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Influence Environmental Cost, Financial Slack, And Media Exposure To Carbon Emission Disclosure with Company Size As A Moderating Variable

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Abstract –

This study examines the effects of environmental cost, financial slack, and media exposure on carbon emission disclosure with firm size as a moderating variable in energy sector companies listed on the Indonesia Stock Exchange during 2021–2025. A quantitative approach was employed using secondary data from annual reports and sustainability reports. The population consisted of 91 energy sector companies, while purposive sampling produced 40 companies or 200 firm-year observations. Data were analyzed using descriptive statistics, classical assumption tests, multiple linear regression, and Moderated Regression Analysis with SPSS version 22. The results show that environmental cost does not significantly affect carbon emission disclosure, while financial slack also has no significant effect. In contrast, media exposure has a positive and significant effect on carbon emission disclosure. Firm size does not moderate the effects of environmental cost, financial slack, or media exposure on carbon emission disclosure. These findings indicate that public visibility and information transparency through media exposure are more closely associated with carbon emission disclosure than environmental expenditure, financial slack, or firm size. The study contributes empirical evidence to environmental accounting literature in Indonesia and provides practical implications for companies and regulators in strengthening transparent carbon reporting.

Keywords – *Carbon Emission Disclosure, Environmental Cost, Financial Slack, Firm Size, Media Exposure*

I. INTRODUCTION

Climate change is becoming an increasingly important environmental issue due to increasing greenhouse gas emissions from human activities. Carbon dioxide emissions from industrial activities and the use of fossil fuels are among the main factors accelerating climate change. Indonesia also faces this challenge, with the energy sector being a significant contributor to emissions due to mining, oil and gas activities, and power generation. This situation increases the demand for companies to demonstrate environmental responsibility through transparent information (Fitriyani & Sulfitri, 2025).

Carbon emissions disclosure is a form of corporate transparency in conveying information about climate change risks, energy consumption, emissions, emission reduction strategies, and responsibility for environmental impacts. In Indonesia, carbon emissions disclosure still tends to be voluntary, so companies' decisions to disclose environmental information can be influenced by strategic considerations and pressures.stakeholder(Yusuf, 2020; Pratiwi et al., 2021).

Legitimacy theory explains that companies strive to gain and maintain public acceptance by aligning their activities with social norms and expectations. One way to maintain legitimacy is through public disclosure of environmental information (Florescia & Handoko, 2021). Meanwhile, stakeholderThe theory emphasizes that companies need to pay attention to the interests of various parties who are affected by or influence the company's activities. Disclosure of carbon emissions can be a means of communication to meet information needs.stakeholderregarding environmental performance and responsibility.

Environmental costThese are company expenses related to the prevention, control, and remediation of environmental impacts. Theoretically, the greater the costs allocated to the environment, the greater the company's commitment to sustainability, which is expected to increase carbon emission disclosure. However, previous research has shown inconsistent results. Nisa & Wahyuningrum (2025) found an influenceenvironmental cost to carbon emission disclosure, while Alviona & Saraswati (2025) did not find a significant influence.

Financial slackFinancial slack indicates the availability of financial resources beyond core operational needs. Theoretically, this availability of funds gives companies the flexibility to finance additional activities, including environmental measurement, management, and reporting. Aini et al. (2021) found a relationship between financial slack and carbon emission disclosure, but Jaunanda & Putri (2021) showed different results.

Media exposureis the exposure of company information to the public, which can increase reputational and legitimacy pressures. The greater the public attention, the greater the company's incentive to maintain its reputation through environmental transparency. Puspita et al. (2024) found the influencemedia exposure to carbon emission disclosure, while other studies show inconsistent results.

Company size is used as a moderating variable because larger companies generally have greater resources, reporting systems, and public attention. These conditions can theoretically strengthen the relationship.environmental cost, financial slack, And media exposure with carbon emission disclosureTherefore, this study examines the influence of these three variables and the ability of company size to moderate each relationship.

This study aims to analyze the influenceenvironmental cost, financial slack, And media exposure to carbon emission disclosureand testing the ability of company size to moderate these three relationships in energy sector companies listed on the Indonesia Stock Exchange for the 2021–2025 period.

Legitimacy theory views corporate sustainability as dependent on societal acceptance of its activities. Companies strive to align their activities with social values, norms, and expectations to gain legitimacy. Disclosure of environmental information is one way to demonstrate that a company is accountable for the impacts of its operational activities (Florescia & Handoko, 2021).

Stakeholder theoryexplains that companies are not only responsible to shareholders, but also to parties who have an interest in the company's activities. Environmental information, including carbon emissions, is required.stakeholderto assess the company's sustainability risks and commitments. Therefore,environmental cost And financial slackcan be linked to the company's ability to meet information needsstakeholder(Ladista et al., 2023; Jao et al., 2024).

Carbon emission disclosureThis is the disclosure of information regarding greenhouse gas emissions, energy consumption, climate change risks and opportunities, emission reduction strategies, and corporate accountability. This study used the Choi et al. (2013) index, which consists of 18 items. Each disclosed item is given a score of 1 and each undisclosed item is given a score of 0.

Environmental costmeasured by comparing the company's expenditure on CSR activities with current year income.Financial slackdescribes the availability of financial resources that are relatively in excess of operational needs.Media exposureused according to the operationalization of the research, while company size is proxied by the natural logarithm of total assets.

Previous research has shown inconsistent results. Nisa & Wahyuningrum (2025) foundenvironmental costhave an impact oncarbon emission disclosure, while Alviona & Saraswati (2025) found no effect. Aini et al. (2021) found a relationshipfinancial slackwith carbon emission disclosure, while Jaunanda & Putri (2021) showedfinancial slackno

effect. Puspita et al. (2024) found media exposure have an impact on carbon emission disclosure. These differences in results form the basis for re-examining energy sector companies for the 2021–2025 period.

II. METHOD

This study uses a quantitative approach, targeting energy sector companies listed on the Indonesia Stock Exchange during the 2021–2025 period. The data used is secondary data: annual report and sustainability report. Data obtained through the Indonesia Stock Exchange and official company websites. The study population consisted of 91 energy sector companies.

Sampling using purposive sampling based on the criteria of energy sector companies listed on the Indonesian Stock Exchange, issuing annual report and sustainability report consistently during the 2021–2025 period, and disclose at least one carbon emissions policy or disclosure item. Of the 91 companies, 51 did not meet the criteria for consistent report publication, resulting in a sample of 40 companies. Over a five-year period, the total observations were 200.

TABLE I. RESEARCH SAMPLE SELECTION PROCESS

Criteria	Amount
Energy sector companies listed on the IDX for the 2021–2025 period	91
Does not meet the criteria for consistent publication of annual reports and sustainability reports	(51)
Does not meet the criteria for at least one carbon emission disclosure item/policy	0
Companies that passed the selection	40
Total observations (40 companies × 5 years)	200

Source: Data processed by the author, 2026

The dependent variable is carbon emission disclosure which is measured using the Choi et al. (2013) index based on 18 disclosure items. Environmental cost measured by comparing CSR/environmental with current year's income. Financial slack describes the availability of funds that exceed operational needs. Media exposure using variables dummy according to the operationalization of the research, while company size is measured using the natural logarithm of total assets.

Data analysis was carried out using descriptive statistics, classical assumption tests, multiple linear regression, F tests, t tests, coefficient of determination, and Moderated Regression Analysis (MRA) using SPSS version 22. The data underwent transformation and autocorrelation handling using the method Cochrane–Orcutt as per the procedure in the thesis. MRA is used by entering interactions: environmental cost × company size, financial slack × company size, and media exposure × company size.

III. RESULTS AND DISCUSSION

The results of descriptive statistics show that the study used 200 observations. Environmental cost has a minimum value of -0.51 and a maximum of 16.97 with an average of 0.1577. Financial slack has a minimum value of 0.00 and a maximum of 2.62 with an average of 0.2599. Media exposure has an average of 0.9850. Carbon emission disclosure has a minimum value of 0.06 and a maximum of 0.89 with an average of 0.4452. Company size has an average of 29.7017.

TABLE II. DESCRIPTIVE STATISTICS

Variables	N	Minimum	Maximum	Mean
Environmental Cost	200	-0,51	16,97	0,1577
Financial Slack	200	0,00	2,62	0,2599
Media Exposure	200	0,00	1,00	0,9850
Carbon Emission Disclosure	200	0,06	0,89	0,4452
Company Size	200	25,97	32,58	29,7017

Source: SPSS version 22 output

The results of the F test show that the model before moderation has a significance value of $0.042 < 0.05$ so that environmental cost, financial slack, and media exposure simultaneously influence carbon emission disclosure. After the moderating and interaction variables were entered, the model's significance value was $0.000 < 0.05$, so the moderation model was declared feasible. The adjusted R square value before moderation was 0.026, resulting in

2.6% variation carbon emission disclosure can be explained by the model. After moderation, adjusted R-square increased to 0.179, up to 17.9% variation carbon emission disclosure can be explained by the model.

TABLE III. RESULTS OF THE T-TEST BEFORE THE MODERATION VARIABLE

Variables	Coefficient B	t	Say.	Results
Environmental Cost	0,009	1,440	0,151	No effect
Financial Slack	-0,020	-0,474	0,636	No effect
Media Exposure	0,189	2,476	0,014	Significant positive

Source: SPSS version 22 output

Environmental cost does not have a significant effect on carbon emission disclosure with a coefficient of 0.009 and a significance of 0.151. These results indicate that increased environmental spending does not automatically translate into increased carbon emissions disclosure. Companies may focus more on implementing environmental activities than on conveying environmental information to stakeholders. This finding is in line with Alviona & Saraswati (2025), but different from Nisa & Wahyuningrum (2025).

Financial slack does not have a significant effect on carbon emission disclosure with a coefficient of -0.020 and a significance level of 0.636. The availability of greater financial resources does not guarantee that companies will increase carbon emissions disclosure because funds can be used for operational needs, investment, expansion, or other activities deemed more priority. These results support Jaunanda & Putri (2021).

Media exposure has a positive and significant effect on carbon emission disclosure with a coefficient of 0.189 and a significance level of 0.014. The greater the public exposure of a company's information, the greater the company's incentive to increase transparency regarding carbon emissions. This finding supports legitimacy theory, as companies are interested in maintaining positive public acceptance and perception through environmental information disclosure, and is in line with Puspita et al. (2024).

TABLE IV. RESULTS MODERATED REGRESSION ANALYSIS (MRA)

Interaction Variables	B	t	Say.	Results
Environmental Cost × Company Size	0,001	0,153	0,878	Not moderating
Financial Slack × Company Size	-0,009	-0,176	0,861	Not moderating
Media Exposure × Company Size	0,019	0,139	0,889	Not moderating

Source: SPSS version 22 output

Company size is not able to moderate the influence of environmental cost to carbon emission disclosure. The interaction coefficient of 0.001 with a significance of 0.878 indicates that differences in company size do not make environmental expenditures stronger in encouraging carbon emission disclosure.

Company size is not able to moderate the influence of financial slack to carbon emission disclosure. The interaction coefficient of -0.009 with a significance level of 0.861 indicates that larger companies do not necessarily use their financial flexibility to increase carbon emissions disclosure. Disclosure decisions may be more influenced by internal policies, sustainability strategies, governance, and management commitment.

Company size is not able to moderate the influence of media exposure to carbon emission disclosure. The interaction coefficient is 0.019 with a significance level of 0.889. This means that the influence of media exposure on carbon emissions disclosure is not stronger simply because the company is larger. Energy sector companies, both large and small, face public attention and environmental pressure, and disclosure decisions can be more influenced by internal strategies and policies. This finding aligns with Abdullah et al. (2020) and Werastuti et al. (2026).

IV. CONCLUSIONS

This study concludes that environmental cost does not have a significant effect on carbon emission disclosure, financial slack does not have a significant effect on carbon emission disclosure, whereas media exposure has a positive and significant effect on carbon emission disclosure in energy sector companies listed on the Indonesia Stock Exchange for the 2021–2025 period.

Company size is not able to moderate the influence environmental cost, financial slack, as well as media exposure to carbon emission disclosure. Thus, company size has not been a factor that strengthens the relationship between the three independent variables and carbon emission disclosure.

Energy sector companies need to improve the quality and completeness of carbon emission disclosures in annual report and sustainability report. Environmental cost And financial slack It should be integrated with sustainability strategies and transparent reporting, while the media can be used as a means of communicating environmental management commitments. Further research can expand the research sectors, periods, and variables.

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