



## Green or Greenwashed?: Investigating Greenwashing Through Media, Innovation, and Governance Lenses

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**Abstract:** *Green or Greenwashed?: Investigating Greenwashing Through Media, Innovation, And Governance Lenses*

**Purpose:** *investigates how media exposure, green innovation, and corporate governance influence corporate greenwashing.*

**Method:** *The study employs regression analysis using a sample of companies listed on the Indonesia Stock Exchange (IDX) from 2018 to 2023.*

**Results:** *both media exposure and green innovation have a statistically significant positive effect on greenwashing. In contrast, profitability and board size are negatively associated with greenwashing and the presence of women on the board have a positive and significant influence on greenwashing.*

**Novelty:** *this study offers a novel contribution by simultaneously examining both external drivers and internal drivers in shaping greenwashing.*

**Contribution:** *this study illustrates the application of signalling theory and legitimacy theory by demonstrating that firms pursue external legitimacy, particularly through media exposure and green innovation-related disclosures.*

### Kata kunci:

Dewan Direksi Wanita;  
Greenwash;  
Inovasi;  
Media;  
Tata Kelola Perusahaan.

**Abstrak:** *Hijau atau Sekadar Pencitraan?: Menelusuri Praktik Greenwashing Melalui Perspektif Media, Inovasi, dan Tata Kelola*

**Tujuan:** *penelitian ini menginvestigasi bagaimana media, inovasi hijau, dan tata kelola perusahaan memengaruhi praktik greenwashing.*

**Metode:** *penelitian menggunakan analisis regresi dimana sampel pada penelitian adalah perusahaan yang terdaftar di IDX selama periode 2018–2023.*

**Hasil:** *media dan inovasi hijau berpengaruh positif dan signifikan terhadap greenwashing. Sebaliknya, profitabilitas dan ukuran dewan direksi berpengaruh negatif, selain itu proporsi perempuan dalam dewan direksi justru berpengaruh positif dan signifikan terhadap greenwashing.*

**Kebaruan:** *studi ini memberikan perspektif baru dengan menggabungkan faktor eksternal dan internal dalam memengaruhi greenwashing.*

**Kontribusi:** *penelitian ini mengilustrasikan penerapan teori legitimasi, di mana perusahaan mencari legitimasi eksternal melalui eksposur media dan pengungkapan inovasi hijau.*



## 1. Introduction

Investor interest in environmentally responsible companies has motivated firms to demonstrate strong environmental performance as part of broader efforts to support the transition toward a green economy [1]. Nevertheless, this trend has also contributed to the rise of greenwashing practices, whereby companies make exaggerated or misleading claims about their environmental initiatives to create a perception of sustainability, despite these claims often lacking substantive backing [2,3]. Greenwashing has increasingly attracted scholar attention, and despite the growing body of research examining its causes and consequences, several gaps remain [4].

Greenwashing can be viewed as a strategic response by companies facing pressure from stakeholders. Firms must show strong operational results and credible environmental responsibility, although media platforms are frequently exploited for greenwashing [5]. Media exposure involves the strategic use of media channels by firms to share and emphasize information designed to highlight their environmental initiatives to stakeholders [6]. By leveraging media visibility, companies may seek to enhance their environmental image, which, in some cases, can obscure the true extent of their sustainability efforts.

In addition to media exposure, green product innovation is increasingly recognized not only as a means of mitigating environmental impact but also as a strategic tool for gaining competitive advantage. It involves the development or modification of products with the objective of minimizing resource consumption, reducing emissions, enhancing recyclability, or extending product life cycles [7]. Unlike superficial sustainability efforts, green product innovation requires significant investment in research and development, organizational learning, and, in some cases, fundamental shifts in production processes [8]. Firms that

integrate green innovation into their core strategies signal a genuine commitment to sustainability, which can strengthen their brand reputation, enhance customer loyalty, and open access to environmentally conscious markets [9]. Consequently, companies that engage substantively in green product innovation are less likely to resort to greenwashing, as they possess verifiable environmental achievements that reduce the incentive for misleading environmental claims. Thus, we expect that green product innovation plays a dual role: advancing environmental stewardship while simultaneously reducing reputational risks associated with accusations of greenwashing.

A discussion of greenwashing cannot be separated from the broader context of corporate governance. Within organizations, every major decision is channeled through the board, making it a critical actor in shaping corporate behavior and environmental responsibility [10,11]. Moreover, the gender composition of the board may also influence the occurrence of greenwashing. According [12] behavioral patterns can differ based on gender and due to psychological differences, women tend to be more sensitive to social activities [13]. Based on this perspective, the proportion of female directors on the board becomes an interesting to examine in relation to the tendency toward greenwashing practices.

Existing research has largely focused on sustainability reporting and regulatory frameworks in relation to greenwashing, whereas the impact of organizational drivers, particularly green product innovation initiatives and corporate governance structures, remains underexplored. Furthermore, comprehensive empirical studies that integrate these factors into a unified analytical framework are notably scarce, particularly in the context of emerging markets. These markets have differed governance dynamics and sustainability challenges from those in developed economies. This study addresses

the critical gap in understanding how organizational drivers contribute to greenwashing by systematically investigating internal (green product innovation, women on board, board size, profitability) and external factors (media exposure).

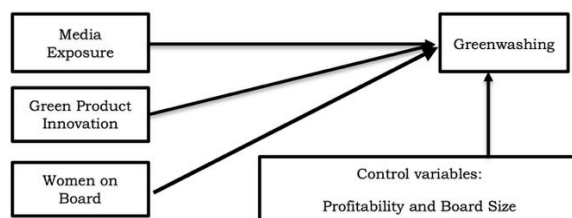
## 2. Method

**Table 1. Sample Selection Criterion**

Criteria	Total
Companies listed the IDX in 2018-2023	824
Companies that conducted IPOs after 2018	(218)
Companies that did not disclose environmental information using the GRI 300 standard during the 2018–2023 period	(559)
Companies that were not participants in the PROPER program during the 2018–2023 period	(31)
Companies that consistently did not disclose environmental cost	(8)
Total Companies	8
Total Sample	48

Table 1 shows the sample selection process. The population of this study is public companies listed on the IDX in 2018–2023. The 2018–2023 period was selected to cover one year before, during, and after the COVID-19 pandemic. The sample was selected through purposive sampling to ensure that only companies with complete and relevant environmental disclosure data were included in the analysis.

The conceptual framework of this study is illustrated in Figure 1 below.



**Figure 1. An Illustration of Media Exposure and Green Product Innovation Influencing Greenwashing**

We employ both signaling theory and legitimacy theory as the theoretical

frameworks to guide this study and address the research question. The conceptual model above (see: figure 1) illustrates the effect of media exposure, green innovation and the proportion of women on board to greenwashing. The following paragraphs provide a detailed explanation of each variable.

The first variable is media exposure. It refers to the activity of listening to, viewing, and reading mass media, as well as paying attention to the messages or information being conveyed [5]. [14] emphasize that media exposure serves as an important platform for disseminating corporate environmental information to stakeholders. Drawing on Signaling Theory, companies, as signal senders, must decide whether and how to communicate specific information, while stakeholders, as receivers, interpret the signals to form perceptions about the company's environmental responsibility [14]. Therefore, media can be used as a tool that companies have fulfilled their responsibilities in preserving the environment, beyond what is disclosed in the sustainability report. The environmental information disclosed may include corporate programs and activities related to environmental management or claims regarding environmentally friendly products [6].

The role of media exposure in communicating corporate information is crucial, as it can influence public or stakeholder perceptions of the company. Through media, the public can monitor and exert pressure on companies to disclose their efforts and responsibilities in preserving the environment [5]. To convince the public or stakeholders, companies naturally seek to present themselves positively, leading to a greater tendency to disclose environmental information [15]. However, if such disclosures are not matched by actual environmental performance, it may result in greenwashing practices [16].

In disclosing environmental information, companies may utilize several

forms of media, including newspapers, television, and internet-based media [17]. Among these, internet-based media is considered the most efficient, as people increasingly rely on the internet for accessing information compared to other forms of media [18]. Companies can leverage official websites, social media platforms, or external media websites to communicate and report on their corporate activities and social and environmental responsibilities to stakeholders [19].

We adapt and modify the measurement of media exposure from [6] and we are focusing on the company's use of internet-based platforms. In this study, media exposure is evaluated based on whether the company discloses environmental information through its official website, corporate social media accounts, and external media outlets. The assessment is conducted by assigning scores from 0 to 3, based on the following criteria:

A score of 0 if the company does not utilize any internet-based media (official website, corporate social media, or external media websites) to disclose environmental information.

A score of 1 if the company uses only the official corporate website (beyond the sustainability report) to disclose environmental information.

A score of 2 if the company uses corporate social media platforms, including Instagram, Twitter, or Facebook, to disclose environmental information.

A score of 3 if the company uses external media websites to disclose environmental information.

In addition to media exposure, green product innovation is also expected to influence a company's decision to engage in greenwashing and thus serves as the second independent variable in this study. Under Legitimacy Theory, companies are seen as striving to align their actions with the norms, values, and expectations of society in order to maintain legitimacy and secure continued support from stakeholders [20].

Green product innovation, as a substantive environmental effort, provides companies with tangible achievements that they can use to maintain or enhance their legitimacy. Firms that genuinely invest in green innovation can credibly demonstrate their commitment to environmental stewardship, thereby reducing the need for symbolic actions or misleading claims. Therefore, companies that actively engage in green product innovation are less prone to greenwashing because their verifiable environmental improvements reduce the need for exaggerated environmental claims. Information on green product innovation is obtained from annual reports and sustainability reports.

Green product innovation in this study is assessed based on the approach proposed by [21] and is calculated using the following formula:

$$\text{Green Product Innovation} = \frac{\text{Research and Development Expenses}_{i,t}}{\text{Total Assets}_{i,t}}$$

where  $i$  denotes the company and  $t$  denotes the year.

The last independent variable is women on the board. It is often measured by the proportion of women directors [22]. Female directors are also more likely to attend meetings regularly and to serve on monitoring committees, thus contributing to better governance outcomes. Additionally, the presence of women on the board can signal a firm's commitment to diversity and social responsibility, enhancing its legitimacy among investors, consumers, and regulators [23].

In addition to the three independent variables, we add controls in the regression that consist of profitability and board size. The first control variable is profitability. Firms in a strong financial position are more inclined to construct a favorable image to attract investors [24–26]. Profitable companies possess greater resources to enhance their efforts in environmental, social, and governance (ESG) initiatives, enabling them to report these efforts more comprehensively

in their sustainability disclosures. As a result, they are more likely to avoid engaging in greenwashing due to the associated reputational and regulatory risks. Profitability is included as a control variable to isolate the effects of media exposure, green innovation and women on board in relation to greenwashing and at the same time accounting for the firm's financial ability, reputational considerations, and legitimacy strategy.

The second control variable is board size. Board size is widely recognized as critical dimensions of governance quality, as they shape the board's ability to monitor management and ensure that corporate actions align with stakeholder interests. A larger board may offer a broader range of expertise, perspectives, and external networks, which can enhance oversight and strategic decision-making [27]. In addition, board members represent the manifestation of the company's objectives. Larger boards are generally associated with enhanced monitoring capacity, stronger managerial control, and improved overall performance, including corporate environmental outcomes [28]. Consequently, the structure and composition of the board play a pivotal control in either enabling or constraining greenwashing within firms.

Including these two variables as controls is important in examining the relationship between media exposure, green innovation, women on board and greenwashing. For example, a more diverse and effective board may be better positioned to encourage genuine green innovation in response to media exposure, rather than resorting to symbolic actions or greenwashing. In addition, strong board governance may moderate the firm's strategic choices in implementing environmental initiatives, ensuring they are substantive rather than symbolic. By accounting for board structure, the analysis can more accurately isolate the effects of media pressure, green innovation, women on board

on corporate greenwashing, thus enhancing the validity of the findings.

Before conducting the regression analysis, classical assumption tests is performed to ensure the validity of the model. These include tests for normality, multicollinearity, heteroscedasticity, and autocorrelation. Once the model satisfies the classical assumptions, regression analysis will be carried out to examine the relationships between the independent and dependent variables.

### 3. Results and Discussion

To ensure the validity of the regression model, several classical assumption tests were conducted. The result of these tests can be seen in the table 2 below:

**Table 2. Summary of Classical Assumption Test Results**

Assumption Test	Method	Result	Conclusion
Normality	Shapiro-Francia W' test	p = 0.13042	Residuals are normally distributed
Multicollinearity	VIF and Tolerance	Mean VIF = 1.21, all VIF < 10	No multicollinearity
Heteroskedasticity	Breusch-Pagan test	p = 0.6585	No heteroskedasticity
Autocorrelation	Durbin-Watson	DW = 1.498	No autocorrelation

First, the normality test was performed using the Shapiro-Francia W' test, which is suitable for small samples. The resulting p-value was 0.13042 ( $W' = 0.96403$ ), which is greater than the 0.05 significance level, indicating that the residuals are normally distributed. Second, the multicollinearity test was conducted using the Variance Inflation Factor (VIF) and tolerance values. All independent variables had VIF values well below 10 and tolerance levels above 0.1, with a mean VIF of 1.21, indicating no multicollinearity problems. Third, the heteroskedasticity test was carried out using the



Breusch-Pagan test, yielding a chi-square value of 0.20 with a p-value of 0.6585, suggesting the absence of heteroskedasticity. Lastly, the autocorrelation test was performed using the Durbin-Watson (DW) statistic, which produced a value of 1.498, falling within the acceptable range of 1 to 3, thereby indicating no significant autocorrelation. These results collectively confirm that the regression model meets the classical assumptions and is suitable for further analysis.

After performing classical assumption, we perform regression analysis. Table 2 below shows the result of regression analysis.

**Table 3. Summary of Regression Results**

Variable	Coefficient	Beta (standardized)
Media Exposure	0.221*	0.195
Board Size	-0.366***	-0.577
Green Product Innovation	0.000***	0.391
Profitability	-5.816***	-0.402
Proportion of Women on Board	5.408***	0.329
Adjusted R <sup>2</sup>	0.68	

The regression model explains approximately 68% of the variation in greenwashing (Adjusted R-squared = 0.68), indicating a strong explanatory power. The F-statistic is significant at the 1% level ( $p = 0.000$ ), suggesting that the overall model is statistically significant.

The two main independent variables, media exposure and green innovation, both show a positive and statistically significant relationship with greenwashing. Media exposure has a coefficient of 0.221 ( $p = 0.034$ ), suggesting that firms with higher media visibility are more likely to engage in greenwashing. This could be due to reputational pressures that incentivize firms to present a favorable environmental image, even if not fully supported by actual practices. These findings support signaling theory, which suggests that firms use media as a tool to communicate positive information in order to enhance their image among stakeholders [29]. However, when

companies emphasize only positive environmental messages while concealing negative aspects or actual poor environmental performance, this can lead to misleading communication and the practice of greenwashing [15]. Firms may strategically utilize media to present themselves as environmentally responsible, even when their operations do not align with such claims (Jiang et al., 2023). Therefore, this study reinforces previous research [15] showing that exposure to environmental information through media is positively associated with greenwashing behavior, as firms seek external legitimacy through symbolic disclosures.

Similarly, green innovation exhibits a positive and statistically significant effect (coefficient = 0.000,  $p < 0.001$ ), suggesting that firms engaged in green innovation may also be more likely to engage in greenwashing. This finding may reflect the possibility that some companies use innovation initiatives as symbolic tools to enhance their environmental image, regardless of their actual environmental impact. This result contradicts our initial hypothesis.

In this study, green innovation is measured based on the environmental costs incurred by each company. The size of these costs is interpreted as a signal of a company's commitment to developing environmentally friendly innovations. According to Legitimacy Theory, companies want to align their actions with the norms, values, and expectations of society to maintain legitimacy. As public awareness of environmental issues in Indonesia has increased, Indonesia companies willing to signal their alignment with societal expectations by investing more in environmental initiatives. However, these investments may not always reflect genuine environmental performance. Instead, the incurred costs may serve as a symbolic gesture, a social contract that enables firms to gain legitimacy and positive public perception. Environmental costs, as a form of sacrifice, are thus seen as

an investment to obtain reputational benefits. One such benefit is a favorable corporate image, which can be strategically pursued through greenwashing. Therefore, higher environmental expenditures, although intended to signal responsibility, may paradoxically be associated with a greater tendency to misrepresent sustainability performance.

However, although the coefficient is statistically significant, its magnitude is notably small, suggesting limited economic significance. This indicates that the level of green innovation disclosed by the company does not have a meaningful economic impact.

Interestingly, our final independent variable, the proportion of women on the board, shows a positive and statistically significant association with greenwashing (coefficient = 5.408,  $p = 0.001$ ). This result suggests that a higher proportion of women on the board of directors is associated with an increased likelihood of greenwashing. In other words, as the representation of female directors increases, greenwashing practices also tend to increase, and vice versa. Although female directors are commonly linked to stronger governance and ethical practices, this finding may suggest that their presence is largely symbolic or that institutional and cultural barriers hinder their substantive influence on environmental decision-making.

While sustainability and environmental protection are concerns shared across all genders, this finding highlights a complex relationship between gender composition and corporate environmental disclosure. Based on the results of this study, companies with a higher proportion of female directors may be more likely to engage in greenwashing. One possible explanation lies in the emotional and perceptual responses that shape sustainability-related behavior. Research in behavioral science suggests that emotional stimuli that often linked to moral and environmental concerns. This behaviour are processed

before rational cognitive evaluation, influencing behavior regardless of gender. However, it is often argued that women are more emotionally responsive, which could translate into greater engagement with symbolic or impression-management practices such as greenwashing. Without assuming negative intent, it is possible that female directors are more inclined to promote sustainability narratives that resonate emotionally with stakeholders, even when actual environmental performance does not fully support such claims. In addition, the representation of women on boards in our sample is relatively low, reflecting tokenism rather than genuine inclusion, thereby serving more as a symbolic gesture than a driver of meaningful change.

Among the control variables, board size exhibits a negative and highly significant association with greenwashing (coefficient = -0.366,  $p < 0.001$ ). As expected, this implies that larger boards are more effective in monitoring managerial behavior and reducing the likelihood of misleading environmental claims. This indicates an inverse relationship, meaning that as the number of board members increases, the likelihood of greenwashing decreases, and vice versa.

The role of the board of commissioners is to oversee and advise the board of directors in managing the company, while the board of directors is responsible for executing the company's strategy and achieving organizational goals [30]. A larger board generally leads to more comprehensive supervision, enhanced decision-making quality, and more effective management. This in turn contributes to improved overall performance, including in the area of environmental responsibility [28]. When environmental performance improves, the incentive or need to engage in greenwashing diminishes. These findings are consistent with research conducted by [31], who also found that board size has a negative and significant relationship with greenwashing.

In short, larger boards appear to strengthen internal governance mechanisms and reducing the likelihood that a firm will resort to misleading environmental claims as a reputational strategy.

Profitability also has a significant negative effect (coefficient = -5.816,  $p < 0.001$ ), suggesting that financially strong firms are less likely to rely on greenwashing, possibly because they have the resources to implement substantive environmental practices. This means that higher profitability is associated with a lower tendency to engage in greenwashing, and vice versa. Profit is a central objective for every company, and in achieving it, firms are often confronted with trade-offs. In many cases, the pursuit of one goal, such as maintaining an ethical image, may come at the expense of another. Greenwashing typically involves masking poor environmental performance through the disclosure of selective positive information. However, when firms are financially strong, they may have less incentive to engage in such practices, as they are better positioned to invest in actual sustainability efforts.

According to Legitimacy Theory, companies with higher profits are under greater public scrutiny and are expected to disclose more genuine positive actions to maintain their legitimacy. Profitability itself attracts investor attention, and this creates additional responsibility for the firm to avoid misleading practices. Engaging in greenwashing could jeopardize investor trust, especially if actual performance is later revealed to be inconsistent with reported claims. Therefore, higher profitability may motivate firms to be more transparent and reduce the use of greenwashing as a strategic communication tool. This reflects the broader influence of the social contract between firms and society, which demands not only financial performance but also authentic accountability.

In summary, the results highlight that both external pressure (media exposure) and internal strategy (green innovation) can influence company to engage in green-

washing. However, our result shows that the availability of women on board are tend to encourage company to engage in greenwashing. Meanwhile, strong governance mechanisms such as larger boards and higher profitability help mitigate greenwashing.

#### 4. Conclusion

The study finds that media exposure and green innovation both positively and significantly influence greenwashing. Greater media visibility increases public pressure, prompting firms to amplify environmental communication, which can result in greenwashing when claims lack substantive backing. Similarly, green innovation may also be used as a symbolic tool to improve corporate image. Conversely, the proportion of female directors shows a positive and significant association with greenwashing. While female directors may exhibit a stronger emotional concern for environmental issues, this increased attention may be channeled into enhancing the firm's environmental image, potentially leading to symbolic disclosures that are not fully supported by actual performance. Among the control variables, board size and profitability are found to have a negative and significant impact on greenwashing. Overall, governance structures and financial capacity play a crucial role in shaping whether environmental communication reflects genuine sustainability or results in greenwashing.

This study illustrates the application of legitimacy theory by demonstrating that firms pursue external legitimacy, particularly through media exposure and green innovation-related disclosures.

Despite the significant findings and contributions to the corporate governance literature, we acknowledge that our sample size is relatively small. Therefore, future research is encouraged to expand the sample by including other Southeast Asian countries, given their shared sustainability development challenges, and to explore potential cross-country comparisons within the region.



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