

Ecotourism development plan to Balbalungao Dam Lupao, Nueva Ecija

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Abstract

This paper is meant to help create an Ecotourism Development plan to maximize the existing beauty and capacity of the Alalunga Dam, to extend the potential of the dam to the tourism industry. This is highly beneficial to the residents of Brgy San Isidro and to the whole Municipality of Lupa.

The findings revealed that the overall status of the ecotourism development of the Alalunga dam was rated with positive perceptions regarding the natural attractions, facilities, tourist arrivals, and community participation. The level of sustainability practices was reflecting strong environmental, socio-cultural, and economic sustainability indicators. Statistical analysis showed no significant relationship between respondents' demographic profile and their views on ecotourism promotion. However, there was a statistically moderate positive relationship between the status of the ecotourism development and sustainability practices, as well as between the promotion of ecotourism and sustainability.

The results from this study suggest that having structured development and responsible promotional strategies can contribute significantly to the sustainability outcomes of the Alalunga dam. Based on these findings, an ecotourism development plan was created. These suggestions are to strengthen the governance systems, environmental management, community participation, and sustainable marketing initiatives. The study concludes that the Balangao Dam has a strong potential to become a sustainable ecotourism destination if strategic planning and continuous monitoring are implemented.

Keywords: Ecotourism Development Plan; Environmental; Socio-Cultural; Economic; Sustainability; Balangao Dam

1. Introduction

The Balbalungao Dam in Lupao, Nueva Ecija, holds a strong potential as an ecotourism destination due to its scenic landscapes, and role in supporting local agriculture in the area. The proposed development plan aims to transform the area into a sustainable tourism site that promotes environmental conservation, cultural preservation, and economic growth for the local community of Lupao. Despite the natural attractions and accessibility of Lupao, tourism development remains limited. This highlights the need to maximize and promote destinations like the Balbalungao Dam. With the ongoing local initiatives such as "Wow Lupao," the plan emphasizes responsible tourism activities, more livelihood opportunities, and community involvement. Ultimately, the development plan seeks to position the dam as a model for a sustainable and community-based ecotourism in Nueva Ecija while ensuring ecological protection and inclusive economic benefits.

This study aimed to assess the ecotourism development of the Balbalungao Dam by examining the socio-demographic profile of the respondents in terms of age, sex, educational attainment, source of income, business ownership, and frequency of visits. It also evaluated the current status of the ecotourism development and the respondents' perceptions

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of ecotourism promotion across the dimensions of sustainable tourism which are: social equality, cultural aspects, economic benefits, and environmental sustainability. Furthermore, the study determined the overall level of sustainability practices and investigated whether significant relationships exist between respondents' profiles, their perceptions of promotion, and the status and sustainability of ecotourism. Based on these findings, an ecotourism development plan was made and proposed.

Moreover, the study tested two null hypotheses: (1) there is no significant relationship between respondents' profiles and their views on ecotourism promotion, and (2) there is no significant relationship among the status of ecotourism development, promotion, and sustainability practices.

2. Materials and Methods

This study employed a quantitative descriptive-correlational research design to assess the status, perceptions, and sustainability of ecotourism development in Balbalungao Dam, Lupao, Nueva Ecija. The data were collected through a validated and reliable survey questionnaire administered to locals, tourists, and LGU representatives using purposive and random sampling techniques. The statistical tools such as frequency, percentage, weighted mean, and Pearson correlation were used to analyze the data, which were confirmed to be normally distributed using the Kolmogorov-Smirnov test. The study is focused on evaluating the site's development status, sustainability practices, and stakeholder perceptions within the framework of sustainable tourism. While limited to the Brgy. San Isidro and constrained by time and resources, the research ensured ethical standards, data confidentiality, and methodological rigor through expert validation, pilot testing, and systematic data analysis. Overall, the study provides a reliable and comprehensive basis for proposing an ecotourism development plan for Balbalungao Dam.

3. Results and Discussion

The findings are interpreted in the discussion by outlining their importance and connecting them to previous research and pertinent studies. This part analyses the data's main findings, patterns, and trends and considers how they relate to the study question.

3.1. What is the Socio-demographic profile in terms of the following;

Table 1 Age

Age	Frequency	Percent
18 to 27	54	49.09
28 to 37	29	26.36
38 to 47	20	18.18
48 to 57	5	4.55
58 and above	2	1.82
Total	110	100.00
Mean Age	30.84	
Standard Deviation Age	9.80	

The table 1 shows that the majority of the respondents are young adults aged 18–27 (49.09%), with a mean age of 30.84 years. It indicates that the study is largely influenced by individuals in their early and economically active years. With the increase of awareness and promotion of ecotourism, the young people were motivated to engage in nature and outdoor activities. They do visit places where nature is the key attraction and physical activities are offered. (Newton et al., 2022) social media plays a vital role in the influence of the age group as they are the one who browses more through those platforms. These lead to why the older age group was in the least of visitors who frequented the dam. The older age groups are minimally represented in this table, suggesting a lower engagement among them in ecotourism activities at the dam. The moderate standard deviation of about 10 years reflects some age diversity, though participation decreases with age. Overall, the findings primarily capture the perspectives of younger respondents, who are more likely to engage in ecotourism due to lifestyle, social media influence, and interest in nature-based activities.

Table 2 Sex

Sex	Frequency	Percent
Female	46	41.8
Male	64	58.2
Total	110	100.0

Table 2 shows the distribution of respondents by sex. The majority of respondents are male with 64 or 58.2 percent, while 46, or 41 percent, of the 110 total respondents are female.

According to the data, men participated in the study more than women. Though there is no significant gap between the two groups, this indicates that both sexes are fairly represented. According to this distribution, men are more likely to be actively involved in or represented in ecotourism development-related activities. Nonetheless, the high percentage of female responders suggests that women are also important to the growth of ecotourism. This suggests that tourism is for everyone regardless of gender, whether as a visitor or tourism personnel. Moreover, Balbalungao Dam is safe for women to visit, the road going through the area is now with street lights. No cases of harassment have been recorded and the community is also friendly towards tourists (Mooney, 2021). With the effort to extend tourism beyond barriers and practice gender equality.

Table 3 Highest Educational Attainment

Highest Educational Attainment	Frequency	Percent
Secondary Level	5	4.5
College Level	35	31.8
College Graduate	56	50.9
Earned Master's Units	7	6.4
Master's Degree Holder	7	6.4
Total	110	100.0

Table 3 shows the data regarding the highest level of education attained by the respondents coming from college graduates, totaling 56 respondents (50.9%). This indicates that over half of the individuals involved have pursued higher education, which could have a positive impact on their understanding of environmental issues, sustainable practices, and the development of ecotourism. There are only 5 respondents (4.5%) who have finished their education at the secondary level. This indicates that there is a minimal representation from those with lower educational qualifications. This distribution suggests that most of the insights from the study are dominated by the opinions of individuals who have advanced educational backgrounds.

To sum up, the information gathered is indicating that those surveyed personnel have a high level of education. This trait is working well for the advancement of ecotourism in the area. This suggests that the individuals who have higher education usually demonstrate increased environmental consciousness. They are also promoters of conservation activities, and have well improved involvement in the planning and management of sustainable tourism. In agreement with Weaver, he stated that an educated traveler is good at grasping the environmental and socio-cultural effects of tourism. As a result of these traits, the respondents are more accountable and has valuable perspectives on the growth of ecotourism. Their sound judgement and proper feedback can help to develop the Balbalungao Dam.

Table 4 Source of income

Source of Income	Frequency	Percent
Allowance	29	26.4
Employment	76	69.1
Business Income	5	4.5
Total	110	100.0

Table 4 shows the respondents' income sources, most of them are employed, comprising 76 individuals (69.1%). This indicates that the majority of the respondents have a consistent income source. This is potentially impacting their ability to engage in tourism and other ecotourism activities. However, merely 5 respondents (4.5%) stated that the business income was their main source of earnings. This is signifying a low presence of self-employed individuals or business owners in this research. Although they are few in number, this group could offer insightful viewpoints on the investment prospects and entrepreneurial participation in ecotourism growth in Balbalungao Dam.

3.2. What is the current status of Ecotourism development in the Balbalungao Dam.

Table 5 Status of the Ecotourism development of the Balbalungao Dam

Status	Locals	Tourists	LGU	Combined Weighted Mean	Verbal Description
1.Natural and Cultural attractions are well-developed.	2.96	3.08	2.90	2.98	Agree
2.Tourism facilities are built around the dam.	3.20	3.08	3.50	3.26	Strongly Agree
3.The number of tourists has increased these days.	3.38	3.26	3.50	3.38	Strongly Agree
4.The dam has activities for its visitors/tourists.	2.76	2.52	2.50	2.59	Agree
5.The local community participates in the development of the dam.	3.34	3.32	3.80	3.49	Strongly Agree
Overall Weighted Mean	3.13	3.05	3.24	3.14	Agree

Legend: 1.00 - 1.74 Strongly Disagree; 1.75 - 2.49 Disagree; 2.50 - 3.24 Agree; 3.25 - 4.00 Strongly Agree

The findings from table 5 indicates that the stakeholders generally view the Balbalungao Dam as adhering to the sustainable tourism principles, particularly in the areas of environmental management and the development initiatives, evident with the high weighted mean of the indicators. However, all the respondents (the Locals, Tourists, and LGU) have the lowest weighted mean on "The dam has activities for its visitors/tourists" with 2.76 (Agree). This highlights the operational gaps that exist in the dam that are likely tied to the governance structures, revenue collection, or the visitor management practices. The slight differences in perception, where the locals and the tourists provided lower scores compared to the LGU, suggest a common dynamic in community-based tourism, where the implementers often hold a more favorable outlook than the beneficiaries. Wherein, the implementers view their work as highly beneficial to its communities and yet the impact remains low and substandard.

The overall "Agree" rating of the table 3.7 indicates that while there are sustainability practices at Balbalungao Dam, they are not yet fully optimized or consistently felt across all the stakeholder groups. As emphasized by the United Nations World Tourism Organization (2023), sustainable tourism requires not only strong policies implemented but also must be equitable and there should be visible outcomes for everyone involved.

3.3. The respondents' view of the promotion of ecotourism in Balbalungao Dam in terms of:

Table 6 shows that the ecotourism promotion in the Balbalungao Dam is generally positive but moderately effective, with an overall weighted mean of 3.03 ("Agree"). The LGU consistently gave higher ratings than the locals and tourists, suggesting a stronger institutional confidence in promotional efforts. Among all the dimensions, the environmental sustainability ranked the highest, indicating a strong focus on conservation and responsible tourism. While social equality, cultural aspects, and economic benefits received moderate ratings, reflecting the areas that are present but not fully emphasized or accessible. Overall, the findings indicate a consistent stakeholder agreement and ongoing efforts, but highlighting the need to strengthen inclusivity, cultural promotion, and economic visibility in tourism strategies.

Table 6 Overall results of the respondents view of the promotion of ecotourism in Balbalungao Dam

Status	Locals	Tourists	LGU	Combined Weighted Mean	Verbal Description
Social equality	3.09	3.08	3.16	3.11	Agree
Cultural aspects	3.03	3.04	3.09	3.05	Agree
Economic benefits	3.03	2.92	3.14	3.03	Agree
Environmental sustainability	3.37	3.35	3.28	3.33	Agree
Overall Weighted Mean	3.13	3.10	3.17	3.03	Agree

Legend: 1.00 - 1.74 Strongly Disagree; 1.75 - 2.49 Disagree; 2.50 - 3.24 Agree; 3.25 - 4.00 Strongly Agree

3.4. What is the level of sustainability of ecotourism practices in the Balbalungao Dam?

Table 7 Level of sustainability of ecotourism practices in the Balbalungao Dam

Status	Locals	Tourists	LGU	Combined Weighted Mean	Verbal Description
Social equality	3.62	3.74	3.90	3.75	Strongly Agree
Cultural aspects	3.28	3.38	3.70	3.45	Strongly Agree
Economic benefits	3.54	3.56	3.40	3.50	Strongly Agree
Environmental sustainability	3.66	3.60	3.30	3.52	Strongly Agree
Overall Weighted Mean	3.53	3.57	3.58	3.56	Strongly Agree

Legend: 1.00 - 1.74 Strongly Disagree; 1.75 - 2.49 Disagree; 2.50 - 3.24 Agree; 3.25 - 4.00 Strongly Agree

Table 7 presents the respondents’ evaluation of the overall sustainability of the ecotourism practices in the Balbalungao Dam based on four major dimensions: social equality, cultural aspects, economic benefits, and environmental sustainability. It has an overall weighted mean of 3.56, verbally described as “Strongly Agree,” indicating that the ecotourism initiatives in the area are widely perceived as highly sustainable by the respondents.

The results demonstrate that ecotourism practices in the Balbalungao Dam are consistent with the fundamental pillars of sustainable tourism; social, economic, and environmental sustainability, while also incorporating cultural sustainability as an essential dimension. Overall, the findings suggest that the Balbalungao Dam exhibits a high level of sustainability in its effort for ecotourism practices, positioning it as a potential model for community-based and environmentally responsible tourism development.

Table 8 Is there a significant relationship between the profile of the respondents and their views on the promotion of ecotourism in Balbalungao Dam

Correlation	Respondents' views on the Promotion of Eco-tourism on Balbalungao Dam		
	Correlation Value	P-value	Interpretation
Profile			
Age	-.103	.282	No significant relationship
Sex	.028	.769	No significant relationship
Highest Educational Attainment	.100	.299	No significant relationship
Source of Income	-.026	.789	No significant relationship
Business Ownership	.064	.506	No significant relationship
Frequency of Visit	-.097	.313	No significant relationship

Table 8 shows that there is no significant relationship between the respondents’ demographic and socio-economic characteristics and their views on the promotion of ecotourism in the Balbalungao Dam, as all p-values exceeded the 0.05 level and correlation coefficients were close to zero. This indicates that the factors such as age, sex, education,

income source, business ownership, and frequency of visit do not influence perceptions. This suggests that the respondents share a common viewpoint regardless of their background. The findings imply that the attitudes toward ecotourism promotion are shaped more by shared experiences than individual differences, which is favorable for sustainable tourism as it reflects broad-based and inclusive support among the stakeholders. UNEP and UNWTO emphasized that having inclusive tourism initiatives should encourage broad-based support among different community sectors.

Table 9 Is there a significant relationship among the description of the respondents on the status of ecotourism development, their views on the promotion and the sustainability of practices of the Balbalungao Dam

Correlation	Level of Sustainability of Balbalungao Dam		
	Variables	Correlation Value	P-value
Status of Ecotourism Development	.381**	.000	Significant Relationship
Promotion of Ecotourism in Balbalungao Dam	.399**	.000	Significant Relationship

**correlation is significant @ 0.01 level

Table 9 reveals that there are significant relationships between the status of the ecotourism development, promotion efforts, and the level of sustainability practices in the Balbalungao Dam, as indicated by p-values below 0.05 and moderate positive correlation coefficients. This means that improvements in development and more effective promotional strategies are associated with stronger sustainability outcomes in the area. The findings confirm that these variables are interconnected and mutually reinforcing, suggesting that a well-planned development and responsible promotion can enhance environmental, socio-cultural, and economic sustainability in the area.

3.5. Based on the findings, what ecotourism development plan may be proposed for Balbalungao Dam in Lupao, Nueva Ecija

Based on the results of the study, an ecotourism development plan is proposed to strengthen the Balbalungao Dam

Ecotourism Development Plan to Balbalungao Dam Lupao, Nueva Ecija

The Ecotourism Development Plan for Balbalungao Dam located in Lupao Nueva Ecija aims to transform the attraction into a sustainable and community-driven destination that balances the dimensions of sustainable tourism (environmental protection, cultural preservation, and economic empowerment) anchored in global best practices from UNEP, UNWTO, and academic frameworks. The Balbalungao Dam is built through the effort of the NIA for agricultural purposes. Nevertheless, given the beauty and its natural resources surrounding the area, the LGU of Lupao sees the opportunity of extending its purpose into tourism initiatives.

The main goal of the ecotourism development plan is to extend the Balbalungao Dam into a sustainable ecotourism destination that harmonizes environmental conservation, cultural preservation, and inclusive community development, through having structured governance being implemented in the area, responsible tourism practices imposed into tourist, and the diversified livelihood opportunities for the community. This will ensure the long-term ecological integrity and socio-economic resilience for the Municipality of Lupao.

Table 10 Ecotourism Development Plan to Balbalungao Dam

Key Area	Objectives	Strategies / Programs	Activities	Responsible Stakeholders	Time Frame	Expected Output	Indicators of Success
Phase 1							
Governance and Management	Strengthen the institutional framework	Establish a management body	Create Balbalungao Dam Management Council	LGU, Stakeholders	Short Term	Organized governance system	Policy implementation; Meeting frequency

	Ensure accountability and transparency	Implement monitoring systems	Financial reporting; KPI tracking; Evaluation reports	LGU, NGOs	Continuou s	Efficient managemen t	Audit reports; Performance metrics
	Prevent environmental degradation	Implement risk management and carrying capacity	Establish visitor limits; Disaster preparedness plan; Monitoring teams	LGU, DPWH, Community	Short-Medium Term	Controlled tourism activities	Reduced environmental damage; Controlled visitor flow
Economic Development	Increase local income and employment	Promote community-based enterprises	Support food stalls, handicrafts, eco-products; Financial literacy training	LGU, NGOs, Local Entrepreneu rs	Short-Medium Term	Increased livelihood opportunities	Number of businesses; jobs created
	Strengthen tourism revenue system	Institutionaliz e fee collection	Entrance fees, permits, environmental fees; Transparent financial reporting	LGU, Management Council	Short Term	Sustainable funding system	Increased revenue collection; Budget allocation reports
Socio-Cultural Development	Preserve cultural heritage and identity	Develop cultural interpretation programs	Cultural brochures; Signages; Cultural orientation sessions; Local guide training	LGU, DOT, Community	Short Term	Increased cultural awareness	Tourist satisfaction; Cultural participation rate
	Promote social equality and participation	Encourage inclusive planning	Community consultations; Stakeholder meetings; Gender-inclusive programs	LGU, Barangay Officials, Community	Continuou s	Empowered community	Participation rate; Inclusivity index
Tourism Product Development	Enhance visitor experience	Develop eco-tourism activities	Guided trekking; Birdwatching; Kayaking; Workshops (handicrafts)	LGU, Tour Guides, Community	Short-Medium Term	Diversified tourism products	Number of activities offered; Tourist engagement
	Expand alternative livelihood sources	Develop homestay and eco-tour services	Homestay program; Eco-tour guide training; Rental services	LGU, Community, NGOs	Medium Term	Increased income sources	Number of homestays; Tour packages

Phase 2							
Marketing and Promotion	Promote sustainable tourism destination	Implement responsible marketing strategies	Social media campaigns; Partnerships with schools and eco-groups	LGU, DOT	Short Term	Increased tourist awareness	Tourist arrivals; Online engagement
Phase 3							
Monitoring and Evaluation	Assess sustainability performance	Use KPI-based monitoring system	Environmental, Economic, Socio-cultural, Management indicators (based on Freitas, 2024)	LGU, Researchers, Community	Continuou s	Data-driven decision-making	Improvement trends; Sustainability scores

The ecotourism development plan envisions the Balangao Dam not just as a tourism site, but as a sustainable community center where nature, culture, and people thrive together. Through the alignment with global ecotourism principles and proper inclusive governance, the dam can achieve a lasting environmental sustainability, cultural integrity, and economic growth for future generations of Lupao, Nueva Ecija.

4. Discussion

The findings reveal that most of the respondents are young, educated, and employed individuals, indicating that the study largely reflects the perspectives of the economically active and socially engaged groups, while the older individuals and entrepreneurs are underrepresented. The current status of the ecotourism development in Balbalungao Dam is generally positive but still in developing stage, with strengths an increased tourist arrival, availability of facilities, and community participation, but evident weaknesses in limited visitor activities.

Across the four dimensions of sustainable tourism, the respondents generally agreed that the ecotourism promotion is evident but only moderately effective. Environmental sustainability emerged as the strongest aspect compared to other dimensions, supported by the active conservation efforts. While social equality, cultural aspects, and economic benefits showed moderate performance, with gaps in the inclusivity, cultural promotion, and revenue systems.

Despite these limitations in several aspects, the overall level of sustainability practices was rated highly, indicating a strong alignment with the sustainable tourism principles and consistent perceptions among locals, tourists, and LGU. However, the LGU respondents consistently rated conditions higher than the others, suggesting a gap between policy implementation and actual experiences.

The Correlation analysis showed no significant relationship between respondents' demographic profiles and their perceptions of ecotourism promotion; this indicates a shared outlook across groups. In contrast, there is a significant positive relationship found among the ecotourism development, promotion, and sustainability practices, suggesting that the improvements in development and promotion can directly enhance sustainability outcomes.

Overall, the Balbalungao Dam demonstrates a strong potential as a sustainable ecotourism destination, but further improvements in the activity development for tourists, inclusivity, cultural integration of the locals, and management systems are needed to fully optimize its benefits for all stakeholders.

5. Conclusion

The findings shows that the study is largely influenced by young, educated, and financially capable respondents, though there is a limited representation from older individuals and entrepreneurs, it highlights the need for greater inclusivity. The Ecotourism development in the Balbalungao Dam is generally positive but still in a developing stage with strengths in facilities, visitor growth, and community participation. Given this, a required improvements in activities, implementation, and inclusiveness must be done. While the stakeholders share consistent perceptions, the LGU tends

to rate conditions more favorably throughout the paper, indicating a gap between policy and actual experiences. Despite this, the ecotourism practices demonstrate a high level of sustainability, reflecting strong alignment with sustainable tourism principles across all dimensions. Additionally, the demographic factors do not significantly influence perceptions, suggesting a unified stakeholder perspective. Importantly, there is significant relationships exist between development, promotion, and sustainability, confirming that the improved planning and promotion efforts contribute to stronger sustainable outcomes in the area.

Overall, the development plan is created base on the findings of this study, assessing its status, perception of the stakeholders and level of sustainability. The implementation of the development plan will not only enhance visitor experience and environmental conservation, but will also ensure that tourism growth can contribute meaningfully to the social and economic well-being of the host community. With proper monitoring, stakeholder collaboration, and policy support of the LGU, Balbalungao Dam has strong potential to serve as a model for sustainable ecotourism development in the province of Nueva Ecija.

Compliance with ethical standards

Acknowledgments

The study maintained a high ethical standard by securing approval from relevant authorities and obtaining informed consent from all the respondents. This ensures voluntary participation and the right to withdraw at any time during data gathering. The confidentiality and anonymity were strictly observed, with all the data securely stored and used solely for research purposes. The researcher upheld respect for the cultural norms, used non-invasive and appropriate questions, and ensured the participants' comfort throughout the process. Additionally, the study avoided bias, coercion, and misrepresentation, ensuring that all the data were accurately, ethically analyzed and reported.

Disclosure of conflict of interest

The author declares no conflicts of interest regarding the publication of this paper.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

Author's contribution

The author collected, processed and drafted this article.

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