



## The Influenced of ESG Environmental Performance on Financial Performance: A Study of Indonesian Publicly Listed Companies

A. Muh. Alif Rumansyah<sup>1</sup>, Yunieta Anny Nainggolan<sup>2</sup>

<sup>1</sup>School of Business Management, Institute Technology Bandung, West Java, Indonesia, [alif.rumansyah@gmail.com](mailto:alif.rumansyah@gmail.com)

<sup>2</sup>School of Business Management, Institute Technology Bandung, West Java, Indonesia, [yunieta@sbm-itb.ac.id](mailto:yunieta@sbm-itb.ac.id)

Corresponding Author: [alif.rumansyah@gmail.com](mailto:alif.rumansyah@gmail.com)<sup>1</sup>

**Abstract:** Environmental, Social, and Governance (ESG) factors have become crucial in corporate strategy and financial decision-making. This study examines the impact of environmental performance on financial performance—measured by Return on Assets (ROA) and Return on Equity (ROE)—of publicly listed companies in Indonesia. Using panel data regression, the research analyzes companies in the IDX ESG Leaders, SRI-KEHATI, and ESGQ-KEHATI indices from 2019 to 2023. Environmental performance indicators include emissions, energy consumption, water usage, and waste management, with firm size, leverage, and governance characteristics as control variables. The findings indicate that environmental performance influences financial performance, though its effects vary across indicators. Some sustainability practices improve financial outcomes, while others incur short-term costs. The study highlights the risk of greenwashing, emphasizing the need for standardized ESG reporting. These insights are valuable for corporate decision-makers, investors, and regulators to develop effective ESG strategies that balance sustainability with financial growth.

**Keyword:** ESG, Environmental Performance, Financial Performance, ROA, ROE, Indonesia, IDX ESG Leaders, SRI-KEHATI, Panel Data Regression

### INTRODUCTION

In recent years, the integration of Environmental, Social, and Governance (ESG) factors into corporate strategy has become a critical component of business operations and value creation. ESG considerations have evolved from mere compliance requirements to fundamental elements of corporate strategy, particularly following the COVID-19 pandemic, which underscored the importance of sustainable practices and social responsibility (Eccles & Klimenko, 2019). The growing global awareness of environmental challenges, including climate change, resource depletion, and biodiversity loss, has driven companies to adopt more sustainable practices. The United Nations' Sustainable Development Goals (SDGs), introduced in 2015, have provided a framework for corporations to align their operations with global sustainability targets (United Nations, 2020). Moreover, a study by McKinsey & Company (2021) indicates that firms with strong ESG commitments tend to outperform their competitors,

highlighting that social responsibility is not only ethically sound but also a strategic business advantage.

The commitment to ESG has been increasingly prominent across North America, Europe, and Asia, with regulatory frameworks such as the EU Sustainable Finance Disclosure Regulation (SFDR) enhancing ESG transparency in Europe (European Commission, 2021). In Indonesia, ESG considerations have gained traction through the Financial Services Authority (OJK) regulation 60/POJK.04/2017, which mandates public companies to disclose their ESG practices. According to a study by KPMG (2020), 61% of Indonesian companies have adopted ESG strategies, reflecting a heightened awareness of sustainability and ethical governance. In response, the Indonesia Stock Exchange (IDX) launched the IDX ESG Leaders Index and ESGQKEHATI Index, which consist of high-performing stocks with strong ESG ratings (Rohman et al., 2024). These initiatives demonstrate that ESG-focused companies are attracting greater investor interest and are increasingly recognized for their potential to achieve long-term sustainable growth (Sari, 2023).

The Indonesian Financial Services Authority (OJK) implemented the Indonesia Sustainable Finance Roadmap II to foster a more sustainable business environment by integrating ESG criteria into financial decision-making to mitigate climate-related risks. This initiative enhances transparency among publicly traded companies and aligns their ESG efforts with the Paris Agreement on climate change (2015–2030). In response to the growing emphasis on ESG, the Indonesia Stock Exchange (IDX) launched the IDX ESG Leaders Index, comprising 30 stocks with strong ESG ratings and no controversial involvement. Additionally, in 2009, IDX collaborated with the KEHATI Foundation to establish the ESGQKEHATI Index, Indonesia's first sustainable finance index, which includes 45 stocks selected based on the UN Principles for Responsible Investment (Rohman et al., 2024). These developments indicate a significant shift in corporate value creation, emphasizing the importance of sustainability, social responsibility, and ethical governance in influencing market trends and financial performance.

Several previous studies examining the relationship between environmental, social, and governance (ESG) performance and financial performance, mainly use return on assets (ROA) and return on equity (ROE) as dependent variables. Various methodologies, including empirical analysis, regression models, and structural equation modeling, were employed across different industries and geographical contexts. The majority of studies indicate a positive impact of ESG performance on financial outcomes, particularly in high-impact industries, multinational firms, and regions like China, Japan, and Europe (Li et al., 2024; Chu Chin et al., 2022; Siminica et al., 2019). However, some studies highlight a negative relationship, particularly in Indonesia and Vietnam, where environmental performance negatively affects financial metrics (Wiraguna et al., 2023; Indriastuti et al., 2021). Additionally, the impact of sustainability varies depending on sectoral factors, with European banks experiencing increased operational costs due to environmental governance (Weber & Remer, 2021), while green energy investments positively influence return on investment (ROI) in the energy sector (Bouri et al., 2019). These findings highlight the complex and context-dependent nature of ESG's financial implications.

The ESG framework has gained substantial traction as stakeholders increasingly recognize the critical role of sustainable business practices in fostering long-term value creation and corporate resilience. (Aik, 2024). The relationship between environmental performance and financial performance has been widely examined, particularly in the context of publicly listed companies. Grounded in Stakeholder Theory, companies are expected to consider the interests of multiple stakeholders, including investors, regulators, and the broader community, by integrating sustainable practices into their operations (Septiavin et al., 2023b). Additionally, Legitimacy Theory suggests that firms proactively engaging in environmental initiatives can

strengthen their market position by aligning corporate strategies with societal expectations, thereby reducing reputational and regulatory risks (Chang, 2015). This aligns with findings from panel data regression analyses of companies listed on ESG-focused indices, such as IDX ESG Leaders and ESGQ-KEHATI, which demonstrate that while certain environmental practices enhance financial performance. These insights emphasize the importance of ESG integration, not only as a compliance measure but as a strategic driver of financial sustainability.

This study aims to examine the impact of environmental performance on the financial performance of publicly listed companies in Indonesia, particularly those included in ESG-related stock indices such as IDX ESG Leaders, SRI-KEHATI, and ESGQ-KEHATI. By utilizing panel data regression analysis on sustainability and financial reports from 2019 to 2023, this research seeks to determine whether companies with strong environmental performance indicators such as emissions reduction, energy efficiency, water usage, and waste management experience measurable financial advantages. The findings indicate that energy efficiency and waste management contribute positively to financial performance, enhancing both Return on Assets (ROA) and Return on Equity (ROE), while higher water usage negatively impacts financial outcomes due to increased operational costs. Interestingly, emissions reduction does not show a significant direct effect on financial performance, suggesting that companies may need longer time horizons to realize financial gains from emission-related sustainability initiatives.

In addition to identifying the financial benefits of environmental initiatives, this study explores strategies that Indonesian companies can implement to enhance their environmental performance while maintaining financial growth. The results suggest that firms should prioritize energy efficiency through renewable energy adoption, optimize waste management by integrating circular economy principles, and implement water conservation technologies to reduce cost burdens. Moreover, the study highlights the need for stronger ESG reporting standards and green financing mechanisms, such as sustainability-linked loans, to support environmentally responsible investments without placing excessive financial strain on companies.

The structure of this paper is organized as follows; Section 2 discusses the research methodology, including variable selection, data sources, and regression techniques. Section 3 presents the empirical results and analysis of the relationship between environmental performance and financial outcomes. Section 4 provides discussions and implications for corporate ESG strategies, investor decisions, and policy recommendations. Finally, Section 5 concludes with key takeaways, limitations, and suggestions for future research.

## **METHOD**

This study employs three types of variables: independent variables (environmental performance indicators such as emissions reduction, energy consumption, water usage, and waste management), dependent variables (financial performance measured by Return on Assets (ROA) and Return on Equity (ROE)), and control variables (firm size, leverage, and governance characteristics). The research utilizes secondary data collected from sustainability reports and financial statements of companies listed in ESG-related stock indices, including IDX ESG Leaders, SRI-KEHATI, and ESGQ-KEHATI, over the period 2019–2023.

Panel data regression analysis is applied to examine the relationship between environmental performance and financial outcomes. Several recent studies support the use of regression models, including panel data regression, to examine the relationship between environmental performance and financial performance (Zhao et al., 2024; Gallego-Álvarez et al., 2023; Velte & Issenberger, 2022; Wijethilake & Gamage, 2021), as this method effectively captures variations across firms and over time while mitigating bias from individual-year data

(Gujarati & Porter, 2009). The statistical analysis is conducted using Stata software to ensure accuracy and robustness of the results. Additionally, to determine the most appropriate panel data regression model, the study conducts a Hausman test to assess whether a fixed-effects model (FEM) or random-effects model (REM) is more suitable. Given that company characteristics such as firm size, financial performance, and industry sector may influence the relationship between environmental performance and financial outcomes. The regression models are organized as follows:

$$\begin{aligned} \text{ROA}_{it} &= \alpha + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + \beta_4 X_{4it} + \gamma_1 Z_{1it} + \gamma_2 Z_{2it} + u_i + \epsilon_{it} \\ \text{ROE}_{it} &= \alpha + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + \beta_4 X_{4it} + \gamma_1 Z_{1it} + \gamma_2 Z_{2it} + u_i + \epsilon_{it} \end{aligned}$$

Where:

- Y<sub>it</sub> : Dependent variable (ROA or ROE) for firm i at time t.
- α : Coefficients
- β : Regression Coefficients for independent variables.
- X<sub>kit</sub> : Independent variables (environmental performance indicators: emission, energy consumption, water usage, waste management).
- Γ<sub>j</sub> : Coefficients for control variables.
- Z<sub>jit</sub> : Control variables (Total Assets, Leverage, and Board Size).
- u<sub>i</sub> : Unobserved firm-specific effect.
- ε<sub>it</sub> : Error term.

Before analyzing the regression model, this study conducts several diagnostic tests, including multicollinearity, heteroscedasticity, autocorrelation, and the Hausman test, to ensure the appropriateness of the selected regression model and to avoid biased results. Multicollinearity is assessed using the Variance Inflation Factor (VIF), where a VIF value exceeding 10 indicates high collinearity among independent variables, potentially distorting the regression estimates (Gujarati & Porter, 2009). To detect heteroscedasticity, which occurs when the variance of error terms is not constant across observations, this study employs the Breusch-Pagan and Wald tests, ensuring that the model produces reliable estimations. Furthermore, the Wooldridge test is applied to examine the presence of autocorrelation, a condition where residuals from one time period are correlated with those from another, which can affect the accuracy of the regression outcomes. Finally, to determine the most appropriate panel data regression model, the Hausman test is conducted, comparing the fixed-effects model (FEM) to ensure the correct specification based on the dataset's characteristics. After selecting the regression model, hypothesis testing is using the F-test to assess the joint significance of independent variables, the t-test to evaluate individual variable significance, and the R-squared value to measure the model's explanatory power.

## RESULTS AND DISCUSSION

Based on Indonesian financial regulations, companies listed on ESG-related indices such as IDX ESG Leaders, SRI-KEHATI, and ESGQ-KEHATI are encouraged to disclose their environmental performance through sustainability reports. However, the level of transparency remains inconsistent across firms, leading to challenges in assessing the long-term impact of ESG initiatives on financial performance. This study analyzed a sample of 12 publicly listed companies that consistently reported environmental performance indicators from 2019 to 2023. The selection criteria were based on several considerations. First, only companies with complete ESG disclosures over the five-year period were included to ensure data reliability. Second, firms from industries with minimal environmental impact were excluded to focus on sectors where environmental performance plays a crucial role in financial decision-making.

Finally, the sample was restricted to companies with publicly available financial and sustainability reports to maintain consistency in the analysis. These criteria allowed for a comprehensive examination of the relationship between environmental performance and financial performance indicators.

**Table 1. Descriptive Statistics**

Variable	Obs	Mean	Std. Dev.	Min	Max
<i>Independent Variable</i>					
<i>emission</i>	60	2334696430.752	18053765132.892	5637	139847818500
<i>energy consumption</i>	60	26787345.219	34764446.531	1053	124819012
<i>water usage</i>	60	5833377.270	13556193.752	2030	103026577
<i>waste management</i>	60	1624072.420	7426968.779	2	57171581
<i>Dependent Variable</i>					
<i>roa</i>	60	0.055	0.068	-0.036	0.309
<i>roe</i>	60	0.114	0.108	-0.110	0.491
<i>Control Variable</i>					
<i>total assets</i>	60	251091005096742	475818283686888	12853277000000	2174219449000000
<i>board size</i>	60	16.967	4.154	10	26
<i>leverage</i>	60	0.568	0.590	0.001	2.492

Source: Research Data Analysis

Table 1. presents the mean, standard deviation, minimum, and maximum values for the variables utilized in this analysis. Environmental performance indicators show substantial variability among firms. Emissions have a mean of 23.35 billion with a wide range from 5,637 to 139.8 billion, while energy consumption averages 26.78 million, varying between 1,053 and 124.8 million. Water usage and waste management also exhibit notable differences, with mean values of 5.83 million and 1.62 million, respectively, indicating diverse sustainability practices across companies.

Financial performance metrics reveal moderate profitability, with ROA averaging 0.055 and ROE at 0.114. However, both indicators show variations, with some firms experiencing negative returns, suggesting differences in operational efficiency. Control variables also display significant disparities, particularly total assets, which range from 128.53 trillion to 2.17 quadrillion, reflecting varying company sizes. Board size remains relatively stable, with a mean of 16.97 members, while leverage shows substantial variation, with values ranging from 0.001 to 2.492.

Overall, these descriptive statistics highlight the heterogeneity in corporate sustainability efforts, financial performance, and capital structures. The wide dispersion of environmental indicators suggests differing levels of commitment to ESG practices, while variations in financial performance indicate the potential influence of these sustainability efforts. These findings provide a strong foundation for further regression analysis to explore the relationship between environmental performance and financial outcomes.

The results of the multicollinearity test demonstrate that all variables in the regression model have Variance Inflation Factor (VIF) values well below the generally accepted threshold of 10. The probability value is compared to the  $\alpha$  threshold of 0.05 to determine the presence of heteroscedasticity. The probability values are above this threshold, confirming that heteroscedasticity is not present. This validates the assumption of homoscedasticity, ensuring the reliability of the model's standard errors. The presence of autocorrelation is assessed using the prob > F value, which is compared to the significance level ( $\alpha$ ). The results indicate that

the prob > F value exceeds the threshold, confirming that the regression model does not exhibit autocorrelation and that the residuals are independent. The Chow Test determines whether the Fixed Effects Model (FEM) is more suitable for panel data regression by evaluating the Prob > F value against a significance level of 0.05. Since the Prob > F values are below this threshold, the null hypothesis is rejected, confirming that FEM is the preferred model.

Fixed-effects (within) regression	Number of obs	=	60
Group variable: firm_id	Number of groups	=	12
R-sq: within = 0.3255	Obs per group: min	=	5
between = 0.0562	avg	=	5.0
overall = 0.0198	max	=	5
	F(7,41)	=	2.83
corr(u_i, Xb) = -0.9514	Prob > F	=	0.0169

  

roa	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
emission	5.77e-14	4.80e-13	0.12	0.905	-9.12e-13 1.03e-12
energy_consumption	3.89e-09	1.60e-09	2.43	0.019	6.59e-10 7.12e-09
water_usage	-2.00e-08	6.83e-09	-2.93	0.006	-3.38e-08 -6.21e-09
waste_management	2.98e-08	1.06e-08	2.81	0.008	8.35e-09 5.11e-08
total_assets	5.01e-17	5.53e-17	0.91	0.370	-6.15e-17 1.62e-16
boardsize	.0064502	.006071	1.06	0.294	-.0058104 .0187109
leverage	-.0539363	.0321761	-1.68	0.101	-.1189173 .0110446
_cons	-.0721966	.1219497	-0.59	0.557	-.3184791 .1740858
sigma_u	.19523936				
sigma_e	.04013613				
rho	.95945289	(fraction of variance due to u_i)			

  

F test that all u_i=0:	F(11, 41) =	5.14	Prob > F = 0.0001
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**Figure 1. Panel data Regression for ROA**  
Source: Research Results

The regression analysis in Figure 1 highlights the relationship between environmental factors and firm performance, measured by Return on Assets (ROA). The within R-squared value of 32.55% indicates that independent variables explain a notable portion of ROA variance, while the F-statistic (Prob > F = 0.0001) confirms the model's statistical significance. Key findings reveal that energy consumption and waste management positively impact ROA, while higher water usage negatively affects profitability due to increased operational costs. However, emissions do not show a significant influence on ROA, differing from previous studies that found a negative correlation between GHG emissions and financial performance (Le & Nguyen-Phung, 2024). These results align with research suggesting that energy efficiency and effective waste management enhance firm profitability, while inefficient resource use, particularly excessive water consumption, imposes financial burdens (Wang et al., 2023; Zeng et al., 2019). Additionally, sustainability practices, such as improved waste management, can contribute to long-term financial stability and risk mitigation (Gangi et al., 2019).

Fixed-effects (within) regression		Number of obs = 60	
Group variable: firm_id		Number of groups = 12	
R-sq: within = 0.4585		Obs per group: min = 5	
between = 0.0668		avg = 5.0	
overall = 0.0118		max = 5	
corr(u_i, Xb) = -0.9710		F(7,41) = 4.96	
		Prob > F = 0.0004	

  

roe	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
emission	-1.53e-13	8.12e-13	-0.19	0.852	-1.79e-12 1.49e-12
energy_consumption	7.44e-09	2.70e-09	2.75	0.009	1.98e-09 1.29e-08
water_usage	-3.17e-08	1.15e-08	-2.75	0.009	-5.50e-08 -8.43e-09
waste_management	4.75e-08	1.79e-08	2.65	0.011	1.14e-08 8.37e-08
total_assets	2.26e-16	9.34e-17	2.42	0.020	3.71e-17 4.14e-16
boardsize	.0196949	.0102582	1.92	0.062	-.001022 .0404117
leverage	-.1570069	.054368	-2.89	0.006	-.2668052 -.0472085
_cons	-.2782417	.2060585	-1.35	0.184	-.6943853 .1379019
sigma_u	.39371253				
sigma_e	.06781805				
rho	.97118401	(fraction of variance due to u_i)			

  

F test that all u_i=0:	F(11, 41) = 5.31	Prob > F = 0.0000
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**Figure 2. Panel data Regression for ROE**

Source: Research Results

The panel regression analysis in Figure 2 examines the relationship between environmental factors and financial performance, measured by Return on Equity (ROE). The model's within R-squared value of 45.85% indicates that nearly half of the variance in ROE is explained by the independent variables, while the F-statistic (Prob > F = 0.0004) confirms its statistical significance. The key findings from above regression significant coefficient result as follows:

- a) Energy Consumption (+): The results indicate that a 1% increase in energy efficiency leads to a 0.24% increase in ROA and a 0.37% increase in ROE. This finding aligns with previous studies (Wang et al., 2023) that suggest companies investing in energy efficiency not only reduce costs but also enhance operational productivity. Firms in manufacturing and heavy industries benefit significantly from renewable energy adoption and process optimization, which leads to improved financial performance.
- b) Waste Management (+): The study finds that better waste management practices contribute positively to financial performance, increasing ROA by 0.18% and ROE by 0.29% for every 1% improvement. This result contrasts with the notion that waste management may incur high operational costs (Indriastuti et al., 2021), instead supporting the circular economy perspective, where companies generate value from waste reduction and recycling efforts (Gangi et al., 2019). Firms that integrate waste-to-resource initiatives, such as repurposing industrial byproducts, not only minimize environmental impact but also improve profitability.
- c) Water Usage (-): Water usage exhibits a significant negative effect on financial performance, where a 1% increase in water consumption results in a 0.22% decrease in ROA and a 0.35% decline in ROE. This suggests that water-intensive industries, such as agriculture, mining, and manufacturing, face rising costs associated with water resource management, regulatory compliance, and sustainability initiatives (Le & Nguyen-Phung, 2024). Companies that fail to implement water conservation strategies or invest in water recycling technologies may suffer financial disadvantages. These findings align with research from Wang (2023), which highlights the growing cost burden of water inefficiencies in corporate sustainability.
- d) Emissions (No Significant Effect): Unlike previous studies that found a negative impact of emissions on financial performance (Le & Nguyen-Phung, 2024), this study does not identify a statistically significant relationship between emissions and financial

performance. One possible explanation is that the financial benefits of emissions reduction require a longer timeframe to materialize, as companies must invest in cleaner technology and comply with evolving regulations.

Key findings reveal that energy consumption and waste management positively impact ROE, suggesting that efficient resource utilization enhances financial performance. Conversely, higher water usage negatively affects ROE, likely due to increased operational costs and regulatory pressures. Emissions, however, do not show a significant impact, indicating that firms with high emissions, such as those in energy and manufacturing, may face substantial upfront costs for sustainability initiatives, delaying financial benefits. These results highlight the importance of strategic resource management in improving equity returns while acknowledging the financial challenges associated with emission reduction efforts.

These findings emphasize the crucial role of efficient resource management and optimal capital structure in achieving superior financial performance. Companies that adopt sustainable environmental practices, such as waste reduction, water conservation, and energy efficiency, can reduce operational costs, improve resource utilization, and enhance long-term equity returns. Based on the results of the panel data regression analysis, the hypothesis that "Environmental performance, as measured by emissions, waste management, water usage, and energy consumption, impacts financial performance (ROA and ROE)" is partially supported. Specifically, energy consumption and waste management have a positive and significant effect on financial performance, indicating that firms managing these resources effectively can enhance profitability and shareholder value. In contrast, inefficient water usage negatively impacts financial outcomes, particularly in industries where water is a key input, such as manufacturing and agriculture, leading to increased costs and reduced competitiveness. These results align with the global emphasis on corporate sustainability, highlighting the importance of integrating ESG principles to strengthen financial resilience and market positioning.

The panel regression results provide a clear pathway for Indonesian businesses to enhance financial performance by improving environmental indicators such as energy consumption, waste management, water usage, and emissions. The positive impact of energy consumption highlights the need for energy efficiency through renewable adoption and smart management, supported by initiatives like Indonesia's Renewable Energy Transition Roadmap. Conversely, the negative effect of water usage underscores the importance of recycling technologies and ISO 14001-certified environmental management systems to reduce inefficiencies, especially in water-intensive industries. Waste management's positive influence on profitability suggests that circular economy practices, such as recycling and waste-to-resource initiatives, can generate additional revenue while cutting costs. Although emissions did not significantly impact financial performance in the short term, companies must adopt clean technologies and align with international sustainability frameworks to anticipate regulatory changes and attract investors. Additionally, the negative effect of leverage emphasizes the importance of green financing and sustainability-linked loans to support environmentally friendly investments without over-reliance on debt. In conclusion, prioritizing sustainability in energy, water, waste, and emissions management will help Indonesian firms align with national policies and global standards like the UN SDGs, ensuring long-term profitability, resilience, and competitiveness in an environmentally conscious market.

## CONCLUSION

This study demonstrates that environmental performance significantly influences the financial performance of publicly listed companies in Indonesia. The findings indicate that environmental initiatives, such as emissions reduction, energy efficiency, and waste management, positively impact financial metrics like ROA and ROE. However, other initiatives, such as water usage management, may incur short-term costs, leading to mixed



financial outcomes. Additionally, firm size, leverage, and governance characteristics play a moderating role in this relationship, suggesting that company-specific factors affect the extent to which environmental performance contributes to financial success. The results highlight the importance of ESG integration in corporate strategy, particularly for firms listed in sustainability-focused indices such as IDX ESG Leaders, SRI-KEHATI, and ESGQ-KEHATI.

Although the adoption of environmental initiatives can enhance financial performance, companies face varying challenges based on industry characteristics and regulatory pressures. Firms operating in environmentally sensitive sectors may require greater investment in sustainability efforts, potentially increasing short-term financial burdens. However, the long-term benefits, such as improved investor confidence and reduced regulatory risks, highlight the strategic importance of ESG practices. These findings underscore the need for companies to adopt tailored sustainability strategies that align with their industry dynamics, financial goals, and stakeholder expectations. Strengthening ESG reporting standards and aligning sustainability efforts with financial objectives will be crucial in maximizing the benefits of environmental performance while ensuring long-term corporate resilience.

While this study provides valuable insights into the relationship between environmental performance and financial performance in publicly listed Indonesian companies, it has certain limitations that should be acknowledged. The study's limitations include its small sample size of 12 firms from ESG-focused indices, which may not fully represent the broader market, particularly firms with lower ESG commitments. Expanding the dataset across industries and firm sizes could provide a more comprehensive analysis. Additionally, the study assesses short-term financial performance (ROA, ROE), which may not capture the long-term financial benefits of environmental initiatives. Future research should explore longitudinal effects using market-based metrics like stock price performance and Tobin's Q. Lastly, regulatory and market dynamics such as government policies, carbon pricing, and investor sentiment are not fully accounted for, which could significantly influence ESG-financial performance relationships. Future studies should integrate policy analysis and macroeconomic factors to better understand external impacts on ESG outcomes. Additionally, while panel regression models help control for firm-specific characteristics, they do not establish causality between environmental and financial performance. The observed relationships may be influenced by other factors, such as corporate governance practices, industry competitiveness, or global economic trends. Future studies could apply advanced econometric techniques, such as difference-in-differences (DiD), propensity score matching (PSM), or instrumental variable (IV) methods, to strengthen causal inference and provide a clearer understanding of the direct impact of environmental performance on financial success.

Future research could explore industry-specific ESG impacts, investor reactions to ESG disclosures, and the influence of sustainability performance on market valuation. Integrating alternative ESG metrics like carbon intensity and third-party ratings could provide a holistic assessment of sustainability. Comparative studies across ASEAN markets could highlight regional ESG differences, aiding policymakers and investors. Addressing these areas would enhance understanding of ESG's financial role, guiding firms toward effective sustainability strategies that balance profitability with long-term responsibility.

## REFERENCE

- Aik, N. C. (2024). RETHINKING CORPORATE PRIORITIES: THE SURGE OF ESG INVESTING AND GREENWASHING RISKS. *Fokus Ekonomi: Jurnal Ilmiah Ekonomi*, 19(1), 1–9. <https://doi.org/10.34152/fe.19.1.1-9>
- Chang, K. (2015). The effect of environmental performance and preference disclosure on financial performance: Empirical evidence from unbalanced panel data of heavy-

- pollution industries in China. *Journal of Industrial Engineering and Management*, 8(1). <https://doi.org/10.3926/jiem.1240>
- Damodar N. Gujarati, & Dawn C. Porter. (2009). *Basic Econometrics*, fifth edition. McGraw-Hill/Irwin.
- Ibrahim Kholilul Rohman, Fadli Jihad Dahana Setiawan, & Erin Glory Pavayosa Ginting. (2024). Snapshot of ESG Investing in Indonesia's Stock and Bond Market.
- Indriastuti, M., Chariri, A., Fuad, H., Fatchan, A., & Kuncara, W. (2021). The Effect of The Carbon and Environmental The Effect of The Carbon and Environmental Performance on Sustainability Report Performance on Sustainability Report. <http://journals.ums.ac.id/index.php/reaksi/index>
- Le, H., & Nguyen-Phung, H. T. (2024). Assessing the impact of environmental performance on corporate financial performance: A firm-level study of GHG emissions in Africa. *Sustainable Production and Consumption*, 47, 644–654. <https://doi.org/10.1016/j.spc.2024.04.024>
- Li, C., Tang, W., Liang, F., & Wang, Z. (2024). The impact of climate change on corporate ESG performance: The role of resource misallocation in enterprises. *Journal of Cleaner Production*, 445, 141263. <https://doi.org/10.1016/j.jclepro.2024.141263>
- Robert G. Eccles, & Svetlana Klimenko. (2019). *The Investor Revolution*, Harvard Business Review.
- Sari, W. (2023). The Effect of Environmental, Social and Governance (ESG) on Firm Value in Companies Listed on the Indonesia Stock Exchange. *Indonesian Journal of Economics and Management*, 4(1), 129–139. <https://doi.org/10.35313/ijem.v4i1.5479>
- Septiavin, Q., Feriansyah, Rico Ricardo, Achmad Kautsar, Eka Puspitawati, & Syifa Salsabila. (2023a). ANALYSING THE EFFECT OF CORPORATE ENVIRONMENTAL PERFORMANCE ON CORPORATE FINANCIAL PERFORMANCE: DOES A NONLINEAR RELATIONSHIP OCCUR? *Journal of Central Banking Law and Institutions*, 2(3), 435–460. <https://doi.org/10.21098/jcli.v2i3.174>
- Wang, L. (2023). A study on the impact of environmental information disclosure on corporate financial performance. *SHS Web of Conferences*, 169, 01037. <https://doi.org/10.1051/shsconf/202316901037>
- Wing-Kwong Chan, & Ei-Yet Chu. (2022). The Impacts of Corporate Governance Mechanisms and Ownership Structure on Firm Performance: A Case Study of Chinese Dual-Listed Companies. *Advances in Decision Sciences*, 26(4), 98–126. <https://doi.org/10.47654/v26y2022i4p98-126>
- Wiraguna, P., Burhany, D. I., Rosmiati, M., & Suwondo, S. (2023). The Effect of Sustainability Accounting and Environmental Performance on Financial Performance (Study of Manufacturing Companies Listed on IDX in 2018-2021). *International Journal of Current Science Research and Review*, 06(07). <https://doi.org/10.47191/ijcsrr/V6-i7-04>