

Greening the Campus: Stakeholders' Insights on Sustainability Practices in a Chinese Higher Education Institution

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ABSTRACT

Universities play a vital role in advancing sustainability by integrating environmental responsibility into teaching, research, operations, and community engagement. This study examined stakeholders' insights on the implementation and effectiveness of green campus initiatives in a private higher education institution in China. Using a descriptive-correlational design, data were gathered from 210 faculty members, administrative staff, and students to assess the extent of implementation, awareness, and satisfaction with sustainability practices. Results revealed that while operational initiatives—such as waste management, energy conservation, and environmental education—were highly implemented, governance and policy frameworks remained moderately developed, with limited accountability mechanisms and stakeholder participation. Correlation analysis showed a significant positive relationship between awareness and satisfaction ($r = 0.64$, $p < 0.01$), yet causality cannot be inferred due to the study's cross-sectional design. Subgroup analysis indicated slight variations in perceptions across gender and stakeholder roles, suggesting differentiated engagement levels that can inform targeted interventions. The study underscores the need for stronger institutional accountability, inclusive governance, and the integration of living-lab and student-led sustainability programs to embed environmental stewardship within campus culture. Future research is encouraged to adopt longitudinal or mixed-method approaches to measure behavioral and institutional impacts of green campus initiatives.

Keywords: Green campus, sustainability governance, stakeholder perception, living-lab, higher education, China

INTRODUCTION

The pursuit of sustainability in higher education institutions (HEIs) has evolved from a peripheral initiative to a strategic imperative (Lozano et al., 2013; Sedlacek, 2013). Universities influence environmental values, model sustainable behavior, and shape policy directions through education, research, and community extension (Tilbury, 2011). As key societal actors, HEIs are increasingly expected to align institutional operations and curricula with global sustainability goals, particularly those outlined in the United Nations Sustainable Development Goals (UNESCO, 2021).

In China, the concept of *ecological civilization* has elevated sustainability from a policy aspiration to a developmental mandate, motivating universities to integrate ecological principles into campus management and culture (Zhou & Li, 2021). The Ministry of Education has promoted "Green Campus" initiatives as part of its broader environmental modernization efforts, emphasizing efficiency in resource use, waste minimization, and environmental awareness (Wu et al., 2023).

A green campus embodies efficient resource utilization, participatory environmental governance, and the integration of sustainability into teaching and research (Velazquez et al., 2006; Sonetti et al., 2019). Despite increasing adoption, several studies indicate that many Chinese universities demonstrate strong operational compliance yet weak governance and accountability frameworks (Nejati & Nejati, 2013; Zhao & Huang, 2022). Sustainability offices often exist in name but lack formal monitoring mechanisms, clear performance indicators,

and systematic stakeholder involvement in policy implementation (Li & Xu, 2022).

The success of a green campus ultimately depends on how policies are experienced and enacted by different stakeholder groups—faculty, staff, and students—who act as both implementers and beneficiaries of institutional sustainability initiatives (Bandura, 2018; Mousa & Othman, 2020). Differences in awareness and satisfaction among these subgroups can reveal important disparities in communication, participation, and sense of ownership toward sustainability goals. Understanding these nuances is critical for designing equitable and inclusive engagement strategies across campus communities.

This study therefore assessed stakeholders' perceptions of green campus practices in a private higher education institution in China. Specifically, it sought to (1) evaluate the extent of implementation of green initiatives, (2) determine stakeholders' levels of awareness and satisfaction, (3) analyze the relationships between awareness and satisfaction, and (4) examine subgroup differences across gender, department, and role to inform targeted institutional interventions.

METHODOLOGY

This study employed a descriptive–correlational design to examine relationships among stakeholders' awareness, satisfaction, and perceptions of green campus practices (Creswell & Creswell, 2018). The research was conducted in a private higher education institution in Jiangxi Province, China, recognized for its emerging sustainability initiatives under the *Green Campus* program.

A total of 210 respondents participated, comprising 90 students (42.9%), 70 faculty (33.3%), and 50 administrative staff (23.8%), selected through stratified random sampling to ensure balanced representation. Demographic data on gender, department, and stakeholder role were gathered to examine subgroup differences.

Data were collected using a structured questionnaire adapted from prior studies (Nejati & Nejati, 2013; Zhou & Li, 2021; Wu et al., 2023) covering four dimensions: *waste management*, *energy and water conservation*, *environmental education and participation*, and *institutional policy and governance*. Governance items assessed accountability mechanisms, leadership commitment, and transparency in sustainability reporting. The instrument demonstrated strong reliability (Cronbach's $\alpha = 0.91$) and content validity through expert review.

Questionnaires were administered both in print and online, with informed consent and ethical approval from the university's Research Ethics Committee. Descriptive statistics summarized implementation levels, while Pearson's r tested the relationship between awareness and satisfaction. One-way ANOVA and Tukey post-hoc tests examined subgroup variations by gender, department, and role. Qualitative responses from open-ended questions were thematically analyzed to enrich interpretation, particularly on governance and participation.

RESULTS AND DISCUSSION

Extent of Implementation of Green Campus Practices

Respondents perceived the university's sustainability initiatives as highly implemented ($M = 4.17$, $SD = 0.46$) (Table 1). Waste management ($M = 4.31$) and energy conservation ($M = 4.22$) achieved the highest means, reflecting visible operational practices such as segregation bins, recycling campaigns, and optimized lighting systems. These results support earlier studies showing that operational aspects often progress faster than policy integration in Chinese HEIs (Zhou & Li, 2021; Zhao & Huang, 2022).

However, the Institutional Policy and Governance dimension recorded a relatively lower mean ($M = 3.98$), indicating that while operational efficiency is strong, accountability and policy coherence remain underdeveloped. Interviews and qualitative feedback revealed that sustainability committees exist but lack clear mandates for monitoring, evaluation, and reporting. Respondents cited limited awareness of policy documents and the absence of annual sustainability audits. These findings echo Sedlacek (2013) and Li & Xu (2022), who argue that institutionalizing sustainability requires embedding accountability systems—such as dedicated sustainability offices and measurable performance indicators—within administrative processes.

Table 1. Descriptive Summary of Green Campus Implementation

Dimension	Mean	SD	Interpretation
Waste Management	4.31	0.51	Highly Implemented
Energy & Water Conservation	4.22	0.45	Highly Implemented
Environmental Education & Participation	4.17	0.49	Highly Implemented
Institutional Policy & Governance	3.98	0.50	Implemented
Overall Mean	4.17	0.46	Highly Implemented

The consistency across operational dimensions underscores the university's commitment to ecological practices. Still, the governance gap suggests a need for structured sustainability policies with defined accountability channels, audit systems, and transparent communication to stakeholders.

Stakeholders' Satisfaction and Awareness

Stakeholders reported high satisfaction with green campus initiatives ($M = 4.09$, $SD = 0.48$). They commended the cleanliness of campus grounds, energy-saving technologies, and campaigns promoting waste reduction. Nevertheless, qualitative feedback indicated that decision-making processes are top-down, and participation in sustainability committees or planning remains limited, particularly among students and administrative staff.

Environmental education activities were common but primarily event-based (e.g., tree planting and clean-up drives). Embedding sustainability principles into the curriculum and staff training would promote long-term behavioral transformation (Tilbury, 2011; Lozano, 2014). Respondents suggested creating sustainability-oriented student organizations and integrating environmental metrics into the university's annual reports to enhance transparency and ownership.

Correlation Between Awareness and Satisfaction

Pearson's correlation analysis revealed a significant positive relationship between awareness and satisfaction ($r = 0.64$, $p < 0.01$) (Table 2). This finding supports the social-cognitive premise that greater environmental awareness fosters stronger satisfaction and pro-environmental behavior (Bandura, 2018).

Table 2. Correlation between Awareness and Satisfaction

Variables	r	p-value	Interpretation
Awareness and Satisfaction	0.64	0.000	Significant

However, it is important to note that correlation does not imply causation. The study's cross-sectional design precludes causal inference; thus, while awareness is associated with satisfaction, longitudinal research is needed to determine whether awareness-building interventions directly enhance satisfaction and engagement over time.

Comparative Analysis across Stakeholder Subgroups

To explore subgroup variations, ANOVA tests were conducted across gender, department, and stakeholder role (faculty, staff, student). Results indicated no statistically significant overall differences ($F = 1.73$, $p = 0.18$), suggesting a broadly shared perception of sustainability practices. Nonetheless, marginal differences provided useful insights.

Faculty respondents recorded slightly higher ratings in *environmental education* ($M = 4.25$) due to direct involvement in curriculum integration. Students rated *waste management* higher ($M = 4.34$), reflecting greater exposure to visible campus initiatives. Administrative staff expressed relatively lower awareness of *policy and*

governance ($M = 3.91$), likely due to limited participation in planning and reporting processes.

Gender-based comparisons also showed that female respondents reported marginally higher satisfaction levels than males, consistent with literature suggesting stronger pro-environmental attitudes among women (Nejati & Nejati, 2013; Mousa & Othman, 2020). These subgroup insights underscore the need for differentiated communication and capacity-building programs tailored to specific stakeholder roles and contexts.

Living-Lab and Student-Led Sustainability Approaches

While operational sustainability is well-established, stakeholder feedback indicated a desire for more participatory and experiential initiatives. Embedding sustainability into living-lab models—where the campus functions as a real-world testbed for innovation—can empower students and staff to co-create and evaluate solutions.

For example, *Tongji University* and *Tsinghua University* have institutionalized living-lab projects in waste reduction, renewable energy monitoring, and circular economy design, effectively integrating research, pedagogy, and practice (Sonetti et al., 2019; Wu et al., 2023). Implementing similar student-led programs would enhance learning outcomes, strengthen ownership, and cultivate a campus-wide sustainability culture.

Conclusion and Recommendations

The findings demonstrate that the studied university exhibits strong operational performance in implementing green campus initiatives, particularly in waste management, energy conservation, and environmental education. These achievements reflect visible institutional efforts aligned with China's broader *ecological civilization* framework. However, sustainability governance and accountability mechanisms remain moderately institutionalized, with limited policy monitoring, transparent reporting, and stakeholder inclusion in decision-making processes.

The significant correlation between awareness and satisfaction ($r = 0.64$, $p < 0.01$) underscores the critical role of environmental literacy and engagement in shaping positive perceptions of sustainability initiatives. Nonetheless, causality cannot be inferred due to the study's cross-sectional design. Subgroup analysis revealed subtle but meaningful differences across gender and stakeholder roles, suggesting that sustainability awareness and satisfaction are not experienced uniformly across the campus community.

Overall, the results point to a transitional stage—where operational compliance is achieved, but governance transformation and participatory sustainability culture remain developing. This study therefore reinforces the notion that sustainable universities must progress beyond physical greening toward systemic integration of accountability, inclusivity, and continuous learning.

To strengthen its sustainability framework, the university should institutionalize a more robust governance and accountability system by establishing a sustainability office or steering committee with clear mandates for policy execution, monitoring, and annual environmental audits. Embedding sustainability indicators within strategic plans and performance reports would enhance transparency and long-term alignment with institutional goals. Inclusive engagement strategies must also be developed to address the varying needs and capacities of faculty, staff, and students through role-specific training, awareness campaigns, and collaborative green initiatives. Integrating sustainability across curricula and research programs can deepen environmental literacy and foster interdisciplinary collaboration. Furthermore, adopting a living-lab approach—where the campus serves as a testbed for innovation—can encourage student-led projects that translate sustainability concepts into practical action. Future studies are encouraged to employ longitudinal or mixed-method designs to better understand causal pathways and evaluate the long-term impact of sustainability governance reforms and participatory initiatives.

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