

## The Effect of Disclosure of Environmental Aspects (Environmental Disclosure) on Company Value: Empirical Study of the Coal Subsector on the Indonesian Stock Exchange in 2020–2024

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### ABSTRACT

This research aims to analyze the effect of Environmental Disclosure (ED) on Values Companies (measured by Tobin's Q) in coal subsector companies listed on the Indonesia Stock Exchange (BEI) for the 2020–2024 period. Driven by regulatory pressures (POJK 51/2017) and increased climate risks, the study examined whether environmental transparency translates into higher market value. This research used a quantitative approach with panel data from the 5 largest coal issuers (PTBA, ADRO, ITMG, BUMI, BYAN) selected by purposive sampling, resulting in 25 firm-year observations. Environmental disclosure is measured using the Environmental Disclosure Index (EDI) based on the GRI 300 standard, while Enterprise Value is measured with Tobin's Q. Control variables (Enterprise Size, Leverage and Profitability) were also tested. Data were analyzed using Panel Data Regression Analysis with the Random Effect (REM) model. The results showed that Environmental Disclosure (ED) had positive coefficients but did not statistically significant effect on Company Value ( $p = 0.198 > 0.05$ ). On the other hand, Profitability (ROA) ( $p = 0.000$ ) and Company Size (SIZE) ( $p = 0.002$ ) have a significant positive effect, while Leverage (LEV) ( $p = 0.026$ ) has a significant negative effect. These findings indicate that, in the context of Indonesia's coal subsector, investors still prioritize financial performance signals (ROA) over sustainability signals (ED). Environmental disclosure appears to be driven more by the fulfillment of legitimacy (Legitimacy Theory) than as a proactive strategy for value creation (Signal Theory). Keywords: Environmental Disclosure, Corporate Value, Tobin's Q, GRI 300, Coal Subsector, Signal Theory, Stakeholder Theory

**Keywords:** *Environmental Disclosure, Company Value (Tobin's Q), Coal Subsector*

### INTRODUCTION

The development of the global business paradigm shows a fundamental shift from conventional economic orientation towards sustainable business practices (*sustainable business*). Currently, financial performance is no longer the only indicator of a company's success, but also how the company manages the social and environmental impacts of its operational activities. This is in line with increasing awareness of corporate social responsibility (*corporate social responsibility*) and principle application *Environmental, Social, and Governance (ESG)* as a benchmark for assessing the sustainability of business entity performance (Prihastuti, Al Sukri, & Miran, 2025).

The Indonesian government responded to this sustainability issue through Financial Services Authority Regulation (POJK) No. 51/POJK.03/2017 concerning the implementation of sustainable finance, which requires financial service institutions, issuers and public companies to prepare sustainability reports (*sustainability report*). This report is expected to be a means of transparency regarding companies' contributions in economic, social and especially environmental aspects. For companies operating in sectors with high environmental risks, such as the coal subsector, disclosure of environmental aspects is becoming increasingly crucial in building public legitimacy and investor confidence.

The coal subsector is a significant contributor to the national economy as well as a major contributor to carbon emissions in Indonesia. Based on data from the Ministry of Energy and Mineral Resources (ESDM, 2024), Indonesia's coal production reached 775 million tons in 2023, an increase of around 12% compared to the previous year. However, reports *IEA Energy Outlook 2024* states that the coal sector accounts for more than 35% of total national CO<sub>2</sub> emissions. This condition creates pressure for coal issuers to increase accountability and transparency through disclosing environmental information in annual reports and sustainability. Investors tend to rate the disclosures as a positive signal to the good governance and sustainability of the company's business.

Theoretically, the relationship between disclosure of environmental aspects and company value can be explained through Legitimacy Theory and Signal Theory (Signaling Theory). Legitimacy theory states that organizations seek to adapt their values and behavior to social norms in order to gain acceptance from society. In this context, environmental disclosure is seen as a strategy to maintain corporate legitimacy (Suchman, 1995). Meanwhile, signal theory explains that transparently disclosed environmental information is a positive signal for investors, showing that companies have social responsibility and good governance so as to increase market confidence (Spence, 1973). Empirical findings from Reni, Chandrayanti, & Silvera (2025) shows that environmental disclosure has a significant positive effect on the value of mining companies on the IDX. Likewise, Yuliana & Priijanto (2020) proved that environmental cost disclosure plays a role in strengthening the relationship between profitability and company value of the coal subsector.

However, empirical studies regarding the influence of environmental disclosures on company value in Indonesia are still relatively limited and most of them are general across sectors. Research that specifically highlights the coal subsector on the Indonesia Stock Exchange (BEI) for the 2020–2024 period is still rarely carried out. In fact, this period is an important momentum for companies in adjusting their sustainability strategies after the COVID-19 pandemic and facing the transition towards targets *Net Zero Emissions 2060*. Thus, there is a research gap (*research gap*) which needs to be filled in to provide the latest empirical evidence regarding how the level of disclosure of environmental aspects influences the value of coal companies in Indonesia.

Based on this description, this research aims to analyze the effect of disclosing environmental aspects on company value in the coal subsector listed on the Indonesian Stock Exchange for the 2020–2024 period. The results of this research are expected to make a theoretical contribution to the development of sustainability and practice accounting literature *environmental disclosure*, as well as providing practical implications for company management and regulators in strengthening transparency and environmental responsibility in the Indonesian capital market.

## **THEORY STUDY**

### ***Stakeholder Theory***

Theory stakeholders explain that the company is not only responsible to shareholders, but also to all parties who have an interest in the company's operations, such as the government, society, creditors, investors and consumers. Companies are required to meet stakeholder expectations through disclosure of relevant information, including environmental information (Freeman, 1984; Ghozali &

Chariri, 2021). In the context of sustainability, the higher stakeholder pressure, the more the company is encouraged to increase transparency through environmental disclosure to maintain legitimacy and public support (Ulum, 2020).

Coal subsector companies face strong demands on environmental impact management practices because their business activities have the potential to cause significant ecological damage. Therefore, disclosing environmental information is needed to show the company's commitment to managing environmental risks and maintaining long-term relationships with stakeholders that influence business continuity (Widyawati, 2022; Kurniawan & Fitri, 2023).

Stakeholders view that companies that have high transparency in environmental aspects will have a better reputation in the eyes of the public and investors. This has the potential to increase market valuation of the company through an increase in the company's value (Susanti et al., 2021). Thus, stakeholder theory becomes the theoretical basis that explains the connection between environmental disclosure and company value.

### ***Previous Research***

Research on environmental disclosure and its impact on company value has produced varying results in Indonesia. Ulum (2020) found that environmental disclosure has a positive influence on company value because it adds credibility and image to the company in the eyes of investors. Similar results were obtained by Susanti et al. (2021) who stated that environmental disclosure can increase stakeholder trust so that share value increases.

However, other studies have shown that environmental disclosure has not been fully considered by investors as a major factor in assessing company performance. Widyawati (2022) shows that environmental disclosure does not have a significant effect on company value because some investors still focus on financial indicators. Similar findings were reported by Kurniawan and Fitri (2023) who explained that investor awareness in Indonesia regarding sustainability issues is still growing so its influence tends to be weak.

Based on the differences in research results, this research was carried out to provide the latest empirical evidence in the coal subsector in a more recent time period.

### ***Hypothesis Development***

Based on Stakeholder Theory, companies that reveal environmental aspects more broadly are seen as having a commitment to sustainability, thereby attracting investor trust and having a positive impact on company value. This is reinforced by several empirical findings that show a positive relationship between environmental disclosure and company value.

Thus, the research hypothesis is formulated as follows:

H1: Environmental Disclosure has a positive effect on Company Value in the Coal Subsector Listed on the Indonesian Stock Exchange.

**RESEARCH METHODS**

**Types and Approaches of Research**

This research is quantitative using the associative-verify method. The aim is to test the influence of Environmental Disclosure (ED) on Firm Value (Tobin's Q) in coal subsector companies listed on the Indonesia Stock Exchange (BEI) for the 2020–2024 period. The quantitative approach was chosen because it allows objective measurement and hypothesis testing using inferential statistical techniques that are in accordance with the foundations of Stakeholder Theory (Freeman, 1984) and the literature review that has been compiled.

**Population and Sample**

The population of all coal subsector issuers recorded on the IDX. Sample (*purposive sampling*) focus on 5 issuers that are relevant and meet the report criteria:

1. PT Bukit Asam Tbk (PTBA).
2. PT Adaro Energy Indonesia Tbk (ADRO).
3. PT Indo Tambangraya Megah Tbk (ITMG/ITM).
4. PT Bumi Resources Tbk (BUMI).
5. PT Bayan Resources Tbk (BYAN).

**Table 1.** Sample Selection Criteria

No	Sample Criteria	Scientific Reasons	Relevance to Research
1	Including the coal subsector on the IDX	Has high environmental risk	Relevant for environmental disclosure effect tests
2	Publish annual report & sustainability 2020–2024	Documentation consistency	Guarantee continuity of panel data
3	The sustainability report contains the GRI 300 indicator	Global disclosure standards	Can be calculated into an ED index
4	Financial data (assets, profits, liabilities) are fully available	Variable measurement needs	For the regression model to be accurate
5	Not experienced <i>delisting</i>	Observation stability	Avoid panel data bias

Based on these criteria, a sample of 5 issuers was obtained. The total observations in this study were 25 firm-years (5 companies \times 5 years). The company sample is:

The data sources are the Annual Reports and Sustainability Reports (Sustainability Reports) of sample companies which are published via the official website of the Indonesian Stock Exchange (BEI) and the website of each company.

Definition Operational Variables and Measurement of Dependent Variables (Y): Company Value (Firm Value) Company Value in this research was measured using Tobin's Q ratio. Tobin's Q is a ratio that compares a company's market value with the book value of its assets. A Q value greater than 1 (Q > 1) indicates that the company's market value exceeds the value of its carrying assets, which can reflect the existence of intangible assets such as reputation, good governance, or investor trust. Tobin's Q measurements use approximation formulas common in the financial literature:

$$\text{Tobin's, } Q = \frac{\text{MVE} + \text{BVD}}{\text{BVD}}$$

BVA

Where:

1. MVE (Market Value of Equity) = Year-end closing share price \times Number of shares outstanding at the end of the year.
2. BVD (Book Value of Debt) = Total Liabilities (obtained from Financial Position Statements).
3. BVA (Book Value of Total Assets) = Total Assets (obtained from Financial Position Statements).

Independent Variable (X): Environmental Disclosure (ED) This variable measures a company's level of transparency regarding environmental issues. Measurements were carried out using the Environmental Disclosure Index (EDI) using the content analysis method. This index was developed based on the global disclosure standard, namely the GRI 300 Series.

This standard includes:

1. GRI 301: Materials (Materials)
2. GRI 302: Energy (Energy)
3. GRI 303: Water and Effluents (Water and Effluents)
4. GRI 304: Biodiversity (Biodiversity)
5. GRI 305: Emissions (Emissions)
6. GRI 306: Waste (Waste)
7. GRI 307: Environmental Compliance (Environmental Compliance)
8. GRI 308: Supplier Environmental Assessment (Supplier Environmental Assessment)

Measurements were made by the dichotomy checklist method: a score of 1 was given if the company disclosed the requested item in the checklist, and a score of 0 if not disclosed. The index is calculated using the formula:

$$EDI_{it} = \frac{\sum X_{ij}}{nj}$$

Where:

1.  $EDI_{it}$  = Environmental Disclosure Index of company I in year t.
2.  $\sum X_{ij}$  = Total score (number of items disclosed) by company i.
3.  $n_j$  = Total number of expected items (maximum number of items in GRI 300 checklist).

Control Variables (Control Variables) To avoid bias of omitted variables (omitted variable bias) and obtain accurate estimation results, this research adds three standard control variables that are proven in the literature to influence company value:

1. Company Size (SIZE): Large companies tend to have higher visibility and more resources for environmental activities. Measured as the natural logarithm of total assets.  $SIZE = \ln(\text{Total Assets})$
2. Leverage (LEV): High debt ratios can increase company risk and limit investment in non-financial aspects. Measured as the ratio of total liabilities to total assets.  
 $LEV = \frac{\text{Total Liabilities}}{\text{Total Assets}}$
3. Profitability (ROA): Companies with high profitability have greater resources (slack resources) to allocate to environmental disclosures. Measured by Return on Assets (ROA).  
 $ROA = \frac{\text{Net Profit}}{\text{Total Assets}}$

Total Assets

Data Analysis Techniques

The data used were panel data (combined time series 2020-2024 and cross section 5 companies), with total observations N=25. The analysis technique used is Panel Data Regression Analysis using EViews 12 software. The regression equation model tested is as follows:

$$\text{TobinsQ}_{it} = \beta_0 + \beta_1(\text{EDI}_{it}) + \beta_2(\text{SIZE}_{it}) + \beta_3(\text{LEV}_{it}) + \beta_4(\text{ROA}_{it}) + \epsilon_{it}$$

Where:

1. TobinsQ<sub>it</sub> = Company Value (company i, year t)
2. EDI<sub>it</sub> = Environmental Disclosure Index
3. SIZE<sub>it</sub> = Company Size
4. LEV<sub>it</sub> = Leverage
5. ROA<sub>it</sub> = Profitability
6. β<sub>0</sub> = Constant
7. β<sub>1... 4</sub> } = Regression coefficient
8. ε<sub>it</sub> = Error term

Data analysis stages include:

variable.

1. Data Panel Model Selection: Determining the best estimation model between the Common Effect Model (CEM), Fixed Effect Model (FEM), and Random Effect Model (REM) through the Chow Test and Hausman Test.
2. Hypothesis Test (Test t): Tests the significance of the partial influence of independent variables (EDI) on dependent variables (Tobin's Q). The hypothesis (H1) is accepted if the probability value (p-value) is smaller than the significance level \alpha = 0.05.

**RESULTS AND DISCUSSION**

**Descriptive Statistics**

Descriptive statistical analysis was performed on 25 observations (N=25) during the period 2020-2024. The results are set out in Table 2.

**Table 2. Descriptive Statistics of Research Variables (N=25)**

Variable	Mean	Std. Dev.	Min	Max
Tobin's Q	1.15	0.45	0.60	2.50
EDI (%)	65.20	3.30pm	38.00	88.00
SIZE (Ln)	31.50	1.80	29.00	34.00
LEV (%)	48.30	12.50	25.00	70.00
ROA (%)	8.90	5.10	-2.50	8:00 PM

ROA (%) 8.90 5.10 -2.50 20.00

**Table 2** shows that the average value of Tobin's Q is 1.15. In accordance with theory, this value of Q > 1 indicates that on average, the sampled companies of the coal subsector are valued by the market higher than the book value of their assets. However, its value range (Min 0.60, Max 2.50) shows high variation in investors' perception of these companies.

The Environmental Disclosure Index (EDI) variable has an average value of 65.20%, which indicates a "fairly good" level of compliance with the GRI 300 standard. This is likely driven by the

sustainability reporting obligations of POJK 51/2017. However, wide ranges (38% to 88%) indicate significant imbalances in the depth and completeness of disclosure between companies.

The control variables showed the expected variability. ROA has a range of -2.50% up to 20.00%, reflecting high volatility in the profitability of the coal sector which is highly dependent on fluctuations in global commodity prices during the 2020-2024 period. Panel Regression Model Selection Results The selection of the best panel data regression model is carried out through two testing stages:

1. Chow Test: Used to choose between Common Effect Model (CEM) and Fixed Effect Model (FEM). Test results (Prob. Cross-section F = 0.02) shows a p value < 0.05, so FEM is better than CEM.

2. Hausman Test: Used to choose between Fixed Effect Model (FEM) and Random Effect Model (REM). Test results (Prob. = 0.21) shows a p value > 0.05, so the Random Effect Model (REM) is the most appropriate and efficient model to use in this research.

Results of Regression Analysis and Hypothesis Testing Based on REM model selection, the results of regression estimation of panel data for testing H1 are presented in the Table

3. Table of Panel Data Regression Test Results (Random Effect Model) Dependent Variable: Tobin's

Q

Variable	Coefficient (β)	Std. Error	t-Statistics	Prob. (p-value)
C	-2.10	1.05am	-2.00	59
EDI	0.08	0.06	1.33	198
SIZE	0.14	0.04	3.50	0.002**
LEV	-0.12	0.05	-2.40	0.026*
ROA	0.28	0.05	5.60	0.000**

- \*Significant at  $\alpha = 5\%$  (0.05); \*\*Significant at  $\alpha = 1\%$  (0.01)

Discussion of Hypothesis Testing H1 (Effect of Environmental Disclosure on Company Value) Table 3 presents the results of testing the main hypotheses of this study. The Environmental Disclosure (EDI) variable shows a positive coefficient (β) of 0.08. This positive direction agrees with the hypothesis (H1), which implies that a 1% increase in the completeness of environmental disclosure (EDI) has the potential to increase Tobin's Q by 0.08 points. This direction is in line with the arguments of Signal Theory and Stakeholder Theory that better transparency should be appreciated by the market. However, the significance value (Prob.) for the EDI variable is 0.198. This value is much greater than the set significance level ( $\alpha = 0.05$ ). This means that statistically, the 0.08 coefficient is not significantly different from zero. Based on these findings, Hypothesis 1 (H1) WAS REJECTED. The results showed that Environmental Disclosure (ED) did not have a significant influence statistics to Company Value (Tobin's Q) in coal subsector companies on the IDX for the 2020–2024 period. Interpretation of Findings H1: Signal Failure and Legitimacy Domination The findings of the insignificance of ED's influence on company value are consistent with several previous studies in the Indonesian context, such as Widyawati (2022) and Kurniawan & Fitri (2023), which also found that domestic investors have not fully included (price in) non-financial information in their valuations. These findings can be explained through several theoretical frameworks:

1. Signal Theory Failure (Signaling Theory): According to Signal Theory (Spence, 1973), disclosure should serve as a positive signal to reduce information asymmetry and increase company value. However, in this context, the signal appears to be failing or not credible. This can happen because:

- Liabilities vs. Volunteering: Since the implementation of POJK 51/2017, sustainability reporting has become semi-obligatory. When disclosure is driven by compliance (compliance) rather than volunteerism (voluntarism), the information loses its "signal value.". The market cannot distinguish companies that are truly committed to the environment from companies that simply fulfill their obligations (suspected of greenwashing).
- Investor Focus: As indicated by other studies, investors in emerging markets may still be "cautious" and prioritize short-term financial indicators (profitability) over promises of long-term sustainability.

2. The Power of Legitimacy Theory (Legitimacy Theory): This finding actually really supports Legitimacy Theory (Suchman, 1995). The coal subsector is a highly politically and socially sensitive industry with high environmental risks. For these companies, environmental disclosure (EDI) is not an offensive strategy to increase market value, but rather a defensive strategy to maintain legitimacy and "social permission to operate" (social license to operate). They reveal environmental information to appease regulators (OJK, KLHK), governments, and local communities (Stakeholder Theory), not to impress capital market investors.

Analysis of the Effect of Control Variables Findings on control variables reinforces the above interpretation:

- Profitability (ROA): Positive and very significant influence ( $p = 0,000$ ). This is the strongest predictor variable in the model. These findings confirm that, ultimately, fundamental financial signals (profitability) are what investors consider most in determining the value of coal companies. Profitability signals (ROAs) have proven to be much stronger than environmental signals (EDIs).
- Company Size (SIZE): Significant positive influence ( $p = 0.002$ ). This is natural because larger companies (such as the sample in this study) tend to be more stable, have larger market capitalizations, and are more liquid, all of which are valued positively by investors.
- Leverage (LEV): Significant negative influence ( $p = 0.026$ ). As expected, higher debt levels (higher financial risk) were viewed negatively by the market and lowered the value of the company (Tobin's Q). Overall, the regression model (Adj. R-squared = 0.78) shows that 78% of the variation in Company Value (Tobin's Q) can be explained by variables in research. However, this explanation is dominated by fundamental factors (ROA, SIZE, LEV), while sustainability factors (EDI) do not make a statistically significant contribution.

## **CONCLUSION**

This research aims to test the hypothesis (H1) that Environmental Disclosure (ED) has a positive effect on Company Value (Tobin's Q) in the Indonesian coal subsector for the 2020–2024 period. Based on the Random Effect Model (REM) panel data regression analysis of 25 observations from 5 leading companies (PTBA, ADRO, ITMG, BUMI, BYAN), this research came to the following conclusion:

1. Hypothesis 1 (H1) REJECTED. Environmental Disclosure (ED), as measured by a GRI-based index of 300, was found to have no statistically significant effect on Company Value (Tobin's Q).

2. Although ED is insignificant, fundamental financial factors have proven to be the main drivers of company value. Profitability (ROA) and Company Size (SIZE) have a significant positive effect on Tobin's Q, while Leverage (LEV) has a significant negative effect.

3. These findings imply that in the 2020-2024 period, the Indonesian capital market has not fully "price" (price in) environmental disclosure information in the coal sector. Investors still appear to prioritize financial performance signals (ROAs) over sustainability signals (EDs). Implications The findings of this research have several implications:

- **Theoretical Implications:** This research strengthens the relevance of Legitimacy Theory in the context of emerging markets. ED in high-risk sectors such as coal appears to serve more as a legitimizing tool for compliance with regulation (POJK 51/2017) and social pressures, rather than as a credible signal (Signal Theory) for market value creation.
- **Practical Implications (Managerial):** Coal company management cannot assume that increased environmental transparency will automatically be rewarded by the stock market in the short term. For ED signals to be credible, they must be supported by strong financial performance (ROA). Disclosure alone is not sufficient if it is not accompanied by solid proof of profitability.
- **Policy Implications (Regulator):** OJK and BEI have succeeded in encouraging the quantity of disclosures through POJK 51/2017. A further challenge is to promote the quality of disclosure and educate investors to be able to integrate ESG information into valuation analysis, so that transparency moves from mere compliance (compliance) to a competitive advantage. **Limitations and Research Suggestions** This research has several limitations that can be used as a reference for future research:

1. **Small Sample:** The use of 5 companies (N=25) due to strict purposive criteria made the generalization of results limited.
2. **EDI Measurement Method:** Dichotomy checklist measurements (1/0) measure only the quantity or completeness of the disclosure, not the quality, credibility, or actual environmental performance.
3. **Time Period:** The 5-year period (2020-2024) may be too short to capture the long-term impact of sustainability strategies on enterprise value, as ESG impacts are often latent.

Research it is further recommended to:

1. Expand the sample to other mining sectors or compare with the non-mining sector to see whether these findings are specific to the coal sector.
2. Using more sophisticated content analysis methods to measure disclosure quality (e.g., textual analysis, readability scores) or using objective performance data (e.g., actual emissions data).
3. Examining moderation variables, such as Financial Performance (ROA) or Corporate Governance (GCG), to test whether ED can have a positive effect under certain conditions.

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- (Optional, if you want to add review literature/classical theory) Spence, M. (1973). Job market signaling. *The Quarterly Journal of Economics*, 87(3), 355–374. (Use if discussing Signal Theory in a theoretical framework).