The Influence of Board of Directors, Managerial Ownership, and Audit Committee on Carbon Emission Disclosure: A Study of Non-Financial Companies Listed on BEI

Review of Integrative Business & Economics Research

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ABSTRACT

The issue of climate change has forced corporations to become more responsible in doing their business. Carbon emission is the major source of climate change that countries must deal with. Corporations contribute greatly to a large portion of carbon emissions. Since stakeholders are now very much concern with environmental issues, corporations are aware that their activities related to environmental responsibilites are important informations for stakeholders, including information on carbon emissions. Carbon emission disclosure is still a voluntary disclosure of listed companies in the Indonesian Stock Exchange (BEI). Given that stakeholders, namely investors, is concerned with environment information, it is believed that company's governance mechanism can enforce the company to disclose more information regarding carbon emission. Based on previous research, governance tools that have a relationship towards disclosure are board of directors size, managerial ownership and audit committee. It is hypothesized that board of directors size, managerial ownership, and audit committee affects carbon emission disclosure. The sample selected for this research are non financial companies listed on BEI from 2016 – 2018 and are included in PROPER category. PROPER is an environmental performance program conducted by the Indonesian Government. Disclosure index developed by Choi (2013) is used to measure the level of carbon emission disclosure. Multiple linear regression is used to analyse and test the hypothesis. Results of the study show that managerial ownership positively affect carbon emission disclosure. This indicates that managers who are also shareholders of the company feel that carbon emission is an important information to consider in decision making. On the other hand, neither board of directors nor audit committee affect the disclosure of carbon emission disclosure. The level of carbon emission disclosure is relatively low. It is suspected that board of directors have different level of knowledge concerning this information that the level of disclosure is not in line with the number of board of directors. And the last reason for the finding is due to the focus of audit committee is on financial statement information, rather than other disclosure information.

Keywords: carbon emission disclosure, board of directors, audit committee, managerial ownership.

1. INTRODUCTION

The United Nations Framework Convention on Climate Change (UNFCCC) has developed a framework for international action designed to reduce climate change known as the Kyoto Protocol. The Kyoto Protocol is an agreement that commits signatories to achieve GHG or carbon emissions reduction. The Indonesian government has made commitments to reduce greenhouse gas (GHG) emission by ratifying the Kyoto Protocol on July 28, 2004 with the issuance of Law no. 17/2004 on The Ratification of Kyoto Protocol to The United Nations Framework Convention on Climate Change. This became the beginning of climate change awareness in Indonesia. At the G-20 meeting in Pittsburgh, U.S.A. in 2009, the Indonesian government made a commitment to independently reduce GHG emission to 26% by 2020, and, with international assistance, reduce GHG emission to 41% by 2020. To support this commitment, the President of Indonesia issued two environmentally related regulations which are the Presidensial Decree no. 61/2011 on National Action Plan on GHG Emission Reduction and Presidential Decree no. 71/ 2011 on the Implementation of Greenhouse Gas Inventory. These rule stated that industries are the major source of GHG emissions and thus must be accountable for the reduction of GHG emissions.

Eventhough the Indonesian government legally regulates GHG emissions by the rules mentioned above, Data of World Resources Institute (WRI) in 2012 show that Indonesia ranked in top six largest GHG emitter in the world (Kiswanto et al, 2016, page 327). This proves that regulations on carbon emissions were not effective.

The industries are blamed as the major source of GHG emissions in any part of the world, including in Indonesia. To encourage the industries to be more concerned on environmental and sustainability issues, the Minister of Environment of Indonesia enacted a program to assess and rank companies based on their environmental performance. This program is called the Environmental Performance Assesment Program or abbreviated to PROPER from the Indonesian terms Penilaian Peringkat Kinerja Perusahaan dalam Pengelolaan Lingkungan Hidup. The Minister of Environment Decree no. 6/2013 regulated the PROPER program. Participating companies are categorized into five groups based on their scores: black, red, blue, green, and gold. Black is the lowest category, and gold is the highest. Results of the PROPER program is announced annually by the Ministry of Environment.

Sustainability issues and particularly those resulting from climate change have an increasing influence on the business environment and, in turn, on the role of accounting. A need to measure and report on social and environmental performance and to consider how greenhouse gas (GHG) emissions are generated by the entity impacts on its information system and reporting practices (Rankin, 2014, p. 315). Reporting environmental information (environmental disclosure) serve as a means of the entity's stewardship as a part of the society. In order to continue its existence, social contracts force the entity to operate within a value system that is consistent with society's own.

Environmental information and disclosure, especially information regarding carbon emission, in Indonesia is still voluntary. The government of Indonesia does regulate corporate social responsibility though. Law no. 40/2007 on Corporation requires companies performing CSR activities to report these activities in their financial reporting. The regulation does not specify the types of CSR information that must be disclosed. Thus, carbon emission information is still categorized as a voluntary disclosure for firms in Indonesia.

Information regarding the firms' responsibility towards the environment is seen as the firms' legitimacy as a part of their society and environment. Thus, by increasing

the disclosure of environmental information such as carbon emission, companies can gain legitimacy from the environment.

Various factors can encourage firms to disclose carbon emission information. Pradini (2013) found that the PROPER ranking positively affect carbon emission disclosure. Firms with better environmental performance are encourage to disclose more carbon emission information since these firms want to increase value and be different from lesser ranked firms. This is consistent with the signalling theory, the theory of disclosure regulation, where firms can increase its value through financial reporting. Corporate governance mechanism can ensure the management is doing business as it should. It gives assurance that the company is managed well and in accordance with rules and the needs of the society. Corporate governance mechanism can be used to encourage firms to be environmentally responsible, including reporting of the firms' action on it. Choi et al. (2013) mentioned that corporate governance quality is one of the influential factor affecting carbon emission disclosure. Ghomi and Leung (2013) found that company size, company's age, and institutional ownership affect carbon emission disclosure. Managerial ownership and audit committee were both found to affect carbon emission disclosure (Kiswanto, 2016). Manurung et al. (2017) and Lorenzo et al. (2010) indicated that the size of board of directors (BOD) affects carbon emission disclosure negatively. Eventhough public pressure to disclose GHG emission exists, BOD are reluctant to do so, especially when the related cost is to high.

This study evaluates three corporate governance mechanism and their effect on carbon emission disclosure of PROPER ranked firms listed on the Indonesian Stock Exchange (BEI – Bursa Efek Indonesia). The three corporate governance mechanism are board of directors, managerial ownership, and audit committee. The results show that board of director and audit committee do not affect the level of carbon emission disclosure, while managerial ownership positively affect carbon emission disclosure.

2. THEORETICAL BACKGROUND

This study is based on several positive theories on financial reporting. These theories are agency theory, legitimacy theory, stakeholder theory, and signalling theory of disclosure.

Agency Theory

Agency relationship is the relationship between a person or group of persons (called the principal) employs the services of another (called the agent) to perform some activities on their behalf. In doing so, the principal delegates decision-making authority to the agent. Agency theory is a branch of game theory that studies the design of contracts to motivate a rational agent to act on the behalf a principal when the agent's interests would otherwise conflict with those of the principal. The agent has a legal and fiduciary duty to act in the best interests of the principal but agency theory assumes that both parties are utility maximizers. The interests of the agent and principal may not be aligned thus the agent will not always act in the best interests of the principal.

Management serve as the agent in corporations, while shareholders and creditors serve as the principal. Since the management has the authority to make decisions that may not be aligned with those of the fund providers, the role of corporate governance is necessary. Corporate governance provide the mechanisme to control, monitor, and evaluate managements actions that those actions be in the best interest of the shareholders and other fund providers, and the stakeholder in general.

Legitimacy Theory

A social contract has often been used to describe how business interacts with society. It relates to expectations society has about how businesses should act to ensure they survive into the future. A social contract is not necessarily a written agreement, but is what we understand society expects. Legitimacy theory is used to explain the process by which the social contract is maintained. This theory argues that organizations can only continue to exist if the society in which they operate recognizes that they are operating within a value system that is consistent with society's own (Rankin, 2014).

The values and norm evident in the social contract have changed over time. In the past, legitimacy was only considered in terms of economic performance. This has changed and business are now expected consider range of issues, including the environmental and social consequences of their activities.

Stakeholder Theory

Stakeholder theory has some links with legitimacy theory as both are derived from political economy theory. The essential difference is that stakeholder theory considers the relationships that exist between the organization and its various stakeholders. Stakeholders can be identified as any gropu or individual who can affect or is affected by the achievements of an organizations objectives (Rankin, 2014). According to the managerial branch of the stakeholder theory, the stakeholder that have larger degree of control over the organization's required resources will be more likely be addressed by managers compared to those with lesser degree of control.

Signalling Theory

Signalling theory holds that a reporting entity can increase its value through financial reporting. Firms are competing for funds in the capital market. In order to maximize their value, these entities have incentives to disclose all available information. This gives above average entities the motivation to show, through financial reporting, that they are better than non-reporting entities.

Corporate Governance

Corporate governance involves ensuring that the decisions made by those managing the corporation are appropriate and provides a means to monitor corporate activities and decision making itself. It is primarily concerned with managing the relationship between the shareholders, the key managers of the corporation, such as the board of directors, other senior manager, and other stakeholders (Rankin, 2014). Companies may have a variety of structure and systems that practice good corporate governance. Example of corporate governance practices are audit committee, board of director size, and managerial ownership. The size of the board of directors can affect the effectiveness of their task and responsibility. It also allow peer-monitoring as the number of board of directors increase. Audit committee's function is to support transparency and accountability of the information provided by the firm. They oversee, supervise, and monitor the financial reporting process. Managers, who also are shareholders, tend to be more concerned and responsible for meeting the shareholders' expectation. The managers, as shareholders themselves, will tend to provide the needs of fellow shareholder. Among others, the shareholders' need of transparent and accountable information.

3. HYPOTHESES DEVELOPMENT

The board of directors' responsibility is to control the company's activities that it achieve the company's objectives. They basically are the ones running the company. The BOD also take part in the financial reporting process, including deciding on what would be included in financial reporting. The BOD tend to encourage the firm to disclose more information in its financial reporting since BOD members have a long run orientation towards the company's social resposibility (Johnson & Greening, 1999; Hillman & Dalziel, 2003). Thus BOD would encourage firms to disclose more information concerning the environmental responsibilities of the firm, which includes carbon emission information.

Several research found opposite results that the larger BOD size, the lesser carbon emission information were disclosed (Manurung et al., 2017; Lorenzo et al., 2010). Eventhough firms face public pressure to disclose carbon emission information, the BOD members were reluctant to do so, especially when litigation issues are prevalent. The BOD avoids the additional cost to disclose such information since the benefit is not proportional. Thus the first hypothesis is formulated as follows:

H_1: Board of directors positively affect carbon emission disclosure.

Managers who are also shareholders of the firm tend to feel more responsible for the growth of the firm and the sustainability of the firm. Based on the stakeholder theory, the company has pressure from external parties namely the shareholder and the fund providers, to disclose more information regarding the company's environmental responsibilities. These shareholder managers would act in the best interest of the external parties. The larger managerial ownership, the more carbon emission information will be disclosed. The more information disclosed is also a means of corporate communication with stakeholders to reduce misunderstandings and to improve corporate-stakeholder relationships (Kiswanto et al., 2016).

H_2: Managerial ownership positively affect carbon emission disclosure.

Audit committee are responsible to oversee and monitor the financial reporting process, and to check that financial statements are prepared according to relevant regulations. The number of audit committee members will affect the effectiveness of the committee in supervising the financial reporting process, including information regarding carbon emission disclosed in them. Kiswanto et al. proved that audit committee positively affect carbon emission disclosure.

H_3: Audit committee positively affect carbon emission disclosure.

4. RESEARCH METHODOLOGY

Carbon emission disclosure is measured using the Carbon Disclosure Project Index checklist developed by Choi et al. (2013). Eighteen disclosure items were grouped into five categories as seen in Table 1.

Table 1. Carbon Emission Disclosure Checklist

Categories		Items
1	Climate change (CC): Risk and opportunity	CC1 – Assesment/description to risk (rule/regulation, physical or general examination) related to climate change and actions taken to manage risk. CC2 – Current (and future) assessments/descriptions of the financial, business, and opportunities impacts of climate change
2	Accounting for greenhouse gas emissions (GHG)	GHG1 – Description of the methodology used to calculate GHG emissions (eg. GHG of ISO protocols)

Categories		Items
		GHG2 – The existence of external verification of GHG emissions quantity by whom and on what basis. GHG3 – total emission of GHG – metric tons of CO2-e produced GHG4 – Disclosure of scope 1 and 2, or scope 3 of direct GHG emissions. GHG5 – Disclosure of GHG emission by sources (eg coal, electricity, etc.) GHG6 – Disclosure of GHG emissions based on facilities or class levels. GHG7 – Comparison of GHG emissions with the previous year.
3	Accounting of energy consumption (EC)	EC1 – Total energy used (eg tera-joule or peta-joule) EC2 – The energy calculations used from renewable resources EC3 – Disclosure by type, facility, or class
4	Reduction of GHG emissions and costs (RC)	RC1 – Details of a strategic plan to reduce GHG emissions RC2 – Level target specification and year of GHG emission reduction. RC3 – Reductions of emission and costs or savings as a result of the reduction plan RC4 – Future emission costs as an element of capital expenditure planning
5	Carbon emission accountability (ACC)	ACC1 – An indication in which the board of committee (or other government) has overall responsibility for action relating to climate change. ACC2 – Description of the mechanism in which the board (or other government) review the company's progress on climate change.

Source: Choi et al., 2013

Each item disclosed in the financial report of firm sample is given a score of 1 and the amount of items disclosed is then summed and divided by 18 to get the disclosure index.

The independent variables and control variable used in this study are board of director size, managerial ownership, and number of audit committee members, and company size. The measures of each dependent, independent, and control variables are shown in Table 2.

Table 2. Measurement of Variables

No.	Variable	Measurement
1	Carbon emission disclosure (CED) – dependent variable	$\frac{\text{number of item disclosed}}{18}$
2	Board of director size (DD)	Total board member
3	Managerial ownership (KM)	$\frac{\text{Number of shares owned by managers}}{\text{Number of shares outstanding}}$
4	Audit committee member (KA)	Number of audit committee member
5	Company size (UP)	Ln (Total assets)

Purposive sampling technique is used to select the sample companies of this study. The sample for this study are non-financial companies listed on the BEI which are also included in PROPER category firms in 2016 – 2018, publish annual financial reporting in 2016 – 2018, and disclose carbon emission information.

To test the hypotheses, the model constructed in this research are as follows: $CED = a + b_1KA + b_2DD + b_3\ KM + b_4UK+\mu_t$; where CED is carbon emission disclosure index, KA represents number of audit committee members, DD represents

the number of board of directors, KM represents the managerial ownership, and UK is company size.

5. RESEARCH RESULTS

Samples selected in the study are as follows:

Table 3. Sample Selection

No.	Sample criteria	Number of company
1.	Non-financial firms listed on BEI categorized as PROPER from 2016 – 2018	63
2.	Do not consecutively publish annual financial reporting from 2016 – 2018	0
3.	Do not disclose carbon emission information in its financial reporting	(45)
	Sample total	18

Data analysis is conducted using eviews and the results will be explained in the following section, beginning with descriptive statistics. Descriptive statistics of the variables used in this study is shown in Table 4.

Table 4. Descriptive Statistics

	DD	KA	CED	KM	UK
Mean	6.523810	3.857143	0.349048	0.013480	29.98905
Median	6.000000	4.000000	0.280000	2.00E-05	30.45000
Maximum	11.00000	6.000000	0.890000	0.092230	32.39000
Minimum	3.000000	3.000000	0.110000	0.000000	27.51000
Std. Dev.	2.502380	0.910259	0.212436	0.032361	1.365034

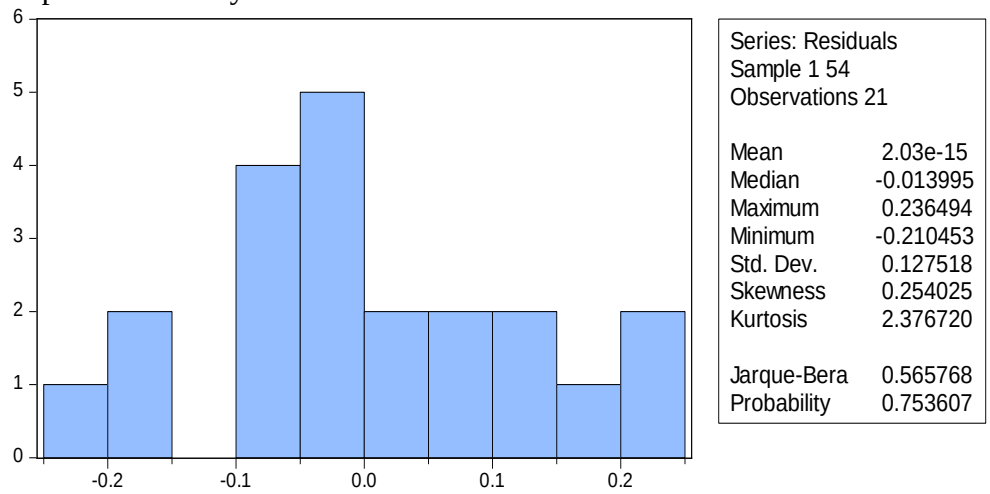
As can be seen in Table 4, the average disclosure level of carbon emission information is 35% which is relatively low since it is below 50%. Managerial ownership of sample firm is also very low, where the maximum managerial ownership is only 9% and the average is 1.3%. Audit committee members average only 3 members. This is in line with government's requirement on the minimum number of audit committee member a firm must have.

Before performing the hypotheses testing, normality, autocorrelation, heterocesdasticity, and multicollinearity tests were performed with the aid of the eviews software. The results of the classical assumption tests will be explained in the next section.

5.1. Normality test

The result of the normality test is shown in Graph 1. below.

Graph 1. Normality Test



Graph 1. shows that data analyzed in the research is normally distributed. The probability score is above 5% or 0.05 (0.753 > 0.05). This means that the model used in this research is also normal and can proceed to the next tests.

5.2. Autocorrelation test

The result of the autocorrelation test is shown in Table 5 below.

Table 5. Autocorrelation Test

Breusch-Godfrey Serial Correlation LM Test:			
Obs*R-squared	0.000000	Prob. Chi-Square(2)	1.0000

Based on Table 5, the Obs*R-squared score is 0.000 and a probability value of 1.00. Since the probability value is greater than α = 5 % (1.000>0.05), thus the model does not contain autocorrelation.

5.3. Heteroskedasticity Test

The result of the heteroskedasticity test is shown in Table 6.

Table 6. Heteroskedasticity Test

Heteroskedasticity Test: White			
F-statistic	1.077329	Prob. F(14,6)	0.4955
Obs*R-squared	15.02351	Prob. Chi-Square(14)	0.3765
Scaled explained SS	6.003279	Prob. Chi-Square(14)	0.9664

Table 6 shows that the Obs*Rsquared value is 15.023 and the probability value is 0.376. Since the probability value is greater than α = 5 % (0.376 >0.05), no heterokesdasticity problem exists.

5.4. Multicollinearity Test

Using correlation matrix, the results of the multicollinearity test as shown in Table 7 prove that all variables do not contain multicollinearity. All variables have a coefficient value less than 0.8, which means no multicollinearity problem is found.

Table 7. Multicollinearity Test

	DD	KA	UK	KM
DD	1	0.210	0.273	-0.377
KA	0.210	1	0.516	-0.394
UK	0.273	0.516	1	-0.663
KM	-0.377	-0.394	-0.663	1

5.5. Hypotheses Testing

Multiple-regression analysis result is shown in Table 8 below.

Table 8. Multiple Regression

Variable	Coefficient	Std. Error	t-Statistic	Prob.
CED	-4.422506	0.974810	-4.536789	0.0003
KA	0.005064	0.041112	0.123187	0.9035
DD	0.012973	0.013790	0.940734	0.3608
KM	3.264354	1.370116	2.382538	0.0299
UK	0.154169	0.033590	4.589790	0.0003

R-squared	0.639679	Mean dependent var	0.349048
Adjusted R-squared	0.549599	S.D. dependent var	0.212436
S.E. of regression	0.142570	Akaike info criterion	-0.853712
Sum squared resid	0.325219	Schwarz criterion	-0.605016
Log likelihood	13.96398	Hannan-Quinn criter.	-0.799739
F-statistic	7.101215	Durbin-Watson stat	0.846105
Prob(F-statistic)	0.001738		

The regression model derived from Table 8 become CED = -4.423 + 0.005KA + 0.013DD + 3.264KM + 0.154UK+μ_t. All independent variables have a positive relationship with carbon emission disclosure as seen in the positive coefficient values. Among the three independent variables studied, only managerial ownership (KM) have a positive significant affect towards carbon emission disclosure. The probability value of KM is less than α = 5 % (0.0299 < 0.05), thus the second hypothesis is supported. The other two hypotheses are not supported since the probability values of DD (board of directors) and KA (audit committee) is greater than α = 5 % (0.3608 and 0.9035, repectively). Company size as the control variable significantly affect carbon emission disclosure.

6. DISCUSSION

The hypotheses testing have proven that managerial ownership positively affect carbon emission disclosure of PROPER companies used in the sample, while board of directors size and committee audit member do not significantly affect carbon emission disclosure. The reason behind the results will be discussed below.

Managerial ownership, eventhough relatively low, prove to have a positive and significant affect on the amount of carbon emission information disclosed in the sample firms' financial reporting. The greater the ownership of shares by management, the more carbon emission information will be disclosed. This shows that management have

fundamental concern on the sustainability of the firm in the long-run, as being explained by the stakeholder theory. The managements' action in reporting carbon emission information supports the legitimacy theory as well. The management wants the firm to be accepted and co-exist with the society, that its operation can also be for a longer period of time. Thus, the management disclose information that is in the best interest of the society, such as carbon emission. The result of this study is consistent with the research performed by Kiswanto et al. (2016) which prove that managerial ownership positively affect carbon emission disclosure.

The research failed to prove the other two hypotheses: board of director size and audit committee member do not affect the carbon emission disclosure. Board of directors size did not determine the amount of information regarding carbon emission disclosed in financial reports. Based on the observation of the data collected, the level of carbon emission disclosure is not consistent with the size of the board of directors. It is found that several firms have a high level of disclosure but have a small member in the board of directors, and vice versa. For example, Asahimas Flat Glass has eleven members in the board of directors in 2016 – 2018. In these years, the disclosure index decreased from 0.39 to 0.28 in 2018. Opposite finding was found in Indofood Sukses Makmur. Indofood Sukses Makmur has nine board of directors members in 2016 – 2017. The level of disclosure increased in those years, from 0.22 to 0.28. Perusahaan Gas Negara has five board of directors members in 2016 – 2018, lesser than Asahimas and Indofood. The disclosure level of this company is 0.78 to 0.89, much higher than Asahimas and Indofood. These findings are suspected to indicate that the knowledge and concern of board of director members towards carbon emission information still varies.

Another reason why board of directors are not encouraged to disclose carbon emission disclosure is on the risk that the information may have on corporate image. The more information regarding carbon emission disclosed may affect the shareholder's perception of the company's operation, thus may decrease the market perception (value) towards the firm and even the risk of high cost lititgation issues. Board of directors would like to avoid such costs since it will jeopardize their position in the company. The result of this study is inconsistent with the research results of Manurung et al. (2017). Manurung et al. (2017) found that carbon emission disclosure is affected by the size of board of directors.

Audit committee member does not affect the carbon emission disclosure level. The audit committee's main task is to oversee the production of the company's financial reporting, specifically the contents which are mandatory by the Indonesian generally accepted accounting principles, and other relevant regulation. Thus, the audit committee is not motivated to encourage the company to disclose voluntary information, such as carbon emission disclosure. The number of members for most sample companies is only three officers. This is the minimum requirement set by the government. So, the companies' audit committee merely exist to conform with regulation. It proves that the audit committee's role in supervising and controlling financial reporting was not executed effectively. The result of this study is consistent with Djuminah et al. (2017) but incosistent with Kiswanto et at. (2016) which has proven that audit committee member positively affect carbon emission disclosure.

7. CONCLUSION

The objective of this study is to observe the factors that determine the carbon emission disclosure level of non-financial, PROPER category firms listed in BEI. The factors evaluated in this study are board of director size, managerial ownership and audit committee member. The selected factors are representatives of the corporate governance structure. The study has proven that managerial ownership is the factor that determines the level of carbon emission disclosure. The other two factors, board of director size and audit committee failed to prove their effects towards carbon emission disclosure. It can be concluded that the governance structure is not effective in increasing the level of carbon emission disclosure.

The study also finds that the disclosure level of carbon emission information of sample firms are relatively low. The average is less than 50%. This can be a sign that the industry in Indonesia have not realize the importance of carbon emission issues and climate change issues. The Indonesian companies and their organs in general are not yet concerned in addressing these issues. The result of this study can also be an indication that relevant government regulations concerning climate change are not (yet) effective.

The subjectivity concerning disclosure items is one of the limitation of this research. The format and contents of carbon emission information in sample companies may not directly state the same wording with that of the item in the checklist. The researcher must use perception and understanding to conclude whether an item is disclosed or not. Different scoring might arise due to different understanding and perception of the items by different researcher.

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