

Accounting Conservatism in Green Practices: Environmental Performance, Green Management, and Green Accounting

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Abstract—Growing climate concerns and pressure to maintain legitimacy have encouraged energy companies to integrate green practices into operations and financial reporting. This study examines the influence of Environmental Performance, Green Accounting, and Green Management on accounting conservatism among energy companies listed on the Indonesia Stock Exchange (IDX) from 2020 to 2024. Using a quantitative causal design, secondary data were obtained from annual and sustainability reports, with samples selected through purposive sampling. Panel data regression was used to analyze the data, with EViews 13 serving as the statistical software for data processing and analysis. The findings reveal that Environmental Performance and Green Accounting have no significant effect on Accounting Conservatism, while Green Management has a positive and significant effect (EP: $\beta = -0.033$, $p = 0.532$; GM: $\beta = 0.533$, $p = 0.002$; GA: $\beta = 0.005$, $p = 0.963$). This study differs from previous research by examining these three variables simultaneously, providing a more integrated perspective on the relationship between sustainability practices and conservative financial reporting in Indonesia's energy sector. Practically, companies should align environmental management with financial reporting policies, particularly by strengthening Green Management as a potential driver of Accounting Conservatism. Investors and stakeholders may also consider these findings when assessing environmental governance and financial reporting reliability. Academically, this study contributes empirical evidence to the discussion of sustainability and accounting conservatism while providing opportunities for future research to examine other variables and industry contexts.

Keywords: Environmental Performance; Green Accounting; Green Management; Accounting Conservatism, Energy

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1. INTRODUCTION

The issues of climate change and environmental degradation have prompted various parties, including companies, governments, and investors, to pay closer attention to sustainable business practices. In Indonesia, the energy sector is one of the most closely scrutinized sectors due to its significant contribution to carbon emissions and other environmental impacts. Companies in this sector face increasing pressure from various stakeholders to implement green practices in their operations.

In the context of financial reporting, this environmental pressure has implications for how companies recognize and report their environmental liabilities and costs. Accounting conservatism, which refers to a conservative approach to financial reporting under accounting principles, whereby companies adopt the most cautious policies when measuring the most detrimental factors, uncertainties, and doubts for the company in their financial reporting (Darmawan, 2023) is relevant to the green practices implemented by several companies in Indonesia. Companies with a strong commitment to the environment are likely to apply a higher degree of conservatism in their financial reporting.

In Indonesia's energy sector, adopting conservative accounting serves as a strong signal to the market that a company is not only capable of effectively managing environmental impacts but also carefully mitigating future financial risks (Watts, 2003). In this way, a company's green practices serve as a catalyst that reinforces management's commitment to adopting more conservative and low-risk financial reporting when disclosing information related to environmental performance in the company's sustainability reports. Consequently, companies in the energy sector can no longer view environmental issues as matters outside their core business but must integrate them into their strategies, management systems, and accounting and financial reporting practices. Therefore, the focus of this study is to examine the influence of green practices, comprising Environmental Performance, Green Accounting, and Green Management on Accounting Conservatism among companies in the energy sector listed on the Indonesia Stock Exchange (IDX) from 2020 to 2024.

One suitable indicator for assessing the extent to which a company manages its environmental impact is Environmental Performance, which refers to a company's efforts to foster positive environmental conditions and maintain the sustainability of the ecosystems surrounding its project sites (Sari, Widyastuti, Maidani, & Sari, 2024). In Indonesia, this is generally represented by the Company Performance Rating Program (PROPER) ranking issued by the Ministry of Environment and Forestry. The higher a company's PROPER ranking, the better its environmental management. Various previous studies have examined the relationship between Environmental Performance and Accounting Conservatism, but the results obtained remain inconsistent. Jati & Siti Kustinah (2025) stated that Environmental Performance did not have a significant effect on Accounting Conservatism. In contrast, Khelifi, Boujelbene, & Chouaibi (2024) revealed that

Environmental Performance was found to have a significant effect on Accounting Conservatism. These differing research findings indicate a research gap that requires further investigation.

Furthermore, most previous studies have focused solely on the direct effect of Environmental performance on Accounting conservatism; consequently, there is a limited body of research that considers other factors that may strengthen or weaken this relationship. Therefore, this study aims to address this gap by conducting a re-examination. Green Accounting is a preventive measure that discourages the establishment of businesses that have the potential to further degrade natural capital. This can be achieved by applying Green Accounting during the investment project evaluation phase and the development of business plans for new power generation facilities (Stanojević, Vranes, & Gökalp, 2010).

Green Accounting itself is an accounting approach that integrates environmental costs and benefits into a company's financial reporting system, covering natural resource management, greenhouse gas emissions control, and waste management (Sadiku, Ashaolu, Adekunle, & Musa, 2021), which are generally represented using environmental disclosure indicators from the GRI (Global Reporting Initiative), specifically the GRI 300 series, as a proxy for a company's Environmental Performance. According to Efria, Baining, & Orinaldi (2023) and Setiawan, Diantimala, Lautania, & Sayuthi (2024), Green Accounting has a significant impact on Accounting Conservatism, whereas according to Wardaningtyas & Poerwati (2024), Green Accounting does not have a significant impact on the Accounting Conservatism. This can be linked to the fact that the quality of reported financial performance is influenced by the level of conservatism applied and can be a direct determinant of the magnitude of reported financial performance ratios.

Green Management refers to a business management strategy that deliberately considers environmental impacts in every organizational decision-making process; it is a systematic framework for managing the environment that includes a commitment to continuous improvement (Paneka & Amanah, 2025). This concept aligns with the idea of "the greening of management" which is an awareness of the interconnection between an organization's decisions and activities and their impact on the environment and is closely related to the implementation of environmental management systems such as ISO 14001. According to a study by Nurdiani, Hutabarat, & Maruli (2026), Green Management does not have a significant effect on Accounting Conservatism, whereas in a study conducted by Fitriaty, Solikhin, & Srikandi (2021), the ISO 14001 environmental management system was found to have a simultaneous positive effect on Accounting Conservatism.

In this study, financial performance is also one of the aspects that may be related to the application of Accounting Conservatism within a company. Financial performance conditions, as reflected by profitability levels, can influence a company's policies regarding the conservative presentation of financial information. Ricky (2025) states that prudent liability management is essential for maintaining a company's financial health and ensuring its ability to meet future financial obligations. In their study on the application of accounting conservatism, Efendi & Handayani (2021) found that factors reflecting a company's financial condition are associated with the application of Accounting Conservatism. This indicates that a company's financial performance can be a consideration in applying the principle of conservatism in financial reporting.

Unlike prior studies, which have generally examined Environmental Performance, Green Accounting, and Green Management in isolation and have predominantly linked them to financial performance rather than to the quality of financial reporting itself, this study contributes conceptually by integrating all three green practice dimensions within a single model to explain Accounting Conservatism, a reporting-quality construct that has received comparatively little attention in the sustainability accounting literature on Indonesia's energy sector. This study aims to analyze the influence of Environmental Performance, Green Accounting, and Green Management on Accounting Conservatism, both partially and simultaneously, among energy sector companies listed on the Indonesia Stock Exchange. Specifically, this study seeks to clarify whether a company's attention to environmental aspects is not only reflected in environmental management and reporting but is also related to the company's prudence in preparing financial statements. Thus, this study is expected to broaden the discussion on Accounting Conservatism by incorporating sustainability as a factor that can influence a company's financial reporting practices. In practical terms, the research findings can provide insight into the relationship between environmental management practices and the quality of financial reporting in the energy sector, thereby serving as a basis for management to align environmental policies with more conservative and transparent reporting practices.

2. RESEARCH METHODS

This study employs a quantitative approach with a causal design to examine the effect of green practices on accounting conservatism. According to Sugiyono (2013), quantitative research emphasizes the use of numerical data and statistical analysis to test predetermined hypotheses. Therefore, a quantitative approach is appropriate for examining the relationship between green practices and accounting conservatism using empirical data. The units of analysis are energy sector companies listed on the Indonesia Stock Exchange (IDX) during the 2020 to 2024 observation period. This study uses secondary data that obtained from the annual reports and sustainability reports of the selected companies. The sample was determined using purposive sampling based on predetermined criteria relevant to the objectives and measurement of the research variables. These criteria were applied to ensure that the selected companies provided sufficient information on environmental practices, ISO 14001 implementation, PROPER participation, and GRI-based disclosures required for the analysis. The population consists of 66 energy sector companies listed on the IDX during the 2020 to 2024 period.

Based on the purposive sampling criteria, 56 companies are excluded, resulting in a final sample of 10 companies. Specifically, one company was excluded because it did not publish the required annual or sustainability reports, 51 companies were excluded because they did not participate in the PROPER program or obtain PROPER certification during the observation period, four companies were excluded based on the GRI disclosure criteria, while no companies were excluded based on the ISO 14001 disclosure and suspension criteria. Since each of the 10 selected companies was observed for five consecutive years from 2020 to 2024, the final dataset consists of 50 firm-year observations (10 companies $\times$ 5 years). The detailed sample selection process is presented in Table 1.

Table 1. Sample Selection Criteria

No	Criteria	Total
1	Energy-sector companies listed on the Indonesia Stock Exchange (IDX) from 2020 to 2024	66
2	Energy sector companies that did not publish sustainability reports or annual reports for 2020–2024	(1)
3	Companies that did not participate in the PROPER program or obtain PROPER certification for 2020–2024	(51)
4	Companies that did not disclose information regarding the implementation of ISO 14001	(0)
5	Companies that did not disclose information on Global Reporting Initiative (GRI) standard indicators	(4)
6	Companies that were suspended	(0)
Sample Size		10
Number of Observations (sample size $\times$ 5 years)		50

2.1 Variables and Operational Definitions

2.1.1 Environmental Performance

This study uses environmental performance as the independent variable. Environmental performance reflects a company's achievements in improving environmental quality through environmental management practices, such as reducing emissions, waste, and resource consumption. Environmental performance can be measured using the PROPER indicators issued by the Ministry of Environment and Forestry, similar to the study by Manurung, Simanjuntak, & Sagala (2026), which also used the PROPER indicators as its measurement tool. PROPER is used as a measurement tool because it is considered capable of assessing various aspects of environmental management in a company's performance. In this study, PROPER ratings are categorized into five colors, and each is assigned a research score based on its color level.

Table 2. PROPER Rating

No	Color	Description	Score
1.	Gold	Excellent	5
2.	Green	Superior	4
3.	Blue	Compliant	3
4.	Red	Substandard	2
5.	Black	Severely deficient	1

2.1.2 Green Management

Green Management can be understood as a corporate management approach that integrates environmental sustainability into all business processes, from planning and organizing to strategic decision-making. The implementation of Green Management not only focuses on minimizing negative impacts on the environment but is also aimed at creating operational efficiency and building a positive corporate image in the eyes of stakeholders. In this study, Green Management is measured using a dummy variable: if a company has obtained ISO 14001 certification, it is assigned a value of 1; if the company has not obtained certification or if the ISO 14001 certification has expired after 5 years, it is assigned a value of 0 (Meliniyati, Septiawati, & Trisyanto, 2024). Companies with ISO 14001 certification are considered to have implemented a management system that complies with applicable regulations.

2.1.3 Green Accounting

Green Accounting is an accounting system that accommodates the recording, measurement, and disclosure of environmental impacts resulting from a company's operational activities. By implementing Green Accounting, companies can provide more transparent information to stakeholders regarding their commitment to environmental sustainability disclosure, while also integrating it into their long-term environmental risk management strategy. The implementation of Green Accounting can be measured through the disclosure of environmental aspects listed in the GRI 300 Series, including the use of materials, energy, and water; emissions; waste; and compliance with environmental regulations. Such disclosures reflect a company's commitment to managing its environmental impacts and enhancing accountability and transparency toward stakeholders (Gola, Mendiratta, Gupta, & Dharwal, 2022). This variable is measured using disclosures of the GRI 300 (Global Reporting Initiative) indicators, a set of global standards governing the disclosure of a company's environmental performance, consisting of 32 indicators formulated as follows:

$$GA = \frac{\text{Number of GRI indicators disclosed}}{\text{Total GRI indicators}} \quad (1)$$

The following are the 32 indicators included in the GRI 300 series:

Table 3. GRI 300 Indicators

No	GRI Code	Topic	Indicators
1.	GRI 301	Material	GRI 301-1 Materials used by weight or volume GRI 301-2 Recycled input materials used GRI 301-3 Reclaimed products and their packaging materials
2.	GRI 302	Energy	GRI 302-1 Energy consumption within the organization GRI 302-2 Energy consumption outside the organization GRI 302-3 Energy intensity GRI 302-4 Reduction in energy consumption GRI 302-5 Reduction in energy requirements of products and services
3.	GRI 303	Water and Effluent	GRI 303-1 Interactions with water as a shared resource GRI 303-2 Management of impacts related to water discharge GRI 303-3 Water withdrawal GRI 303-4 Water discharge GRI 303-5 Water consumption
4.	GRI 304	Biodiversity	GRI 304-1 Operational sites owned, leased, managed, or located near protected areas and areas of high biodiversity value GRI 304-2 Significant impacts of activities, products, and services on biodiversity GRI 304-3 Protected or restored habitats GRI 304-4 Species listed on the IUCN Red List and national conservation lists whose habitats are located within the company's operational areas
5.	GRI 305	Emissions	GRI 305-1 Direct greenhouse gas (GHG) emissions (Scope 1) GRI 305-2 Indirect GHG emissions from energy (Scope 2) GRI 305-3 Other indirect GHG emissions (Scope 3) GRI 305-4 GHG emissions intensity GRI 305-5 GHG emissions reductions GRI 305-6 Ozone-depleting substance (ODS) emissions GRI 305-7 Nitrogen oxides (NOx), sulfur oxides (SOx), and other significant air emissions
6.	GRI 306	Wastewater and Waste	GRI 306-1 Water discharges by quality and destination GRI 306-2 Waste by type and disposal method GRI 306-3 Significant spills GRI 306-4 Transportation of hazardous waste GRI 306-5 Water bodies affected by water discharges and/or runoff
7.	GRI 307	Environmental Compliance	GRI 307-1 Non-compliance with environmental laws and regulations
8.	GRI 308	Supplier Environmental Assessment	GRI 308-1 New suppliers selected using environmental criteria GRI 308-2 Negative environmental impacts in the supply chain and actions taken

2.1.4 Conservatism Accounting

Accounting conservatism is classically defined as the tendency of accountants to require a higher level of verification when recognizing good news (or profits) compared to bad news (Basu, 1997). In the era of modern corporate governance, this principle of prudence is regarded as one of the most crucial qualitative attributes that shape the quality of financial reporting. According to Agency Theory, information asymmetry between management (the agent) and shareholders (the principal) often triggers opportunistic behavior in the form of earnings management to embellish financial performance. Accounting conservatism serves as an internal control mechanism that curbs management's excessive optimism by requiring the prompt recognition of potential future costs and losses (Watts, 2003). High-quality financial statements are characterized by transparency and low levels of accrual manipulation. When a corporation adopts strategic policies to enhance its reputation and the overall quality of its reporting, this inherently strengthens the implementation of conservative accounting. According to Givoly & Hayn (2000), accounting conservatism is measured using the formula

$$CONACC = \frac{NIO - DEP - CFO \times (-1)}{TA} \quad (2)$$

In this formula, CONACC represents the level of accounting conservatism, which quantifies the cautious recognition of income in financial report. The variables are defined as: NIO denotes Net Income before Operating, DEP refers to Depreciation expense, CFO signifies Cash Flow from Operating Activities, and TA represents Total Assets. This

calculation highlights the conservative bias by comparing accrual based earnings components against operating cash flows, normalized by the firm's total assets. The formula is designed to reflect the degree to which earnings are reported conservatively, consistent with the principles of accounting conservatism. The measurement of accounting conservatism in this study uses the accrual approach developed by Givoly & Hayn (2000). The value is multiplied by -1 to reverse the direction of the accrual value, so that a higher value reflects a higher level of accounting conservatism. Thus, the use of a negative sign ensures that the measurement results have an interpretation consistent with the accounting conservatism variable.

2.2 Literature Review

2.2.1 Legitimacy Theory

Legitimacy Theory states that companies operate within the boundaries set by society and strive to obtain and maintain their legitimacy (Martens & Bui, 2023). In the context of green practices, energy sector companies that implement sound environmental practices seek to demonstrate to the public that their operational activities are aligned with prevailing environmental values and norms. This is achieved through the implementation of Environmental Performance as evidence that the company conducts its operations in an environmentally responsible manner, Green Accounting through the disclosure of environmental information, and Green Management through sustainable environmental management as a manifestation of the company's commitment to environmental responsibility (Deegan, 2002). The implementation of these three practices also encourages companies to prepare financial statements more carefully through accounting conservatism, thereby increasing transparency and helping to maintain the company's legitimacy in the eyes of the public. On this basis, Legitimacy Theory provides the theoretical foundation for H1, H2, and H3: each green practice dimension is expected to positively influence accounting conservatism because it functions as a legitimacy-seeking signal that management chooses to reinforce with more cautious, credible financial reporting.

2.2.2 Stakeholder Theory

According to Stakeholder Theory, companies have a responsibility to all stakeholders, not just shareholders (Mahajan, Lim, Sareen, Kumar, & Panwar, 2023). This theory explains that companies need to meet stakeholder expectations by implementing sustainable business practices including Environmental Performance, Green Management, and Green Accounting as a form of accountability for their environmental impact. Pressure from investors, regulators, the public, and other interested parties encourages companies to disclose environmental information transparently and manage the environment sustainably in order to gain stakeholder trust (Deegan, 2002). These conditions also encourage companies to apply accounting conservatism so that financial statements are presented more prudently and reliably, thereby reducing information asymmetry between the company and its stakeholders. Complementing Legitimacy Theory, Stakeholder Theory therefore reinforces the same directional prediction for H1, H2, and H3: companies that are more responsive to stakeholder pressure through Environmental Performance, Green Management, and Green Accounting are expected to adopt more conservative financial reporting as a mechanism for building stakeholder trust.

2.2.3 Environmental Performance

Environmental Performance reflects a corporation's operational effectiveness and commitment to preserving ecosystems and reducing pollution. In Indonesia, this metric is formally measured through the PROPER color-coded rating system issued by the Ministry of Environment and Forestry. According to Legitimacy Theory, companies with high operational intensity on the natural environment face political pressure and strict public scrutiny. To maintain legitimacy and avoid social and legal sanctions, management is required to present the company's performance honestly, both from an environmental and a financial perspective. Studies by Sari et al. (2024) and Khelifi et al. (2024) show that Environmental Performance influences Accounting Conservatism, indicating that the market values companies with strong Environmental Performance. Companies with strong Environmental Performance are expected to be more cautious in their financial reporting to maintain consistency between their environmental commitments and their accounting practices. Improvements in Environmental Performance effectively support improvements in a company's financial performance. This situation may encourage companies to adopt Accounting Conservatism as a form of prudence in presenting financial information and to anticipate risks arising from the company's operational activities.

H1: Environmental performance has a positive effect on accounting conservatism.

2.2.4 Green Management

Green management is a managerial approach that integrates environmental protection into a company's entire product processing value chain. This concept is objectively measured through the attainment of the international ISO 14001 (Environmental Management System) certification. Adoption of ISO 14001 requires companies to undergo an independent, periodic, and rigorous environmental audit process. Several studies, such as Carrillo-Labela, Fort, & Saïsset (2026), show that implementation of ISO 14001 has a positive effect on accounting conservatism, as environmental management practices encourage firms to recognize potential risks and liabilities more prudently. On the other hand, Saleh et al. (2026) also explain that sustainability-oriented Green Management positively linked to financial performance, although their effectiveness may be influenced by each company's specific characteristics. Therefore, the implementation of Green Management through environmental management systems such as ISO 14001 is expected to encourage

companies to present more transparent and accountable information, including in the application of accounting conservatism. As referenced in the literature, improvements in financial performance resulting from the implementation of Green Management can reflect a company's ability to manage resources and risks more effectively. This situation can encourage companies to adopt accounting conservatism as a form of prudence in the presentation of financial information. H2: Green Management has a positive effect on accounting conservatism.

2.2.5 Green Accounting

Green accounting is an accounting discipline that identifies, allocates, and discloses environmental indicators from the GRI 300 series arising from an entity's business activities. In modern reporting, these green accounting disclosures are evaluated through the quantification of GRI (Global Reporting Initiative) indicators specific to environmental aspects. Through green accounting, disclosures regarding waste management, carbon emissions, and energy recovery are presented transparently in annual reports or sustainability reports. Dianty & Nurrahim (2022) indicate that the implementation of Green Accounting impacts the quality of corporate reporting by promoting the presentation of more transparent and accountable information. Similarly, research by Dewi & Muslim (2022) found that the implementation of Green Accounting has a significant impact, though its effectiveness remains influenced by a company's commitment to consistently implementing sustainable practices. The implementation of Green Accounting can enhance the transparency and accountability of environmental information, which ultimately supports the assessment of a company's financial performance. This situation can encourage companies to adopt Accounting Conservatism by recognizing environmental costs and liabilities more cautiously in the presentation of financial statements.

H3: Green Accounting has a positive effect on accounting conservatism.

2.2.6 Conceptual Framework

Conceptually, this study analyzes the effects of Environmental Performance, Green Accounting, and Green Management on Accounting Conservatism in energy sector companies. These three independent variables are assumed to influence the degree of prudence companies exercise in presenting their financial statements. The conceptual framework of this study is illustrated in Figure 1.

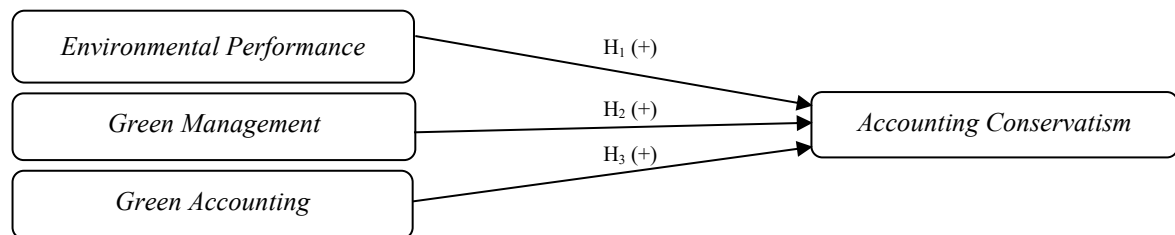


Figure 1. Research Model

2.3 Data Analysis Techniques

The data in this study were analyzed using panel data regression with the aid of EViews 13 software. Panel data regression is an analytical method that combines time-series and cross-sectional data to test the relationship between independent and dependent variables across multiple companies over several observation periods. The initial stage of the analysis involved descriptive statistics to provide an overview of the characteristics of the research data. Next, the most appropriate panel data regression model was selected through three tests: the Lagrange Multiplier (LM) test, the Hausman test, and the Chow test. These tests were used to determine the most appropriate regression model among the Common Effects Model (CEM), Fixed Effects Model (FEM), and Random Effects Model (REM). After the panel data regression model was selected, the study proceeded with testing classical assumptions, specifically the multicollinearity test, to determine whether there were strong relationships or correlations among the independent variables in the regression model. Next, hypothesis testing was conducted, including the coefficient of determination (R^2) test, the F-test, and the t-test. The coefficient of determination (R^2) test was used to determine the extent to which the variables Environmental Performance, Green Management, and Green Accounting explain the variation in Accounting Conservatism. The F-test was used to determine whether all independent variables simultaneously influence Accounting Conservatism. Meanwhile, the t-test was used to determine the partial effect of each independent variable on Accounting Conservatism. The regression model used in this study can be formulated as follows:

$$AC_{it} = \alpha + \beta_1 EP_{it} + \beta_2 GM_{it} + \beta_3 GA_{it} + \varepsilon_{it} \quad (3)$$

The dependent variable in this study is Accounting Conservatism, while the independent variables consist of Environmental Performance, Green Management, and Green Accounting. Environmental Performance is used to measure a company's environmental performance; Green Management is used to describe the implementation of environmental management in a company's operations; and Green Accounting is used to describe the implementation of accounting practices that take environmental aspects into account in a company's activities.

3. RESULTS AND DISCUSSION

3.1 Research Results

3.1.1 Descriptive Statistical Tests

A descriptive statistical test was conducted to provide an overview of the characteristics of each variable used in this study, including the mean, median, maximum, minimum, and standard deviation values. The results of the Descriptive Statistical test are presented in Table 4.

Table 4. Descriptive Statistical Test Results

	EP	GM	GA	CA
Mean	4.140000	0.980000	0.688950	-0.179188
Median	4.000000	1.000000	0.718750	-0.038109
Maximum	5.000000	1.000000	1.280000	0.187659
Minimum	3.000000	0.000000	0.156250	-1.908330
Std. Dev.	0.756199	0.141421	0.287303	0.459957
Observations	50	50	50	50

Based on the results of the Descriptive Statistical test in Table 4, this study used 50 observations consisting of Environmental Performance (EP), Green Management (GM), Green Accounting (GA), and Accounting Conservatism (CA). Environmental Performance has a mean value of 4.140000, with a minimum value of 3.000000 and a maximum value of 5.000000, as well as a standard deviation of 0.756199. Green Management has a mean of 0.980000, with a minimum of 0.000000, a maximum of 1.000000, and a standard deviation of 0.141421. Green Accounting has a mean of 0.688950, with a minimum value of 0.156250, a maximum value of 1.280000, and a standard deviation of 0.287303. Meanwhile, Accounting Conservatism has a mean of -0.179188, with a minimum value of -1.908330, a maximum value of 0.187659, and a standard deviation of 0.459957. These results indicate that each variable exhibits distinct characteristics and levels of data variation over the study period.

3.1.2 Lagrange Multiplier (LM) Test

The LM test is used in panel data regression analysis to determine the most appropriate estimation model between the Common Effect Model (CEM) and the Random Effect Model (REM) (Basuki, 2021). This test was developed by Breusch-Pagan and is based on the residual values from the Common Effect model. If the p-value is < 0.05 , the REM is selected; if the p-value is > 0.05 , the CEM is considered more appropriate. The results of the LM test are presented in Table 5.

Table 5. Lagrange Multiplier (LM) Test Results

	Test Hypothesis		
	Cross-section	Time	Both
Breusch-Pagan	30.92587 (0.0000)	1.709379 (0.1911)	32.63525 (0.0000)

Based on the results of the LM test in Table 5, it can be seen that the probability value for the cross-sectional chi-square test is 0.0000, which is less than the significance level of 0.05; therefore, it can be concluded that the best model is REM.

3.1.3 Hausman Test

The Hausman test was conducted to determine whether to use a Fixed Effects Model (FEM) or a Random Effects Model (REM) in estimating panel data (Basuki, 2021). This test was used to determine whether there is a relationship between the specific characteristics of each company and the independent variables in the study. If the p-value is < 0.05 , the FEM is selected; if the p-value is > 0.05 , the REM is considered more appropriate for use. The results of the Hausman test are presented in Table 6.

Table 6. Hausman Test Results

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	244.818596	3	0.0000

Based on the results of the Hausman test in Table 6, it can be seen that the probability value for the cross-sectional chi-square test is 0.0000, which is less than the significance level of 0.05; therefore, it can be concluded that the best model is the FEM (Fixed Effects Model).

3.1.4 Chow Test

The Chow test is the first step in determining the best data model, either the Fixed Effects Model (FEM) or the Common Effects Model (CEM) in panel data regression analysis (Basuki, 2021). In this study, the test was conducted to determine

whether there are differences in characteristics among companies in the energy sector during the 2020–2024 period. If the cross-section F probability value is less than 0.05, then the FEM is more appropriate.

Conversely, if the cross-section F probability value is greater than 0.05, then the CEM is more appropriate. The results of the Chow test are presented in Table 7.

Table 7. Chow Test Results

Effects Test	Statistic	d.f.	Prob.
Cross-section F	27.772932	(9,37)	0.0000
Cross-section Chi-square	102.420617		90.0000

Based on the results of the Chow test in Table 7, it can be seen that the cross-sectional chi-square probability value of 0.0000 is less than the significance level of 0.05; therefore, it can be concluded that the best model is the FEM (Fixed Effects Model). Based on the results of the model tests conducted, the FEM model emerged as the best model for analyzing panel data regression, yielding the following regression equation.

Table 8. Panel Data Regression Test Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.566584	0.263419	-2.150881	0.0381
EP	-0.033429	0.052925	-0.631627	0.5315
GM	0.532803	0.160405	3.321614	0.0020
GA	0.005287	0.114554	0.046156	0.9634

Based on the results of the panel data regression analysis in Table 8 above, the regression equation with the best-fitting model the Fixed Effects Model (FEM) is as follows:

$$Y = -0.566583824 - 0.033429EP + 0.5328030GM + 0.005287GA$$

Based on the results of the panel data regression analysis presented in Table 8, the regression equation indicates that the constant value of -0.566584 means that when Environmental Performance, Green Management, and Green Accounting are assumed to be zero, the estimated value of Accounting Conservatism is -0.566584. The regression coefficient for Environmental Performance is -0.033429, indicating that a one-unit increase in Environmental Performance is associated with a decrease in Accounting Conservatism of 0.033429 units, assuming that Green Management and Green Accounting remain constant. The negative coefficient indicates an inverse relationship between Environmental Performance and Accounting Conservatism.

In contrast, the regression coefficient for Green Management is 0.532803, indicating that a one-unit increase in Green Management is associated with an increase in Accounting Conservatism of 0.532803 units, ceteris paribus. The positive coefficient indicates a positive relationship between Green Management and Accounting Conservatism. Furthermore, the regression coefficient for Green Accounting is 0.005287, indicating that a one-unit increase in Green Accounting is associated with an increase in Accounting Conservatism of 0.005287 units, assuming that Environmental Performance and Green Management remain constant. The positive coefficient indicates a positive relationship between Green Accounting and Accounting Conservatism.

3.1.5 Multicollinearity Test

To determine whether there was a high correlation among the independent variables, namely Environmental Performance, Green Management, and Green Accounting, a multicollinearity test was conducted. The results of the Multicollinearity test are presented in Table 9.

Table 9. Multicollinearity Test Results

	EP	GM	GA
EP	1.000000	0.217549	0.472009
GM	0.217549	1.000000	0.032121
GA	0.472009	0.032121	1.000000

Based on the results of the Multicollinearity test in Table 9 indicate that none of the correlation coefficients among the independent variables exceeded 0.80, suggesting that multicollinearity is not present in the data. Therefore, the regression model used in this study is considered appropriate.

3.1.6 Coefficient of Determination (R²) Test

To determine the extent to which the independent variables can explain the variation in the dependent variable, a coefficient of determination (R²) test was conducted. The results of the Coefficient of Determination (R²) test are presented in Table 10.

Table 10. Coefficient of Determination (R^2) Test Results

Description	Score
R-squared	0.926553
Adjusted R-squared	0.902732

Based on the results of Coefficient of Determination (R^2) test in Table 10, the R-squared value was 0.926553 and the adjusted R-squared value was 0.902732. The adjusted R-squared value indicates that the independent variables, namely, Environmental Performance, Green Management, and Green Accounting are able to explain 90.2732% of the variation in the dependent variable, accounting conservatism, while the remaining 9.7268% is explained by other variables not examined in this research model. This value indicates that the regression model used in this study is highly effective in explaining the variation in accounting conservatism based on the independent variables examined.

3.1.7 F Test

To examine whether the independent variables simultaneously have a significant effect on the dependent variable, an F-test was conducted. The results of the F-test are presented in Table 11.

Table 11. F Test Results

Description	Score
F-statistic	38.89693
Prob(F-statistic)	0.000000

Based on the results of the F-test in Table 11, the F-statistic value was 38.89693 with a Prob(F-statistic) value of 0.000000. This probability value is smaller than the significance level of 0.05; therefore, it can be concluded that Environmental Performance, Green Management, and Green Accounting simultaneously have a significant effect on Accounting Conservatism. Thus, the regression model used in this study is suitable for explaining the relationship between the independent variables and the dependent variable.

3.1.8 t Test

To examine the partial effect of each independent variable on the dependent variable, a t-test was conducted. The results of the t-test are presented in Table 12.

Table 12. t Test Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.566584	0.263419	-2.150881	0.0381
EP	-0.033429	0.052925	-0.631627	0.5315
GM	0.532803	0.160405	3.321614	0.0020
GA	0.005287	0.114554	0.046156	0.9634

Based on the results of the t-test in Table 12, Environmental Performance has a probability value of $0.5315 > 0.05$ with a regression coefficient of -0.033429, indicating a negative direction of influence but no significant effect on Accounting Conservatism. Thus, H1 is rejected. Green Management has a p-value of $0.0020 < 0.05$ with a regression coefficient of 0.532803, indicating a positive direction of influence and a significant effect on Accounting Conservatism. Thus, H2 is accepted. Furthermore, Green Accounting has a p-value of $0.9634 > 0.05$ with a regression coefficient of 0.005287, indicating a positive direction of influence but no significant effect on Accounting Conservatism. Thus, H3 is rejected.

3.2 Discussion

3.2.1 The Effect of Environmental Performance on Accounting Conservatism

Based on the results of the panel data analysis, it can be that Environmental Performance has a p-value of $0.5315 > 0.05$ with a regression coefficient of -0.033429. This indicates that environmental performance does not have a significant effect on accounting conservatism; therefore, the first hypothesis is rejected. A negative regression coefficient indicates that an increase in environmental performance tends to be followed by a decrease in accounting conservatism; however, this effect is not statistically significant. This suggests that a company's environmental performance has not yet become a factor that directly influences its policies regarding the application of accounting conservatism. Companies with good environmental performance do not necessarily apply a higher degree of accounting conservatism in preparing their financial statements. This may occur because environmental performance is more oriented toward achieving and managing environmental aspects, whereas accounting conservatism relates to a company's policies regarding the cautious recognition and measurement of financial information. Furthermore, differences in how companies manage environmental aspects may also explain why environmental performance has not yet been able to exert a significant influence on accounting conservatism. Given these results, it can be concluded that this study aligns with the research by Lorenza & Ingriyani (2025), which states that environmental performance has no effect on accounting conservatism.

3.2.2 The Effect of Green Management on Accounting Conservatism

Based on the results of the panel data test, it can be that Green Management has a p-value of $0.0020 < 0.05$ with a regression coefficient of 0.532803. This indicates that green management has a positive and significant effect on accounting conservatism; therefore, the second hypothesis is accepted. A positive regression coefficient indicates that the better a company implements green management, the higher the level of accounting conservatism applied. The implementation of green management can also increase a company's awareness of various risks arising from operational activities, including environmental risks and costs associated with environmental management. Awareness of these risks can encourage companies to recognize potential losses more cautiously, thereby aligning with the principle of accounting conservatism. Thus, the better the implementation of green management, the greater the tendency for companies to apply conservatism in their financial reporting. This is also consistent with research conducted by Paneka & Amanah (2025), which states that green management as measured by ISO 14001 has an effect on accounting conservatism.

3.2.3 The Effect of Green Accounting on Accounting Conservatism

Based on the results of the panel data regression test, Green Accounting has a coefficient of 0.005287 and a p-value of 0.9634. A p-value greater than 0.05 indicates that Green Accounting does not have a significant effect on Accounting Conservatism; therefore, the research hypothesis is rejected. Although the relationship is positive in direction, the effect of Green Accounting on Accounting Conservatism is very small and not statistically significant. This suggests that environmental disclosures based on GRI 300 have not yet become a factor that directly determines a company's application of accounting conservatism. GRI 300 disclosures are more oriented toward transparency regarding a company's environmental activities and impacts, whereas accounting conservatism relates to a company's prudence in recognizing and measuring revenue, assets, liabilities, and expenses. Therefore, a high level of Green Accounting disclosures does not necessarily lead to an increase in the application of accounting conservatism. Thus, the results of this study indicate that the adoption of green accounting has not yet become a determining factor in a company's level of accounting conservatism, which is consistent with the findings by Efria et al. (2023). Although the direction of the coefficient indicates a positive relationship, this effect is not strong enough to have a significant impact on accounting conservatism.

4. CONCLUSION

Based on the research findings, it can be concluded that green practices comprising Environmental Performance, Green Management, and Green Accounting have a significant joint (simultaneous) effect on Accounting Conservatism among energy sector companies listed on the Indonesia Stock Exchange from 2020 to 2024, although their partial effects differ considerably across the three dimensions. Partially, only Green Management has a significant individual effect, while Environmental Performance and Green Accounting do not. The research results indicate that Environmental Performance does not have a significant effect on accounting conservatism, suggesting that a company's environmental performance as measured by its PROPER rating does not directly determine the level of caution the company exercises in preparing its financial statements. Furthermore, Green Management has a positive and significant effect on accounting conservatism, indicating that companies implementing an environmental management system through ISO 14001 tend to pay greater attention to environmental risks and potential liabilities arising from operational activities, thereby encouraging more conservative financial reporting. Meanwhile, Green Accounting does not have a significant effect on accounting conservatism, indicating that the level of environmental information disclosure based on GRI 300 does not directly determine a company's conservative policies in financial reporting. Although there is a positive relationship, broader environmental disclosure does not necessarily lead to increased accounting conservatism because GRI 300 disclosure is more oriented toward environmental transparency and accountability, whereas accounting conservatism relates to prudence in the recognition and measurement of financial elements. This study also offers a different perspective from some previous research, which has primarily linked Environmental Performance, Green Management, and Green Accounting to Financial Performance. Financial Performance and accounting conservatism are fundamentally interrelated because the application of conservative principles can affect the timing and magnitude of the recognition of revenue, expenses, assets, and liabilities, which in turn can ultimately influence reported financial performance. In this study, accounting conservatism is used as the dependent variable to test the three dimensions of green practices collectively among Indonesian energy sector companies, thereby providing a new perspective on whether a company's environmental practices are not only related to financial performance but also to prudence in financial reporting. The results of the simultaneous test also indicate that all three variables collectively have a significant effect on accounting conservatism, suggesting that green practices remain broadly linked to a company's financial reporting policies. Furthermore, the limited number of previous studies that directly link green practices to accounting conservatism has led discussions and comparisons of research findings to rely more heavily on studies examining the relationship between green practices and financial performance. This study is subject to several limitations. Primarily, regarding sample selection, the study was restricted to 10 energy sector companies (50 firm-year observations) that met the purposive sampling criteria, which limits the generalizability of the findings to the broader population of energy companies or to other industries. In terms of data collection, the study relies on secondary data from annual and sustainability reports, which may not fully capture the actual implementation of green practices within companies. From a measurement perspective, Green Management was

measured using a dummy variable based on ISO 14001 certification, which may not reflect the depth or quality of environmental management practices. Lastly, regarding the temporal scope, the study period (2020–2024) may not capture longer-term dynamics in the relationship between green practices and accounting conservatism. Therefore, future research is recommended to expand the sample size and sectors of companies, extend the study period, use alternative proxies to measure both accounting conservatism and green practices, and examine other variables that may explain the relationship between sustainability practices and the quality of a company's financial reporting.

5. DECLARATIONS

5.1 Author Contributions

Conceptualization: R.;

Methodology: S.;

Software: S.;

Validation: S.;

Formal Analysis: S., and R.;

Investigation: S.;

Resources: R.;

Data Curation: S., and R.;

Writing Original Draft Preparation: S.;

Writing Review and Editing: S., and R.;

Visualization: S., and R.;

All authors have read and agreed to the published version of the manuscript.

5.2 Data Availability

The data presented in this study are available on request from the corresponding author.

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5.4 Institutional Review Board Statement

Not applicable.

5.5 Informed Consent Statement

Not applicable.

5.6 Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

5.7 Generative AI and AI-assisted Technologies in The Writing Process

The authors used Generative AI to improve the writing clarity of this paper. They reviewed and edited the AI-assisted content and took full responsibility for the final publication.

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