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Evaluating the Green Campus Program at Universitas Padjadjaran Using the UI GreenMetric Framework

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Abstract

This study evaluates the implementation of the Green Campus program at Universitas Padjadjaran (Unpad) and its contribution to sustainability performance based on the UI GreenMetric framework. Despite the growing adoption of sustainability initiatives among Indonesian universities, challenges remain in translating policies into effective implementation. Using a descriptive qualitative approach with an evaluative method, this research applies six UI GreenMetric indicators such as: Setting and Infrastructure, Energy and Climate Change, Waste, Water, Transportation, and Education and Research as the analytical framework. Data were collected through document analysis and institutional reports. The results indicate that Unpad demonstrates strong performance in the Energy and Climate Change as well as Education and Research indicators, reflecting significant progress in energy efficiency policies and the integration of sustainability into academic activities. However, relatively lower scores in Water and Setting and Infrastructure highlight challenges related to water management systems and the equitable distribution of green infrastructure across campuses. Supporting factors include institutional commitment, policy integration, and participation in sustainability rankings, while constraints involve unequal distribution of program across campuses, financial capacity and budget allocation, as well as infrastructure limitations. Overall, the findings indicate that the Green Campus program has shown a meaningful contribution to strengthening Unpad's sustainability performance, although further optimization is required to ensure more comprehensive and balanced implementation across all indicators.

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1. INTRODUCTION

The intensifying global commitment toward sustainability is reflected in international initiatives such as the Sustainable Development Goals (SDGs) and the Paris Agreement, which establish sustainability not merely as a moral discourse but as a global development standard. These commitments require the involvement of multiple sectors, including higher education institutions, which play a strategic role in generating human capital, research, and innovation to support sustainable development. Universities are therefore positioned as agents of change and miniature representations of society, where academic and operational activities reflect broader social dynamics and environmental responsibilities.

Within this context, the concept of Green Campus emerges as an integrated approach to creating environmentally friendly and sustainable university environments. Green Campus can be

defined as a campus developed with consideration of environmental impacts so that its operational activities align with environmental preservation (Haruna, 2025). Furthermore, Green Campus is described as a community that improves energy efficiency, conserves resources, and enhances environmental quality through sustainability-oriented education while promoting a healthy learning environment (Humblet, 2008). These initiatives are expected to contribute significantly to strengthening sustainability performance in higher education institutions.

The effectiveness of Green Campus implementation is closely related to the concept of sustainability performance. According to Lozano (2013), sustainability performance refers to an institution's ability to improve human and ecosystem well-being through socially, economically, and environmentally responsible actions. In the university context, sustainability performance reflects the extent to which sustainability principles are integrated into teaching, research, campus operations, and stakeholder engagement. Beyond conceptual understanding, sustainability performance measurement is defined as a systematic process of assessing, monitoring, and communicating environmental, social, and economic performance to support sustainability-oriented decision-making (Schaltegger & Wagner, 2006). It also involves collecting and analyzing sustainability-related data to be communicated through sustainability reporting (GRI, 2020), while integrating both financial and non-financial indicators to provide a comprehensive evaluation of organizational contributions to sustainable development (Hubbard, 2009).

Despite increasing institutional commitment, implementing Green Campus programs remains challenging. Research conducted at the State University of Makassar found that Green Campus implementation has not yet been optimal due to limitations in policy strategy and infrastructure support (Haruna et al., 2025). Similarly, a study at Universitas Padjadjaran identified a gap between regulatory frameworks and actual implementation practices, emphasizing the need for effective green leadership and participatory environmental communication (Sumpena et al., 2025). These findings indicate that sustainability initiatives often face managerial, structural, and coordination constraints that hinder comprehensive integration.

To evaluate sustainability performance systematically, several international frameworks have been developed. Among them, the UI GreenMetric World University Rankings is widely used in Indonesia as a benchmarking and evaluation tool. UI GreenMetric assesses university sustainability performance across six categories: Setting & Infrastructure, Energy & Climate Change, Waste, Water, Transportation, and Education & Research. The framework is considered comprehensive and accessible, enabling institutions to compare their sustainability achievements at both national and international levels. Although contextual differences between universities may affect indicator relevance, UI GreenMetric remains one of the most utilized sustainability assessment tools among Indonesian higher education institutions.

Although many universities participate in UI GreenMetric rankings, empirical studies often focus on reporting ranking positions rather than critically examining how specific Green Campus implementation practices contribute to improvements in each performance category. Prior research has frequently emphasized descriptive outcomes or perception-based assessments without systematically linking implementation depth to structured performance indicators. This reveals an important research gap: the limited evaluative analysis connecting Green Campus implementation with measurable sustainability performance outcomes.

Addressing this gap, the present study evaluates the implementation of the Green Campus program at Universitas Padjadjaran using the six UI GreenMetric indicators as an analytical framework. By examining how implementation practices correspond to performance outcomes across categories, this study aims to identify strengths, limitations, facilitating factors, and structural constraints in enhancing institutional sustainability performance. Through this evaluative approach, the research moves beyond descriptive reporting and ranking comparison, offering a structured assessment of how Green Campus initiatives substantively contribute to strengthening sustainability

performance within higher education institutions. he introduction should contain (in sequence) a general background, a review of previous literature (state of the art) as the basis for the statement of scientific novelty of the article, a statement of scientific novelty, and the research problem or hypothesis. The final section of the introduction should state the research objectives of the article. In a scientific article format, references to literature are not permitted as in a research report; instead, they should be presented in the form of a review of previous literature (state of the art) to demonstrate the scientific novelty of the article.

2. METHOD

This study employed a qualitative descriptive design with an evaluative approach to analyze the implementation of the Green Campus program and its contribution to institutional sustainability performance. The qualitative design was appropriate because the research aimed to explore implementation processes, institutional practices, and performance alignment rather than to test statistical relationships. The evaluative approach was used to assess the extent to which Green Campus initiatives corresponded to established sustainability indicators.

The research was conducted at Universitas Padjadjaran, with the unit of analysis focused on institutional-level policies and operational practices related to sustainability. Informants were selected using purposive sampling, targeting university administrators and institutional units directly involved in sustainability planning, implementation, and reporting. This sampling strategy ensured that participants possessed relevant knowledge and authority regarding Green Campus initiatives.

Data were collected through document analysis and semi-structured interviews. Document analysis included institutional sustainability reports, internal policy documents, and official submissions to the UI GreenMetric World University Rankings. Interviews were conducted using a guide developed based on the six UI GreenMetric indicators: Setting and Infrastructure, Energy and Climate Change, Waste, Water, Transportation, and Education and Research. All interviews were recorded and transcribed to ensure accuracy. The data consisted of qualitative descriptions of program implementation, institutional strategies, supporting factors, and implementation constraints. Secondary performance data from GreenMetric submissions were used descriptively to support contextual interpretation.

Data analysis followed the interactive model of Miles and Huberman (1994), consisting of three stages: data reduction, data display, and conclusion drawing and verification. First, data were reduced by selecting information relevant to Green Campus implementation and sustainability performance indicators. Second, findings were organized into thematic categories aligned with the six UI GreenMetric indicators. Finally, conclusions were drawn by comparing empirical findings with the indicator framework to evaluate alignment, strengths, and performance gaps.

3. RESULTS AND DISCUSSION

The findings reveal that the implementation of the Green Campus program at Universitas Padjadjaran has contributed to measurable improvements in sustainability performance. However, the impact remains uneven across categories assessed by the UI GreenMetric World University Rankings. Sustainability performance, as defined by Lozano (2013), reflects an institution's ability to enhance human and ecosystem well-being through socially, economically, and environmentally responsible actions . In this context, improvements in specific categories indicate partial progress in integrating sustainability principles into institutional practices.

The most consistent improvements were observed in the Energy and Climate Change (EC) and Education and Research (ED) categories. This suggests that sustainability performance increases more significantly when initiatives are institutionalized within governance structures and academic systems. Energy transition programs and curriculum integration are embedded in long-term planning and infrastructure investment, allowing their impact to accumulate and translate into scoring

improvements. From a stakeholder theory perspective (Freeman, 1984), organizational performance improves when institutional actions align with the expectations of key stakeholders and are supported by structured accountability mechanisms. In this case, the integration of energy transition programs and curriculum development indicates that sustainability initiatives are implemented in response to stakeholder demands rather than as fragmented or symbolic efforts.

However, other categories such as Waste (WS) and Transportation (TR) demonstrate slower progress despite program innovation. For example, the QR-code vehicle monitoring system represents administrative modernization; yet its measurable impact remains limited. As reflected in interview findings with the Head of Environmental Management Unit (PK3L Unpad): "The vehicle monitoring system using QR codes was planned last year, but it was only realized this year as part of improving transportation data collection." This indicates that innovation alone does not automatically enhance sustainability performance. Without consistent monitoring mechanisms, behavioral change, and cross-campus integration, operational initiatives tend to produce incremental rather than transformative impact.

On the other hand, based on interview findings, the rectorate currently allocates greater financial emphasis toward student-oriented infrastructure and academic facilities, resulting in limited large-scale investment in environmental infrastructure such as water conservation systems and transportation restructuring. This supports the interpretation that sustainability at this stage is institutionally acknowledged but not yet positioned as a dominant capital expenditure priority. Consequently, categories requiring significant infrastructure investment such as Water (WS) and Transportation (TR) show relatively limited score growth within UI GreenMetric assessments.

Another important dynamic concerns temporal strategy. With the 2026 UI GreenMetric reporting cycle approaching, the university appears to prioritize program optimization and educational initiatives such as SDGs-related activities rather than initiating new large-scale physical infrastructure projects. This reflects a pragmatic reporting strategy: improving measurable indicators through programmatic and educational interventions rather than capital-intensive transformation within a short timeframe. However, this short-term adjustment should be interpreted alongside the existence of a Green Campus roadmap extending to 2030. The presence of a long-term strategic document indicates increasing institutional seriousness. Moreover, the integration of Green Campus targets into ministerial performance indicators and competitive grant requirements strengthens the structural incentive for sustainability advancement.

Thus, the claims regarding Green Campus contributions are supported by results but must be interpreted cautiously. Improvement exists, yet it is concentrated in structurally embedded categories.

4. CONCLUSION

This study confirms that sustainability performance in higher education institutions should be understood as a staged governance process rather than an immediate outcome of program implementation. The case of Universitas Padjadjaran demonstrates that environmental transformation evolves through phases of institutional recognition, structural alignment, and gradual capital integration.

From a governance perspective, the findings indicate that the university is currently in a phase of transitional commitment, marked by formal policy recognition, the establishment of a sustainability roadmap toward 2030, increasing alignment with ministerial performance targets, and incremental improvements in UI GreenMetric scores. However, financial prioritization for large-scale environmental infrastructure remains moderate, reflecting ongoing institutional balancing between sustainability goals and core academic development needs. This condition explains the asymmetrical growth across assessment categories. Sustainability performance is therefore not solely determined by the presence of environmental programs, but by the depth of institutional integration, capital allocation commitment, and governance maturity.

The findings reposition green campus performance as an evolving strategic alignment process rather than a binary indicator of institutional seriousness. By highlighting internal prioritization dynamics and reporting strategies, this study advances sustainability governance literature within higher education contexts. It emphasizes that measurable sustainability outcomes must be interpreted alongside institutional resource sequencing and long-term strategic planning.

Nevertheless, this research is limited to a single institutional case and relies primarily on qualitative analysis supported by performance score trends. The findings cannot be generalized across all universities participating in UI GreenMetric. Future research should adopt comparative multi-institutional approaches and incorporate quantitative examination of sustainability-related capital expenditure to better capture the relationship between financial commitment and environmental performance.

Practically, strengthening financial transparency, integrating sustainability into core budget planning, and ensuring alignment between short-term reporting strategies and long-term infrastructure investment will be critical for achieving more balanced and structurally embedded sustainability outcomes in future reporting cycles.

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