate the hypothesis. The study has shown that managerial ownership has a significant influence on carbon emission disclosure, while institutional ownership and foreign ownership do not influence carbon emission disclosure.

Keywords: Institutional Ownership; Managerial Ownership; Foreign Ownership; Carbon Emission Disclosure
JEL Code: G32, M14, Q56

INTRODUCTION

Carbon emissions have been increasing since the beginning of the 21st century. The increase in carbon emissions is thought to be caused by the use of fossil fuels, transportation, and forest burning, as well as the growth of industrial companies (Nursulistyo et al., 2022). However, the pandemic in 2020 caused a 4,6% decrease in emissions. This was due to the lockdown policy imposed by each country (Bhanumati et al., 2022). Although the lockdown policy had a significant effect on reducing carbon emissions, it was only temporary. Global carbon emissions in 2022 increased again by 1,4% from the previous year, the highest rate recorded over the past two decades (European Commission et al., 2023).

Indonesia's carbon emissions 2022 have increased by 10% compared to 2019, the last year before the pandemic (European Commission et al., 2023). As the 10th most carbon-emitting country in the world (USAID, 2022), the Indonesian government has taken actions to participate in reducing carbon emissions by participating in the Paris Agreement 2015, as stated in Indonesia Law No. 16 of 2016 (Krisnawanto & Solikhah, 2019; Kurnia et al., 2020; Nurlis, 2019). To implement the contents of the Paris Agreement, Indonesia has a target of a 29% reduction in carbon emissions by 2030 (Nursulistyo et al., 2022). To achieve this target, many parties, including companies, are needed to support Indonesia's carbon emission reduction program. By monitoring the emissions they produce and measuring or reporting their carbon emissions, companies can contribute to reducing greenhouse gas emissions (Kurnia et al., 2020; Yusuf, 2020). Regulation No. 47 of 2012, set by the Indonesian government, emphasizes that every company must report its social and environmental activities in its annual report (Indonesia Government, 2012). However, the actual carbon disclosure practices by companies in Indonesia are still at a low level (Andanrani et al., 2024; Nurlis, 2019).

Stakeholders are one of the parties that have an essential role in the company's success. Based on the stakeholder theory developed by Freeman & McVea (2005), the main focus of this theory is how companies are not only profit-oriented but must also pay attention to the impact of business activities on the environment. The increased awareness of stakeholders on environmental issues provides confidence that stakeholders are entitled to information related to company operations that has the potential to influence their decisions (Kiswanto et al., 2023). Therefore, companies need to meet these stakeholder needs by demonstrating their commitment to the environment by disclosing carbon emissions. Since investors and customers are increasingly aware of the environmental impact of companies, they consider this factor in their investment decisions. By disclosing carbon emissions, companies enhance their accountability and reputation and provide a competitive advantage in the face of industry competition. Thus, disclosure of carbon emissions not only fulfills stakeholders' needs but also benefits the company.

In corporate governance, the ownership structure is an essential element that determines managers' incentives, the level of supervision, and the company's economic efficiency (Fama & Jensen, 1983). Regarding its impact on Environmental Social and Governance (ESG) performance, different ownership structures in each company can lead to different levels of corporate commitment to ESG practices (Black & Yahaya, 2024; Jubaedah & Setiawan, 2023). This gives confidence that ownership structure impacts social and environmental disclosures such as carbon emissions. Research by Amaliyah & Solikhah (2019), Hariswan et al. (2022), Ika et al. (2021), Sri & Ayustyara (2023), Wibowo et al. (2022) and Yu et al. (2023) has examined the impact of ownership structure on carbon emission disclosure. The results show that ownership structure can be a consideration for companies when providing information about carbon emissions with the aim of increasing firm value and legitimizing the company in society. However, further research is needed due to inconsistent results from earlier research.

The focus of this research is to examine the extent to which companies in Indonesia have disclosed their carbon emissions, especially in the mining, primary industry, and chemical sectors,

considered the largest emission-contributing sectors in Indonesia (Suhardi & Purwanto, 2015). The study contributes to the lack of literature on carbon emissions disclosure by appropriately testing the influence of ownership structure, where previous studies only focused on financial variables and rarely saw how ownership structure affects carbon emissions disclosure. Also, this study attempts to use the Global Reporting Index (GRI) 305 standard in assessing carbon emission disclosure. Nursulistyo et al. (2022) state the Carbon Disclosure Project (CDP) Checklist has been widely used to determine carbon emission disclosure. Therefore, the selection of GRI 305 in this study presents a novelty in the methodology of assessing carbon emission disclosures. According to what has been explained, the research needs to be expanded to determine how ownership structure affects carbon emissions disclosure programs.

LITERATURE REVIEW AND HYPOTHESIS FORMULATION

Stakeholder Theory

The stakeholder approach is used by management to develop strategies in future planning to consider both the environmental impact on the company and the company's impact on the environment (Freeman & McVea, 2005). Problems related to the environment, including information on environmental issues such as global warming, climate change, increasing earth temperatures, and other information related to business sustainability, can be considered by stakeholders when making decisions. The company needs stakeholders' support to maintain its existence (Gray et al., 1995). Therefore, as the perspective of stakeholder theory suggests, companies should prioritize their relationships with stakeholders, recognizing their impact on the organization's success (Ermaya & Mashuri, 2018). In addition to fulfilling the company's responsibility to disclose environmental information, environmental disclosures such as carbon emissions disclosures must be made to respond to stakeholders' needs for environmental information.

Carbon Emissions Disclosure

The mandatory disclosure of information about environmental issues has been stated in Statement of Financial Accounting Standards (PSAK) No. 1, paragraph 9, by Corporate Social Responsibility (CSR). Carbon emissions disclosure is part of the environmental disclosure components reported in sustainability reports or annual reports. Companies must spend more money and time to disclose information about carbon emissions. As a result, not all companies can implement emissions disclosure practices. Some studies reveal that disclosing carbon emissions can assist stakeholders in making better decisions. The disclosure of carbon emissions also helps the government achieve various goals, such as encouraging accounting disclosure and improving its sustainability performance (Jiang et al., 2021).

Institutional Ownership and Carbon Emissions Disclosure

Stock that is owned by an organization such as pension funds, investment banks, or other organizations that manage financial resources on behalf of others is usually referred to as institutional ownership. Institutional ownership tends to be large proportions, allowing managerial supervision to be tighter (Krisnawanto & Solikhah, 2019). The greater the amount of ownership, the more it will encourage the company to maintain its reputation. One way to maintain the company's reputation is by implementing environmental disclosure practices, such as reporting carbon emissions. In several companies that disclose carbon emissions, the composition of ownership held by institutional parties is relatively high and dominates almost half of the total ownership. There are also companies whose ownership composition is almost entirely owned by institutional parties. Disclosing carbon emissions can be a recommendation for business owners when making decisions for the benefit of investment involvement, and this increased accountability is expected to result in lower emissions (Hales, 2023).

H1: Institutional ownership influences carbon emissions disclosure.

Managerial Ownership and Carbon Emissions Disclosure

Ownership of shares from management parties who are active in the decision-making process in a company is called managerial ownership. Stakeholder theory explains that external parties often pressure companies to disclose their environmental activities. Therefore, the amount of managerial ownership will affect management conduct. The greater the amount of managerial ownership, the more it will influence management in ensuring its behavior so that management can fulfill stakeholder interests (Shan et al., 2021). The composition of ownership held by managers in several companies that disclose carbon emissions is relatively low, not reaching half of the total ownership. Previous research explains that higher managerial ownership influences a company's disclosure of carbon emissions (Shan et al., 2021).

H2: Managerial ownership influences carbon emissions disclosure.

Foreign Ownership and Carbon Emissions Disclosure

Information about carbon emissions provides valuable insight for stakeholders to monitor company activities regarding their environmental responsibilities. Companies with foreign ownership often face information gaps between the company and foreign shareholders due to differences in geographical location and language barriers (Kim et al., 2021). To reduce the information gap caused by geographical differences, foreign investors will demand transparency from the company's environmental activities. Foreign investors tend to be concern about the environment, so they prioritize disclosure (Richard & Wijaya, 2022). Therefore, companies with foreign ownership will be concerned about carrying out their responsibilities in providing information related to corporate environmental activities, such as carbon emission, to meet investor expectations. The composition of ownership held by foreign investors in several companies shows relatively high carbon emissions, reaching half of the total ownership. There are also companies whose ownership composition is entirely owned by foreign parties. Prior studies by Kim et al. (2021) stated that companies with many foreign investors will affect the disclosure of carbon emissions.

H3: Foreign ownership influences carbon emissions disclosure.

Based on the explanation above, the research model is as follows.

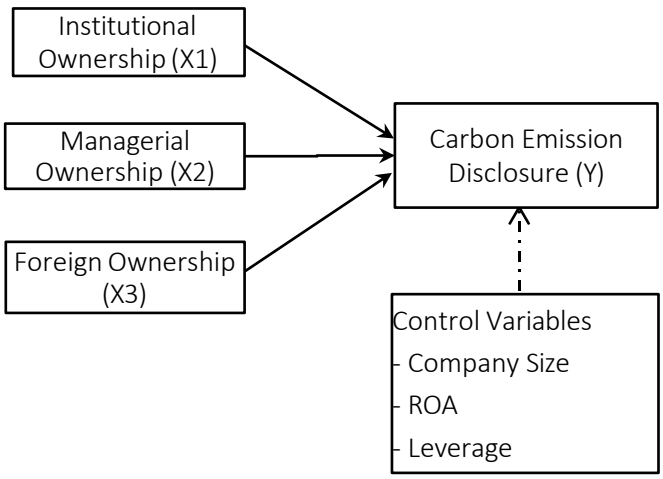

Figure 1. Research Model

RESEARCH METHOD

Population, Sample, and Data Collection Techniques

This study uses a quantitative approach by using secondary data from idx.co.id and related company websites. Mining, primary industries, and chemical sectors listed on the Indonesia Stock Exchange (IDX) in 2020–2022 were collected as the population. This analysis examined 93 samples from 31 companies, covering a three-year observation period, which was selected based on purposive sampling with criteria: (a) mining sector companies, primary industries, and chemicals listed on IDX in 2020–2022; (b) provide annual reports and corporate sustainability reports during the research period.

Table 1. Population and Sample

Criteria	Total
Mining, primary industries, and chemical sector listed on IDX from 2020 to 2022	148
Companies do not consecutively publish sustainability reports and annual reports during 2020 – 2022	(116)
Companies that have incomplete data	(1)
Number of Samples	31
Total sample (31 x 3 years)	93

Source: author

Variable Operationalization

Operational variables are descriptions of research variables used to develop research instruments and identify appropriate indicators in a study. Table 2 describes the variable measurements in this study.

Table 2. Variable Operationalization

Variable	Description	Measurement
Dependant Variable		
Carbon Emissions Disclosure	The extent to which companies practice carbon emissions disclosure	Using GRI 305 standards, which is calculated through a dummy score by assigning a value of 1 to companies following GRI 305 guidelines, 0 if not (Kurnia et al., 2020)
Independent Variable		
Institutional Ownership	Percentage of stock owned by institutions	$ST = \frac{\text{Stock owned by institution}}{\text{outstanding stock}}$ (Aini et al., 2022)
Managerial Ownership	Percentage of stock owned by management	$MNGR = \frac{\text{Stock owned by managerial}}{\text{outstanding stock}}$ (Budiharta & Kacaribu, 2020)
Foreign Ownership	Percentage of stock owned by foreign investor	$FRGN = \frac{\text{Stock owned by foreign}}{\text{outstanding stock}}$ (Ika et al., 2021)

Furthermore, this study also uses control variables. Control variables are defined as variables controlled to minimize differences in research results caused by calculation bias. Based on previous research, several control variables are used to see their influence on carbon emission disclosure. The control variables in this study include company size, return on assets (ROA), and leverage.

Table 3. Operationalization Control Variable

Variable	Description	Measurement
Control Variable		
Company Size	The extent of companies as determined by its total asset	Ln = (Total Assets) (Trufvisa & Ardiyanto, 2019)
ROA	A scale that measures the amount of profitability that the company is able to generate	ROA= $\frac{\text{Net Income}}{\text{Total Assets}}$ (Hapsari & Prasetyo, 2020)
Leverage	The proportion of the company's liabilities	DAR= $\frac{\text{Total Debt}}{\text{Total Assets}}$ (Hapsari & Prasetyo, 2020)

Data Analysis Techniques

This study employed multiple linear regression analysis using statistical software SPSS version 26 to test the hypothesis. The specific equation used for this analysis is presented below:

$$CED = \alpha+\beta1INST+\beta2MNGR+\beta3FRGN+\beta4SIZE+\beta5ROA+\beta6LEV+ e \quad (1)$$

CED in equation (1) is the dependent variable for Carbon Emissions Disclosure, α is a constant, β1INST, β2MNGRR, β3FRGN is the regression coefficient of the independent variables; institutional ownership, managerial ownership, and foreign ownership while β4SIZE, β5ROA, β6LEV is the regression coefficient of the control variables of company size, ROA, and Leverage, e represents error.

RESULT AND DISCUSION

The practice of disclosing carbon emissions by mining sector companies, basic industries, and chemical industries in Indonesia is still low; this can be seen from Table 4 the average value of disclosing carbon emissions only reaching 42%, less than 50%.

Table 4. Descriptive Statistics Analysis

Variable	N	Min	Max	Mean	Std. Deviation
CED	93	,000	1,000	,42473	,313390
INST	93	,000	1,049	,66808	,304783
MNGR	93	,000	,722	,05090	,140397
FRGN	93	,000	,989	,33536	,309132
SIZE	93	27,224	32,756	30,28586	1,354899
ROA	93	-,499	,616	,06078	,130577
LEV	93	,089	1,404	,51461	,256703

Source: SPSS test Result, 2023

The variables are homogeneous based on Table 4 because the mean value of each variable is larger compared to the standard deviation so there is no large difference in data deviation between one variable and another. On the other hand, variables whose mean value is less compared to the standard deviation have heterogeneous data distributions.

The classic assumption test is carried out before conducting hypothesis testing. There are four analyses to test classical assumptions, namely normality, multicollinearity, heteroscedasticity, and autocorrelation tests. Normality testing is done using the Monte Carlo method. The results show a significant value of 0,229 > 0,05 thus suggests that the data have a normal distribution.

The test of multicollinearity can be determined by examining the VIF value, which should be less than 10, and the tolerance value, which should be greater than 0,10. Examining the individual

variables in this research, The VIF and tolerance values for each research variable were within the acceptable range. INST has a VIF value 1,391, tolerance 0,719. MNGR has a VIF value of 1,196 and a tolerance of 0,836. FRGN has a VIF value of 1,220, tolerance 0,820. SIZE has a VIF value 1,101, tolerance 0,908. ROA has a VIF value 1,461, tolerance 0,685. LEV has a VIF value 1,328, tolerance 0,754. Based on these results, it can be said that there are no multicollinearity symptoms in the data.

Spearman's Rho is used to see whether there are heteroscedasticity symptoms in the data used by looking at the unstandardized residual number of each variable. The results show the INST variable has a significance value 0,977, MNGR variable is 0,594, FRGN variable is 0,701, SIZE variable is 0,643, ROA variable is 0,509, and LEV variable is 0,482. According to the result, there is no sign of heteroscedasticity in the research because the significance of each variable is more significant than 0,05. To perform the autocorrelation test, the Durbin-Watson method is used. Table 5 shows the value of DU (1,154) < DW (1,750) < 4-DU (2,846), indicating that the research data are not autocorrelated.

Table 5. Autocorrelation Test Result

Model	Durbin-Watson
1	1,15

Source: SPSS Test Result, 2023

Table 6. Regression Analysis Result

	Model	B	T	Sig.	Conclusion
1	(Constant)	-4,033	-6,762	,000	
	INST	,132	1,338	,184	Rejected
	MNGR	-,707	-3,552	,001	Accepted
	FRGN	-,016	-,170	,865	Rejected
	SIZE	,148	7,493	,000	Accepted
	ROA	-,189	-,798	,427	Rejected
	LEV	-,131	-1,146	,255	Rejected

Source: SPSS Test Result, 2023

Through a t-test, hypothesis testing suggest the independent variables exert a significant influence on the dependent variable if they have a considerable value <0,05. As evidenced by Table 6, only the managerial ownership variable affects carbon emissions disclosure with a p-value of 0,001 < 0,05.

Table 7. Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,655[a]	,429	,389	,245015

Source: SPSS Test Result, 2023

Based on Table 7, the Adjusted R Square result has a value of 0,389 or 38,9%, indicating that 38,9% of carbon emissions disclosure can be explained by the independent variables, namely institutional ownership, managerial ownership, and foreign ownership. Meanwhile, the remaining 61,1% implies the presence of other potentially factor that were not part of this study.

Institutional ownership does not significantly influence carbon emission dislosure. These current studies are consistent with prior research by Aini et al. (2022), Hermawan et al. (2018), and Sri & Ayustyara (2023) which confirm that there is no correlation between institutional ownership and the disclosure of carbon emissions. In stakeholder theory, it is said that the greater the institutional ownership in a company, the more it will influence the company in carrying out its responsibility to make voluntary disclosures (Hermawan et al., 2018). However, the decision to

reveal carbon emissions is the responsibility of the company's internal parties. Management tends to disclose emissions to avoid negative perceptions from the public perceptions about the company's activities. Therefore, high institutional ownership cannot be used as a benchmark for companies to disclose carbon emissions because it depends on company management regulations.

Managerial ownership has an influence on carbon emissions disclosure. When the proportion of managerial ownership is high, the level of concern for company to disclose carbon emissions also increase. As stated by stakeholder theory, managerial parties will maintain the image of the company they own for the sake of public judgment and stakeholder trust as part of company ownership, consequently this can lead company to be more open about their carbon emission. When the disclosure of carbon emissions increases, public and stakeholder trust regarding the company's responsibilities towards the environment increases. Therefore, this will affect the company's image, investor interest, and a potential rise in the company's stock price. However, these findings align with previous research by Shan et al. (2021), and Yeh & Liao (2024) which explain that the higher managerial ownership impact corporate carbon emissions disclosure.

The findings indicated that foreign ownership does not significantly influence carbon emissions disclosure. This finding is due to the low number of foreign ownerships in mining, primary industry, and chemical sector companies. As revealed by the analysis of individual companies where PT Golden Energy Mines Tbk (GEMS) has a high average foreign ownership in a row from 2020-2022, but the practice of disclosing carbon emissions is still low. Meanwhile, PT Petrosea Tbk (PTRO), a company with a low average value of foreign ownership, has a higher carbon emissions disclosure value than PT Golden Energy Mines Tbk. These results align with prior studies by Ika et al. (2021) and Tarigan et al. (2022), which state that the high or low amount of foreign ownership does not significantly influence carbon emissions disclosure.

The control variables prove there is no relationship between ROAand leverage on carbon emissions disclosure. This result aligns with studies conducted by Wirawan & Setijaningsih (2022), where a high ROA cannot ensure the company will report on its carbon emissions. Moreover, the study suggests that a high leverage value may indicate that the company is more focused on improving their financial situation than disclosing carbon emissions. While the company size variable affects the disclosure of carbon emissions, this shows that larger corporations have higher pressure to be environmentally responsible. This pressure may motivate companies to offer information regarding their carbon emissions, so with this action, it is expected that the trust of the stakeholders will increase.

CONCLUSION

This research is to examine how different types of ownership structures, namely institutional ownership, managerial ownership, and foreign ownership, affect carbon emission disclosure in the mining, basic industries, and chemicals sectors listed on IDX from 2020 to 2022. The research confirms that managerial ownership significantly affects disclosure of carbon emissions. This is consistent with stakeholder theory, which holds that managers, with their focus on the long-term prosperity of the business, have direct authority over the company to prioritize carbon emissions transparency in response to stakeholder expectations about sustainability. While institutional and foreign ownership doesn't have an impact on carbon emissions disclosure, this is because foreign and institutional investors do not always have full control over companies. Therefore, they lack the power to impose regulatory changes, including policies related to carbon emissions disclosure.

The research's implications can provide a deep understanding of how ownership structure and carbon emissions disclosure offer valuable insight to companies through the lens of stakeholder theory. The study's results can help management enforce regulations related to carbon emissions disclosure by creating policies that are in line with stakeholder interests.

This study has limitations. First, the research only uses the mining sector, primary industry, and chemicals, so the information cannot be taken into consideration for other companies in

Indonesia. Also, the amount of companies that report carbon emissions is still low. Therefore, future research can add other sectors in Indonesia or combine them with other countries in ASEAN. Second, this study only examines the ownership structure factor, where the results of the study only contributed 38,9 percent. Future research is recommended to use additional variables beyond those discussed in this research or add moderating variables such as good corporate governance that can explain in more detail the factors that influence carbon emissions disclosure.

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