

Carbon Emissions Disclosure: Study of Companies Classified as Carbon-Intensive Industries on the Indonesian Stock Exchange

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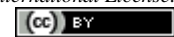
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Abstract

This research was created with the aim of seeing whether financial performance, media exposure, managerial ownership, institutional ownership, the audit committee, and the board of commissioners influence carbon emissions disclosure. The object of this research is a company classified as a carbon-intensive industry that is listed on the Indonesian Stock Exchange for the 2019–2022 period. The population in this study includes all companies classified as carbon-intensive industries listed on the Indonesian Stock Exchange for the 2019–2022 period, totaling 142 companies. By using purposive sampling, a total sample of 44 companies was obtained. The information used in this research is secondary information. Secondary data refers to information collected from existing sources. Research data This information was obtained from the official website of the Indonesian Stock Exchange, namely www.idx.co.id and the company's official website. The data needed in this research is the disclosure of carbon emissions for each company in 4 consecutive years from 2019–2022 in each company's sustainability report and annual report. After all the required data and information have been collected, the data processing stage can be carried out. Data processing was carried out using Eviews 12 software.

Keywords: Financial Performance, Media Exposure, Corporate Governance, Environmental Performance, Carbon Emissions Disclosure, Leverage.

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1. Introduction

Environmental pollution has become a debated trend in recent years, because economic development must be based on environmental protection [1]. Global warming-related climate change is still a hot topic of discussion. The World Meteorological Organization revealed in the WMO Greenhouse Gas Bulletin that the amount of heat-trapping greenhouse gases in the atmosphere has hit a new record, with an annual growth rate above average, based on the findings of a monitoring analysis. There will still be a lot of greenhouse gases in the air in 2021, which will have an impact on air quality. Indonesia's air quality, which has been continuously declining over the past 20 years and is currently ranked 20th out of all countries in the world with the poorest air quality, is described by the Air Quality Live Index (AQLI). Operating operations of firms whose exhaust emissions surpass the standard are one of the reasons for poor air quality. Companies must to take into account how their activities affect the environment, particularly how carbon emissions are affected [2]. Stakeholder concern over getting more information about how firms are behaving in terms of carbon emissions is growing as a result [3]. This increases the pressure on management to reveal more details about their environmental responsibilities, particularly the disclosure of carbon emissions [4]. Largest Carbon Emission Country in 2021 on Figure 1.



Figure 1 Largest Carbon Emission Country in 2021

The International Energy Agency (IEA) projects that China will account for the majority of global carbon emissions in 2021, with 11.94 gigatons of CO₂ released into the atmosphere. With 4.64 gigatons of CO₂ in carbon emissions, the United States is the next-largest contributor, followed by India with 2.54 gigatons and the European Union with 2.71 gigatons. In the meantime, 14.4 gigatons of CO₂ are produced annually by the total carbon emissions of other nations. Global carbon emissions are expected to exceed 36.3 gigatons of CO₂ in total in 2021, which will be a record high. There are several sectors that contribute to global greenhouse gas emissions. Data from Climate Watch indicates that the main source of greenhouse gas emissions is energy. This sector was able to produce 36.44 gigatons of carbon dioxide equivalent (Gt CO₂e) or 71.5% of total emissions in 2017. Carbon emissions from the energy sector, namely emissions from burning oil, gas and coal, continue to increase on a global scale.

The global energy sector will emit the most carbon dioxide (CO₂) in history in 2022, with figures from the Energy Institute indicating that these emissions will

total 34.37 billion tonnes. China will be recognized as the nation generating the most amount of carbon emissions for the energy sector in 2022, with 10.55 billion tons of CO₂ produced, or 30.69% of all emissions worldwide. The United States came in second place with 4.82 billion tons of CO₂ produced last year, or 14% of the world's total emissions. India and Russia came next, with 2.59 billion and 1.45 billion tonnes of CO₂ emissions from the energy sector, respectively. With 691.97 million tons of CO₂ emissions from the energy sector in 2022, Indonesia is placed sixth in the world. Carbon Dioxide Emissions from Energy Combustion and Global Industrial Activities on Figure 2. Next Level of Carbon Emissions Disclosure in Companies Classified as Carbon Intensive Industries on the Indonesian Stock Exchange on Figure 3.



Figure 2. Carbon Dioxide Emissions from Energy Combustion and Global Industrial Activities

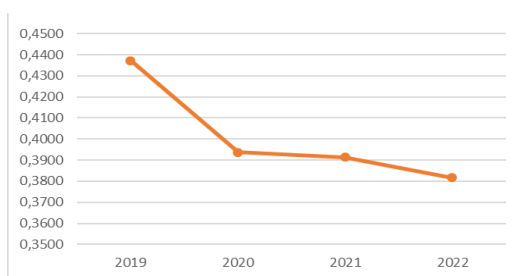


Figure 3. Level of Carbon Emissions Disclosure in Companies Classified as Carbon Intensive Industries on the Indonesian Stock Exchange

The International Energy Agency (IEA) projects that worldwide industrial activity and energy burning will result in 36.8 gigatonnes of carbon dioxide (CO₂) emissions by 2022. As can be seen from the graph, these emissions are up by about 0.5 gigatonnes when compared to 2021 and have reached a new historical high. The primary sources of the increase in emissions in 2022, according to the IEA, will be the combustion of coal and oil.

A company's approach to carbon produced by its operations is disclosed in its annual report, and by making these disclosures, companies are able to prevent or reduce carbon emissions. Disclosure of carbon emissions is presented as an accounting application related to societal problems. A crucial component of CSR reporting is the disclosure of carbon emissions. In order to achieve sustainable development goals and contribute to global efforts to limit and minimize greenhouse gas (GHG) emissions, Indonesia ratified the Kyoto Protocol on December 3, 2004, with reference to Law No. 17 of 2004. The country also

followed and signed the Kyoto Protocol MOU. The Kyoto Protocol was adopted in 1997 and entered into force in 2005 as a major driver of changes in corporate approaches to global warming [5]. Since the introduction of the Kyoto Protocol, entities especially those operating in environmentally sensitive industries, have come under increasing pressure to prevent carbon emissions across the organization.

This study has a main focus on one of the GHGs, namely carbon emissions (CO₂) from companies that contribute greatly to climate change in the world. Disclosure of carbon emissions in Indonesia is still voluntary (volunteer disclosure), so there are companies that have not disclosed the amount of carbon emissions produced by these companies. In practice, there is still minimal disclosure of carbon emissions by companies [6]. Even though it is important for all business actors to report their carbon emissions to stakeholders as a form of accountability for a changing climate. Therefore, this study will examine several factors that might explain why companies disclose information related to their carbon emissions.

The phenomenon of global warming has now become an increasingly important issue in most countries [7]. Calls for companies to mitigate climate change challenges can also be justified. An important aspect in climate change mitigation is the obligation of companies to acknowledge, measure, record, present and disclose their carbon emissions [8]. Carbon disclosure serves as a means to gain public trust and legitimacy [9]. Previous studies have examined the disclosure of carbon emissions from various aspects, both in Indonesia and abroad. Many factors affect the disclosure of carbon emissions. A company that seems to be doing well in terms of environmental performance at the corporate level may not be doing so at the site level [10]. Either good environmental performance at a facility or merely changing GHG intensity with good performance in some facility settings compensating poor performance in others may be associated to seemingly good environmental performance. In the end, customers may be misled by information about GHG emissions at the corporate level into thinking that these companies have less regulatory risk or expense than they actually do.

Limited research on the impact of corporate governance on reducing carbon emissions [11]. Most related studies have examined the relationship between corporate governance and carbon emissions disclosure or how corporate governance mechanisms influence environmental sustainability performance without specifically focusing on emissions reduction carbon [12]. Meanwhile, carbon emissions reduction is an important and sensitive topic in the environmental sustainability debate, because this requires more research attention. Multinational companies to actively participate in tackling climate change, considering that leading multinational companies operate in large carbon emitting industries, and are based in the largest

emitting countries [13]. Fresh insights to help explain why environmental reports are occasionally criticized for being incomplete or of relatively low quality, based on an examination of corporate GHG disclosures [14]. This can be explained in terms of GHG emissions as distilling the physical complexity of GHG emissions into a single quantitative scale that can be used to evaluate the environmental performance of an organization. If production data is not available to evaluate environmental performance, the mandated GHG emissions declaration at the plant level will have less significance.

According to legitimacy theory, there is a "social contract" between society and organizations, with the primary tenet being that the organization's objective is to act in a socially responsible manner in order to conform to the expectations, values, and principles of the stakeholders in the social system, in addition to making profits [15]. Therefore, every organization must respect the social contract in exchange for its acceptance as a legitimate institution in society [16]. Therefore, resolving agency conflicts and optimizing financial performance are not the only responsibilities of the board of directors, according to legitimacy theory. The company's goals and plans must be decided by the board when it has a complete understanding of the social and environmental effects of the company's operations.

These theories provide a complementary theoretical foundation in the field of carbon emissions assurance [17]. If society believes that a firm has broken the social compact, the company's ability to survive may be in jeopardy. According to the legitimacy hypothesis, businesses that pose a serious danger to their legitimacy are therefore more inclined to take steps to mitigate the environmental harm caused by their operations and to show that their operations are in line with society ideals [18]. Consequently, businesses are more motivated to engage in carbon underwriting because they worry about the significant reputational consequences they face if they don't. They can buy carbon assurances to lessen stakeholder concerns and mitigate legitimacy risks [19].

In corporate social and environmental disclosure, stakeholders play a significant role. Companies may feel pressured by stakeholder groups to adopt environmentally conscious practices and communicate them through communication channels [20]. Organization is to strike a balance between the primary objectives of the firm and the interests of different stakeholders [21]. The term "voluntary disclosure" refers to the fact that managers voluntarily decide whether to reveal information about the company's carbon emissions, and because of this, there are no special consequences for withholding information. One type of environmental disclosure included in the supplementary reporting included in PSAK is the Carbon Emission Disclosure [22].

Demonstrate the beneficial effect of carbon information disclosure on market-driven financial success. A high

firm value indicates that investors have faith in the company to deliver both strong financial results and promising future prospects. The firm needs to disclose environmental information to make a good image for stakeholders.

Exposure to the media means that the industry must disseminate information about its social duties and other pertinent notes to staff, clients, and other stakeholders, as well as to all citizens using different forms of communication. Companies may be encouraged to reveal carbon information by news media demand for legitimacy, which will lower carbon emissions and enhance their carbon performance. Society, governments, businesses, and the media are urged to work together to solve climate change and assist in achieving carbon neutrality through news stories on carbon. Thus, it is crucial to report carbon emissions appropriately in order to raise public knowledge of the issue of carbon emissions and to encourage public participation in combating climate change.

According to the voluntary disclosure theory, they discovered that, when evaluated by the ratio of total toxic waste generated to total toxic waste treated, recycled, or otherwise processed, higher-performing businesses disclosed more comprehensive and in-depth information on their environmental performance. Environmental performance is crucial, particularly for businesses in developing nations that operate in highly polluting industries. Environmental performance, which is the result of a company's strategic activities to manage its impact on the natural environment is becoming an increasingly important research metric. Some existing literature on environmental performance explores the environmental performance of digital transformation.

2. Research Method

Quantitative methods and hypothesis testing techniques were used in this research. The scientific method known as quantitative research involves presenting data as numerical values that may be verified and processed using statistical or mathematical computations. This quantitative approach's goal is to determine whether a variable significantly affects other variables by examining the relationship between the independent and dependent variables. Testing hypotheses explains the presence of certain correlations, highlights group differences, or establishes the independence of two or more variables in a given circumstance. This hypothesis testing explains the relationships, influences, and differences between variables. Hypothesis the test was carried out to see how much influence the independent variables Financial Performance (X_1), Media Exposure (X_2), Corporate Governance (X_3) and Environmental Performance (X_4) have on the dependent variable Carbon Emission Disclosure (Y) with the control variables Leverage, Company Size and Company Age.

In this research, non-probability sampling technique was used as a sampling technique. A non-probability sampling design is one in which the research's population components are unknown in advance. This strategy is used because everyone in the study does not have the same opportunity to be sampled. The information used in this research is secondary information. Secondary data refers to information collected from existing sources. Research data This information was obtained from the official website of the Indonesian Stock Exchange, namely www.idx.co.id and the company's official website. The data needed in this research is the disclosure of carbon emissions for each company in 4 consecutive years from 2019-2022 in each company's sustainability report. After all the required data and information have been collected, the data processing stage can be carried out. Data processing was carried out using Eviews 12 software.

The theoretical framework was created to make the flow of this research easier to understand. This describes the relationship between the independent variables (X_1), (X_2), (X_3), and (X_4) and the dependent variable (Y), Conceptual Framework on Figure 4.

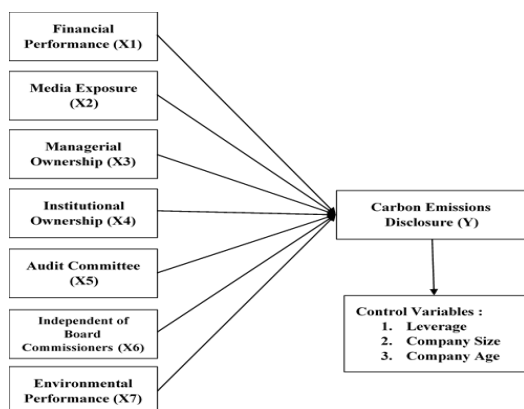


Figure 4. Conceptual Framework

3. Result and Discussion

There are 176 observations in this study, with 44 companies as sample in 2019-2022 period. The object of this research is a company classified as a carbon-intensive industry that is listed on the Indonesian Stock Exchange for the 2019-2022 period. This research was created with the aim of seeing whether financial performance, media exposure, managerial ownership, institutional ownership, the audit committee, and the board of commissioners influence carbon emissions disclosure. The population in this study includes all companies classified as carbon-intensive industries listed on the Indonesian Stock Exchange for the 2019-2022 period, totaling 142 companies. By using purposive sampling, a total sample of 44 companies was obtained.

Based on descriptive statistics, it is known that the amount of data processed is 176 observations. From data tabulation, it is known that the lowest value of company value is 0.0556 while the highest value is 0.6111. Overall, the average value of carbon emissions disclosure held by industrial carbon incentive

companies generally has an mean of 0.3046 with a standard deviation of 0.1311. If the standard deviation is smaller than the average value, this means that the average value can be used as a good representation of the overall data because the average value of carbon emissions disclosure has a low level of deviation.

This research uses classical assumption test, classical assumption test is a requirement for carrying out multiple regression analysis. This is done so that the results of the processed data can describe the objectives of the research and obtain valid results. Testing the classical assumptions in this research uses the normality test, multicollinearity test, heterocadasticity test, and autocorrelation test. Normality Test Results on Figure 5.

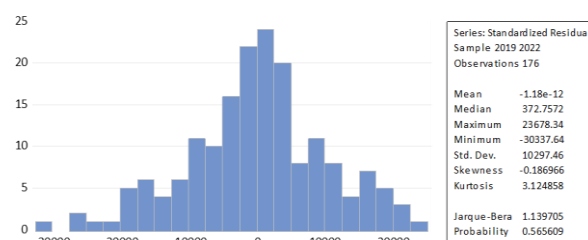


Figure 5. Normality Test Results

When testing normality, the Jarque-Bera test is used. If the probability value $>$ alpha 0.05 then it can be said to be normally distributed. If the Jarque-Bera probability value is above alpha 5% (prob $>$ alpha 5%), then the data is said to be normally distributed. On the other hand, if the Jarque-Bera probability value is below alpha 5% (prob $<$ alpha 5%), then the data is said to be non-normally distributed. In figure 2, it can be seen that the Jarque-Bera probability value is greater than alpha 5% (0.05), namely 0.5656. This indicates that the residual values in this study are normally distributed so that the next stage of testing can be carried out.

Detecting symptoms of multicollinearity is by using or looking at a test tool called the variance inflation factor (VIF). If the VIF value is less than 10, it shows that the model does not have multicollinearity symptoms, meaning that there is no relationship between the independent variables. Based on the output of data processing using Eviews assistance above, it can be seen that the VIF values of the three variables (capital structure, company size and company risk) have VIF values that are less than 10, so it can be concluded that this research data is free from multicollinearity. One way to detect the presence or absence of heteroscedasticity is to conduct the Breush-Pagan-Godfrey test. The probability result is said to be significant if the significance value is above the 5% confidence level (0.05). The decision taken is if the significance value is greater than 0.05 (alpha), then H_0 is accepted. Conversely, if the significance is smaller than 0.05 (alpha), then H_0 is rejected. The following are the results of the heteroscedasticity test in. Based on the output results above, the value of the Breush-Pagan-Godfrey test is 0.1438, this value is more than alpha 0.05, this means that in this research data there is no heteroscedasticity.

Autocorrelation testing is done using the Durbin Watson (DW) test if the DW value is -2 then there is positive autocorrelation, if the DW value is between -2 to $+2$ there is no autocorrelation, if DW $+2$ then there is negative autocorrelation (Winarno, 2015). Based on the results of the autocorrelation test table, it can be seen that the Durbin Watson (DW) value is 1.949864. The results obtained meet the two squares $-2 \leq 1.949864 \leq +2$ so it can be concluded that there is no positive or negative autocorrelation in the regression model that has been formed. Therefore, it can carry out further data processing stages. Based on the F statistical test results in the table above, it can be seen that the F-statistic probability value is 0.000. This result shows that the resulting F-statistic probability value $< \alpha$ 0.05, meaning that it can be concluded that together financial performance, media exposure, managerial ownership, institutional ownership, audit committee, independent board of commissioners and environmental ownership have a significant effect on carbon emissions disclosure.

Based on the output above, the probability t-statistics value of Media Exposure, Institutional Ownership, Environmental performance, and Leverage, has a value of 0.000, 0.001, 0.003, and 0.010, both of these values are less than alpha 0.05 so it can be concluded that media exposure, institutional ownership, environmental performance and leverage partially have a significant effect on carbon emissions disclosure. While financial performance, managerial ownership, audit committee, independent board of commissioner, company size and company age have a value of 0.080, 0.593, 0.877, 0.266, 0.195, 0.499 greater than alpha 0.05 so it can be concluded that financial performance, managerial ownership, audit committee, independent board of commissioner, company size and company age do not have a significant effect on carbon emissions disclosure.

4. Conclusion

Financial Performance has no effect on carbon emissions disclosure in companies classified as carbon-intensive industries listed on the Indonesia Stock Exchange for the 2019-2022 period. These results show that the amount of profit earned by mining companies does not affect the company to disclose carbon emissions because the disclosure is included in the policy of the company's management itself, not influenced by the size of the profitability obtained. In accordance with Government Regulation No. 47 of 2012 concerning Social and Environmental Responsibility of Limited Liability Companies, it is stated that every company as a legal subject has social and environmental responsibilities. Media Exposure has a positive and significant effect on carbon emissions disclosure in companies classified as carbon-intensive industries listed on the Indonesia Stock Exchange for the 2019-2022 period. The company will be more aggressive in making disclosures including disclosure of carbon emissions because the disclosures made by the company will greatly affect the views of

stakeholders on the company's image. Companies tend to disclose all their activities including efforts to reduce carbon emissions which are considered to make the company's financial performance increase so that it can attract the attention of investors to invest. In addition, the results of this study are also in line with legitimacy theory which states that, companies will be more aggressively disclosing including disclosure of carbon emissions to gain legitimacy from the community. By disclosing carbon emissions the company will be legitimized by the community where the legitimacy states that the company has been run in accordance with applicable norms. Managerial Ownership has no effect on carbon emissions disclosure in companies classified as carbon-intensive industries listed on the Indonesia Stock Exchange for the 2019-2022 period. This study is not in accordance with agency theory where in agency theory it is said that in order to reduce agency problems companies can add a percentage of managerial ownership in the company. This is because managerial ownership is considered that the more managers hold shares, the greater the disclosure of carbon emissions. The involvement of managers in the ownership of company shares is expected to reduce the moral hazard of managers who are too consumptive so that there is a sense of reluctance in providing sufficient effort and even fraud. By holding company shares, managers are motivated to improve corporate performance. The results of this study are in line with the findings of Chang and Zhang (2015), who found that top management ownership does not affect environmental information disclosure. Institutional Ownership has a positive and significant effect on carbon emissions disclosure in companies classified as carbon-intensive industries listed on the Indonesia Stock Exchange for the 2019-2022 period. The results of the study are in accordance with stakeholder theory where institutional in this case is one of the company's stakeholders who can influence and also be influenced by institutionally owned companies, so that all the good and bad things of institutionally owned companies will affect institutional companies and vice versa, therefore through the supervision carried out by institutions to the company will further influence the company to become more open and make carbon emission disclosures. The Audit Committee has no effect on carbon emissions disclosure in companies classified as carbon-intensive industries listed on the Indonesia Stock Exchange for the 2019-2022 period. Information about carbon gas emissions in the company is not included in the policies or regulations that must be carried out so that the presence or absence of an audit committee has no effect on the disclosure of information about carbon gas. This is not in line with stakeholder theory where to get support from stakeholders the company must disclose company information thoroughly as evidence of transparency. Independent board of commissioners has no influence on carbon emissions disclosure in companies classified as carbon-intensive industries listed on the Indonesia Stock Exchange for the 2019-2022 period. The condition of no influence is suspected due to

inconsistent data between the two variables. The author suspects that commissioners who supervise and control companies with a high level of education are more interested in carrying out good financial performance strategies that are useful for the interests of their stakeholders, rather than disclosing carbon emissions that require considerable costs. So the findings of this study are not in line with stakeholder theory. Environmental Performance has a positive and significant effect on carbon emissions disclosure in companies classified as carbon-intensive industries listed on the Indonesia Stock Exchange for the 2019-2022 period. Based on this, companies can improve their image and reputation by participating in Proper. The company will show its concern by improving its environmental management performance and information about the company's performance related to its environment. Companies with high Proper ratings will be good news for stakeholders so that the company's relationship with its stakeholders is maintained. The results of this study are in accordance with legitimacy theory that to obtain community legitimacy, one of the efforts made is good performance management and disclosing it in the company's report.

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