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Sustainability Governance, Impact Disclosure, Carbon Disclosure, and Stock Returns

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ABSTRACT
This study examines the associations of sustainability impact disclosure (SID) and carbon emission disclosure (CED) with stock returns and tests whether sustainability governance (SG) moderates these relationships. The study's novelty is an expanded CED index that integrates disclosure items derived from Presidential Regulation No. 98 of 2021, carbon-accountability indicators, climate-governance indicators, and the TCFD framework to reduce construct underrepresentation in conventional disclosure checklists. Using a quantitative approach, the study analyzes 566 firm-year observations from 283 non-financial companies listed on the Indonesia Stock Exchange during 2023–2024. Samples were selected through purposive sampling, and the data were analyzed using panel-data regression, moderated regression analysis, and sensitivity testing. CED is positively associated with stock returns, whereas SID shows no statistically significant association. SG strengthens the positive association between CED and stock returns but does not strengthen the relationship between SID and stock returns. The sensitivity test shows that the expanded CED measurement yields stronger test statistics and an additional supported moderation hypothesis relative to the original measurement. These findings indicate that investors respond more strongly to specific, quantifiable, and governance-supported climate information than to broad sustainability-impact narratives.

INTRODUCTION

The capital market significantly influences stock returns, serving as the primary metric for investors to evaluate investment performance and reflecting the market's reaction to diverse information disseminated by the company. Nevertheless, the returns on shares of companies listed on the Indonesia Stock Exchange (IDX) continue to exhibit significant

variations periodically. This situation signifies that investors' reactions to received information are inconsistent, leading to disparities in stock performance among companies and across time periods. The swings indicate that the information disseminated by the company has not consistently elicited a uniform response from the market, resulting in an inconsistent return for investors.

According to Bahrudin and Arisudhana (2025), the average return on firm shares from 2021 to 2024 varied annually, as illustrated in Figure 1. This phenomenon indicates that multiple factors continue to influence stock return formation; therefore, further research is needed to identify disclosure and governance elements that can strengthen investor confidence and stimulate stock returns.

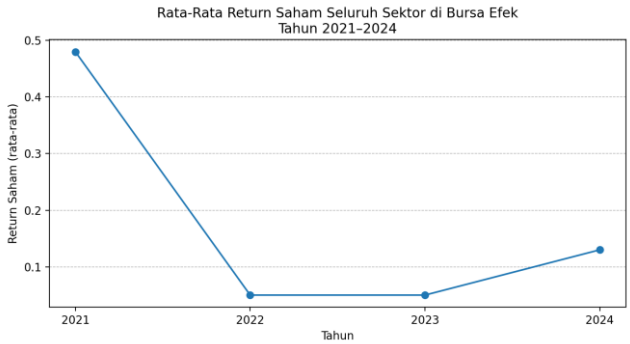

Figure 1. Average *Stock* Return
Source: Research by Bahrudin & Arisudhana (2025)

Based on Figure 1, the company's stock returns across sectors during the 2021-2024 period fluctuated. This condition reflects the influence of economic dynamics, global uncertainty, and increasing investor attention to environmental and sustainability aspects of the company. Companies that manage environmental risks and consistently implement sustainability practices tend to obtain a more positive market response, which has the potential to increase stock returns (Bahrudin & Arisudhana, 2025).

The stock returns in this study are affected by two main independent variables, namely sustainability impact disclosure and carbon emission disclosure. Sustainability impact disclosure demonstrates corporate transparency regarding economic, social, and environmental impacts, whereas carbon emission disclosure signals accountability for climate-related risks. Prior studies show that environmental sustainability disclosure, ESG information, and carbon disclosure can shape investor confidence, stock market reaction, and stock return behavior Alsahlawi et al. (2021); Palealu et al. (2025); Dewi et al. (2024). Evidence from Hendra and Murwaningsari (2024) also supports the relevance of sustainability reporting quality and stock returns in Indonesia-based market analysis.

This study employed sustainability governance as a moderating variable because governance structures related to sustainability can improve reporting transparency, strengthen environmental oversight, and reinforce responsible corporate practices Qaderi et al. (2022); Orazalin (2020); Sulistyowati & Tumirin (2023).

Prior empirical findings remain inconsistent. Several studies indicate that ESG disclosure, environmental disclosure, and sustainability-related information may improve

market response, while other studies show that the effect can depend on financial constraints, governance quality, industry context, and the credibility of the disclosure Alsahlawi et al. (2021); Nurnaningsih & Handajani (2025); Dewi et al. (2024); Papoutsi & Sodhi (2020). The choice of sustainability governance as a moderating variable is therefore based on a research gap characterized by inconsistent findings regarding the associations of sustainability impact disclosure and carbon emission disclosure with stock returns.

The research gap is therefore not merely the inconsistency of prior findings but also the way Carbon Emission Disclosure (CED) has been operationalized. Many earlier disclosure indices rely on generic or legacy checklists that record whether an item is disclosed but do not fully represent Indonesia-specific climate obligations, NDC implementation, mitigation and adaptation planning, carbon economic value, emission accountability, and board-level climate governance. Such construct underrepresentation can produce different empirical results because studies use non-equivalent disclosure domains, apply different scoring rules, and examine firms with varying industry exposure, reporting credibility, and governance quality. Consequently, a positive market response may appear in studies that capture financially material and credible carbon information, but disappear when disclosure scores are dominated by broad, symbolic, or weakly comparable items (Choi et al., 2013; Papoutsi & Sodhi, 2020; Fransisca et al., 2024).

Stakeholder theory explains the relationship between disclosure and stock returns by emphasizing that companies are expected to provide transparent information to stakeholders. In the context of environmental and sustainability reporting, broader and more credible disclosure can reduce information asymmetry, strengthen legitimacy, and improve market confidence (Bouguerra et al., 2023). Accordingly, carbon emission disclosure and sustainability impact disclosure are expected to become signals that support investor evaluation of long-term corporate value.

This research is innovative because it develops a more comprehensive instrument for measuring carbon emission disclosure. The basic measurement refers to the carbon emission disclosure framework developed by Choi et al. (2013) and is modified by integrating the provisions of Presidential Regulation Number 98 of 2021. The initial instrument comprises four dimensions: (1) Nationally Determined Contribution (8 indicators), (2) Climate Change Mitigation (4 indicators), (3) Climate Change Adaptation (4 indicators), and (4) Carbon Economic Value Transition (3 indicators). This study enhances the instrument by incorporating two additional dimensions, namely Carbon Emission Accountability and Climate Governance. The Carbon Emission Accountability dimension is derived from Fransisca et al. (2024) and is aligned with the Task Force on Climate-related Financial Disclosures (TCFD) framework. The Climate Governance dimension refers to SEOJK Number 13/SEOJK.03/2017 and is supplemented with an additional TCFD-based indicator. Therefore, the carbon emission disclosure instrument in this study consists of six dimensions and twenty-eight indicators.

The proposed expanded measurement addresses these shortcomings by integrating global climate-risk concepts with the Indonesian institutional context. Its novelty lies in adding theoretically distinct dimensions—Carbon Emission Accountability and Climate Governance—and in explicitly covering NDC, mitigation, adaptation, and carbon economic value

requirements. The resulting six-dimension, 28-indicator index is intended to improve construct-domain coverage and comparability, rather than simply increase the number of items. It therefore tests whether a context-aligned and governance-sensitive CED measure provides more decision-useful information for explaining stock returns.

Consequently, this study aims to (1) assess the association between sustainability impact disclosure and stock returns; (2) assess the association between carbon emission disclosure and stock returns; (3) examine whether sustainability governance moderates the relationship between sustainability impact disclosure and stock returns; (4) examine whether sustainability governance moderates the relationship between carbon emission disclosure and stock returns; and (5) enrich the literature on sustainability impact disclosure, carbon emission disclosure, and sustainability governance by integrating Presidential Regulation Number 98 of 2021, the Task Force on Climate-related Financial Disclosures (TCFD) framework, and SEOJK Number 13/SEOJK.03/2017 into a more comprehensive carbon emission disclosure measurement instrument.

RESEARCH METHODOLOGY

This study employs a quantitative, observational panel design using secondary data from annual reports, sustainability reports, and financial statements of non-financial corporations listed on the Indonesia Stock Exchange (IDX) for 2023–2024. The panel structure is used to estimate conditional statistical associations across firms and years. Because the design does not randomly assign an exposure and does not implement an exogenous causal-identification strategy, the regression coefficients are interpreted as associations rather than causal effects. Sample selection uses purposive sampling to align the observations with the research objectives. The criteria encompass: (1) non-financial corporations listed on the Indonesia Stock Exchange for the 2023–2024 period; (2) corporations that disseminate comprehensive annual and sustainability reports; (3) corporations possessing data on carbon emission disclosures, sustainability governance, sustainability impact disclosures, and stock returns; and (4) corporations that do not incur losses during the 2023–2024 period.

Stock Return according to Hadiwibowo & Saraswati (2024) is the rate of return earned by investors as compensation for investments made in a stock. The measurement of the stock return variable will use the following calculation ratio:

Where:

$$Ri = \frac{Pt - P_{t-1}}{P_{t-1}}$$

Ri : Stock Return

Pt : Company Share Price in the period t

Pt-1 : Company Share Price in the t-1 period

Sustainability Impact Disclosure is treated as a form of corporate accountability that communicates economic, social, and environmental impacts to stakeholders. This study

assesses sustainability impact disclosure using IRIS 3.0 (Impact Reporting and Investment Standards), which contains five dimensions. The first dimension is Product Impact, encompassing client information, supplier information, environmental impact, quality and research, quality and performance, and product and service. The second dimension is Operational Impact, covering organizational governance, employee satisfaction, wage information, training and education, and impact on society. The third dimension is Financial Impact, including balance sheet, cash flow, income statement, ratios, concepts, and calculations. The fourth dimension is Organizational Impact, covering organizational information, governance and ownership, report information, environmental impact, societal impact, and governance impact. The fifth dimension is Investment Impact, covering investment information, investment impact, environmental investment impact, and societal investment impact. This measurement approach is consistent with the view that sustainability disclosure should be evaluated based on the substance of reported impacts rather than disclosure volume alone (Papoutsi & Sodhi, 2020).

Carbon Emissions Disclosure refers to corporate disclosure of greenhouse gas emissions, emission-reduction targets, climate-related risks, mitigation actions, and governance mechanisms associated with carbon management. This study assesses Carbon Emissions Disclosure by integrating Presidential Regulation Number 98 of 2021, the indicator development proposed by Fransisca et al. (2024), and SEOJK Number 13/SEOJK.03/2017. The measurement consists of six dimensions. The first dimension is Nationally Determined Contribution (NDC), encompassing projected greenhouse gas emission levels, emission-reduction target distribution, climate change mitigation scenarios, climate change adaptation scenarios, estimated implementation costs, funding sources, required technologies, and capacity building. The second dimension is Climate Change Mitigation, covering GHG emission inventories, GHG baseline preparation, mitigation target formulation, and mitigation action plans. The third dimension is Climate Change Adaptation, covering climate impact inventories, climate resilience baselines, resilience targets, and adaptation action plans. The fourth dimension is Carbon Economic Value Transition, covering GHG emission caps, actual GHG emissions or carbon sequestration levels, and quantified emission reductions or sequestration improvements. The fifth dimension is Carbon Emissions Accountability, covering carbon emission disclosure reporting, environmental risk management teams, emissions inventory facilities, and physical and transition risk mapping. The sixth dimension is Climate Governance, covering climate risk management structures, policies, procedures, risk limits, board and business-unit responsibilities, climate-risk strategies, financial-risk monitoring, governance practices, and climate target disclosure in line with the TCFD framework.

The expanded CED index is theoretically necessary because carbon disclosure is a multidimensional accountability construct. An emissions inventory alone captures reported outcomes, but not the organizational capacity and governance processes that make those outcomes credible and decision-useful. The additional accountability and climate-governance indicators reduce construct underrepresentation by capturing responsibility assignment, risk mapping, oversight, policies, targets, and monitoring mechanisms. In disclosure-index research, this strengthens construct representation and content validity by ensuring that the

operational measure covers both carbon performance information and the governance infrastructure that produces, controls, and uses that information. Conceptually, the index differs from CDP and GRI rather than replacing them. CDP is a broad climate questionnaire and scoring system covering governance, risks and opportunities, strategy, targets, emissions, verification, carbon pricing, and engagement; GRI 305 is an impact-reporting standard focused primarily on emissions-related impacts and their management. The present index is a research-oriented, Indonesia-specific content-analysis instrument that maps selected global climate-disclosure concepts onto the regulatory domains applicable to the study period, including NDC implementation, mitigation, adaptation, carbon economic value, accountability, and climate governance. Thus, each added dimension represents a missing facet of the construct, not a redundant increase in item count.

Content-analysis coding and index construction. Each firm-year constitutes one coding unit, and the annual report and sustainability report are read as a combined evidence set. The revised coding protocol applies the same four-level evidence scale to SID and CED: 0 = the item is not disclosed; 1 = the item is mentioned briefly or only in qualitative/general terms; 2 = the company provides detailed, company-specific disclosure with some numerical support; and 3 = the disclosure is extensive and quantitatively supported, including targets, baselines, progress, or achieved results. This 0–3 structure follows the content-analysis scoring logic used by (Papoutsi & Sodhi, 2020). Duplicate disclosure across the annual and sustainability reports is counted once for the same firm-year. A generic policy statement without company-specific implementation evidence cannot receive more than a score of 1, whereas scores of 2 or 3 require traceable company-specific evidence. Where several passages address the same item, the highest score justified by the evidence is recorded; the source document and page are retained in the coding sheet to maintain an audit trail. Non-disclosure is coded 0 rather than treated as missing, because the index measures the extent and quality of disclosed information. All items are equally weighted. The 28-item CED score is normalized as $CED\_it = \Sigma CED\_jit/(28\times3)$, yielding a 0–1 index. SID is normalized analogously as $SID\_it = \Sigma SID\_kit/(K\_SID\times3)$, where K_SID is the number of predefined SID items in the coding sheet across the five IRIS 3.0 dimensions.

Coder preparation, reliability, and validity. The submitted manuscript and the coding records available for this revision do not document a retained duplicate-coded subsample, a formal coder-training log, or a numerical chance-corrected intercoder reliability coefficient. Accordingly, the study does not retrospectively report an invented reliability statistic. The revised method therefore distinguishes procedural reproducibility from empirical intercoder reliability: reproducibility is supported by explicit item definitions, fixed 0–3 scoring anchors, decision rules, and source-page traceability, while the absence of a formal intercoder coefficient is acknowledged as a measurement limitation. For replication and future validation, at least two coders should first review the codebook and anchor examples, independently code a pilot set, reconcile interpretive differences after the initial independent coding, and then independently double-code a prespecified subsample before reporting a chance-corrected agreement coefficient such as Krippendorff's alpha. Content validity is addressed through domain mapping rather than item-count expansion alone: the CED items

are mapped to Presidential Regulation Number 98 of 2021, the Indonesian indicator development of Fransisca et al. (2024), SEOJK Number 13/SEOJK.03/2017, and TCFD-based climate-governance concepts, whereas SID is mapped to the five IRIS 3.0 impact dimensions. The sensitivity test compares alternative CED operationalizations as a robustness check, but it is not treated as a substitute for intercoder reliability or external construct validation.

Sustainability Governance denotes the governance mechanisms, board-level oversight, committees, policies, and accountability structures used to supervise sustainability performance and disclosure. Prior studies show that sustainability committees and board characteristics can influence integrated reporting strategy, corporate environmental and social performance, and environmental disclosure quality Qaderi et al. (2022); Orazalin (2020); Driss et al. (2024). This study measures Sustainability Governance using five aspects. The first dimension pertains to Responsibility for Sustainability Performance Implementation, encompassing indicators such as corporate commitment to sustainability governance; identification of responsible personnel; delineation of responsibilities for board members, commissioners, or other officials; appointment of a director responsible for sustainability policies; establishment of a division or unit managing sustainability-related data; existence of an ESG committee, unit, or division; transparency regarding ESG committee members; and monthly meetings of the ESG committee or division. The second dimension is Sustainability Competency Development, encompassing sustainability performance training, competency enhancement for board members and officials, and risk management competencies supported by professional certification. The third dimension is Sustainability Risk Assessment, covering sustainability performance risk evaluation, ESG risk identification and monitoring protocols, board involvement in ESG risk oversight, anti-corruption policies, internal audit examinations, anti-corruption awareness programs, economic, environmental, and social risk disclosure, management of environmental and social risk repercussions, and ERM-based risk management. The fourth dimension is Stakeholder Engagement, covering stakeholder engagement assessments, stakeholder identification, formal stakeholder disclosure, multi-stakeholder communication forums, and stakeholder engagement strategies. The fifth dimension is Sustainability Performance Challenges, covering disclosure of obstacles in implementing sustainability performance, strategies to address those obstacles, and challenges in developing environmentally friendly products.

Data analysis was conducted with Stata software. The analytical phase encompasses descriptive statistics and diagnostic tests for normality, multicollinearity, heteroscedasticity, and autocorrelation, followed by panel-data regression to estimate the conditional associations of SID and CED with stock returns. Moderated Regression Analysis (MRA) was used to test whether the strength or direction of these associations varies with sustainability governance through the SID×SG and CED×SG interaction terms. Main-effect and interaction coefficients are interpreted as model-based associations within the observed panel rather than as causal effects. A sensitivity analysis additionally compares the original and expanded CED measurements while holding the sample, dependent variable, moderator, control variables, and panel estimator constant.

The regression equations in this study are as follows:

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$$SR = \alpha + \beta_1 SID + \beta_2 CED + \beta_3 SG + \beta_4 (SID \times SG) + \beta_5 (CED \times SG) + \beta_6 LEV + \beta_7 ROE + \varepsilon$$

SR : Stock Return
α : Constant
β_1–β_7 : Regression coefficients
SID : Sustainability Impact Disclosure
CED : Carbon Emission Disclosure
SG : Sustainability Governance
LEV : Leverage
ROE : Profitability
i : Company
t : Year
ε : Error term

Sensitivity analysis compares the original CED index with the expanded index while holding the sample, dependent variable, moderator, control variables, and panel estimator constant. This isolates whether the operationalization of CED changes coefficient significance and moderation results. The same regression specification is estimated for each version of the CED measure.

$$SR = \alpha + \beta_1 SID + \beta_2 CED + \beta_3 SG + \beta_4 (SID \times SG) + \beta_5 (CED \times SG) + \beta_6 LEV + \beta_7 ROE + \varepsilon$$

SR : Stock Return
α : Constant
β_1–β_7 : Regression coefficients
SID : Sustainability Impact Disclosure
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LEV : Leverage
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i : Company
t : Year
ε : Error term

RESULTS AND DISCUSSION

This study initially identified 762 non-financial firms listed under IDX-IC during 2023–2024. Purposive sampling excluded 183 firms without annual and sustainability reports, 215 firms with incomplete required data, 59 loss-reporting firms, and 22 delisted firms. The final sample comprised 283 firms observed over two years, yielding 566 firm-year observations.

Table 4. Descriptive Test

Variable	Mean	SD	Minimum	Maximum
SR	1.6037	1.2216	-2.5903	5.0239

Variable	Mean	SD	Minimum	Maximum
SID	0.0658	0.0461	0.0058	0.2953
CED	0.4055	0.2071	0.0222	0.8778
SG	0.4979	0.1738	0.0556	0.8778
ROE	0.0619	0.0517	-0.9915	0.9747
LEV	0.5041	0.4669	0.0037	4.0954

Source: Output Stata, (2026)

Based on Table 4, stock returns (SR) range from -259.03% to 502.39%, with a mean of 160.37% and a standard deviation of 122.16%. Sustainability impact disclosure (SID) ranges from 0.58% to 29.53%, with a mean of 6.58% and a standard deviation of 4.61%. Sustainability governance (SG) ranges from 5.56% to 87.78%, with a mean of 49.79% and a standard deviation of 17.38%. Carbon emission disclosure (CED) ranges from 2.22% to 87.78%, with a mean of 40.55% and a standard deviation of 20.71%.

Profitability (ROE) ranges from -99.15% to 97.47%, with a mean of 6.19% and a standard deviation of 5.17%. Leverage (LEV) ranges from 0.37% to 409.54%, with a mean of 50.41% and a standard deviation of 46.69%. These values indicate substantial cross-firm heterogeneity, particularly in stock returns and leverage; therefore, interpretation should rely on the panel estimator and diagnostic tests rather than on a mean–standard deviation comparison alone.

Table 5. Intra-class Correlation (rho)

rho	0.4539

Source: Data Processing Output with Stata, 2026

Table 5 reports an intra-class correlation (rho) of 0.4539, indicating that approximately 45.39% of the residual variance is associated with firm-specific effects. This statistic supports the relevance of panel-level heterogeneity but is not, by itself, a Chow-test probability. Formal model selection is therefore based on the Breusch–Pagan Lagrange Multiplier and Hausman tests reported below.

Table 6. Breusch–Pagan Lagrange Multiplier Test

Probability chibar²	0.0493

Source: Data Processing Output with Stata, 2026

The Breusch–Pagan Lagrange Multiplier test compares the pooled Common Effects Model with the Random Effects Model. The probability value of 0.0493 is below 0.05; therefore, the Random Effects Model is preferred to the pooled model.

Table 7. Hausman Test

Probability chi²	0.4283

Source: Data Processing Output with Stata, 2026

The Hausman probability value of 0.4283 exceeds 0.05, so the null hypothesis that the Random Effects estimator is consistent is not rejected. Combined with the significant Lagrange Multiplier test, this result identifies the Random Effects Model as the appropriate primary

panel-data specification. Consistent with Gujarati & Porter (2009), the model is estimated using a Generalized Least Squares structure.

Table 8. Hypothesis Test

Hypothesis	Coefficient	Test statistic	p-value	Decision
SID → SR	2.003	1.72	0.226	Rejected
CED → SR	0.977	1.77	0.038**	Accepted
SG×SID → SR	-5.967	1.92	0.130	Rejected
SG×CED → SR	1.028	1.73	0.042**	Accepted

Significance levels: *p < 0.10, **p < 0.05, ***p < 0.01. Description: SR = Stock Return; SID = Sustainability Impact Disclosure; CED = Carbon Emission Disclosure; SG = Sustainability Governance; LEV = Leverage; ROE = Profitability.

Source: Stata Output, 2026

The hypothesis test indicates that CED has a positive and statistically significant association with stock returns (B = 0.977; p = 0.038), whereas SID is not statistically significant (B = 2.003; p = 0.226). The SG×CED interaction is positive and significant (B = 1.028; p = 0.042), indicating that higher SG strengthens the positive CED–stock return association within the model. By contrast, the SG×SID interaction is negative but not significant (B = -5.967; p = 0.130), so the data do not support a moderating association for SG in the SID–stock return relationship.

Table 9. Coefficient Determination Test

Dependent Variable	Adjusted R^2
Stock Return	0.2217

Source: Stata Output, 2026

Table 9 reports an adjusted R^2 of 0.2217 (22.17%). Thus, the model explains 22.17% of the variation in stock returns after adjusting for the number of predictors, while 77.83% is attributable to factors outside the model. The moderate explanatory power is reasonable for a market-return model and indicates that sustainability-related disclosure and governance provide incremental, but not exhaustive, information.

Table 10. Sensitivity Test

Expanded CED Measurement			
Hypothesis	Test statistic	p-value	Decision
SID → SR	1.72	0.226	Rejected
CED → SR	1.77	0.038**	Accepted
SG×SID → SR	1.92	0.130	Rejected
SG×CED → SR	1.73	0.042**	Accepted
Original CED Measurement			
SID → SR	0.76	0.222	Rejected
CED → SR	1.66	0.049**	Accepted

SG×SID → SR	-1.23	0.109	Rejected
SG×CED → SR	0.36	0.359	Rejected

Significance levels: *p < 0.10, **p < 0.05, ***p < 0.01. Description: SR = Stock Return; SID = Sustainability Impact Disclosure; CED = Carbon Emission Disclosure; SG = Sustainability Governance; LEV = Leverage; ROE = Profitability.

Source : Output Stata, (2026)

Table 10 shows that the expanded CED measure produces stronger coefficient-test evidence than the original measure. The CED direct effect remains significant, while the SG×CED interaction becomes significant only under the expanded measurement. The higher reported test statistics and lower p-values indicate greater empirical sensitivity to governance-supported carbon disclosure. Because Table 10 does not report adjusted R^2 for both specifications, the sensitivity conclusion is restricted to the comparative hypothesis tests and is not presented as an adjusted-R^2 improvement. These results support the incremental usefulness of the expanded index, while its construct validity is principally justified by broader and more coherent domain coverage.

Table 8 shows that Sustainability Impact Disclosure is not significantly associated with stock returns (B = 2.003; p = 0.226). Therefore, the hypothesis of a positive SID–stock return association is rejected.

The study's findings indicate that sustainability impact disclosure is not significantly associated with stock returns. Extensive disclosure does not necessarily produce a stronger market response because investors may assess whether sustainability information reflects actual performance and financially material outcomes. This interpretation is consistent with studies emphasizing that disclosure credibility and financial constraints affect whether sustainability information becomes relevant to stock return evaluation (Papoutsi & Sodhi, 2020); (Alsahlawi et al., 2021). Mechanistically, SID is a broad composite of product, operational, financial, organizational, and investment impacts. Investors may face high processing costs and limited comparability when these heterogeneous items are aggregated into one score, especially when the disclosure does not separate financially material impacts from descriptive stakeholder information. In a short two-year observation window, the market may also treat these narratives as long-horizon or reputational information rather than as immediate cash-flow news. Thus, SID may satisfy stakeholder-accountability expectations without generating a contemporaneous stock-return response.

According to Stakeholder Theory, sustainability impact disclosure represents corporate accountability to various stakeholder groups. However, the results of this study show that the market does not always interpret the disclosure as having direct economic value for stock returns. This finding indicates that stakeholder-oriented disclosure requires credible governance support and material performance content before it can be translated into a positive investor response (Bouguerra et al., 2023).

This study's results differ from studies showing that sustainability and ESG disclosure can enhance investor trust and market valuation Alsahlawi et al. (2021); Palealu et al. (2025); Kusumo & Yuyeta (2025); Manurung et al. (2025). However, the findings are consistent with

the argument that disclosure must be substantive and credible to influence market decisions (Papoutsi & Sodhi, 2020). Evidence from Hendra and Murwaningsari (2024) further supports the importance of examining sustainability reporting quality in relation to stock returns within Indonesian listed companies.

Table 8 shows that Carbon Emission Disclosure is positively and significantly associated with stock returns (B = 0.977; p = 0.038). Therefore, the hypothesis of a positive CED–stock return association is accepted.

The findings of this study align with and corroborate prior research showing that carbon-related information can shape market perception. Companies that transparently disclose climate and carbon information are perceived as more responsible and better prepared to manage long-term environmental risk (Bolton & Kacperczyk, 2021); (Bahriansyah & Ginting, 2022). Consistent with Stakeholder Theory, carbon emission disclosure reflects the company's effort to meet stakeholder expectations, maintain legitimacy, and secure sustained market support.

The results further support prior studies indicating that carbon emission disclosure is relevant for stock-market reaction and investor confidence. More complete and transparent carbon disclosure can serve as a favorable signal because it reduces uncertainty about climate-related risk exposure and future sustainability commitments (Dewi et al., 2024); (Palealu et al., 2025). Consequently, enhanced carbon disclosure may become an important strategy for corporations seeking to strengthen investor trust and cultivate a favorable market perception of sustainability performance. CED receives a stronger market response because its contents are more specific and more readily connected to transition costs, regulatory exposure, energy efficiency, carbon pricing, and future cash flows. Quantified emissions, targets, mitigation actions, and climate-risk mapping reduce uncertainty about a firm’s exposure and preparedness. Within Indonesia, the sustainable-finance reporting architecture and the national carbon-economic-value framework applicable to the study period give carbon information a clearer policy and compliance reference point than broad sustainability-impact narratives. Investors can therefore interpret CED as a more comparable and decision-useful signal.

Table 8 shows that the SG×SID interaction is not significant (B = -5.967; p = 0.130). Therefore, sustainability governance does not strengthen the relationship between Sustainability Impact Disclosure and stock returns, and the moderation hypothesis is rejected.

Sustainability governance does not significantly strengthen the association between sustainability impact disclosure and stock returns because investors may still question whether the reported sustainability information reflects actual performance. Disclosure that is broad but not sufficiently material may fail to affect valuation decisions. This result is consistent with the argument that sustainability reporting does not automatically indicate actual sustainability performance and therefore requires credible governance and performance alignment (Papoutsi & Sodhi, 2020); (Driss et al., 2024). Indonesian listed firms also differ in disclosure depth, assurance, and implementation quality, which encourages investors to discount broad narratives when their financial materiality is unclear. This result should not be interpreted as investor indifference to sustainability; rather, it indicates

selective pricing of information that is credible, comparable, and connected to identifiable economic consequences.

This study's conclusions differ from studies indicating that sustainability governance and ESG-related practices can strengthen long-term corporate performance and market confidence Orazalin (2020); Martínez-Ferrero & García-Meca (2020); Palealu et al. (2025). Nevertheless, the findings remain consistent with Stakeholder Theory because stakeholder-oriented disclosure will influence investors only when the market perceives the disclosure as credible, material, and connected to measurable corporate value (Bouguerra et al., 2023).

Table 8 shows that the SG×CED interaction is positive and significant (B = 1.028; p = 0.042). Therefore, sustainability governance strengthens the positive relationship between Carbon Emission Disclosure and stock returns, and the moderation hypothesis is accepted.

The interplay between Sustainability Governance and Carbon Emission Disclosure is crucial for investors because it enhances transparency, mitigates long-term risks, and strengthens trust in corporations. Effective governance helps ensure that environmental commitments are supported by oversight mechanisms, while Carbon Emissions Disclosure provides evidence of corporate transparency. Their joint presence is positively associated with stock returns within the estimated model because the company is perceived as more resilient, efficient, and sustainability-oriented. This interpretation is consistent with evidence that sustainability reporting quality and stock returns are relevant in Indonesian listed-company analysis (Hendra & Murwaningsari, 2024) and supports Stakeholder Theory, which views sustainability disclosure as a form of corporate accountability to stakeholders. The asymmetric moderation result reflects a closer conceptual fit between SG and CED. The SG indicators directly capture board oversight, climate-risk structures, policies, targets, monitoring, and accountability, all of which can verify and operationalize carbon information. This complementarity increases the credibility of CED. By contrast, SID spans economic, social, environmental, product, and investment impacts that are not all governed by the climate-focused oversight mechanisms represented in the SG index. Governance therefore cannot compensate for low materiality or weak comparability across the broader SID domain, explaining why it strengthens only the CED relationship.

CONCLUSION

This study shows that carbon emission disclosure is positively associated with stock returns, while sustainability impact disclosure is not significantly associated with stock returns. In addition, the SG×CED interaction is positive and significant, indicating that sustainability governance strengthens the positive CED–stock return association within the estimated model, whereas the SG×SID interaction is not significant. The sensitivity test also shows that the expanded carbon emission disclosure measurement produces more supported hypotheses than the previous measurement model. These findings are associational and should not be interpreted as establishing causality.

The theoretical contribution is that stakeholder-oriented disclosure does not have uniform market value. Its relevance depends on whether the disclosed information is specific, materially interpretable, and supported by governance mechanisms that enhance credibility.

The findings therefore refine the assumed universal value relevance of sustainability disclosure by demonstrating domain-specific and governance-contingent market responses.

The results indicate that companies should prioritize specific, quantified, and governance-supported carbon information, while improving the materiality and comparability of broader sustainability-impact disclosure. Investors may use the expanded CED dimensions as complementary indicators of transition-risk preparedness and accountability. Future research should extend the observation period, test sector-specific effects, report inter-coder reliability, and validate the expanded index against external climate-performance measures and subsequent regulatory regimes. These steps are necessary to examine the instrument's reliability, convergent validity, and generalizability beyond the 2023–2024 Indonesian setting.

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