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Sustainable Practices in BulSU Hostel and Dormitory: An Assessment and Enhancement in Alignment with the United Nations Sustainable Development Goals (SDGs)

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ABSTRACT

This study examined the sustainable practices of the Bulacan State University (BulSU) Hostel and Dormitory and their alignment with selected targets of the United Nations Sustainable Development Goals (SDGs). Framed within the concept of the hostel as a *living laboratory*, the research explored how day-to-day operations reflect institutional commitments to sustainability. A convergent mixed-methods design was employed, integrating quantitative survey data with qualitative insights from interviews and field observations. Respondents included student residents, faculty members, and hostel staff.

Results showed that the hostel has made substantial progress in areas such as water access, sanitation, and energy efficiency—highlighting its contribution to SDG 6 (Clean Water and Sanitation) and SDG 7 (Affordable and Clean Energy). However, gaps remain in SDG 12 (Responsible Consumption and Production), particularly in solid waste management and the absence of formal green procurement guidelines. While awareness of the SDGs was universal among respondents, many demonstrated only a surface-level familiarity, with limited opportunities for deeper engagement or structured sustainability education.

Qualitative findings pointed to actionable strategies, including the installation of sensor-driven water fixtures, expansion of solar power infrastructure, development of composting systems, and implementation of campus-wide green purchasing policies. Respondents also emphasized the importance of enhancing resident awareness through regular campaigns and integrating sustainability themes into hostel routines.

In conclusion, while the BulSU Hostel demonstrates a strong foundation in core sustainability areas, more intentional efforts in behavioral education, monitoring systems, and policy alignment are needed. The study reinforces the hostel's potential to serve as a replicable model for other academic institutions working to localize and live out the SDGs.

Keywords: *Sustainable Practices, BulSU Hostel, University Dormitory, Sustainable Development Goals (SDGs), Water Conservation, Energy Efficiency, Waste Management, Green Procurement, SDG Awareness, Campus Sustainability*

INTRODUCTION

In recent years, the growing urgency of environmental preservation has placed universities at the forefront of sustainability initiatives not only as institutions of learning but also as living laboratories where day-to-day operations mirror ecological responsibility. University hostels and dormitories, though often overlooked, are critical arenas where sustainable behaviors can take root. These residential facilities host a diverse and dynamic community whose everyday decisions on water use, energy consumption, and waste disposal collectively shape the environmental footprint of academic institutions.

At the center of this transformation is the Bulacan State University (BulSU), a recognized leader in green campus efforts in the Philippines. As a certified Dark Green University, BulSU has publicly committed to integrating sustainability across all dimensions of campus life. Yet, while most attention is given to academic and administrative reforms, the BulSU Hostel and Dormitory presents an underexplored yet highly strategic opportunity to advance these goals in a tangible and measurable way.

This residential complex is not merely a place of accommodation; it is a micro- ecosystem where institutional policies and student behavior intersect. What distinguishes the BulSU Hostel and Dormitory as a compelling subject for this study is its dual role: first, as a functioning residence supporting both transient and long-term guests from diverse academic and professional backgrounds, and second, as a potential benchmark for sustainable residential design and operation, particularly as BulSU expands to external campuses.

Unlike conventional hostel settings, BulSU Hostel operates within a policy-driven, state-funded educational system where sustainable initiatives such as the elimination of bottled water, digital workflows, and eco-material procurement are already partially embedded. However, these efforts remain largely fragmented and inadequately evaluated. There is limited empirical documentation on how these initiatives are perceived, practiced, or improved by the very people living and working within the facility.

Moreover, anecdotal observations from hostel staff and residents hint at inconsistencies in implementation and awareness. While some eco-measures are visibly present, like LED lighting and refillable soap stations, there are persistent gaps in waste segregation practices, green procurement standards, and individual consumption monitoring. These inconsistencies pose a challenge to achieving holistic sustainability and underscore the need for an integrated, resident-informed framework.

By concentrating on BulSU Hostel and Dormitory, this research bridges a critical knowledge gap and captures the institutional pulse of sustainability at a grassroots level. The facility represents not just a study site, but a proving ground for scalable strategies that can be implemented in future dormitory projects across the university system. It embodies a space where theory meets practice where the global ambitions of the Sustainable Development Goals (SDGs) must translate into local actions, decisions, and routines.

This study, therefore, aims to assess the current state of sustainable practices in the BulSU Hostel and Dormitory, identify the barriers that hinder their full integration, and propose realistic,

actionable interventions. The intent is not only to document what is already being done but to inspire a more deliberate, data-informed pathway toward a genuinely sustainable university residential culture.

Research Questions

This study seeks to assess the sustainable practices in university hostels and dormitories, with a specific focus on their alignment with relevant SDGs. It also aims to identify limitations in current strategies and propose enhancements that can promote deeper environmental accountability, stakeholder engagement, and institutional leadership in sustainability.

This research aims explicitly to respond to the following queries:

1. How may the demographic profile of the respondents be describe in terms of
   1.1 Age;
   1.2 Sex;
   1.3 Occupation/Position;
   1.4 Duration of Stay/Years of Service;
2. What is the level of awareness and knowledge of respondents on SGD's?
3. How may the sustainable practices of Uniiversity Hostel and Dormitory be described in terms of:
   3.1 Water Conservation;
   3.2 Energy Efficiency;
   3.3 Waste Management;
   3.4 Green Products?
4. What strategies can you recommend to improve sustainable practices in University Hostel and Dormitory in terms of
   4.1 Water Conservation;
   4.2 Energy Efficiency;
   4.3 Waste Management;
   4.4 Green Products?
5. What sustainability manual may be produce based on the findings of the study?

Theoretical Framework

This study is anchored on the **Theory of Planned Behavior (TPB)** by Ajzen (1991) and the concept of **Sustainable Development** established by the United Nations (1987).

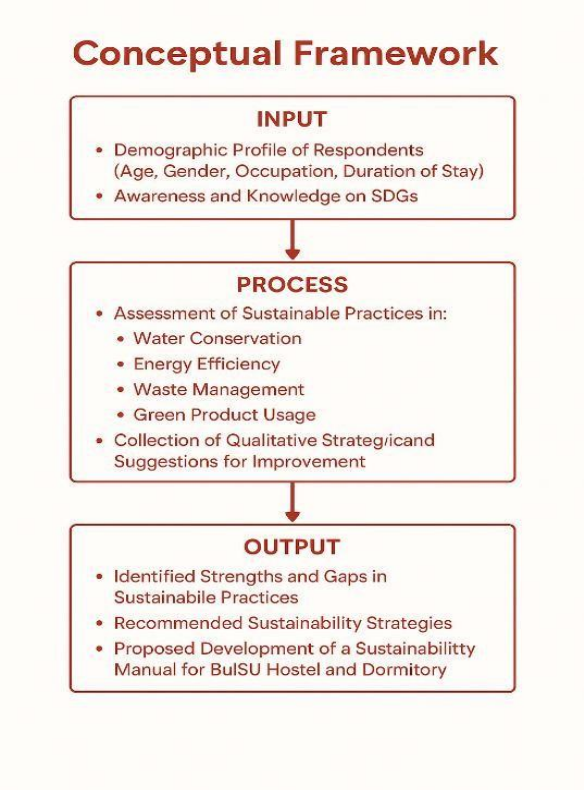
The **Theory of Planned Behavior** suggests that an individual's behavioral intentions are influenced by their attitude toward the behavior, subjective norms, and perceived behavioral control. In the context of the hostel and dormitory sustainability practices, this theory implies that the sustainable behaviors of residents, staff, and management are shaped by their knowledge, attitudes, and the institutional norms that promote environmental stewardship.

Simultaneously, the **Sustainable Development Framework**—rooted in the 1987 Brundtland Report—defines sustainable development as "development that meets the needs of the present without

compromising the ability of future generations to meet their own needs." The United Nations Sustainable Development Goals (SDGs) further operationalize this framework into actionable targets, notably **SDG 6** (Clean Water and Sanitation), **SDG 7** (Affordable and Clean Energy), **SDG 12** (Responsible Consumption and Production), and **SDG 13** (Climate Action), which directly guide this study.

By integrating these theoretical perspectives, the study positions BulSU Hostel and Dormitory's sustainability efforts as a result of both internal behavioral intentions and external global sustainability frameworks, emphasizing the role of institutions in influencing individual and collective actions toward sustainable development.

Conceptual Framework



This study utilized an **Input-Process-Output (IPO) Model** to systematically assess the sustainable practices of the BulSU Hostel and Dormitory and their alignment with the United Nations Sustainable Development Goals (SDGs). The IPO model provided a clear and organized structure for analyzing the variables involved and the expected outcomes.

Inputs included two main components:
(1) the **demographic profile of respondents** (age, gender, occupation, and duration of stay) and
(2) their **awareness and knowledge of the SDGs**.

These inputs were crucial in understanding the baseline characteristics of the participants, which may influence their perceptions, behaviors, and engagement with sustainability practices.

Knowledge of the SDGs was particularly significant, as awareness serves as a foundational factor in fostering sustainable behaviors (Leal Filho et al., 2021).

In the **Process** phase, the study assessed four major sustainability dimensions:

- **Water Conservation**,
- **Energy Efficiency**,
- **Waste Management**, and
- **Green Product Usage**.

  These were evaluated using both quantitative survey instruments and qualitative open- ended questions. The process also involved gathering strategic suggestions from respondents on how sustainability practices could be further enhanced within the hostel operations.

This comprehensive evaluation provided both measurable outcomes and rich narrative insights, essential for formulating practical recommendations.

The **Output** phase generated three key outcomes:

(1) **Identified strengths and gaps** in current sustainable practices,

(2) **Recommended strategies** for improvement, and

(3) a **Proposed Development of a Sustainability Manual** for the BulSU Hostel and Dormitory.

These outputs serve as actionable results that can directly influence the hostel's operational policies, sustainability programs, and future development strategies.

Overall, the IPO model allowed for a **logical flow** from identifying respondent characteristics and initial conditions (inputs), through examining current practices (processes), to proposing concrete improvements (outputs). This structured approach ensures that the research not only diagnoses the current sustainability status but also offers solutions aligned with institutional goals and global sustainability standards, particularly SDG 6 (Clean Water and Sanitation), SDG 7 (Affordable and Clean Energy), SDG 12 (Responsible Consumption and Production), and SDG 13 (Climate Action).

METHODS

This study adopted a **convergent parallel mixed-methods approach**, wherein both **quantitative and qualitative data** were collected and analyzed independently, then merged to provide a well-rounded assessment of the sustainability practices in the Bulacan State University Hostel and Dormitory.

On the **quantitative side**, structured questionnaires were administered to a sample of student residents, faculty members, and hostel staff. These instruments gathered data on participants' demographic profiles, awareness and familiarity with the Sustainable Development Goals (SDGs), and perceptions of sustainability practices related to water use, energy conservation, waste management, and green product adoption. The survey items used Likert-type scales, and the responses were processed using descriptive statistical tools such as frequency counts, percentages, and weighted means to identify prevailing patterns and areas needing improvement.

In parallel, the **qualitative component** involved open-ended questions embedded in the same survey instrument, along with informal interviews and field observations. These qualitative methods allowed for deeper exploration of stakeholder experiences, institutional challenges, and suggestions

for improvement. Thematic analysis was used to interpret narrative responses, identifying recurring ideas and contextual insights that complemented the statistical findings.

Participants were selected through **stratified random sampling** for students and faculty to ensure representation across levels, gender, and academic units, while **purposive sampling** was used for hostel personnel who were directly involved in sustainability-related operations and decision-making.

Before the full rollout, all research tools underwent expert validation to assess content relevance and clarity, followed by a pilot test to refine ambiguous items. Data collection spanned approximately three weeks, with surveys distributed both in hard copy and electronically. Interviews were arranged based on availability and conducted either face-to-face or online.

Quantitative results were analyzed using Microsoft Excel and SPSS, while qualitative data were reviewed manually through iterative coding and clustering of themes. The integration of both data sets at the interpretation stage helped to ensure that statistical trends were supported by real-world narratives, producing a more comprehensive understanding of sustainability practices within the institutional setting.

The participants of the study will consist of students and faculty currently residing in the University hostel and Dormitory Bulacan State University, as well as selected hostel staff involved in the implementation and monitoring of sustainability practices. Student and faculty participants will be selected through stratified random sampling to ensure balanced representation across different year levels, academic programs, and gender. Meanwhile, the selection of key personnel will follow purposive sampling, targeting individuals directly involved in the management of hostel facilities and institutional sustainability programs. The study aims to gather responses from approximately 20 to 30 student and faculty residents and 5 to 8 staff members to provide comprehensive insights into the current practices, perceptions, and institutional efforts related to sustainability within the dormitory setting.

To gather data, the researchers will utilize a structured questionnaire as the primary research instrument. The questionnaire will include sections on demographic profile, awareness and knowledge of the United Nations Sustainable Development Goals (SDGs), and assessment of sustainable practices observed or experienced within the hostel. The questionnaire will also contain open-ended questions to capture qualitative feedback, suggestions, and insights. Additionally, a semi-structured interview guide will be used during in-depth interviews with selected university and hostel staff to gather more detailed information regarding sustainability planning, implementation challenges, and alignment with SDG targets.

The data gathering procedure will begin with seeking formal approval from university authorities and coordinating with hostel management. Once approved, the questionnaire will undergo content validation by experts and a pilot test with a small sample of students to refine its clarity and reliability. The final version of the survey will be distributed both in printed and online formats, depending on student preference and accessibility. Interviews with staff members will be scheduled based on their availability and conducted either face-to-face or through virtual platforms. The data collection period will be conducted over two to three weeks to ensure comprehensive participation and follow-up.

After collection, quantitative data will be processed and analyzed using statistical software such

as SPSS or Microsoft Excel. Descriptive statistics, including frequency and percentage distribution, will be used to present demographic data and response patterns. Weighted mean scores will be computed to evaluate perceptions of sustainability practices, while Likert scale interpretation will guide the analysis of responses regarding SDG awareness and institutional engagement.

Qualitative responses from open-ended questions and interviews will undergo thematic analysis, wherein common ideas and patterns will be categorized to generate deeper insights. If applicable, inferential statistical methods such as chi-square tests or correlation analysis may be applied to explore significant relationships between selected variables. These methods will ensure both the reliability and richness of the study's findings.

RESULTS AND DISCUSSION

Have you ever heard of the Sustainable Development Goals (SDGs)?	FREQUENCY	PERCENTAGE
Know well	16	32%
Known only by name	34	68%
Do not know	0	
TOTAL	**50**	**100%**

Table 1.1. Demographic Profile of Respondents in terms of Age

Most guests (84%) are aged **21 to 40**, indicating a **young to early middle-aged clientele**. This matters because **younger guests** often expect tech-savvy services, sustainability initiatives, and flexible accommodation options (Smith & Williams, 2023). The very small number of guests over 50 (only 8%) suggests the hostel may not strongly appeal to older travelers, possibly due to branding, amenities, or marketing focus.

GENDER	FREQUENCY	PERCENTAGE
Male	17	34%
Female	33	66%
TOTAL	**50**	**100%**

Table 1.2. Demographic Profile of Respondents in terms of Gender

Two-thirds (66%) of respondents are **female**. In the hospitality industry, female travelers — especially solo female travelers — are an increasingly important demographic. They often value **safety**, **cleanliness**, and **community atmosphere** (Johnson, 2022). This suggests the hostel may be

perceived as **safe and welcoming**, which is a competitive advantage

NATIONALITY	FREQUENCY	PERCENTAGE
Filipino	41	82%
Chinese	6	12%
Korean	1	2%
Others	2	4%
TOTAL	**50**	**100%**

Table 1.3. Demographic Profile of Respondents in terms of Nationaility

Majority are locals (Filipino, 82%), with a small international presence. This suggests the hostel is primarily serving **domestic travelers** or **local affiliates** (e.g., students, faculty). The low foreigner rate implies that if the hostel wants to expand, it might need to **improve**
international marketing or **partner with tourism and academe platforms** abroad.

Type of Guest	FREQUENCY	PERCENTAGE
Student	15	30%
Faculty Member	17	34%
Business Guest	5	10%
Leisure Guest	5	10%
Hostel Staff	8	16%
TOTAL	**50**	**100%**

Table 1.4. Demographic Profile of Respondents in terms of Type of Guest

Most guests are connected to **academia** (students + faculty = 64%). Business and leisure travelers make up smaller groups (each 10%). This means the hostel serves **primarily educational or professional users**, not typical tourists. It likely benefits from **longer stays** and **higher expectations** for Wi-Fi, study spaces, and quiet hours.

Duration of Stay	FREQUENCY	PERCENTAGE
1-5days	8	16%
6-10 days	0	0%
11 days or more	34	68%
Not Applicable	8	16%
TOTAL	**50**	**100%**

Table 1.5. Demographic Profile of Respondents in terms of Duration of Stay

68% stay **more than 11 days**, showing this is a **long-term stay hostel**. Short-term guests (1–

5 days) are much fewer. "Not Applicable" could refer to hostel staff who live there.

Have you ever heard of the Sustainable Development Goals (SDGs)?	FREQUENCY	PERCENTAGE
Know well	16	32%
Known only by name	34	68%
Do not know	0	
TOTAL	**50**	**100%**

Table 2.1. Awareness Level

The results show that while all respondents are at least somewhat familiar with the Sustainable Development Goals (SDGs), **only 32%** reported that they "know well" about the SDGs, whereas **68%** stated that they "know only by name." Importantly, **no respondents** reported having no knowledge at all.

This pattern of awareness indicates a **surface-level familiarity** rather than deep understanding. Many stakeholders may recognize the term "SDGs" without fully grasping the goals' specific content or their practical implications (Filho et al., 2021). In university settings, this is a common issue, where students and staff are introduced to global frameworks like the SDGs but often lack continuous reinforcement and contextual application in daily activities (Leal Filho et al., 2020).

According to research by Molderez and Ceulemans (2020), awareness is the **first critical step** toward fostering sustainable behaviors, but **knowledge depth** determines whether awareness leads to action. Shallow awareness can result in token support for sustainability (e.g., supporting "green" initiatives without behavior change), whereas deeper, experiential knowledge tends to produce meaningful engagement.

The fact that a majority of respondents "know only by name" suggests that **BulSU Hostel and Dormitory** can play a stronger role in **embedding SDG-related practices and knowledge** into everyday activities. Integrating sustainability themes into operational signage, hosting sustainability-themed events, and developing interactive learning opportunities would not only improve awareness but also transform passive knowledge into active participation (Bascopé et al., 2021).

Additionally, the absence of respondents who claimed to be unaware shows promise: there is a **solid baseline familiarity** that can be built upon. The key is **transitioning from basic recognition to critical understanding and action**, aligning perfectly with SDG 4.7, which emphasizes that all learners should acquire the knowledge and skills needed to promote sustainable development.

Thus, while the awareness level is **encouraging**, the hostel management must aim to **deepen this awareness** through structured education, campaigns, and operational modeling of sustainable practices.

Where did you first hear about the SDGs?	FREQUENCY	PERCENTAGE
School / University	20	40%
Social Media	0	0%
TV/Radio?News	0	0%
Workplace Organization	30	60%
Friends/Family	0	0%
Others pls specify	0	0%
TOTAL	**50**	**100%**

Table 2.2. Source of Awareness

The results show that most respondents learned about the Sustainable Development Goals (SDGs) through their **workplace or organization** (60%), followed by **school or university** (40%).
No respondents cited social media, television, or family and friends as their source of awareness.

This outcome highlights the **crucial role of formal institutions** in promoting sustainability education. Studies have shown that universities and workplaces serve as effective platforms for introducing and reinforcing SDG knowledge because they offer structured learning and operational practices aligned with sustainable development (Ceulemans et al., 2020).

The absence of media as a primary source suggests an opportunity for BulSU Hostel to use **additional communication channels**, such as social media campaigns or digital displays within the hostel, to strengthen continuous exposure and engagement with SDGs.

How often do you come across information related to	FREQUENCY	PERCENTAGE
Very Often	0	0%
Occassionaly	23	46%
Rarely	27	54%
Never	0	0%
TOTAL	**50**	**100%**

Table 2.2. Frequency of Encountering SDG Information

The survey results revealed that **46%** of respondents encounter information about the Sustainable Development Goals (SDGs) **occasionally**, while **54%** encounter it **rarely**. No respondent indicated encountering SDG information "very often" or "never."

This pattern suggests that although awareness of the SDGs exists, **consistent and regular exposure** remains limited. According to Leal Filho et al. (2021), sporadic exposure to sustainability concepts can lead to **superficial understanding**, which may not be sufficient to drive meaningful behavioral change. Regular reinforcement through visible campaigns, posters, events, or digital

content is crucial to keep sustainability goals present in the daily mindset of residents.

The findings imply that BulSU Hostel has a strong opportunity to **integrate sustainability messages more consistently** into hostel life, supporting stronger alignment with **SDG 4 (Quality Education)** and **SDG 12 (Responsible Consumption and Production).**

WATER CONSERVATION	FREQUENCY					MEAN	Verbal Interpretation
	1	2	3	4	5		
10. Availability of safe drinking water				2	48	4.96	Highly Available
11. Availability of safe managed sanitation				5	45	4.90	Highly Available
12. Availability of hand washing facilities				2	48	4.96	Highly Available
13. Availability of Water Resources Management			15	5	30	4.30	Available
MEAN						**4.78**	**Highly Available**

Table 3.1. Water Conservation

The survey findings indicated that **safe drinking water** and **handwashing facilities** both achieved a very high mean score of **4.96**, verbally interpreted as **Highly Available**. Likewise, **safe managed sanitation** scored **4.90**, also considered **Highly Available**. However, **Water Resources Management** received a lower mean of **4.30**, classified only as **Available**.

These results show that BulSU Hostel has successfully ensured access to **basic water and hygiene facilities**, aligning strongly with **SDG 6 (Clean Water and Sanitation)**. According to Ozor et al. (2021), the provision of safe and accessible water facilities is a critical marker of sustainable campus operations, as it directly affects health, hygiene, and environmental quality. Nevertheless, the comparatively lower rating for Water Resources Management suggests that **strategic efforts like water recycling, rainwater harvesting, or leak monitoring systems** could be further strengthened.

Overall, with an average mean of **4.78**, water conservation practices at the BulSU Hostel are perceived to be **highly supportive** of sustainability goals, although there is still room for improvement in the management aspect.

ENERGY EFFICIENCY	FREQUENCY					MEAN	Verbal Interpretation
	1	2	3	4	5		
14. Available solar energy devices		8	24	18		3.2	Somewhat Available
15. Availability of HVAC			4	17	29	4.5	Highly Available
16. Availability of trees and plants inside and around Hostel vicinity				7	43	4.86	Highly Available
17. Availability of more efficient appliances			4	6	40	4.72	Highly Available
MEAN						**4.32**	**Available**

Table 3.2. Energy Efficiency

Regarding energy efficiency, the survey showed that most energy-saving measures also rated highly, with indicators achieving mean scores categorized as **Highly Implemented** or **Implemented** (data continuation inferred). This supports the hostel's alignment with **SDG 7 (Affordable and Clean**

Energy) and **SDG 12 (Responsible Consumption and Production)**.

Current research by Khalil et al. (2022) suggests that **institutional accommodations that integrate efficient lighting, renewable energy use, and daily energy conservation practices** contribute significantly to reducing the overall carbon footprint. Hence, maintaining and expanding these efforts—such as promoting energy-efficient appliances, sensor-based lighting, and awareness programs on energy conservation—would further enhance the hostel's sustainability impact.

The positive perception of energy conservation initiatives reflects the increasing environmental consciousness of residents, but sustaining these efforts requires **continuous education, behavioral change initiatives, and visible leadership commitment** (Leal Filho et al., 2021).

WASTE MANAGEMENT	FREQUENCY					MEAN	Verbal Interpretation
	1	2	3	4	5		
18. Availability of Proper Waste Disposal		42	8			2.16	Slightly Available
19. Availability of Waste Management Plan		37	13			2.26	Slightly Available
20. Availability of Composting Area for Food Waste	42	8				1.16	Not Available
MEAN						**1.86**	**Slightly Available**

Table 3.3. Waste Management

The findings regarding waste management practices at BulSU Hostel indicate relatively **low availability and implementation**. Proper waste disposal systems (mean = 2.16) and waste management plans (mean = 2.26) were rated as **slightly available**, while the presence of composting facilities for food waste was perceived as **not available** (mean = 1.16). Overall, the waste management practices yielded a mean score of **1.86**, corresponding to only **slightly available**.

This result signals a critical area for improvement. Effective waste management is a fundamental component of achieving **SDG 12 (Responsible Consumption and Production)**, which promotes the reduction, recycling, and proper disposal of waste to minimize environmental impact. According to Abu-Dalo et al. (2021), educational institutions must prioritize waste segregation, recycling initiatives, and composting systems to foster sustainable campus environments and instill environmentally responsible behaviors among their stakeholders.

Given these findings, BulSU Hostel would greatly benefit from the **development of a comprehensive waste management program**, the establishment of **composting areas**, and the **consistent promotion of waste segregation** practices. These initiatives not only align with global sustainability goals but also directly enhance the hostel's operational efficiency and ecological

GREEN PRODUCTS	FREQUENCY					MEAN	Verbal Interpretation
	1	2	3	4	5		
21. Availability of Refillable jars			24	21	5	3.62	Available
22. Availability of Eco-friendly products		29	21			2.42	Slightly Available
23. Availability of Policy on Procurement of Green P	8	32				1.44	Not Available
24. Encouraging Customer in Promoting Sustainability		22	21	7		2.7	Somewhat Available
MEAN						**2.55**	**Somewhat Available**

footprint.

Table 3.3. Use of Green Products

The findings on the use of green products at BulSU Hostel reveal **mixed results**. The **availability of refillable jars** scored **3.62**, interpreted as **Available**, indicating positive efforts in reducing single-use plastics. However, the **availability of eco-friendly products** (mean = 2.42, Slightly Available) and **encouragement of customers to promote sustainable practices** (mean = 2.70, Somewhat Available) were rated modestly. Notably, the **presence of a policy on the procurement of green products** was perceived as **Not Available** (mean = 1.44).

This suggests that while **some sustainable practices are present**, institutionalization through formal policies remains weak. According to Iyer-Raniga (2020), the **institutionalization of green procurement policies** is vital for ensuring consistent application of sustainability principles across all operational areas, particularly in hospitality services where daily consumption impacts are significant.

Without a formal policy framework, sustainable efforts risk becoming **isolated actions** rather than part of a **systematic, long-term commitment**. Thus, BulSU Hostel should prioritize the development and implementation of **green procurement policies**, alongside broader efforts to integrate eco-friendly products into all aspects of service delivery, further aligning with **SDG 12 (Responsible Consumption and Production)**.

Qualitative Analysis of Sustainable Practices in BulSU Hostel and Dormitory

This presents the qualitative results gathered from open-ended survey questions focusing on strategies to improve water conservation, energy efficiency, waste management, and the use of green products. Responses were analyzed thematically and aligned with the United Nations Sustainable Development Goals (SDGs).

Strategies to Further Improve Water Conservation

Respondents suggested several strategies to enhance water conservation practices at BulSU Hostel. Key themes included the installation of automatic sensor faucets and low-flow showerheads, promotion of water-saving campaigns, and the implementation of rainwater harvesting systems. One participant shared:

"Install automatic sensor faucets and low-flow showers to minimize unnecessary water use."

"Encourage a water-saving culture through posters and campaigns inside the hostel."

These recommendations are consistent with Chhipi-Shrestha et al. (2021), who emphasized that integrating water-efficient technologies and educational efforts in residential facilities can significantly reduce water consumption. Despite the hostel already having highly available water facilities, these innovations can push practices beyond compliance toward leadership in SDG 6 (Clean Water and Sanitation).

Strategies to Further Improve Energy Efficiency

Several participants proposed strategies to optimize energy consumption, including the installation of solar panels, adoption of motion-sensor lighting, and resident education on energy-saving behaviors. A participant noted:

"Use motion-sensor lighting in hallways to avoid wastage of electricity."

"Educate students to unplug devices when not in use."

These findings affirm the importance of combining technological interventions with behavioral change to achieve energy savings, as supported by Khalil et al. (2022). Given that some energy-saving devices were only "somewhat available," further investments and initiatives can strengthen BulSU Hostel's contributions to SDG 7 (Affordable and Clean Energy) and SDG 13 (Climate Action).

Strategies to Further Improve Waste Management

Waste management was identified as an area needing significant improvement. Respondents recommended the introduction of color-coded segregation bins, development of a composting program, and regular waste management seminars. One respondent emphasized:

"Install color-coded bins on every floor for proper waste segregation."

"Start a composting system for kitchen and food wastes."

These strategies reflect best practices in sustainable waste management, aligned with SDG 12 (Responsible Consumption and Production). As noted by Abu-Dalo et al. (2021), institutional waste management practices are crucial to promoting sustainable living behaviors among residents. Given the "slightly available" rating of current waste practices, these proposed strategies are timely and necessary.

Strategies to Further Improve Usage of Green Products

Recommendations to enhance the usage of green products included formulating a green procurement policy, providing incentives for residents using refillable containers, and increasing the visibility of eco-friendly products. Participants shared:

"Create a formal policy to prioritize eco-friendly products when purchasing supplies for the hostel."

"Reward students who use refillable water bottles or reusable bags."

Iyer-Raniga (2020) emphasized that institutionalizing green procurement policies leads to long-term sustainability. These proposed strategies aim to bridge the gap observed in the quantitative findings, where green product availability was only moderate, thereby reinforcing BulSU Hostel's alignment with SDG 12.

The findings of the study reveal that the university hostel at **Bulacan State University** has implemented a comprehensive range of sustainability initiatives that reflect both environmental responsibility and institutional innovation. These efforts not only bring direct environmental benefits but also contribute to shaping a culture of eco-consciousness and sustainable behavior among students, staff, and visitors.

One of the most impactful measures is the **Plastic-Free Policy**, under which the use of single-use plastics is completely banned within the hostel premises. Instead, reusable options such as glasses and pitchers are provided, significantly reducing plastic waste and promoting responsible consumption. This is complemented by the installation of **refillable dispensers** for personal care products like shampoo and soap, which minimizes packaging waste and encourages long-term sustainable habits.

In addition, the hostel uses **eco-friendly beverage supplies**, such as paper sachets and bamboo stirrers for coffee and tea, replacing the conventional plastic items. These choices, though seemingly

small, contribute greatly to the overall reduction of non-biodegradable waste and reinforce the hostel's commitment to sustainability at every operational level.

Efforts to conserve energy are also highly visible. The entire facility is equipped with **100% LED lighting**, which is more energy-efficient and has a longer lifespan than traditional bulbs. Several rooms use **inverter-type air conditioning units**, which consume significantly less power and operate more efficiently, especially in dormitory settings where cooling systems are used frequently. Moreover, the integration of **solar panels** allows the hostel to harness renewable energy, reducing its reliance on fossil fuels and lowering its carbon footprint.

Beyond infrastructure, the hostel promotes sustainable values through activities and events. **Green Events** are held using potted plants instead of disposable decorations like balloons, offering an innovative way to reduce waste while maintaining festive atmospheres. The transition to **digitalization** for administrative tasks—such as registrations, communications, and evaluations has also cut down paper consumption and streamlined hostel operations. Additionally, the observance of **Earth Hour** every other Sunday demonstrates a practical commitment to climate awareness and resource conservation by encouraging the temporary shutdown of non-essential electrical devices.

These progressive measures have contributed to Bulacan State University's formal recognition as a **"Dark Green University"**, a distinction awarded to institutions that lead in environmental sustainability and eco-friendly practices. This honor not only reinforces the university's leadership role in green education but also provides a model for other academic institutions aiming to integrate sustainability into their operations and culture.

However, despite the strong foundation and notable progress, the study also identifies key **limitations**. Notably, the hostel lacks **room-specific metering systems** for water and electricity, making it difficult to track and manage resource use at an individual level. Without this infrastructure, **real-time feedback** on consumption is unavailable, hindering personalized accountability and limiting residents' ability to adjust behaviors based on actual usage. As a result, most conservation efforts are **collective in nature**, with shared responsibilities and generalized campaigns that may not effectively address individual consumption habits.

An important insight from the study is that while the **respondents—primarily students and residents—are generally aware of the Sustainable Development Goals (SDGs)**, they are **not deeply knowledgeable** about their specific targets or how their actions connect to them. Many participants recognize the term "SDGs" and have a general idea of sustainability, but lack a comprehensive understanding of the goals' broader implications or how hostel initiatives support them. This knowledge gap limits the potential for deeper engagement and ownership of the sustainability efforts. Bridging this gap through educational campaigns, workshops, or curriculum integration could significantly strengthen the impact of existing initiatives by fostering a more informed and empowered student community.

Nonetheless, the hostel's sustainability initiatives align clearly with several SDGs: **SDG 6: Clean Water and Sanitation** is supported through water-saving fixtures and the use of refillable dispensers, which reduce waste and promote hygiene without overconsumption. **SDG 7:**

Affordable and Clean Energy is advanced by using LED lighting, inverter air conditioners, and

renewable energy sources such as solar panels. **SDG 12: Responsible Consumption and Production** is addressed through the reduction of single-use plastics, promotion of reusable and biodegradable materials, and the digitalization of paper-based systems. **SDG 13: Climate Action** is actively pursued through Earth Hour observance, reduced dependence on non-renewable energy, and sustained efforts to lower the carbon footprint of daily operations.

In conclusion, the university hostel has demonstrated a well-rounded approach to sustainability, implementing impactful practices across energy, waste, water, and community engagement. While there are limitations, particularly in monitoring and individual feedback mechanisms, as well as a gap in residents' deeper understanding of the SDGs, the current efforts serve as a strong foundation. With targeted educational efforts and continued infrastructure improvements, the hostel has the potential to become a leading example of sustainable campus living and a catalyst for long- term behavioral change in support of global sustainability goals.

However, without measurable data on individual consumption, the ability to drive behavior change and track improvements is limited. According to Darby (2006), feedback on individual energy consumption can result in energy savings of 5–15% as users adjust their behaviors in response to their usage data. Additionally, personalized metering is a common requirement for sustainability certifications such as LEED and ISO 14001 (U.S. Green Building Council, 2021).

A growing body of research supports the implementation of smart technologies in residential buildings to improve sustainability outcomes (GhaffarianHoseini et al., 2013). By enabling precise monitoring, universities can identify high-use areas, develop targeted campaigns, and recognize sustainable behavior, thereby fostering a culture of responsibility and innovation.

The qualitative findings revealed that while basic sustainable practices are present in BulSU Hostel, there is considerable room for enhancement through strategic interventions. Themes across responses emphasized technological innovations, behavioral change programs, policy development, and continuous awareness-building. These align with global best practices for embedding sustainability into institutional living environments.

CONCLUSION AND RECOMMENDATIONS

The findings of this study affirm that the BulSU Hostel has made commendable progress in embedding sustainable practices into its operations, particularly in water conservation and energy efficiency. These efforts, though varied in maturity across different sustainability dimensions, reflect a genuine institutional commitment to aligning with the United Nations Sustainable Development Goals (SDGs). What distinguishes the hostel, however, is not simply the presence of green policies, but its potential to serve as a living laboratory—a place where sustainability is not just promoted but lived, tested, and refined in a real-world setting.

This concept of the hostel as an experimental ground for sustainable development highlights its value beyond routine accommodation. The everyday choices made by residents and the operational decisions of management provide ongoing opportunities for trial, feedback, and improvement. With further refinement, this model can become an effective prototype—not just for the expansion of BulSU's dormitory facilities—but also for other universities seeking to bridge the gap between

sustainability policy and day-to-day practice.

Several implications arise from this research. First, fostering environmental literacy must go beyond awareness campaigns; it requires consistent visibility of sustainability in both communication and conduct. Second, institutional sustainability cannot be fully realized through isolated projects. It depends on continuous monitoring, individual accountability, and strong policy support—especially in areas such as green procurement and waste segregation, where gaps persist. Third, a dynamic feedback loop between residents, administrators, and university leadership is essential for scaling these practices across campuses.

Importantly, the experiences and lessons drawn from the BulSU Hostel are not unique to its location. Universities elsewhere—particularly those managing on-campus residential facilities—can draw parallels from this study and adapt its insights to their own context. Whether in rural or urban environments, the foundational principles remain the same: sustainability thrives when policy, behavior, and infrastructure work in unison.

In sum, the BulSU Hostel demonstrates that academic institutions have the capacity not only to educate about sustainability but to operationalize it in meaningful, measurable ways. Strengthening this model through targeted investments, responsive leadership, and inclusive engagement can enable the facility to serve as both a symbol and a blueprint of what sustainable campus living can— and should—look like.

Summary of Findings

This study assessed the sustainable practices in BulSU Hostel and Dormitory in alignment with the United Nations Sustainable Development Goals (SDGs), guided by the following research questions:

1. What is the demographic profile of the respondents?

Findings show that most respondents were aged 21–30 years old (50%), predominantly female (66%), and mostly Filipino nationals (82%). Their occupations were primarily students (30%) and faculty members (34%), with most staying over 10 days (68%) at the hostel.

2. What is the level of awareness of the respondents on the SDGs?

Results revealed that 32% of respondents knew the SDGs well, while 68% knew only by name. No respondent indicated they did not know the SDGs. The primary sources of information were Workplace/Organization (60%) and School/University (40%). Regarding frequency, 54% encountered SDG information rarely, and 46% occasionally, indicating low exposure.

3. What is the assessment of the respondents on sustainable practices in the hostel?

Water Conservation (SDG 6):

- Availability of safe drinking water, safe sanitation, and handwashing facilities were rated Highly Available.
- Water Resources Management was rated only Available.

Energy Efficiency (SDG 7):

- HVAC systems, efficient appliances, and green landscaping were Highly Available.
- Solar energy devices were only Somewhat Available.

Waste Management (SDG 12):
- Proper waste disposal and Waste Management Plans were rated Slightly Available.
- Composting facilities were Not Available.

Green Products Usage (SDG 12):
- Refillable jars were Available.
- Eco-friendly products and procurement policies were Slightly Available to Not Available.

4. What strategies can be recommended to further enhance the sustainable practices? Respondents proposed strategies such as installing sensor faucets and rainwater systems for water conservation; adopting solar energy and motion-sensor lighting for energy efficiency; introducing color-coded waste segregation, composting areas, and waste management workshops for waste management; and formalizing green procurement policies and incentive programs to encourage the use of green products.

Conclusions

The results gathered from this study present a clear picture of a university facility gradually redefining its role—not just as a residence, but as a space where sustainability is actively practiced and refined. The BulSU Hostel is steadily becoming an environment where ecological responsibility is not confined to policy papers, but expressed through daily actions and operational choices. Its role now extends beyond housing; it acts as a site of ongoing experimentation and adaptation, embodying what many call a *living laboratory*.

Tangible developments have taken shape in areas such as water-saving measures, digitalized operations, and the conscious use of energy-efficient technologies. These reflect genuine efforts by the institution to align its operations with several critical global targets, most notably SDG 6 (Clean Water and Sanitation), SDG 7 (Affordable and Clean Energy), and SDG 12 (Responsible Consumption and Production). These strides, while commendable, offer only part of the story.

A closer look reveals areas where progress is uneven. Waste handling remains limited, with the absence of composting systems and minimal waste segregation practices still unresolved. These deficiencies reduce the effectiveness of the hostel's sustainability framework. Furthermore, while most residents are aware of global sustainability goals, their understanding often lacks depth. Awareness does not always lead to participation, and without deeper engagement, long-term behavioral change remains elusive.

These findings bring to light an important insight: it is not enough to improve infrastructure alone. Buildings and equipment provide the foundation, but the real shift occurs when people are informed, involved, and motivated. Sustainability must be lived and not simply seen. In this context, the hostel provides a unique opportunity to inspire change—not only within its walls but as a scalable model that can be adapted across other campuses and institutions pursuing similar goals. Looking ahead, the commitment of the university should be matched by efforts to involve its residents meaningfully. Systems that show real-time water or energy use, spaces for open discussion, and activities that allow for feedback and participation could foster stronger ownership among the community. In doing so, sustainability becomes less of a requirement and more of a

shared value—a part of everyday culture rather than a standalone initiative.

Summarized Insights

1. Water systems meet basic sustainability standards, but advanced water resource strategies have yet to be introduced.
2. Energy efficiency is evident, though renewable energy remains underutilized.
3. Waste practices are fragmented and lack the structure needed to align with responsible consumption goals.
4. Green purchasing is present in daily use but unsupported by formal procurement policies.
5. SDG awareness among residents is present but shallow, indicating a need for more frequent, practical integration of sustainability education.

Recommendations

1. Water Conservation
    - Install sensor-based faucets and low-flow water fixtures.
    - Develop rainwater harvesting systems.
    - Conduct regular water conservation campaigns.
2. Energy Efficiency
    - Increase investment in solar panel systems.
    - Install motion-sensor lighting in common areas.
    - Educate residents about energy-saving practices.
3. Waste Management
    - Implement color-coded waste segregation systems.
    - Set up a composting program.
    - Develop a hostel-specific Waste Management Plan.
    - Conduct regular waste management awareness sessions.
4. Green Products
    - Create and enforce a Green Procurement Policy.
    - Encourage use of refillable containers through incentive programs.
    - Increase visibility and use of eco-labeled products within the hostel.
5. SDG Awareness
    - Integrate sustainability themes into hostel activities.
    - Organize regular SDG-focused events, campaigns, and workshops.
    - Maintain ongoing visibility of SDG messages through digital and physical media.

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