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THE INFLUENCE OF INDUSTRY TYPE, ENVIRONMENTAL MANAGEMENT PERFORMANCE, AND CARBON INTENSITY ON CARBON EMISSION DISCLOSURE

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ABSTRACT

The IPCC AR6 Working Group I report highlights that greenhouse gas emissions, particularly those generated by human activities, are the primary drivers of global warming, emphasizing the importance of better environmental accountability. In Indonesia, PSAK allows entities to issue separate environmental reports from their financial statements, particularly in industries where environmental considerations are critical. However, there is a significant disparity in the disclosure obligations for carbon emissions across various sectors. This study aims to explore the influence of industry type, environmental management performance, and carbon intensity on carbon emission disclosure among companies listed in the IDX30 index. The study uses a sample of 16 companies for the period from 2019 to 2021, selected through purposive sampling. The data were processed using Eviews 12 software. The findings indicate that all three independent variables collectively influence carbon emission disclosure. However, when tested individually, industry type does not have a significant impact and shows a positive correlation with carbon emission disclosure. Similarly, carbon intensity does not have a significant effect and exhibits a negative relationship with carbon emission disclosure. In contrast, environmental management performance shows a significant positive effect on carbon emission disclosure. These findings indicates that higher environmental management performance is closely related to higher transparency and more comprehensive carbon emission disclosures.

Keywords: *Carbon emission disclosure; industry type; environmental management performance; carbon intensity*

1. INTRODUCTION

The IPCC AR6 Working Group I report emphasizes that evidence from comprehensive climate models and observational data indicates that global warming's primary drivers are human activities, which produced greenhouse gas emissions (IIPC, 2023). Wide-spread use of fossil fuels such as coal and oil, industrial activities including the production of steel and cement, and large-scale deforestation contribute significantly to green-house gas emissions. The United Nations notes that the Earth's temperature at the current moment is approximately 1.1°C higher than it was in the late 19th century, with emissions continuing to rise (Kinley, 2016). Considering this, the Paris Agreement adopted at COP21 (Conference of the Parties) in Paris in 2015 is a pivotal moment in global commitment to climate change this century. In Indonesia, the government has stated its commitment to decarbonization towards Net-Zero Emission by 2060, or sooner (Parimita & Najicha, 2023). One form of government initiative to achieve this target is the launch of the Indonesian Carbon Exchange (IDXCarbon) on September 26, 2023.

Statements of Financial Accounting Standards (PSAK) 1 (Revised 2009) paragraph 12 states that entities may also issue separate reports on environmental matters and value-added statements, apart from their financial reports, particularly in sectors where environmental concerns are crucial and for industries that view employees as a key stakeholder group (IAI,

2009). Although it is not regulated under PSAK, the preparation of sustainability reports is governed by the Financial Services Authority (OJK). OJK Regulation No. 51/POJK.03/2017 Article 10 stipulates that Financial Services Institutions (LJK), Issuers, and Public Companies are required to prepare a Sustainability Report. Submission of the report to OJK must be done no later than the deadline for the submission of the annual report applicable to each LJK, Issuer, and Public Company, or by April 30 of the following year if submitted separately.

The Sustainability Report, as referred to in Article 10, must be prepared in the format prescribed in Annex II of OJK Regulation No. 51/POJK.03/2017, which is an integral part of OJK Regulation No. 51/POJK.03/2017. The annex specifies that the sustainability report, in the environmental performance section, must disclose at a minimum: a) the quantity and intensity of emissions produced, classified by type; and b) the measured taken and progress made in reducing emission. However, this disclosure is only required for financial services institutions, issuers, and public companies whose operations are directly linked to environmental matters.

OJK Circular Letter No. 16/SEOJK.04/2021 explains this in detail. The OJK states that sustainability in the field of environmental sustainability consists of two parts, namely the first part regarding environmental sustainability in general and the second part regarding environmental sustainability for issuer and public companies whose whose operations are directly linked to the environment. The disclosure of information regarding environmental sustainability in general as referred to in point III Number F.4 to F.8 regarding general aspects, materials, energy, and water applies to all issuer and public companies; while for issuer and public companies whose operations are directly linked to the environment (such as mining companies, plantations, and other sectors) in addition to disclosing information as referred to in point III number F.4-F.8, issuer and public companies must also disclose information as referred to in point III number F.9 to F.16 related to biodiversity, emissions, waste and effluent, and environmental complaints.

This implies that companies whose business processes or operations are not directly linked to the environment can legally not report their carbon emissions. However, not only the mining and plantation sectors, companies from the energy industry (oil & gas), transportation (land, sea, and air), materials (mining), and utilities (electric, gas, water) are all included in carbon-intensive companies (Meiryani *et al.*, 2023). This phenomenon shows that there is inequality in the obligation to disclose carbon emissions in Indonesia. This may result in companies whose operations are not directly associated to the environment—yet have significant environmental impacts and no obligation to disclose their carbon emissions—facing less pressure to mitigate their environmental footprint.

In addition to the obligation to prepare a Sustainability Report, as part of the government's initiatives to reach the Net-Zero Emission goal, the Ministry of Environment and Forestry has developed a ranking system called PROPER (Public Disclosure Program for Environmental Compliance). PROPER is a policy to evaluate the environmental management performance of companies to improve environmental management performance in compliance with the regulations. The application of this instrument is expected to create incentives and pressure on companies in Indonesia to increase the transparency of their carbon emissions disclosure as one of the evaluation criteria for PROPER. It is proven that the number of PROPER participants in 2022 increased by 23%, indicating an improvement in environmental management performance in Indonesian companies.

This focus of this research is to investigate: (a) the influence of industry type on carbon emission disclosure, (b) the influence of environmental management performance on carbon emission disclosure, and (c) the influence of carbon intensity on carbon emission disclosure. By exploring these variables, the study seeks to deepen understanding of the various determinants that shape corporate behavior in disclosing carbon emissions.

It is hoped that the findings of this research will contribute to: (a) Investors, by offering insights for more informed and sustainable investment decisions; (b) Management board, by enriching references for the development of strategies and decision-making related to environmental management and carbon emission disclosure; (c) Regulators, by enhancing their understanding for formulating targeted policies and regulations concerning environmental management and carbon emission disclosure; and (d) Future Researchers, by serving as a reference for subsequent studies in the future.

Legitimacy, as defined by Lindblom (1993), refers to a condition in which an entity's value system aligns with the broader societal value within which it operates. Maurer (1971) approaches legitimacy through the concept of morality, suggesting that legitimacy is a process of justification in which organizations seek to justify their existence to their peers or the larger societal framework. From a theoretical standpoint, legitimacy encourages disclosure as a means of gaining public approval (Rahmadhani & Indriyani, 2019). Therefore, companies disclose their carbon emissions not only as part of efforts to reduce greenhouse gas emissions but also as an initiative to enhance their value and legitimacy within the community in which they operate (Putri & Arieftiara, 2023).

Stakeholder theory is founded on the premise that companies require the support of their stakeholders to ensure their continued existence. As such, companies must take into account the approval and perspectives of stakeholders when conducting their operations (Gray *et al*., 1995; Rokhlinasari, 2016). To sustain relationships with stakeholders, there are various strategies companies can undertake, one instance of this is disclosing environmental activities, such as carbon emissions. The reporting of environmental practices is particularly important, as companies' environmental performance is increasingly becoming a key factor for investors when deciding where to allocate their investments (Putri & Arieftiara, 2023).

Conceptual Definition of the Variable

Carbon Emission Disclosure is the disclosure of greenhouse gas emission intensity, energy use, emission trading schemes, climate-related strategies, and efforts to reduce emissions. The high level of carbon emissions, which are derived from a company's operational activities, triggers stakeholders to demand action from the company to address emissions (Saraswati *et al*., 2021). A company's commitment to addressing carbon emissions can be observed through how it discloses information about its emissions, a practice referred to as carbon emission disclosure. The Global Reporting Initiative (GRI) is one of the internationally recognized standards that is often used as a reference in preparing sustainability reports.

Globally, one of the commonly used industry classification references is the Global Industry Classification Standard (GICS). In the context of carbon emissions, industries fall into two distinct groups, namely: 1) Carbon-intensive industries; and 2) Non-intensive industries. Carbon-intensive industries produce significant carbon emissions, having a relatively large impact on environmental pollution. On the other hand, non-intensive industries are industries that produce small carbon emissions, having a relatively small impact on environmental

pollution. Industries that fall into the category of carbon-intensive industries include energy, transportation, materials, and utilities (Choi *et al*., 2013).

Environmental management performance describes the company's capacity to safeguard the environment as part of its accountability for the impact of its operational activities, such as raw material processing and energy consumption (Inawati & Taufiqi, 2022). One way to assess a company's performance, whether positive or negative, is by examining the PROPER ranking it receives, which is issued by the Ministry of Environment and Forestry. According to its official website, the PROPER evaluation criteria consist of two categories, namely: 1) Compliance assessment; and 2) Assessment beyond compliance. In order from the highest rank, there are five PROPER ranks, namely gold, green, blue, red, and black.

Elevated carbon emission intensity indicates that a company demonstrates weak carbon performance, often due to the inefficient use of resources. In contrast, companies with lower carbon emission intensity are viewed as having better carbon performance (Ratmono *et al*., 2021). The Carbon Emission Intensity index can be used to evaluate carbon intensity by comparing the level of carbon emissions to the company's revenue. In this context, lower carbon intensity indicates better environmental performance, while higher intensity reflects inefficiencies in the company's carbon management.

Hypothesis Development

Industries that are under public scrutiny are those whose business operations produce high levels of carbon emissions and high levels of environmental pollution (Saptiwi, 2019). The pressure faced by carbon-intensive industries will encourage companies to try to reduce or mitigate this pressure (Irwhantoko & Basuki, 2016). How carbon-intensive companies disclose information regarding their carbon emissions plays a crucial role in helping them gain legitimacy from the public and demonstrate accountability to stakeholders. In the framework of Stakeholder Theory, companies operating in carbon-intensive industries have an obligation to consider the interests of multiple stakeholders, including the public and the environment (Gray *et al*., 1995). As a result, companies in these sectors have a strong incentive to provide comprehensive disclosures regarding their carbon emissions, aiming to align with stakeholder interests and maintain their legitimacy. Based on this reasoning, it can be inferred that industry type has a positive influence on the extent of carbon emission disclosure by a company. This hypothesis is supported by the findings of Rahmadhani and Indriyani (2019), which validate this relationship.

H1: The type of industry has a positive effect on carbon emission disclosure.

Companies with high PROPER rankings demonstrate a proactive approach to addressing environmental concerns and actively contribute to environmental conservation. As a result, as a way of communication to their stakeholders, these companies—through the sustainability or annual reports—tend to disclose more information regarding their environmental performance, particularly about carbon emissions. This disclosure serves as a means for external parties to assess the company's environmental impact (Nurlis, 2019). Companies that excel in environmental management, as evidenced by their PROPER rankings, are motivated to voluntarily disclose their carbon emissions to showcase the effectiveness of their environmental strategies to investors and other external stakeholders (Ratmono *et al*., 2020). In the context of legitimacy theory, achieving high rankings prompts the public to demand tangible evidence of the company's actions, ensuring that their practices align with societal norms and legal requirements. To meet these stakeholder expectations, companies are likely to provide comprehensive carbon emission disclosures in their reports. This suggests that

environmental management performance has a positive impact on carbon emission disclosure. This hypothesis is supported by the findings of Priliana and Ermaya (2023).
H2: Environmental management performance has a positive effect on carbon emission disclosure.

The volume of a company's emissions is generally directly proportional to its operational activities; the more activities carried out, the higher the carbon emissions produced (Ramadhani & Venusita, 2020). In the context of legitimacy theory, companies with high carbon intensity are considered to not have adequate emission policies, and therefore, their legitimacy is threatened. Therefore, companies with low carbon intensity are motivated to keep up their carbon profile improvements and notify the public of them. In the context of Stakeholder Theory, if the company's carbon intensity is low, it indicates that the company's management has recognized the importance of the sustainability concept in carrying out the company's operations, which will please stakeholders. Companies with low carbon intensity, a sign of effective carbon performance, are motivated to set themselves apart from those with subpar performance. In other words, carbon intensity has a negative effect on carbon emission disclosure. This hypothesis is consistent with the results of the study by Putri and Arieftiara (2023) which states the same thing.
H3: Carbon intensity has a negative effect on carbon emission disclosure.

2. RESEARCH METHOD

Thirty companies that were listed on the IDX30 index during the study period make up the study's population. Purposive sampling was used for the sampling process, and samples were chosen according to the following standards: 1) The company's stock listing date occurred before January 1, 2019; 2) The company did not experience delisting between 2019 and 2021; 3) The company released an annual report and/or sustainability report in consecutive years from 2019 to 2021; 4) The company disclosed carbon emissions in its annual report and/or sustainability report. Based on these criteria, 16 companies were selected, providing a total of 48 data points. The data were analyzed using multiple linear regression analysis, conducted with the Eviews 12 software.

To measure the carbon emission disclosure index, each item of disclosure within a company's report was assigned a value of 1. Therefore, if a company disclosed all the relevant items, it would receive a total score of 18. The 18 items in the carbon emission disclosure indicator are based on the research of Choi, *et al*. (2013) in Meiryani, *et al.* (2023). The operationalization of the variables and indicators used in this research is presented in Table 1:

Table 1. Variables Operationalization.

Variable	Indicator	Scale	Reference
Carbon Emission Disclosure	$CED = \frac{\sum \text{di}}{\text{M}}$	Ratio	Choi, *et al*. (2013)
Industrial Type	1 = Carbon-intensive industries 0 = Non-intensive industries	Nominal	Meiryani (2023)
Environmental Performance	Refering to the PROPER rating received by the company, with score as follows: 0 = Not a participant 1 = Very bad; black colour 2 = Bad; red colour 3 = Good; blue colour 4 = Very good; green colour 5 = Exceptional; gold colour	Interval	Inawati & Taufiqi (2022)
Carbon Emission Intensity	$CEI = \frac{\text{Total carbon emission}}{\text{Total revenue}}$	Ratio	Putri & Arieftiara (2023)

3. RESULTS AND DISCUSSIONS

Descriptive Statistic Test

This table 2 below presents the statistical report for the descriptive statistics test, where CED (Carbon Emission Disclosure) is the dependent variable predicted based on three independent variables: IND (Industry Type), PROPER (Environmental Management Performance), and CEI (Carbon Emission Intensity).

Table 2. Descriptive Statistic Test.

Variable	Mean	Median	Maximum	Minimum	Std. Dev.
CED	0.370370	0.388889	0.666667	0.111111	0.140046
IND	0.416667	0.000000	1.000000	0.000000	0.498224
PROPER	2.582855	3.071429	5.000000	0.000000	1.859676
CEI	2.77E-08	1.14E-08	1.42E-07	1.02E-11	3.70E-08

CED has a maximum value of 0.666667 and a minimum of 0.111111, indicating that companies disclose 12 and 2 items, respectively, out of 18 carbon emission disclosure items. For IND, the maximum is 1 and the minimum is 0, which respectively indicate carbon-intensive and non-intensive industries. Regarding PROPER, a maximum score of 5 suggests the highest rank (gold), while a minimum score of 0 indicates that the company is not yet a participant in the program. Finally, for CEI, the maximum value of 1.14E-07 is produced by PT Medco Energi Internasional Tbk in 2020, while the lowest value of 1.02E-11 is generated by PT Sumber Alfaria Trijaya Tbk in 2021.

Panel Model Test Selection

Given that the cross-section Chi-square probability is 0.0049, as presented in Table 3, and is less than 0.05, FEM is deemed the most appropriate for the analysis. Therefore, the analysis should proceed with the Hausman test.

Table 3. Chow Test.

Effects Test	Statistic	d.f.	Prob.
Cross-Section F	1.900340	(15,29)	0.0673
Cross-Section Chi-Square	32.859737	15	0.0049

Conversely, the cross-section random probability value is 0.07916, as shown in Table 4, which is greater than 0.05. Therefore, REM is deemed more appropriate, and the analysis should proceed with the Lagrange Multiplier test.

Table 4. Hausman Test.

Test Summary	Chi-Sq. Statistic	Chi-Sq d.f.	Prob.
Cross section random	1.039879	3	0.07916

Finally, the Breusch-Pagan probability value is 0.1342, as shown in Table 5, which is greater than 0.05. This suggests that CEM is the most appropriate for this study.

Table 5. Lagrange Multiplier Test.

	Test Hypothesis		
	Cross-Section	Time	Both
Breusch-Pagan	2.242760	14.38810	16.63086
	(0.1342)	(0.0001)	(0.0000)

Classical Assumption Test

Table 6 presents a Jarque-Bera probability value of 0.617045. A value exceeding 0.05 indicates that the data conforms to a normal distribution.

Table 6. Normality Test.

Skewness	0.046525
Kurtosis	2.311408
Jarque-Bera	0.965634
Probability	0.617043

Table 7 presents the correlation between the three independent variables, with the following results: the correlation between IND and PROPER is 0.627983, between IND and CEI is 0.615823, and between CEI and PROPER is 0.539340. Since all of these values are below 0.85, it can be concluded from this result that there is no multicollinearity among the independent variables.

Table 7. Multicollinearity Test.

	IND	**PROPER**	**CEI**
IND	1.000000	0.627983	0.615823
PROPER	0.627983	1.000000	0.539340
CEI	0.615823	0.539340	1.000000

Table 8 presents the prob Obs*R-squared value of 0.0525, which is greater than 0.05, indicating that heteroscedasticity is not present in the regression model.

Table 8. HeteroscedasticityTest.

F-statistic	2.804444	**Prob. F(3,44)**	0.0507
Obs*R-squared	7.704909	**Prob. Chi-Square(3)**	0.0525
Scaled explained SS	6.854058	**Prob. Chi-Square(3)**	0.0767

Table 9 shows that the obtained Chi-Square probability value for this study is 0.3465, which is greater than 0.05. Therefore, it can be concluded that there are no autocorrelation issues in this study.

Table 9. Autocorrelation Test.

F-statistic	0.970149	**Prob. F(2,42)**	0.3874
Obs*R-squared	2.119565	**Prob. Chi-Square(3)**	0.3465

Regression Analysis Test

Prior to conducting the regression analysis, the model was tested using the panel model test selection. The results of these three tests indicate that the data is appropriate for the Common Effect Model (CEM), with the equation as follows:

CED = 0.275927441526 + 0.0949360854308*IND + 0.0305172630829*PROPER - 863041.625629*CEI

The constant term (0.275927441526) indicates the expected value of CED when all independent variable have a value of zero. The coefficient for IND (0.0949360854308) shows that when the industry type variable is increased by one unit, CED increases by approximately 0.0949360854308, holding other factors constant. This suggests that between industry type and carbon emission disclosure exists a positive correlation. The coefficient for

PROPER (0.0305172630829) implies that an increase of one unit in environmental management performance is associated with an increase of 0.0305172630829 in CED, suggesting a positive impact of effective environmental management on disclosure practices. Conversely, the coefficient for CEI (-863041.625629) indicates a negative relationship; as carbon emission intensity increases, CED decreases by 863041.625629. This implies that greater carbon intensity is linked to reduced carbon emission disclosure.

Simultaneous Significance Test

As shown in Table 10, the F-statistic probability value is 0.00096, which is less than 0.05. Thus, it can be determined that industry type, environmental management performance, and carbon intensity simultaneously influence carbon emission disclosure.

Table 10. Simultaneous Significance Test.

F-statistic	6.516395
Prob(F-statistic)	0.000960

Partial Significance Test

As presented in Table 11, there are several key findings that can be inferred from the analysis of the significance values of the variables. First, the industry type variable has a significance value of 0.0642 which is greater than 0.05, indicating that it does not have a significant influence on Carbon Emission Disclosure, although it demonstrates a positive relationship. In contrast, the environmental management performance variable shows a significance value of 0.0190, which is less than 0.05, suggesting that it significantly influences Carbon Emission Disclosure, with a positive relationship. Lastly, the carbon emission intensity variable also has a significance value of 0.1723, which is greater than 0.05, indicating that it does not significantly affect CED, and it exhibits a negative relationship.

Table 11. Partial Significance Test.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.275927	0.029972	9.206115	0.0000
IND	0.094936	0.050000	1.898729	0.0642
PROPER	0.030517	0.012533	2.434920	0.0190
CEI	-863041.6	621974.5	-1.387584	0.1723

Multiple Coefficient of Determination Test

The independent variables, including industry type, environmental management performance, and carbon emission intensity, explain 26.04% of the variation in Carbon Emission Disclosure as shown by Table 12. The remaining 73.96% is attributable to other variables not discussed in this study.

Table 12. Multiple Coefficient of Determination Test.

R-squared	0.307623
Adjusted R-squared	0.260415

Table 13. Hypothesis Test Results.

No	Hypothesis	Result
H1	The type of industry has a positive effect on carbon emission disclosure	Rejected
H2	Environmental management performance has a positive effect on carbon emission disclosure	Accepted
H3	Carbon intensity has a negative effect on carbon emission disclosure	Rejected

Results in Table 13 show industry type has no significance influence on carbon emission disclosure. This result does not correspond to this study's hypothesis, but aligns with the researchs done by Meiryani, *et al*. (2023). PT Indo Tambangraya Megah Tbk., a company within the carbon-intensive industries sector, specifically operating in the energy sector related to coal mining, recorded the highest carbon emission disclosure score among all the study samples. Despite being part of an industry traditionally associated with significant environmental impacts, PT Indo Tambangraya Megah Tbk. demonstrates a strong commitment to transparency in carbon emission management through its sustainability reports. However, it is important to note that companies within sectors typically considered non-intensive can also exhibit significant disclosure levels. For instance, PT Kalbe Farma Tbk. consistently reported a carbon emission disclosure score above the sample average for three consecutive years, from 2019 to 2021. This highlights that companies, whether classified as carbon-intensive or non-intensive, can achieve substantial carbon emission disclosures, depending on their environmental management practices and strategies. It underscores the importance of the managerial approach adopted by the company, rather than merely the industry in which it operates. In other words, while industry type may provide context regarding the environmental risks and responsibilities companies face, the degree of transparency in carbon emission disclosure is more strongly influenced by management's commitment and social responsibility to transparency towards stakeholders.

On the contrary, the results indicate that environmental management performance has a positive influence on carbon emission disclosure, which aligns with this study's hypothesis. Companies are increasingly competing to achieve higher PROPER ratings, which are assessed based on two main criteria: compliance with applicable regulations and performance that exceeds the established requirements, often referred to as 'beyond compliance.' One key aspect evaluated under the 'beyond compliance' category is the effort to reduce carbon emissions, which includes the percentage of renewable energy usage and the adoption of environmentally friendly fuels. To attain a higher rating, companies are expected to surpass the minimum standards set by regulatory requirements. As a result, companies with higher PROPER ratings are more likely to demonstrate more comprehensive and transparent carbon emission disclosures. This transparency serves to inform stakeholders about their environmental performance, allowing external parties to evaluate their efforts. Proactive environmental management not only demonstrates effectiveness to investors but also meets public expectations for accountability, as indicated by legitimacy theory. Thus, comprehensive carbon emission disclosures are a natural outcome of strong environmental management performance, consistent with findings by Harits & Mutasowifin (2024). This is further supported by PT Adaro Energy Tbk., which achieved the PROPER Gold rating for three consecutive years from 2019 to 2021. This achievement reflects the company's strong commitment to sound environmental management practices. Additionally, the carbon emission disclosure scores of PT Adaro Energy Tbk. in 2020 and 2021 indicate that the company provided carbon emission disclosure items exceeding the average disclosure levels observed in this study. Thus, PT Adaro Energy Tbk. serves as a clear example of how PROPER ratings, as a measure of environmental management performance, can positively influence carbon emission disclosures.

The findings show that carbon intensity has no significant influence on carbon emission disclosure. This finding is not aligned with this study's hypothesis, but corresponds with research conducted by Putri & Yuliandhari (2024). The initial hypothesis of this study posited that carbon intensity has a negative influence on carbon emission disclosure, suggesting that the lower the carbon intensity of a company, the more comprehensive its carbon emission

disclosure tends to be. Although the findings affirm this negative relationship, as indicated by the partial significance test, no statistically significant effect was found between the two variables. This implies that while there is a tendency for companies with lower carbon intensity to provide more comprehensive emission disclosures, the relationship is not strong enough to be considered statistically significant. This suggests that other factors, such as managerial strategies or the company's approach to transparency, may play a more substantial role in determining the level of emission disclosure, rather than the carbon intensity itself. In the context of legitimacy theory and stakeholder theory, these findings reinforce the notion that companies with high emission intensity tend to refrain from disclosing information that could harm their image. Such companies seek to keep their social legitimacy in the eyes of their stakeholders by limiting disclosures that may expose shortcomings in their environmental management practices.

4. CONCLUSIONS AND SUGGESTIONS

This study focuses on 16 companies which all listed on the IDX30 index during the period of 2019-2021. The objective of the research is to investigate how industry type, environmental management performance, and carbon intensity influence carbon emission disclosure. Analysis on the findings showcase that all three independent variables collectively impact carbon emission disclosure. However, when considered individually, the industry type variable does not show a significant effect, although it exhibits a positive correlation with carbon emission disclosure among IDX30-listed companies during the study period. Similarly, carbon intensity does not have a significant effect, displaying a negative relationship with carbon emission disclosure. In contrast, environmental management performance has a significant positive effect on carbon emission disclosure.

Based on the findings of this study, it is recommended that investors pay particular attention to a company’s PROPER rating. As the PROPER rating is determined through company efforts, reflecting its commitment and strategies in environmental management, investing in companies with high PROPER ratings may serve as an indicator of trust in the company's commitment to sustainability and may encourage other companies to follow suit, as it demonstrates investor concern and attention to environmental issues and sustainability practices.

From a regulatory perspective, these findings highlight the need for regulators to strengthen the disclosure criteria for carbon emission within the PROPER assessment. Given the significant positive influence that the PROPER rating has on a company’s carbon emission disclosure, more specific and comprehensive criteria would motivate companies to enhance the transparency of their emissions reporting in order to attain a higher ranking, thereby fostering a business ecosystem that is more accountable to environmental issues.

Additionally, for the company’s management board, it is crucial to monitor and continually strive to improve their PROPER rating, as this rating not only reflects transparency in carbon emission disclosure but also correlates with the company’s commitment to sustainability issue. Given the growing urgency of climate change issues and companies' commitments to Net-Zero Emissions, it is expected that companies will not only meet regulatory requirements but also take proactive steps to enhance the transparency of their carbon emission disclosures. This can create opportunities for companies to build a better reputation and foster stronger relationships with stakeholders, thus contributing to long-term sustainability and environmental responsibility.

Lastly, as this study's population includes only IDX30-listed companies, not all Indonesian companies, and is limited to 2019-2021, the findings may not represent the entire market and could be affected by macroeconomic factors like the Covid-19 pandemic. Future research should expand the time frame and consider samples from different sectors, as well as include additional relevant independent variables to enhance insights into carbon emission disclosure.

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