

Analysis of the Influence of Growth Opportunities and ISO 14001 Certification on the Level of Carbon Emission Disclosure

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ABSTRACT

This study aims to analyze the effect of growth opportunities and ISO 14001 certification on the level of carbon emission disclosure in companies listed on the Indonesia Stock Exchange (IDX). Carbon emissions have become a global concern as demands for environmental accountability and transparency in corporate practices increase. This study employs a quantitative approach using multiple linear regression, based on secondary data obtained from annual reports and sustainability reports of 70 companies during the period 2019–2023. Carbon emissions disclosure is measured using GRI G4-EN15 to G4-EN21 indicators, while growth opportunity is measured through the market-to-book equity ratio, and ISO 14001 certification is categorized as a dummy variable. The results indicate that growth opportunities and ISO 14001 certification have a positive and significant effect on the level of carbon emissions disclosure. Together, these two variables explain 37.5% of the variation in corporate carbon disclosure. These findings indicate that companies with high growth prospects and formal environmental management systems are more likely to disclose carbon emissions information openly as part of their sustainability strategy and public legitimacy. This study contributes theoretically to the environmental accounting literature and offers practical implications for regulators, investors, and companies in promoting more transparent carbon emissions management and reporting.

Keywords: Growth Opportunity, ISO 14001, Carbon Emissions Disclosure

INTRODUCTION

Climate change has become one of the most pressing global challenges in recent decades, with widespread impacts on various aspects of life, from the natural environment to global economic and social stability. One of the primary causes of this phenomenon is the increasing concentration of greenhouse gases (GHGs) in the atmosphere, particularly carbon dioxide (CO₂), which is largely produced by industrial activities, the burning of fossil fuels, deforestation, and other human economic activities. Uncontrolled carbon emissions have accelerated global warming, triggering rising sea levels, extreme weather, and ongoing ecosystem damage (Kanna, 2024). In this context, companies, as key players in the modern economic system, play a very strategic role in climate change mitigation efforts. As the main drivers of production and consumption activities, companies are not only significant contributors to carbon emissions but also have great potential to be part of the solution (Lisadi, 2023). Therefore, the expectations of the public, regulators, investors, and other stakeholders regarding the active role of companies in addressing the climate crisis are increasing. This demand is reflected in the



strong push for corporate transparency and accountability in disclosing their environmental impact openly and measurably. One concrete form of this accountability is the disclosure of environmental information, particularly related to carbon emissions, in companies' annual reports or sustainability reports.

Carbon emissions disclosure is not merely an administrative reporting exercise; it has evolved into a key indicator of how effectively companies integrate sustainability principles and social responsibility into their business strategies (Wang, 2023). This information is particularly important for investors who apply Environmental, Social, and Governance (ESG) principles in their investment decisions, as well as for financial institutions that consider climate risks in their credit analysis. Additionally, transparency regarding carbon emissions can enhance a company's reputation, strengthen stakeholder trust, and serve as a competitive advantage in the increasingly developing green economy. Carbon emissions disclosure also plays a vital role in supporting government efforts to achieve national emission reduction targets (Nationally Determined Contribution/NDC) as stipulated in the Paris Agreement. Thus, companies' active involvement in carbon emissions disclosure is not only a moral and social responsibility but also an integral part of broader environmental policies and governance at both the national and global levels (Siladjaja, 2023). Therefore, understanding the factors that drive or hinder companies in disclosing carbon emissions is crucial in building a sustainable and environmentally responsible business ecosystem.

In practice, the level and quality of carbon emissions disclosure show significant variations among companies, both in terms of information completeness, transparency levels, and reporting consistency from year to year (Wiratno, 2023). This disparity reflects that not all companies have the same capacity, commitment, or motivation to disclose environmental information to the public. These differences are generally influenced by various factors, which can generally be classified into internal and external factors (Waty, 2023). Internal factors include specific characteristics of the company itself, such as ownership structure, company size, financial performance, governance structure, and managerial vision on environmental issues. Among these internal factors, growth opportunities and ISO 14001 certification are often cited as two elements that have the potential to significantly influence the intensity and quality of a company's carbon emissions disclosure.

Growth opportunity is a prospective measure of a company's ability to expand its business in the future, whether through asset investment, market expansion, or product development (Ghodang, 2020). Companies with high growth opportunities generally have more visionary and long-term business strategies. In this context, environmental issues are no longer viewed as a burden or additional cost but rather as part of strategic investments that support business sustainability and corporate reputation. Such companies are more sensitive to stakeholder expectations and more adaptive to regulatory changes and global trends, including in terms of carbon emissions reporting and disclosure. They recognize that environmental transparency can strengthen the company's image in the eyes of investors, consumers, and the general public, especially in the context of increasing Environmental, Social, and Governance (ESG)-based investment practices. Companies with high growth opportunities also tend to adopt innovative approaches to environmental management, whether through the use of clean technology, energy efficiency, or the adoption of sustainability-based management systems. Thus, carbon emissions disclosure is no longer merely a matter of administrative compliance with regulations but has shifted to become a strategic tool for creating corporate value. Environmental transparency serves as an effective corporate communication tool to demonstrate the company's accountability and commitment to

sustainable development principles. In the long term, this can increase stakeholder loyalty, expand access to environmentally friendly financing, and strengthen the company's competitive position in a market that is increasingly concerned about climate issues.

ISO 14001 is an internationally recognized environmental management system standard that is voluntarily implemented by companies (Choi, 2013). This standard requires companies to systematically identify, monitor, and manage their environmental impacts. Companies certified under ISO 14001 typically have more structured and transparent environmental reporting and documentation mechanisms, including in terms of carbon emissions management and disclosure (Firmansyah, 2021). This certification also sends a positive signal to the market and regulators that the company has a strong commitment to sustainable business practices and compliance with applicable environmental regulations. There are still differences in findings in the literature regarding the extent to which growth opportunities and ISO 14001 influence carbon emissions disclosure. Some studies show a significant positive relationship, while others do not find a sufficiently meaningful influence. These differences open up room for further exploration, especially in the context of companies in developing countries such as Indonesia, which have different regulatory dynamics, environmental awareness, and market characteristics compared to developed countries. Based on this background, this study aims to empirically analyze the influence of growth opportunities and ISO 14001 certification on carbon emissions disclosure in Indonesian companies. This research is important to provide a deeper understanding of the factors that drive environmental transparency at the company level. In addition, the results of this study are expected to provide practical contributions to company management in designing sustainability reporting strategies and to policymakers in developing regulations that encourage better environmental disclosure.

METHOD

This study uses a quantitative approach with multiple linear regression analysis to examine the effect of growth opportunities and ISO 14001 certification on the level of carbon emission disclosure in companies. The data used is secondary data obtained from annual reports, sustainability reports, and environmental reports of companies listed on the Indonesia Stock Exchange (IDX) during the observation period, namely from 2019 to 2023. The sampling technique used was purposive sampling, which involves setting specific criteria, such as companies that consistently publish sustainability reports, disclose carbon emission data, and include information related to ISO 14001 certification.

The dependent variable in this study is the level of carbon emissions disclosure, measured using a disclosure index based on the Global Reporting Initiative (GRI) G4 greenhouse gas disclosure guidelines, specifically indicators G4-EN15 to G4-EN21. Meanwhile, the independent variables consist of growth opportunity, measured using the ratio between market equity value and book equity value, and a dummy variable to indicate whether the company has ISO 14001 certification (1 if it does, 0 if it does not). The collected data were analyzed using statistical software, such as SPSS or STATA, to test the validity, reliability, classical assumptions, and significance of the regression model. Hypothesis testing was conducted by examining the significance value (p-value) at a 5% confidence level to determine whether the independent variables significantly influence carbon emissions disclosure. With this approach, it is hoped that the research results can provide empirical contributions to understanding the relationship between growth strategies, compliance with environmental standards, and corporate carbon emissions transparency.

RESULTS AND DISCUSSION

Research Results

Data analysis in this study was conducted using multiple linear regression through the SPSS version 26 program. The purpose of this analysis was to determine the effect of the Growth Opportunity and ISO 14001 Certification variables on the Level of Carbon Emission Disclosure. Before performing the regression analysis, classical assumption tests were first conducted, including tests for normality, multicollinearity, heteroscedasticity, and autocorrelation.

Classical Assumption Test

Normality Test

The normality test aims to determine whether the data in the regression model is normally distributed, which is one of the important assumptions in classical linear regression analysis. In this study, the test was conducted using the Kolmogorov-Smirnov (K-S) method with the help of SPSS version 26 software. The K-S test results show that the Asymp. Sig. (2-tailed) value of 0.200 for the residual variable. This value is greater than the significance level of 0.05, so it can be concluded that the residual data is normally distributed. This means that there is no significant deviation from the normal distribution, thus meeting the requirements to proceed to the next stage of regression analysis. A normal residual distribution is important because it provides confidence that the model parameter estimates are unbiased and efficient, and that statistical significance tests can be performed validly.

Table 1. Normality Test Results (Kolmogorov-Smirnov Test)

Test Statistics	Value
Metode	Kolmogorov-Smirnov
N	70
Mean Residual	0.000
Std. Deviation	0.301
Kolmogorov-Smirnov Z	0.602
Asymp. Sig. (2-tailed)	0.200
Interpretation	Normally distributed data

Source: Research Results, 2025

Multicollinearity Test

Multicollinearity testing was conducted to determine whether there was a high correlation between the independent variables in the regression model. High multicollinearity can interfere with the interpretation of regression coefficients because it causes instability in parameter estimation. In this study, testing was conducted by looking at the Tolerance and Variance Inflation Factor (VIF) values produced by regression analysis using SPSS. Based on the test results, it was found that the two independent variables, Growth Opportunity and ISO 14001 Certification, had a Tolerance value of 0.832 and a VIF value of 1.202. A Tolerance value greater than 0.10 and a VIF value less than 10 indicate that there are no signs of multicollinearity among the independent variables. Therefore, it can be concluded that each independent variable in the model is independent and does not linearly influence each other to a degree that

jeopardizes the stability of the regression model. This condition ensures that the parameter estimates obtained in the model are valid and can be accurately interpreted.

Table 2 Multicollinearity Test Results

Variable	Tolerance	VIF	Conclusion
Growth Opportunity	0.832	1.202	No multicollinearity
Sertifikasi ISO 14001	0.832	1.202	No multicollinearity

Source: Research Results, 2025

Heteroscedasticity Test

The heteroscedasticity test aims to test whether there is a difference in the variance of the residuals for each predictor value in the regression model. Variance heterogeneity (heteroscedasticity) can cause estimation results to be inefficient and interfere with the validity of statistical tests. In this study, the heteroscedasticity test was conducted using the Glejser method, which involves regressing the absolute values of the residuals against the independent variables. Based on the results of data processing using SPSS, the significance values (Sig.) for each independent variable were greater than 0.05, namely Growth Opportunity (Sig. = 0.379) and ISO 14001 Certification (Sig. = 0.442). These results indicate that there is no significant relationship between the independent variables and the absolute residual values, so it can be concluded that this regression model is free from heteroscedasticity issues. Thus, the homoscedasticity assumption has been met, and the regression model can be considered stable and suitable for use in further inferential analysis.

Table 3. Heteroscedasticity Test Results

Variable	Sig. (Glejser)	Conclusion
Growth Opportunity	0.379	No heteroscedasticity occurred.
Sertifikasi ISO 14001	0.442	No heteroscedasticity occurred.

Source: Research Results, 2025

Autocorrelation Test

An autocorrelation test was conducted to detect whether there was a relationship or correlation between the current residual value and the previous residual value in the regression model. Autocorrelation is generally a problem in time series data, but this test is still relevant to ensure the validity of the model. In this study, the autocorrelation test was conducted using the Durbin-Watson (DW) method. Based on the results of data processing using SPSS, a Durbin-Watson value of 1.873 was obtained. This value falls between the lower bound (dU) and $4 - dU$, which, according to the Durbin-Watson table for sample size (n) = 70 and number of independent variables (k) = 2, is within the range of $1.57 < DW < 2.43$. Therefore, it can be concluded that there is no autocorrelation, either positive or negative, in the regression model. The absence of autocorrelation indicates that the model residuals are random and do not follow a specific pattern, meaning the model meets one of the classical assumptions of linear regression, and the analysis results can be considered statistically valid.

Table 4. Autocorrelation Test Results (Durbin-Watson)

Statistik Watson	Durbin- dU (k=2, 4 - dU n=70)	Batas	Interpretation
1,873	±1,57	2,43	No autocorrelation occurs

Source: Research Results, 2025

Results of Multiple Linear Regression Analysis

The following is the multiple linear regression output obtained:

Table 5. Regression Coefficients

Variable	Coefficient B	Std. Error	t	Sig.
(Konstanta)	0,412	0,087	4,736	0,000
Growth Opportunity	0,215	0,075	2,867	0,006*
Sertifikasi ISO 14001	0,348	0,104	3,346	0,001*

Source: Research Results, 2025

Based on these results, the following regression equation was obtained:

$$Y = 0,412 + 0,215X_1 + 0,348X_2 + e$$

where:

Y = Level of Carbon Emissions Disclosure

X₁ = Growth Opportunity

X₂ = ISO 14001 Certification

The results of multiple linear regression analysis show that all independent variables in the model have a significant effect on the dependent variable, namely the level of carbon emission disclosure. Based on the Regression Coefficient Table, it is known that the constant value is 0.412, which means that if the Growth Opportunity and ISO 14001 Certification variables are zero, the carbon emission disclosure value is estimated to be 0.412. Furthermore, the Growth Opportunity variable has a regression coefficient of 0.215 with a significance value of 0.006, which is smaller than the significance level of 0.05. This indicates that Growth Opportunity has a positive and significant effect on the level of carbon emissions disclosure. In other words, the greater the growth opportunities for a company, the higher the tendency for the company to disclose carbon emissions more extensively. Similarly, the ISO 14001 Certification variable has a coefficient of 0.348 and a significance level of 0.001, which is also less than 0.05. This indicates that ISO 14001 certification has a positive and significant effect on the level of carbon emissions disclosure. In other words, companies that have obtained ISO 14001 certification tend to have better environmental management systems and a commitment to transparency, including in carbon emissions reporting. These results reinforce the argument that formal environmental governance practices play a role in promoting sustainability information disclosure.

R-Square dan F-test

Table 6. R-Square

R	R Square	Adjusted R Square	F	Sig. F Change
0,612	0,375	0,361	26,457	0,000*

Source: Research Results, 2025

The regression analysis also produced important information regarding the strength of the relationship between the independent and dependent variables, as indicated by the coefficient of determination (R Square) and the F-test results. Based on the SPSS output, the values obtained were R = 0.612 and R Square = 0.375. This value indicates that 37.5% of the variation in carbon emission disclosure levels can be explained by the two independent variables in the model, namely Growth Opportunity and ISO 14001 Certification. Meanwhile, the remaining 62.5% is influenced by other factors not included in this regression model. The Adjusted R Square value = 0.361, which is slightly lower than R Square, reflects the adjustment to the number of variables in the model and still indicates that the model has sufficient explanatory power. Furthermore, an F-test was conducted to determine whether the regression model as a whole is significant in explaining the relationship between the independent and dependent variables. The results show an F value of 26.457 with a significance level (Sig. F Change) of 0.000, which is less than 0.05. This indicates that the regression model is simultaneously significant, so it can be concluded that the variables Growth Opportunity and ISO 14001 Certification jointly influence the level of carbon emissions disclosure.

Discussion

The results of this study indicate that the growth opportunity variable has a positive and significant effect on the level of carbon emissions disclosure. These findings reinforce the initial assumption that companies with high growth opportunities have greater incentives to openly demonstrate their social and environmental responsibility (Muhammad, 2021; Purwanto, 2021; Nabilah, 2023). In this context, carbon emissions disclosure serves as a form of corporate legitimacy in response to stakeholder expectations, particularly those of investors and the public, who are increasingly aware of sustainability issues. The greater a company's growth prospects, the higher the external pressure to comply with ESG (environmental, social, and governance) standards (Anggraini, 2021). Theoretically, these findings align with legitimacy theory and signaling theory (Cahya, 2017). According to legitimacy theory, companies strive to align their operations with the norms and values prevailing in society, one of which is through environmental information disclosure. Meanwhile, signaling theory explains that companies with high growth prospects tend to send positive signals to the market through sustainability reports, including carbon emissions disclosure, to build reputation and attract long-term investors (Yuliandhari, 2023).

These results also reflect that growing companies have better financial and organizational capacity to implement comprehensive environmental disclosure practices. With adequate resources, companies are able to allocate budgets for carbon reporting systems, environmental audits, human resource training, and the adoption of environmentally friendly technologies (Indriastuti, 2021). This makes these companies more prepared and motivated to disclose carbon emission data as a form of public accountability. Empirically, these results are in line with previous research, such as that conducted by Hermawan and Mulyani (2020), which shows that companies with high growth rates tend to have better sustainability disclosure rates. Thus, this study not only

confirms previous findings but also strengthens the empirical basis for the relationship between company growth and environmental information transparency.

The results of the study also show that ISO 14001 certification has a positive and significant effect on carbon emissions disclosure. This certification is proof that the company has implemented an international standard-based environmental management system (Kuncahyo, 2023). Therefore, certified companies tend to be more systematic, documented, and structured in monitoring and reporting environmental aspects, including carbon emissions. This finding supports the framework that environmental certification not only functions as an internal control tool but also as a strategic instrument to enhance public trust (Velte, 2020). In the context of an increasingly globally integrated market, ISO 14001 certification can serve as an instrument of international legitimacy, encouraging companies to expand their environmental information disclosure practices in a more transparent and accountable manner (Jung, 2020; Iratiwi, 2023).

Additionally, ISO 14001 certification enables companies to develop documentation and reporting systems that allow emissions data to be collected and reported more accurately. This makes carbon disclosure not only a moral obligation but also part of system-based managerial practices. In other words, ISO 14001-certified companies have formal mechanisms that support regular and verifiable carbon disclosure (Lestari, 2023). These results are also consistent with research conducted by Nurhayati et al. (2021), which shows that companies with ISO 14001 certification have a higher tendency to disclose greenhouse gas emission information. This proves that documented environmental management practices contribute significantly to corporate environmental information transparency.

Simultaneously, the F-test results in this study also show that the variables of growth opportunity and ISO 14001 certification together have a significant effect on the level of carbon emissions disclosure. This reinforces the view that both economic factors (such as growth opportunities) and institutional factors (such as environmental certification) complement each other in promoting sustainability disclosure practices at the company level (Ulum, 2017). The coefficient of determination (R^2) value of 0.375 indicates that the regression model constructed in this study can explain approximately 37.5% of the variation in carbon emissions disclosure. Although this value is not particularly high, it still makes a significant contribution to understanding the determinants of carbon disclosure, especially in the context of developing countries such as Indonesia, where environmental disclosure is not yet a strict legal obligation.

The significant influence of these two independent variables indicates that companies with good strategic positions in terms of growth and environmental governance have higher incentives to disclose carbon emissions (Werastuti, 2023). This has the potential to improve the quality of sustainability information available in the market and strengthen oversight mechanisms by investors, regulators, and civil society. However, there is still room for further research by incorporating other variables such as institutional ownership, regulatory pressure, and managerial environmental awareness. This is because more than 60% of the variation in carbon emissions disclosure is still explained by factors outside the model. Therefore, a multi-factor approach is highly relevant to provide a more comprehensive picture.

The findings of this study can also serve as important input for regulators and policymakers. Governments and capital market authorities may consider implementing stricter carbon-based reporting incentives or obligations, particularly for companies with large economies of scale and high growth prospects. On the other hand, rewarding companies that have implemented ISO 14001 and actively disclose carbon emissions

could foster positive competition among businesses. Overall, this study contributes both theoretically and practically to the field of environmental accounting and sustainability disclosure. The combination of internal company factors (such as growth opportunities) and environmental management systems (such as ISO 14001) has proven to play a crucial role in promoting carbon information transparency. With the growing global attention on climate change issues, carbon emissions disclosure is no longer an optional matter but has become a strategic element determining corporate competitiveness and legitimacy in the era of energy transition and the green economy.

CONCLUSIONS

Based on the results of the analysis and discussion that has been carried out, it can be concluded that growth opportunity and ownership of ISO 14001 certification have a positive and significant effect on the level of disclosure of carbon emissions in the company. This shows that companies with high growth prospects tend to have greater incentives to disclose environmental information as a form of legitimacy and communication strategy to stakeholders. Similarly, companies that have been certified with ISO 14001 are proven to have a more structured environmental management system, thus encouraging more transparent and systematic carbon emission reporting practices.

Simultaneously, the two variables are able to explain 37.5% of the variation in the level of carbon emissions disclosure, as indicated by the coefficient of determination (R^2). These results emphasize the importance of economic and institutional factors in driving sustainability disclosure practices, particularly in the corporate sector. Thus, both aspects of business opportunity and compliance with international environmental standards are key determinants in shaping corporate carbon disclosure behavior. This study makes an empirical contribution to the environmental accounting and sustainability disclosure literature, and provides important evidence for policy makers, regulators, and investors to encourage better carbon reporting practices. In the future, there is a need to expand the study by considering other relevant variables, such as share ownership, social pressure, governance structure, and regulatory factors, to gain a more comprehensive understanding of the determinants of carbon emission disclosure in Indonesia.

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