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Article

Sustainability Report of Mining and Energy Companies: The Role of Board Characteristics and Public Ownership

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Abstract: Sustainability reporting has become an important mechanism for strengthening corporate accountability, particularly in environmentally sensitive industries such as mining. In Indonesia, increasing regulatory requirements and stakeholder expectations have intensified the need to understand how corporate governance mechanisms influence sustainability reporting disclosure (SRD). This study examines the effects of board size, board independence, and public ownership on SRD among mining companies listed on the Indonesia Stock Exchange during 2019–2023. Using a quantitative approach, the study applies panel data regression to a purposively selected sample of 53 companies that consistently published the required corporate reports during the observation period. SRD was measured using a disclosure index based on the Global Reporting Initiative Standards. Board size, board independence, and public ownership were included as the main explanatory variables, while firm size, leverage, and profitability were incorporated as control variables. The Fixed Effects Model was selected as the most appropriate estimation method. The descriptive results show an average SRD level of 41.5%, indicating that Indonesian mining companies disclosed fewer than half of the sustainability indicators assessed. The regression results demonstrate that board independence and public ownership have significant positive effects on SRD, whereas board size has no significant effect. These findings suggest that the effectiveness of independent monitoring and external shareholder oversight is more influential in promoting sustainability transparency than the numerical size of the board. The results support agency-theoretic arguments that independent governance and dispersed ownership reduce information asymmetry and strengthen managerial accountability. Practically, mining companies should enhance the substantive role of independent commissioners, strengthen board-level sustainability oversight, and improve disclosure responsiveness to public shareholders to increase reporting credibility and stakeholder confidence.

Keywords: Board Independence, Board Size, Corporate Governance, Mining Industry, Public Ownership, Sustainability Reporting. JEL Classification: G30, G34, M14, M41

1. Introduction

Sustainability reporting has become an important component of corporate accountability as companies face increasing demands to communicate their economic, environmental, and social impacts transparently. Through sustainability reporting, firms provide stakeholders with information regarding how sustainability related risks, impacts, and responsibilities are identified and managed. Such disclosure may enhance accountability, support stakeholder-decision-making, and strengthen corporate legitimacy, particularly in industries whose operations generate significant environmental and social externalities (Amoako et al., 2021; Anyigbah et al., 2023). The GRI Sustainability Reporting Standards similarly emphasise that sustainability reporting enables organisations to disclose their most significant impacts on the economy, environment, and people in a consistent, credible, and comparable manner, thereby improving transparency and organisational accountability (GRI, 2021).

The need for credible sustainability reporting is particularly pronounced in the mining industry. Mining activities are closely associated with greenhouse gas emissions, extensive land use, ecosystem disruption, waste generation, occupational risks, and socioeconomic consequences for surrounding communities. These impacts expose mining companies to substantial scrutiny from governments, investors, local communities, environmental organisations, and other stakeholders. The Indonesian context is especially relevant because the country remains highly dependent on fossil fuels and natural-resource extraction. Indonesia's energy-sector carbon dioxide emissions reached approximately 600 million tonnes in 2021, placing the country among the world's largest energy-related emitters (IEA, 2022; Zheng et al., 2023). At the same time, mining and quarrying continue to make an important contribution to national economic activity, government revenue, exports, employment, and regional development (BPS, 2024)

Indonesia has strengthened its climate and sustainability commitments through several policy initiatives. Under its Enhanced Nationally Determined Contribution, Indonesia committed to reducing greenhouse gas emissions by 31.89% unconditionally and by up to 43.20% with international support by 2030 relative to the business-as-usual scenario (The Republic of Indonesia, 2025). In the corporate reporting domain, Financial Services Authority Regulation No. 51/POJK.03/2017 requires issuers and public companies to prepare and disclose sustainability reports, while SEOJK No. 16/SEOJK.04/2021 provides more detailed guidance concerning the content and presentation of sustainability information in annual reports or separate sustainability reports (OJK, 2017, 2021). These regulatory developments reflect growing expectations that listed companies, particularly those operating in environmentally sensitive sectors, provide transparent and accountable information regarding their sustainability performance.

Despite these commitments, the environmental consequences of mining activities remain significant. Reported cases of river pollution, land degradation, hazardous waste, and disruption to communities surrounding mining areas illustrate the continuing environmental and social risks associated with extractive operations (KLHK, 2022; Perdana et al., 2024). Mining-related forest loss also remains an important concern. Satellite-based monitoring by Nusantara Atlas indicates that mining-driven deforestation in Indonesia has persisted over time and approached approximately 10,000 hectares annually by 2023 (Nusantara Atlas, 2024). As illustrated in Fig. 1, the persistence and renewed increase in mining-related forest loss reinforce the need for companies to disclose not only their sustainability policies and commitments but also measurable information regarding environmental impacts, mitigation activities, rehabilitation, and performance outcomes.

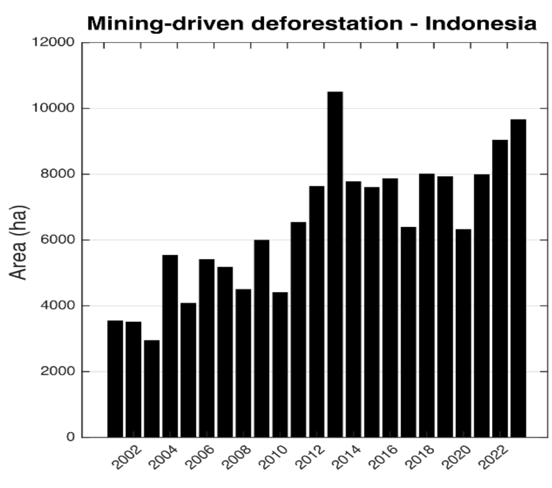

Figure. 1. Mining-driven deforestation in Indonesia

Source: (Nusantara Atlas, 2024)

The existence of reporting standards and regulatory requirements does not necessarily ensure that all firms disclose sustainability information to the same extent. Differences in corporate governance arrangements may influence how effectively management is monitored and how strongly companies respond to stakeholder demands for transparency. In this regard, the size and independence of the board of commissioners and the proportion of shares held by the public may affect the extent of sustainability reporting. Previous studies generally suggest that larger boards can provide broader expertise and greater monitoring capacity, while independent commissioners may strengthen objective oversight and constrain managerial discretion in corporate reporting (Buallay et al., 2022;

Githaiga & Kosgei, 2023). However, excessively large boards may experience coordination and communication difficulties that weaken their effectiveness (Centorrino et al., 2024; Thuc & Nguyen, 2020). Similarly, dispersed public ownership may increase external demand for information and encourage broader disclosure, whereas concentrated ownership may reduce reliance on publicly available corporate information (Kumar, 2022; Safelia & Muda, 2023).

These findings indicate that the relationship between corporate governance and sustainability reporting remains inconclusive and may depend on the institutional, ownership, regulatory, and industry context in which firms operate. Evidence obtained from cross-country or multi-industry samples may not fully explain reporting behaviour in Indonesia's mining industry, which combines substantial environmental exposure, concentrated ownership structures, significant economic importance, and an evolving sustainability-reporting regime. Moreover, the simultaneous influence of board size, board independence, and public ownership on the extent of sustainability reporting among Indonesian mining companies remains insufficiently understood. Examining these governance mechanisms within a single environmentally sensitive industry may therefore provide more context-specific evidence than studies that combine firms with substantially different environmental and social risk profiles.

Accordingly, this study examines the effects of board size, board independence, and public ownership on the extent of sustainability reporting among mining companies listed on the Indonesia Stock Exchange (IDX) during the 2019–2023 period. Using panel data regression, the study evaluates whether corporate monitoring and ownership mechanisms contribute to differences in sustainability reporting across firms and over time. The study contributes to the sustainability reporting and corporate governance literature (Brogi & Lagasio, 2025; Jamil et al., 2020; Ong & Djajadikerta, 2018) by providing sector-specific evidence from an emerging market undergoing strengthened sustainability-reporting regulation. It also extends previous research by integrating board characteristics and public ownership within a single empirical model. Practically, the findings are expected to assist corporate management, investors, the IDX, the Financial Services Authority, and the Ministry of Energy and Mineral Resources in strengthening governance mechanisms and improving the transparency, comparability, and accountability of corporate sustainability reporting.

2. Theory and Hypotheses Development

Agency theory provides the main theoretical foundation for explaining the relationship between corporate governance mechanisms and sustainability reporting. Jensen and Meckling (1976) argue that the separation between ownership and managerial control creates agency conflicts because managers may possess more information about corporate activities than shareholders and other external stakeholders. This information asymmetry may allow managers to prioritise their own interests or selectively disclose information that presents the company favourably. Sustainability reporting can therefore function as an accountability mechanism through which companies communicate their environmental, social, and governance performance, reduce information asymmetry, and demonstrate that corporate resources are managed in accordance with shareholders' and stakeholders' interests. This function is particularly important in the mining sector because mining activities generate substantial environmental and social impacts and consequently attract considerable public and regulatory scrutiny.

The board of commissioners represents an important internal governance mechanism responsible for overseeing managerial decisions and ensuring adequate corporate accountability. From an agency theory perspective, a larger board may strengthen managerial monitoring because it provides a broader range of expertise, professional backgrounds, experience, and perspectives. These resources may improve the board's ability to evaluate sustainability risks, oversee management's environmental and social responsibilities, and encourage the disclosure of more comprehensive sustainability information (Anyigbah et al., 2023; Buallay et al., 2022). Larger boards may also establish more effective task distribution and provide greater capacity to address the complex sustainability issues faced by mining companies. Prior studies generally indicate that board size is positively associated with the extent or quality of sustainability disclosure (Buallay et al., 2022; Centorrino et al., 2024). Nevertheless, excessively large boards may experience communication, coordination, and collective decision-making problems that reduce their monitoring effectiveness (Centorrino et al., 2024; Thuc & Nguyen, 2020). Despite this potential limitation, a sufficiently large board is expected to provide stronger oversight and encourage greater corporate transparency. Accordingly, this study proposes the following hypothesis:

H1: Board size has a positive effect on sustainability reporting.

Board independence is another essential governance mechanism for mitigating agency conflicts. Independent commissioners are less involved in daily managerial activities and are therefore expected to provide more objective monitoring than commissioners who have close relationships with management or controlling shareholders. Their independence enables them to challenge managerial decisions, protect minority shareholders, and encourage the disclosure of information that may otherwise be withheld by management. In sustainability reporting, independent commissioners can enhance the credibility and completeness of disclosed information by limiting managerial discretion and ensuring that reporting practices reflect actual environmental and social performance rather than merely symbolic corporate claims (Githaiga & Kosgei, 2023). A higher proportion of independent commissioners may also increase corporate responsiveness to reporting regulations, international sustainability standards, and external stakeholder expectations (Khalaf, 2024). Empirical evidence suggests that companies with stronger board independence tend to provide more transparent and comprehensive sustainability disclosures (Githaiga & Kosgei, 2023; Khalaf, 2024). Therefore, the following hypothesis is formulated:

H2: Board independence has a positive effect on sustainability reporting.

Public ownership may also influence sustainability reporting by increasing the number and diversity of external shareholders who depend on publicly available information. According to agency theory, dispersed public ownership increases information asymmetry because individual shareholders generally have limited access to internal corporate information and limited ability to directly monitor management (Jensen & Meckling, 1976). Consequently, companies with greater public ownership face stronger pressure to provide transparent, reliable, and comprehensive disclosure in order to reduce information gaps, facilitate investment decisions, and maintain shareholder confidence (Safelia & Muda, 2023). Broader public ownership may also expose companies to greater capital-market scrutiny, reputational pressure, and demands for compliance with recognised sustainability reporting standards (Martinez-ferrero, 2023). In contrast, concentrated ownership may reduce external disclosure incentives because dominant shareholders can obtain information directly from management and may exercise control without relying extensively on public reports (Kumar, 2022). Publicly dispersed ownership is therefore expected to encourage firms to demonstrate greater accountability through sustainability reporting. Based on this reasoning, the study proposes the following hypothesis:

H3: Public ownership has a positive effect on sustainability reporting.

Although corporate governance and sustainability reporting have received growing academic attention, evidence concerning the effects of board size, board independence, and public ownership remains inconclusive and is highly dependent on institutional and industry contexts. Some studies demonstrate that stronger governance mechanisms enhance sustainability disclosure (Brogi & Lagasio, 2025; Farooq & Muhammad, 2025), whereas others identify insignificant or even negative relationships arising from coordination problems, symbolic governance practices, ownership concentration, and variations in regulatory enforcement (Yavuz et al., 2024). These inconsistencies indicate that findings obtained in developed markets or less environmentally sensitive industries cannot necessarily be generalised to mining companies operating in an emerging economy.

Taken together, agency theory provides the overarching explanation for the relationships between corporate governance mechanisms and sustainability reporting. Board size and board independence are expected to strengthen managerial monitoring, constrain opportunistic behaviour, and reduce information asymmetry, while greater public ownership is expected to increase external demand for transparent and accountable corporate information. In the context of Indonesian mining companies, these governance mechanisms are particularly important because firms operate under substantial environmental exposure, regulatory scrutiny, and stakeholder pressure. Accordingly, this study proposes that board size, board independence, and public ownership positively influence the extent of sustainability reporting. These hypotheses provide the theoretical basis for the empirical analysis presented in the subsequent section.

3. Method

Sampling and Data

The population of this study comprises all mining firms listed on the Indonesia Stock Exchange (IDX) between 2019 and 2023. The mining sector was selected due to its significant role in the national economy, both in terms of state revenue and employment, while also posing substantial environmental challenges that demand higher levels of transparency and accountability in sustainability reporting. As one of the sectors with high emission levels, mining provides a relevant context for examining how corporate governance influences sustainability disclosure. According to IDX data, more than 63 active mining firms were identified as the population (Setiawan & Ridaryanto, 2022).

From this population, 53 mining firms were selected using purposive sampling. This method was chosen because it enables the selection of firms that meet specific criteria relevant to the research objectives. The criteria included: (1) firms consistently publishing both annual reports and sustainability reports during the 2019–2023 period, and (2) reports being publicly accessible. These criteria ensure that the selected sample provides a representative overview of sustainability disclosure practices within the mining sector. The approach also improves analytical accuracy by including only firms that meet the required standards for data completeness (Pallant, 2020).

This study employs quantitative data derived from firms' annual reports and sustainability reports. The data include information relevant to financial performance, governance characteristics, and sustainability indicators aligned with the research framework. Secondary data were obtained from the official IDX website and individual corporate websites. The use of secondary data ensures standardization, verifiability, and validity of the research findings. To maintain consistency and reliability, data collection followed a structured procedure, enabling the results to be scientifically accountable (Barlian, 2016).

Variables and Data Analysis

To empirically examine the relationship between board structure, ownership structure, and the extent of sustainability reporting disclosure, this study defines several variables based on relevant theories and prior empirical research. The variables consist of dependent, independent, and control variables, each operationalized in accordance with established measurements in corporate governance and sustainability disclosure studies. The operational definitions of these variables are summarized in Table 1.

Table 1: Definition of Variables

Variables	Operational Definition
Dependent Variables:	
Sustainability Reporting Disclosure (SRD)	Total disclosure based on GRI index
Independent Variables:	
Board structure	
Board size (BS)	Total board of directors and commissioners
Board Independence (BI)	Percentage of independent board members to total board members
Ownership structure	
Public Ownership (PO)	Percentage of shares held by the general public
Control Variables:	
Firm size (FS)	Log natural total asset
Leverage (Lev)	Total liabilities divided by total assets
ROA	Return on assets, net income divided by total assets

4. Results And Discussion

Descriptive statistics of CSD

As presented in Table 2, Sustainability Reporting Disclosure (SRD) has a mean value of 41.5%, indicating that the sampled companies disclose, on average, fewer than half of the sustainability indicators included in the reporting index. This finding suggests that the extent of sustainability reporting among Indonesian mining companies remains relatively limited. Sustainability-related information may therefore not yet be fully integrated into the companies' core reporting and governance practices. Instead, sustainability disclosure appears to remain selective, with companies reporting only certain environmental, social, and governance aspects rather than providing comprehensive information across all assessed indicators.

Nevertheless, the average disclosure level identified in this study is higher than those reported in several previous studies.Buallay and Al-Ajmi, (2020), examining banks listed on stock exchanges in Gulf Cooperation Council countries, documented an average sustainability disclosure level of 34.01%. In the Indonesian context, Hidayah and Raihan (2024) reported an average disclosure rate of 32.09% among mining companies, while Hikmah and Anisykurlillah (2023) found an average of 30.52% among state-owned enterprises. Compared with these findings, the mean SRD value of 41.5% observed in the present study may indicate greater corporate attention to sustainability-related information. However, this comparison should be interpreted cautiously because differences in industry characteristics, observation periods, regulatory environments, sample composition, and disclosure measurement instruments may affect the reported disclosure levels.

The relatively higher mean disclosure level may reflect increasing regulatory pressure, stronger stakeholder expectations, and growing public concern regarding the environmental and social consequences of mining activities. These external pressures may encourage companies to provide broader sustainability information in order to strengthen accountability, maintain legitimacy, and respond to the information needs of investors and other stakeholders. Despite this apparent improvement, the fact that the average disclosure level remains below 50% indicates that substantial scope remains for Indonesian mining companies to enhance the completeness, consistency, and transparency of their sustainability reporting.

Table 2. Statistic Descriptive

	SRD	BS	BI	PO	ROA	LEV	FSize
Mean	0.415	3.886	0.401	0.237	0.047	0.491	19.133
Median	0.358	4.000	0.400	0.206	0.035	0.464	18.845
Maximum	1.000	8.000	0.667	0.616	0.229	1.204	23.101
Minimum	0.000	2.000	0.167	0.000	-0.124	0.007	15.231
Std. Dev.	0.246	1.342	0.096	0.135	0.070	0.259	1.805
N	201	201	201	201	201	201	201

The relatively higher level of sustainability disclosure may reflect changes in the business environment, in which companies face increasing pressure from regulators, investors, and the wider public to provide more transparent information regarding their environmental and social performance. From an agency theory perspective, such pressure encourages firms to expand sustainability disclosure as a means of reducing information asymmetry between management and external stakeholders, particularly shareholders who have limited access to internal corporate information. Stricter sustainability regulations, the adoption of internationally recognised reporting standards, and growing investor attention to environmental, social, and governance risks may increase the monitoring imposed on management and reduce managerial discretion over the information disclosed. In addition, heightened public concern regarding the environmental and social consequences of mining activities may encourage firms to provide more comprehensive sustainability information to demonstrate accountability and justify the use of corporate resources. Although the average disclosure level remains relatively limited, the findings suggest a gradual movement toward more transparent and accountable reporting practices. Such disclosure may reduce agency costs, strengthen corporate legitimacy, and enhance investor confidence in the company's long-term sustainability.

Results of the Hypothesis Test

Multiple linear regression analysis was employed to examine the effect of independent variables on the level of Sustainability Reporting Disclosure (SRD). Table 3 presents the hypothesis testing results, including regression coefficients, probability values (significance levels), and supporting statistical indicators such as adjusted R-squared, F-statistics, and F-statistic probability. An asterisk (*) denotes statistical significance at the 5% level. These findings provide the basis for evaluating the extent to which each independent variable significantly influences corporate sustainability disclosure.

Regression results indicate that board size has no significant effect on the level of sustainability reporting disclosure among mining companies listed on the Indonesia Stock Exchange. This finding suggests that a larger number of board members does not necessarily enhance corporate transparency in disclosing sustainability-related information. According to agency theory, monitoring effectiveness depends not merely on board size but on the individual capacity of members to perform oversight (Girella et al., 2021). Larger boards may experience coordination challenges, free-rider problems, and reduced efficiency in decision-making, which collectively diminish their contribution to greater transparency.

Table 3. Hypothesis test

Variable	Coefficient	Prob.
C	-3.1485	0.0005
BS	0.0213	0.5331
BI	0.5878	0.0086*
PO	0.8112	0.0007*
Fsize	0.1566	0.0005
Lev	-0.3615	0.0000
ROA	0.3762	0.0000
Adjusted R-squared	0.5081	
F-statistic	5.7025	
Prob(F-statistic)	0.0000	
Note: *indicate significance at the 5% levels.		

The Effect of Board Size on Sustainability Reporting

From a legitimacy theory perspective, mining firms face substantial social and environmental pressures. The results demonstrate that such legitimacy pressures are not necessarily addressed through board expansion but rather through the quality of governance and management's commitment to integrating sustainability issues (Arisanty & Gumay, 2024). Thus, sustainability reporting is more strongly influenced by internal governance mechanisms such as board independence, public ownership, and regulatory requirements rather than the number of directors alone.

Previous studies reinforce this conclusion. Walsh et al. (2021) emphasize that board effectiveness depends more on competence, diversity, and independence than on size. Anyigbah et al. (2023) highlights that cross-country variations in regulation and market expectations may explain inconsistencies in board size effects. Overall, board size cannot be considered a reliable determinant of sustainability disclosure quality; firms should prioritize board effectiveness and managerial commitment to achieving transparent and credible reporting.

The Effect of Board Independence on Sustainability Reporting

Results reveal that board independence has a positive and significant effect on sustainability reporting, supporting the proposed hypothesis. Independent commissioners play a pivotal role in enhancing disclosure of environmental, social, and governance (ESG) issues. Their neutrality enables more objective monitoring and compels management to disclose information transparently, elevating their role beyond administrative oversight toward a strategic function in non-financial accountability.

Agency theory posits that independent commissioners reduce conflicts of interest by ensuring management actions align with shareholder and stakeholder concerns (Mwasambu et al., 2024). In Indonesia, the increasing professionalism and integrity of independent directors highlight that board quality is more important than board size (Sutawan & Sisdyani, 2022). This effectiveness is further amplified when independent commissioners possess ESG-related expertise in law, environment, or sustainable finance (Fratiwi et al., 2023). Regulatory requirements mandating a minimum of 33% independent commissioners must therefore be complemented by substantive empowerment, including involvement in strategic forums and capacity building (Butar-butar et al., 2024).

Legitimacy theory supports this finding, suggesting that independent directors strengthen corporate legitimacy by representing external interests (Pratiwi & Pahmi, 2024). Their active participation in sustainability reporting enhances public trust, narrows legitimacy gaps, and fosters global competitiveness. Empirical evidence aligns with prior studies, such as Githaiga & Kosgei (2023) and Khalaf (2024), which confirm the positive role of independent boards in sustainability disclosure. Contrary to the perception that good corporate governance in emerging markets is largely symbolic, these findings highlight its substantive impact. Strengthening the role of independent commissioners through ESG training, access to strategic data, and active involvement in decision-making is therefore essential for advancing responsible governance practices.

The Effect of Public Ownership on Sustainability Reporting

Findings show that public ownership positively and significantly influences the extent of sustainability reporting. A greater proportion of publicly held shares increases corporate incentives to provide transparent sustainability disclosures. In line with agency theory, dispersed ownership amplifies information asymmetry risks, motivating management to strengthen transparency by reporting non-financial information, including social impacts, environmental risks, and governance practices (Martinez-Ferrero, 2023).

In emerging economies such as Indonesia, public ownership is particularly relevant to sustainability reporting in environmentally sensitive industries such as mining. From an agency theory perspective, a higher proportion of public ownership generally reflects a more dispersed ownership structure, in which numerous external shareholders have limited access to private corporate information and limited capacity to monitor management directly. The separation between ownership and managerial control may consequently increase information asymmetry and agency costs, particularly when managers possess discretion over the disclosure of environmental and social impacts (Healy & Palepu, 2001; Jensen & Meckling, 1976). Under these conditions, sustainability reporting serves as a monitoring and accountability mechanism through which management communicates the use of corporate resources, sustainability-related risks, and environmental and social performance to external shareholders. Companies with greater public ownership are therefore expected to provide more extensive sustainability disclosure to reduce information asymmetry, mitigate agency concerns, and maintain investor confidence. This disclosure incentive may be particularly strong among mining companies because their operations are exposed to substantial environmental risks, regulatory scrutiny, and potential reputational costs. As public shareholders are generally unable to obtain information directly from management, comprehensive sustainability reporting becomes an important means of demonstrating managerial accountability and reducing monitoring costs borne by dispersed investors (Eng & Mak, 2003). Accordingly, a higher level of public ownership is expected to encourage more extensive sustainability reporting.

This finding is consistent with prior evidence. Martinez-Ferrero (2023) documented similar results in China, showing that public ownership drives ESG transparency. Sharma et al. (2022) reported comparable effects among Fortune Global 500 firms, while Safelia & Muda (2023) highlighted that Indonesian companies with higher public ownership are more responsive to regulatory requirements and open to sustainability reporting. In the mining sector, intensified oversight by OJK, IDX, and environmentally conscious communities reinforces these effects. Public ownership, therefore, acts as a governance mechanism that enhances transparency and accountability through meaningful sustainability disclosures.

5. CONCLUSION

This study empirically examined the effects of board size, board independence, and public ownership on the extent of sustainability reporting among Indonesian mining companies during the 2019–2023 period. Using panel data regression with a fixed effects specification, the results demonstrate that board independence and public ownership have significant positive effects on sustainability reporting, whereas board size has no significant effect. These findings indicate that the effectiveness of governance mechanisms is determined less by the numerical size of the board than by the board's capacity to provide objective oversight and by the external monitoring exercised by public shareholders. The study therefore contributes to the corporate governance and sustainability reporting literature by showing that governance quality and ownership-based monitoring are more influential in promoting sustainability transparency than board structure alone.

The findings provide support for agency theory by demonstrating that independent commissioners and public ownership can function as monitoring mechanisms that reduce managerial discretion, mitigate information asymmetry, and strengthen corporate accountability. Independent commissioners are more likely to provide objective oversight of managerial reporting decisions, while a broader public ownership base increases external demand for transparent and decision-useful sustainability information. The results also complement legitimacy theory by suggesting that companies exposed to greater public scrutiny are more responsive to societal expectations concerning environmental and social accountability. Overall, sustainability reporting among Indonesian mining companies appears to be driven more strongly by independent oversight and external shareholder pressure than by the number of commissioners serving on the board.

From a practical perspective, mining companies should strengthen the substantive role of independent commissioners in overseeing sustainability-related risks, performance, and disclosure. This may be achieved by improving commissioners' sustainability and ESG-related competencies, providing them with timely and reliable non-financial information, and formally incorporating sustainability oversight into board responsibilities and evaluation processes. Companies should also respond more effectively to the information needs of public shareholders by improving the completeness, consistency, comparability, and credibility of sustainability disclosures. Accordingly, high-quality sustainability reporting requires more than formal compliance with reporting regulations; it requires the integration of sustainability considerations into governance processes, managerial accountability, and long-term corporate decision-making.

6. Author Contributions

A.Y. Perdana contributed to the conceptualization of the study, development of the methodology, data collection, formal analysis, and preparation of the original draft. A.K. Widagdo supervised the research process, validated the results, and contributed to reviewing and editing the manuscript. S.R. Ika provided resources, assisted with visualization, managed project administration, and participated in the review and editing of the manuscript. All authors have read and approved the final version of this article.

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8. Conflict of Interest

The author declares that there is no conflict of interests regarding the publication of this manuscript. In addition, the ethical issues, including plagiarism, informed consent, misconduct, data fabrication and/or falsification, double publication and/or submission, and redundancy have been completely observed by the authors.

9. Abbreviations

ESG	Environmental, Social, and Governance
NDC	Nationally Determined Contribution
BI	Board Independen
BS	Board Size
FSize	Firm Size
GDP	Gross Domestic Product
IDX	Indonesia Stock Exchange
Lev	Leverage
$MtCO_2$	Metric Tons of Carbon Dioxide
PO	Public Ownership
SRD	Sustainability Reporting Disclosure
WALHI	Wahana Lingkungan Hidup Indonesia (Indonesian Forum for the Environment)

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