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The Influence of Primary Stakeholder, Secondary Stakeholder, and Regulatory Stakeholder on Carbon Emission Disclosure

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Keywords

Carbon Emissions Disclosure; Internal Primary Stakeholders; External Primary Stakeholders; Secondary Stakeholders; Regulatory Stakeholders

ABSTRACT

This research aims to analyze direct and indirect influences between internal primary stakeholders, external primary stakeholders, secondary stakeholders, and regulatory stakeholders on carbon emissions disclosure. The population of this research are non-financial companies listed on the Indonesia Stock Exchange (IDX) in 2019-2021 period. The sample in this research was 196 samples with a purposive sampling method. The type of data in this study is secondary data, and panel data regression analysis with the EViews 10. The results of this research showed that investor-oriented industry, industry close to consumers, media exposure, and government pressure have a positive effect on carbon emission disclosure. Meanwhile employee-oriented industries and creditor pressure have a negative effect on carbon emission disclosure. Environmentally sensitive industries and the audit by KAP Big 4 had no influence on carbon emissions disclosure.

INTRODUCTION

Environmental problems are getting more serious, such as rising sea levels and thick smog, making environmental awareness in society even more urgent. These problems are caused by climate change and the energy crisis, which are the main factors in global environmental threats and sustainable development for living things. Over time, climate change on earth has become a big concern, and now countries around the world are competing to take concrete steps to reduce or stop the increase in carbon emissions. Forest fires occured in 2019, spanning Central Kalimantan, East Kalimantan, and Riau, are an example of suspected environmental damage caused by the business activities of several corporations (Kompas.com, 2019). Indonesia is a member of the G20 countries, which continue to commit to reducing carbon emissions by 26% in 2020 and 29% in 2030. Even though Indonesia has made efforts to reduce carbon emissions, it is still quite behind other large economic countries that are members of the G20. Currently, Indonesia is trying to accelerate the net zero emission project by building the Indonesia Green Industrial Park, covering an area of 12,500 hectares in North Kalimantan. Another effort is to rehabilitate 620,000 hectares of mangroves by 2024, which will have a carbon absorption capacity up to four times greater than tropical forests (GoodnewsforIndonesia, 2022). Based on the results of the report (Climate Change Performance Index (CCPI), 2022), Indonesia shows high performance in the renewable energy category, ranks middle in the category of energy use and climate policy, and obtains low greenhouse gas (GHG) emissions. This shows that Indonesia has an overall average performance. The Ministry of Industry (Kemenperin) continues to implement a green industry in Indonesia by holding various activities to engage industry players and other stakeholders, as well as academics, in collaborating together to create a domestic industry that is low in carbon emissions and environmentally friendly. Disclosure of information about carbon accounting is an important part of management accounting activities around the world. This reflects the company's behavior, effectiveness, and responsibility in terms of the economy, environment, and society.

PT Nirmala Tipar Sesama was found to have committed environmental pollution by violating the use of B3 waste without a permit, storing it in an unauthorized area, and disposing of the waste without proper authorization. (Metro.tempo.co, 2021). Similarly, in 2022, PT Kimu Sukses Abadi (KSA) in Cikarang was involved in six environmental pollution violations, which led to its sealing (bekasikab.go.id 2022). There were two cases of environmental pollution violations committed by PT Medco and PT Kimu. Such violations can be attributed to both

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internal and external factors. The driving category from within the company is the role of management and company owners to care for and be responsible for the social and environmental aspects of the company. External driving categories include regulations, laws, and mandatory environmental impact analysis. The government through KLH has implemented a PROPER audit (Company Performance Improvement Assessment Program). The issue of environmental pollution at this time proves the lack of special attention from management and its stakeholders including the government regarding environmental views of business activities.

Based on the phenomenon above, researchers are interested in conducting research on the influence of stakeholders on disclosing carbon emissions disclosure in Indonesia. The aim is to encourage the government to prioritize environmental pollution issues and enact stricter policies. Additionally, this research seeks to foster greater compliance with regulations and environmental responsibilities among industrial players. Investors, consumers, the public, and other parties can also obtain information about the environment for their operational activities. Stakeholders are divided into four groups, among others internal primary stakeholder, external primary stakeholder, secondary stakeholder, and regulatory stakeholder. The four stakeholder groups include internal primary stakeholders (investor-oriented industries & employee-oriented industries), external primary stakeholders (industries close to consumer, environmentally sensitive industries & creditor pressure), secondary stakeholders (media exposure & audits by KAP Big 4) and regulatory stakeholders. (government pressure) in research (Sriningsih & Wahyuningrum, 2022). This study examines which stakeholders have an impact on disclosure of carbon emissions, particularly within the category of internal primary stakeholders. Internal primary stakeholders are shareholders and employees who have an important impact on information disclosure decisions. A larger proportion of shares traded means that public shareholders have more voting rights, which creates pressure on companies and encourages disclosure of carbon information (Tang et al., 2019). (Tang et al., 2019) Investor pressure has a positive effect on carbon information disclosure. However, Chithambo et al., (2020) revealed that investor pressure has no effect on voluntary disclosure of carbon emissions. Employee involvement has a positive effect on disclosure of carbon emissions because it is more transparent and according to quality (Shen et al., 2020). On research (Chithambo et al., 2020) revealed

that employee pressure had no effect on voluntary disclosure of carbon emissions.

External primary stakeholder, including consumers, environmentally sensitive industries, and creditors, exert pressure on companies to disclose carbon information. According to research (Shen et al., 2020) consumer pressure has a positive effect on disclosure of corporate carbon information. In contrast, Chithambo et al., (2020) states that customer pressure has no effect on voluntary disclosure of carbon emissions. The type of industry that is environmentally sensitive has a positive effect on the disclosure of carbon information (Tang et al., 2019). However, Nastiti and Hardiningsih (2022) states that the type of industry has no effect on the disclosure of carbon emissions. The greater the creditor pressure, the greater the disclosure of carbon information in research (Tang et al., 2019) creditor pressure has a positive effect on disclosure of carbon information. Conversely, multiple studies (Chithambo et al., 2020; Dandy Andriadi & Werastuti, 2020; Shen et al., 2020) states that creditor pressure has no effect on disclosure of carbon emissions.

Secondary stakeholders are divided into two, namely media exposure and audits. Media exposure plays an important role in informing the public about company activities including disclosure of carbon emissions. The existence of supervision from the media and the organization will be increasingly racing to make disclosure of its activities. Multiple research (Nastiti dan Hardiningsih, 2022; dan Cordova et al., 2020) explained that media exposure has a positive effect on disclosure of carbon emissions. In research (Sandi et al., 2021) stated that media exposure had no effect on carbon emissions disclosure. Companies audited by large Public Accounting Firms (KAP) tend to make disclosures and information more extensive to their users. (Wardhani dan Kawedar, 2019; Shen et al., 2020) found that the audit institution has a positive effect on the disclosure of corporate carbon information. In research (He et al., 2019; Irwhantoko & Basuki, 2016) stated that KAP's reputation had no significant involvement with the disclosure of carbon emissions.

Regulatory pressure namely pressure from the government as one of the company's stakeholders to control the company's operational activities that have an impact on polluting the environment (Dewi et al., 2019). Studies (Chithambo et al., 2020; Tang et al., 2019) shows that government pressure has a positive effect on disclosure of corporate carbon emissions. While research (Dandy Andriadi & Werastuti, 2020; Sandi et al., 2021) revealed that government pressure had no effect on disclosure of carbon emissions.

This study combines research findings from multiple research sources (Tang et al., 2019), (Chithambo et al., 2020) (He et al., 2019) and (Nastiti & Hardiningsih. 2022). This study uses measurements of Carbon Disclosure Information (CDI) as proposed by Shen et al., (2020) to measure the presence of carbon emissions in a company's sustainability report and is expected to be able to disclose carbon emissions in companies in Indonesia. This research uses non- financial companies listed on the Indonesia Stock Exchange in 2019-2021.

Hypothesis Development

1. Internal Primary Stakeholder

The influence of investor-oriented industries on disclosure of carbon emissions

Industries that have many investors with a large shareholding spread are considered as investor-oriented industries. Within these industries, investors find carbon information useful in their investment decisions which can help investors find risks and opportunities in investing. Stakeholder theory gives the position of shareholders or investors as stakeholders who are authorized to benefit from the company in various forms of financial and non-financial information. Investor demand for disclosure of non-financial information has increased accordingly (Tang et al., 2019). (Frynas & Yamahaki, 2016) Comprehensive company disclosure is considered important for investors and other capital market players to make investment decisions. Research (Shen et al., 2020; Tang et al., 2019) also revealed that investors can increase the level of corporate carbon disclosure. Thus, comprehensive disclosure of financial and non-financial information will increase transparency and reduce information asymmetry.
Hypothesis 1: Investor-oriented industries have a positive effect on disclosure of carbon emissions

The influence of employee-oriented industries on disclosure of carbon emissions

Today's employees are increasingly concerned about whether the company takes significant steps toward addressing social and environmental issues or not. Therefore, a more transparent and quality disclosure of carbon emissions must involve employees. Employee pressure influences the disclosure of carbon emissions (Shen et al., 2020). (Guenther et al., 2016) Employees are also starting to pay attention to the company's disclosed carbon performance. Companies with more employees are usually better organized so they can address environmental issues by using their voice to reach higher levels of management. Stakeholder theory explains that employees are important internal stakeholders, which can influence the company's information disclosure behavior.
Hypothesis 2: Employee-oriented industries have a positive effect on disclosure of carbon emissions

2. Eksternal Primary Stakeholder

The influence of industry close to consumers on disclosure of carbon emissions

Consumers who are aware of the adverse effects of environmental damage, demand that their suppliers of goods or services be transparent and accountable for the impact of their operations on the environment (Halkos & Skouloudis, 2016). Promoting a positive corporate image can guarantee responsible behavior, increase brand loyalty, and motivate consumers to buy products. To maintain good relations with consumers, companies will try to disclose more relevant information about the environment and are expected to disclose as much carbon information as possible to enhance the company's reputation and meet consumer information needs that increase retention of old customers and attract new customers (Shen et al., 2020). Guenther et al., (2016) found that customers are also starting to pay attention to the company's disclosed carbon performance for better decision-making. Legitimacy theory reveals that all companies will try to ensure that their activities are accepted by the environment and society, including the end consumer.
Hypothesis 3: Industry close to consumer's positive effect on the disclosure of carbon emission

The influence of environmentally sensitive industries on disclosure of carbon emissions

Companies that are part of the environmentally sensitive industry in carrying out their business activities have a greater and greater influence in disclosing their carbon emissions. The statement was also written by research (Tang et al., 2019) who found that companies operating in the fields of thermal power, building materials, steel, chemicals, textiles, cement, papermaking, electrolytic aluminum, coal, metallurgy, pharmaceuticals, petrochemicals, and brewing, have a major responsibility for environmental issues. . In legitimacy theory, environmentally sensitive companies are more likely to face increasing pressure from society, and companies need to disclose carbon emission reports to meet demand and gain legitimacy from society. (He et al., 2019; Shen et al., 2020; Tang et al., 2019) has obtained evidence that environmentally sensitive industries have a positive impact on disclosure of carbon emissions.
Hypothesis 4: Environmentally sensitive industries have a positive effect on disclosure of carbon emissions

The influence of creditor pressure on disclosure of carbon emissions

Creditors are individuals or groups of lenders who are stakeholders who can influence activities and levels of information disclosure (Shen et al., 2020). Creditors demand that companies be transparent and disclose more information, including environmental risk information. Results of research (Tang et al., 2019) revealed that creditor pressure has a positive effect on disclosure of carbon emissions because companies with creditor pressure have a beneficial effect on disclosure of carbon emissions. Stakeholder theory reveals that creditors have power and can make legitimate demands through the loans they provide.
Hypothesis 5: Creditor pressure has a positive effect on disclosure of carbon emissions

3. Secondary Stakeholder

The influence of media exposure on disclosure of carbon emissions

Expose corporate carbon information to the media caused by public demands on companies to gain legitimacy from society. The media plays an important role in social mobilization movements, including environmental advocacy groups (Cordova et al., 2020). Efforts to maintain good relations with stakeholders can involve issuing a sustainability report (Hörisch et al., 2020). The publication of a sustainability report is expected to provide useful information for achieving sustainability goals to stakeholders. Corporate stakeholder theory strongly considers the importance of environmental disclosures that provide information to stakeholders. The more disclosure of information in the media this can encourage companies to gain public legitimacy and get positive responses from stakeholders.
Hypothesis 6: Media exposure has a positive effect on disclosure of carbon emissions

The influence of the Big Four KAP audits on disclosure of carbon emissions

KAP, or the Certified Public Accountant (CPA) firm, is responsible for presenting appropriate information for users of financial statements to make decisions. Some clients assume that auditors who come from large KAPs and are affiliated with international KAPs are more likely to provide high quality (Shen et al., 2020). Auditors can influence client governance and take initiatives in promoting socially and environmentally responsible accounting practices. Therefore, the more qualified an auditor is, the more information will be obtained. (Wardhani dan Kawedar, 2019) The quality of a public accounting firm has an important role in increasing client confidence in the opinion it provides.
Hypothesis 7: Big Four KAP audits have a positive effect on disclosure of carbon emissions

4. Regulatory Stakeholder

The influence of government pressure on disclosure of carbon emissions

The government is a stakeholder that plays a major role in regulating and influencing the business activities of a company. Companies owned by the government are expected to be able to disclose more environmental information because their accountability function receives budgetary funds from the government (Dewi et al., 2019). The level of disclosure of environmental information by government-owned companies (BUMN) is higher than non-government-owned companies (non-BUMN). This shows that BUMN are more likely to convey to the public that they have fulfilled their social environmental responsibilities, thus building a high-quality reputation that is positively responsive to the market (Tang et al., 2019). Stakeholder theory that companies must comply with regulations and legitimacy attributes created by governments and other regulatory agencies by establishing norms and guidelines for sustainability reporting practices.
Hypothesis 8: Government pressure has a positive effect on disclosure of carbon emissions

METHODS

A. Sampling and data

Carbon emission disclosure data comes from non-financial companies listed on the Indonesia Stock Exchange from 2019 to 2021 using a purposive sampling method. The selection of the non-financial sector is because this sector has a large influence on carbon emissions.

Table 1
Sample selection

No	Sector	2019-2021	
		N	%
1	Basic Materials	48	24
2	Consumer Cyclicals	6	3
3	Consumer Non-Cyclicals	25	13
4	Energy	41	21
5	Healthcare	20	10
6	Industrial	13	7
7	Infrastruktur	28	14
8	Properties & Real Estate	6	3
9	Transportation & Logistic	9	5
	Total	196	100

Table 2
Sample by sector 2019-2021

Criteria	Total
Non-financial company listed on the IDX 2021	662

Non-financial companies that are not consecutively listed on the IDX 2019-2021	100
Non-financial companies whose Annual Report is not complete 2019-2021	116
Non-financial companies whose Sustainability Report is incomplete 2019-2021	377
Number of samples (69 companies x 3 years)	207
Number of samples after Outliers (207-11)	196

For this study, the financial sector is not included. Additionally, the technology sector was not used as a sample because it did not meet the sample selection criteria, namely that no one had published a sustainability report consecutively for 2019-2021. In table 2 the basic material sector represents the largest sample with 48 samples (24%), then the energy sector represents the second largest sample with 41 samples (21%), and the smallest group is consumer cyclicals and properties & real estate with 6 samples (3%).

B. Variable analysis

This research uses panel data regression analysis, which is a combination of two data, namely cross- sectional data and time series data. Panel data is also often referred to as pooled data (Ghozali dan Ratmono, 2020:195). Panel data regression equation:

$$CEDit = \alpha + \beta1\ INVESit + \beta2\ EMPLOit + \beta3\ CONSUit + \beta4\ ENVIit + \beta5\ CREDit + \beta6\ EXPOit + \beta7\ KAPit + \beta8\ REGUit + \beta9\ SIZEit + eit$$

C. Variable measurement

Measurement of carbon emission disclosure is proxied by scoring from research developed by (Shen et al., 2020), in his research based on a Carbon Disclosure Information (CDI) request sheet where the scoring is divided into 6 levels and 15 indexes according to the following provisions:

Table 3
Carbon Disclosure Information (CDI)

No	Category	Indeks	Indicator
1	Carbon reduction targets and Strategies	Carbon reduction targets	1. Firm should formulate clear and effective emission reduction targets. 2. Planning and risk measures for future low carbon development 3. Energy saving and emission reduction related notes and commitments
		Carbon reduction strategy	1. Long- and short-term strategies launched by the company 2. Draw up incentive mechanism, encourage objects and methods
2	Carbon emission reduction management	Institution setting	The establishment of environmental protection, energy conservation and emission reduction institutions and the information system of management platform
		Internal training	Education and training in environmental awareness and related skills for management and staff.
		Identification and trading of carbon emissions	1. Certification / verification status of carbon emissions or energy saving, environmental assessment, etc. 2. Companies involved in carbon emission reduction transactions
		Carbon emission reduction activities	Energy conservation and environmental protection knowledge promotion and publicity, afforestation, environmental protection donations and other activities.

3	Carbon emission reduction accounting	Energy consumption	Consumption of fuel, electricity, heat, gas and refrigerating capacity.
		Carbon footprint	Emission of air pollutants such as carbon dioxide, sulphide, nitrogen oxides and dust
4	Kinerja pengurangan emisi karbon	Energy saving and emission reduction	Compared with the previous year, the company's carbon emissions or joint energy
		Standard degree	In terms of energy saving and emission reduction, the company meets the requirements of government standards and the achievement of carbon reduction targets.
		Benefit estimation	The company reduces the benefits of carbon emissions, such as cost saving, greening rate, air quality and so on.
5	Capital investment and government subsidy	Low carbon investment	The company's low-carbon economy development related technology and capital investment and research results, such as fixed assets investment, technological transformation and R&D investment, etc.
		Expense expenditure	Sewage charges, daily maintenance costs and environmental protection greening investment.
		Government and social grants and incentives	Project investment, energy saving and emission reduction subsidies and incentive funds
6	Environmental accident	Government penalties and pollution incidents	Environmental pollution and damage incidents, illegal incidents, departures by environmental protection departments or lists of key pollution enterprises, and fines and compensation paid and paid for them

Note: 0 = If not disclosing, 1 = if carbon information is non-quantitative, and 2 = if carbon information is quantitative. Number of items disclosed / total disclosures (30).

Table 4
Variable calculation

No	Variable / Symbol	Measurement	Scale
		Dependent Variable	
1.	Carbon Emissions Disclosure / **CED**	Carbon disclosure information on table 3 (Shen et al., 2020)	Ratio
		Independent Variable	
1.	Investor Oriented Industry / **INVES**	Proportion of tradable shares = Stock Floated / Total Equity (Tang et al., 2019)	Ratio
2.	Employee Oriented Industry / **EMPLO**	Labor intensity ratio = Total labor costs / Total fixed assets (Trianaputri & Siregar, 2018)	Ratio
3.	Industri yang dekat dengan konsumen / **CONSU**	Customer Pressure = Advertising Expenses / Sales Revenue (Shen et al., 2020)	Ratio
4.	Environmentally Sensitive Industries / **ENVI**	Companies that are included in the high carbon industry, namely: thermal power, building materials, steel, chemicals, textiles, cement, paper making, electrolytic aluminum, coal, metallurgy, pharmaceuticals, petrochemicals,	Nominal

No	Variable / Symbol	Measurement	Scale
		and brewing, are given a value of 1 while a value of 0 is otherwise. (Tang et al., 2019)	
5.	Creditor Pressure / **CRED**	Financing Debt Ratio = $\frac{\text{(Short Term Borrowing + Long Term Loan)}}{\text{Total Liabilities}}$ (Tang et al., 2019)	Ratio
6.	Media Exposure / **EXPO**	Score 1 if it discloses more information related to carbon emissions (Annual Report, Sustainability Report, Website), Score 0 otherwise (Sandi et al,, 2021)	Nominal
7.	Audit KAP BIG 4 / **KAP**	Score 1 for companies audited by KAP Big 4, score 0 for non-KAP Big 4 (He et al.,2019)	Nominal
8.	Government pressure/ **REGU**	Business Entity Ownership = 1 If BUMN, score 0 non-BUMN (Tang et al., 2019)	Nominal
9	Size/ **SIZE**	Size = Ln Total Assets (Tang et al., 2019)	Ratio

RESULTS

A. Disclosure of carbon emissions

Table 5 presents the average value of companies disclosing carbon emissions across the 15 indices. The highest level of disclosure is at index 7, namely energy consumption, with 1,810 (2019), 1,851(2020), and 1,939(2021) companies disclosing their energy consumption in sustainability report. The second largest is index 9, namely energy saving and emission reduction with 1,365(2019), 1,612(2020), and 1,667 (2021) companies making efforts to reduce carbon or energy emissions from the previous year. The third highest is index 13, which covers expenses, with 1.127 (2019), 1.134 (2020), and 1.348 (2021) as the average figures, indicating that companies budget for expenses on waste costs, maintenance costs and environmental protection costs as well as greening investments.

The lowest level of disclosure is found in index 15, which pertains to government penalties and pollution incidents, with figures 0.000 (2019), 0.000 (2020), and 0.015 (2021). This proves that companies in Indonesia have not been involved in significant pollution and environmental damage, illegal incidents, and fines that must be paid to the government. The second lowest is index 14, related to government and social grants and incentives, with value of 0.000 (2019), 0.000 (2020), and 0.030 (2021), indicating that the government has not fully provided funds and subsidies for investment in energy saving and emission saving projects to companies. The third smallest index is the 4th, namely internal training, with figures 0.381 (2019), 0.418 (2020), and 0.667 (2021), suggesting that the company has not provided much education, training and skills in the environmental field for management and staff. In the graph of disclosing carbon emissions in 2021 there is an increase in disclosing carbon emissions at companies in Indonesia.

Table 5
The average value of companies that reveal each index

Code Indexs	Indexs	2019	2020	2021	2019-2021
I1	Carbon reduction targets	0,937	1,060	1,288	1,097
I2	Carbon reduction strategy	0,905	1,030	1,061	1,000
I3	Institution setting	0,825	0,896	0,939	0,888
I4	Internal training	0,381	0,418	0,667	0,490
I5	Identification and trading of carbon emissions	0,810	0,851	0,879	0,847
I6	Carbon emission reduction activities	0,984	1,060	1,136	1,061
I7	Energy consumption	1,810	1,851	1,939	1,867

Code Indexs	Indexs	2019	2020	2021	2019-2021
I8	Carbon footprint	1,032	1,030	1,136	1,066
I9	Energy saving and emission reduction	1,365	1,612	1,667	1,551
I10	Standard degree	0,603	0,552	0,591	0,582
I11	Benefit estimation	1,206	1,194	1,167	1,189
I12	Low carbon investment	0,857	0,866	0,909	0,878
I13	Expense expenditure	1,127	1,134	1,348	1,204
I14	Government and social grants and incentives	0,000	0,000	0,030	0,010
I15	Government penalties and pollution incidents	0,000	0,000	0,015	0,005

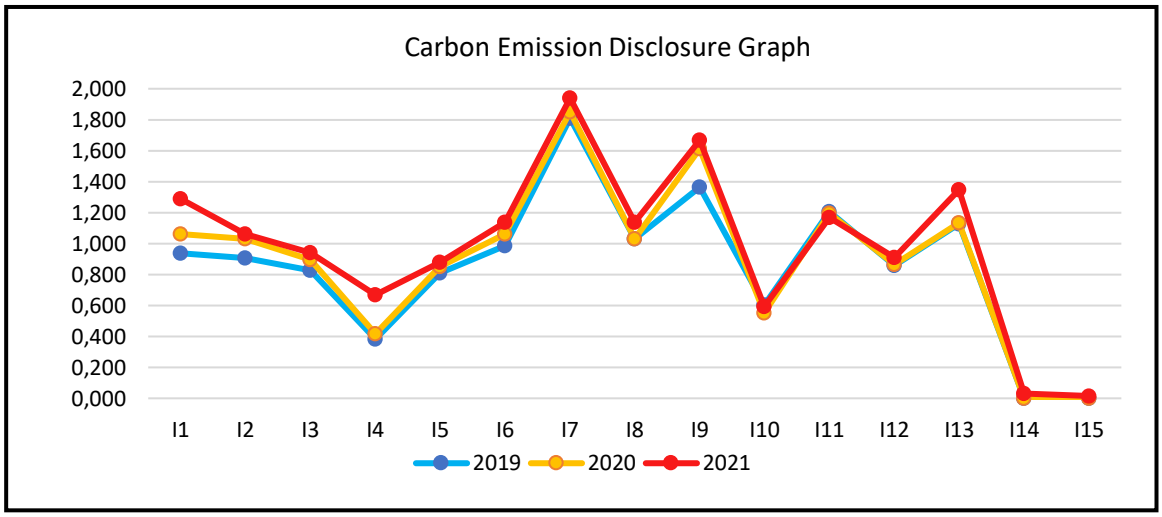

Figure 1. Carbon Emission Disclosure

Table 6
Descriptive statistics

Continuous Variables					
Variables	**N**	**Minimum**	**Maximum**	**Mean**	**Std. Deviation**
CED	196	0,13333	0,700	0,457	0,114
INVES	196	0,00322	2,654	0,146	0,346
EMPLO	196	0,00079	2,622	0,188	0,323
CONSU	196	0,00006	0,211	0,026	0,034
CRED	196	0,00157	1,030	0,299	0,233
SIZE	196	27,5268	33,537	30,499	1,332
Dummy Variables					
Variables	**Category**			**Frequency**	**Percentage**
ENVI	Not a high carbon industry			66	34
	High carbon industry			130	66
	Total			196	100
EXPO	Does not disclose full carbon emissions			43	22
	Disclose full carbon emissions			153	78
	Total			196	100
KAP	Non KAP Big 4			71	36
	KAP Big 4			125	64
	Total			196	100
REGU	Non BUMN			154	79
	BUMN			42	21
	Total			196	100

Descriptive statistics on the continuous variables in table 6 reveal that the disclosure of carbon emissions has a minimum value of 0.133, a maximum value of 0.700 and an average of 0.457. This indicates that the results of disclosing carbon emissions by companies are still very low. Investor-oriented industries have a minimum value of 0.0032, a maximum value of 2.654 and an average of 0.146, suggesting that the proportion of public shares traded in the capital market is still small. Employee-oriented industries have a minimum score of 0.0007, a maximum score of 2.622, and an average of 0.188, signifying that employee involvement in company carbon information is still very small. Industries near consumers have a minimum value of 0.00006, a maximum value of 0.211 and an average of 0.026, indicating that there is fulfillment of information needs and approaches to consumers are still low. Creditor pressure is a minimum value of 0.0015, a maximum value of 1.030 and an average of 0.299, suggesting that the loans made by the company to creditors are of small value. As for control variable size, it ranges from minimum value of 27.526 (IDR 901,060,986,000) to maximum value of 33,537 (IDR 367,311,000,000,000), with average value of 30,499. This indicates a substantial company size, which is associated with a higher likelihood of disclosing carbon emissions.

The industry dummy variable is environmentally sensitive, indicates that 66 companies (34%) belong to the low- carbon industry, and 130 companies (66%) belong to the high-carbon industry. Regarding media exposure, 43 companies (22%) did not disclose complete carbon emission information to the media, while 153 companies (78%) companies disclosed complete carbon emission information to the media. For audits by KAP Big 4, 71 companies (36%) companies did not use BIG4 KAP audit services, whereas 125 companies (64%) used BIG4 KAP services. In term of government pressure, 154 non-BUMN companies (79%) and 42 BUMN companies (21%) experienced government pressure.

Table 7
Panel Effect Test Results

Test	Hypothesis	Count Statistics	Prob	Conclusion
Chow	H_0: Common effect H_1: Fixed effect	Fstat = 5,74	0,0038	Fixed effect
Hausman	H_0: Random effect H_1: Fixed effect	Chi-square = 10,4739	0,1633	Random effect
LM	H_0: Common effect H_1: Random effect	LM test = 59,249	0,0000	Random effect

The results of the Chow test in table 7 show that the probability value is 0.0038 < 0.05, so the fixed effect is more appropriate. The Hausman test shows that the probability value is 0.1633 > 0.05, so the random effect is more appropriate. The Lagrange multiplier test shows that the probability value is 0.0000 < 0.05, so the random effect is more appropriate. Therefore, it can be concluded that the best model chosen is the random effect.

Table 8. Normality Test

Residual Models	Prob	Alpha	Conclusion
Asymp.Sig. (2-tailed)	0,065	0,05	Normal

The normality test in this study used the Jarque-Bera statistical test to produce a probability value of 0.065 > 0.05. It can be concluded that the data is normally distributed.

Table 9. Multicollinearity Test

Variabel	VIF	Critical Value	Conclusion
INVES	1,052338	VIF < 10	No Multicholinearity Occurs
EMPLO	1,067431		
CONSU	1,087237		
ENVI	1,069929		
CRED	1,055127		
EXPO	1,025686		

KAP	1,054440
REGU	1,123112
SIZE	1,127010

The results of the multicollinearity test show that all variables have a VIF value <10 so it can be concluded that the multicollinearity assumption has been met, which means that multicollinearity does not occur, there is no correlation between the independent variables.

B. Determinants of carbon emissions disclosure

Table 10
Hypothesis Testing

Variable	Hypothesis Prediction	Coefficient	T-Stat	Prob (1 tailed)	Conclusion
INVES	+	0,039853	2,079744	0,01945	H1 accepted
EMPLO	+	-0,059887	-1,893476	0,0299	H2 rejected
CONSU	+	0,874060	3,047524	0,0013	H3 accepted
ENVI	+	0,003560	0,022628	0,4376	H4 rejected
CRED	+	-0,053768	-1,761287	0,0399	H5 rejected
EXPO	+	0,052829	3,638655	0,0002	H6 accepted
KAP	+	0,003185	0,149273	0,44075	H7 rejected
REGU	+	0,061255	2,248474	0,01285	H8 accepted
SIZE		0,031017	3,834298	0,0001	
C		-0,548938	2,227914		
			Adjusted R-Square		0,1838
			Prob F-Statistic		0,0000

Based on table 10, the panel data regression equation is as follows:

CEDit = -0,548938+ 0,039853 – 0,059887 + 0,874060 + 0,003560 – 0,053768 + 0,052829 + 0,003185 + 0,061255 + 0,031017 + e_{it}

The results of the R2 test in table 10 were obtained by Adj. R-Square of 0.18387 means that the contribution of all independent variables to the increase or decrease in disclosure of carbon emissions is 18.38%, the remaining 81.62% is influenced by other variables not included in the model.

The results of the F test in Table 10 obtained an F-Statistic probability of 0.0000 <0.05. It can be concluded that all independent variables jointly or simultaneously have a significant effect on disclosure of carbon emissions.

The results of the T test in table 10 explain the independent variables on the dependent variable as follows: Investment-oriented industries have a positive effect on disclosure of carbon emissions with a probability value of 0.019, which is less than 0.05 with a coefficient of 0.039. It concludes that H1 is accepted. A larger proportion of shares traded means that public shareholders have more voice which creates pressure on companies and encourages disclosure of carbon information. (Shen et al., 2020; Tang et al., 2019) investors can increase the level of corporate carbon disclosure.

Employee-oriented industries have a negative effect on disclosure of carbon emissions with a probability value of 0.029, which is less than 0.05 with a coefficient of -0.059. This leads to conclusion that H2 is rejected. Employee- oriented industries reduce the quality of disclosure of carbon emissions, meaning that there is a lack of evidence stating that employees demand more disclosure of carbon emissions to companies, because it will increase the company's burden and employees do not have full rights to corporate environmental responsibility.

Industries close to consumers have a positive effect on disclosure of carbon emissions with a probability value of 0.0013, which is less than 0.05 with a coefficient of 0.874. It is concluded that H3 is accepted. Through advertising, companies try to disclose more relevant information to establish

good relationships between consumers and suppliers (Shen et al., 2020). So, it can be seen directly that consumers have an influence on the disclosure of carbon emissions so that companies tend to be more transparent in their operations. Promoting a positive corporate image can guarantee responsible behavior, increase brand loyalty and motivate consumers to buy products (Halkos & Skouloudis, 2016).

Environmentally sensitive industries have no effect on disclosure of carbon emissions, having a probability value of 0.437 > 0.05 with a coefficient of 0.003, it is concluded that H4 is rejected. Companies that disclose carbon emissions are not only carried out by industry sensitive companies, non-industry sensitive companies also disclose carbon emissions, disclosure of carbon emissions depends on management policies not from sensitive industry types.(Tana & Diana, 2021) Disclosure of carbon emissions is a management policy of every company not influenced by environmentally sensitive industries. Intensive industrial types that produce low emission levels in their disclosures will be highlighted by the government and the community from various social and environmental fields so that they can make the company have a bad image (Nastiti & Hardiningsih, 2022).

Creditor pressure has a negative effect on disclosure of carbon emissions, has a probability value of 0.039, which is less than 0.05 with a coefficient of -0.053. It is concluded that H5 is rejected. Companies that have a large proportion of loans do not always disclose carbon emissions considering this creates extra costs. (Florencia & Handoko, 2021) Good environmental performance does not always make companies disclose carbon emissions to apply for loans. (Prasetya, 2017) Creditors generally pressure companies to use available resources as effectively as possible so that payment of obligations remains smooth. Creditors may be interested in other disclosures that have a more direct effect on the company's finances, therefore companies make more financial disclosures (Chithambo et al., 2020).

Media exposure has a positive effect on disclosure of carbon emissions having a probability value of 0.0002, which is less than 0.05 with a coefficient of 0.052, concluded that H6 is accepted. With supervision from the media, companies will be increasingly motivated to make disclosures of their activities. (Cordova et al., 2020) Reporting of carbon emissions is influenced by the company's sustainability profile which is proxied by publishing social responsibility reports. (Nastiti dan Hardiningsih, 2022) due to excessive concern regarding corporate environmental monitoring, corporate activities related to carbon emissions are exposed openly in the media.

KAP Big 4 audit has no effect on disclosure of carbon emissions has a probability value of 0.440, which is more than 0.05 with a coefficient of 0.003, concluded H7 is rejected. Reputation KAP is not involved with the disclosure of carbon emissions. (Irwhantoko & Basuki, 2016) This finding is because the Public Accounting Firm in Indonesia from the Big Four or other groups is not an independent institution entitled to carry out carbon emission assessments. Carbon emission assessment is carried out by an accredited independent body, namely a Designated Operational Entity (DOE) to validate and verify carbon emission reductions. It is stated that (He et al., 2019) KAP's reputation has no involvement with carbon emissions disclosure.

Government pressure has a positive effect on disclosure of carbon emissions, has a probability value of 0.012, which is less than 0.05 with a coefficient of 0.061. It is concluded that H8 is accepted. The level of environmental information disclosure is higher in state-owned enterprises compared to non-state-owned companies, this shows that BUMN are more likely to convey to the public that they have fulfilled their social and environmental responsibilities to build a high-quality reputation that is positively responsive to the market. (Chithambo et al., 2020; Tang et al., 2019) Government pressure influences corporate environmental behavior.

The control variable firm size has a positive effect on disclosure of carbon emissions, this shows good results and consistent prob values. 0.0001, which is less than 0.05 with a coefficient of 0.031. Companies that acquire large assets have great pressure from stakeholders who have high expectations regarding disclosure of carbon emissions. This shows that large companies have greater pressure on environmental issues. (Tang et al., 2019) Large companies are more encouraged to provide quality voluntary disclosures. The research results are in accordance with (Nastiti dan Hardiningsih, 2022; Chithambo et al., 2020; He et al., 2019).

CONCLUSION

This study examines the disclosure of carbon emissions of Indonesian non-financial companies. The results of the research that has been described have concluded that investor-oriented industries,

close-consumer industries, media exposure, and government pressure have a positive effect on disclosure of carbon emissions with a significant level of 0.05 (H1, H3, H6, H8 are accepted), employee-oriented industries , and creditor pressure has a negative effect on disclosure of carbon emissions with a significant level of 0.05 (H2, H5 are rejected), environmentally sensitive industries and KAP Big4 audits have no effect on disclosure of carbon emissions with a significant level of 0.05 (H4 and H7 are rejected). Based on the research results, it proves that stakeholders, investors, consumers, media, and government support previous research and underlie stakeholder and legitimacy theories.

This research has implications for various parties such as stakeholders, especially the government in formulating policies and being able to understand the importance of maximizing the disclosure of carbon emissions produced by companies as a responsibility to people, planet, social and environment that can attract investors. The government can supervise and provide stricter policies to companies.

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