



JURNAL

Riset Akuntansi dan Keuangan Indonesia

URL : <http://journals.ums.ac.id/index.php/reaksi/index>



Large Determinant of Greenhouse Gas Emissions Disclosure in Indonesia

Rohmah Suryani and Fitri Laela Wijayati

Sharia Accounting, Faculty of Economy and Islamic Business, IAIN Surakarta

Rohmahsuryani49@gmail.com

Keywords:

greenhouse gas disclosure, environmental management system, environmental committee, capital expenditure, financial slack.

ABSTRACT

The purpose of this study is to examine the influence of corporate governance and financial performance on greenhouse gas disclosure. Study in the companies listed in Indonesia Stock Exchange (BEI) for the year 2014-2017. This study used secondary data from the sustainability report dan company's annual report. The sampling technique used purposive sampling. The sample of this study consists of 13 companies in four years to 52 companies. Data were analyzed by multiple linear regression. Meanwhile, data processing used SPSS. The result of this study showed that the environmental management system, environmental committee, leverage, and board independence does not affect greenhouse gas disclosure. While profitability, capital expenditure, company size, and financial slack affects positive and significant to greenhouse gas disclosure.

INTRODUCTION

Issues relevant to global warming have increased stakeholders' attention on the company's environmental performance. It is undeniable that human activities contribute to gas emissions and the effect of global warming. The biggest contributor to gas emissions comes from companies' activities in the industrial purpose, therefore companies are required to control the emissions produced (www.ipcc.ch).

The Kyoto Protocol is an international agreement to control greenhouse emission as an effort in environmental responsibility. Regarding the agreement, the government of Indonesia ratified the Kyoto Protocol by enactment regulations related to the reduction of greenhouse gas emissions, Law No. 17 of 2004 and Presidential Regulation No. 61 of 2011 concerning the National Action Plan to Reduce Greenhouse Gas Emissions (www.gri.org). In addition to the Kyoto Protocol, countries around the world also entered into a Paris Agreement to reduce greenhouse gas emissions. The government of Indonesian participated in ratifying the Paris Agreement to reduce greenhouse gas emissions by 27% in 2030. To actualize this agreement, the role of stakeholders is vital to encourage companies to

be environmentally responsible, one of the ways is by controlling greenhouse gas emissions from company activities results.

The practice of environmental responsibility by the company is conducted through a sustainability report. Sustainability reporting is used as a means for companies to communicate (disclose) environmental, social and good governance performance to all stakeholders in an accountable manner (www.ojk.go.id). Disclosure standards used are majorly based on disclosure standards contained in the Global Reporting Index (GRI). Disclosure of greenhouse gas emissions is regulated in GRI G4 point 305.

The corporate sectors that contribute to the largest greenhouse gas emissions in Indonesia are the manufacture, agriculture, and energy sectors (coal and transportation). Thus, companies that contribute to the largest greenhouse gas emissions in Indonesia are under the attention of the Ministry of Environment and Forestry to reduce released greenhouse gas emissions. The following table presents information on companies in the manufacture, agriculture and energy sectors (coal and transportation) that disclose greenhouse gas emissions based on the sustainability report:

Table 1. Disclosure Rate of Greenhouse Gas Emissions

Sector	2014	2015	2016	2017	Listed Companies on BEI orderly
Manufacture	9 Companies	9 Companies	9 Companies	12 Companies	138 Companies
Energy	4 Companies	4 Companies	4 Companies	4 Companies	64 Companies
Agriculture	2 Companies	2 Companies	3 Companies	7 Companies	20 Companies

Source: secondary data processed, 2018

Based on the information above, the companies that disclosed greenhouse gas emissions in the sustainability report in the manufacturing sector in 2014 were 6.52%, in 2015 were 6.52%, in 2016 were 6.52% and in 2017 was 8.69% out of 138 companies registered in the manufacturing sector. In 2014-2017, companies in the energy sector that disclosed greenhouse gas emissions were 6.25% from 64 energy sector companies including transportation and coal. The agricultural sector in 2014 was 10%, 10% in 2015, 15% in 2016, and 35% in 2017 out of 20 companies registered in the agriculture sector. Based on the data, the companies have contributed as the largest greenhouse gas emissions but only a

few that have reported the sustainability reporting related to greenhouse gas emissions.

The exact action to present the consciousness of the importance of environmental responsibility, particularly greenhouse gas emissions is through environmental management system implementation. The manifestation of the environmental management system is the application of ISO 14001. The application of ISO 14001 is expected to create a commitment of the companies to manage monitoring, management, and reporting related to environmental issues, including greenhouse gas emissions (Rankin, Windsor, & Wahyuni, 2011).

The stipulation of government regulations, the Kyoto Protocol, and ISO 14001 certification cannot ensure companies in Indonesia are free from environmental problems and greenhouse gas emissions are no exception. This is proven by several phenomena in Indonesia. First, according to the World Resources Institute (WRI), forest fires in Indonesia almost reached 100,000 in 2015. Forest fires and land-use changes cause greenhouse gas emissions will affect the global climate system and Indonesia is placed as the third largest gas emitter in the world (Armandhanu, 2015).

The company, such as PT Langgam Inti Hibrido (LIH) burned down hundreds of hectares of land in the Pangkalan Gadai village, Langgam, Pelalawan. PT LIH is a subsidiary of PT Provident Agro Tbk. Moreover, PT Provident Agro Tbk as the holding company of PT LIH is certified ISO 14001, a reference in the company's environment management (Kusumawati, 2015).

In addition to the case of PT LIH, PT Indah Kiat Pulp and Paper (IKPP) located in Pekanbaru received protests from the community due to air pollution of the company's gas emissions. PT IKPP also used Chlorine that recognized by the UN as hazardous material like a paper shredder. The exposure of this material can result in the death of humans breathing Chlorine-polluted air (Sani, 2017).

Disclosure of greenhouse gas emissions is a form of corporate concern for the environment and as the commitment of the company to implement ISO 14001. Companies applying ISO 14001 display that the company is profit-oriented, planet-oriented and people-oriented. This statement is in accordance with the triple bottom line concept in sustainability reports (Rankin, Windsor, & Wahyuni, 2011).

Disclosure of greenhouse gas emissions gives stakeholders high self-esteem to the companies' commitment to maintaining the sustainability of the company and the responsibilities for the environmental impact of its activities through environment management to avoid environmental problems and fulfill its responsibilities to stakeholders. Companies with good financial performance indicated by the value of profitability, financial slack and leverage will certainly have the ability to take responsibility for the environment. This is conducted by companies to gain trust that the companies have good financial and non-financial

performance (Lorenzo, Dominguez, Alvarez, & Sanchez, 2009).

Large companies have more operational activities compared to small companies. The companies' operational activities, in effect, will receive the most attention from the public, either the community or government. The companies' operational activities certainly will be inseparable from the environment. Thus, if the companies' operational activities cause environmental damage, the community and the government will impose sanctions on the company. One of the sanctions is the companies are threatened to stop their activities (Pratiwi, 2018).

The implementation of ISO 14001 and the establishment of a committee responsible for the environment is an effort to minimize the occurrence of environmental damage correlated with the management of greenhouse gas emissions (Pratiwi, 2018). Furthermore, companies must have an independent board of commissioners to encourage companies to create more extensive disclosures, including arranging disclosures related to environmental performance (Liao, Luo, & Tang, 2014).

Companies with higher capital expenditure have more flexibility in spending its resources. Allocations of fixed assets used for the companies' operational activities are expected to create more environmentally friendly operational activities (Chitambo & Tauringana, 2014).

Previous research conducted by Chitambo & Tauringana (2014) states that firm size affects the disclosure of greenhouse gas emissions. In contrast to research conducted by Irwhantoko and Basuki (2016) arguing that firm size does not affect the disclosure of greenhouse gas emissions.

This research is the development of previous researches (Lorenzo, Dominguez, Alvarez, & Sanchez, 2009), (Chitambo & Tauringana, 2014), (Rankin, Windsor, & Wahyuni, 2011), (Choi, Lee, & Psaros, 2013) and (Pratiwi, 2018) about the factors that affect the disclosure of greenhouse gas emissions. The novelty in this study is that several independent variables affect the extent of greenhouse gas emissions disclosure that has never been studied in Indonesia, such as environmental committee variables, environmental management systems, financial slack, and capital expenditure. Besides, this research was conducted in companies

listed on the Indonesia Stock Exchange which contribute the largest greenhouse gas emissions in Indonesia and used the latest regulations, G4.

Based on the description above, it is important to conduct research related to the disclosure of greenhouse gas emissions. Also, this complies with the interests of stakeholders to the companies' environmental performance which is based on the facts placing Indonesia as one of the largest gas emitters in the world.

Literature Review and Hypothesis Development *Signaling Theory*

Signaling theory is an action taken by a company to provide guidance to stakeholders in making decisions and reduce the occurrence of asymmetrical information so the company will disclose information both voluntary and mandatory. Voluntary disclosures such as the disclosure of greenhouse gas emissions in a sustainability report can provide a positive signal that shows that the company is trying to maintain the company's survival (Nuswandari, 2009).

Sharia Enterprise Theory

Sharia enterprise theory has assumed that humans were created on earth as the leader (God's representative on earth). Everything on this earth, including natural resources and everything in it, belongs to Allah. When humans utilize the resources Allah has said, they must account for their use after Allah in the form of accountability of abd 'Allah (Allah's servant) (Mulawarman, 2009).

The manifestation of the companies' responsibility to Allah Almighty for its operational activities can be accomplished by preserving the environment as mandated to humans, management and maintaining. Islam always encourages people to respect nature since humans are the leader on earth and have to protect the environment bestowed by Allah.

Therefore, damaging or polluting the environment is violating the commands of Allah Almighty that brings a negative impact on oneself, the environment, and the community. These conditions are in accordance with the word of Allah reflected in the QS. Ar-Rum verses 41-42:

ظَهَرَ الْفَسَادُ فِي الْبَرِّ وَالْبَحْرِ بِمَا كَسَبَتْ أَيْدِي النَّاسِ لِيُذِيقَهُمْ مَذَاقَ
ذَيْعِمَلُو الْعَلْمَمِيرِ جِعُونَ قَلْسِيرُ وَإِنَّا لَأَرْضٌ ضِيفَانُظُرُ وَكَيفَكَانَ
عَاقِبَةُ الَّذِينَ مِن قَبْلِكَ إِنَّا كَثُرُ هُمُ مُشْرِكِينَ

Meaning:

"Corruption has appeared throughout the land and sea by [reason of] what the hands of people have earned so He may let them taste part of [the consequence of] what they have done that perhaps they will return [to righteousness]. Say, [O Muhammad], "Travel through the land and observe how was the end of those before. Most of them were associators [of others with Allah]." (Kemenag.go.id).

Environmental Management System

The environmental management system is a system that assists management, control and monitoring issues relevant to the companies' environment, including the issue of greenhouse gas emissions. Thus, the existence of an environmental management system will help companies to report environmental performance, such as disclosure of greenhouse gas emissions (Rankin, Windsor, & Wahyuni, 2011).

Environmental Committee

The environmental committee is the party that has the responsibility of carrying out the management and supervision to create environment-friendly company performance. Finally, companies that have an environmental committee signal that the company cares about the company's environment, including in controlling, calculating and reporting greenhouse gases (Ashforth & Gibbs, 1990).

Profitability

Profitability is the result earned by management in managing funds invested by investors or capital owners. Companies can utilize most of their assets maximally to get profit. This advantage can be used to show the responsibilities to the environment, which is the disclosure of greenhouse gas emissions (Majid & Ghazali, 2015).

Leverage

Leverage is the company's ability to manage debt provided by creditors for for-profit purposes.

Creditors are influencing stakeholders to companies' performance. When a company has a high leverage value, the power of creditors towards the company will be higher (Majid & Ghozali, 2015). Creditors will put pressure on companies' good performance, for instance, the performance of its environment to maintain the companies' survival. Good environmental performance can be done by controlling greenhouse gas emissions (Roberts, 1992).

Capital Expenditures

Capital expenditure is a companies' expenditure to obtain capital assets or fixed assets, improve the companies' operational efficiency, and obtain benefits from fixed assets. Companies with higher capital expenditures will have a more flexible shape in managing company operations, such as following technological developments. Companies follow technological developments by using the more sophisticated and latest equipment and through these devices companies are expected to manage gas emissions properly as an effort to reduce the effects of global warming (Villiers & Staden, 2011).

Firm Size

Firm size shows that the size of a company is measured by using total assets, the number of workers, the level of sales or income and market capitalization. Companies that have a larger size will earn greater attention from the public as well as having large resources. So, the company will make an effort to provide broader information, including environmental information to avoid social conflicts and create a good image for the company (Lorenzo, Dominguez, Alvarez, & Sanchez, 2009).

Disclosure of greenhouse gas emissions to avoid social conflicts, create a good image for companies and gain legitimacy from the public. With the ability to have a high level of income, large companies tend to disclose information more widely (Jannah & Muid, 2014).

Financial Slack

Financial slack owned by companies is derived from the cash ratio and cash equivalent to total sales. Financial slack of companies can be used to make improvements to the companies' environmental performance, such as dealing with climate change. Climate change can be overcome by controlling the greenhouse gas emissions released by companies. Controlling greenhouse gas emissions certainly requires a very large cost. So, the financial slack can be used to cover the costs of controlling greenhouse gas emissions and disclosed it as a voluntary disclosure in the sustainability report (Brammer & Pavelin, 2006).

Independent Board of Commissioners

An independent board of commissioners is a board that supervised top management. The independent board of commissioners also provides direction and knowledge to the management field, consisting of environmental performance related. This causes companies to pollute the environment and the reputation and legitimacy of the companies will be degraded. Eventually, the existence of an independent board of commissioners will encourage companies to create environment-friendly performance, that is controlling greenhouse gas emissions (O'Neil, Saunders, & McCarthy, 1989).

Disclosure of Greenhouse Gas Emissions

Disclosure of greenhouse gas emissions is a voluntary disclosure of environmental performance. The standard for disclosing greenhouse gas emissions is guided by the Global Reporting Initiative (GRI) which is used for the presentation or disclosure of corporate responsibility towards the environment. The disclosure of greenhouse gas emissions focuses on GRI 305. GRI standards underwent revision in 2016 to GRI G4, which was previously entitled GRI G3. The differences between GRI G3 and GRI G4 are especially the disclosure points of greenhouse gas emissions include:

Table 2. Comparison of GRI G3 and GRI G4 Standards

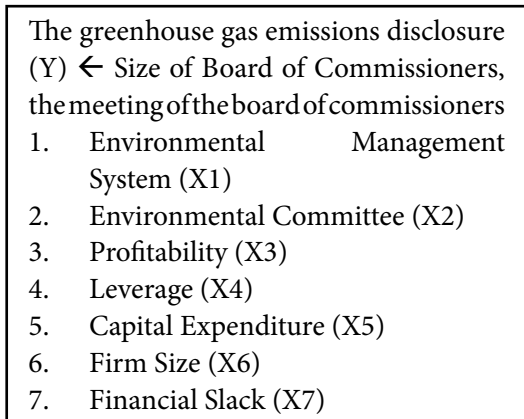
Code	GRI G3	GRI G4
EN-16 (305-1)	Gross direct and indirect (Scope 1) GHG emissions in metric tons.	Gross direct (Scope 1) GHG emissions in metric tons.
EN-17 (305-2)	Gross indirect (Scope 3) GHG emissions in metric tons.	Gross indirect (Scope 2) GHG emissions in metric tons.
EN-18 (305-3)	GHG emissions reduced as a direct result of reduction initiatives and accomplishments.	Gross other indirect (Scope 3) GHG emissions in metric tons.
EN-19 (305-4)	Ozone-depleting substances or ODS emissions in metric tons.	GHG emissions intensity ration for organization and sources of gas emissions.
EN-20 (305-5)	Nitrogen oxide, sulfur oxide, and air emissions in kilogram and type.	GHG emissions reduced as a direct result of reduction initiatives and accomplishments.
EN-21 (305-6)		Ozone-depleting substances or ODS emissions in metric tons.
EN-22 (305-7)		Nitrogen oxide, sulfur oxide, and air emissions in kilogram and type.

Source: www.gri.org

RESEARCH METHODS

This study examined the effect of environmental management systems, environmental committees, and independent board of commissioners, profitability, leverage, capital expenditure, firm size, and financial slack on the disclosure of greenhouse gas emissions by using control variables, namely the size of the board of commissioners and meeting of the board of commissioners. Researchers chose this control variable since the variable is independent variable related, i.e. independent board of commissioners. The conceptual framework for this research is as follows:

Figure 1. Conceptual Framework



The Effect of Environmental Management Systems on Greenhouse Gas Emissions Disclosure

The implementation of the environmental management system shows that the company puts concern for the environment to create environmentally friendly operational activities. This is completed to minimize negative impacts on the environment and an effort to provide benefits to the environment by managing greenhouse gas emissions (Giacomo, Guthrie, & Farneti, 2017). Research Rankin, Windsor, & Wahyuni (2011) find that companies with environmental management system certificates tend to disclose house gas emissions. Based on the description, the hypothesis drawn is as follows:

H1: The environmental management system influences greenhouse gas emissions disclosure.

The Effect of the Environmental Committee on Greenhouse Gas Emissions Disclosure

The establishment of an environmental committee shows the commitment of the company to preserve the company's environmental conditions, especially those generating greenhouse gas emissions. Greenhouse gas emissions have a negative impact and cause global warming. With the presence of the environmental committee,

the company can participate in solving the global warming problem by managing and disclosing greenhouse gas emissions (Rankin, Windsor, & Wahyuni, 2011).

The Ashforth & Gibbs (1990) study argues that the environmental committee influences the disclosure of greenhouse gas emissions. Thus, companies with an environmental management system will disclose broadly regarding greenhouse gas emissions. Based on this problem, the research hypothesis drawn is as follows:

H2: The environmental committee influences the greenhouse gas emissions disclosure.

The Effect of Profitability on Greenhouse Gas Emissions Disclosure

Companies with high profitability will have the freedom and flexibility to manage their resources. For instance, companies can use their excess resources to show their responsibility towards the environment by organizing environment-related activities. This is conducted to avoid the interest gap between management and the public. If companies are environmentally responsible, it will stimulate public confidence toward companies' commitment to bringing benefits, not merely profit (Pratiwi, 2018).

Research (Jannah & Muid, 2014) shows that profitability has a positive effect on the disclosure of greenhouse gas emissions. Based on the results of the explanation above, the hypothesis in this study is as follows:

H3: The profitability affects the greenhouse gas emissions disclosure.

The Effect of Leverage on Greenhouse Gas Emission Disclosures

Companies with high leverage will limit the management, control, and disclosure of greenhouse gas emissions. This is performed due to companies' careful decision on non-mandatory expenses for companies. The companies inclined to utilize their resources to cover all obligations to creditors. (Luo, Tang, & Lan, 2013).

Research (Luo, Tang, & Lan, 2013) shows that leverage has a negative and significant effect on greenhouse gas emissions disclosure. Based on the previous studies, the hypothesis in this study is as follows:

H4: The leverage affects the greenhouse gas emissions disclosure.

The Effect of Capital Expenditures on Disclosure of Greenhouse Gas Emissions

Capital expenditures are incurred by companies to obtain fixed assets. Companies with high capital expenditures dispose to be more flexible in spending their capital, such as purchasing sophisticated equipment. The expectation is with the utilization of sophisticated equipment the activities of companies will run efficiently and effectively and be better at waste management containing greenhouse gas emissions. Sophisticated equipment tends to produce environmentally friendly company operations (Villiers & Staden, 2011).

Research (Clarkson, Overell, & Chapple, 2011) states that capital expenditure has a positive and significant effect on environmental performance, including greenhouse gas emissions disclosure. Based on the results of previous studies, the hypothesis in this study is as follows:

H5: The capital expenditure affects greenhouse gas emissions disclosure.

Effect of Firm Size on Greenhouse Gas Emissions Disclosure.

Firm size describes the number of resources the companies have. Large companies will have a balanced stance with large resources as well to gain the most attention from the public (Choi, Lee, & Psaros, 2013). When the companies conduct operations causing environmental damage, companies will get public pressure. To deal with this pressure, companies will disclose their information regarding environmental performance, including efforts to control greenhouse gas emissions (Irwhantoko & Basuki, 2016).

Research (Choi, Lee, & Psaros, 2013) shows that firm size has a positive and significant effect on greenhouse gas emissions disclosure. Based on the results of the previous study, the hypothesis is:

H6: The firm size affects greenhouse gas emissions disclosure.

The Effect of Financial Slack on Greenhouse Gas Emissions Disclosure

All companies' activities must require costs, including to manage companies' environment.

Of companies have financial slack, it will be more flexible in managing its resources to be environmentally friendly and enhance the reputation of the companies before stakeholders. Thus, an increase reputation of companies will bring a positive impact to bring investors. To achieve this is by managing and disclosing greenhouse gas emissions (Kock, Santalo, & Diestre, 2011).

Research (Chitambo & Tauringana, 2014) examines that financial slack has a significant effect on greenhouse gas emissions disclosure. Based on the results of the previous study, the hypothesis is:

H7: The financial slack affects greenhouse gas emissions disclosure.

The Effect of the Independent Board of Commissioners on Greenhouse Gas Emissions Disclosure

The independent board of commissioners has the duty to supervise and monitor the performance of the companies' management. Furthermore, the independent board of commissioners also provides guidance and knowledge related to the companies' environmental performance. Companies that have good environmental performance will bring more value to the stakeholders. Thus, the independent board of commissioners will encourage companies to make broad disclosures related to environmental performance, including home gas emissions disclosure (Villiers & Staden, 2011).

Research (Villiers & Staden, 2011) shows that the independent board has a positive and significant effect on corporate social responsibility disclosure, including greenhouse gas emissions disclosure. Based on the results, the hypothesis of this study is:

H8: The independent board affects the greenhouse gas emissions disclosure.

Research methods

Secondary data in this study were documentation of sustainability reporting and annual reports regularly published by the company annually on companies registered on the Indonesia Stock Exchange.

The population in this study was the energy sector companies including transportation and coal, manufacture, and agriculture listed on the Indonesia Stock Exchange between the 2014-2017 period with 80 observational data. The sample in this study used a purposive sampling method and 13 companies were selected as a sample and the data used in this study amounted to 52 observational data. With the procedures and sampling criteria are as follows:

Table 4. Sampling Procedures and Criteria

Criteria	Company
<i>Manufacture, energy (coal and transportation) and agriculture sectors exhibiting sustainability reporting and annual report period 2014-2017.</i>	20
<i>Company withdrawing sustainability reporting consecutively period 2014-2017.</i>	(7)
Total of Company	13
Total of observed data	52

The dependent variable in this study is the greenhouse gas emissions disclosure measured using the CDP index developed by Choi, Lee, & Psaros (2013) consisting of 18 items to disclose greenhouse gas emissions as follows:

Table 3. Greenhouse Gas Emission Disclosure Index

Category	Item	Information
Climate change: Risks and Opportunities	CC 1	The description of the risks relating to climate change and action taken to solve the risks.
	CC 2	Description of current and future financial implications, and opportunities of climate change.

Category	Item	Information
Greenhouse Gas Emissions	GHG 1	Description of the methodology used to calculate and report GHG emissions based on the Kyoto Protocol, ISO, etc.
	GHG 2	Existence of external verification of the quantity of GHG emissions.
	GHG 3	Total GHG emissions (metric tons of CO ₂ -e).
	GHG 4	Disclosure of Scope 1 and 2, or Scope 3..
	GHG 5	Disclosure of GHG emissions by sources (e.g.: coal, electricity, etc.)
	GHG 6	Disclosure of GHG emissions by the facility.
	GHG 7	Comparison of GHG emissions with previous years.
Energy Consumption	EC 1	Total energy consumed.
	EC 2	Quantification of energy used from renewable sources.
	EC 3	Disclosure by type, facility used.
GHG Reduction and Cost	RC 1	Strategies to reduce GHGH emissions.
	RC 2	Specification of GHG emissions reduction target level and target year.
	RC 3	Emissions reduction and associated costs or savings achieved to date as a result of the reduction plan.
	RC 4	The cost of future emissions factored into capital expenditure planning.
Greenhouse Gas Emissions Accountability	AC 1	Indication of which board of committee/other has overall responsibility for actions related to climate change.
	ACC 2	Description of the mechanism by which the board/other reviews the company's progress regarding climate change.

Source: (Choi, Lee, & Psaros, 2013).

The independent variables in this study are the environmental management system, environmental committee, profitability, leverage, capital expenditure, firm size, financial slack and independent board of commissioners. The environmental management system was measured by the dummy, 1 is for ISO 14001 certified company and 0 is ISO 14001 non-certified company. The environmental committee was measured by the dummy, 1 is for companies with the environmental committee and 0 is with no environmental committee. Profitability was measured by Return On Assets (ROA), net income is divided by total

assets. Leverage as measured by Debt to Asset (DAR), total debt is divided by total assets. Capital expenditure was measured by fixed assets divided by total income or sales. Firm size was measured by total revenue or sales. Financial slack was measured by cash and cash equivalent divided by total income or sales. The independent board of commissioners was measured by the number of independent boards.

This study used multiple linear regression techniques. Analysis of the data presented in this study used assistance from the Statistical Package for Social Sciences (SPSS) program.

RESULTS AND DISCUSSION

Descriptive statistics

Table 5. Descriptive Statistics Results

	N	Minimum	Maximum	Mean	Std. Deviation
PERGK	52	.0556	.6667	.409188	.1516586
SML	52	.0000	1.0000	.903846	.2976783
KL	52	.0000	1.0000	.846154	.3643213
PRF	52	-.1200	.5267	.109302	.1373915
LEV	52	.1331	.7518	.498335	.1718055
BM	52	.1317	1.7559	.618438	.4327667
UP	52	2,696,318,000,000	206,057,000,000,000	32,244,659,957,767.66	48,712,101,213,865.410
FS	52	.0093	.6297	.180909	.1526571
DKI	52	.2500	.8000	.412475	.1308067
RDK	52	2.0000	24.0000	7.269231	4.1826691
UDK	52	4.00	12.00	6.4423	1.68515
Valid N (listwise)	52				

Source: Processed secondary data, 2018

The greenhouse gas emissions disclosure consists of 18 disclosure items divided into 5 categories of disclosure, with the percentage for each category is as follows:

Table 6. Disclosure Percentage for Each Category

Category	Number of Disclosure Item	Disclosure Average
Category 1 (Climate Change: Risks and Opportunities)	2 item	8,87%
Category 2 (Greenhouse Gas Emissions)	7 item	45,69%
Category 3 (Energy Consumption)	3 item	20,88%
Category 4 (Greenhouse Gas Reduction and Cost)	4 item	23,75%
Kategori 5 (Carbon Emissions accountability)	2 item	0,783%

Source: Processed data, 2019

Based on table 6, it shows that from the 5 disclosure categories, the largest percentage of greenhouse gas emission disclosures is the second category concerning greenhouse gas emissions disclosure of 45.69%. Thus, most companies have disclosed greenhouse gas emissions according to the second category. The seven disclosure items included in category two are as follows:

1. The calculation methodology for greenhouse gas emissions with a percentage of disclosure of 8.35%
2. External verification of the results of the calculation of greenhouse gas emissions with a disclosure percentage of 1.56%.
3. Total greenhouse gas emissions emitted with a disclosure percentage of 9.13%.

4. Disclosure of scope 1, 2 and 3 with a percentage of disclosure of 10.44%.
5. Disclosure of greenhouse gas emissions by source with a percentage of disclosure of 6.78%.
6. Disclosure of greenhouse gas emissions based on the facility with a disclosure percentage of 1.56%.
7. Comparison of annual greenhouse gas emissions with a percentage of disclosure of 7.83%.

On the reverse, the disclosure category that has the lowest percentage is the fifth category related to carbon emissions accountability with 0.783%. The fifth category consists of two disclosure items, which are as follows:

1. Indication of which board of committee/other has overall responsibility for actions related to climate change with a percentage of disclosure of 0.783%.
 2. Description of the mechanism by which the board/other reviews the company's progress regarding climate change with a percentage of disclosure of 0%.
- The following table 7 is the frequency distribution data regarding the environmental management system of the sample companies:

Table 7. Results Frequency Distribution of Environmental Management Systems SML

	Frequency	Percent	Valid Percent	Cumulative Percent
.0000	5	9.6	9.6	9.6
Valid 1.0000	47	90.4	90.4	100.0
Total	52	100.0	100.0	

Source: Data processed, 2019

The following Table 8 is the frequency distribution data regarding the environmental committee of the company:

Table 8. The Results of Frequency Distribution of Environmental Committee KL

	Frequency	Percent	Valid Percent	Cumulative Percent
.0000	8	15.4	15.4	15.4
Valid 1.0000	44	84.6	84.6	100.0
Total	52	100.0	100.0	

Source: Processed Data, 2019

DOUBLE REGRESSION RESULTS

Table 9. Multiple Regression Analysis Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	-2.478	.727		-3.411	.001
SML	-.059	.068	-.116	-.869	.390
KL	.057	.073	.137	.785	.437
PRF	.711	.253	.644	2.804	.008
LEV	-.013	.145	-.014	-.088	.931
1 BM	.239	.058	.681	4.095	.000
UP	.104	.026	.749	3.967	.000
FS	.332	.148	.334	2.240	.031
DKI	-.405	.268	-.349	-1.511	.138
RDK	-.007	.006	-.207	-1.314	.196
UKD	-.053	.014	-.585	-3.826	.000

a. Dependent Variable: PERGK

Source: Processed Data, 2019

Environmental management system affects greenhouse gas emissions disclosure

Based on table 9, the calculated t value is -0.869 and t table value is 2.015. The significance value is 0.390 which means that the environmental management system has a negative relationship direction but the effect is not significant.

The environmental management system is a system used by companies to manage the environment. The environmental management system encourages to create an environmentally friendly company. However, environmental-related disclosures regulation is in the current Global Reporting Initiative (GRI) of GRI G4.

The global reporting initiative G4 has 45 environmental disclosure indicators. One of them is greenhouse gas emissions with 7 disclosure indicators. Given these proportions, environmental disclosure related to greenhouse gas emissions has a low proportion. Therefore, companies donot concern about greenhouse gas emissions disclosure,

but the company carries out overall environmental monitoring. Thus, greenhouse gas emissions disclosure is not optimal (www.gri.org).

This statement is reinforced by the existence of special certification related to the management and greenhouse gas emissions disclosure, ISO 14064. ISO 14064 certification guides the form of a framework for companies to measure greenhouse gas emissions and verifyexternally to ensure the accuracy and completeness related to greenhouse gas emissions. But in practice, most companies in Indonesia do not yet have ISO 14064 certification (www.iso.org).

Based on data obtained, companies with an environmental management system do not always disclose greenhouse gas emissions generally. There are several research samples with environmental management system but attach low greenhouse gas emissions disclosure in the sustainability report, as shown follows:

Table 10. The Greenhouse Gas Emissions Disclosure <50% with Environmental Management System

	Percentage	Company	Year
1.	27,78%	PT Astra International Tbk	2015
2.	11,11%	PT Tambang Batubara Bukit Asam Tbk	2016
3.	38,89%	PT Unilever	2017
4.	5,56%	PT Wijaya Karya Beton Tbk	2016

Source: Processed data, 2019

Based on the table above, although the companieshave an environmental management system, the companies do not automatically disclose a high proportion of greenhouse gas emissions. This is also supported by data stating that there are companies with the absence of an environmental management system but do disclose a high proportion of greenhouse gas emissions, for instance, PT Indocement Tunggal Prakarsa in 2014 with approximately 55.56%.

The environmental committee affects the greenhouse gas emissions disclosure

The second hypothesis is to find out whether there is an effect of the environmental committee on the greenhouse gas emissions disclosure. Based on table 9, the calculated t value is 0.785 and the t table value is 2.015. The significance value is 0.437 which means that the environmental committee

has a positive relationship but the effect is not significant.

The environmental committee is individuals to supervise and monitor the company’s environmental performance. The companies’ environmental performance includes several aspects, such as aspects of energy, biodiversity, greenhouse gas emissions, effluents & waste, and products & services. Thus, the environmental committee must observe all aspects of environmental performance, not merely one aspect (www.gri.org). Therefore, the higher chance might occur for the environmental committee to do maximum monitoring and supervision of every aspect of environmental performance, as such aspects of greenhouse gas emissions. So the greenhouse gas emissions disclosureinclines to be low.

Based on data on the annual report and the sustainability report on the sample companies

that most companies tend to focus more on managing the waste emitted. This is shown by activities conducted to deal with waste, including companies collaborating with external audits to supervise the work safety management system handling waste, recycles waste, have ISO 16949 certification to deal with waste produced by the company, and so.

The statements above are reinforced by the data obtained that companies with environmental committees withdraw itself from extensive greenhouse gas emissions disclosure. There are a number of research samples with the environmental committee but disclose the proportion of greenhouse gas emissions below 50%, as follows:

Table 11. The Greenhouse Gas Emissions Disclosure <50% with Environmental Committee

No	Percentage	Company	Year
1	27,78%	PT Astra International Tbk	2016
2	33,33%	PT Petrosea Tbk	2016
3	5,56%	PT Wijaya Karya Beton Tbk	2014
4	11,11%	PT Wijaya Karya Beton Tbk	2017

Source: Processed data, 2019

Table 11 explains that companies with an environmental committee do not attach a guarantee to disclose greenhouse gas emissions widely. This is also supported by data that states that some companies with no environmental committee do disclose a high proportion of greenhouse gas emissions, which is PT Holcim Indonesia in 2014 at 50.00% and in 2015 at 55.56%.

Profitability affects the disclosure of greenhouse gas emissions

The third hypothesis is to find out whether there is a profitability effect on greenhouse gas emissions disclosure. Based on table 9, the t value is 2.804 and the t table is 2.015. The significance value is 0.008 which means that the profitability variable has a positive effect on the greenhouse gas emissions disclosure.

Based on the data above, companies with high profitability tend to use their net profit more flexible resulted from maximum asset management

to be environmentally responsible as an effort to get the public's attention. This is caused by companies' operational activities that harm the environment and the community will put pressure on the companies (Pratiwi, 2018).

One can minimize the social pressure from the community by controlling and disclosing related greenhouse gas emissions emitted by companies. This is companies' effort to convince the public that companies are being responsible to protect the environment, not merely seek profit (Pratiwi, 2018).

Based on the data obtained shows that company with high profitability value, such as PT Multi Bintang Indonesia Tbk in 2017 has a profitability of 52.67% by disclosing 7 greenhouse gas emissions from 18 disclosure items. Also, PT Unilever Tbk in 2014 has a high profitability value of 40.18% by disclosing 11 greenhouse gas emissions from 18 disclosure items.

Conversely, companies with low profitability value or experience losses such as PT Garuda Indonesia (Persero) Tbk in 2014 amounting to -12.00% made greenhouse gas emissions disclosure by 3 items from 18 disclosure items. In addition, PT Wijaya Karya Beton Tbk in 2016 has a profitability value of 6.03% by disclosing 1 item out of 18 disclosure items.

This study is in line with research (Jannah & Muid, 2014) and (Choi, Lee, & Psaros, 2013) arguing that profitability has a positive and significant effect on the disclosure of greenhouse gas emissions.

Leverage affects the greenhouse gas emissions disclosure

The fourth hypothesis is to find out whether there is a leverage effect on the disclosure of greenhouse gas emissions. Based on table 9, the calculated t value of -0.088 and t table of 2.015. The significance value is 0.931 which means that the leverage variable does not affect the disclosure of greenhouse gas emissions.

Stakeholder theory states that companies with high leverage will have a great responsibility towards their creditors. The pressure aims to ensure that the loaned funds can be returned by the company on time. Therefore, companies will tend to use its source of funds to cover its obligations to creditors rather than to make disclosures that are still voluntary in nature such as the disclosure of greenhouse gas emissions (Luo, Tang, & Lan, 2013).

This research is in line with research (Lorenzo, Dominguez, Alvarez, & Sanchez, 2009) which states that leverage has a negative relationship direction but the effect is not significant.

Capital expenditure affects the greenhouse gas emissions disclosure

The fifth hypothesis is to find out whether there is an effect of capital expenditure on the disclosure of greenhouse gas emissions. Based on table 9, the calculated t value is 4.095 and t table is 2.015. The significance value is 0,000 which means that the capital expenditure variable has a positive effect on the disclosure of greenhouse gas emissions.

Based on the data above, companies with high capital expenditure value also have a high ability to allocate capital to buy sophisticated equipment. The companies' goal is using sophisticated equipment to create environmentally friendly operational activities. Efforts to create operational activities environmentally friendly is by controlling and managing greenhouse gas emissions (Villiers & Staden, 2011).

Companies capable of controlling and managing the resulting greenhouse gas emissions is an achievement that must be reported to stakeholders. Thus, companies tend to make more disclosures related to the management and control of greenhouse gas emissions emitted (Villiers & Staden, 2011).

Based on data obtained by companies that have high capital expenditure, namely PT Holcim Indonesia Tbk in 2016 amounted to 175.59% by disclosing 8 items greenhouse gas emissions from 18 disclosure items. PT Holcim Indonesia Tbk in 2016 made a cement terminal worth USD 26 million, where this terminal used the latest technology, environmentally friendly equipment and created a dock to support the operation. A cement terminal was built in Lampung to distribute cement produced to the market.

The company that has a low capital expenditure, such as PT Multi Bintang Indonesia Tbk in 2015 amounted to 27.91% with 4 items of greenhouse gas emissions disclosure from 18 items disclosure. PT Multi Bintang Indonesia Tbk uses environmentally-friendly equipment such as cooling machines to reduce carbon emissions released.

This research is in line with research (Clarkson, Overell, & Chapple, 2011) shows that capital

expenditure has a positive and significant influence on the disclosure of greenhouse gas emissions.

The firm size affects the greenhouse gas emissions disclosure

The sixth hypothesis is to find out whether there is an effect of firm size on the greenhouse gas emissions disclosure. Based on table 9, the calculated t value is 3,967 and the t table is 2,015. The significance value is 0,000, which means that company size variables have a positive effect on the greenhouse gas emissions disclosure.

Based on the data above, it can be concluded that large companies have a balance with a lot of operational activities. The activities carried out by the company must be related to the surrounding environment. One of the companies' stakeholders is the community. Community will put pressure if the companies conduct operational activities with negative impact on the environment. So, companies with a massive size tend to have the ability to handle these pressures by using the revenue earned by the company (Irwhantoko & Basuki, 2016).

The income owned by the company can be used to carry out environmental responsibilities to improve the companies' environmental performance. One of the efforts that can be done is by managing and disclosing the greenhouse gas emissions produced by companies (Irwhantoko & Basuki, 2016).

Based on data obtained by large-sized companies with high revenue or sales value, namely PT Perusahaan Gas Negara (Persero) Tbk in 2015 amounting to Rp. 42,333,969,706,775 disclosed 10 item greenhouse gas emissions from 18 disclosure items. In addition, PT Unilever Tbk in 2014 had sales value of 34,511,000,000,000 and disclosed 11 items of greenhouse gas emissions from 18 disclosure items. While companies that have low income or sales, such as PT Wijaya Karya Beton Tbk in 2016 amounted to Rp 3,481,731,506,128 disclosed barely 1 item greenhouse gas emissions from 18 disclosure items.

This research is in line with research (Lorenzo, Dominguez, Alvarez, & Sanchez, 2009) and (Chitambo & Tauringana, 2014) state that firm size has a positive and significant influence on the greenhouse gas emissions disclosure.

Financial slack affects the greenhouse gas emissions disclosure

The seventh hypothesis is to find out whether there is an effect of financial slack on the greenhouse gas emissions disclosure. Based on table 9, the calculated t value of 2.240 and t table of 2.015. The significance value is 0.031 which means that the financial slack variable has a positive effect on the disclosure of greenhouse gas emissions.

Companies with high financial slack will have a great ability to allocate financial resources to carry out initiatives towards environmental change and become more environmentally friendly. For instance, dealing with the conditions of climate change caused by high greenhouse gas emissions. The availability of abundant or more resources allows companies to cover the costs incurred to manage and disclose the greenhouse gas emissions released (Kock, Santalo, & Diestre, 2011).

Based on data obtained by companies with high financial slack, it will disclose high greenhouse gas emissions. This is proven by the research sample that has the highest financial slack value, PT Indocement Tunggul Prakarsa Tbk in 2016 by disclosing as many as 12 items from 18 items of the disclosure. While the company with low financial slack, such as PT Unilever in 2016 disclosed 8 items of greenhouse gas emissions out of 18 disclosure items.

This study is in line with research (Kock, Santalo, & Diestre, 2011) and (Chitambo & Tauringana, 2014) stating that financial slack has a positive and significant effect on the greenhouse gas emissions disclosure.

The independent board of commissioners affects the greenhouse gas emissions disclosure

The eighth hypothesis is to find out whether there is an influence of the independent board of commissioners on the greenhouse gas emissions disclosure. Based on table 9, the calculated t value is -1.511 and the t table is 2.015. The significance value is 0.138 which means that the independent board of commissioner variable does not affect the disclosure of greenhouse gas emissions.

The function of the independent board of commissioners is to supervise management performance. Companies with a large independent board of commissioners will be offset by greater resistance from the board of commissioners to top management. This resistance in the form of an independent board of commissioners will be more

direct to manage capital from shareholders to the maximum to generate maximum net income as well as to make disclosures that are still voluntary such as the greenhouse gas emissions disclosure which will only increase costs incurred by the company (Ibrahim, Howard, & Angelidis, 2003).

Based on the discussion above if it is linked to the grand theory that companies with a large allocation of resources will certainly carry out its responsibilities to the shareholders in the form of greenhouse gas emissions management as a positive commitment that the company participates to manage the environment surrounding. In addition, humans as leaders on this earth are given the trust by Allah to manage the universe well. Companies can realize it by managing the environment so as to create an environmentally friendly company performance.

CONCLUSIONS

This study aims to determine the broad determination of greenhouse gas emissions disclosure in Indonesia. This research was conducted on companies listed on the Indonesia Stock Exchange sectors which contributed the largest greenhouse gas emissions, such as the manufacture sector, energy, and agriculture during the 2014-2017 period. Based on the discussions, conclusions drawn are as follows:

1. There is no influence of the environmental management system, environmental committee, leverage, independent board of commissioners on the greenhouse gas emissions disclosure.
2. The existence of the effect of profitability, capital expenditure, firm size, financial slack on the greenhouse gas emissions disclosure.

This study has several limitations including the limitations of the sample of only 13 companies in a period of 4 years and 52 data were observed since those are only companies that produce the largest greenhouse gas emissions and submit sustainability reports consecutively. This study has a coefficient of determination of 41.7%, the remaining 48.3% is influenced by other variables outside the study. Therefore, researchers provide some suggestions for further researchers including further expand on research sample companies that contribute to the largest greenhouse gas emissions and add another variable that affect the extent of greenhouse gas emissions disclosure.

REFERENCE

- Armandhanu, D. (2015). Indonesia Akan Jadi Penyumbang Polusi Terbesar Ketiga Dunia. <https://m.cnnindonesia.com/internasional/20151019115101-106-85766/indonesia-akan-jadi-penyumbang-polusi-terbesar-ketiga-dunia>.
- Ashforth, B. E. (1990). The Double-Edge Of Organizational Legitimation The Double-Edge Of Organizational Legitimation. *Organization Science*, Vol. 1(No. 2), 177–194. <https://doi.org/10.1287/orsc.1.2.177>.
- Brammer, S., & Pavelin, S. (2006). Voluntary Environmental Disclosure by Large UK Companies. *Journal of Finance and Accounting*, 33 (7), 1168-1188.
- Chitambo, L., & Tauringana, V. (2014). Company Specific Determinants Of Greenhouse Gases Disclosures. *Journal Of Applied Accounting Research*, Vol. 15 Is(Iss 3), 323–338. <https://doi.org/10.1108/jaar-11-2013-0087>.
- Choi, B. B., Lee, D., & Psaros, J. (2013). An analysis of Australian company carbon emissions disclosure. *Pacific Accounting Review*, Vol. 25 (iss 1), pp.58-79.
- Clarkson, P., Overell, M., & Chapple, L. (2011). Environmental Reporting and its Relation to Corporate Environmental Performance, 47(1), 27–60. <https://doi.org/10.1111/j.1467-6281.2011.00330>.
- Giacomo, N. Di, Guthrie, J., & Federica Farneti. (2017). Environmental management control systems for carbon emissions. *PSU Research Review*, Vol. 1(Issue: 1), 39–50. <https://doi.org/10.1108/PRR-10-2016-0004>.
- Irwhantoko, & Basuki. (2016). Carbon Emission Disclosure : Studi Pada Perusahaan Manufaktur Indonesia, 18(2), 92–104. <https://doi.org/10.9744/jak.18.2.92-104>
- Jannah, R., & Muid, D. (2014). Analisis Faktor-Faktor Yang Mempengaruhi Carbon Emission Disclosure Pada Perusahaan Di Indonesia (Studi Empiris Pada Perusahaan Yang Terdaftar Di Bursa Efek Indonesia Periode 2010-2012), 3(2013), 1–11.
- Kusumawati, U. D. (2015). *Polisi Tangkap Direktur PT Langgam Inti Hibrido Tersangka Pembakaran Lahan*. <https://m.cnnindonesia.com/nasional/20150914125900-12-78561/kebakaran-hutan-pt-langgam-inti-hibrida-ditetapkan-tersangka>.
- Liao, L., Luo, L., & Tang, Q. (2014). Gender Diversity , Board Independence , Environmental Committee And Greenhouse Gas Disclosure Q. *The British Accounting Review*, 1–16. <https://doi.org/10.1016/j.bar.2014.01.002>.
- Lorenzo, J. M., Dominguez, L. R., Alvarez, I. G., & Sanchez, I. M. (2009). Factors Influencing The Disclosure Of Greenhouse Gas Emissions In Companies World-Wide. *Management Decision*, Vol. 47 (No. 7).
- Luo, L., Tang, Q., & Lan, Y.-C. (2013). Comparison Of Propensity For Carbon Disclosure Between Developing And Development Countries: A Resource Constraint Perspective. Article Information : *Accounting Research Journal*, 26(1), 6–34. <https://doi.org/http://dx.doi.org/10.1108/arj-04-2012-0024>.
- Majid, R. A., & Ghozali, I. (2015). Analisis Faktor-Faktor Yang Mempengaruhi Pengungkapan Emisi Gas Rumah Kaca Pada Perusahaan Di Indonesia. *Diponegoro Journal Of Accounting*, Volume 4 (No. 2), 1-11
- Mulwarman, A. D. (2009). *Akuntansi Syariah Teori, Konsep, Laporan Keuangan*. Jakarta: E-Publishing Company.
- Nuswandari, C. (2009). Pengungkapan Pelaporan Keuangan Dalam Perspektif Signalling Theory. *Kajian Akuntansi*, 1 (1), 48-58.
- O’Neil, H. M., Saunders, C. B., & McCarthy, A. D. (1989). Board Members, Corporate Social Responsiveness and Profitability: Are Tradeoffs Necessary. *Journal of Bussines Ethics* , 353-375.
- Pratiwi, D. N. (2016). Implementasi Carbon Emission Disclosure The Implementation Of Carbon Emission Disclosure In Indonesia, (2007), 101–112.

- Rankin, M., Windsor, C., & Wahyuni, D. (2011). An Investigation Of Voluntary Corporate Greenhouse Gas Emissions Reporting In A Market Governance System Australian Evidence. <https://doi.org/10.1108/09513571111184751>.
- Roberts, R. W. (1992). Determinants Of Corporate Social Responsibility Disclosure : An Application Of Stakeholder Theory. *Accounting Organizations And Society*, 17(6), 995–612.
- Sani, A. (2017). *Cerami Lingkungan, Anak Perusahaan Sinarmas Group Didemo Warga*. <https://www.google.com/amp/m.merdeka.com/amp/peristiwa/cemari-lingkungan-anak-perusahaan-sinarmas-group-didemo-warga.html>.
- Villiers, C. De, & Staden, C. J. Van. (2011). J .Account . Public Policy Where Firms Choose To Disclose Voluntary Environmental Information. *Journal Of Accounting And Public Policy*, 30(6), 504–525. <https://doi.org/10.1016/J.Jaccpubpol.2011.03.005>.

www.kemenag.go.id

www.menlhk.go.id

www.iaiglobal.or.id

www.globalreporting.org

www.ipcc.ch