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The Relationship Between Financial Leverage and ESG Disclosure on Greenwashing

Hubungan Financial Leverage dan ESG Disclosure Terhadap Greenwashing

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Abstract

Greenwashing has become a critical governance issue as companies may portray an environmentally responsible image through disclosures that are not fully supported by actual practices. This study examines how financial pressure (financial leverage) and non-financial pressure (ESG disclosure) influence greenwashing behavior in energy sector companies listed on the Indonesia Stock Exchange. Using panel data from 32 firms observed over the 2021–2023 period, resulting in 75 firm-year observations after data screening, this study employs panel-based linear regression analysis to assess the relationship between leverage, ESG disclosure, and greenwashing. The findings reveal that higher financial leverage is associated with lower greenwashing practices, suggesting that creditor monitoring and financial discipline reduce opportunistic sustainability signaling. In contrast, ESG disclosure is positively associated with greenwashing, indicating that sustainability reporting may be used symbolically to maintain legitimacy rather than reflect substantive environmental performance. These results provide empirical support for agency and legitimacy theories and highlight the methodological relevance of panel data in capturing firm-level dynamics over time. The study offers important implications for regulators, investors, and firms in strengthening the credibility of ESG disclosures and mitigating greenwashing risks.
Keywords: financial leverage; ESG disclosure; greenwashing; energy sector

Abstrak

Greenwashing telah menjadi isu tata kelola yang kritis karena perusahaan dapat menampilkan citra bertanggung jawab terhadap lingkungan melalui pengungkapan yang tidak sepenuhnya didukung oleh praktik aktual. Studi ini meneliti bagaimana tekanan keuangan (leverage keuangan) dan tekanan non-keuangan (pengungkapan ESG) memengaruhi perilaku greenwashing di perusahaan sektor energi yang terdaftar di Bursa Efek Indonesia. Menggunakan data panel dari 32 perusahaan yang diamati selama periode 2021–2023, menghasilkan 75 observasi perusahaan-tahun setelah penyaringan data, studi ini menggunakan analisis regresi linier berbasis panel untuk menilai hubungan antara leverage, pengungkapan ESG, dan greenwashing. Temuan menunjukkan bahwa leverage keuangan yang lebih tinggi dikaitkan dengan praktik greenwashing yang lebih rendah, menunjukkan bahwa pengawasan kreditor dan disiplin keuangan mengurangi sinyal keberlanjutan yang oportunistik. Sebaliknya, pengungkapan ESG dikaitkan secara positif dengan greenwashing, menunjukkan bahwa pelaporan keberlanjutan dapat digunakan secara simbolis untuk mempertahankan legitimasi daripada mencerminkan kinerja lingkungan yang substantif. Hasil ini memberikan dukungan empiris untuk teori agensi dan legitimasi serta menyoroti relevansi metodologis data panel dalam menangkap dinamika tingkat perusahaan dari waktu ke waktu. Studi ini menawarkan implikasi penting bagi regulator, investor, dan perusahaan dalam memperkuat kredibilitas pengungkapan ESG dan mengurangi risiko greenwashing.
Kata Kunci: *financial leverage; ESG disclosure; greenwashing; sektor energi*

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Introduction

In recent years, greenwashing has emerged as an increasingly concerning global issue, raising the question of whether companies genuinely engage in environmentally friendly practices or merely claim to be "green" to gain public sympathy. Greenwashing refers to misleading consumers about a company's environmental practices or the environmental benefits of its products or services (Zioło et al., 2024). This practice creates a significant gap between the apparent sustainability performance communicated by companies and their real environmental impact, which often remains stagnant (Kathan et al., 2025). According to a special report by RepRisk, one in four ESG-related climate risk incidents involve greenwashing. Although the total number of greenwashing cases globally decreased by 12%, high-risk cases rose by 30%, often committed repeatedly by the same actors (RepRisk, 2023) These facts indicate that greenwashing has evolved from a mere reputational issue into a serious challenge for corporate governance and public transparency.

Financial pressures, particularly from a company's funding structure in the form of financial leverage, can motivate greenwashing practices (Peng & Xie, 2024). High leverage indicates a significant portion of assets financed by debt, prompting firms to engage in greenwashing to remain attractive to investors or creditors. In other study, higher leverage impacts in lower financial performance (Risyona & Tannia, 2025). More than 50% of greenwashing incidents in the financial sector are linked to financing fossil fuels (RepRisk, 2023). Chavkin (2025) investigative report for APNews revealed that over USD $286 billion in sustainability-linked loans (SLLs) have been granted to companies in environmentally damaging industries such as fossil fuels, mining, and large-scale deforestation—suggesting debt can be used not only for financing but also for manipulative sustainability image-building. External pressures also play a role, particularly ESG disclosure, which is ideally designed to reflect corporate transparency and accountability in environmental, social, and governance aspects. In practice, companies often use ESG disclosure to highlight positive actions without substantial evidence (Hao et al., 2025). A KPMG Canada survey found that 89% of organizations face stakeholder pressure to show progress toward ESG goals, which can encourage genuine improvement but also prompt some companies to adopt greenwashing strategies to preserve reputation and profits (Press, 2024).

The energy sector has been a focal point of global greenwashing scandals, with oil, gas, and utility companies consistently accounting for the largest share of annual incidents. Between 2018–2020, the oil and gas sector contributed nearly 30% of global greenwashing cases, and while this share declined slightly in 2021–2023, it remains significant. This suggests that large energy companies are more likely to use sustainability narratives for image-building rather than genuine transition to clean energy. The phenomenon is also relevant in Indonesia, where the energy sector plays a strategic role in both the economy and the nation's net zero 2060 commitment.

This study employs a panel data approach, utilizing firm-level observations across multiple time periods. By combining cross-sectional data (across companies) and time-series data (across years), panel data allow for a more rigorous examination of greenwashing behavior by capturing both inter-firm differences and intra-firm dynamics over time. This methodological approach enhances the reliability of empirical findings and enables a more nuanced interpretation of how financial leverage and ESG disclosure influence greenwashing practices within firms over the 2021–2023 period. This study examines the pressures driving greenwashing, focusing on financial pressure (financial leverage) and non-financial pressure (ESG disclosure). Financial leverage can incentivize opportunistic "green" narratives to maintain corporate image (Peng & Xie, 2024), while higher ESG disclosure does not guarantee honesty and can serve as a tool for manipulation (Hao et al., 2025). Understanding the interaction of these pressures is especially urgent in the energy sector.

This research offers novelty by (1) comparing financial and non-financial pressures in explaining greenwashing motivations, (2) focusing on the energy sector as a context most vulnerable to these pressures, and (3) assessing which financial leverage or ESG disclosure dominates in driving greenwashing. The study, titled "The Relationship Between Financial Leverage and ESG Disclosure on Greenwashing Practices", aims to contribute both theoretically and practically to understanding corporate strategic dynamics in the sustainability era.

Literature Review

Agency Theory

Agency theory, first developed by Jensen et al (1976), explains the relationship between the principal, in this case the shareholders, and the agent, namely the company's management, arising from the fact that both parties often have differing interests for instance, management may make decisions that benefit themselves rather than the company as a whole (Jensen et al., 1976). Such conflicts of interest create agency costs, which are incurred to monitor management and ensure their actions align with the owners' objectives. Within the framework of agency theory, financial leverage functions as a mechanism to control managerial behavior, as high levels of debt place management under pressure to ensure the continuity of debt repayment and maintain a healthy financial image of the company. However, this pressure can also exacerbate conflicts of interest, as Peng & Xie (2024) argue that management may resort to greenwashing to protect the company's reputation and preserve access to financing a manipulative strategy aimed at satisfying creditors and appealing to investors.

Legitimacy Theory

First introduced by Dowling & Pfeffer (1975), posits that companies seek to align their operations and reputation with prevailing societal values and norms to obtain social legitimacy. Such legitimacy exists when there is congruence between a company's actions and the values accepted by society, whereas any misalignment creates a "legitimacy gap" that can threaten corporate sustainability. To bridge this gap, companies often disclose their social responsibility activities through ESG or CSR reports, aiming to shape public perception in line with their business practices. In the sustainability context, ESG disclosure signals a company's commitment to values such as environmental stewardship, social justice, and good governance. However, social legitimacy can also be obtained unethically through greenwashing, which, according to Lokuwaduge & Silva (2022), reflects the negative side of legitimacy-seeking strategies when pursued symbolically, thereby eroding public trust particularly when ESG disclosures are used solely to secure social support and maintain corporate image without substantive evidence.

ESG Fraud Triangle Theory

The ESG Fraud Triangle theory, also known as the Greenwashing Triangle, is an adaptation of the traditional fraud triangle that explains factors influencing corporate misconduct, comprising pressure, opportunity, and rationalization (Kurpierz & Smith, 2020). Pressure arises from demands by investors, society, and regulators to meet sustainability targets, which can drive companies to make inappropriate ESG claims to protect their image and reputation. Opportunity emerges from weak ESG monitoring and reporting systems, which are less stringent than financial reporting, allowing data manipulation or concealment. Rationalization occurs when perpetrators justify such misconduct as serving the company's long-term interests (Kurniawati & Sandha, 2023). Firms with high financial leverage face significant pressure from creditors and investors to maintain positive performance, including in sustainability aspects, potentially leading management to enhance, embellish, or manipulate ESG disclosures to secure funding access.

Weak ESG regulations further provide opportunities for presenting unsupported information, while rationalization often stems from the belief that these manipulative practices safeguard financial stability and long-term survival. Thus, the interplay of high leverage, intensive ESG disclosure, and weak oversight creates conditions conducive to greenwashing, as outlined in the ESG Fraud Triangle framework.

Greenwashing

Greenwashing is the practice whereby an organization or company projects a misleading environmentally friendly image through marketing or communication strategies without making genuine environmental improvements (Zervoudi et al., 2025). Often viewed as a short-term strategy to gain instant reputational or market trust, greenwashing ultimately fails when stakeholders discover the company's true practices (Inês et al., 2023). According to Zervoudi et al (2025), it takes several forms: (1) claim greenwashing, involving inaccurate verbal claims unsupported by concrete environmental evidence; (2) executional greenwashing, using visual elements such as green colors, images, and recycling symbols to create a "green" impression without substantive action; and (3) hybrid greenwashing, combining claims and symbols, such as using false or ambiguous environmental certifications. Other types include (a) disclosure vs action greenwashing, where companies report "green" initiatives in disclosures without consistent actions, particularly common in non-financial reporting like ESG reports; (b) active vs passive greenwashing, where firms actively spread false sustainability information and conceal critical facts; and (c) positive vs negative greenwashing, where companies highlight minor positive aspects to boost reputation while obscuring negative impacts.

Empirical studies have consistently shown that financial factors play a significant role in driving greenwashing practices. Companies facing financial pressures or limited access to capital are more prone to manipulating ESG-related information to attract investors or maintain a positive market image. Key financial factors associated with greenwashing include leverage, cost of debt, financial risk, and financial constraints as measured by the Kaplan-Zingales Index (Maria et al., 2024). Other research has revealed that worsening financial performance and capital limitations may push firms toward short-term manipulative strategies, such as greenwashing, to improve stakeholder perceptions (Yang et al., 2020). Financial leverage, in particular, represents the use of borrowed funds to enhance potential shareholder returns. It reflects the extent to which a company relies on debt financing for its assets compared to equity (Brigham & Houston, 2021), and is often measured through the Debt-to-Equity Ratio (DER) or Debt-to-Asset Ratio (DAR). High leverage increases both financial risk and the pressure to meet debt obligations, particularly interest and principal payments. Under such pressure, companies may resort to greenwashing as a way to maintain funding access and market confidence (Xia et al., 2023).

Beyond financial considerations, non-financial factors also contribute to corporate greenwashing. Common non-financial drivers include corporate communication strategies, institutional pressures, stakeholder and consumer expectations, the complexity of environmental regulations, and the symbolic nature of CSR communications (Forliano et al., 2025). Additionally, internal organizational quality and individual managerial mindsets influence the likelihood of engaging in such practices (Alaudhli, 2024). In this context, ESG disclosures often serve as a primary channel for greenwashing, functioning as both a response to external pressure and a symbolic tool to attract investor and public interest.

Hypothesis Development

According to agency theory, leverage and greenwashing are interconnected through conflicts of interest and managerial pressure, whereby leverage creates pressure on managers (agents) to ensure the company remains credible in the eyes of investors (principals). High corporate debt can lead managers to adopt manipulative strategies, including greenwashing, to attract investors, secure or maintain new funding, and sustain market confidence. This aligns with the ESG Fraud Triangle theory, which posits that high financial leverage constitutes a significant source of pressure driving greenwashing. Empirical evidence supports this view: Peng & Xie (2024) found that highly leveraged firms are more likely to engage in greenwashing to create a sustainability perception and reduce financing costs; Xia et al (2023) reported that financial constraints encourage firms to conduct greenwashing to maintain capital market access; and Zhang (2022) demonstrated that financial limitations, including leverage, positively influence a firm's tendency to practice greenwashing. So, the first hypothesis is:
H1: Financial leverage has a positive relationship with greenwashing.

According to legitimacy theory, companies strive to align with societal values to maintain public trust and support. In this context, ESG disclosure serves as a tool to demonstrate adherence to sustainability principles; however, when such disclosure is used merely for image-building rather than reflecting genuine actions, it constitutes greenwashing. This perspective is reinforced by the ESG Fraud Triangle theory, which posits that stakeholder demands to enhance sustainability image can create pressure leading to such practices. Ma et al (2025) argue that ESG disclosure can become a channel for greenwashing if not linked to actual performance, while Hu et al (2024) note that overly complex and intricate disclosures are often indicative of greenwashing. Furthermore, Lokuwaduge & Silva (2022) find that inconsistency and weak ESG standards provide opportunities for companies to present selective and misleading information. This lack of transparency can result in misinformation in both investor decision-making and financial reporting, reinforcing the notion that higher ESG disclosure may increase the likelihood of greenwashing. In light of this reasoning, the hypothesis proposes is:
H2: ESG disclosure has a positive relationship with greenwashing

Research Methods

The population of this study consists of companies listed in the energy sector of the Indonesia Stock Exchange from 2021 to 2023. The total population studied was 249 observations from 83 companies over three years. From this population, a sample was selected using purposive sampling, a technique for selecting samples based on specific criteria set by the researcher (Bougie & Sekaran, 2019). The criteria used in the sample screening were: excluding companies that had recently conducted an initial public offering (IPO) in the current year because they did not have sufficient historical data, companies engaged in transportation because they did not directly produce or supply energy, and excluding companies that did not have ESG data or did not publish a Sustainability Report for three consecutive years. These criteria were used to ensure the suitability and completeness of the data. Although the initial sampling process identified 32 companies observed over three years, the final dataset used in the empirical analysis constitutes an unbalanced panel. The use of an unbalanced panel is appropriate in this study, as the exclusion of observations was based on data quality considerations rather than systematic firm characteristics. A summary is presented in the following table:

Table 1. Data Sampling

Sample Selection Stages	Amount	Description
Total initial population of the energy sector	249	83 companies x 3 years
Less:		
Data on companies that have newly listed in the current year 2023	(24)	8 companies x 3 years
Companies whose the main activity is in the transportation industry	(33)	11 companies x 3 years
Companies that have not published a sustainability report for three consecutive years	(96)	32 companies x 3 years
Final sample total	**96**	**32 companies x 3 years (38,55% from population)**

Source: Authors (2025)

Secondary data in this study was obtained through documentation from financial reports and sustainability reports of energy sector companies published on the Indonesia Stock Exchange during the period 2021–2023. In addition, data was also collected from official company websites. The Leverage variable (LEV) is obtained by dividing the company's total debt, both current and non-current, by its total assets (Brigham & Houston, 2021). ESG Disclosure (ESG) is obtained by dividing the number of items disclosed in the environmental, social, and governance aspects by the total number of items based on GRI guidelines (Lokuwaduge & Silva, 2022). Greenwashing (GWS) is measured using the Greenwashing Index (GWI) as the difference between the standard scores of the Green Communication Index (GCI) and the Green Practice Index (GPI), which categorizes companies into "Silent green," meaning companies with good environmental performance but minimal or no active ESG disclosure, and "Possibly greenwashing," which refers to companies that actively communicate ESG but have weak environmental performance in substance (Li et al., 2023). As a control variable, firm size (FSZ) is measured using the natural logarithm of the company's total assets.

Results and Discussions

Prior to the empirical analysis, the dataset was screened for extreme values. During this process, several firm-year observations were identified as outliers and excluded, resulting in a final sample of 75 firm-year observations used for descriptive statistics and regression analysis. Based on descriptive statistics, the average greenwashing index (Y) for 100 company samples was -0.1089 (SD = 0.35425), indicating that most companies tend not to engage in explicit greenwashing. The average financial leverage is 0.4821 (SD = 0.28271), indicating that some companies in the energy sector generally finance around 48.21% of their assets with debt, with fairly moderate variation between samples. Meanwhile, the average ESG disclosure is 0.5746 (SD = 0.23753), indicating a relatively moderate to high level of ESG disclosure in the energy sector. And a series of classical assumption tests and hypothesis tests to analyze the relationship between financial leverage, ESG disclosure, and greenwashing have been conducted and passed by researchers such normality, multicolinearity, heterogenity, and autocolinearity.

Table 2. Statistic Descriptive

	Mean	Std. Deviation	N
GWS	-0.1199	0.35425	75
LEV	0.4821	0.28271	75
ESG	0.5746	0.23753	75
FSZ	30.0011	1.78046	75

Source: Authors (2025)

Table 3. Hyphotesis Results

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	1.015	0.644		1.577	0.119
LEV	-0.283	0.137	-0.226	-2.058	0.043
ESG	0.459	0.169	0.308	2.717	0.008
FSZ	-0.042	0.022	-0.212	-1.897	0.062
Dependent Variable			GWS		
R Square			0.189		
Adj. R Square			0.154		
F Score			5.505		

Source: Authors (2025)

The multiple linear regression results show an Adjusted R Square value of 0.154, indicating that the model explains 15.4% of the variance in greenwashing, while the remaining 84.6% is explained by variables outside the model. This suggests that the model's predictive ability is relatively low, implying that other factors beyond financial leverage and ESG disclosure are likely associated with greenwashing. The F-test results reveal an F-value of 5.505, which is greater than the F-table value of 2.740, with a significance level below 0.05. This indicates that the model is simultaneously significant, meaning that financial leverage and ESG disclosure jointly influence greenwashing.

The multiple linear regression analysis further reveals that the unstandardized coefficient (B) for financial leverage is −0.283 (SE = 0.137), with t = −2.058 and p = 0.043 (< 0.05), indicating a significant negative relationship. This means that a one-unit increase in financial leverage decreases greenwashing by 0.283 points. The standardized coefficient (Beta) for financial leverage is −0.226, confirming its negative contribution to the model. Therefore, H1 (positive relationship) is rejected. In contrast, ESG disclosure has an unstandardized coefficient (B) of 0.459 (SE = 0.169), t = 2.717, and p = 0.008 (< 0.05), indicating that a one-unit increase in ESG disclosure increases greenwashing by 0.459 points. Its standardized coefficient (Beta) is 0.169, reflecting a positive contribution. Consequently, H2 (positive relationship) is accepted.

From a simultaneous perspective, financial leverage and ESG disclosure both have significant associations with greenwashing, although the Adjusted R Square value of 0.154 suggests that the model explains only a limited portion of the variance. Rather than undermining the results, the modest explanatory power highlights the importance of viewing the findings as partial but theoretically consistent evidence, and underscores opportunities for future research to extend the model. According to agency and legitimacy theories, both financial (leverage) and non-financial (ESG disclosure) pressures can motivate firms to create a positive public image. However, the relatively low explanatory power indicates that greenwashing is strongly influenced by other factors. As Ozili (2023) notes, in social science research, a low R^2 value (> 0.10) is still acceptable as long as predictor variables are significant, since the aim is to test variable relationships rather than predict human behavior.

In the context of agency theory, conflicts of interest arise between shareholders (principals) and management (agents). For highly leveraged firms, managers face pressure to maintain the confidence of creditors and investors, which could encourage symbolic sustainability reporting. However, the empirical findings here show the opposite, high leverage is associated with reduced greenwashing. Financial constraints and closer external monitoring from creditors and capital markets appear to

enforce managerial discipline, reducing the likelihood of symbolic or manipulative actions. This is consistent with Table 4, where financial leverage has a significant negative relationship with greenwashing. From an ESG Fraud Triangle perspective, high leverage reduces the "pressure" element that often drives manipulation, limits the "opportunity" due to stricter reporting and covenant requirements, and constrains "rationalization" as managers recognize the reputational and financing risks of manipulation. Wang et al (2024) similarly note that while greenwashing can provide greater access to debt financing, high leverage can also lead to debt overhang, restricting strategic flexibility and prompting more cautious communication of sustainability strategies.

Table 4. Companies with low LEV

No	Code	Year	LEV	GWS	Interpretations
1	CNKO	2023	2,36	-0,57	Silent Green
2	MTFN	2021	1,04	-0,92	Silent Green
3	MEDC	2021	0,78	-0,01	Silent Green
4	MEDC	2022	0,75	-0,20	Silent Green
5	MEDC	2023	0,73	-0,30	Silent Green
6	GTSI	2021	0,63	-0,78	Silent Green
7	GEMS	2021	0,62	-0,22	Silent Green
8	SMMT	2021	0,62	-0,78	Silent Green
9	BIPI	2021	0,57	-0,37	Silent Green
10	HITS	2022	0,56	-0,53	Silent Green

Source: Authors (2025)

From the data collected, there is classification of firms into "silent green" and "possibly greenwashing" categories is intended as a descriptive illustration rather than a formal inferential test. These classifications are derived directly from the greenwashing index construction and are used to contextualize the regression results by providing concrete firm-level examples. Table 4 show many highly leveraged firms fall into the "silent green" category committed to sustainability but refraining from excessive public promotion. This is reflected in relatively low greenwashing index scores despite high leverage ratios, indicating that financial pressure can deter rather than encourage symbolic environmental claims. Therefore, in the Indonesian energy sector context, high financial leverage tends to suppress rather than promote greenwashing, as tighter creditor oversight and cautious ESG strategies focus on substantive rather than symbolic sustainability actions.

Legitimacy theory posits that firms seek to gain, maintain, or restore societal support by aligning with prevailing norms and values, with ESG disclosure often serving as a symbolic means to demonstrate such alignment. However, when ESG disclosure is not accompanied by substantive actions, it can become a vehicle for greenwashing, presenting sustainability reports without meaningful environmental performance improvements. From the ESG Fraud Triangle perspective, high ESG disclosure may itself be a source of "pressure" arising from stakeholder expectations. In such cases, management may opt to meet expectations through information manipulation rather than costly operational changes. Hao et al (2025) and Lokuwaduge & Silva (2022) find that high ESG disclosure correlates positively with greenwashing risk, as it can be used to manipulate reputation rather than reflect genuine sustainability efforts.

Table 5. Companies with high ESG Disclosure

No	Code	Year	ESGD	GWS	Interpretation
1	PTBA	2021	1,00	0,21	Possibly Greenwashing
2	TOBA	2023	0,99	0,21	Possibly Greenwashing
3	ITMG	2023	0,96	0,21	Possibly Greenwashing
4	PTBA	2023	0,96	0,12	Possibly Greenwashing
5	PTBA	2022	0,96	0,12	Possibly Greenwashing
6	INDY	2021	0,88	0,05	Possibly Greenwashing
7	INDY	2022	0,86	0,05	Possibly Greenwashing
8	AKRA	2021	0,86	0,33	Possibly Greenwashing
9	ITMG	2022	0,85	0,48	Possibly Greenwashing
10	AKRA	2022	0,80	0,34	Possibly Greenwashing

Source: Authors (2025)

Evidence from Table 5 shows that firms with high ESG disclosure often fall into the "possibly greenwashing" category, suggesting a gap between sustainability communication and actual practices. This supports the positive and significant relationship between ESG disclosure and greenwashing found in the regression results. In Indonesia's energy sector, ESG disclosure remains largely narrative or promotional rather than substantive, highlighting the need for caution when using disclosure quantity as a sustainability indicator.

The findings contribute to agency theory by showing that financial leverage can act as a disciplinary mechanism rather than a driver of managerial opportunism, depending on institutional context and corporate strategy. Managerially, energy sector firms must ensure ESG disclosure is substantiated with verifiable operational evidence. This requires integrating ESG metrics into strategic planning and decision-making to ensure that sustainability claims are supported by concrete outcomes. For policymakers, the results underscore the need for stricter ESG reporting regulations and standardized disclosure frameworks. For investors, they emphasize the importance of critically evaluating ESG disclosures and incorporating independent assessments in sustainability risk evaluation.

Conclusion

Greenwashing has emerged as an increasingly concerning issue in recent years. Although the number of cases has declined globally, the complexity and associated risks have intensified, particularly in the energy sector, which faces pressure from multiple stakeholders. This practice undermines transparency and erodes stakeholder trust in a company's ESG commitments. The findings of this study on greenwashing practices in Indonesia's energy sector during 2021–2023 reveal two main conclusions. First, financial leverage is significantly and negatively associated with greenwashing, indicating that companies with higher financial leverage tend to avoid such practices. This may be due to stricter creditor oversight and heightened reputational pressures, which act as external control mechanisms, disciplining management to exercise greater caution in manipulating sustainability information contrary to agency theory's view of leverage as a driver of opportunism. Second, ESG disclosure is significantly and positively associated with greenwashing, suggesting that higher levels of ESG disclosure may increase the likelihood of greenwashing. This aligns with legitimacy theory, which posits that companies may strategically use non-financial disclosures, such as sustainability reports, as symbolic tools to project a positive image. When such disclosures are not backed by substantive actions, they risk becoming manipulative instruments that create the illusion of sustainability.

Several limitations must be acknowledged. First, although the dataset spans multiple firms and years, the analysis relies on an unbalanced panel, arising from outlier treatment and data availability

constraints, which may affect the consistency of firm-level observations across periods. Second, the relatively limited sample size and short observation window (2021–2023) restrict the generalizability of the findings and preclude more advanced panel estimation techniques. Third, greenwashing is measured indirectly through the discrepancy between reported disclosure and observed practices, which involves a degree of researcher judgment and does not incorporate stakeholder perceptions. Finally, ESG disclosure was measured solely based on the Global Reporting Initiative (GRI) checklist, without comparing alternative measurement frameworks such as MSCI ESG Ratings, Bloomberg ESG Disclosure Scores, or Sustainalytics. Future research is encouraged to employ longer time horizons, larger and more balanced panel datasets, and alternative econometric specifications to better account for firm-specific effects and dynamic relationships. Expanding the analysis to other sectors, such as retail or FMCG where reputational pressure and green marketing are more pronounced, and integrating alternative ESG measurement frameworks and qualitative assessments, would further enhance understanding of greenwashing behavior and corporate sustainability governance.

References

Alaudhli, R. J. (2024). Greenwashing Risk and Its Mitigation for Sustainable Finance. *Issue 61 Academic Journal of Research and Scientific Publishing* |, *6*, 61.

Bougie, R., & Sekaran, U. (2019). *Research Methods For Business: A Skill Building Approach*. Wiley. https://books.google.co.id/books?id=ikI6EAAAQBAJ

Brigham, E., & Houston, J. (2021). *Fundamentals of Financial Management* (Vol. 16). Cengage Learning.

Chavkin, S. (2025). Polluting companies take advantage of green loans. *APNews*. https://apnews.com/article/shell-drax-greenwashing-pollution-sustainabilitylinks-loans-slls-a28e03c7421222c58025b31ab8185272

Dowling, J., & Pfeffer, J. (1975). Organizational Legitimacy: Social Values and Organizational Behavior. *The Pacific Sociological Review*, *18*(1), 122–136. https://doi.org/10.2307/1388226

Forliano, C., Battisti, E., Bernardi, P. de, & Kliestik, T. (2025). Mapping the greenwashing research landscape: A theoretical and field analysis. In *Review of Managerial Science*. Springer Science and Business Media Deutschland GmbH. https://doi.org/10.1007/s11846-025-00856-3

Hao, X., Tian, T., Dong, L., Wong, C. W. Y., & Lai, K. H. (2025). Unmasking greenwashing in ESG disclosure: Insights from evolutionary game analysis. *Annals of Operations Research*. https://doi.org/10.1007/s10479-025-06538-3

Hu, P., Li, X., Li, N., Wang, Y., & Wang, D. D. (2024). Peeking into Corporate Greenwashing through the Readability of ESG Disclosures. *Sustainability (Switzerland)*, *16*(6). https://doi.org/10.3390/su16062571

Inês, A., Diniz, A., & Moreira, A. C. (2023, December). A review of greenwashing and supply chain management: Challenges ahead. In *Cleaner Environmental Systems* (Vol. 11). Elsevier Ltd. https://doi.org/10.1016/j.cesys.2023.100136

Jensen, M. C., Meckling, W. H., Benston, G., Canes, M., Henderson, D., Leffler, K., Long, J., Smith, C., Thompson, R., Watts, R., & Zimmerman, J. (1976). Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure. In *Journal of Financial Economics* (Issue 4, pp. 305–360). Harvard University Press. http://hupress.harvard.edu/catalog/JENTHF.html

Kathan, M. C., Utz, S., Dorfleitner, G., Eckberg, J., & Chmel, L. (2025). What you see is not what you get: ESG scores and greenwashing risk. *Finance Research Letters*, *74*. https://doi.org/10.1016/j.frl.2024.106710

Kurniawati, C. P., & Sandha, O. A. (2023). SUSTAINABILITY FRAUD: GREENWASHING *. *Asian Journal of Government Audit*. https://www.researchgate.net/publication/370527285

Kurpierz, J. R., & Smith, K. (2020). The greenwashing triangle: Adapting tools from fraud to improve CSR reporting. *Sustainability Accounting, Management and Policy Journal*, *11*(6), 1075–1093. https://doi.org/10.1108/SAMPJ-10-2018-0272

Li, W., Li, W., Seppänen, V., & Koivumäki, T. (2023). Effects of greenwashing on financial performance: Moderation through local environmental regulation and media coverage. *Business Strategy and the Environment*, *32*(1), 820–841. https://doi.org/10.1002/bse.3177

Lokuwaduge, C. S. D. S., & Silva, K. M. D. (2022). ESG Risk Disclosure and the Risk of Green Washing. *Australasian Accounting, Business and Finance Journal*, *16*(1), 146–159. https://doi.org/10.14453/aabfj.v16i1.10

Ma, Y., Feng, G.-F., Yin, Z., & Chang, C.-P. (2025). ESG disclosures, green innovation, and greenwashing: All for sustainable development? *Sustainable Development*, *33*(1), 1797–1815. https://doi.org/10.1002/sd.3210

Maria, M. M. L., Zonatto, V. C. da S., Júnior, E. M., Louzada, L. C., & Nascimento, S. P. (2024). THE PRACTICE OF GREEN WASHING MOTIVATED BY FINANCIAL CONSTRAINTS: AN ANALYSIS IN GLOBAL ECONOMIES. *Revista de Gestao Social e Ambiental*, *18*(7). https://doi.org/10.24857/RGSA.V18N7-060

Ozili, P. K. (2023). *The acceptable R-square in empirical modelling for social science research*.

Peng, Q., & Xie, Y. (2024). ESG greenwashing and corporate debt financing costs. *Finance Research Letters*, *69*, 106012. https://doi.org/10.1016/j.frl.2024.106012

Press, T. C. (2024). Businesses worried about ESG fraud: KPMG poll. *Investment Executive*.

RepRisk. (2023). *Special report On the rise: Navigating the wave of greenwashing and social washing*. https://www.reprisk.com/insights/reports/on-the-rise-navigating-the-wave-of-greenwashing-and-social-washing

Risyona, V., & Tannia, T. (2025). Pengaruh Corporate Social Responsibility terhadap Kinerja Keuangan Perusahaan di Sektor Energi dengan Risiko sebagai Mediator. *Business Management Journal*, *21*(1), 33. https://doi.org/10.30813/bmj.v21i1.8129

Wang, Y., Xing, C., & Zhang, L. (2024). Is greenwashing beneficial for corporate access to financing? Evidence from China. *Finance Research Letters*, *65*, 105538. https://doi.org/10.1016/j.frl.2024.105538

Xia, F., Chen, J., Yang, X., Li, X., & Zhang, B. (2023). Financial constraints and corporate greenwashing strategies in China. *Corporate Social Responsibility and Environmental Management*, *30*, 1770–1781. https://doi.org/10.1002/csr.2453

Yang, Z., Nguyen, T. T. H., Nguyen, H. N., Nguyen, T. T. N., & Cao, T. T. (2020, July). Greenwashing behaviours: Causes, taxonomy and consequences based on a systematic literature review. In *Journal of Business Economics and Management* (Vol. 21, Issue 5, pp. 1486–1507). VGTU. https://doi.org/10.3846/jbem.2020.13225

Zervoudi, E. K., Moschos, N., & Christopoulos, A. G. (2025). From the Corporate Social Responsibility (CSR) and the Environmental, Social and Governance (ESG) Criteria to the Greenwashing Phenomenon: A Comprehensive Literature Review About the Causes, Consequences and Solutions of the Phenomenon with Specific Case Studies. *Sustainability*, *17*(5), 2222. https://doi.org/10.3390/su17052222

Zhang, D. (2022). Are firms motivated to greenwash by financial constraints? Evidence from global firms' data. *Journal of International Financial Management & Accounting*, *33*(3), 459–479. https://doi.org/10.1111/jifm.12153

Zioło, M., Bąk, I., & Spoz, A. (2024). Literature review of greenwashing research: State of the art. *Corporate Social Responsibility and Environmental Management*. https://doi.org/10.1002/csr.2842