

# Comparison of Greenhouse Gas Emission Disclosure Before and After Enactment of the Indonesia Act No. 17 of 2004

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# 1 Comparison of Greenhouse Gas Emission Disclosure Before and After Enactment of the Indonesia Act No. 17 of 2004

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## Abstract

Indonesia, as a country with high vulnerable to the effects of global climate change due to greenhouse gas emissions, is committed to implementing the Kyoto Protocol by issuing the Law No. 17 of 2004 regulating the ratification of the Kyoto Protocol to the United Nations Framework Convention on Climate Change. On the other hand, Indonesia with the second largest tropical forest in the world is expected to contribute oxygen to protect the world's top greenhouse gas effect as the main cause of global warming. This study aims to provide empirical evidence of the extent to which the response of companies in Indonesia in addressing global warming due to carbon emissions leading to dumping greenhouse gases and what efforts done as a form of corporate social responsibility. This study found that there are differences in the disclosure of carbon emissions before and after the enactment of Indonesian Act No. 17 of 2004. However, the study also found that only about 10% of manufacturing companies in Indonesia have an action associated with a reduction in carbon emissions of the company.

**Keyword:** *Carbon Emission Disclosure, Greenhouse Gas, Kyoto Protokol*

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## 5 Introduction

A climate change phenomenon is closely related to greenhouse carbon emissions as the main cause of global warming that can cause harm to the environment and human life. Today society is fully aware of the importance of managing the physical and social environment. As a result, people pay more serious attention to the positive and negative impacts of the activities carried out by the company in their environment. The awareness of environmental issues for the future welfare of human beings was indicated in the United Nations Conference on Environment and Development held at the Earth Summit in Rio de Janeiro in 1992. As the follow up of the conference, the Kyoto Protocol, in December 11, 1997, on an agreement within the members of UN framework hearing on climate change to reduce greenhouse emissions was signed.

Indonesia as an archipelagic country with the second longest coastline in the world is particularly vulnerable to the impacts of climate change, including rising of sea levels.

For that reason, Indonesia should take an active role in reducing greenhouse emissions. One of the evidences from the active role is the enactment of Act No. 17 of 2004 concerning the ratification of the Kyoto Protocol to The United Nations Framework Convention on Climate Change. According to the Act (Republic of Indonesia, Law No. 17 of 2004), the climate changes due to increased concentrations of greenhouse gases in the atmosphere cause adverse effects on the environment and human life that need to be controlled in accordance with the common principle but differentiated responsibilities (common but differentiated responsibilities) by taking into account of social and economic conditions of each country. In addition, the important consideration stipulated in the Act include: (1) as developing countries, Indonesia needs to develop clean technology industry with low-emissions, (2) as a tropical country with the second largest forest in the world, Indonesia has an important role in influencing the climate of the earth. Furthermore, the Act No. 17 of 2004 does not obligate companies to make disclosures related to greenhouse gases. Rather, the regulation is a response to ratify the Kyoto Protocol as Indonesian concern for climate change. This study assumes that given the issuance of Act No. 17 of 2004, the Indonesian companies will encourage themselves to change their business activities so that carbons emitted are reduced.

One of the responses by the Indonesian companies is initiatives of eight companies to reduce greenhouse gas emission in their social and environmental responsibility activities as a release of finding of a study entitled literature study on cost of climate change delivered by The Indonesian Institute (<http://www.energytoday.com/2013/04/08/tjislcsr-8-perusahaan-berupaya-kurangiemisi-gas-rumah-kaca>). Another finding is that the company engaged in the automobile has also focused on developing environmentally friendly vehicles using alternative fuels that reduce emissions. The companies' response is line with the the government's commitment. In the forum of G-20 summit in Pittsburgh on September 25, 2009, Indonesia has been committed to reducing greenhouse gas emissions by 26% in 2020. As the follow up of the commitment, Government issued a regulation in Presidential Decree No.61 of 2011 on National Action Plan for Reducing Emissions of Greenhouse Gases.

Furthermore, it is noted that many countries also strongly support efforts to reduce greenhouse gas emissions. The Australian Parliament ratified a law related to carbon tax. The law regulate carbon tax of U.S.\$23.78 per tonne for the 500 companies which are considered as the biggest polluters from July 2012, before entering into the carbon market scheme in July 2015 ([http://www.bbc.co.uk/indonesia/dunia/2011/11/111107\\_australiacarbontax.shtml](http://www.bbc.co.uk/indonesia/dunia/2011/11/111107_australiacarbontax.shtml)). British Prime Minister, Gordon Brown, urged the leaders of the European Union (EU) to cut the amount of carbon emissions of each country by 30 percent. This amount is higher than the proposed EU summit on climate change in Copenhagen, Denmark ([http://dunia.news.viva.co.id/news/read/112118/pm\\_inggris\\_serukan\\_pengurangan\\_emisi\\_karbon](http://dunia.news.viva.co.id/news/read/112118/pm_inggris_serukan_pengurangan_emisi_karbon)).

This study is a preliminary research conducted in Indonesia on the issue of carbon emissions from the accounting perspective. Very few accounting studies related to corporate social responsibility (CSR and corporate environmental issues) discussed disclosure of greenhouse gas emissions in the financial statements. Environmental Investment Organisation (EIO) revealed that the most of largest companies in the world failed to report greenhouse gas emissions correctly. According to EIO, of the 800 largest companies, only 37% of the reported GHG emission data is complete and compli-

ance with the global standards (<http://www.hijauku.com/2013/05/03/inilah-rangking-pelaporan-emisi-perusahaan-dunia>).

This study aims to provide empirical evidence of the extent to which the response of companies in Indonesia in addressing global warming due to carbon emissions that lead to dumping greenhouse gases and of what efforts done as a form of corporate social responsibility. Given the objective, this paper is organized by discussing literature review in the following section. The section provides important conceptual framework which is a basis for the development of a hypothesis. The next section is research method, where the issues of how the research objectives are to meet, including data, research model, and analysis of this study are discussed. Other sections in this paper are finding & discussion and conclusion.

### **Literatur Review and Hypothesis Development**

Legitimacy theory is a theory that is widely used by researchers when discussing environmental issues. One of studies using this theory in constructing arguments and assumptions was a study from Deegan, Robin and Tobin (2002). They stated that the legitimacy of the company will be acquired, if there are any similarities between the public expectancy and the companies outcomes. Other researchers also used the theory of legitimacy to be a basic assumption of research on the topic of environmental accounting and social responsibility (see Tsang, 1988; Linblom, 1994; Gray, 1995; and Guthrie and Parker, 1989). Tsang (1988) defined legitimacy as a general theory of perception or assumption that the general purpose, methods of operation, and the output of the organization shall be in accordance with the norms and social values. This statement refers to the ideal conditions of the company's activities to the needs of the community surrounding the company. If the activities and impact of these activities are relevant with the expectations of society and the environment, it can be said that the company has a legitimate (lawful) with the community and environment, vice versa. Legitimacy theory used in this study to support the assumption that the actions of companies perform social responsibility is accepted in the neighborhood, where the company operates. The suitability of the company's actions to norms or rules that apply in the community will encourage companies to gain legitimacy in society.

Supporting the concept of legitimacy, Linblom, 1994 in Gray (1995) stated that organizations can only survive if the people in the organization feel that the organization has been operated under a system of equal value with the value systems of the communities. Companies must be able to create a fit between their activities with the social values and norms of acceptable behavior in a social system where companies operate. As Guthrie and Parker (1989) stated that the organization bases its business operations on the environment through the company's social contract agreed and the various desires of the community as a form of appreciation for the approval of organizations and corporate sustainability. Social contract is not in its purist (the real) form, but the deal on the generally accepted norm in society must be understood and implemented when the company started its activities in their particular environment. By understanding and maintaining the generally accepted norms of the society, it means that the company has made the social contract with the environment.

In 1987, the term sustainable development is known as the increased attention to the impact of economic growth on welfare, natural resources and the environment. United

Nations refer to it as the Brundtland Report, also known as Our Common Future. Sustainable development defined as development today must be able to provide the same opportunity for future generations to have the ability to meet their needs in the future (WCED, 1987). With the objective in mind that future generations can obtain resources (natural resources, capital, expertise) as great as what we get at this time, we currently need to maintain the sustainability of natural resources, economic and social environment. Later, in 1995, the World Summit further defined this term as a framework to achieve a higher quality of life for all people, where economic development, social development and environmental protection are interdependent and mutually reinforcing components (UN, 1995 in Teppo, 2008).

The concept of environmental accounting began to flourish in Europe since the 1970s along with many pressures from non-governmental organizations and increased public awareness to urge companies to adopt environmental management not only for the benefit of industry (Ikhsan, 2008). In its development, accounting is not only limited to financial accounting processes, but also began to spread to areas of social responsibility accounting environment as a relatively new science. Environmental accounting shows the real cost for the input and business processes as well as ensuring cost efficiency, but it also can be used to measure the cost of quality and service. The ultimate goal is compliance with environmental protection legislation to find efficiencies that reduce environmental impacts and costs (Helvegja, 2001).

One dimension of corporate social responsibility is the environmental dimension. Environmental responsibility refers to the responsibility of the ecological environment. In the company's perspective, the dimensions of the environment have a strong influence for the company and have a negative effect in case of problems surrounding environment. Steurer (2005) described aspects of the environmental dimension including the resources, pollution and environmental damage. The company goal is to maintain the natural resources at a certain level by using renewable and un-renewable resources responsibly. Responsible use should be made throughout the production cycle, namely in procurement, product design, production, distribution/logistics and consumption. The problem with pollution is to avoid all kinds of pollution of water, air and soil throughout the product cycle. Companies should avoid environmental damage and destruction, such as loss of biodiversity and climate change (Steurer, 2005; 270- in Teppo, 2008).

Rohweder (2004 - in Teppo 2008) divided the environmental impacts into directly and indirectly responsibility. Direct responsibility refers to all environmental problems and risks and the use of natural resources caused by the company itself. In term of responsibility, the problems can be managed using the right planning and implementation which aims to minimize the use of resources and the amount of waste. It is good for business in reducing energy and waste disposal, and lowering the cost of pollution (EC, 2001). Indirect responsibility for environmental is usually for the long term, for example outsourcing and supply chain length. Therefore, companies should establish environmental policies. In this way, environmental responsibility can encompass the entire value chain and product life cycle. Cook (2009) explained that the International Accounting Standards Board (IASB) is still continueing discussion on accounting for carbon emissions. Together with FASB, the board designed model of recognition, recording and reporting for carbon emissions.

The above explanation gives enough insight to the reader that the thought in controlling environmental impacts continues to evolve over time.

UK Energy Research Center reveals that for approximately 20 years the UK has failed to reduce greenhouse gas effect despite the fulfillment of the mandate of the Kyoto Protocol. Garbaccio, Ho and Jorgenson (1998) tested the use of carbon taxes to reduce carbon emissions in China. Their study developed a model of Computable General Equilibrium (CGE) for the Chinese economy and concluded that the imposition of a carbon tax can increase the additional revenue for the government and decrease carbon emissions in China. Bebbington and Gonzalez (2008) suggested the concept of a global climate change policy. They empirically examined issues relating to the valuation of pollution identified as a liability arising when companies pollute exceeding their thresholds. Carbon trading short-term financial implications for the company and potentially long-term implications for company are in accordance with the plan (Bebbington and Gonzalez, 2008).

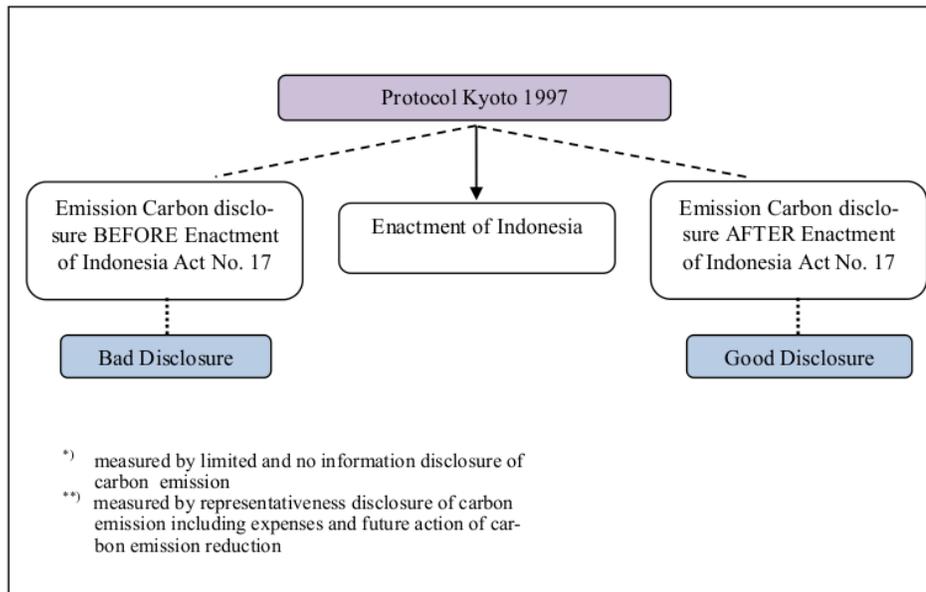
Although most researchers discovered several attempts that have been successfully carried out in several countries in respect to reducing the impact of greenhouse gases, but until now there is no one model agreed to be applied together. Research conducted by Marland, Fruit and Sedjo (2001) proved that quantitative emissions produced over the issue of greenhouse gas (GHG) emissions since 1998 (the Kyoto Protocol) is increasingly becoming the focus of attention of each country. The study of Marland *et al.*, (2001) offered clearly that if emissions reduction can be made permanently (ie without burning oil and gas), and further emission credits may be bought and sold. However, if it is not clear emission reduction (carbon absorbed by forests with activities of ongoing oil and gas combustion), the emission credits may only be rented. Issues that are offered in the paper written by Marland *et al.*, (2001) are quite interesting and in line with the concept that has been conducted by the Ministry of Environment of Columbia government. They stated that there is the Kyoto Protocol or not, carbon emissions should be a major concern in the planning. Marland *et al.*, (2001) tried to offer ideas for leasing activities emission credits when emissions reductions that can take place is not clear whether it is permanent or not.

Panggabean and Holly (2012) evaluated the environmental protection related to financial reporting by PT Timah (as the largest minning company in Indonesia). Research results prove that in 2009-2011 the company has not fully implemented the measurement or calculation of carbon emissions and not disclosed any amount of greenhouse gas emissions. Global climate change makes initiatives for a variety of non-parties to discuss issues of financial accounting and reporting on carbon emissions. Reporting on carbon emissions is important for accountability to stakeholders in assessing the company's financial and non-financial performance of the company. To date there has not been an agreement among countries in the measurement and accounting records to respond to the company's carbon emissions (Neumayer, 2000; Cook, 2009; and Hopwood, 2009), even though European countries highly prioritize environmental issues.

Recently, environmental issues have become the interesting discussions in accounting field. One of the issues discussed by International Accounting Standards Board (IASB) is accounting for carbon emissions (Cook, 2009). The discussion includes conceptual and technical issues. One study by Hopwood (2009), focusing on the im-

portance of accounting records on carbon emissions and corporate social responsibility reporting, discussed several ways of accounting mechanisms and other calculations related to the environmental issues of carbon emission. However, the study does not clearly indicate costs that should be considered related to the carbon emissions. Based on the description above, the hypothesis of this study is:

Ha: There are differences in the disclosure of carbon emissions before and after the enactment of Indonesia Act No. 17 of 2004 concerning the ratification of Kyoto Protocol To The United Nations Framework Convention On Climate Change.



**Figure 1. Conceptual Framework**

### Research Method

The data used in this study was a secondary data (annual reports). The sample of this study is manufacturing companies listed in Indonesia Stock Exchange and that published their annual reports in the period 2000-2011. Given the purposive sampling method, the total annual reports collected were 1,388, with 96 for before the enactment of Indonesia Act No. 17 of 2004 and 1,292 for after the enactment. The before the enactment include the period of 2000-2003, while the period of 2005-2011 were the after enactment.

Main variables used in this study were the disclosure of carbon emissions scores listed in the annual report. Scores disclosure of carbon emissions were as follows:

- 0 = The company does not disclose any information of carbon emissions
- 1 = The company discloses very limited information of carbon emissions
- 2 = The company discloses a lot of information of carbon emissions and the costs

incurred to handle it

3 = The company discloses a lot of information of carbon emissions and its future action to reduce it

The objective of this study is to examine the difference of greenhouse gas emission disclosure by Indonesian companies before and after enactment of the Indonesian Act No. 17 of 2004. This study is the one in the verification-descriptive type. The descriptive analysis is done through descriptive statistics. The data collected in this study were processed using SPSS. Hypothesis this study was tested using independent samples t-test to perform whether the two unrelated samples have different average before and after enactment of Law No. 17 of 2004. Hypothesis testing was performed using a significance level ( $\alpha$ ) which is tolerated by 5%.

### Results and Discussion

The following table is the result of a descriptive analysis of the variables in this study:

**Table 1. Emission Disclosure before Indonesian Act No 17of 2004**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	96	100.0	100.0	100.0

Table 1 shows that 100% of the 96 samples studied obtained a score of 0. This finding suggests that before enactment of Indonesian Act No.17 2004 the entire sample companies did not disclose the carbon emissions.

**Table 2 Emission Disclosure after Indonesian Act No 17of 2004**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	1162	89.9	89.9	89.9
	1	17	1.3	1.3	91.3
	3	113	8.7	8.7	100.0
	Total	1292	100.0	100.0	

Table 2 indicated that after enactment Indonesian Act No.17 2004 1.162 samples or 89.9% do not disclosure carbon emissions produced by their company. 17 samples or 1.3% disclose very little information about the carbon emissions and 113 samples or 8.7% provide a lot of information on carbon emission and strategies that will be done in the future to reduce the carbon emissions.

Indonesian's companies have the responsibility to implement the Indonesian Act 17 in 2004 to minimize the carbon emissions produced by the companies and disclose them in the annual report. Despite only 10% of the samples disclosing the carbon emissions, this indicates that the companies respond to the government's policy to disclose carbon emissions and are trying to reduce them.

**Table 3. Testing Result of Independent Samples Test**

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	T	df	Sig. (2- tailed)	Mean Dif- ference	Std. Error Differ- ence	95% Confi- dence of the Differ- ence Lower	Upper
emisiondi sclosure	Equal variances assumed	49.190	.000	-3.170	1386	.002	-.276	.087	-.446	-.105
	Equal variances not assumed			-11.632	1291.000	.000	-.276	.024	-.322	-.229

Table 3 shows that there are significant differences, with the F-value of 49 and p-value of 0.000, in the disclosure of carbon emissions by Indonesian companies before and after the enactment of Indonesian Act No.17 2004 concerning the ratification of Kyoto Protocol to the United Nations Framework Convention on Climate Change.

The Indonesia Act No. 17 of 2004 requires that Indonesian companies minimize its carbon emissions. This study proves that there are differences in disclosure before and after the enactment of Indonesia act No. 17 of 2004 on manufacturing companies in Indonesia. Before the enactment of Indonesia Act No. 17 of 2004, there are no disclosures of carbon emissions produced by their company in their annual report. The possible reason to explain the finding is that before the enactment of the law, there is no awareness of the Indonesian companies to reduce their carbon emission. After the establishment of Indonesian Act No.17 2004, companies disclose carbon emissions that they generate. This suggests that companies have been responding to government policy in addressing global warming due to carbon emissions that lead to dumping greenhouse gases and have been making plans to continue to reduce the carbon emissions it generates. Table 2 shows that there are 89.9% of the samples have not revealed the carbon emissions that they generate. It is the duty of the government to continue to oversee the companies conducting operations in Indonesia in order to carry out the mandate of the law.

Currently, the global warming issue is one getting paid attention of the world community. Therefore, the public expects the companies to provide their concern to reduce carbon emissions from their operations for human well-being in the present and the future. This condition is in line with the legitimacy that has been voiced by many studies (for example, see Deegan et al., 2002). According to the study of Deegan et al. (2002), the legitimacy of the company will only be obtained, if there is an alignment between the expectations of the public and what the company did. This study finds that the implementation of Indonesia Act No. 17 of 2004 has succeeded in forcing the company to reduce carbon emissions despite the low level of their disclosure.

## Conclusion

The conclusion of this study is that there are differences in the disclosure of carbon emissions before and after the enactment of Indonesia Act No. 17 of 2004 concerning the ratification of Kyoto Protocol to the United Nations Framework Convention on Climate Change.

This study indicates the importance of government intervention to overcome the problems associated with carbon emissions resulting from the companies' production process, especially the ones engaged in manufacturing. As shown in the finding above, given the Indonesia Act No. 17 of 2004, the companies have obligation to take action to reduce carbon emissions and the attempts are disclosed in their annual report. However, the study also finds that only approximately 10.1% of the sampled companies disclosed their actions. It means that awareness of the Indonesian companies to reduce the carbon emissions is still relatively low.

The implication of this study is that government through the related ministry (Environmental Ministry) to issue a circular letter explaining the importance for the companies to comply with the applicable regulation (the law No. 17 of 2004 on the ratification of the Kyoto Protocol to the United Nations Framework Convention on Climate Change) and sanction should be firmly imposed to the companies doing otherwise.

The limitations of this study are two folds. Firstly, there is a sample difference between before and after the issuance of the Act No. 17 year 2004. This situation occurs due to the availability of companies listed in IDX. Secondly, there is no paired sample t-test due to the very small sample for the use of independent t-test sample. Given the research objective, it seems that the approach is relevant. For future research, it is suggested that data be collected from sustainability reporting as additional information. Another suggestion is that cross country study be adopted to compare the compliance of the companies to the applicable law in certain countries.

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