

ANALYSIS OF ENVIRONMENTAL ACCOUNTING AND ITS CONFORMITY WITH *GLOBAL REPORTING INITIATIVE* (GRI) STANDARDS ON OIL AND GAS COMPANIES ON THE INDONESIA STOCK EXCHANGE (IDX) YEAR 2022-2024

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Abstract

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This study aims to find out whether environmental accounting in Oil and Gas Companies on the Indonesia Stock Exchange is done well, the form of environmental accounting, and the application of environmental accounting in accordance with global reporting initiative (GRI) standards. This study aims to analyze the level of sustainability reporting disclosure based on the GRI 300 environmental indicators in six companies listed on the Indonesia Stock Exchange during the 2022–2024 period. This study uses a qualitative method with content analysis techniques. Measurements are carried out using a scoring system, which is a score of 1 if an indicator is disclosed and a score of 0 if it is not disclosed. The indicators analyzed include aspects of energy (GRI 302), water (GRI 303), biodiversity (GRI 304), emissions (GRI 305), waste (GRI 306), and environmental compliance (GRI 307). The data used is secondary data obtained from the company's sustainability report and annual report.

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INTRODUCTION

Environmental pollution due to industrial operational activities continues to increase as a consequence of production activities carried out by the company. The company's awareness to pay attention to environmental impacts is still limited, most of them assume that environmental management will only increase the burden of operational costs. Environmental accounting exists as an instrument to measure and account for these costs systematically.

Budiawan (2019) found that neglect of environmental management by companies can cause long-term losses to the community around the operational area, such as damage to productive land that changes its function due to uncontrolled industrial activities. This kind of condition confirms the need for companies to allocate special charging to waste generated from their production process. The Government of Indonesia has responded to this problem through Law Number 40 of 2007 concerning Limited Liability Companies Article 74 Paragraphs 1 to 4, which requires the company to be responsible for the management of waste from its operational activities.

The Global Reporting Initiative (GRI) is an independent international organization that develops *sustainability reporting standards* to help companies communicate the impact of their business processes to the public. The GRI Standard is composed of three series, namely the Universal Standard that applies to the entire organization, the Sector Standard for specific industries, and the Topic Standard that contains specific information, including environmental topics in the GRI 300 series.

Siregar, Rasyad, and Onasis (2022) examined the application of environmental accounting in several companies and found that the form of application varies between companies, ranging from environmentally friendly policies to disclosure of material aspects such as energy, water, and biodiversity, although some companies have not consistently presented environmental cost reports. Similar findings have emerged in various other sectors, such as hospitals and plantations, which show that the implementation of environmental accounting is underway but has not fully met generally accepted accounting standards.

Based on this description, this study aims to find out whether environmental accounting in oil and gas companies on the Indonesia Stock Exchange has been done well, identify the form of its implementation, and assess its conformity with GRI standards in the 2022–2024 period.

LITERATURE REVIEW

Environmental Accounting

Environmental accounting is a concept that integrates environmental costs into the company's accounting functions. Ikhsan (2008) defines environmental accounting as a means of information for environmental management in determining environmental management facilities as well as a communication tool with the community to convey the negative impact caused by company activities. *The United States Environmental Protection Agency* (US EPA), as quoted in Ikhsan (2008), states that environmental accounting functions to identify ways to reduce or avoid environmental costs while improving the quality of the environment itself.

The objectives of environmental accounting include two main functions according to Ikhsan (2008): first, as an environmental management tool to assess the effectiveness of conservation activities and determine the cost of environmental management facilities and investments; Second, as a public communication tool to convey environmental impacts and the results of conservation activities, so that community feedback can be feedback for the company. Hansen and Mowen (2007) added that environmental cost reporting provides two important benefits, namely showing the impact of costs on the company's profitability and showing the relative amount spent for each category of environmental costs.

Standar Global Reporting Initiative (GRI)

The GRI standard is a global practice for publicly reporting economic, environmental, and social impacts. GRI-based sustainability reporting provides information on the organization's positive and negative contributions to sustainability. Environmental indicators in the GRI 300 series that are relevant to this study include energy (GRI 302), water (GRI 303), biodiversity (GRI 304), emissions (GRI 305), waste (GRI 306), and environmental compliance (GRI 307).

Previous Research

Several previous studies have shown variations in the level of conformity of environmental accounting implementation with applicable standards. Hasiara, Fitriana, and Hars (2018) found that Samarinda Medika Citra Hospital has implemented a historical cost-based waste management cost accounting stage. Susanti, Baehaqi, and Firman (2021) found that the Surabaya Haji General Hospital has implemented environmental accounting while implementing the principles of sharia maqashid. Muna (2021) recorded a conformity rate of 80% in the plantation companies studied, with the identification of environmental costs as an aspect that has not been met. Syahputra, Helmy, and Mulyani (2019) and Apriliyani, Farwitawati, and Nababan (2021) found that the level of disclosure based on GRI G4 is *partially applied* to the mining and agricultural sectors. These studies show that the suitability of the application of environmental accounting with reporting standards still varies between sectors and between companies, so it is an important basis for this study to examine the oil and gas sector in particular.

RESEARCH METHODS

This study uses a qualitative descriptive method with content analysis techniques (Sugiyono, 2017) to examine the application of environmental accounting and its conformity with GRI standards in oil and gas companies. The object of the study is all oil and gas companies listed on the Indonesia Stock Exchange for the 2022–2024 period and have issued sustainability reports, so that six companies were obtained as research samples, as presented in Table 1.

Table 1. Research Sample

Code	Company
MEDC	Medco Energi Internasional Tbk
ELSA	Elnusa Tbk
ESSA	Essa Industries Indonesia Tbk
ENRG	Energi Mega Persada Tbk
NOISE	Radiant Utama Interinsco Tbk
SURE	Super Energy Tbk

Source: www.idx.co.id, processed 2026

The data used is secondary data in the form of *sustainability reports* and annual *reports* obtained through the official website of the Indonesia Stock Exchange. Data analysis was carried out using a content analysis technique (Apriliyani, 2021), which is to give a score of 1 if a GRI 300 indicator is disclosed and a score of 0 if it is not disclosed, then calculated using the formula:

$$I = (n/k) \times 100\%$$

where I is the disclosure rate, n is the number of disclosure items that are met, and k is the maximum number of item scores. The results of the calculation are interpreted into five categories: 0% (not applied), 1%–40% (limited disclosure), 41%–75% (partially applied), 76%–99% (well applied), and 100% (fully applied).

RESULTS AND DISCUSSION

Application of Environmental Accounting in Oil and Gas Companies

Medco Energi Internasional Tbk shows a relatively comprehensive implementation of environmental accounting, reflected in consistent disclosures regarding the management of greenhouse gas emissions, waste management, energy and water efficiency, and post-operation land reclamation. Elnusa Tbk reported efforts to manage hazardous and toxic material waste, energy efficiency, and the implementation of the health, occupational safety, and environmental (HSSE) system, including a mangrove planting program of 3,900 seedlings in several of its operating units. Essa Industries Indonesia Tbk revealed that it systematically manages energy, emissions, and water consumption, accompanied by a commitment to biodiversity protection through habitat restoration and species protection.

Energi Mega Persada Tbk has disclosed compliance with environmental regulations and waste management, but its scope is still relatively limited compared to Medco Energi Internasional Tbk. Radiant Utama Interinsco Tbk focuses more on regulatory compliance and occupational safety aspects, while detailed disclosure of environmental costs and performance has not been widely presented. Super Energy Tbk revealed its environmental management and occupational safety policies, but the scope of information is still relatively simple compared to companies with larger scale operations. The difference in the level of disclosure shows that the implementation of environmental accounting in the oil and gas sector is influenced by the scale of operations, business complexity, and transparency policies of each company.

Conformance to GRI 300 Standard

The results of content analysis of six GRI 300 indicators in the 2022–2024 period are summarized in Table 2.

Table 2. GRI 300 Oil and Gas Company Disclosure Score and Index in 2022–2024

Yes	Company	2022 Score	2022 Indices	2023 Score	2023 Indices	Shoes 2024	Index 2024
1	Medco Energi Internasional Tbk (MEDC)	5/6	83,33%	5/6	83,33%	5/6	83,33%
2	Elnusa Tbk (ELSA)	4/6	66,66%	4/6	66,66%	4/6	66,66%
3	Essa Industries Indonesia Tbk (ESSA)	5/6	83,33%	5/6	83,33%	6/6	100%
4	Energi Mega Persada Tbk (ENRG)	3/6	50%	3/6	50%	2/6	33,33%



5	Radiant Utama Interinsco Tbk (RUIS)	2/6	33,33%	5/6	83,33%	5/6	83,33%
6	Super Energy Tbk (SURE)	5/6	83,33%	5/6	83,33%	5/6	83,33%

Source: data processed, 2026

The data in Table 2 show varying levels of disclosure between companies and between years. Essa Industries Indonesia Tbk recorded an increase to reach the "fully implemented" category in 2024, supported by the disclosure of environmental compliance indicators (GRI 307) that had not previously been presented in 2022 and 2023. Radiant Utama Interinsco Tbk experienced an index surge from the "limited disclosure" category in 2022 to "well implemented" in 2023 and 2024, as the disclosure of water, biodiversity, and emissions indicators increased. On the other hand, Energi Mega Persada Tbk actually experienced a decrease from 50% in 2022–2023 to 33.33% in 2024, which indicates that the company's sustainability reporting is still in the development stage and is not consistent.

The environmental compliance indicator (GRI 307) is the least disclosed aspect among all samples, only appearing in Essa Industries Indonesia Tbk (2024) and inconsistently in Energi Mega Persada Tbk. This condition is in line with the findings of Syahputra, Helmy, and Mulyani (2019) who also found variations in the depth of environmental disclosure between companies even though they are both classified as natural resources sectors. In general, companies with larger operating scales and higher stakeholder pressures, such as Medco Energi Internasional Tbk and Essa Industries Indonesia Tbk, tend to show a better level of compliance with GRI standards than companies with smaller operating scales.

CONCLUSION

This study concludes that environmental accounting in oil and gas companies on the Indonesia Stock Exchange has been applied to varying degrees. Essa Industries Indonesia Tbk achieved the highest conformity with an index of 100% in 2024, Medco Energi Internasional Tbk, Radiant Utama Interinsco Tbk, and Super Energy Tbk were in the range of 83.33%, Elnusa Tbk reached 66.66%, while Energi Mega Persada Tbk recorded the lowest index, falling from 50% in 2022–2023 to 33.33% in 2024. The application of environmental accounting in oil and gas companies generally focuses on energy, emissions, and waste aspects, while biodiversity disclosure and environmental compliance are still weak points for most sample companies.

These findings indicate the need for oil and gas companies to expand the scope of disclosure, especially in the aspects of biodiversity and environmental compliance, so that the sustainability reports produced are more transparent and fully meet the GRI 300 standards. The next research is suggested to extend the observation period or compare the oil and gas sector with other natural resource sectors to enrich the analysis of the conformity of environmental reporting with international standards.

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