Can Environmental Performance Improve Disclosure of Carbon Emissions in Mining Companies in Indonesia?

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Abstract. This study aims to determine whether environmental performance, seen from the company's obligation to present PROPER, can increase the disclosure of carbon emissions. The population of this study is the mining sector companies listed on the Indonesia Stock Exchange for the 2016-2019 period. The purposive sampling technique was used in this study and resulted in 144 sample units—analysis of research data using Partial Least Square with WarpPLS software. The results show that profitability does not affect carbon emission disclosures, while leverage, company size, and institutional ownership affect the disclosure of carbon emissions. Only leverage has a negative effect, and others have a positive impact. Environmental performance as a moderating variable cannot strengthen or weaken the impact of profitability, leverage, firm size, and institutional ownership on carbon emission disclosures. This study concludes that the carbon emission disclosures of mining companies will increase when the company's firm size and institutional ownership increase but will decrease as mining companies have high debt. The environmental performance of the sample companies is still not optimal, which causes it to be unable to moderate the effect of the variables tested on the disclosure of carbon emissions.

Keywords: Carbon Emission Disclosure, Profitability, Leverage, Firm Size, Institutional Ownership, Environmental Performance

1 Introduction

Community support for the company's business processes is one of the essential elements to maintain the company's sustainability. The company should be committed to providing the disclosures needed by the community so that the company gains legitimacy. One of the disclosures made by the company is to disclose carbon emissions. Disclosure of carbon emissions shows the company's role in broader issues, namely environmental problems that impact global warming. Halimah and Yanto [1] stated that carbon emission disclosure discloses information related to carbon emissions generated due to company activities. The company's disclosure of carbon emissions through the annual report will reveal various things such as the activities carried out, the impacts, and the company's actions in overcoming the effects caused by the company's operating activities.

A disclosure of carbon emissions shows various things, such as how the company is committed to carrying out business processes by maintaining the sustainability of the surrounding environment. However, the international community and its government pay

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great attention to the global warming issue until now. The issue of global warming is often associated with many production activities that are not environmentally friendly, resulting in a lot of carbon emissions. Matters related to business activities that produce high carbon emissions also occur in Indonesia. The case involving PT Bumi Mekar Hijau (PT BMH) in South Sumatra shows that forest fires occurred due to business processes run by PT BMH, which caused deaths and respiratory diseases as well as economic losses reaching trillions [2]. The fires that occurred reached 20,000 hectares in 2015, and these forest fires repeatedly occur in areas managed by PT BMH [3]. In addition, environmental pollution caused by chimneys from two aluminum smelters in Cilincing has also caused residents to experience acute respiratory infections [4].

Indonesia has participated in efforts to reduce carbon emissions by issuing a Presidential Regulation of the Republic of Indonesia concerning the National Action Plan for Reducing Greenhouse Gas Emissions, which reduces greenhouse gas emissions [5]. The regulation states that business actors are also involved in reducing greenhouse gas emissions [6]. One of the efforts to take part is by making additional disclosures in the annual report, namely the disclosure of carbon emissions. However, the disclosure of carbon emissions in Indonesia is still voluntary, so this disclosure is still low [7]. In 2018 and 2019, the disclosure of carbon emissions carried out only had an average value of 0.241 to 0.356, which means that companies are still not revealing much about carbon emissions [8][9][1].

Various studies try to find out what factors will affect the company's willingness to disclose carbon emissions. Profitability testing on carbon emission disclosures found inconsistent results; some found a positive influence and other findings besides this [1][10][11][12][13][8][14]. Tests on leverage also found inconsistent results [11][13][15][12][16][8]. Firm size tested against carbon emission disclosures also showed inconsistent findings [13][17][12][11][14][15][8]. Likewise, institutional ownership also shows inconsistent results [5][14][12][18].

Different inconsistent results from previous studies make research on this theme interesting, especially research conducted in Indonesia. We estimate that other variables affect the variables tested on the disclosure of carbon emissions so that the results of previous studies are inconsistent. The Indonesian government has encouraged companies to improve environmental performance (environmental performance). One manifestation of the government's seriousness is that the government will evaluate companies with specific business criteria through the PROPER program. These criteria include 1) companies listed on the stock exchange, 2) companies with their production for export, 3) companies that are of concern to the public at regional and national levels, and 4) companies with a significant scale of activities impact on the environment. Thus, the environmental performance of companies in Indonesia is predicted to impact the variables tested for their effect on the disclosure of carbon emissions. So the purpose of this study is to determine whether environmental performance, seen from the company's obligation to present PROPER, can increase the disclosure of carbon emissions.

This research was conducted based on two theories, namely legitimacy theory, and stakeholder theory. Legitimacy theory tells us that companies will always try to align company values with values accepted in society to gain recognition (legitimacy) from the community in which the company conducts business activities [19]. Meanwhile, the stakeholder theory explains that many parties are interested in the company, not just investors and creditors. Freeman [20] explains organizational management and business ethics, which discusses morals and values in managing companies, so companies must maintain good relations with their stakeholders. Nowadays, pressure from external stakeholders, such as

government, media, society, related to environmental problems affected by business activities is increasing [21].

The company's ability to generate profits can be measured using the profitability ratio. High profitability means that the company's financial performance is in good condition. Based on legitimacy theory, the company will try to meet society's expectations to gain legitimacy in carrying out business activities. Today's society is very concerned with environmental sustainability, so companies will try to protect the environment. Companies with good financial performance certainly have sufficient resources to protect the environment in every business operation they carry out [22]. One of the actions in protecting the environment is related to the management of carbon emissions. Companies that have profitability will be able to manage carbon emissions optimally because they have sufficient resources. These actions will be disclosed to the public so that the company gains legitimacy. Cahya [10], Akbaş and Canikli [12] found that profitability positively affects carbon emissions' disclosures.

H1: Profitability has a positive effect on the disclosure of carbon emissions

In running its business, the company can obtain funds from capital and debt. Concerning debt, companies must manage these obligations well, and one of the ratios to see the company's health-related liabilities is leverage. Halimah and Yanto [1] state that leverage is a debt source of funds used by the company to finance company assets outside the source of capital funds. The high value of leverage will indicate the high source of funds obtained by the company from creditors. Stakeholder theory states that creditors are one of the company's stakeholders to influence company decision-making. The higher the leverage, the more supervision from creditors in their business activities. Creditors are very concerned that the company can pay interest and repay the principal debt. If the company cannot pay off debt and interest properly, future creditors will no longer trust to provide loans. Of course, this causes management to act as hard as possible to maintain good relations with creditors. Disclosure of carbon emissions in Indonesia is still voluntary so that under these conditions, the company's management will prioritize the use of funds from debt to finance business operations. So that from this operation, the company can pay off debt and interest compared to managing carbon emissions and making disclosures that also cost money. Ratmono et al. [23] and Leung and Philomena [24] state that high leverage will reduce the disclosure of carbon emissions.

H2: Leverage has a negative effect on disclosure of carbon emissions

Company size shows the resources owned by the company. The larger the company's size, the larger the scale of business that can be carried out, impacting the environment. Legitimacy theory explains that people pay more attention to big companies. The environmental impact caused by the business operations of large companies will be visible to the public, so companies must be careful in maintaining their image. Therefore, large companies tend to disclose more about their business operations to support the legitimacy gained by informing about carbon emissions. Peng et al. [11], Prafitri and Zulaikha [6], Akbaş and Canikli [12], Mujiani et al. [13] states that firm size has a positive effect on carbon emission disclosures.

H3: Firm size has a positive effect on carbon emission disclosure

Institutional ownership shows share ownership by institutions of all outstanding company shares. Akbaş and Canikli [12] said that institutional ownership is a monitoring agent whose role is to oversee management behavior in running the company. The existence of institutional ownership increases the supervision of the company related to business operations carried out so that it is following the rules to achieve the company's goals, namely obtaining profits and

business sustainability. Based on stakeholder theory, it becomes clear that management will pay attention to institutional ownership, and management will try to fulfill the direction and input given by institutional owners. The supervision carried out by institutional owners makes the company will make broader disclosures as an effort for transparency and accountability. Not only mandatory disclosures but also other disclosures, including disclosure of carbon emissions. This more comprehensive disclosure occurs because understanding the company's sustainability is also influenced by how the company treats the environment in which it operates. So institutional owners need to ensure that sustainability and companies will expand disclosures, one of which is the disclosure of carbon emissions. Pratiwi [14], Akbaş and Canikli [12], Amaliyah and Solikhah [5] stated that institutional ownership has a positive effect on carbon emission disclosures.

H4: Institutional ownership has a positive effect on carbon emission disclosure

Companies that have good profitability will have sufficient ability to take action to protect the environment. One of the actions taken in preserving the environment is the management of carbon emissions. The company's carbon emissions management will be disclosed to the public to show that the company is interested in this matter. Environmental performance shows how the company can create a clean and green environment; this shows the company's responsibility in protecting the environment.

The government, which is currently paying more attention to the environment, has evaluated through PROPER for companies listed on the stock exchange. PROPER is an evaluation conducted by the government on companies and shows the environmental performance of these companies. Companies with good profitability can better disclose carbon emissions to gain/maintain legitimacy from the community. The presence of PROPER from the government makes companies increasingly want to protect the environment and disclose carbon emissions. The company does this because it tries to fulfill the wishes of stakeholders (government) so that environmental performance can strengthen the influence of profitability on the disclosure of carbon emissions.

H5: Environmental performance strengthens the effect of profitability on carbon emission disclosure

Leverage is a debt source of funds used by the company to finance company assets outside the source of capital funds [1]. The high leverage indicates the number of company funds obtained through debt, so it causes creditors to strictly monitor the actions taken by management in managing the company. The company will try to pay debts and interest on loans smoothly to maintain creditors' trust. The company will place more importance on managing debt funds to carry out profitable business operations to repay the loan.

The government that evaluates the company's environmental performance will provide information to the public about which companies carry out environmental management well. Suppose the company does not get a good evaluation result. It will be viewed negatively by the community because it is considered only concerned with profit, not caring about environmental sustainability. Therefore, to maintain legitimacy and meet stakeholder expectations, the company will improve its environmental performance. Thus, this environmental performance will strengthen the company's commitment to protecting the environment, one of which is the management of carbon emissions. Therefore, the company will be willing to set aside its resources to disclose carbon emissions during its busy schedule to carry out operations to repay loans to creditors.

H6: Environmental performance weakens the effect of leverage on carbon emission disclosure

Companies with large sizes certainly have a significant impact on the environment. Therefore, companies need to take action to maintain the legitimacy that has been obtained from the community. The action taken is to carry out business operations that support the sustainability of the surrounding environment and make broader disclosures. One of the disclosures made by the company is related to carbon emissions as a form of information that the company pays attention to the processing of waste in the production process.

Large companies will undoubtedly be in the spotlight of various stakeholders, including the community and the government. Companies with good environmental performance will undoubtedly impact the company's image, which is considered not just for profit. The good environmental performance will show that the company can optimally manage the impact of its business operations on the environment, so this will be accompanied by publication/disclosure to the public. So that when large companies disclose carbon emissions, high environmental performance will strengthen them.

H7: Environmental performance strengthens the effect of firm size on carbon emission disclosure

The presence of institutional ownership makes management more supervised in running the company. The supervision carried out by institutional owners makes the company's management carry out broader measures to demonstrate transparency and accountability. Institutional owners are very interested in the company's business sustainability, so it will pressure management to take actions that positively impact the company. One of them is paying attention to the environment to maintain its legitimacy and image in the public's eyes. Therefore, the company will carry out environmental management and make broader disclosures related to the environment, namely disclosing carbon emissions.

Companies with good environmental performance indicate that the company can handle its business processes by managing the impacts that arise on the environment. The company will provide broad disclosure to the public because it has succeeded in carrying out such management. The success of protecting the environment will strengthen the instructions of institutional owners so that companies expand their disclosures, including disclosure of carbon emissions.

H8: Environmental performance strengthens the effect of institutional ownership on carbon emissions

2 Method

The population used in this study are companies on the Indonesia Stock Exchange included in the category of mining companies. Observations were made from 2016 to 2019 and resulted in 144 units of analysis using the purposive sampling technique. The criteria used in selecting the sample are: 1) being listed on the Indonesia Stock Exchange consecutively in the observation period, 2) issuing an annual financial report in each year of observation, 3) disclosing carbon emissions, and 4) having complete data according to the variables researched. The data used is secondary data obtained from the annual report published by the company by downloading it on the Indonesia Stock Exchange website. Data analysis was

carried out by descriptive statistical analysis and partial least square by WarpPLS. Hypothesis testing is based on the significance level of 5%.

Carbon Emission Disclosure (CED) is the disclosure of information by companies regarding environmental responsibility related to the remaining combustion gases from a company in the production process, measured by CED = total score of entity i in period t / maximum number of scores [25]. Profitability is a ratio that shows the level of management effectiveness to measure how strong the company can obtain the expected profit in a certain period [26], measured by ROA (return on total assets) = profit after tax / total assets [12]. Leverage is the ratio of total liabilities to total assets, DAR (debt to assets ratio) = total debt / total assets [27]. Firm size is the company's size regarding the number of assets owned, measured by Log Natural total assets [27][28]. Institutional ownership (INST) is share ownership by institutions of all outstanding company shares measured by the number of shares owned by the institution / number of shares outstanding [12]. Meanwhile, environmental performance is environmental performance describing the company's ability to create a clean and green environment Suratno et al. [29] measured by PROPER. PROPER measurement is done by giving a scale of 0 (for no color, which means no data); Scale 1 (for black which means very bad); Scale 2 (for red which means bad); Scale 3 (for blue which means good); Scale 4 (for green which means very good); and a scale of 5 (for the gold color which means very good) [6].

3 Results and Discussion

Table 1 presents descriptive statistics of the variables. All variables look good because they have an average value greater than the standard deviation value, except for the profitability variable.

Table 1. Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
CED	144	.11	.61	.3048	.10929
ROA	144	-1.54	.46	.0380	.18190
DAR	144	.11	1.29	.5141	.23397
Log_SIZE	144	10.76	14.00	12.7128	.69851
INST	144	.00	.97	.6345	.22134
PROPER	144	.00	5.00	2.1875	1.98585
Valid N (listwise)	144				

Table 2 shows the results of the evaluation of the structural model of data processing results using WarpPLS. Table 2 shows good results because only two criteria were not accepted. Ghozali and Latan [30] states that if the purpose of the study is to test the hypothesis, then the criteria for model fit do not have to be met all.

Table 2. Structural Model Evaluation

	Score	Criteria	Conclusion
APC	0,030	≤ 0,05	Accepted
ARS	0,001	≤ 0,05	Accepted
AARS	0,006	≤ 0,05	Accepted

AVIF	1,586	Ideal if ≤ 3,3	Ideal
AFVIF	1,614	Ideal if ≤ 3,3	Ideal
Tenenhaus GoF	0,479	Ideal if ≥ 0,36	Big
SPR	0,625	Acceptable if ≥ 0,7	Not accepted
RSCR	0,890	Acceptable if ≥ 0,9	Not accepted
SSR	1,000	Acceptable if ≥ 0,7	Accepted
NLBCDR	0,875	Acceptable if ≥ 0,7	Accepted

Table 3 presents a summary of hypothesis testing. Disclosure of carbon emissions is only influenced by leverage, firm size, and institutional ownership.

Table 3. Summary of Hypothesis Testing

No	Hypothesis	Coefficient	P-value	α	Conclusion
1	Profitability has a positive effect on the disclosure of carbon emissions	0.043	0.301	0.05	H_1 rejected
2	Leverage has a negative effect on disclosure of carbon emissions	-0.241	0.001	0.05	H_2 accepted
3	Firm size has a positive effect on carbon emission disclosure	0.381	<0.001	0.05	H_3 accepted
4	Institutional ownership has a positive effect on carbon emission disclosure	0.181	0.013	0.05	H_4 accepted
5	Environmental performance strengthens the effect of profitability on carbon emission disclosure	0.030	0.358	0.05	H_5 rejected
6	Environmental performance weakens the effect of leverage on carbon emission disclosure	-0.126	0.061	0.05	H_6 rejected
7	Environmental performance strengthens the effect of firm size on carbon emission disclosure	-0.007	0.467	0.05	H_7 rejected
8	Environmental performance strengthens the effect of institutional ownership on carbon emissions	0.009	0.456	0.05	H_8 rejected

3.1 The Effect of Profitability on Carbon Emission Disclosure

Profitability has no effect on the disclosure of carbon emissions for a sample of mining companies in Indonesia. Table 2 shows that profitability (ROA) is in the high category. Companies with high ROA can provide carbon emission disclosures because they have sufficient resources to handle the costs arising from such disclosures. The reason is that there is no influence of profitability on the disclosure of carbon emissions in companies in Indonesia because this disclosure is voluntary, so it is not seen as the main thing to do. Companies choose to use the profits earned to fund other more important activities, such as handling increasingly complex business processes. Companies with high profitability have also given a signal that the company is in good condition, so there is no need to present voluntary disclosures not to obscure the signal. The effect of profitability on the disclosure of carbon emissions in this study supports the findings of Larasati et al. [31]; Bae Choi et al. [25]; Septriyawati and Anisah [8]; and Pratiwi [14].

3.2 Effect of Leverage on disclosure of carbon emissions

Leverage has a negative effect on carbon emissions. High corporate debt causes creditor supervision to be tighter. The purpose of this supervision is to ensure that the company pays its debts and interest. The company also understands that creditors as stakeholders must be protected because it is one of the sources of funds to carry out operations. If the company fails to pay the creditor in the future, the creditor will not provide credit. Therefore, the company will try to take advantage of the debt obtained for business operations to profit. Profits earned are used to pay debts and interest. The voluntary disclosure of carbon emissions in Indonesia is not able to pressure companies to do so. The company views that spending on carbon emission management and disclosure is not more important than paying debts to creditors because the nature of disclosure of carbon emissions is still voluntary. This argument is confirmed in table 2, the company's profitability is in the high category because it focuses on making profits. So this condition can give confidence to creditors that their loan funds are safe and can be returned. This finding aligns with Ratmono et al. [23] and Leung and Philomena [24].

3.3 Effect of firm size on carbon emission disclosure

Firm size has a positive effect on the disclosure of carbon emissions. Companies that have a large size will always get the attention of various stakeholders. This is because the impact resulting from the production process will also be significant with a large size. Thus, large companies are also under more pressure to maintain the viability of the environment in which they operate. Many stakeholders provide supervision and report on the company, if the company is not good at managing the environment, such as managing carbon emissions from the industry, it will reduce its image in the eyes of the public. The company will be branded as just looking for profit and does not care about environmental conditions for future survival. This study supports the findings of Peng et al. [11], Prafitri and Zulaikha [6], Akbaş and Canikli [12], and Mujiani et al. [13] states that firm size has a positive effect on carbon emission disclosures.

3.4 The effect of institutional ownership on carbon emission disclosure

Institutional ownership has a positive effect on the disclosure of carbon emissions. Institutional owners expect the company always to generate profits and maintain business continuity in the future. The current business perspective is not only looking for profit but must pay attention to the environment (planet) and social (people/community) [33][34][35]. So the institutional owner must ensure that the company has fulfilled these three things to survive. Therefore, institutional owners will pressure management to pay attention to environmental aspects and make broader disclosures. One of the disclosures related to the environment is the disclosure of carbon emissions. If the company does not do what is intended, the institution's owner may withdraw financial support to the company, which is detrimental. Pratiwi [14], Akbaş and Canikli [12], Amaliyah and Solikhah [5] also found that institutional ownership had a positive effect on carbon emission disclosures.

3.5 The effect of profitability on the disclosure of carbon emissions with environmental performance as a Moderator

Environmental performance does not moderate the effect of profitability on the disclosure of carbon emissions. Table 2 shows that the company's profitability is high, and the environmental performance of companies in Indonesia is moderate. The achievement of the environmental performance of mining companies in Indonesia is not something special, and there are still many companies that have to improve their environmental performance. So

under these conditions, companies prefer not to expand disclosures related to the environment because it will obscure their success in terms of profits. The purpose of this action is so that stakeholders are not distracted from the company's success in obtaining profits, and stakeholders are limited in their knowledge of the impact of business operations on the environment.

3.6 The effect of leverage on the disclosure of carbon emissions with environmental performance as a Moderator

Environmental performance does not moderate the effect of leverage on the disclosure of carbon emissions. The environmental performance of mining companies still needs to be improved based on the data in table 2. Companies seem to be reluctant to do business by seriously maintaining the balance of profit-planet-people. Therefore, the company chooses not to disclose its carbon emissions because the public will know that its environmental performance is not optimal. The existence of demands for repayment of debt and interest by creditors makes the company more concerned about this. The company views that broader disclosure is not necessary when creditors pay more attention to the company's ability to pay debts. Thus, it can be understood why environmental performance does not moderate the effect of leverage on the disclosure of carbon emissions.

3.7 The effect of company size on the disclosure of carbon emissions with environmental performance as a moderator

Environmental performance does not moderate the effect of firm size on the disclosure of carbon emissions. This study shows that the sample companies are classified as large companies, while environmental performance is moderate (table 2). A company of this size will undoubtedly pay attention to its image to maintain the legitimacy obtained from stakeholders. Companies will voluntarily disclose carbon emissions to demonstrate environmental performance because they are aware of the environmental impact of their operations. Seeing this condition, even though the government does not evaluate environmental performance through PROPER, companies will still disclose carbon emissions because carbon from mining is easily visible, especially for large companies. Stakeholders will monitor, criticize, and disseminate the company's image, both positive and negative, regarding how the company manages the environment, including carbon emissions. The attention and pressure given by stakeholders make the management of large companies continue to disclose carbon emissions regardless of their environmental performance.

3.8 The influence of institutional ownership on the disclosure of carbon emissions with environmental performance as a moderator

Environmental performance is not able to moderate the effect of institutional ownership on the disclosure of carbon emissions. Institutional owners provide strict supervision so that the company can still generate profits and maintain the continuity of its business operations. In today's era, where businesses must balance profit-planet-people, it encourages institutional owners to oversee the processes carried out by management so that business processes run with these three things. So that the company will expand disclosure, one of which is related to the environment, namely carbon emissions. The environmental performance of the sample companies is only in the moderate category, meaning that the performance shown is still not optimal. Even though environmental performance is not optimal, institutional owners who understand the latest business concepts can maintain a balance of profit-planet-people so that

they will continue to monitor the impact of business operations on the environment. Regardless of the company's environmental performance conditions or whether the government evaluates it with PROPER, institutional owners will continue monitoring management and making companies expand disclosures. One of the environmental disclosures is carbon emissions because every production carried out by mining companies produces carbon. This action is to maintain the balance of profit-planet-people.

4 Conclusion

Disclosure of carbon emissions in Indonesia is still voluntary, so profitable companies choose not to prioritize disclosure. Companies take this action to emphasize information about the company's success in obtaining profits. Increasing corporate debt makes companies think more about paying off debt and interest than disclosing carbon emissions. Stakeholders will pay great attention to large companies because they have a significant impact on business operations. Robust supervision from various parties makes companies willing to disclose carbon emissions. Institutional ownership makes companies disclose carbon emissions because they believe that the concept of sustainable business is to maintain a balance of profit-planet-people; this encourages companies to disclose carbon emissions.

Environmental performance cannot strengthen or weaken the influence of the variables tested in this study because the environmental performance of the sample companies still needs to be improved. Even though the government does not evaluate environmental performance through PROPER, large companies will continue to disclose carbon emissions due to strict supervision from stakeholders. Meanwhile, institutional owners want the company to survive by maintaining a balance of profit-planet-people. For companies with good profitability, less than optimal environmental performance will obscure company profits. The creditor's biggest concern is seeing the company's ability to pay the loan and the interest. Suggestions for further research are conducting testing on industrial groups that focus on Food, Beverages, Consumer Goods, Milk, Herbal Medicine, Cooking Oil, Animal Feed, and Processed because they produce carbon emissions every day.

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