Designing an Environmental Sustainability Report Model Based on Green Accounting to Support Higher Education Sustainability Performance

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Abstract. Higher education institutions play a strategic role in supporting sustainable development through responsible environmental management. Various initiatives, including energy, water, and waste management, have been implemented by many universities. However, these initiatives are often not supported by a structured environmental sustainability reporting system integrated with accounting practices. As a result, information related to environmental costs and resource utilization is not comprehensively documented, limiting universities' ability to demonstrate sustainability performance transparently in assessments like the UI GreenMetric World University Rankings. This study aims to identify the challenges in preparing environmental sustainability reports in higher education and develop a green accounting-based reporting model to integrate environmental management information with accounting approaches. Using a qualitative approach, data were collected through interviews with relevant units, literature studies, and documentation of green campus implementation. This study concludes that while report preparation at Politeknik Negeri Bali (PNB) encounters regulatory hurdles, formatting inconsistencies, human resource workload constraints, and manual data infrastructure, the adoption of a model based on the seven UI GreenMetric criteria and green accounting concepts serves as an effective strategic solution. Evaluated through Stakeholder Theory, this proposed model successfully minimizes information asymmetry and strengthens institutional legitimacy by providing transparent presentations of performance scores, national and international rankings, and explicit segregation of environmental costs from general maintenance expenses, thereby supporting decision-making processes and improving institutional sustainability performance.

Keywords: Environmental Sustainability Reporting, Green Accounting, Higher Education Institutions, Sustainability Performance, UI Green Metric.

1 Introduction

Corporate Social Responsibility (CSR) has now significantly developed at both regional and international levels and has become an essential component of business (Wulandari & Sudana, 2018). CSR serves as an important instrument in establishing corporate transparency and accountability. This is in line with the rising expectations

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of the public, government, and other stakeholders toward responsible business practices (Rahmawati et al., 2024). Sound CSR implementation enables companies to conduct their business operations more ethically and responsibly, which in turn can strengthen the relationship between the company and its stakeholders (Nopriyanto, 2024). Within the scope of higher education, CSR is commonly referred to as University Social Responsibility (USR).

Higher education institutions compete to attract the best scholars, administrative staff, international partners, projects, and donors (Kaźmierczak et al., 2025). They also strive to secure top positions in university rankings. Simultaneously, these institutions seek to meet the expectations and demands of their stakeholders (Khovrak, 2020). This process cannot succeed without relying on the concept of University Social Responsibility (USR), which impacts stakeholders, helps acquire a positive reputation, and enhances the university's competitive position (Azizi & Sassen, 2023). USR is a strategic and systemic approach to university administration. This approach is conducive to fostering cooperation and dialogue with stakeholders, promoting sustainable development, societal values and attitudes, academic values, and the development of new ideas. USR is considered an ethical administrative model that benefits both the university and society (Sadeghi-Moghadam et al., 2021).

Environmental sustainability issues have become a global concern along with the increasing impacts of climate change, environmental degradation, and natural resource exploitation. Higher education institutions hold a strategic role in supporting sustainable development through educational activities, research, and environmentally-oriented campus management. One form of tangible contribution by higher education institutions to sustainable development is through the implementation of the green campus concept. The green campus program is an initiative designed to establish a green and eco-friendly campus (Rachmadian et al., 2025). Higher education institutions manage their environment by integrating sustainability principles across all aspects of campus activities. This represents a moral, social, and legal responsibility to create a sustainable future for the campus environment (Sumpena et al., 2025). The green campus concept encourages higher education institutions to integrate sustainability principles into the management of energy, water, waste, transportation, and green open spaces.

One of the instruments used to assess the sustainability performance of higher education institutions globally is the UI GreenMetric World University Rankings, which measures university commitment to sustainability through various indicators such as environmental management, energy and climate change, waste management, transportation, as well as sustainability-related education and research (GreenMetric, 2026). When compared to other rating tools such as GREENSHIP and STARS, UI GreenMetric is the most widely utilized ranking tool by higher education institutions in Asia, Europe, and the United States (Lauder et al., 2015). Since the inception of UI GreenMetric in 2010, the number of participating higher education institutions (HEIs) has continually risen at a near-steady growth rate, whereas the growth in the number of participating countries has begun to slow down in recent years, indicating that the increase in participating universities is predominantly driven by the growing number of HEIs from countries already represented in the ranking (Atici et al., 2021).

Although various higher education institutions have implemented multiple sustainability programs, obstacles remain regarding the systematic documentation and reporting of environmental activities. Many universities have not yet developed structured environmental sustainability reports that are integrated with institutional reporting systems. Consequently, information related to resource management, environmental costs, and environmental impacts has not been comprehensively and transparently recorded. This shortfall can hinder the evaluation process of sustainability performance and reduce the effectiveness of data-driven decision-making in campus environmental management.

In the accounting context, the green accounting or environmental accounting approach can be utilized as a tool to identify, measure, and report costs and benefits associated with an organization's environmental activities (Bennet & James, 1998). The implementation of green accounting enables institutions to integrate environmental information into accounting and reporting systems, thereby enhancing transparency and accountability in environmental resource management. Nevertheless, the implementation of green accounting within higher education environments remains relatively limited, particularly in the form of systematic environmental sustainability reports that can serve as a basis for evaluating campus sustainability performance.

Politeknik Negeri Bali is one of the public higher education institutions that has not yet developed an environmental sustainability report (Pramitari et al., 2019). The implementation stages of University Social Responsibility (USR) are divided into four main phases: environmental awareness, environmental involvement, environmental reporting, and environmental audit. While the levels of environmental awareness and environmental involvement at Politeknik Negeri Bali are already relatively good, they are not yet supported by environmental reporting and environmental audits within the institution. Other higher education institutions, such as Universitas Indonesia, Universitas Trisakti, Universitas Brawijaya, and Universitas Diponegoro, have published sustainability reports as a form of commitment to environmental, energy, and social issues. In fact, the Director of Politeknik Negeri Bali has established behavioral guidelines for the Green Campus Community (Green Sivitas Kampus), as stipulated in the Decree of the Director of Politeknik Negeri Bali Number: 678/PL8/OT/2020. Furthermore, Politeknik Negeri Bali has implemented various programs to support the Green Campus Movement, such as providing IZIFILL Water Stations through a collaboration between Politeknik Negeri Bali and Danone AQUA (KPN, 2024). In the field of research, PNB has developed IoT-applied research for cacao farming in Jembrana to support green agriculture and sustainable tourism. In addition to executing various programs to support the realization of a Green Campus, PNB also participates in the UI GreenMetric World University Rankings 2025. This is a world-class Green Campus ranking program initiated by Universitas Indonesia. PNB has participated since 2023, and in the 2025 rankings, it successfully ranked 984th globally, 99th nationally, and placed among the top five most sustainable polytechnics in Indonesia (Humas, 2025).

These conditions highlight the need for a green accounting-based environmental sustainability reporting model that can systematically document environmental activities and costs. Such a model is expected to improve reporting quality,

transparency, and accountability while supporting higher education sustainability performance. Accordingly, the research questions are: (1) What are the obstacles faced by higher education institutions in preparing environmental sustainability reports? (2) How can a green accounting-based environmental sustainability reporting model be designed to support the sustainability performance of higher education institutions?

2 Methodology

This research employs a qualitative approach with a descriptive method to identify issues in environmental reporting practices within higher education institutions. Data collection was conducted through interviews with managers of relevant units, such as the environmental management unit, the planning bureau, and the finance unit, as well as through a documentary study of existing policies, institutional reports, and environmental management documents. Data analysis was performed by identifying the gaps between current environmental management practices and the requirements for structured sustainability reporting. Furthermore, the results of the analysis were used as a basis to design an environmental sustainability reporting model based on green accounting. The resulting model will include reporting components such as the identification of environmental activities, measurement of environmental costs, environmental performance indicators, and reporting mechanisms that can support the evaluation of sustainability performance in higher education. This approach is expected to produce an applicable reporting framework that higher education institutions can use as a guideline to systematically prepare environmental sustainability reports.

3 Result and Discussion

3.1 Result

Obstacles in Preparing Environmental Sustainability Reports as shown in Table 1.

Table 1. Obstacles and Solutions in Preparing Environmental Sustainability Reports

Categories of Obstacles	Obstacles Description	Solution
Regulatory Obstacle	There is no legal framework mandating higher education institutions to prepare environmental sustainability reports.	1) University leadership can issue an executive decree mandating each institutional unit to collect annual environmental data. 2) Integrating sustainability reporting into the university's Key Performance Indicators (KPIs) as articulated in the five-year Strategic Plan.
Reporting Standard Obstacle	There is currently no agreed-upon reporting standard among Indonesian higher	Higher education institutions can adopt the Global Reporting Initiative (GRI) standards or the Sustainable Development Goals (SDGs) framework for their reporting.

	education institutions for preparing environmental sustainability reports.	
Human Resource Obstacle	The limited number and capability of personnel in preparing environmental sustainability reports.	1) Universities may form a cross-functional committee through an official directive, consisting of representatives from multiple existing departments. 2) Delegating team representatives to attend official reporting standards training, such as the GRI Standards Certified Training or UI GreenMetric questionnaire submission training.
Data Infrastructure Obstacle	1) Higher education institutions have not yet adopted an integrated information system to collect and manage environmental data. 2) Environmental sustainability reports have not been published on the university website due to the extensive time required for data collection.	Higher education institutions can utilize customized Cloud-based or Google Workspace digital dashboard templates to centralize data and enable real-time access.

Designing an Environmental Sustainability Reporting Model Based on Green Accounting as shown in Table 2.

Table 2. Framework Matrix and Guidelines for Preparing Environmental Sustainability Reports

Environmental Sustainability Report Disclosure Aspects	Methodology and Reporting Guidelines
Information Source	The information presented in the Environmental Sustainability Report is sourced from data collected by the UI GreenMetric Team.
Reporting Standards	The reporting standards utilized to compile the Environmental Sustainability Report are the 17 Sustainable Development Goals (SDGs), which are already integrated into the UI GreenMetric criteria and indicators.
Higher Education Institutional Positioning	Higher education institutions can include feedback reporting information from the UI GreenMetric Secretariat, consisting of *campus sustainability scores, world ranking result summary, ranking in Indonesia*, and *performance by indicator* to determine the institution's position at both national and international levels.

Accounting treatment for Environmental Financial Data	Higher education institutions can utilize *green accounting* as the basis for the accounting treatment of environmental financial data.

3.2 Discussion

Obstacles in Preparing Environmental Sustainability Reports. Politeknik Negeri Bali faces several barriers in compiling its environmental sustainability reports, namely:

Regulatory Obstacle. There is no specific regulation requiring higher education institutions to prepare environmental sustainability reports. However, several regulations require institutions to fulfill their responsibilities for environmental management, including Law No. 23 of 1997, Law No. 25 of 2007, Law No. 32 of 2009, and PSAK No. 32 and No. 33 (A. K. Sari et al., 2023). These regulations encourage institutions to voluntarily manage and preserve the environment. One practical solution is for university leaders to issue an Executive Decree requiring each working unit to collect annual environmental data. At Politeknik Negeri Bali, the Director has appointed 15 lecturers from various departments to compile the 2025 PNB UI GreenMetric assessment document. Another strategic approach is to include Sustainability Reporting as a Key Performance Indicator (KPI) in the university's five-year Strategic Plan (Renstra).

Reporting Standard Obstacle. There is currently no standardized environmental sustainability reporting framework for higher education institutions in Indonesia. As a result, universities use different reporting formats, making cross-campus benchmarking and comparison difficult. In practice, the Global Reporting Initiative (GRI) and the Sustainable Development Goals (SDGs) are the two main frameworks commonly used. As a UI GreenMetric participant, Politeknik Negeri Bali (PNB) annually collects and submits environmental performance data. Because UI GreenMetric indicators are aligned with the 17 SDGs, this process facilitates the preparation of PNB's Environmental Sustainability Report. PNB prepared a preliminary 2024 Environmental Sustainability Report in 2025; however, it contains limited disclosure metrics, has not been formally approved or published, and is not yet available on PNB's official sustainability website.

Human Resource Obstacle. The research results reveal human resource constraints in preparing environmental sustainability reports at Politeknik Negeri Bali (PNB). The limited number of lecturers, combined with insufficient reporting skills, including English proficiency and understanding of required sustainability report components, creates a significant workload. Since 2025, PNB has established a dedicated team of lecturers from various disciplines to compile UI GreenMetric data and prepare institutional environmental sustainability reports. However, this responsibility is added to their existing duties in teaching, research, and community service without workload

adjustments. Interviews with UPA-PP staff also confirmed that limited English report-writing skills remain a major challenge.

Data Infrastructures Obstacle. Politeknik Negeri Bali (PNB) faces data infrastructure barriers because it does not yet have an integrated system for collecting and managing environmental data. Data collection is still conducted manually, resulting in lengthy processing times and the absence of published environmental sustainability reports on the university website. A practical solution is to implement a customized cloud-based or Google Workspace dashboard to centralize environmental data and provide real-time access. This system could streamline data collection and processing while reducing reporting time.

Designing an Environmental Sustainability Reporting Model for Higher Education Institutions. To develop a comprehensive environmental sustainability reporting model based on UI GreenMetric criteria, this study used interviews, literature review, and document analysis. Interviews involved PNB's UI GreenMetric team, financial staff, and the head of the Maintenance and Repair Unit (UPA-PP). The literature review compared PNB's 2024 draft sustainability report with reports from other universities, while document analysis assessed PNB's implementation across all UI GreenMetric categories.

Information Source. The literature review shows that environmental sustainability reports from Indonesian universities require data similar to that collected by PNB's UI GreenMetric Team. Aligning these data sources can streamline the preparation of PNB's sustainability reports and reduce the team's workload and reporting time. This practice supports Stakeholder Theory by promoting transparency and reducing information asymmetry between PNB and its stakeholders. Aligning UI GreenMetric data with published sustainability reports can also strengthen institutional accountability and legitimacy.

Reporting Standard. To address the second research objective, the study reviewed PNB's 2024 draft report and sustainability reports from six Indonesian universities. Based on this review, a reporting model was developed using the seven UI GreenMetric criteria: Setting and Infrastructure (SI), Energy and Climate Change (EC), Waste (WS), Water (WR), Transportation (TR), Education and Research (ED), and Governance and Digitalization (GD). These criteria were selected because PNB already collects and submits the required data annually to UI GreenMetric and because they align with SDG reporting practices used by other universities. This model reflects Stakeholder Theory by promoting transparency and environmental accountability. Integrating UI GreenMetric data into sustainability reporting can meet stakeholder information needs while reducing the data collection and reporting workload of PNB's internal team. Thus, a green accounting-based reporting system using established environmental indicators can improve both public accountability and institutional reporting efficiency (Kurniawan & Dewi, 2025).

Higher Education Institutional Positioning. Interviews with a PNB UI GreenMetric team member revealed that the Secretariat provides a feedback report containing sustainability scores, indicator performance, and national and global rankings. The proposed reporting model therefore incorporates these metrics to disclose PNB's annual sustainability achievements and enable stakeholders to benchmark its performance against other universities. This approach reflects Stakeholder Theory by reducing information asymmetry and strengthening institutional legitimacy. Including externally benchmarked UI GreenMetric results enhances transparency and accountability while addressing the information needs of students, regulators, and the community. It also strengthens PNB's environmental governance credibility and institutional reputation (Sudaryati et al., 2025).

Accounting Treatment for Environmental Financial Data. The study finds that PNB's environmental costs are currently included under general maintenance expenses. Interviews with financial staff confirmed that expenses for equipment and building maintenance, cleaning, and waste management are combined without separately reporting environmental activities and costs. This practice is consistent with Pramitari et al., (2019), which found that environmental reporting had not been explicitly incorporated into PNB's financial reports. It also differs from green accounting principles, which require environmental costs to be separately identified and disclosed. Therefore, the proposed environmental sustainability reporting model incorporates specific environmental costs based on green accounting principles. From a Stakeholder Theory perspective, separating these costs reduces information asymmetry and improves accountability. Transparent environmental financial information can meet stakeholder information needs, strengthen trust, and enhance PNB's institutional legitimacy (Larrinaga & Bebbington, 2021).

4 Conclusion

This study concludes that PNB faces regulatory, reporting standardization, human resource, and data infrastructure challenges in preparing environmental sustainability reports. A reporting model based on the seven UI GreenMetric criteria and green accounting principles provides a strategic solution to these challenges. From a Stakeholder Theory perspective, the model reduces information asymmetry and strengthens institutional legitimacy through transparent disclosure of sustainability performance, rankings, and environmental costs. Integrating existing UI GreenMetric data also meets stakeholder accountability needs while improving internal reporting efficiency and reducing workload duplication.

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