

Impact of Board Size, Media Exposure & Green Investment on Post-COVID-19 Carbon Emission Disclosure in Indonesia



Nur Icmiati Karim¹, Agung Nur Probohudono²

^{1,2}Accounting, Faculty of Economics and Business, Sebelas Maret University, Surakarta, Indonesia

ABSTRACT: This study examines carbon emission disclosure in Indonesian companies that publish annual reports and sustainability reports and are listed on the Indonesia Stock Exchange (BEI) for the period 2021-2022. The research data consisted of 99 companies selected using purposive sampling. The independent variables are board size, media exposure, and green investment. Analysis using the SPSS program with results shows board size, media exposure, and green investment are significantly associated with carbon emission disclosure. This research is reinforced by the theory of legitimacy. Carbon emission disclosure is measured using a scoring checklist of 5 items developed by the Carbon Disclosure Project (CDP). The board size measured by summing up the total council of commissioners per year in a company, the measurement of media exposure is seen from the number of publications about the company published in the media, and green investment is measured using the PROPER rating by the Ministry of Environment. The findings in this study are expected to be the material for companies trying to reduce carbon emissions as well as the company's policy-related improvement material.

KEYWORDS: Board Size, Media Exposure, Green Investment, CED, Legitimation

I. INTRODUCTION

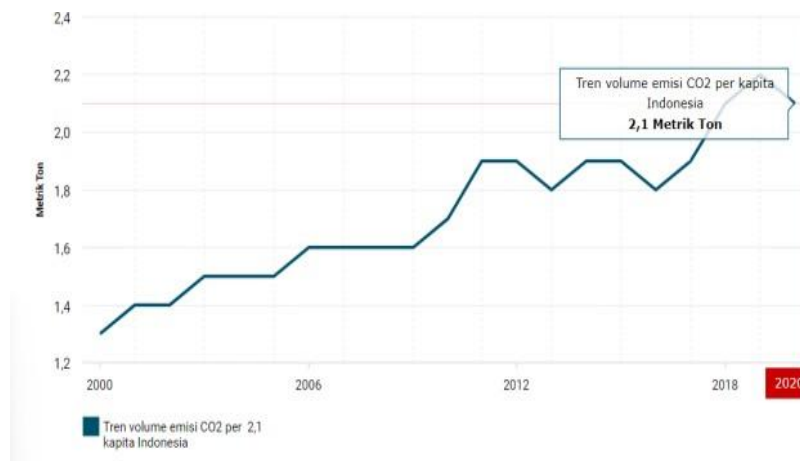
The fast-growing world economy has unavoidable negative consequences, one of which is the decline in the quality of life. (Nasih et al., 2019). Therefore, governments in different countries form policies to anticipate the direct impact of the decline in the quality of life. (Mulyati & Darmawati, 2023). In 1992 in Brazil, the Earth Summit outlined a new economic idea by putting forward the concept of sustainable economic development, hoping that the needs of the present generation would not be at the expense of the interests of future generations. (Irwhantoko & Basuki, 2016). Economic growth around the world raises social and environmental problems (Amin et al., 2021), including climate change and global warming, which are the main sources of carbon emissions. The potential for climate change is accelerating, feels warmer than ever, and natural disasters are more frequent (World Economic Forum, 2020).

The Kyoto Protocol was established by the United Nations Framework on Climate Change (UNFCCC) to reduce emissions due to climate change. The first meeting was held in Japan in 1997, and the second in Qatar in 2012. At the second meeting, it was expected that each Annex 1 member will be able to reduce emissions by 18% of the 1990 emission base, a target starting from 2013 to 2020. (UNFCCC, 2012). Efforts to mitigate carbon emissions are carried out from the corporate to the state level, one of the mitigations is to establish carbon-related regulations. Indonesia is one of the countries that has undertaken mitigation by ratifying the Kyoto Protocol in Act No. 12 of 2004. Afni et al., (2018) in their research said only 10% of manufacturing companies in Indonesia are taking action related to reducing carbon emissions. The Financial Services Authority (OJK) has prepared a sustainable financial roadmap. (Nathalia & Setiawan, 2022).

The OJK also established regulations for financial services institutions in OJK regulation No. 51/PJOK.03/2017 Article 4(1) that financial service institutions are obliged to draw up a sustainable financial action plan which is a written document containing strategies to carry out activities in harmony with economic, social, and environmental aspects. (Nathalia & Setiawan, 2022). That is, the banking sector is also contributing to the fight against climate change. For example, the use of electronic or paperless documents. Tamburino et al., (2023) in their research grouped countries into four income groups namely high-income groups, middle-income up, middle-down-income groups, and low-income groups. The percentage of the world's highest emissions in the upper-middle or middle-income countries group was 51% with total emissions of 17.29 Gt. Indonesia was one of the countries in the group. Indonesia has become the sixth-largest contributor to carbon emissions in the world and the third-largest in Asia after

Impact of Board Size, Media Exposure & Green Investment on Post- COVID-19 Carbon Emission Disclosure in Indonesia

China and India (Kurnia et al., 2021). Previously, in 2005, Indonesia was still ranked fourth (Nasih et al., 2019).



Source: databoks – data.worldbank.org

Picture 1. CO2 Emission Volume Trends Indonesia

Nasih et al., (2019) said that the trend of per capita CO2 emission volumes in Indonesia depends on its government encouraging companies to contribute to the management and disclosure of carbon emissions to the public. The emissions generated in Indonesia come on average from the mining and agricultural industries. According to the Ministry of Energy and Mineral Resources, not only Indonesia but also the world is experiencing an economic decline of up to 3% as a result of the lockdown. The COVID-19 phenomenon on climate change brings new hope in reduced emissions (Nguyen et al., 2021). Companies need to understand the relationship between maintenance-related strategies that drive them toward financial management worldwide, so they need sustainability reports. (Yolanda et al., 2024). In line with the theory of legitimacy, companies need a sustainability report to disclose the company's status. Generally, the theory of legitimacy concerns the relationship between the company and the public. There are norms in society that are expected to be applied to the company's operational activities so that the company can be accepted by society (Deegan, 2002).

Companies that make disclosures consistently make in their annual reports and sustainability reports will be able to boost a good reputation in the eyes of the public. Law No. 40 of 2007 section 1 paragraph 6 which regulates the duties of the board of commissioners states that the board functions generally or specifically to oversee the company according to the basic budget and to give input to the management. When the disclosure is delivered as expected then it will improve the good reputation of the company (Pratama, 2021). One example, when the transparency of information relating to the disclosure of carbon emissions. Automatically, the company will give good results when displaying information about its activities. (Trufvisa & Ardiyanto, 2019).

The role of the media helps the public in putting pressure on the company to present information in a way that matches the reality and the expectations of the public because it will jeopardize the trust of the company. In line with the theory of legitimacy, media exposure becomes a tool that generates public opinion. The opinion formed depends on the information the company communicates through the media. The media plays a role in overseeing companies in determining strategies for disclosing of environmental impacts including carbon disclosures. (Ramadhani & Astuti, 2023).

Green investment is an activity that is a sustainable investment with the aim of refining economic and life sustainability that focuses on social, environmental, and governance aspects, in other words, the green investment represents a form of effort to provide solutions to environmental issues (Magalhães (2021); (Syabilla et al (2021). The role of green investment is not only in decarbonizing the economy and improving the environment but also in improving stability and performance in corporate finance and green innovation. (Wen et al., 2023).

Previous research has given different results on the relationship between board size, media exposure, and green investment to carbon emission disclosure. Based on the background of the problem and the theory of legitimacy that underpins the research, the problem formula in this study is "Is board size significantly associated with carbon emission disclosure?", "Is media exposure significantly associated with the carbon emissions disclosures?" and "Is green investment significantly associated with the carbon emission disclosure?".

Impact of Board Size, Media Exposure & Green Investment on Post- COVID-19 Carbon Emission Disclosure in Indonesia

II. LITERATUR REVIEW AND HYPOTHESIS

A. Legitimacy Theory

Legitimation theory is a common theory in explaining social and environmental disclosure. The theory of legitimacy according to (Deegan, 2002) is a condition that emerges when the corporate image system harmonizes with the image system that exists in society. Companies will be deemed to fail when they are unable to meet the expectations of society. Companies will get sanctions from the public, such as restrictions on the company's operations, difficulties with resources such as labor, and reduced demand for goods and services, as well as other sanctions. The public and the Company have an agreement that the Company operates and uses economic resources according to the agreement formed. (Wirawan & Setyaningsih, 2022). Companies need to apply legitimacy to restrict between norms and social values to convince the public that the company has met the company's expectations, including taking care of the environment and striving to reduce carbon emissions. (Nasih et al., 2019).

The legitimacy of the community can encourage and contribute to continuous innovation in environmentally-friendly products or programs. To date, pioneers of eco-friendly innovation benefit from profits as first drivers and enjoy better performance by demanding higher prices for environmentally friendly products and improving the corporate image (Soewarno et al., 2019). To obtain legitimacy from the public, the company will do environmental disclosure (Yanto et al., 2019). The theory of legitimacy focuses more on the interaction of the corporate side with society. It's not easy to get legitimacy. Companies must pass the legitimacy test as well as the relevance of public consent. (Ghozali, 2020). Companies that have legitimacy from the public can create a good image (Jaya & Nugraheni, 2024).

B. Carbon Emission Disclosure

One example of environmental disclosure is carbon emission disclosure. The Indonesian Financial Accounting Standards (FAS) Declaration No. 1 (Revision 2009) paragraph 12, states that carbon emission disclosure. This environmental disclosure covers greenhouse intensity and energy consumption, corporate governance and strategy on climate change, achievement of greenhouse gas emission reduction targets, and risks and opportunities related to the impact of climate change.

C. Board Size

The theory of legitimacy states the information and openness of companies ensure they obey social contracts to guarantee the existence of companies. Companies that carry out various actions that people want will, in return generate profits. However, when companies violate social contracts, the companies will face difficulties in terms of access to economic and other resources. (Gahramanova & Furtuna, 2023). In the exhibition of the theory of legitimacy, the company is expected to meet the expectations of the public if one of the companies is sued for carbon emission disclosure. When the company discloses its carbon emissions then the company will further improve its performance. So, it requires an active part in decision-making, namely the board of commissioners. The Board of Commissioners has powers that are regarded as one of the internal corporate governance mechanisms that can influence the performance and decisions of the company. (Nguyen et al., 2021; Amin et al., 2021).

Previous research by Nasih et al., (2019), and Grediani et al. (2020), found the board size influenced the disclosure of carbon emissions. However, it is not in line with the results of research from Trufvisa & Ardiyanto (2019). The main task of the Board of Commissioners is to formulate a strategy to be implemented by management. So, the Council of commissioners works to provide a specific disclosure policy for environmental disclosures. The larger board size will have a range of knowledge, skills, and experience that enhances the board's ability to oversee and control company disclosures. (Ebaid, 2022). It can be said that the role of the Board of Commissioners in environmental performance and carbon disclosure is crucial. (Yanto et al., 2019). So, the hypothesis in this study is stated as follows:

H1. Board size is significantly associated with the carbon emission disclosure

D. Media Exposure

The transparent moral responsibility of companies covers all aspects not only of initiative but also of socialist and ecosystem aspects. (Nurjanah & Herawaty, 2022). The media has a role to play in monitoring the company's economic activities. (Ramadhani & Astuti, 2023). The media has an important role to play as a means of communicating information to the public, so the media becomes the focus of public attention, especially the Internet media is becoming more accessible and Internet users are also increasing so that it becomes effective in passing information on to the general public, including information on corporate activities. (Nuraini et al., 2021).

When companies are intensive in communicating corporate information, especially in the living environment, then companies will be increasingly motivated to disclose environmental information, in particular carbon emissions disclosure. By the time the company discloses information about its carbon disclosure, the company will gain a good reputation based on the news in the

Impact of Board Size, Media Exposure & Green Investment on Post- COVID-19 Carbon Emission Disclosure in Indonesia

media. In the concept of legitimacy, companies are charged with a moral obligation to disclose their activities, not only in the financial sphere but in the social and environmental spheres. Companies will find ways and think more deeply about doing environmental disclosure including carbon disclosures (Nastiti & Hardiningsih, 2022). Thus, the company will carry out and communicate information related to the company's activities as best as possible to gain a good reputation in the eyes of the public. Research conducted by Suci and Nur Anisah (2019) says that media exposure influences carbon emission disclosure. However, in Laksani et al. (2020) and Mulyati & Darmawati (2023), the research found that media exposure does not influence carbon emissions disclosures. Thus, the hypothesis in this study is stated as follows:

H2. Media exposure is significantly associated with the carbon emission disclosure

E. Green Investment

Green investment refers to three pillars of business: environmental, social, and financial. In line with the theory of legitimacy, green investment. The growth of a country will be linked to the amount of carbon emissions, so all countries must participate in carbon reduction with whatever strategies are possible to implement. Indonesia has targeted a 29% reduction in carbon emissions by 2030 (Yanto et al., 2019). Any investment that involves improving the overall efficiency of the production process is considered a green investment. (Shen et al., 2021). Green investment is considered to be an additional environmental cost and a burden that reduces revenues and profits. It is a long-term investment of the company because it affects both the company's image and sustainability. The Ministry of Environment and Forestry of the Republic of Indonesia requires all industrial companies to implement PROPER – a program designed to reduce the negative impact of companies on the environment and society. (Yanto et al., 2019).

Several studies have identified the impact of this program on the transparency of companies in their environmental management. The theory of legitimacy is in line with the accounting of this environment. Companies that care about the environment are vital to obtaining legitimacy, companies that obtain legitimacy and acceptance by the public will be able to thrive in the long term (Agustina & Tarigan, 2016). Previous research by Syabilla et al., (2021) that green investment has a significant influence on the disclosure of carbon emissions. The better the PROPER rating the company gets, the better it marks the company in revealing its carbon emissions. In another study, Afni et al., (2018) also found that there was a significant link between green investment and green innovation towards carbon disclosure in non-financial companies listed on the Indonesian and German stock exchanges. However, Ramadhani & Astuti's study (2023) found a different result, that green investment did not influence carbon emission disclosures. Thus, the hypothesis in this study is stated as follows:

H3. Green investment is significantly associated with the carbon emission disclosure

III. RESEARCH METHODOLOGY

A. Sample and Methods

This study uses the population of companies in Indonesia in 2021-2022 listed on the Indonesian Stock Exchange. This research uses purposive sampling to obtain samples with specific criteria. The research uses secondary data that comes from annual reports and sustainability reports. This study uses SPSS.21 with analysis methods that use double regression. There were 99 companies surveyed during 2021-2022 (See Table 1).

B. Carbon Emission Disclosure

The measurement of carbon emission disclosure is based on the results of checklist score of 5 These carbon disclosures are developed based on the carbon information sheet by the Carbon Disclosure Project (CDP). (Choi et al., 2013). Companies that meet the indicator of disclosure items will be awarded a rating of 1, if they submit disclosures in full then will have a maximum value of 18. If no item is disclosed in accordance with the question then the company item will be rated 0. The score will be summed and the result of the comparison will be calculated with the following formula:

$$CED = \frac{\text{Total Company Scores}}{\text{Maximum Score}} \times 100\%$$

C. Board Size

The measurement of the board size uses the method of measuring that is done by summing up the total council membership of the Commissioners per year in one company. (Pangestu & Hati, 2024).

D. Media Exposure

Measurement of media exposure is based on measurement using the number of news or articles about companies published in newspapers in Indonesia and the number of publications by companies (Alfariz & Widiastuti, 2021).

Impact of Board Size, Media Exposure & Green Investment on Post- COVID-19 Carbon Emission Disclosure in Indonesia

E. Green Investment

The measurement of green investment is based on the calculation of PROPER ratings consisting of five color ratings namely Gold, Green, Blue, Red, and Black. The better the PROPER ratings that the Company obtains, the better the environmental performance will be shown. (Mulyati & Darmawati, 2023).

F. Research Models

This study uses quantitative data with multiple regression analysis methods and the tests carried out by this study are descriptive statistical tests, classical assumption tests, and hypothesis tests. The regression model in this study is as follows:

$$CED = \alpha + \beta_1 UDE + \beta_2 MEX + \beta_3 GIN + e$$

Explanation:

α	= Constanta
CED	= Carbon Emission Disclosure
UDE	= Board Size
MEX	= Media Exposure
GIN	= Green Investment
e	

IV. RESULT AND DISCUSSION

A. Descriptive statistics

Table 2 explained that variable carbon emission disclosure was measured by an index with 18 disclosures and obtained an average of 0.2062 or 20.62%. Then the total value of the carbon emissions disclosure of at least 0.00 or 0% belongs to PT. AdhiCommuter Property Tbk, PT. Adaro Minerals Indonesia Tbk and eleven other companies that do not disclose their carbon emissions. Then, the maximum value of the total carbon emission carbon is 1.18 owned by PT. ABM Investama Tbk. It also has a relatively small standard deviation of 0.23313 or about 23%. The board size variable is measured by the number of councils of commissioners held in a year and obtained an average of 3,4091 and a standard deviation of 1,3959. Then, the total value of the minimum board size of 1,00 or 1 member of the council of commissioners by PT. Makmur Berkah Amanda Tbk.

The media exposure variable is measured by the number of company news and obtained an average of 0.3081 and a standard deviation of 0.99289. Then the total value of the media exposure is at least 0.00 or no news publication by more than 10 companies. Then, the maximum value is 8.00 or 8 news published by PT. Adaro Energy Indonesia Tbk. The last variable is the green investment variable, measured by a PROPER rating and obtained an average of 0.3788 and a standard deviation of 1,04369. Then the total value of the green investment is at least 0.00 or not receiving a PROPER rating is PT. Ace Hardware Indonesia Tbk. Then, the maximum value of total green investment with a maximum value is 5.00 by PT. Adaro Energy Indonesia Tbk.

B. Classical Assumption Test Normality Test

In the normality test table, the Kolmogorov-smirnov test results showed that Kolmogorov's value was 0.079 with a significant probability of 0.396 p values > 0.05 which can be interpreted that the remaining data are distributed normally. Thus, the regression model used in this study has met the normality test assumption (see Table 3).

Heteroscedasticity Test

Based on the heteroscedasticity table, it can be determined that the probability value is greater than 0.055 so that the variable presented in the study does not occur heteroscedasticity (see Table 4).

Multicollinearity Test

Based on the multicollinearity test table, it can be determined that the VIF value of each independent variable is less than 10 so the conclusion is that there is no multicollinearity problem (see Table 5).

Autocorrelation Test

The result of the calculation above the Durbin-Watson value of 1.979 is located between du and (4-du) values of 1.789 and 2.211 (du < DW < 4-du), so it can be concluded that there is no auto-correlation in the regression model used in this study (see Table 6).

C. Test the hypothesis

Multiple Analysis Regression Model

Based on the Table of Results of the Multiple analysis regression model Test above, the calculation of the double linear regression (see Table 7) obtained the following results:

Impact of Board Size, Media Exposure & Green Investment on Post- COVID-19 Carbon Emission Disclosure in Indonesia

$$Y = 0.359 + 0.493 X_1 + 0.473 X_2 + 0.186 X_3 + e$$

- Constant = 0.359. That means if there are no variables of board size, media exposure, and green investment that affect carbon emission disclosure then carbon emissions disclosures are 0.359 units.
- $b_1 = 0.493$. That means if the board size variable increases by one unit then the carbon emission disclosure will increase by 0.493 with the assumption of other free variables being fixed.
- $b_2 = 0.473$. This means that if the media exposure increases by one unit then the carbon emission disclosure will increase by 0.473 with the assumption of other free variables being fixed.
- $b_3 = 0.186$. This means that if the green investment variable increases by one unit then the carbon emission disclosure will increase by 0.186 with the assumption of other free variables being fixed.

From the F test results on the Double Linear Regression Test results table, the F count is 52,462 and the probability is 0,000. Since the sig 0,000 < 0.05, it can be concluded that board size variables, media exposure, and green investment together influence carbon emission disclosure. From the F test results in the table, the Double Linear Regression Test results showed the size of the determination coefficient (Adjusted R²) = 0.439, meaning that the board size variable, the media exposure and the green investment combined influenced the carbon emission disclosure variable of 43.9% while the remaining 56.1% was influenced by other variables not included in this study model (see Table 7).

D. Discussion

The test results of the first hypothesis significantly show that there is a probability value of $0,000 \leq 0,05$. This value can prove that "the size of the board has an influence on carbon emission disclosure" (H1 accepted) (see Table 7). In the 2007 Legislative Regulation No. 40, it is stated that the Board of Commissioners has a functional duty to supervise and participate in advising the Board of Directors. According to the theory of legitimacy, the company is expected to meet the expectations of the public that one company is sued for carbon emission disclosure. This requires an active part in decision-making. The Board of Commissioners is the category in question because it is the part of power that belongs to the management that is actively involved in decision-making, especially at the Commissioner level. The results of this study prove that the Board of Commissioners has performed its role in carbon emission disclosure either in annual reports or sustainability reports. This study is in line with the previous study that explains that the size of the Board influences carbon emissions disclosures: Kiliç & Kuzey (2019), Pratama (2021), Astuti & Setiany (2021) and Pangestu & Hati (2024).

The test results of the second hypothesis significantly show that against the probability value of $0,000 \leq 0,05$. This value can prove that "media exposure influences carbon emission disclosure" (H2 accepted) (see Table 7). Environmental information loaded in the media is an external attribute of a company that can help the company influence the public's view of the company's commitment to the environment (Nuranisa, 2020). So, with the media, the company can't do things that can damage the image of the company itself. On the contrary, the company will strive to carry out activities that are acceptable to the public, including carbon disclosure. It is also in line with the theory of legitimacy that the disclosure of carbon emissions is done by a company to obtain legitimacy from the public. With the presence of the media, then the company will not engage in activities that can damage the company's image, but instead, the company would strive to undertake activities that are acceptable to the public by disclosing the carbon emissions. The results of this study are in line with the results of studies from Sukmawati (2023), Nuraini et al. (2021), and Nastiti & Hardiningsih (2022) that media exposure influences carbon emission disclosure.

The test results of the third hypothesis significantly show that against the probability value of $0.036 \leq 0.05$. This value can prove that "green investment influences carbon emission disclosure" (H3 accepted) (see Table 7). The results of this study are in line with the findings of Afni et al., (2018), Sukmawati (2023); Syabilla et al. (2018); and Mulyati & Darmavati (2023), which stated that green investment influences carbon emission disclosure. The better the PROPER rating the company gets shows that the company is also better at disclosing its carbon emissions. In line with the concept of legitimacy theory, then the company that cares about carbon emission disclosure will get legitimacy and acceptance by the public, so the company can thrive in the long term.

V. TABLE

Table 1. Research Sampling

This table shows the number of companies that have been eliminated from the sample criteria to the remaining 99 companies.

No.	Information	Sum
1	Companies listed on the Indonesian Stock Exchange in 2021-2022	178

Impact of Board Size, Media Exposure & Green Investment on Post- COVID-19 Carbon Emission Disclosure in Indonesia

2	Companies that do not publish an annual report or sustainability report for the period 2021-2022	(79)
3	Companies that don't have research variable data supplies like carbon(0) emission carbon, board size, media exposure, and green investment	
		99
The number of samples used as the object of research (2 years)		198

Table 2. Descriptive Statistic

This table describes and describes the data seen from mean, standard deviation, maximum, and minimum on the variables used in this study consisting of carbon emission disclosure, board size, media exposure, and green investment.

Variable	Min	Max	Mean	Std. Deviation
Board Size	1.00	9.00	3.4091	1.39590
Media Exposure	0.00	8.00	0.3081	0.99289
Green Investment	0.00	5.00	0.3788	1.04369
Carbon Emission Disclosure	0.00	1.18	0.2062	0.23313

Source: Output SPSS, 2024.

Table 3. Normality Test

This table describes the results of the normality test to test whether observations are distributed normally or not. A good regression model is observations distributed normally or close to normal.

Variable	Sig	Limit	Description
Unstandar Residual	0.79	>0.05	Normal

Source: Output SPSS, 2024.

Table 4. Heteroskedasticity Test

This table explains the results of the heteroskedasticity test. The objective is to test the regression model whether there is an inequality of residual variants of one observed data with the observation of other data. A good regression model is that of the absence of heterosexuality.

Variable	Sig	Limit	Description
Board Size	0.142	> 0.05	There's no heteroscedasticity
Media Exposure	0.078	> 0.05	There's no heteroscedasticity
Green Investment	0.920	> 0.05	There's no heteroscedasticity

Source: Output SPSS, 2024.

Table 5. Multicollinearity Test

This table describes the multicollinearity test to determine whether a regression model correlates with free variables.

Variable	Tolerance	VIF	Description
Board Size	0.908	1.101	There's no multicollinearity
Media Exposure	0.803	1.245	There's no multicollinearity
Green Investment	0.877	1.140	There's no multicollinearity

Source: Output SPSS, 2024.

Table 6. Autocorrelation Test Results

This table describes the results of autocorrelation with the aim of testing whether in a regression model there is a correlation between data in a variable.

DU	DW	4-DU	Description
1,789	1,979	2,211	There's no autocorrelation

Source: Output SPSS, 2024.

Impact of Board Size, Media Exposure & Green Investment on Post- COVID-19 Carbon Emission Disclosure in Indonesia

Table 7. Multiple Linear Regression Test Results

This table describes a summary of the double linear regression analysis that has been performed. The results of the t test are performed to determine the partial influence between the independent variable and the dependent variable. The results in the table also show the magnitude of the determination coefficient. The table also describes the results of tests for each hypothesis.

Variable	B	t count	Sig t	Description
(Constant)	-0.359			
Boar Size	0.493	5.255	0.000	significant
Media Exposure	0.473	7.842	0.000	significant
Green Investment	0.186	2.115	0.036	significant
F Count	52.462			
Sig F	0.000			
Adjusted R Square	0.439			

Source: Output SPSS, 2024.

CONCLUSION

The study looks to provide empirical evidence about board size, media exposure, and green investment to carbon emission disclosure in annual reports and corporate sustainability reports. This research uses the theory of legitimacy which is a form of corporate effort in the equality between the results and what society expects from the company, so that the company makes social sacrifices as a reflection of the company's attention to society (Deegan, 2002). Based on the results of data analysis and discussions carried out, it can be concluded that:

1. Based on the result of double regression, Board size has a significant influence on Carbon Emission Disclosure (CED). This proves that the Board of Commissioners, which performs its duties, oversees, and advises the Directorate, has acted accordingly. There is transparency of information related to the disclosure of carbon emissions, making companies strive to show good results in line with public expectations.
2. Based on the result of double regression, Media exposure has a significant influence on carbon emission disclosure (CED). This proves that it is impossible for companies to carry out and disclose information related to the company's activities that can damage the image of the company. When companies provide information about a particular environmental habitat, carbon emissions will gain a good reputation or image in the eyes of the public.
3. Based on the result of double regression, Green Investment has a significant impact on Carbon Emission Disclosure (CED). This proves that the better the PROPER rating a company achieves then indicates that the company is better at disclosing its carbon emissions.

IMPLICATIONS AND LIMITATIONS

The results of this study support the theory that the size of the board, media exposure, and green investment, but some previous studies produced different conclusions with different measurements, specifically the media exposure to carbon emission disclosure. Thus, there is still inconsistency between the results of one study and the other so carbon emission disclosure is still worth studying and used as an independent variable in further research. The results of this research are expected to be a better improvement material for companies in Indonesia regarding the carbon emission disclosure policy. In addition, it can provide insights into the importance of efforts in reducing carbon emissions so that companies get a good image in the eyes of the public according to social contacts between the company and society.

The results of this study support the theory that the size of the board, media exposure, and green investment, but some previous studies produced different conclusions with different measurements, specifically the media exposure to carbon emission disclosure. Thus, there is still inconsistency between the results of one study and the other so carbon emission disclosure is still worth studying and used as an independent variable in further research. Further research is suggested to add other independent variables to obtain comprehensive research results, using samples with the latest year, as well as using another proxy in measuring carbon emissions disclosures to produce more up-to-date research in describing the carbon disclosure in Indonesia.

REFERENCES

- 1) Afni, Z., Gani, L., Djakman, C. D., & Sauki, E. (2018). "The Effect of Green Strategy and Green Investment Toward Carbon Emission Disclosure". *The International Journal of Business Review (The Jobs Review)*, Vol. 1 No. 2, 97–112. <https://doi.org/10.17509/tjr.v1i2.13879>

Impact of Board Size, Media Exposure & Green Investment on Post- COVID-19 Carbon Emission Disclosure in Indonesia

- 2) Agustina, C., & Tarigan, J. (2016). "Perilaku Pemilik atas Isu Manajemen Lingkungan dilihat dari Sektor, Regional dan Ukuran Perusahaan". *Akuntansi Bisnis Universitas Kristen Petra*, Vol. 4, No. 1.
- 3) Alfariz, R., & Widiastuti, H. (2021). "The Influence of Media Exposure, Managerial Ownership, and the Indonesia Sustainability Reporting Award on Corporate Social Responsibility (CSR) Disclosure". *Advances in Economics, Business, and Management Research*. Vol. 176. <https://doi.org/10.2991/aer.k.210121.036>
- 4) Amin, M. H., Mohamed, E. K. A., & Elragal, A. (2021). "CSR disclosure on Twitter: Evidence from the UK". *International Journal of Accounting Information Systems*, 40, 100500. <https://doi.org/10.1016/j.accinf.2021.100500>
- 5) Astuti, T. A., & Setiany, E. (2021). "The Effect of Board Characteristics on Carbon Emission Disclosure". In the *International Journal of Management Studies and Social Science Research*. Vol. 207. www.ijmsssr.org
- 6) Ayu Laksani, S., Andesto, R., & Jaya Kirana, D. (2020). "Carbon Emission Disclosure Ditinjau dari Nilai Perusahaan, Leverage dan Media Exposure". *Studi Akuntansi Dan Keuangan Indonesia*. Vol. 3 No. 2.
- 7) Choi, B. B., Lee, D., & Psaros, J. (2013). An analysis of Australian company carbon emission disclosures. *Pacific Accounting Review*, 25(1), 58–79. <https://doi.org/10.1108/01140581311318968>
- 8) Deegan, C. (2002). "Introduction: The legitimizing effect of social and environmental disclosures – a theoretical foundation". In *Accounting, Auditing & Accountability Journal*. Vol. 15. Issue 3 (282–311). <https://doi.org/10.1108/09513570210435852>
- 9) Ebaid, I. E.-S. (2022). "Corporate governance mechanisms and corporate social responsibility disclosure: evidence from an emerging market". *Journal of Global Responsibility*, 13(4), 396–420. <https://doi.org/10.1108/JGR-12-2021-0105>
- 10) Gahramanova, G., & Furtuna, Ö. K. (2023). "Corporate climate change disclosures and capital structure strategies: evidence from Türkiye". *Journal of Capital Markets Studies*, Vol. 7 No. 2, 140–155. <https://doi.org/10.1108/JCMS-10-2023-0039>
- 11) Ghozali, I. (2020). "25 Grand Theory, Teori Besar Ilmu Manajemen, Akuntansi dan Bisnis". Yoga Prata.
- 12) Grediani, E., Hanny Yustrianthe, R., & Niandari, N. (2020). "Pengaruh Corporate Governance terhadap Pengungkapan Emisi Gas Rumah Kaca dengan Peran Audit Internal sebagai Pemoderasi". In *Jurnal Ilmiah Akuntansi*. Vol. 5 Issue 2.
- 13) Irwhantoko, I., & Basuki, B. (2016). "Carbon Emission Disclosure: Studi pada Perusahaan Manufaktur Indonesia". *Jurnal Akuntansi Dan Keuangan*, 18(2). <https://doi.org/10.9744/jak.18.2.92-104>
- 14) Jaya, M. O. M., & Nugraheni, B. D. (2024). "Pengaruh Kinerja Lingkungan dan Pengungkapan Emisi Karbon Terhadap Kinerja Keuangan Perusahaan Manufaktur yang Terdaftar di Bursa Efek Indonesia". *Jurnal Ilmiah Mahasiswa Akuntansi*, 13 No. 1.
- 15) Kılıç, M., & Kuzey, C. (2019). "The effect of corporate governance on carbon emission disclosures". *International Journal of Climate Change Strategies and Management*, Vol.11 No. 1, 35–53. <https://doi.org/10.1108/IJCCSM-07-2017-0144>
- 16) Kurnia, P., Emrinaldi Nur, D. P., & Putra, A. A. (2021). "Carbon emission disclosure and firm value: A study of manufacturing firms in Indonesia and Australia". *International Journal of Energy Economics and Policy*, Vol. 11 No. 2, 83–87. <https://doi.org/10.32479/ijeep.10730>
- 17) Magalhães, N. (2021). "The green investment paradigm: Another headlong rush". *Ecological Economics*, 190, 107209. <https://doi.org/10.1016/j.ecolecon.2021.107209>
- 18) Mulyati, R., & Darmawati, D. (2023). "The impact of green investment, media coverage, and international sales on carbon emission disclosure with the audit committee as the moderating variable". In *Enrichment: Journal of Management*. Vol. 13, Issue 1. <https://doi.org/10.35335/enrichment.v13i1.1311>
- 19) Nasih, M., Harymawan, I., Paramitasari, Y. I., & Handayani, A. (2019). "Carbon emissions, firm size, and corporate governance structure: Evidence from the mining and agricultural industries in Indonesia". *Sustainability (Switzerland)*, 11(9). <https://doi.org/10.3390/su11092483>
- 20) Nastiti, A., & Hardiningsih, P. (2022). "Determinan Pengungkapan Emisi Karbon. *Jurnal Ilmiah Akuntansi dan Keuangan*", Vol 4 No 5.
- 21) Nathalia, C., & Setiawan, D. (2022). "Does board capital improve climate change disclosures?". *Cogent Business and Management*, 9(1). <https://doi.org/10.1080/23311975.2022.2121242>
- 22) Nguyen, K. T. A., Mai, K. N., & Cao, M. M. (2021). "Investigating the relationship between CSR and financial performance based on corporate reputation: evidence from Vietnamese enterprises". *Global Business and Economics Review*, 24(2), 107. <https://doi.org/10.1504/GBER.2021.113118>
- 23) Nguyen, X. P., Hoang, A. T., Ölçer, A. I., & Huynh, T. T. (2021). "Record decline in global CO2 emissions prompted by COVID-19 pandemic and its implications on future climate change policies". *Energy Sources, Part A: Recovery, Utilization and*

Impact of Board Size, Media Exposure & Green Investment on Post- COVID-19 Carbon Emission Disclosure in Indonesia

- Environmental Effects. <https://doi.org/10.1080/15567036.2021.1879969>
- 24) Nuraini, Azmi, Z., & Mirsal. (2021). "Determinants of Disclosure of Carbon Emissions in the Financial Statements of Manufacturing Companies Listed on the IDX for the Period 2018-2019".
 - 25) Nurjanah, I. A., & Herawaty, V. (2022). "Pengaruh Corporate Governance Dan Media Exposure Terhadap Carbon Emission Disclosure Dengan Kinerja Lingkungan Sebagai Variabel Moderasi. *Jurnal Ekonomi Trisakti*, 2(2), 1261–1272. <https://doi.org/10.25105/jet.v2i2.14637>
 - 26) Pangestu, J. C., & Hati, D. P. (2024). "Determinan Pengungkapan Emisi Karbon Perusahaan Sektor Energi di BEI Periode 2020-2022". *Jurnal Ekonomi Bisnis, Manajemen Dan Akuntansi (Jebma)*, Vol. 04 No. 01.
 - 27) <https://doi.org/doi.org/jebma.v4n1.3658>
 - 28) Pratama, Y. M. (2021). "Analisis Determinan Pengungkapan Emisi Karbon di Indonesia". *MODUS*, Vol. 33 No. 2, 120–137. <https://doi.org/10.24002/modus.v33i2.4644>
 - 29) Ramadhani, K., & Astuti, C. D. (2023). "Pengaruh Green Strategy Dan Green Investment Terhadap Carbon Emission Disclosure Dengan Media Exposure Sebagai Variabel Pemoderasi". *Jurnal Informasi, Perpajakan, Akuntansi, Dan Keuangan Publik*, 18(2), 323–338. <https://doi.org/10.25105/jipak.v18i2.17244>
 - 30) Shen, Y., Su, Z.-W., Malik, M. Y., Umar, M., Khan, Z., & Khan, M. (2021). "Does green investment, financial development and natural resources rent limit carbon emissions? A provincial panel analysis of China". *Science of The Total Environment*, 755, 142538. <https://doi.org/10.1016/j.scitotenv.2020.142538>
 - 31) Soewarno, N., Tjahjadi, B., & Fithrianti, F. (2019). "Green innovation strategy and green innovation". *Management Decision*, 57(11), 3061–3078. <https://doi.org/10.1108/MD-05-2018-0563>
 - 32) Sukmawati, Y. T. (2023). "Pengaruh Media Exposure Dan Kinerja Lingkungan Terhadap Pengungkapan Emisi Karbon". *Fidiana Sekolah Tinggi Ilmu Ekonomi Indonesia (STIESIA) Surabaya*.
 - 33) Syabilla, D., Wijayanti, A., & Fahria, R. (2021). "Pengaruh Investasi Hijau dan Keragaman Dewan Direksi Terhadap Pengungkapan Emisi Karbon". *KORELASI Konferensi Riset Nasional Ekonomi, Manajemen, dan Akuntansi*. Vol. 2. 1171-1186
 - 34) Tamburino, L., Cafaro, P., & Bravo, G. (2023). "An Analysis of Three Decades of Increasing Carbon Emissions: The Weight of the P Factor." *Sustainability (Switzerland)*, 15(4). <https://doi.org/10.3390/su15043245>
 - 35) Trufvisa, U. S., & Ardiyanto, M. D. (2019). "Pengaruh Karakteristik Dewan Komisaris Terhadap Pengungkapan Emisi Karbon". *Diponegoro Journal Of Accounting*, 8(1). <http://ejournal-s1.undip.ac.id/index.php/accounting>
 - 36) Wen, J., Zhang, S., Chang, C. P., Anugrah, D. F., & Affandi, Y. (2023). "Does climate vulnerability promote green investment under energy supply restrictions?". *Energy Economics*, 124. <https://doi.org/10.1016/j.eneco.2023.106790>
 - 37) Wirawan, J., & Setiyaningsih, H. T. (2022). "Analisis Pengungkapan Emisi Karbon Di Indonesia". *Jurnal Muara Ilmu Ekonomi Dan Bisnis*, 6(1), 235. <https://doi.org/10.24912/jmieb.v6i1.18398>
 - 38) Yanto, H., Rofiah, A., & Bahlawan, Z. A. S. (2019). "Environmental Performance and Carbon Emission Disclosures: A Case of Indonesian Manufacturing Companies". *Journal of Physics: Conference Series*, 1387(1), 012005. <https://doi.org/10.1088/1742-6596/1387/1/012005>
 - 39) Yolanda, Popi., Sudiyanto, Totok., & Oktariansyah. (2024). "Pengaruh Jaminan, Profitabilitas dan Laporan Keberlanjutan terhadap Nilai Pasar pada Perusahaan Sub Sektor Pertambangan Minyak dan Gas Bumi di Bursa Efek Indonesia Periode 2016-2020". *Jurnal Media Akuntansi*, Vol. 6 No. 2.



There is an Open Access article, distributed under the term of the Creative Commons Attribution – Non Commercial 4.0 International (CC BY-NC 4.0) (<https://creativecommons.org/licenses/by-nc/4.0/>), which permits remixing, adapting and building upon the work for non-commercial use, provided the original work is properly cited.