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The Effect of Environmental Management System, Green Investment, Company Size, Profitability, and Public Accounting Firm Reputation on Carbon Emission Disclosure in Energy Sector Companies Listed on the IDX in the Period 2019-2023

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ABSTRACT: This research aims to investigate and empirically prove the impact of environmental management systems, green investment, company size, profitability, and public accounting firms' reputations on carbon emission disclosure. The study's population consists of companies in the energy industry listed on the IDX between 2019 and 2023. We selected the study sample using a census sampling approach that yielded 219 observations. We used the Eviews 12 software for panel data regression analysis as our data analysis method. According to the study's findings, carbon emission disclosure is positively and significantly impacted by environmental management systems and company size but not by green investment, profitability, and public accounting firms' reputations

KEYWORDS: Company Size, Carbon Emission Disclosure, Environmental Management System, Green Investment, Profitability, Public Accounting Firm Reputation.

1. INTRODUCTION

The radically changing climate conditions due to human activities that produce carbon emissions have affected extreme weather and climate in every region of the world. Global warming from 2011 to 2020 caused the earth's surface temperature to rise by 1.1°C over pre-industrial levels, which had a significant negative influence on the economy, human health, the security of food and water, and the environment. (Intergovernmental Panel on Climate Change [IPCC], 2023). Melting glaciers, wildfires, strong mid-latitude storms, lake heat waves, and extreme rainfall are some of the events that drive to reduce carbon dioxide (CO_2) emissions to zero and adapt to climate change. (Zheng & Jin, 2023). Rising global temperatures are causing climate change, which poses a growing danger to both the earth and humanity.

Adopted by 196 parties at the 2015 UN Climate Change Conference (COP-21) in Paris, the Paris Climate Agreement is a legally binding international agreement to strengthen global action on the threat of climate change by attempting to keep the rate of increase in the global average temperature from rising above 1.5 degrees Celsius and limiting it to no more than 2 degrees Celsius from the pre-Industrial Revolution. An increase in temperature above 1.5 degrees Celsius risks causing much more severe climate change impacts. Further targets of this agreement include the development of a financing plan that supports climate-resilient, low-emission development and increased ability to adapt to climate change.

In 2016, precisely on April 22, Indonesia signed *the Paris Agreement* in New York, USA, with an NDC target of reducing GHG emissions by 29% or 834 million tons of CO2e without international assistance, and reducing GHG emissions by up to 41% or 1,185 million tons of CO2e if implemented with international cooperation, from the main target of GHG emissions in 2030 of 2,869 million tons of CO2e. (Presidential Regulation No. 98, 2021). Therefore, when policy makers in Indonesia target emission reductions, as a major player in the global economy, companies have a significant role in efforts to reduce carbon emissions and provide carbon information at an adequate level. (Karim, Albitar & Elmarzouky, 2021).

Carbon Emission Disclosure is a historical and prospective report of a company's carbon performance reported to stakeholders. According to Velte, Stawinoga & Lueg (2020). The company regularly submit the Carbon Emission Disclosure Report to its internal and external stakeholders, which includes the company's carbon performance, climate change adaptation plan, and climate change risks and opportunities. The sole way for stakeholders to assess how corporate activities affect the environment is via voluntary disclosure, because it has not been fully integrated with financial reporting standards, making voluntary disclosure the

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only option available to stakeholders to evaluate the impact of business operations on the environment. (Desai, 2022). Legitimacy Theory is a guideline for company operational activities to remain within the limits of environmental and societal reasonableness. (Dewi & Dewi, 2024). According to this theory, companies must disclose their carbon data to the public because this helps companies to legitimize their operations and narrow the information gap available to managers and stakeholders. (Desai, 2022). According to Stakeholders Theory, an entity will try to adjust its operational activities according to the wishes of stakeholders. (Firmansyah, Jadi, Febrian & Sismanyudi, 2021). Increasing environmental awareness among stakeholders will put pressure on businesses to explain environmental information, such as carbon emissions, both directly and indirectly.

Disclosure of corporate carbon performance includes the amount of corporate carbon emission intensity, climate change mitigation and adaptation strategies implemented, carbon emission reduction targets and corporate performance results in achieving these targets. The following is the amount of National GHG emission intensity for 2019-2022 generated from 5 (five) sectors in Indonesia.

Table 1.1 National GHG Emissions 2019-2022 Gg CO_2e

Year	Energy Sector	Industrial Process and Product Use (IPPU) Sector	Agricultural Sector	Forestry Sector and Other Land Uses	Waste	Total
2019	636,452.69	58,173.48	105,300.85	709,181.79	120,333.20	1,629,442.01
2020	584,284.42	57,194.08	101,981.72	209,314.12	124,753.28	1,077,527.62
2021	595,862.49	59,377.28	105,876.65	266,664.52	128,274.38	1,156,055.33
2022	727,330.26	59,192.05	90,642.73	221,367.89	130,188.21	1,228,721,13

Source: KLHK, GHG and MPV Report (2023).

Based on Table 1.1, the actual national GHG emission intensity for 2022 is 1,228.72 million tons of CO2e, with an emission reduction target of 859.49 million tons of CO2e. However, the reduction in GHG emissions that can be achieved is only 428.39 million tons of CO2e or 49.8%. (KLHK, 2023). This shows that the mitigation actions implemented have not been able to meet the target for reducing GHG emissions. From the emission levels above, the energy sector contributes the highest emissions compared to other sectors. In 2021 and 2022, the energy sector contributed 52% and 59% of total national emissions. When compared to 2021, greenhouse gas (GHG) emissions from the energy sector increased by 22% in 2022 due to increased fuel combustion, especially from coal combustion. (Ministry of Energy and Mineral Resources, HEESI 2022). The sustainability report, which is released every year, details the company's carbon performance. Still, several businesses in the energy industry do not provide sustainability reports that reveal their carbon performance. This is a list of IDX firms in the energy industry that released Sustainability Reports between 2019 and 2023.

Table. 1.2 Energy Sector Companies Listed on the IDX in 2019 - 2023 That Published *Sustainability Report*

	2019	2020	2021	2022	2023
Number of Listed Companies	64	66	71	75	83
Number of Companies Publishing *Sustainability Reports*	18	21	49	63	68
Percentage	28%	32%	69%	84%	82%

Source: www.idx.co.id. (2024)

From table 1.2, it is explained that there are still energy sector companies that do not publish Sustainability Reports as a company commitment to provide carbon emission disclosure reports to stakeholders. This is due to Indonesia's continued voluntary disclosure of carbon emissions. The legitimacy study in Carbon Emission Disclosure also shows that companies that cause bad environmental impacts or have environmental problems make less objective disclosures, so that the perception of company stakeholders is biased

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towards environmental performance, and not actually reducing damage to the environment and society. (Liu et al., 2023). The breadth of Carbon Emission Disclosure is very much needed to realize Indonesia's commitment in *the Paris Agreement.*

The purpose of this study is to analyze and prove the influence of environmental management systems, green investment, company size, profitability and reputation of public accounting firms on carbon emission disclosure because there is still a literature gap that requires further research on this variable.

The Environmental Management System is a framework that helps companies manage the environmental impact of their operations. Legitimacy Theory is a guideline for company operational activities to remain within the limits of environmental and societal reasonableness. (Dewi & Dewi, 2024). The implementation of an Environmental Management System helps companies gain legitimacy from the public by demonstrating their commitment to the environment by conducting Carbon Emission Disclosure. The environmental management system in a company can be seen through the ownership of an ISO 14001 certificate. According to research conducted by Suherman and Kurniawati (2023), Rohmah and Nazir (2022), Dewi and Dewi (2024), Arifah and Haryono (2021), it shows that carbon emission disclosure is greatly influenced by the environmental management system. However, on the contrary, research by Sari and Sulfitri (2023), and research by Wulansari, Chairunnisa and Susanti (2023) obtaining environmental management system results has no impact on carbon emission disclosure.

Green Investment is a long-term sustainable investment, often known as socially responsible investment. (Soraya, 2023). According to Stakeholders Theory an entity will try to adjust its operational activities according to the wishes of stakeholders. (Firmansyah et al., 2021). The increasing concern of stakeholders for the environment will increasingly force companies to increase *green investment* or environmentally friendly investment and accelerate the environmentally friendly transition. (Zheng & Jin, 2023). Companies must invest heavily in carbon emission management such as low-carbon technology to meet carbon emission reduction targets. (Liu, Zhou, Yang, Hoepner & Kakabadse, 2023). Research by Syabila, Wijayanti and Fahria (2021), Mulyati and Darmawati (2023) shows that green investment has a positive influence on carbon emission disclosure. However, research by Yesiani, Sari and Kristina (2023), Ramadhani and Astuti (2023), Dani and Harto (2022) shows that Green Investment has no influence on Carbon Emission Disclosure.

Companies make efforts to disclose carbon emissions as part of their commitment to mitigate climate change and maintain legitimacy. (Dewi & Dewi, 2024). Legitimacy theory encourages large companies with many resources to implement more comprehensive disclosure practices, including carbon emission disclosure. Large companies tend to provide environmental information than small companies and have a wider level of environmental disclosure in response to social, environmental, political, and economic pressures to gain and maintain legitimacy. Stakeholder theory states that big businesses are more compelled than small businesses to reveal their carbon footprints. Large corporations openly reveal their carbon footprints as a result of shareholder pressure. (Firmansyah et al, 2021). Desai (2022) explains that large companies tend to disclose their carbon emissions. Likewise, research by Firmansyah et al (2021), Pratiwi, Maharani and Sayekti (2021), Hidayat, Ismail, Taqi & Yulianto (2022), Wardiman, Muid and Hamdani (2023), Saraswati, Amalia and Herawati (2021) proves that company size has an influence on carbon emission disclosure. On the other hand, research by Dewi and Dewi (2024), Wulansari et al (2023), and research by Ramadhan, Ermaya, and Wibawaningsih (2021) explains that company size has no influence on carbon emission disclosure.

As a corporate social responsibility, stakeholder theory explains, profit-oriented businesses tend to meet stakeholder demands for carbon emission disclosure. A process of operational activities shown in high production and sales activities is indicative of high profitability. Carbon emissions are high when there is a lot of industrial activity. (Pratiwi et al., 2021). Companies benefit from the use of resources while society bears the impact directly or indirectly, so companies are responsible for the negative impacts that exist. Legitimacy theory explains that companies that make profits tend to disclose their carbon emission data to gain public trust and legitimize their way of making profits. (Desai, 2022). In the research of Pratiwi et al (2021), Sandi, Soegiarto and Wijayani (2021), Saraswati et al (2021) explained that carbon emission disclosure is influenced by profitability. However, research by Suherman and Kurniawati (2023), Dewi and Dewi (2024), Ramadhan et al (2021), Hidayat et al (2022), and Wardiman et al (2023) explained that carbon emission disclosure is not influenced by profitability. Likewise, Desai's research (2022) proves that profitability has a negative influence.

Stakeholder Theory explains that pressure from stakeholders forces companies to provide more data and information to the public. (Firmansyah et al., 2021). Certified public accountants are responsible for examining, supervising, and evaluating a company's financial statements before they are released. This is to ensure that the report is accurate and useful for decision making.

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(Rohmah & Nazir, 2022). Stakeholders tend to have more confidence in the information included in sustainability reports and annual reports audited by reputable KAP. Sustainability Reports audited by reputable Public Accounting Firms (KAP) strengthen stakeholder trust in the reliability and credibility of company disclosures. (Auliani et al., 2023). According to research by Rohmah and Nazir (2022), Arifah and Haryono (2021), Wardhani and Kawedar (2019) explained that Carbon Emission Disclosure is positively influenced by KAP Reputation. However, Pratiwi et al (2021), Wardiman et al (2023) explained that carbon emission disclosure is not influenced by KAP Reputation.

2. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

Legitimacy Theory

Legitimacy theory states that organizations disclose environmental information in response to social, environmental, political, and economic pressures to obtain or maintain a license to operate. (Dowling & Pleffer, 1975). Companies operate in society through "social contract" (Pattern, 1991 in Desai, 2022). Company disclosure of non-financial information helps make sure that organizational operations are in line with society values and expectations, particularly when company actions are seen to be environmentally detrimental. Therefore, in response to societal pressure and to validate their economic operations, corporations voluntarily provide statistics on carbon emissions (Desai, 2022). A business must comply with social norms and values as well as societal expectations in order to be accepted (legitimized) by stakeholders and society (Bui et al., 2020). A company can effectively communicate its operations and management's viewpoints on social, environmental, and other business-related issues by disclosing information. A thorough theoretical framework for explaining why businesses disclose carbon emissions and how these disclosures affect their performance is provided by legitimacy theory. (Liu et al., 2023).

Stakeholder Theory

Stakeholders describe the relationship of groups or people who are identified as having the ability to influence or be influenced by the goals of the organization. (Freeman & Reed, 1983). According to this view, an organization's capacity to satisfy the demands and expectations of several stakeholders not just shareholders determines its level of success. Stakeholders include customers, employees, suppliers, communities, and others who have an interest in the company's operations. (Freeman & Reed, 1983). Stakeholders will directly or indirectly urge companies to disclose environmental information, including carbon emissions, in order to meet their expectations regarding climate change. Company activities and environmental management efforts can be communicated to them from Carbon Emission Disclosure (Rohmah & Nazir, 2022).

Carbon Emission Disclosure

Carbon emission disclosure is a form of corporate accountability commitment related to the carbon emissions it produces. Carbon emission disclosure includes the amount of carbon emission intensity, climate change mitigation and adaptation strategies, carbon emission reduction targets and the company's performance results in achieving these targets, and considering the opportunities and risks of the impact of climate change on the company.

Carbon emission disclosure measurement can be done using the Carbon Disclosure Project (CDP) (Desai, 2022; Dewi & Dewi, 2024), the Global Reporting Initiative (GRI) index (Firmansyah et al., 2021), automatic textual analysis (Karim et al., 2021), the 42-item Comprehensive Disclosure Index (Liu et al., 2023).

Carbon Emission Disclosure is useful for providing assurance to stakeholders that the company's activities are in line with stakeholder expectations regarding carbon emissions in legitimizing the company and to maintain the social contract. In addition, Carbon Emission Disclosure can provide added value for creating competitive advantages, increasing transparency and accountability of company performance, facilitating report users in risk evaluation, performance assessment, and investment and operational decision making and improving reputation. For carbon-sensitive companies, carbon emission disclosure is carried out to avoid risks such as legal proceedings, reputational risks, and penalty fines. Non-compliance with environmental regulations increases economic costs. (Gu, Ho, Yan & Gozgor, 2021). Carbon Emission Disclosure in Indonesia is still voluntary so that there are still companies that have not disclosed carbon emissions.

Environmental Management System and Carbon Emission Disclosure

A framework that helps companies identify emission sources, monitor and measure the environmental impact of the company's operational activities and better report environmental issues such as carbon emission disclosure . According to legitimacy

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theory, businesses provide environmental information in reaction to economic, political, social, and environmental pressures to get or keep operating permits. (Dowling & Pleffer, 1975). By showcasing their dedication to the environment via the disclosure of carbon emissions, businesses may acquire public trust by putting in place an environmental management system. Disclosure of a company's carbon data to the public helps companies legitimize their operations. Since carbon emissions are a component of environmental management, carbon emission disclosure is expected to increase when a company has an environmental management system and the carbon emissions reported by companies with environmental management systems will be more credible than companies without such systems. (Nazir & Rohmah, 2022). Companies with environmental management systems often find it easier to communicate carbon emission reduction initiatives. Research by Dewi and Dewi (2024), Suherman and Kurniawati (2023), Rohmah and Nazir (2022) and Arifah and Haryono (2021) shows that Environmental Management Systems have a positive effect on Carbon Emission Disclosure. From theoretical and empirical perspectives, the first hypothesis of this study is:

H_1: Environmental Management System has a positive effect on Carbon Emission Disclosure

Green Investment and Carbon Emission Disclosure

Green Investment is a long-term, sustainable investment, which is often known as green investment socially responsible. (Soraya, 2023). According to Stakeholders Theory, an entity will try to adjust its operational activities according to the wishes of stakeholders. (Firmansyah et.al, 2021). The increasing concern of stakeholders for the environment will increasingly force companies to increase green investment or environmentally friendly investments and accelerate environmentally friendly transitions. (Zheng & Jin, 2023). Companies must invest heavily in carbon emission management such as low-carbon technology to meet carbon emission reduction targets. (Liu et al.2023). Companies making green investments in renewable technologies, increasing energy efficiency, waste management and environmentally friendly investments to meet emission reduction targets and fulfill stakeholder demands. This encourages companies to make carbon emission disclosures. Green investment information disclosed in carbon emission disclosures will increase the company's competitive advantage, reputation and value. The higher the company's environmental investment costs, the broader the disclosures made by the company. (Yesiani et al., 2023). Research by Syabila et al., (2021), and research by Mulyati and Darmawati (2023) show that green investment has a positive influence on carbon emission disclosure. From theoretical and empirical perspectives, the second hypothesis of this study is:

H_2: Green Investment has a positive effect on Carbon Emission Disclosure

Company Size and Carbon Emission Disclosure

Companies make efforts to disclose carbon emissions as part of their commitment to mitigate climate change and maintain legitimacy. (Dewi & Dewi, 2024). Legitimacy theory encourages large companies with more resources to implement more comprehensive disclosure practices, including carbon emission disclosure. Large companies tend to provide environmental information than small companies and have a wider level of environmental disclosure in response to social, environmental, political, and economic pressures to gain and maintain legitimacy. According to Stakeholder Theory, large companies are under greater pressure to disclose carbon emissions than small companies. Larger companies are becoming more open about their carbon footprint due to pressure from stakeholders. (Firmansyah et al., 2021). Research by Desai (2022), Pratiwi et al (2021), Firmansyah et al (2021), Hidayat et al (2022) and Wardiman et al (2023) shows a positive effect of company size on carbon emission disclosure. From theoretical and empirical perspectives, the third hypothesis of this study:

H_3: Company size has a positive effect on Carbon Emission Disclosure

Profitability and Carbon Emission Disclosure

Companies benefit from the use of resources, while society bears the impacts directly or indirectly, so that companies are responsible for the negative impacts caused by disclosing their carbon emissions . According to legitimacy theory, profitable companies tend to disclose their carbon emissions data to gain public trust and legitimize their way of making profits. According to stakeholder theory, investors and society anticipate more transparency from successful businesses. As a measure of social and environmental responsibility, profitable businesses may satisfy stakeholder expectations by disclosing carbon emissions. The more profitable a corporation is, the more carbon emissions it discloses (Desai, 2022). According to research by Saraswati et al. (2021), Sandi et al. (2021), and Pratiwi et al. (2021), profitability affects the disclosure of carbon emissions. The fourth hypothesis of this research, as seen from both theoretical and empirical angles, is:

H_4: Profitability has a positive effect on Carbon Emission Disclosure

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Public Accounting Firm Reputation and Carbon Emission Disclosure

Public accounting firms with good reputations tend to be stricter in conducting audits and encourage transparency, including in terms of carbon emission disclosure. Research by Rohmah and Nazir (2022) shows that public accounting firms with good reputations are more trusted by investors and stakeholders. Higher audit quality and strict adherence to ethical norms are often associated with this reputation. Stakeholder Theory explains that pressure from stakeholders forces companies to provide more data and information to the public. (Firmansyah et al., 2021). Stakeholders tend to have more confidence in the information included in sustainability reports and annual reports audited by reputable KAP. Sustainability Reports audited by reputable Public Accounting Firms (KAP) strengthen stakeholder trust in the reliability and credibility of company disclosures. (Auliani et al., 2023). Companies audited by the Big Four Public Accounting Firms tend to disclose more information including carbon emission disclosures. (Rohmah & Nazir, 2022). Research by Rohmah and Nazir (2022), Arifah and Haryono (2021) and Wardhani and Kawedar (2019) shows that KAP Reputation has a positive effect on Carbon Emission Disclosure. Based on theory and empirics, the fifth hypothesis of this study is :

H_5: The reputation of the Public Accounting Firm has a positive effect on Carbon Emission Disclosure.

3. RESEARCH METHODS

This study's methodology is quantitative. All 83 energy-related businesses registered on the Indonesia Stock Exchange (IDX) between 2019 and 2023 make up the study's population. The selection of energy sector companies is based on the fact that these companies include those whose operational activities are intensive in producing carbon emissions . Sampling was carried out by means of a census which makes all members of the population a sample. Documentation studies are used in collecting supporting data from reference books, journals and collecting secondary data such as annual reports and sustainability reports taken from company websites and the IDX website.

Carbon Emission Disclosure is the dependent variable in this research. The independent variables include the company size, profitability, green investment, environmental management system, and public accounting firm reputation.

Table 3.1 Operationalization of Variables

Variables	Indicator	Scale
Carbon Emission Disclosure	CED = (ΣDi/ M) x 100% Information: CED = *Carbon Emission Disclosure* ∑Di = Total overall score 1 obtained by the company. M = Total maximum items that can be disclosed (18 items) (Choi et al., 2013)	Ratio
Environmental Management System	Using a dummy with a weight of 1 for companies with ISO 14001 certification and 0 for companies without ISO 14001 certification.	Nominal
Green Investment	Using PROPER Rating: Score 5: Gold Score 4: Green Score 3: Blue Score 2: Red Score 1: Black	Ordinal
Company Size	Natural Logarithm of Total Assets	Ratio
Profitability	ROA = $\frac{\text{Net Profit after Tax}}{\text{Total Aset}}$	Ratio
KAP Reputation	Dummy variable where the value is 1 for companies audited by Big Four accounting firms and 0 for companies audited by non-Big Four accounting firms.	Nominal

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Panel data regression using Eviews 12 was used to examine the study data. Descriptive statistical analysis, panel data regression analysis, the classical assumption test,and Goodness of Fit Regression Models were the techniques used. The research used the following regression model:

$$Y_{it} = \alpha + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + \beta_4 X_{4it} + \beta_5 X_{5it} + e$$

Information:

Y	= Carbon Emission Disclosure
α	= Constant (Intercept)
$\beta_1, \beta_2, \beta_3$	= Coefficient Slope regressor (variable independent)
X_1	= Environmental Management System
X_2	= Green Investment
X_3	= Company Size
X_4	= Profitability
X_5	= Public Accounting Firm Reputation
e	= Error term
i	= Cross-section unit
t	= Time Period

4. RESULTS AND DISCUSSION

Table 4.1 Descriptive Statistics

Variable	Minimum	Maximum	Mean	Std. Deviation
Carbon Emission Disclosure (Y)	0.06	0.94	0.535	0.270
Environmental Management System (X_1)	0	1	0.7397	0.4397
Green Investment (X_2)	0	5	1,7305	1,9689
Company Size (X_3)	6.27	29.15	20,906	4,2554
Profitability (X_4)	-354.00	61.63	6,8285	28.8512
Public Accounting Firm Reputation (X_5)	0	1	0.4337	0.4967

Source: *Software* EViews 12

The minimum value of 0.06 and the maximum value of 0.94 for *Carbon Emission Disclosure* indicate that there is a fairly large range of disclosure values. Several energy sector companies make very minimal disclosures by disclosing 1 of the 18 items that must be disclosed, while several other companies show extensive disclosure by disclosing 17 of the 18 items that must be disclosed. The minimum value of 0.06 is owned by one of them, PT. Ratu Prabu Energi Tbk. (ARTI) in 2021. The maximum value of 0.94 is owned by PT. ABM Investama Tbk. (ABMM) in 2021-2023, PT. Dian Swastatika Sentosa Tbk. (DSSA) in 2023, PT. Energi Mega Persada Tbk. (ENRG) in 2023, PT. Indika Energy Tbk. (INDY) in 2021-2023. The mean value of this variable is 0.535, which means that the average company only discloses around 53.5% or around 9-10 items from the total disclosure items of 18 items. The standard deviation is 0.270 < mean value of 0.535, which indicates that there is no variation in the data.

Companies that have an Environmental Management System with an ISO 14001 certificate are indicated by a value of 1, while those that do not have it are indicated by a value of 0. The minimum value of 0 is owned by several companies such as PT. Ratu Prabu Energi Tbk. (ARTI) in 2021, PT. Exploitasi Energi Indonesia Tbk. (CNKO) in 2021-2023, PT. Black Diamond Resources Tbk. (COAL) in 2022-2023. The maximum value of 1 is owned by the majority of energy company samples such as PT. ABM Investama Tbk. (ABMM) in 2019-2023, PT. Adaro Energy Indonesia Tbk. (ADRO) in 2019-2023, PT. AKR Corporindo Tbk. (AKRA) in 2019-2023, PT. Indika Energy Tbk. (INDY) 2019-2023. The average value (mean) of 0.739 or the average company from 219 observations of 73.9% has an ISO 14001 certificate for its environmental management system. The standard deviation of 0.4397 <mean value of 0.739 indicates that there is no wide variation in the research data.

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Green Investment variable with a minimum value of 0 and a maximum of 5 explains a fairly wide range of variation, where some companies have a very high level of green investment, while most companies are at a low level or do not make green investment. Green Investment is measured by the PROPER Rating achieved by the company. The minimum value of 0 is owned by the majority of companies, one of which is PT. Darma Henwa Tbk. (DEWA) in 2019-2023. The maximum value of 5 is owned by six companies, one of which is PT. Adaro Energy Indonesia Tbk. (ADRO) in 2019-2023. The average green investment level of 1.7305 indicates that most companies have a score close to 2 which is in the red rank in the PROPER rating, meaning that the company has made efforts to limit its environmental impact, but has not met the criteria set by environmental regulations. There is an indication of variation in the research data because the standard deviation of 1.9689 is higher than the average value of 1.7305.

Company size shows a minimum value range of 6.27 to 29.15, which means that the company size is between total assets of 6.27 to 29.15. The minimum value of 6.27 or total asset of Rp. 7.736.093.240,- was owned by PT. Petrosea Tbk. (PTRO) in 2020, while PT. Sumber Global Energy Tbk. (SGER) has the maximum value of 29.15 or total asset of Rp.4.576.848.746.878,- in 2023. Between 2019 and 2023, the average company size was 20.906, with a standard deviation of 4.255.

Profitability shows a minimum value range of -354.00 with a maximum value of 61.63. This wide range indicates a very significant variation in profitability between companies, including companies that experience losses (negative profitability). The minimum value of -354.00 was obtained by PT. Artha Mahiya Investama Tbk. (AIMS) in 2023, while the maximum value of 61.63 was obtained by PT. Golden Energy Mines Tbk. (GEMS) in 2022. The average profitability is 6.828 with a very high standard deviation of 28.851 confirming the large differences between companies. The very large range and high standard deviation indicate extreme variations in company profitability, with some companies being very profitable and others experiencing large losses.

Public Accounting Firm Reputation uses a *dummy variable* with a value of 1 for companies audited by Big Four KAP and a value of 0 for companies audited other than Big Four. The minimum value of 0 is owned by most of the samples, one of which is PT. Bumi Resources Tbk. (BUMI) in 2019–2023, while the maximum value of 1 is owned by several sample companies such as PT. Samindo Resources Tbk. (MYOH) in 2019–2013, PT. Indika Energy Tbk. (INDY) in 2019–2023, and PT. Perusahaan Gas Negara (PGAS) in 2019–2023. The average value (mean) is 0.4337 or only 43.4% of companies audited by Big Four KAP. The remaining 56.6% are audited by KAP other than Big Four. There is a spread in the data, as shown by the standard deviation of 0.4967 which is higher than the mean value of 0.4337.

Regression Model Selection

Chow Test

Table 4.2 Results of the Chow Test

Redundant Fixed Effects Tests
Pool: DPANEL
Cross-section fixed effects test

Effects Test	Statistics	df	Prob.
Cross-section F	3.465053	(71,142)	0.0000
Cross-section Chi-square	220,144614	71	**0.0000**

Source: *Software* EViews *12*

The Chow test determines whether a regression model is formed using the FEM or CEM model. According to Table 4.2's Chow test findings, the test's probability value is 0.0000. Since the probability value is 0.00 < 0.05, the Fixed Effect Model (FEM) is the model that was chosen.

Hausman test

The Hausman test is a statistical test to choose whether the REM or FEM model is more appropriate to use in forming a regression model. The probability value for the Hausman test in Table 4.3 is 0.0010. The fixed effect model (FEM) was selected because to its 0.00 < 0.05 probability value. The Fixed Effects Model is a better option for creating a regression model, as shown by the Hausman and Chow test findings.

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Table 4.3 Results of the Hausman Test
Correlated Random Effects - Hausman Test
Pool: DPANEL
Cross-section random effects test

Test Summary	Chi-Sq. Statistic	Chi-Sq. df	Prob.
Random cross section	20.549528	5	**0.0010**

Source: *Software* EViews *12*

Through these two model tests, the Chow and Hausman test results indicate that the Fixed Effect Model is more appropriate for constructing a regression model. A classical assumption test is required if Fixed Effect Model (FEM) is selected.

Panel Data Regression Model

This study's panel data regression equation model combines cross-sectional and time series data, with regression outcomes derived from the chosen *Fixed Effect Model*.

Table 4.4 Panel Data Regression Results (*Fixed Effect Model*)
Dependent Variable: Y
Method: Panel Least Squares
Date: 10/27/24 Time: 08:31
Sample: 2019 2023
Periods included: 5
Cross-sections included: 72
Total panel (unbalanced) observations: 219

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Environmental Management System (X_1)	0.292682	0.114716	2.551362	0.0118
Green Investment (X_2)	0.001939	0.019786	0.098019	0.9221
Company Size (X_3)	0.040706	0.016738	2.431942	0.0163
Profitability (X_4)	0.001855	0.001226	1.512876	0.1325
Public Accounting Firm Reputation (X_5)	-0.078666	0.097491	-0.806906	0.4211
Constantine	-0.514291	0.361566	-1.422398	0.1571

Source: *Software* EViews *12*

From the regression results in table 4.4, a regression equation can be made as follows.

$$\mathbf{Y = -0.514291 + 0.292682X1 + 0.001939X2 + 0.040706X3 + 0.001855X4 - 0.078666X5 + e}$$

From the regression equation, it can be seen that the variables Environmental Management System (X_1), Green investment (X_2), Company Size (X_3), and Profitability (X_4) all show positive regression coefficients. This proves that there is a unidirectional relationship between Carbon Emission Disclosure (Y) and Environmental Management System, Green investment, Company Size, and Profitability. This implies that the bigger or better the environmental management system, green investment, company size, and profitability, the greater the carbon emission disclosure. However, the Public Accounting Firm Reputation variable (X_5) has a negative regression coefficient value which shows an inverse relationship with Carbon Emission Disclosure (Y) .

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Classical Assumption Test

Normality Test

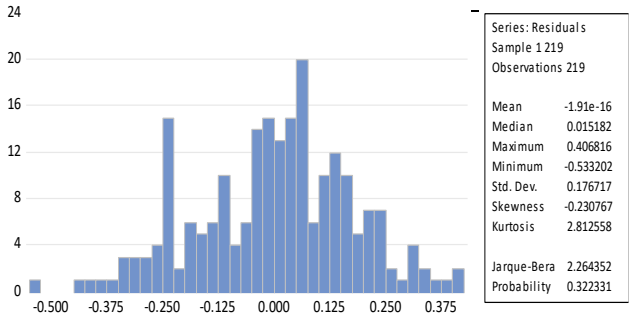

Figure 4.1. Normality Test with Jarque-Bera

Source: *Software* EViews *12*

From Figure 4.1, the probability value of the JB statistic is 0.322331, which shows a probability of 0.322331 > 0.05, which means that the normality assumption is met.

Multicollinearity Test

Table 4.5 Multicollinearity Test with VIF

Variable	VIF
Environmental Management System (X_1)	1,567349
Green Investment (X_2)	1.323720
Company Size (X_3)	1.314686
Profitability (X_4)	1.074883
Public Accounting Firm Reputation (X_5)	1.557155

Source: *Software* EViews *12*

There are no signs of multicollinearity between the independent variables, according to the multicollinearity test findings in Table 4.5. This is due to the VIF value being less than 10.

Autocorrelation Test

Table 4.6 Autocorrelation Test with Durbin-Watson Test

Log likelihood	69.32576	Hannan-Quinn critter.	-0.540818
		Durbin-Watson stat	1,320830

Source: *Software* EViews *12*

According to Table 4.6, the Durbin-Watson statistical value is 1.32083 0, meaning that the non-autocorrelation condition is satisfied since the Durbin-Watson statistical value falls between 1 and 3, namely 1 < 1.320830 < 3.

Heteroscedasticity Test

Table 4.7 Heteroscedasticity Test with White Test

Heteroskedasticity Test: White

F-statistic	1.554517	Prob. F(18,200)	0.0750
Obs*R-squared	26.87899	**Chi-Square Prob.(18)**	**0.0813**

Source: *Software* EViews *12*

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From the results of the White p test in Table 4.7, the Chi-Square Prob. is 0.0813 > 0.05, which means that there is no heteroscedasticity.

***Goodness of Fit Regression* Model**

Goodness of Fit of the regression function shows how well the function estimates the true value. Statistically it can be measured from the value of the coefficient of determination, the F statistic value and the t statistic value.

Table 4.8 Statistical Values of the Determination Coefficient, F Test, and t Test (*Fixed Effect Model*)

Dependent Variable: Y
Method: Panel Least Squares
Date: 10/27/24 Time: 08:31
Sample: 2019 2023
Periods included: 5
Cross-sections included: 72
Total panel (unbalanced) observations: 219

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Environmental Management System (X_1)	0.292682	0.114716	2.551362	0.0118
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Profitability (X_4)	0.001855	0.001226	1.512876	0.1325
Public Accounting Firm Reputation (X_5)	-0.078666	0.097491	-0.806906	0.4211
Constantine	-0.514291	0.361566	-1.422398	0.1571
R-squared	0.843508	Mean dependent variable		0.535114
Adjusted R-squared	0.759752	SD dependent var		0.270240
SE of regression	0.132459	Sum squared residual		2,491,428
F-statistic	10.07097	Durbin-Watson stat		1.782300
Prob(F-statistic)	0.000000			

Source: *Software* EViews *12*

Coefficient of Determination

The degree to which the independent variable influences the dependent variable or the extent to which the model can account for the variance of the dependent variable is indicated by the coefficient of determination. From Table 4.8 , the value of the coefficient of determination (*R-squared*) is $R^2 = 0{,}8435$and *Adjusted* $R^2 = 0{,}7597$. *Adjusted* Value R^2shows that the Environmental Management System (X_1), Green Investment (X_2), Company Size (X_3), Profitability (X_4), Public Accounting Firm Reputation (X_5) can explain the Carbon Emission Disclosure variable (Y) by 75.97%, while the remaining 24.03% is explained by other factors outside the model.

F Statistic Test

The F test explains whether the research regression model is suitable for use or not and whether all the independent variables included in the model have the same value simultaneous influence on the dependent variable. The study's regression model is feasible to use, as indicated by Table 4.8's prob. value (F-Statistics) of 0.000000 <0.05. All independent variables, including

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Environmental Management System (X_1), Green Investment (X_2), Company Size (X_3), Profitability (X_4), and Public Accounting Firm Reputation (X_5), simultaneously have a significant influence on the Carbon Emission Disclosure variable (Y).

t Statistical Test

Whether each independent variable in the model has a partial impact on the dependent variable is shown by the t-test. The criteria utilized to make the decision are a significance level of 5%.

The Environmental Management System variable (X_1) has a significance value of 0.01 < 0.05, and a positive regression coefficient of 0.293. Since it demonstrates that the environmental management system significantly and favorably affects Carbon Emission Disclosure (Y), H_1 is approved.

The Green investment variable (X_2) has a significance value of 0.92 > 0.05. Since H_2 demonstrates that green investment has no impact on Carbon Emission Disclosure (Y), it is rejected.

The Company Size variable (X_3) has a significance value of 0.02 <0.05, and a positive regression coefficient of 0.041. This demonstrates that firm size has a favorable and substantial impact on Carbon Emission Disclosure (Y), supporting the acceptance of H_3.

The profitability variable (X_4) has a significance value of 0.13>0.05. Since H_4 demonstrates that profitability has no impact on Carbon Emission Disclosure (Y), it is rejected.

The Public Accounting Firm Reputation variable (X_5) has a significance value of 0.42>0.05, and a negative regression coefficient of -0.079. This proves that H_5 is false since Carbon Emission Disclosure (Y) is unaffected by the public accounting firm's reputation.

DISCUSSION

The Effect of Environmental Management Systems on *Carbon Emission Disclosure*

The results of the first hypothesis test show that the Environmental Management System has a positive and significant influence on Carbon Emission Disclosure. Thus H_1 is accepted.

Legitimacy theory supports the results of this study which explains that the company's operational activities must remain within the corridor of environmental and societal fairness. The implementation of an environmental management system shows the company's commitment to continue to make sustainable efforts in aligning business interests with environmental interests including carbon emission disclosure. Companies must disclose their carbon data to the public because this helps companies to legitimize their operations through carbon emission disclosure.

The results of this investigation are consistent with studies carried by Dewi and Dewi (2023), Rohmah and Nazir (2022), Suherman and Kurniawati (2023), Arifah and Haryono (2021). The Environmental Management System can be seen from the ownership of the ISO 14001 certificate. Compared to businesses without an environmental management system, those that have adopted the ISO 14001 environmental management system will disclose their carbon emissions in more detail. Companies that have implemented this system will voluntarily disclose credible carbon emission data compared to companies without an environmental management system. The company's dedication to improving environmental monitoring, management, measurement, and reporting, including the disclosure of carbon emissions, is shown by the implementation of the ISO 14001 Environmental Management System.

Energy sector companies are the highest contributors to emissions compared to other sectors. According to legitimacy theory, companies seek to gain, maintain, and improve legitimacy from society and stakeholders by demonstrating that their activities are in line with prevailing social values and norms. In the environmental context, legitimacy is achieved when companies demonstrate a commitment to sustainability and management of negative impacts on the environment.

The Effect of Green Investment on Carbon Emission Disclosure

The second hypothesis test's findings indicate that green investment has no impact on carbon emission disclosure, so H_2 is disproved. The results of the study do not support the research of Syabilla et al (2021), Mulyani et al (2023), Zheng and Jin (2023) who found that green investment has an effect on carbon emission disclosure. The findings of this study do not support the stakeholder theory which explains that an entity will try to adjust its operational activities according to stakeholder desires. The increasing concern of stakeholders for the environment will increasingly force companies to increase green investment or

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environmentally friendly investment and accelerate environmentally friendly transitions to meet emission reduction targets and fulfill stakeholder demands.

The findings of this analysis are consistent with studies by Dani and Harto (2022), Ramadhani and Astuti (2023), and Yesiani et al. (2023) that shown no relationship between green investment and carbon emission disclosure. The study's findings demonstrated that the degree of carbon emission disclosure has not been impacted by the total amount of green investment made by the firm. This is because there is still an assumption that investment costs will only reduce the level of company income and profit because the investment value is quite large. In addition, green investment by companies is not always directly related to the company's openness to carbon emission disclosure. It is possible that companies invest in environmentally friendly projects for other reasons, such as cost savings or image enhancement, without having to increase transparency in carbon emission disclosure.

Energy sector companies have high carbon emissions and greater regulatory pressures than other sectors. During the 2019-2023 study period, green investments in the energy sector may have been in their early stages or more focused on internal efficiency, without increasing transparency in emissions reporting. This period includes the COVID-19 pandemic, which has had a significant impact on global economic conditions. Many companies are facing financial pressures, so their priorities are more focused on business sustainability than sustainability reporting such as carbon emissions reporting.

The Effect of Company Size on Carbon Emission Disclosure

The results of the third hypothesis test show that Company Size has a positive and significant influence on Carbon Emission Disclosure. Thus H_3 is accepted.

The results of this study are in line with the legitimacy theory which states that large companies are under high pressure from the public to disclose carbon emission data in order to maintain the social contract. Due to increased public pressure and requests to disclose their environmental performance, major corporations are more likely to make voluntary disclosures. Carbon emissions disclosure is a component of environmental disclosure that businesses may employ to react to public demand and maintain the legitimacy of their operations. Furthermore, the study's findings align with stakeholder theory, which posits that big businesses will be more open about their operations in order to preserve their image and stakeholders' confidence that they bear responsibility for the consequences of the emissions they generate.

The findings of this investigation are consistent with studies carried by Firmansyah et.al (2021), Pratiwi et.al (2021), Desai (2022), Hidayat et.al (2022), Wardiman et.al (2023) which show that company size has a positive and significant effect on Carbon Emission Disclosure. Large companies are more likely to disclose environmental information than small companies and have a broader level of environmental disclosure in response to social, environmental, political, and economic pressures to gain and maintain legitimacy and meet stakeholder demands. Furthermore, due of their environmental effect, big businesses are more conscious of their need to voluntarily provide carbon statistics. This study proves that large companies have a broader level of carbon emission disclosure because they have more resources than small companies, thus influencing more comprehensive carbon emission information disclosure.

Energy sector companies are a type of company that is intensive with carbon emissions, so large companies in this sector tend to get more attention from regulators, the public, and investors. This motivates large companies to be more transparent in disclosing carbon emissions as a form of social responsibility, maintaining legitimacy and fulfilling stakeholder demands.

The Effect of Profitability on *Carbon Emission Disclosure*

The fourth hypothesis test's findings demonstrate that profitability has no impact on carbon emission disclosure, leading to the rejection of H_4. The results of the study do not support the research of Pratiwi et al (2021), Sandi et al (2021), Wahyuningrum et al (2024) who found that Profitability has an effect on carbon emission disclosure

The findings of this analysis are consistent with studies that demonstrate that profitability has little impact on carbon emission disclosure, such those by Dewi and Dewi (2023), Suherman and Kurniawati (2023), Desai (2022), Hidayat et al. (2022), Ramadhan et al. (2021), and Wardiman et al. (2023). It is evident from the study's findings that a company's disclosure of its carbon emissions is unaffected by its level of profitability. Companies with high profitability do not necessarily disclose carbon emissions, this is due to the high costs required which will reduce profits so that the company has a low level of carbon emission disclosure. In addition, companies do not always allocate their profits for social and environmental activities because apart from being voluntary,

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carbon emission disclosure also depends heavily on the awareness of company management in implementing environmental policies, not only on the company's ability to generate profits.

The results of this study imply that profitability alone is not enough to encourage companies to disclose carbon emission. Carbon disclosure is more influenced by external factors such as strong regulations, stakeholder pressure, and management awareness of sustainability issues Therefore, governments and regulators need to strengthen policies related to carbon reporting and provide relevant incentives to encourage companies to increase transparency in their carbon emission disclosure.

The Effect of Public Accounting Firm Reputation on *Carbon Emission Disclosure*

The fifth hypothesis test's findings indicate that carbon emission disclosure is unaffected by the public accounting firm's reputation, so H_5 is rejected. The stakeholder theory, which explains that companies audited by a reputable public accounting firm will disclose more information about carbon emissions because of higher audit quality and adherence to strict ethical standards related to sustainability reporting and carbon emission disclosure, in order to gain stakeholders' trust, is not supported by the study's findings. The results of the study do not support the research of Rohmah and Nazir (2022), Arifah and Haryono (2022), Wardhani and Kawedar (2019) who found that Public Accounting Farm has an effect on carbon emission disclosure

The results of this study are consistent with studies by Wardiman et al. (2023) and Pratiwi et al. (2021), which demonstrate that carbon emission disclosure is not significantly impacted by the reputation of the public accounting firm. Companies audited by Public Accounting Firms with good reputations, namely the Big Four, do not influence companies to disclose the company's carbon emissions. This may be because the disclosure of carbon emissions is more influenced by the company's internal policies or pressure from other external parties than the reputation of the accounting firm they use. External auditors function to provide opinions regarding the fairness of the financial statements presented by the company. Public Accounting Firms, both Big Four and non-Big Four, are not independent institutions that verify and validate carbon emissions. Carbon footprint assessments are carried out by accredited independent bodies. Disclosure of carbon emissions is carried out in the company's sustainability report. An external verifier/external assurance is needed to guarantee the sustainability report in the form of a sustainability certification body. Considerations of the costs and benefits of carbon disclosure also have a major impact on the company's finances, which will ultimately affect the extent of disclosure.

5. CONCLUSION, IMPLICATIONS AND SUGGESTIONS

Conclusion

The purpose of this research is to examine and demonstrate if carbon emission disclosure is impacted by the Environmental Management System, Green Investment, Company Size, Profitability, and Public Accounting Firm Reputation. A sample of energy-related businesses listed on the Indonesia Stock Exchange between 2019 and 2023 is used in this research. It is possible to draw the following conclusions from the study's findings:

1. Environmental Management System has a positive effect on Carbon Emission Disclosure.
2. Green Investment does not have a significant effect on Carbon Emission Disclosure.
3. Company size has a positive effect on Carbon Emission Disclosure.
4. Profitability does not have a significant effect on Carbon Emission Disclosure.
5. The reputation of the Public Accounting Firm does not have a significant effect on Carbon Emission Disclosure.

Research Limitations

This study has several limitations, namely:

1. Not all energy sector companies listed on the IDX for the 2019-2023 period published sustainability reports for 5 consecutive years, so only 219 observations could be made on a sample of the 415 observations that should have been made.
2. The application of content analysis techniques in measuring Carbon Emission Disclosure can cause differences in perspective and have high subjectivity. These differences in perspective can result in different results in calculating the dependent variable score if carried out by other researchers.

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Research Implications

This research provides the following implications:

1. Theoretical Implications
   It is hoped that this research will shed light on how current ideas on carbon emissions disclosure are applied and serve as a guide for future research on the topic.

2. Practical Implications
   a. For companies, it is expected to motivate companies to maximize carbon emission disclosure as a form of company participation in realizing the *triple bottom line principle* (*Profit, People and Planet*).
   b. For Investors. The results of this study can encourage and attract the interest of the public and investors to participate in supporting companies that have made efforts to reduce carbon emissions, for example by using products or investing in companies that have made efforts to reduce carbon emissions and are more concerned about environmental and earth sustainability.
   c. For funding institutions to be more helpful in offering incentives and credit facilities to businesses that make greater efforts to maintain and improve their ESG.
   d. For Regulators. The study also shows that in order to achieve greater transparency and incentivize businesses to care about sustainability issues, governments, in their capacity as regulators, must control the rules related to carbon emissions disclosure and emissions management practices. To raise public awareness of sustainability issues and achieve the goals of the Paris Agreement, carbon emissions disclosure oversight must be implemented holistically, not only in relation to large companies.

Suggestion

1. Further researchers can choose research objects other than the energy sector and use sample selection methods with certain criteria, thus allowing for broader analysis regarding carbon emission disclosure;
2. The differences in researchers' perspectives on measuring carbon emission disclosure are due to the lack of applicable benchmarks/guidelines for determining disclosure index score. Further researchers can use text analysis software to automatically extract and assess carbon emission disclosures from company reports. This method can increase researcher objectivity.

REFERENCES

1. Arifah, N., Haryono, S. Analysis of Determinants of Carbon Emission Disclosure (Comparative Study of Companies in Indonesia and Malaysia for the Period 2013-2018). *Journal of Economic Studies*, 12(1). DOI: https://doi.org/10.18592/at-taradhi.v12i1.4654
2. Auliani, A., Pramesti, D., & Yunita, L. (2023). The Role of Auditor in Sustainability Reporting. *Sinomics Journal*, 1(6). https://doi.org/10.54443/sj.v1i6.94
3. Bui, B., Houqe, M. N., & Zaman, M. (2020). Climate Governance Effects on Carbon Disclosure and Performance. *British Accounting Review*, 52(2). doi: 10.1016
4. Choi, B.B., Lee, D., & Psaros, J. (2013). An Analysis of Australian Company Carbon Emission Disclosures. *Pacific Accounting Review*, 25(1), 58-79. DOI:10.1108/01140581311318968
5. Dani, I. M., Harto, P. (2022). The Influence of Environmental Performance and Green Investment on Carbon Emission Disclosure. *Diponegoro Journal of Accounting*, 11(4), 1 – 10.
6. Desai, Rajesh. (2022). Determinants of carbon corporate disclosure: A step towards sustainability reporting. *Borsa Instanbul Review*, 22(5), 886-896. https://doi.org/10.1016/j.bir.2022.06.007
7. Dewi, N. P. L. W., & Dewi, L. G. K. (2024). Environmental Management Systems, Environmental Performance and Carbon Emission Disclosure of Energy Companies in Indonesia. *E-Jurnal Akuntansi*, 34(3), 611-623. DOI: 10.24843/EJA.2024.v34.i03.p05
8. Dowling, J., & Pfeffer, J. (1975). Organizational legitimacy: Social values and organizational behavior. Sociological Perspectives, 18(1), 122–136. https://doi.org/ 10.2307/1388226

International Journal of Current Science Research and Review
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Volume 08 Issue 07 July 2025
DOI: 10.47191/ijcsrr/V8-i7-45, Impact Factor: 8.048
IJCSRR @ 2025
www.ijcsrr.org

9. Firmansyah, A., Jadi, P. H., Febrian, W., & Sismanyudi, D. (2021). The Influence of Corporate Governance and Company Size on Carbon Emission Disclosure in Indonesia. *Journal of Information, Taxation, Accounting, and Public Finance*, 16 (2), 303-320. http://dx.doi.org/10.25105/jipak.v16i2.9420
10. Freeman, R.E., & Reed. (1983). Stockholders and stakeholders: a new perspective on corporate governance. *Californian Management Review*, 25(2), 88-106
11. Gu, Y., Ho, K., Yan, C., & Gozgor, G. (2021). Public environmental concern, CEO turnover, and green investment: Evidence from a quasi-natural experiment in China. *Energy Economics*, 100. https://doi.org/10.1016/j.eneco.2021.105379
12. Hidayat, I., Ismail, T., Taqi, M., & Yulianto, A. S. (2022). Investigating in Disclosure of Carbon Emission: Influencing the Elements Using Panel Data. *Jurnal Akuntansi dan Keuangan*, 12(2), p. 721-732. DOI:10.22219/jrak.v12i3.23072
13. Intergovernmental Panel on Climate Change. (2023). Climate Change 2023: *Syntetis Report. Contribution of Working Groups I, II and III to the Sixth Assessment Report. Geneva, Switzerland.*
14. Ministry of Environment and Forestry of the Republic of Indonesia. *Greenhouse Gas (GHG) Inventory and Monitoring, Reporting, Verification (MPV) Report 2023*.
15. Ministry of Energy and Mineral Resources of the Republic of Indonesia. *Handbook of Energy & Economic Statistics of Indonesia (HEESI)* 2022
16. Karim, E., Albitar, K., & Elmarzouky, M. (2021). A Novel Measure of Corporate Carbon Emission Disclosure, the Effect of Capital Expenditures and Corporate Governance. *Journal of Environmental Management*. https://doi.org/10.1016/j.jenvman.2021.112581
17. Liu, Y. S., Zhou, X., Yang, J. H., Hoepner, A. G. F., & Kakabadse, N. (2023). Carbon emissions, carbon disclosure and organizational performance. *International Review of Financial Analysis*, 90. https://doi.org/10.1016/j.irfa.2023.102846
18. Mulyati, R., Darmawati, D. (2023). The Impact of Green Investment, Media Coverage, and International Sales on Carbon Emission Disclosure with Audit Committee as the Moderating Variable. *Jounal of Management*, 13(1). https://doi.org/10.35335/enrichment.v13i1.1311
19. Presidential Regulation of the Republic of Indonesia Number 98 of 2021. Concerning the Implementation of Carbon Economic Values for the Achievement of Nationally Determined Contribution Targets and Control of Greenhouse Gas Emissions in National Development.
20. Pratiwi, L., Maharani, B., & Sayekti, Y. (2021). Determinants of carbon emission disclosure: An empirical study on Indonesian manufacturing companies. *The Indonesian Accounting Review*, 11(2), 197 – 207. DOI: 10.14414/tiar.v11i2.2411
21. Ramadhan, R. T., Ermaya, H. N. L., & Wibawaningsih, E. J. (2021). Determination of Carbon Emission Disclosure in Companies in Indonesia. *Journal of Accounting and Taxation*, 22(01), 450-464. DOI: http://dx.doi.org/10.29040/jap.v22i1.2873
22. Ramadhani, K., Astuti, C. D. (2023). The Influence of Green Strategy and Green Investment on Carbon Emission Disclosure with Media Exposure as a Moderating Variable. *Journal of Information, Taxation, Accounting, and Public Finance, 18(2), 323-338. DOI :* http://dx.doi.org/10.25105/jipak.v18i2.17244
23. Rohmah, D. F. N., Nazir, N. (2022). The Influence of Financial Performance, Environmental Performance, Environmental Management System, Managerial Ownership and Public Accounting Firm Reputation on Carbon Emission Disclosure. *Trisakti Economic Journal*, 2(2), 749 – 762. http://dx.doi.org/10.25105/jet.v2i2.14485
24. Sandi, D. A., Soegiarto, D., & Wijayani, D. R. (2021). The Influence of Industry Type, Media Exposure, Profitability and Stakeholders on Carbon Emission Disclosure (A Study of Companies Listed on the Indonesian Sharia Stock Index in 2013-2017). *Accounting Global Journal*, 5(1), 99 – 122, DOI: https://doi.org/10.24176/agj.v5i1.6159
25. Saraswati, E., Amalia, R. S., & Herawati, T. (2021). Determinants of Carbon Emission Disclosure in Indonesia Manufacturing Company. *Asian Journal of Economics, Business and Accounting*, 21(3). DOI: 10.9734/AJEBA/2021/v21i330356
26. Sari, N. M., Sulfitri, V. (2023). The Effect of Media Exposure, Environmental Performance, and ISO 14001 Certification on Carbon Emission Disclosure. *Journal of Economics, Finance, and Management Studies*, 06. DOI: 10.47191/jefms/v6-i8-13

International Journal of Current Science Research and Review
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DOI: 10.47191/ijcsrr/V8-i7-45, Impact Factor: 8.048
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www.ijcsrr.org

27. Soraya, Annisa. (2023). Green investment policy in Indonesian legislation as an effort to reduce national GHG emissions towards E-NDC 2030. *UNES Law Review*, 6(2). https://doi.org/10.31933/unesrev.v6i2
28. Suherman, Y., & Kurniawati, K. (2023). The Influence of Profitability, Environmental Management System, Institutional Ownership and Audit Committee on Carbon Emission Disclosure. *Journal of Accounting Applications*, 8(1). https://doi.org/10.29303/jaa.v8i1.289
29. Syabilla, D., Wijayanti, A., & Fahria, R. (2021). The effect of green investment and board diversity on carbon emission disclosure. *National Research Conference on Economics, Management, and Accounting*, 2, 1171 – 1186
30. Velte, P., Stawinoga, M., & Lueg, R. (2020). Carbon performance and disclosure: A systematic review of governance-related determinants and financial consequences. *Journal of Cleaner Production*, 25(4). DOI: 10.1016/j.jclepro.2020.120063
31. Wardhani, R. K., Kawedar, W. (2019. Factors Affecting Carbon Emission Disclosure and Stock Reactions in Manufacturing Companies in Indonesia. *Diponegoro Journal of Accounting*, 8(2), 1 -11.
32. Wardiman, R. F., Muid, D., & Hamdani. (2023). The Influence of Social Pressure, Shareholder Pressure and The Reputation of Public Accounting Firms on Carbon Emission Disclosure. *Jurnal Manajemen Bisnis*, 10(1), 84-97. DOI: https://doi.org/10.33096/jmb.v10i1.482
33. Wulansari, N. E., Chairunnisa, N. M., & Susanti, N. L. (2023). Do Environmental Management Systems, Environmental Performance, and Firm Size Influence Greenhouse Gas Emission Disclosures? *Research of Finance and Banking*, 1(2), DOI: https://doi.org/10.58777/rfb.v1i2.136
34. Yesiani, M. E. S., Sari, D. P., & Kristina, N. (2023). The influence of environmental performance and green investment on carbon emission disclosure. *Scientific journal of accounting students*, 12(1), DOI: 10.33508/jima.v12i2.5350.
35. Zheng, S., & Jin, S. (2023). Is corporate green investment a determinant of corporate carbon emission intensity? A managerial perspective. *Heliyon*, 9. https://doi.org/10.1016/j.heliyon.2023.e22401

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