# Guidelines for developing Kasem Bundit University, Thailand into a Green University according to UI Green Metric Standards and sustainable development goals (SDGs)

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**ABSTRACT**

This study aimed to develop a comprehensive framework and practical strategies for transforming Kasem Bundit University into a Green University, guided by the principles of Green U and the United Nations Sustainable Development Goals (SDGs). The research focused on improving the efficiency of energy consumption, waste management, and water resource utilization, while cultivating a strong culture of environmental responsibility among students and staff. A qualitative approach was employed, utilizing in-depth interviews with key stakeholders alongside a systematic review of documents and existing research related to Green University development. The findings indicated that transitioning Kasem Bundit University into a Green University can substantially reduce environmental impacts, lower operational costs, and foster environmentally responsible behaviors within the university community. The study proposed key recommendations, including the adoption of an integrated energy management plan, the implementation of effective waste segregation and recycling systems, and the promotion of sustainable water use practices. The results underscore the importance of systems thinking and institutional collaboration in implementing sustainable policies that adhere to international standards. The proposed model serves not only as a roadmap for Kasem Bundit University but also as a replicable guideline for other institutions of higher education aiming to achieve sustainability both locally and globally.

**Keywords:** Green University, Sustainable Development Goals (SDGs), UI Green Metric,

## Introduction

Public policy frameworks supporting sustainable development and environmental impact reduction have gained increasing global importance. The United Nations (UN) launched the

Sustainable Development Goals (SDGs) in 2015, setting 17 objectives to be achieved by 2030. These goals address critical global challenges, including poverty eradication, quality education, public health, and environmental conservation (United Nations, 2015). For higher education institutions, the SDGs offer a strategic foundation for integrating sustainability principles into institutional development.

In addition, the UI GreenMetric World University Rankings serve as a widely accepted global benchmark to assess universities' commitment to sustainability. This ranking system evaluates key indicators such as energy and climate change, waste and water management, transportation, and environmental education (UI GreenMetric, 2020). These indicators encourage universities to adopt environmentally and socially responsible practices, aligning their missions with global sustainability imperatives.

The concept of Green **University** has emerged as a transformative policy initiative recognized worldwide. It reflects a university's ability not only to minimize environmental impacts but also to contribute to sustainable economic and social development. Green Universities also act as hubs of innovation and collaboration, fostering partnerships among academic institutions, local communities, and policymakers.

In the context of global environmental challenges—ranging from industrialization and urbanization to climate change, universities play a critical role in shaping sustainable futures. They are uniquely positioned to disseminate knowledge, build awareness, and empower future generations to address sustainability issues (Lozano et al., 2015). Transitioning toward a Green University model not only enables resource conservation and cost reduction but also enhances institutional credibility and promotes sustainable practices in the broader community (Shuwaikh & Abubakar, 2008).

Kasem Bundit University has officially adopted a policy to pursue Green University status by aligning with the Green U principles and the SDGs. The initiative seeks to foster a sustainable environment by promoting energy efficiency, responsible waste and water management, biodiversity enhancement, and reduced greenhouse gas emissions. These practices aim to reduce the environmental footprint of the campus while building awareness and responsible behavior among students, faculty, and staff.

Implementing a Green University strategy brings significant institutional benefits. It results in cost savings through

improved energy and resource efficiency, while simultaneously cultivating a culture of environmental stewardship (Cortese, 2003). On a broader scale, it enables the university to participate in global sustainability networks and to serve as a model for other institutions—both in Thailand and internationally.

To achieve this transformation, a clear strategic framework and set of operational standards are necessary. This study seeks to develop such a framework for Kasem Bundit University, rooted in internationally recognized guidelines, particularly the Green U framework and UI GreenMetric indicators. These frameworks promote systemic change in university governance by integrating sustainability into planning, operations, research, and academic curricula.

By establishing evidence-based sustainability practices, the university can promote long-term institutional transformation. These practices include structured energy management, effective waste reduction, optimized water use, and enhanced environmental education and awareness. In doing so, Kasem Bundit University not only enhances its sustainable development credentials but also contributes meaningfully to national policy goals and the global SDGs.

Ultimately, this research contributes to defining a practical, scalable model for sustainable university development. It reinforces Kasem Bundit University's role as a leader in sustainability and its capacity to inspire replication and adaptation across other higher education institutions in Thailand and beyond.

**Research Objectives**

1. To design an integrated and actionable framework that supports Kasem Bundit University in its transition toward becoming a Green University, aligning with the Green U indicators and the United Nations Sustainable Development Goals (SDGs).

2. To improve the university’s operational efficiency through evidence-based strategies for energy management, waste management, and water resource utilization, ensuring measurable reductions in environmental impact.

3. To promote environmental literacy and foster a university-wide culture of sustainability among students, faculty, and staff, thereby enhancing long-term behavioral change and institutional commitment to sustainability.

4. To position Kasem Bundit University as a model of sustainable higher education in Thailand, while contributing to global sustainability efforts through adherence to SDG targets and international green university standards

**Scope of the Research**

1. Content Scope This research focuses on developing a strategic and practical framework to guide Kasem Bundit University toward becoming a Green University, based on the indicators of the UI Green Metric World University Rankings **and the** United Nations Sustainable Development Goals (SDGs)**.** The study will assess and integrate sustainable practices in the following core areas:

Energy management (e.g., use of renewable energy and energy-saving technologies), Water resource utilization (e.g., water conservation systems and reuse of non-potable water), Waste management (e.g., waste segregation, recycling programs), Environmental awareness and engagement (e.g., sustainability education, student/staff participation), Sustainable campus infrastructure and green spaces (e.g., building design, open space development).

The scope also includes the examination of policies, stakeholder engagement, and institutional readiness, with an emphasis on a holistic management approach to sustainability.

**2.** Geographical Scope The research will take place within the campuses of Kasem Bundit University**,** particularly the Romklao Campus. It will cover physical infrastructure and operational systems, including:

Academic buildings and classrooms, Administrative and office spaces, Sports facilities and green areas, Dormitories, cafeterias, and service areas. This ensures that environmental and sustainability issues are studied in an integrated, cross-functional way across all university functions and spatial domains.

3. Time Scope The research is scheduled for a 12-month period (October 2023 to September 2024), and will include:

Phase 1 (Months 1–6): Literature review, policy analysis, and both quantitative and qualitative data collection through interviews, document analysis, and on-site observations.

Phase 2 (Months 7–8): Data synthesis and content analysis using thematic and comparative methods.

Phase 3 (Months 9–12): Model and guideline development, validation with stakeholders, and preparation of policy recommendations

**Benefits of the Research**

1. The research will result in a comprehensive and adaptable framework that enables Kasem Bundit University to operationalize the Green University model, enhancing sustainability across academic, administrative, and infrastructural domains.

2. It will improve resource efficiency, particularly in energy, water, and waste management, leading to reduced environmental impacts and long-term cost savings.

3. It will foster a culture of environmental responsibility and enhance environmental literacy among students, faculty, and staff through participatory learning and engagement.

4. It will support institutional positioning and recognition at both the national and international levels, strengthening the university's profile as a leader in sustainability-driven higher education.

5. The outcomes and recommendations can be replicated or adapted by other universities seeking to align with Green U or SDG frameworks, thereby contributing to wider educational sustainability movements in Thailand and globally.

**Literature Review**

1. Concept of Green University Development The concept of a Green University refers to higher education institutions adopting sustainable practices in campus operations, governance, and education to reduce negative environmental impacts. This involves energy efficiency, sustainable water usage, waste reduction, and fostering environmental responsibility among students and staff (Alshuwaikhat & Abubakar, 2008). A Green University also integrates sustainability into curricula and research while serving as a model for broader community development.

2. Theoretical Foundations

Sustainable Development Theory The Brundtland Commission (1987) defined sustainable development as "development that meets the needs of the present without compromising the **ability** of future generations to meet their own needs." This theory underpins the United Nations' Sustainable Development Goals (SDGs), offering a universal framework that universities can use to design strategies that balance environmental, social, and economic development (United Nations, 2015).

Systems Theory Systems theory views the university as a set of interconnected subsystems (e.g., buildings, waste, energy, people) working together toward a sustainable goal (Meadows, 2008). This theory supports holistic approaches to planning, helping institutions understand feedback loops, synergies, and the long-term implications of environmental decisions (Cortese, 2003).

Social Learning Theory Social learning theory emphasizes the role of modeling and experiential engagement in shaping pro-environmental behavior.

Within Green Universities, students and staff can internalize sustainable behaviors through participation in real-world environmental initiatives and peer-led activities (Bandura, 1977).

3. Related Research and Indicators Lozano et al. (2015) emphasize that sustainability in universities must be integrated across institutional strategies, curricula, operations, and partnerships. Their study presents a model for aligning institutional practices with global sustainability frameworks like the SDGs.

The UI GreenMetric World University Rankings (Universitas Indonesia, 2020) is a global benchmarking tool that assesses universities across indicators such as setting and infrastructure, energy and climate change, waste, water, transportation, and education. This index has played a key role in promoting sustainability reporting and competition among institutions worldwide.

4. Case Studies of Green Universities University of Tokyo (Japan): Developed the "Action Plan for a Carbon-Free Campus" with a focus on solar energy, smart energy monitoring, and biodiversity restoration (University of Tokyo, 2020).

University of Copenhagen (Denmark): Set a target to cut carbon emissions by 65% by 2030, integrated sustainability into research and curriculum, and promoted green mobility (University of Copenhagen, 2019).

Monash University (Australia): Implemented the “Net Zero Initiative” featuring solar farms, smart energy grids, water reuse, and waste minimization strategies (Monash University, 2018).

University of California, Davis (USA): Achieved multiple LEED-certified buildings and installed a 14-megawatt solar farm for clean energy (University of California, Davis, 2020).

University of Nottingham (UK): Adopted comprehensive strategies including green construction, biodiversity zones, and waste minimization (University of Nottingham, 2020).

Mahidol University (Thailand): Topped UI Green Metric rankings in Thailand through solar energy, LED systems, and waste segregation programs (Mahidol University, 2021).

These case studies provide valuable models demonstrating how different cultural and regional contexts adapt sustainability frameworks effectively.

**Research Methodology**

This study employed a qualitative research methodology designed to explore and analyze processes, policies, and practices essential for transforming Kasem Bundit University into a Green University. The methodology is guided by the UI Green

Metric indicators and the United Nations Sustainable Development Goals (SDGs) framework, emphasizing sustainability in higher education institutions.

1. Research Design

The research follows a case study approach, which allows an in-depth examination of Kasem Bundit University's current practices, strengths, and areas for development in relation to sustainable university management. This design is appropriate for understanding complex systems and contextual dynamics related to environmental management in higher education.

2. Data Collection Methods

To gather rich and contextual data, the study applied the following qualitative techniques:

In-depth Interviews: Conducted with key stakeholders including university administrators, facilities management personnel, academic staff, and student representatives. These interviews aim to explore perceptions, institutional strategies, and operational challenges in implementing sustainable practices.

Document Analysis: reviews of internal reports, sustainability policies, Green U guidelines, SDG implementation strategies, and relevant university documents. These sources provide baseline data and insights into the university's current environmental performance.

On-site Observations: Conducted in various locations such as classrooms, green spaces, waste collection points, and energy use areas. This helps to validate data from interviews and documents through direct engagement with the physical environment.

3. Data Analysis

The collected data were analyzed through thematic content analysis, involving:

Coding interview transcripts and documents to identify recurring themes related to energy use, waste and water management, environmental awareness, and policy frameworks.

Triangulation of data sources (interviews, documents, and observations) to ensure credibility and validity.

Comparing findings against UI Green Metric criteria and SDG targets to assess alignment and identify gaps.

4. Research Duration and Scope

The research was conducted over a 12-month period from October 2023 to September 2024, encompassing all operational and academic zones of Kasem Bundit University, including administrative buildings, student facilities, classrooms, and recreational areas

**Synthesis of Research Findings**

Based on the data collected through interviews, document analysis, and observations, the study synthesized key findings into a comprehensive framework

for developing Kasem Bundit University into a Green University. The synthesis focused on four core operational dimensions:

1. Energy Management – Including the adoption of renewable energy technologies, energy-saving policies, and infrastructure optimization.
2. Water Resource Utilization – Incorporating water-saving technologies, efficient irrigation systems, and water reuse strategies.
3. Waste Management – Implementing systematic waste separation, promoting recycling, and reducing single-use materials.
4. Environmental Awareness and Culture – Fostering sustainability consciousness through student and staff engagement, training programs, and environmental campaigns.

These synthesized elements contribute to the formation of a practical development framework aligned with the UI Green Metric indicators and the United Nations Sustainable Development Goals (SDGs). The framework provides actionable guidelines for university administrators and stakeholders to implement sustainability practices at institutional and operational levels.

Research Findings

The research revealed several critical insights:

1. Institutional Readiness Kasem Bundit University has demonstrated a foundational commitment to sustainability, as seen in its existing policies and stakeholder awareness. However, gaps remain in implementation consistency, particularly in infrastructure upgrades and integrated sustainability planning.
2. Potential for Resource Efficiency The university can significantly improve its energy, water, and waste efficiency by adopting green technologies and optimizing existing systems. Such improvements will lead to reduced environmental impact and operational cost savings in the long term.
3. Cultural Transformation as a Key Enabler Building a culture of environmental responsibility among students and staff emerged as a central success factor. Environmental education, training programs, and role modeling by university leaders are essential to instill sustainable behaviors.
4. Holistic Management is Essential A systems-based approach that integrates sustainability into all aspects of university operations—administration, curriculum, facilities, and community engagement—is necessary for effective transformation into a Green University.
5. Scalability and Replicability The framework and lessons derived from this study offer a viable model for other

institutions seeking to align with international sustainability standards. It also supports Thailand's national policies on environmental responsibility in higher education and contributes to the broader achievement of the SDGs.

**Conclusion and Discussion**

The findings of this study confirm that transforming Kasem Bundit University into a Green University—guided by the UI Green Metric indicators and the Sustainable Development Goals (SDGs)is both feasible and impactful when approached through strategic, integrated measures. These include energy efficiency, sustainable water resource use, systematic waste management, and the promotion of an environmental conservation culture within the university community.

Importantly, the study reveals that the concept of a Green University is not merely about environmental protection but involves redefining institutional management practices to achieve long-term sustainability. Measures such as adopting renewable energy, implementing water-saving technologies, and promoting waste reduction initiatives contribute not only to lowering environmental impact but also to reducing operational costs. These findings align with the Sustainable Development Theory (Brundtland Commission, 1987), which advocates optimizing current resource use without compromising future needs.

Additionally, the Systems Theory perspective (Meadows, 2008) supports the research's holistic approach—viewing the university as an interrelated system. Success in one domain (e.g., energy efficiency) influences and supports improvements in others (e.g., cost savings and campus culture), reinforcing the idea that sustainable development must occur across all university functions, not in silos.

From the lens of Social Learning Theory (Bandura, 1977), the findings underscore the importance of modeling sustainable behaviors, engaging stakeholders in practical initiatives, and fostering peer learning. The study found that environmental awareness campaigns, participatory training, and student involvement play a key role in shifting attitudes and fostering behavioral change.

Despite the clear benefits, the research identifies a major challenge: transforming organizational culture and ingrained behaviors. Establishing a Green University demands continuous effort, long-term vision, and supportive leadership. Institutional resistance, limited awareness, and a lack of integrated policy frameworks can slow progress. Therefore, successful implementation requires:

Consistent institutional policy support, both internally and from government agencies.

Resource investment in infrastructure, such as renewable energy systems and water conservation technology.

Engagement strategies that empower faculty, staff, and students to become change agents.

The research offers a replicable framework for other universities, especially in Southeast Asia, to follow. Kasem Bundit University's case highlights how localized sustainability practices can contribute to global sustainability agendas. The study affirms that higher education institutions are not only centers of learning, but also models of sustainable behavior, capable of influencing their surrounding communities and society at large.

**Theoretical Recommendations**

The findings of this research suggest that the transformation of a university into a Green University not only improves resource management efficiency but also fosters an institutional culture of environmental awareness and responsibility. In line with this, the following theoretical frameworks are recommended to guide and support sustainable development within higher education institutions:

1. Systems Theory as a Framework for Integrated Environmental Management Systems Theory (Meadows, 2008) offers a holistic approach to understanding how different subsystems within a university—such as energy consumption, waste disposal, and water management—interact and influence one another. By applying this perspective, universities can move beyond fragmented management strategies and adopt integrated planning that recognizes the interdependence of various environmental components. This systemic view enables institutions to anticipate unintended consequences, optimize resource flows, and design more resilient sustainability initiatives.

2. Sustainable Development Theory to Shape Long-Term Institutional Vision Rooted in the Brundtland Commission's definition (1987), Sustainable Development Theory emphasizes meeting present needs without compromising future generations. This theory provides a normative foundation for universities to align their operational policies, infrastructure investments, and academic programs with sustainability principles. It encourages long-term planning and responsible resource consumption, helping institutions embed sustainability goals into their strategic vision and governance frameworks.

3. Social Learning Theory to Foster a Culture of Environmental Responsibility Based on Bandura's (1977) Social

Learning Theory, behavior change within institutions can be effectively promoted through observation, modeling, and participation. Universities should intentionally cultivate an environment where sustainable behaviors are demonstrated by faculty, staff, and student leaders. Environmental programs that involve experiential learning, peer-to-peer influence, and visible role models can reinforce positive habits and transform sustainability from policy into everyday practice. This theory is particularly effective in fostering collective engagement and shaping long-term values among members of the university community.

**Implications for Institutional Development**

These three theoretical perspectives—Systems Theory, Sustainable Development Theory, and Social Learning Theory—complement one another and provide a robust foundation for institutional change. When applied in combination, they enable universities to:

Strategically design sustainability programs that consider system-wide interactions.

Anchor sustainability in policy, planning, and academic missions.

Nurture a campus-wide culture that supports and sustains behavioral change.

Together, these theories can serve as a model framework for other institutions seeking to develop effective, evidence-based approaches toward becoming Green Universities and contributing to global sustainability goals.

**Practical Recommendations**

Based on the research findings, the following practical recommendations are proposed to guide Kasem Bundit University in its transition toward becoming a Green University in accordance with UI Green Metric and the Sustainable Development Goals (SDGs):

1. Establish a Strategic Energy Management and Monitoring System Develop an institutional energy management policy that includes the installation of energy-efficient technologies, such as LED lighting, motion-sensor lighting systems, and solar energy systems. Establish a centralized digital monitoring system to collect real-time energy usage data across university facilities. This enables continuous analysis, benchmarking, and improvement of energy efficiency performance while contributing to the reduction of carbon emissions.

2. Implement Campus-Wide Integrated Waste Management Programs: Design a waste management system that includes source separation (e.g., organic, recyclable, hazardous waste) with clearly marked disposal stations across the campus.

Launch awareness campaigns and educational signage to promote responsible waste disposal behaviors among students and staff. Incorporate digital tracking of waste volumes and types to monitor progress and identify areas for improvement.

3. Adopt Water Efficiency and Conservation Infrastructure Install low-flow water fixtures, automatic faucets, and water-efficient sanitation systems across all university buildings. Introduce rainwater harvesting systems for landscape irrigation and explore the use of greywater systems for non-potable applications. Conduct campus-wide training on water conservation practices and display water usage data in public areas to encourage behavioral change.

4. Promote Sustainability Education and Campus Engagement: Integrate sustainability content into the university curriculum across faculties and offer interdisciplinary elective courses on environmental issues. Establish student-led Green Campus Clubs and organize ongoing activities such as eco-hackathons, zero-waste campaigns, and monthly "Green Action Days." Provide incentives and recognition for sustainable behavior, including a "Green Ambassador" program for students and staff.

5. Strengthen Institutional Collaboration and Knowledge Exchange. Form formal networks with local and international universities, environmental NGOs, and government agencies to foster exchange of best practices, joint research, and co-hosted sustainability conferences. Collaborate on green pilot projects and invite external experts to evaluate and improve campus sustainability strategies. Participation in international platforms such as UI Green Metric and AASHE STARS should be encouraged for benchmarking and visibility.

These recommendations emphasize both technological implementation and behavioral transformation, ensuring that sustainability becomes embedded in the university's daily operations and culture. By institutionalizing these practices, Kasem Bundit University can establish itself as a regional model for Green University transformation and contribute meaningfully to the achievement of the SDGs.

**Future Research Recommendations**

1. Broaden Comparative Studies: Future research should include multiple universities, both domestic and international, to compare Green University development approaches and extract best practices for contextual adaptation.

2. Assess Economic Impacts Further studies should explore the long-term economic benefits of Green University initiatives, including cost

savings, funding opportunities, and value-added institutional branding.

3. Examine Environmental Behaviors Investigate the environmental attitudes and behaviors of students and staff to identify engagement factors that influence the success of sustainable campus initiatives.

4. Develop Localized Indicators Future research should formulate environmental performance indicators tailored to Thailand's cultural and ecological context to improve measurement and policy relevance.

5. Leverage Digital Technology Explore the application of digital tools (e.g., IoT, big data analytics) to enhance environmental monitoring, management efficiency, and data-driven decision-making within university systems.

Practical Recommendations for Developing Kasem Bundit University into a Green University

To advance Kasem Bundit University toward becoming a Green University, a series of integrated and actionable sustainability strategies should be adopted. In terms of energy management, the university should prioritize the installation of energy-efficient technologies, such as LED lighting and automated controls, coupled with renewable energy sources like solar panels. A centralized energy monitoring system is also essential to improve operational efficiency and reduce carbon emissions. Despite high initial costs and the need for technical expertise, this initiative can be supported by awareness-building workshops and the creation of student-led energy clubs to foster broad participation.

For waste management, the implementation of a source-segregated waste system—including designated bins for recyclables and organic waste—must be supported by campus-wide education on proper disposal practices. Engagement campaigns, such as zero-waste competitions and green product promotions, can help embed recycling behavior into daily routines. However, sustained cooperation and institutional infrastructure remain critical to long-term success.

Water conservation efforts should focus on installing water-saving fixtures and introducing rainwater harvesting systems for landscape irrigation. Promoting responsible water use through posters, social media, and student-led campaigns can build awareness and behavioral change. Although initial investments may be a constraint, these practices offer long-term cost savings and environmental benefits.

Cultivating a culture of environmental conservation is equally vital. This involves organizing participatory activities such as Green University Day, eco-project

contests, and hands-on sustainability learning programs like tree planting and waste audits. Challenges such as limited motivation or resources can be mitigated by forming environmental clubs and communication channels that empower both staff and students to take ownership of initiatives.

Finally, institutional collaboration is key. Building partnerships with other universities, NGOs, and governmental agencies can enhance knowledge exchange and joint sustainability efforts. While resource limitations may constrain collaboration, strategic networking and participation in academic conferences can open up new pathways for innovation and support

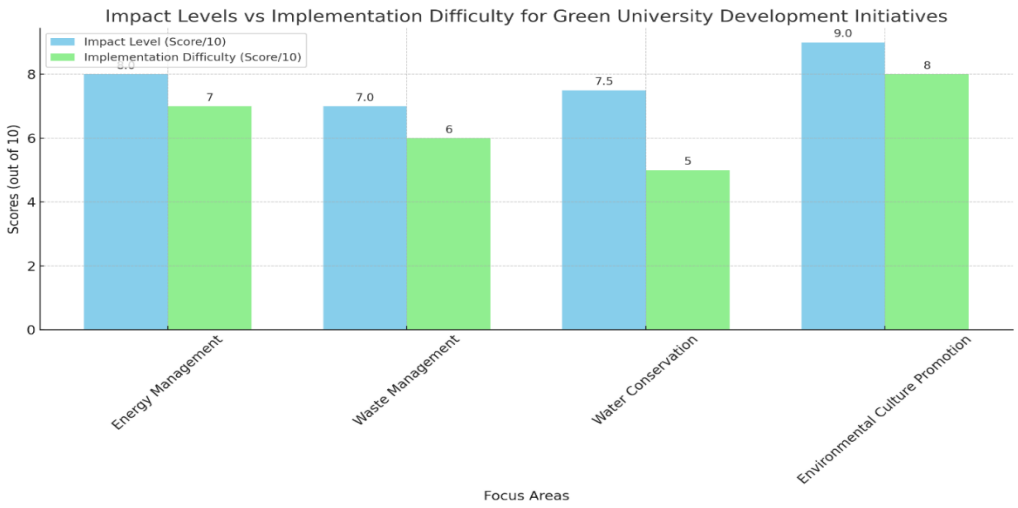


Figure 1: Comparison of Impact Levels and Implementation Difficulty Across Key Green University Development Focus Areas

The chart titled "Impact Levels vs Implementation Difficulty for Green University Development Initiatives" illustrates a comparative analysis of four key focus areas: Energy Management, Waste Management, Water Conservation, and Environmental Culture Promotion. Each area is assessed using two criteria: Impact Level and Implementation Difficulty, both measured on a scale from 1 to 10.

Key Observations:

1. Environmental Culture Promotion stands out with the highest impact level (9.0) but also reflects a high implementation difficulty (8.0). This suggests that while cultural transformation yields substantial long-term benefits in

sustainability, it requires significant effort, resources, and sustained engagement from the university community.

2. Water Conservation demonstrates a favorable impact-to-difficulty ratio, with a high impact score (7.5) but the lowest difficulty score (5.0) among all categories. This implies that water conservation initiatives may offer a "quick win" with relatively lower barriers to implementation, making it an ideal starting point for institutional change.

3. Energy Management scores 8.0 in impact and 7.0 in difficulty, indicating that although the benefits are considerable, such as cost savings and carbon reduction, the operational complexity and investment requirements are moderate to high.

4. Waste Management ranks 7.0 in impact and 6.0 in difficulty, reflecting a balanced opportunity where structured policies and community engagement can drive sustainable waste behavior with manageable implementation challenges.

Strategic Implications:

Prioritization: Based on this comparison, the university may prioritize Water Conservation and Waste Management in the short term to build momentum and showcase measurable success.

Long-Term Focus: Environmental Culture Promotion should be treated as a strategic long-term goal requiring dedicated leadership, incentive mechanisms, and integration with educational programs.

Systemic Integration: All four areas are interrelated and should be implemented as part of a broader systems approach aligned with the UI Green Metric indicators and SDGs.

Data Source and Reliability:

The scores presented are based on expert interviews, institutional observations, and content analysis of policy documents. To enhance validity, triangulation was applied across data sources, and interpretations were reviewed against existing best practices in Green University initiatives.

**Policy Matrix for Green University Development**

This policy matrix provides a strategic overview of the five key areas essential to developing Kasem Bundit University into a Green University. It outlines the corresponding actions, enabling and hindering factors, and strategies for engaging stakeholders to ensure successful and sustainable implementation

**Table 1**: Policy Matrix for the Development of Kasem Bundit University into a Green University

| Strategic Area | Key Actions/Policy Direction | Supporting Factors | Challenges/Barriers | Community Engagement Strategy |
|---|---|---|---|---|
| 1. Sustainable Energy Management | Implement LED lights, solar panels, and energy monitoring systems | Institutional support; availability of technology | High initial cost; technical maintenance | Seminars, student energy clubs, awareness campaigns |
| 2. Efficient Waste Management | Introduce waste segregation, reduce packaging, promote reuse/recycle | Existing waste facilities; environmental campaigns | Behavioral resistance; lack of enforcement | Recycling competitions, awareness workshops, student clubs |
| 3. Sustainable Water Resource Utilization | Water-saving fixtures, rainwater harvesting, reduce water use | Availability of space; awareness of water scarcity | Investment costs; usage habits | Poster campaigns, contests, green idea sharing |
| 4. Environmental Conservation Culture | Green events, participatory projects (e.g., tree planting, green days) | University mission alignment; interest groups | Low student/staff motivation; time limitations | Volunteer networks, student-led green initiatives |
| 5. Networking and Collaboration | Partner with NGOs, government, and other Green Universities | Shared goals, policy incentives | Resource constraints; inconsistent cooperation | Joint activities, collaborative research, knowledge excha |

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