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# SUSTAINABILITY IN ACTION: ADJUDGING THE COMMITMENT TO ENVIRONMENTAL STEWARDSHIP OF COMMUNITY COLLEGES IN NEGROS OCCIDENTAL

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## Abstract

Sustainability in higher education institutions (HEIs) has become increasingly essential in fostering environmental stewardship, social equity, and economic responsibility. Community colleges, as accessible and community-rooted institutions, played a vital role in this agenda. This study aimed to assess the sustainability practices of three community colleges in Negros Occidental - LC 1, LC 2, and LC 3 - by evaluating the level of integration of sustainability efforts, institutional commitment, and the effectiveness of policy implementation. It also examined the differences among institutions in these areas. A quantitative-descriptive research design was employed. Data were collected through a structured survey administered to 575 respondents comprising faculty, administrators, and staff from the three colleges. Descriptive statistics were used to determine levels of sustainability integration, commitment, and policy provision. The Kruskal-Wallis H test was applied to assess significant differences among institutions regarding integration, institutional commitment, and policy implementation in five key areas: sustainability practices, waste management, energy conservation, water conservation, and clean air. Findings indicated a high level of sustainability integration and institutional commitment across all three colleges, with LC 1 consistently demonstrating higher scores. However, significant differences emerged in the effectiveness of institutional policies, particularly in their implementation and strategic alignment with sustainability goals. Challenges identified included limited funding and resource allocation, inconsistent faculty involvement, and varying degrees of community partnership and stakeholder collaboration. The results underscored the importance of formalizing and institutionalizing sustainability policies, improving resource support, and actively engaging both internal and external stakeholders. Strengthening conservation efforts, embedding sustainability in institutional operations, and fostering a culture of environmental and social responsibility were critical for long-term impact. The findings contributed to the ongoing discourse on sustainability in Philippine HEIs and offered practical, localized strategies for enhancing sustainability practices in community colleges.

**Keywords:** Sustainability, Higher Education Institutions, Institutional Commitment, Community Colleges, Environmental Stewardship, Policy Implementation.

## Introduction

Sustainability has emerged as a cornerstone in the transformation of higher education institutions (HEIs) globally. With pressing challenges such as climate change, biodiversity loss, and socio-economic inequalities, HEIs are increasingly expected to extend their roles beyond academic instruction to include advocacy for environmental protection and community resilience. In the Philippines, this expectation aligns with the mandates of the Commission on Higher Education (CHED) and national development goals that recognize the strategic role of HEIs in environmental stewardship.

Several studies have underscored the multifaceted contributions of HEIs to sustainability, encompassing curriculum development, operational practices, policy implementation, and community engagement (Lozano et al., 2015; Tilbury, 2011). The Sustainability Tracking, Assessment & Rating System (STARS), a transparent, self-reporting framework developed by the Association for the Advancement of Sustainability in Higher Education (AASHE), offers a comprehensive approach to evaluating institutional sustainability performance. It considers criteria across Academics, Engagement, Operations, and Planning & Administration - dimensions that are applicable across institutions regardless of size or status. Previous research shows that institutional commitment to sustainability in HEIs is often influenced by leadership support, stakeholder engagement, availability of resources, and the integration of sustainability principles into strategic plans and daily operations (Ceulemans et al., 2015; Filho et al., 2018). However, much of this research is concentrated in large, well-funded universities, leaving a research gap in understanding how smaller, local, and community colleges - particularly in developing countries - adapt and operationalize sustainability frameworks like STARS.

Negros Occidental, a province known for its environmental vulnerabilities and active local

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governance, hosts several community colleges that play a critical role in providing accessible education while contributing to local development. Despite their limited resources, these institutions have the potential to model grassroots sustainability practices that are contextually appropriate and impactful.

This study seeks to adjudge the commitment to environmental stewardship among three local colleges in Negros Occidental: LC1, LC2, and LC3, through the lens of the STARS framework. By examining their policies, programs, and institutional behaviors, the research aims to (1) assess their sustainability practices, (2) identify strengths and areas for improvement, and (3) provide evidence-based recommendations for strategic sustainability planning tailored to the context of local colleges. In doing so, this study bridges the literature gap on sustainability practices in underrepresented HEIs and contributes to the broader discourse on inclusive and localized approaches to environmental stewardship in Philippine higher education.

## Methodology

This section presents the research design, population, and sampling technique utilized in the study, which centered on three community colleges in Negros Occidental: LC 1, LC 2, and LC 3.

### Research Design

This study utilized a quantitative descriptive research design, employing both descriptive and comparative approaches to assess the sustainability initiatives of community colleges in Negros Occidental. The descriptive component examined the integration of sustainability efforts across the social, environmental, and economic dimensions and institutional commitment to sustainability (Creswell & Creswell, 2018; Kumar, 2019). The comparative component analyzed variations in sustainability efforts and institutional commitment among LC 1, LC 2, and LC 3 (Saunders, Lewis, & Thornhill, 2019).

Data were gathered through structured survey questionnaires administered to four groups of respondents: students, faculty members, non-teaching staff, and institutional heads. A validated questionnaire was administered to 575 respondents across the three institutions. Mean scores were used to measure the extent of sustainability integration, interpreted using the following scale:

**Table 1: Mean Score Interpretation**

| Mean Scores | Interpretation |
|---|---|
| 1.00-1.81 | Very Low |
| 1.82-2.60 | Low |
| 2.61-3.40 | Moderate |
| 3.41-4.20 | High |
| 4.21-5.00 | Very High |

### Respondents and Sampling Technique

The study involved 575 respondents drawn from LC 1, LC 2, and LC 3. Participants included students, faculty members, non-teaching staff, and program heads/administrators. Respondents were selected through proportional stratified random sampling to ensure representative participation from each stakeholder group.

Within each stratum, respondents were randomly selected to minimize bias. Sampling was based on Slovin's Formula (Tejada & Punzalan, 2012):

$$n = \frac{N}{1 + Ne^2}$$

The distribution of respondents was proportionally based on the population of each college and stakeholder group.

### Research Instrument

This study employs a structured survey questionnaire as the primary research instrument to assess the sustainability initiatives of local colleges in Negros Occidental. The survey collects quantitative data through a Likert-scale format, allowing respondents to indicate their level of agreement with various sustainability-related statements. Structured questionnaires are widely used in descriptive and comparative research as they ensure standardized responses, facilitating objective analysis and comparison across institutions (Creswell & Creswell, 2018; Kumar, 2019).

The questionnaire consisted of five sections; each aligned with specific research objectives. The first section, Demographic Profile, collected key information such as age, gender, role at the institution, length of affiliation, and college affiliation. These variables helped contextualize the responses and enabled the identification of patterns across different stakeholder groups (Fraenkel, Wallen, & Hyun, 2019). The second section focused on the Social Dimension, measuring how sustainability initiatives were integrated into academic curricula, faculty engagement, student participation, and community collaborations. Respondents rated their agreement with relevant statements using a five-point Likert scale (Bryman, 2016). The third section assessed the Environmental Dimension, capturing perceptions of institutional policies and practices related to energy conservation, waste management, and the presence of green infrastructure (Saunders, Lewis, & Thornhill, 2019). The fourth section addressed the Economic Dimension, examining aspects such as funding allocation for sustainability programs, cost-efficiency, and access to external grants or incentives. Participants rated the adequacy and long-term viability of financial support for these efforts (Kumar, 2019). Finally, the fifth section evaluated Institutional Commitment to Sustainability,

focusing on leadership support, strategic integration of sustainability goals, and active stakeholder involvement. This section gauged the perceived prioritization of sustainability in long-term institutional planning (Cohen, Manion, & Morrison, 2018).

To ensure validity and reliability, the questionnaire undergoes expert validation using Good and Scates (1972) and pilot testing before full-scale data collection. Three experts from the academe and the environment and natural resources office validated the test questionnaire while Cronbach's alpha ($p = 0.978$) is applied to assess the internal consistency of the instrument, ensuring that the items effectively measure sustainability efforts (Taherdoost, 2016).

### Data Collection Procedure

The data collection process was carefully structured to ensure accuracy, reliability, and adherence to ethical standards. Initially, the structured survey questionnaire underwent expert validation by three specialists to assess the clarity and relevance of its content. A pilot test was then conducted on a small sample to determine the instrument's reliability, with Cronbach's alpha used to evaluate internal consistency and confirm the tool's effectiveness in measuring sustainability efforts (Taherdoost, 2016).

To ensure balanced representation, proportional stratified random sampling was employed across three key respondent groups - students, faculty members, and administrative staff - based on their actual distribution within LC1, LC2, and LC3 (Creswell & Creswell, 2018). The validated questionnaire was disseminated through both digital (Google Forms) and printed formats to increase accessibility and response rates. Clear instructions were provided for all respondents, accommodating varied preferences and connectivity levels (Saunders, Lewis, & Thornhill, 2019).

Ethical protocols guided the entire process. Participants were briefed on the purpose of the study, assured of the confidentiality of their responses, and informed of their voluntary participation. A consent form was included to ensure participants fully understood their rights, including the option to withdraw at any time without penalty (Cohen, Manion, & Morrison, 2018).

The survey was administered over a two-to-four-week period, with follow-up reminders issued to enhance response rates and achieve the target sample size (Kumar, 2019). Upon completion, the responses were reviewed, cleaned, and organized, removing incomplete or inconsistent entries to prepare the data for analysis.

### Data Analysis Procedure

The collected data were analyzed using quantitative statistical techniques to evaluate the sustainability initiatives of the three local colleges in Negros Occidental. Following data collection, responses were reviewed, cleaned, and organized to ensure completeness and accuracy. Incomplete or inconsistent entries were excluded to maintain data integrity (Kumar, 2019).

Descriptive statistics, including frequencies, percentages, means, and standard deviations, were computed to summarize the demographic profiles of respondents and assess the extent of sustainability integration across the environmental, social, and economic dimensions (Creswell & Creswell, 2018).

To assess the suitability of further statistical tests, the Shapiro-Wilk test was performed to determine the normality of the data distribution (Field, 2018).

Given the non-parametric nature of the data, the Kruskal-Wallis H test was used to examine statistically significant differences in sustainability practices and institutional commitment among LC1, LC2, and LC3. Where significant differences were found, post hoc analyses, such as Dunn's test with Bonferroni correction, were conducted to identify specific pairwise differences (Pallant, 2020; Field, 2018).

Findings were interpreted in relation to the study's objectives and used to identify trends, strengths, and areas for improvement in sustainability initiatives across institutions. Results were presented through tables, charts, and graphs, and significance levels (p-values) were reported to support interpretation (Saunders, Lewis, & Thornhill, 2019).

### Ethical Considerations

This study strictly followed ethical research protocols to protect the rights, privacy, and well-being of all participants. Before data collection, participants were fully informed of the study's purpose, objectives, and procedures through a clear and accessible consent process. Participation was voluntary, and respondents had the right to withdraw at any time without consequence (Cohen, Manion, & Morrison, 2018).

No personally identifiable information was collected. All responses were anonymized, coded, and securely stored to ensure confidentiality (Saunders, Lewis, & Thornhill, 2019). In adherence to the principle of do no harm, the study avoided any form of psychological, emotional, or professional risk to participants. The three participating colleges were referred to as LC1, LC2, and LC3 to maintain institutional anonymity.

Participants were neither coerced nor pressured. They were allowed to skip any questions they found uncomfortable and could discontinue participation at any point (Creswell & Creswell, 2018). Data were stored in encrypted digital files and restricted-access physical records, used solely for academic purposes. After the study, data were retained for a limited period and then securely deleted or destroyed (Pallant, 2020). By upholding these principles, the research maintained academic integrity, fairness, and respect for all participants.

## Results and Discussion

This section presents and interprets the findings of the study based on the data gathered from the respondents. The analysis focuses on addressing the research questions through descriptive and inferential statistics, highlighting key patterns, relationships, and significant differences observed in the data. Where applicable, the results are compared with relevant literature to provide context and deepen understanding.

### Demographic Profile

A total of 575 respondents participated in the study, representing a diverse group of stakeholders from three community colleges in Negros Occidental. The sample was composed primarily of students (79.13%), followed by faculty members (10.61%), non-teaching staff (6.61%), and administrators (3.65%). This distribution aligns with the actual composition of academic institutions, where students constitute the majority, yet also ensures the inclusion of key institutional actors involved in sustainability implementation. In terms of age, the data revealed that the 17–27 age group comprised 82.26% of the sample, indicating that most participants were young adults - likely enrolled students - who are both the direct beneficiaries and potential drivers of sustainability initiatives. Older age brackets, while less represented, provide essential perspectives from faculty and administrators who influence policy and programmatic decisions.

A notable gender imbalance was observed, with females accounting for 65.04% of the total population. This trend may reflect broader enrollment or employment patterns in these institutions and could inform gender-responsive approaches in sustainability programming.

With respect to institutional distribution, LC 3 contributed the largest proportion of respondents (44.70%), followed by LC 2 with 30.78%, and LC 1 with 24.52%. This proportional representation allows for a comparative analysis across institutions, offering a comprehensive view of sustainability practices and perceptions across varied geographic and administrative contexts.

Overall, the demographic diversity of the respondents provides a solid foundation for assessing sustainability integration from multiple institutional lenses - ensuring that the findings capture both top-down (administrative) and bottom-up (student and staff) perspectives.

**Table 2: Demographic Profile of Respondents**

| Variable | Category | Frequency (n) | Percentage (%) |
|---|---|---|---|
| **Role** | Students | 455 | 79.13% |
| | Faculty | 61 | 10.61% |
| | Non-teaching Staff | 38 | 6.61% |
| | Administrators | 21 | 3.65% |
| **Age Group** | 17–27 years old | 473 | 82.26% |
| | 28–37 years old | 47 | 8.17% |
| | 38–47 years old | 29 | 5.04% |
| | 48 years old and above | 26 | 4.52% |
| **Sex** | Female | 374 | 65.04% |
| | Male | 201 | 34.96% |
| **Institution** | LC 1 | 141 | 24.52% |
| | LC 2 | 177 | 30.78% |
| | LC 3 | 257 | 44.70% |
| **TOTAL** | | **N = 575** | **100.00%** |

### Descriptive Results

The descriptive analysis of the three sustainability indicators - integration of sustainability efforts, institutional commitment, and policy implementation - revealed consistently strong performance across all three community colleges, with notable variation in the extent of implementation and engagement.

All three institutions demonstrated a high level of integration across the environmental, social, and economic dimensions of sustainability. As reflected in Table 3, LC 1 achieved the highest mean score of 4.34 (SD = 0.51), suggesting well-structured and deliberate sustainability strategies. These include green campus initiatives, local environmental partnerships, and incorporation of sustainability content in general education curricula. LC 2

followed with a mean of 4.15 (SD = 0.48), indicating commendable, though less systematic, integration. LC 3 recorded the lowest score of 3.98 (SD = 0.57), pointing to areas needing reinforcement, particularly in cross-sector collaboration and curricular infusion.

Institutional commitment was assessed based on leadership advocacy, integration of sustainability into vision-mission statements, and the presence of sustainability champions and governance mechanisms. LC 1 again led with a mean of 4.42 (SD = 0.46), demonstrating a strong alignment between strategic intent and operational implementation. The college has institutionalized sustainability through regular forums, performance metrics, and leadership support. LC 2 posted a mean of 4.12 (SD = 0.51), reflecting moderate levels of administrative support. LC 3 had the lowest mean of 3.85 (SD = 0.59), suggesting that while sustainability is valued, leadership engagement may require further strengthening to cascade institutional goals into concrete actions.

In terms of policy clarity, resource allocation, and monitoring mechanisms, LC 1 maintained its leading position with a mean of 4.28 (SD = 0.50). The institution has clear sustainability policies, assigned sustainability officers, and ongoing efforts to review and improve implementation. LC 2 followed with a mean of 4.05 (SD = 0.47), while LC 3 posted 3.78 (SD = 0.54) - the lowest among the three. These results suggest that although sustainability policies may exist on paper in LC 2 and LC 3, the execution, communication, and institutional ownership of these policies are not as robust compared to LC 1.

Table 4 presents a composite view combining both descriptive means and mean ranks from inferential analysis. LC 1 consistently emerged as the highest-performing institution, indicating strong, coherent sustainability practices across all domains. LC 2 showed moderate performance, while LC 3 trailed in all indicators, suggesting opportunities for institutional strengthening, capacity building, and more strategic policy implementation.

**Table 3: Summary of Descriptive Statistics on Sustainability Indicators by Institution**

| Sustainability Indicator | College | Mean | Std. Dev. |
|---|---|---|---|
| **Integration of Sustainability Efforts** | LC 1 | 4.34 | 0.51 |
| | LC 2 | 4.15 | 0.48 |
| | LC 3 | 3.98 | 0.57 |
| **Institutional Commitment** | LC 1 | 4.42 | 0.46 |
| | LC 2 | 4.12 | 0.51 |
| | LC 3 | 3.85 | 0.59 |
| **Provision and Implementation of Institutional Policies** | LC 1 | 4.28 | 0.50 |
| | LC 2 | 4.05 | 0.47 |
| | LC 3 | 3.78 | 0.54 |

**Table 4: Composite Summary of Sustainability Performance by Institution**

| College | Integration of Sustainability Efforts | | Institutional Commitment | | Policy Implementation | | Overall Standing |
|---|---|---|---|---|---|---|---|
| | Mean | Mean Rank | Mean | Mean Rank | Mean | Mean Rank | |
| **LC 1** | 4.34 | 322.14 | 4.42 | 337.67 | 4.28 | 318.91 | **Highest** |
| **LC 2** | 4.15 | 298.13 | 4.12 | 295.08 | 4.05 | 293.44 | Moderate |
| **LC 3** | 3.98 | 262.29 | 3.85 | 255.87 | 3.78 | 267.30 | Lowest |

### Inferential Results

To complement the descriptive findings and gain deeper insights into the variations in sustainability practices across institutions, a series of inferential statistical analyses were conducted. These analyses aimed to determine whether significant differences existed among the three community colleges - LC 1, LC 2, and LC 3 - regarding the integration of sustainability efforts, institutional commitment, and the provision and implementation of sustainability-related institutional policies.

Preliminary normality checks using the Shapiro-Wilk Test confirmed that the data were not normally distributed across all indicators. The results revealed significant departures from normality for overall integration of sustainability efforts ($W = .968$, $p < .001$), the social dimension ($W = .936$, $p < .001$), the environmental dimension ($W = .955$, $p < .001$), and the economic dimension ($W = .956$, $p < .001$). Similarly, institutional commitment ($W = .926$, $p < .001$) and policy implementation ($W = .930$, $p < .001$), including associated policy dimensions such as energy, water, and clean air conservation, also exhibited significant non-normality. Given these results, the study employed the Kruskal-Wallis H Test - a non-parametric equivalent of the one-way ANOVA - to compare institutional differences.

The results of the Kruskal-Wallis H Test revealed a statistically significant difference in the integration of sustainability efforts among the three colleges, H(2) = 12.795, p = .002. LC 1 obtained the highest mean rank of 322.14, indicating a more robust and consistent integration of sustainability efforts. This was followed by LC 2 with a mean rank of 298.13 and LC 3 with 262.29. Post hoc pairwise comparisons confirmed that the difference between LC 1 and LC 3 was statistically significant (p = .002), suggesting that LC 1's integration of sustainability is considerably stronger than LC 3's. However, the differences between LC 1 and LC 2 (p = .600), and between LC 2 and LC 3 (p = .081), were not statistically significant, implying that LC 2's performance is relatively comparable to both LC 1 and LC 3.

In terms of institutional commitment, the Kruskal-Wallis H Test also showed a highly significant difference among the three institutions, H(2) = 23.095, p < .001. LC 1 again emerged with the highest mean rank of 337.67, followed by LC 2 at 295.08 and LC 3 at 255.87. Post hoc results revealed that the differences between LC 1 and LC 3 (p < .001), and between LC 2 and LC 3 (p = .043), were both statistically significant. These findings indicate that both LC 1 and LC 2 exhibit significantly stronger institutional commitment to sustainability than LC 3. The comparison between LC 1 and LC 2, however, was not statistically significant (p = .064), suggesting a similar level of institutional commitment between these two colleges.

Finally, regarding the provision and implementation of institutional policies on sustainability, the Kruskal-Wallis H Test yielded a statistically significant result, H(2) = 9.322, p = .009. LC 1 again ranked highest with a mean rank of 318.91, followed by LC 2 at 293.44 and LC 3 at 267.30. Post hoc testing showed a significant difference only between LC 1 and LC 3 (p = .008), suggesting that LC 1's policy framework and implementation mechanisms are more advanced compared to LC 3. The comparisons between LC 1 and LC 2 (p = .505), and between LC 2 and LC 3 (p = .307), did not yield statistically significant differences.

These inferential findings affirm and strengthen the descriptive results. They consistently point to LC 1 as the leading institution in terms of integrating sustainability into its operations, demonstrating strong institutional commitment, and effectively implementing relevant policies. LC 2 shows moderate but commendable performance, often statistically comparable to LC 1, while LC 3 continues to lag behind, indicating the need for more targeted interventions, resource allocation, and institutional reforms to enhance sustainability outcomes.

**Table 5: Summary of Inferential Results on Sustainability Indicators**

| Indicator | Kruskal-Wallis H (df=2) | *p*-value | Significant Pairwise Differences (Post Hoc) | Interpretation |
|---|---|---|---|---|
| **Integration of Sustainability Efforts** | 12.795 | .002 | **LC 1 vs LC 3** (*p* = .002) | LC 1 significantly stronger than LC 3 |
| **Institutional Commitment** | 23.095 | .000 | **LC 1 vs LC 3** (*p* = .000)<br>**LC 2 vs LC 3** (*p* = .043) | LC 1 & LC 2 stronger than LC 3 |
| **Policy Implementation** | 9.322 | .009 | **LC 1 vs LC 3** (*p* = .008) | LC 1 stronger than LC 3 |

## Conclusion

This study concludes that the three participating community colleges in Negros Occidental demonstrate a commendable commitment to sustainability, as evidenced by their overall strong performance in sustainability integration, institutional commitment, and the implementation of related policies. While the findings affirm that sustainability is an institutional priority across all colleges, the degree of commitment and operationalization varies significantly. Among the three, LC 1 consistently emerged as the most advanced in embedding sustainability into its systems - marked by its higher mean scores, stronger policy implementation, and evident institutional support. These outcomes point to a more structured and strategic approach, supported by dedicated offices, leadership advocacy, and clearer policy frameworks.

As a matter of ethical responsibility and in respect of institutional privacy, the actual names of the participating colleges may be anonymized in wider dissemination unless formal consent is secured. Such measures uphold the integrity of the research while promoting constructive dialogue among institutions.

The study also identified critical gaps in resource allocation and infrastructural readiness. Although sustainability goals are articulated in policy, some colleges face constraints in translating these commitments into long-term, measurable programs due to limited funding, staffing, or technical

capacity. Similarly, while general awareness among faculty and staff is evident, deeper engagement - particularly in planning, implementation, and monitoring - remains an area for institutional development. This calls for expanded training opportunities and the establishment of participatory mechanisms that foster a more inclusive and empowered sustainability culture.

Encouragingly, initiatives involving students and collaborations with external stakeholders - including government units, non-government organizations, and private sector partners - indicate a growing ecosystem of support. However, these efforts need to be further institutionalized to maximize impact and continuity. Finally, the disparity in strategic planning and policy coherence across colleges underscores the need for more consistent alignment with sustainability frameworks such as STARS. By adopting unified metrics and fostering cross-institutional learning, community colleges in the region can advance their sustainability goals more equitably and effectively.

## Recommendations

Based on the results of the study on the Institutional Commitment, Integration, Provision, Policy Effectiveness, and Sustainability Practices of the Community Colleges in Negros Occidental, the following recommendations are suggested:

1. All institutions should strengthen their water and energy conservation programs by investing in technologies such as low-flow faucets, rainwater collection systems, motion sensor lighting, and solar-powered infrastructure. These measures should be supported by campus-wide awareness campaigns on responsible resource use.
2. Procurement policies should be enhanced by prioritizing eco-friendly and locally sourced products. Institutions are encouraged to establish formal guidelines that emphasize sustainable standards in all acquisitions.
3. Monitoring and evaluation systems must be established. Internal sustainability audit teams composed of faculty, staff, and student representatives should be formed to regularly assess the outcomes of implemented programs.
4. To increase stakeholder participation, all colleges should conduct regular capacity-building activities on environmental protection, climate resilience, and sustainable practices. Gender-responsive modules should be included in these trainings.
5. Institutions should actively expand partnerships with local government units, national agencies such as DENR and DOST, private businesses, and non-governmental organizations to widen the impact of their sustainability initiatives.
6. Sustainability policies must be institutionalized by integrating SDG-aligned objectives into strategic planning, academic programs, and operational systems. Dedicated sustainability offices should be created in each college.
7. Documentation and knowledge-sharing among institutions must be encouraged through annual sustainability forums, joint research, and shared reporting of best practices and innovative approaches.
8. Sustainability programs must be gender-responsive, ensuring inclusive participation and equitable access to opportunities for all genders. It is recommended that each institution designate GAD Focal Points within their sustainability offices to mainstream gender in all initiatives. Regular gender-sensitivity training should be conducted, and IEC materials must reflect gender diversity and inclusion in environmental advocacy.
9. Community extension activities should align with sustainability goals and integrate practical, grassroots approaches. Projects such as barangay eco-audits, green livelihood programs, and climate education workshops can be incorporated into NSTP and OJT programs. Additionally, student-led action research may be encouraged to solve specific environmental problems in local communities, fostering both civic engagement and applied learning.

Moreover, the following recommendations are suggested for each of the community colleges:

(a) LC 1 has established sound economic sustainability practices but can improve on water conservation. It is recommended that the institution invest in greywater systems for use in school gardens and comfort rooms.

(b) From a gender development perspective, LC 1 may develop the 'Eco-Responsible Women' initiative, focusing on empowering women in environmental responsibility and green livelihood. For community extension, short-term courses certified by TESDA on sustainable crafts, vertical farming, and waste-to-wealth programs can be launched for urban communities.

(c) LC 2 showed consistent environmental practices and strong economic integration. It is recommended that the college establish a regular system for auditing resource usage to support evidence-based sustainability decisions.

(d) To enhance gender responsiveness, LC 2 can initiate a Sustainability Mentorship Program where senior female students and faculty mentor younger students on sustainability leadership and gender advocacy. For community extension, the college should work with local farming communities to promote sustainable agriculture practices, offering technical training and research-based solutions in collaboration with students and extension workers.

(e) LC 3 demonstrated strong environmental and economic sustainability practices. It is recommended that the institution take the lead in establishing a Green Model Campus initiative for the consortium. This could serve as a benchmark in effective campus greening, solid waste management, and student-led environmental projects.

(f) To integrate gender development, LC 3 should promote a 'Women for Sustainability' program that empowers female students and staff to take leadership roles in environmental advocacy. Community extension can be further strengthened through Barangay Greening Brigades, involving students in reforestation, clean-up drives, and environmental education campaigns.

## Conflict of Interest

The authors declare no conflict of interest in conducting this research.

## References


1. Abo-Khalil, A. G. (2024). Integrating sustainability into higher education: Challenges and opportunities for universities worldwide. Heliyon. https://doi.org/10.1016/j.heliyon.2024.e29946
2. AlAli, R., & Aboud, Y. Z. (2024). Sustainability assessment of higher education institutions: Faculty members' perspective in Saudi universities. GeoJournal of Tourism & Geosites, 52(1). https://www.researchgate. net/publication/378977008_SUSTAINABILITY_ASSESSMENT_OF_HIGHER_EDUCATION_INSTITUTIONS_FACULTY_MEMBERS_PERSPECTIVE_IN_SAUDI_UNIVERSITIES
3. Angelaki, M. E., Bersimis, F., Karvounidis, T., & Douligeris, C. (2024). Towards more sustainable higher education institutions: Implementing the SDGs and embedding sustainability into ICT curricula. Education and Information Technologies, 29(4), 5079–5113. https://doi.org/10.1007/s10639-024-04055-1
4. AASHE (2019). STARS Technical Manual Version 2.2. Association for the Advancement of Sustainability in Higher Education. https://stars.aashe.org/pages/about-the-stars/
5. Balanay, R. M., & Halog, A. (2016). Teaching education for sustainable development at university level: A case study from the Philippines. Teaching Education for Sustainable Development at University Level, 163–174. https://www.researchgate.net/publication/303704483_Teaching_Education_for_Sustainable_Development_at_University_Level_A_Case_Study_from_the_Philippines
6. Bryman, A. (2016). Social Research Methods (5th ed.). Oxford University Press. https://books.google.com.ph/books?hl=en&lr=&id=N2zQCgAAQBAJ&oi=fnd&pg=PP1&dq=Bryman,+A.+(2016).+Social+Research+Methods+(5th+ed.).+Oxford+University+Press.&ots=dqNtKPQ2wg&sig=4cWB_6rieRsfXhQWUA5p3VGbru8&redir_esc=y#v=onepage&q=Bryman%2C%20A.%20(2016).%20Social%20Research%20Methods%20(5th%20ed.).%20Oxford%20University%20Press.&f=false
7. Cadiz, N. R. R., Mariano, K. L. S., Dumalag, J. B. L. C., Retamar, A. E., & Aceron, J. C. F. (2023). Information, education, and communication campaign in the Philippines: Capacitating institutions using GIS, Radar, and AI. Asian Conference on Remote Sensing. https://www.academia.edu/127468450/Information_Education_and_Communication_Campaign_in_the_Philippines_Capacitating_Academic_Institutions_and_Government_Agencies_using_Geographic_Information_System_Radar_Remote_Sensing_and_Artificial_Intelligence
8. Creswell, J. W., & Creswell, J. D. (2018). Research Design: Qualitative, Quantitative, and Mixed Methods Approaches (5th ed.). SAGE Publications. https://books.google.com.ph/books?hl=en&lr=&id=335ZDwAAQBAJ&oi=fnd&pg=PT16&dq=Creswell,+J.+W.,+%26+Creswell,+J.+D.+(2018).+Research+Design:+Qualitative,+Quantitative,+and+Mixed+Methods+Approaches+(5th+ed.).+SAGE+Publications.&ots=YExRPIAnuO&sig=ixjJngrpIwy1Ot_dU_JeNQAfaxo&redir_esc=y#v=onepage&q&f=false
9. Duran, M. K. L., & Mariñas, K. A. (2024). Sustainability integration in Philippine higher education curricula: A structural equation modeling assessing teacher intention to integrate. Sustainability, 16(9), 3677. https://doi.org/10.3390/su16093677
10. Eichberg, E. T. A. M., & Charles, A. (2024). The role of the Civic University in facilitating inclusive and transformative pedagogical approaches to SDGs: A systematic review. Sustainability, 16(7), 2752. https://doi.org/10.3390/su16072752

11. Galang, A. P. (2010). Environmental education for sustainability in HEIs in the Philippines. International Journal of Sustainability in Higher Education, 11(2), 173–183. https://doi.org/10.1108/14676371011032477
12. Gatcho, A. R. G., Manuel, J. P. G., & Hajan, B. H. (2024). No child left behind, literacy challenges ahead: A focus on the Philippines. Frontiers in Education, 9, 1349307. https://doi.org/10.3389/feduc.2024.1349307
13. Özbay, F., Tekin, B., Shah, S. A. R., & Abbas, N. (2024). Financial institutions and markets in environmental sustainability: A hidden behavior study in OECD economies. Journal of Environmental Management, 370, 122812. https://doi.org/10.1016/j.jenvman.2024.122812
14. Tomasella, B., Akbar, B., Lawson, A., Howarth, R., & Bedford, R. (2024). Embedding the SDGs into higher education institutions' marketing curriculum. Journal of Marketing Education, 46(2), 155–174. https://www.researchgate.net/publication/378508994_Embedding_the_Sustainable_Development_Goals_Into_Higher_Education_Institutions'_Marketing_Curriculum
15. Uzorka, A., Akiyode, O., & Isa, S. M. (2024). Strategies for engaging students in sustainability initiatives and fostering ownership and responsibility. Discover Sustainability, 5(1), 320. https://www.researchgate.net/publication/384810777_Strategies_for_engaging_students_in_sustainability_initiatives_and_fostering_a_sense_of_ownership_and_responsibility_towards_sustainable_development