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Local Wisdom-Based Sustainable Recreation & Eco-Edu Tourism Model: Integrating the Concepts of CD, CBET, and Sustainability

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ABSTRACT

The nature tourism development is often confronted with a dilemma between economic exploitation and environmental preservation. This study aims to formulate and evaluate the "Integrating Concept of CD, CBET, and Sustainability" as an environmentally conscious tourism management strategy rooted in local wisdom. The approach employed is Participatory Action Research (PAR), implemented through a three-stage intervention of training and mentoring (FGDs and workshops) for the Tourism Awareness Group (Pokdarwis) and MSE actors at Wisata Alam Tapian Tabiang Barasok. This initiative also integrates cross-border knowledge spillover through an academic collaboration with Universiti Putra Malaysia. The results demonstrate that the bottom-up governance approach successfully confirm to enhances the management literacy and human resource capacity of Pokdarwis. This is evidenced by the formulation of vision-mission documents, organizational Standard Operating Procedures (SOPs), and an approximate 20% increase in the community's economic potential. The findings suggest a potential relationship wherein CD serves as the driving instrument for CBET, acts as a core process catalyst to achieve the macro goals of Sustainability.

Keywords: community development, community-based tourism, eco-edu tourism, local wisdom, sustainability

INTRODUCTION

Learning from the year-end flood disasters in Sumatra, nature management—especially for those residing in disaster-prone tourist zones—demands critical reflection. The establishment of tourism areas must not compromise environmental integrity or jeopardize future generations for short-term economic gains. Tourism development, such as that in the Tapian Tabiang Barasok nature tourism area, should ideally be governed under Sustainable Tourism Development (STD) paradigms. Within this framework, ecological preservation (nature conservation), cultural authenticity, social cohesion, and economic viability must be treated as overarching priorities.

Maintaining an equilibrium among community welfare, empowerment, and active multi-stakeholder participation is imperative. This aligns with previous empirical findings indicating that the involvement of informal leaders combined with collective group efficacy

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significantly fortifies the ecological impacts of sustainable tourism. Presently, the Tapian Tabiang Barasok nature tourism destination operates strictly on a grassroots community initiative through a Tourism Awareness Group (Pokdarwis) consisting of 25 active members. Approximately 20 Micro and Small Enterprises (MSEs) are embedded within this tourism ecosystem. The adoption of green entrepreneurship expands significantly when the internal culture and motivations of local actors align harmoniously with sustainability principles. This intersection underlines the value of sustainable tourism entrepreneurship anchored in local tenets and cultural wisdom. Consequently, the Tabiang Barasok Pokdarwis holds dual accountability: managing tourism assets while actively supporting localized MSMEs. Under such conditions, adaptive and collaborative leadership emerges as a cornerstone for MSME resilience during periods of crisis.

Nevertheless, the management faces structural bottlenecks due to the low human resource quality within Pokdarwis, where the average educational attainment is high school or below. Human capital quality serves as a primary determinant for escalating regional competitiveness and community welfare, including within the hospitality and tourism sectors. Hence, elevating human resource capacities in tourist villages via edu-tourism interventions is crucial. Prior research highlights that environmental knowledge, attitudes, and behaviors play a fundamental role in conserving natural landscapes. Viewed through the lens of STD, integrating edu-tourism modules becomes indispensable for both destination managers and visiting tourists.

As of 2024, the Ministry of Tourism and Creative Economy (Kemenparekraf) recorded more than 338 registered Tourist Villages (Desa Wisata) in West Sumatra. West Sumatra consistently fields the highest number of tourist village delegations across the island of Sumatra in the prestigious Indonesian Tourist Village Awards (Anugerah Desa Wisata Indonesia - ADWI). These rural tourist destinations (locally termed nagari) are predominantly mobilized by Pokdarwis, who manage natural attractions such as waterfalls, rivers, caves, ridges, and agrotourism zones. The Pokdarwis supervising Tapian Tabiang Barasok represents a prime example of these community-driven bodies.

The long-term vision for the Tapian Tabiang Barasok Tourism Area is to establish it as a premier destination grounded in the natural typography and indigenous culture of the Minangkabau people. Geographically, the area possesses abundant and pristine natural resources, offering vast exploration potentials ranging from panoramic hilltops and deep valley vistas to authentic local culinary arts, traditional performing arts like randai and saluang, and ancestral folk games (permainan anak nagari).

Despite the growing literature on Community-Based Ecot-edu Tourism (CBET) and local governance, critical empirical and operational gaps persist. First, there remains an insufficient integration of community capacity building and eco-educational tourism (eco-edu tourism) in actionable grassroots frameworks. While capacity building and edu-tourism are frequently cited as vital components of sustainable destinations, few studies illustrate how structured educational interventions directly enhance community capacity in real time. Second, there is a limited operationalization of local wisdom within CBET governance; cultural tenets are often cited abstractly rather than embedded as functional mechanisms for destination management and environmental stewardship. Third, while extensive research focuses on mature destinations, there is limited empirical documentation regarding participatory governance development and operationalization within early-stage Pokdarwis and newly established rural tourism destinations.

Currently, field assessments at Tapian Tabiang Barasok confirm these gaps: the early-stage Pokdarwis confronts substantial hurdles, including low managerial capacity, a lack of unified development visions, and strategic ambiguity regarding how to translate indigenous Minangkabau wisdom into concrete CBET governance. The community aspires for economic expansion yet is deeply committed to maintaining local enterprise ownership,

preserving nature, and passing down resilient, local wisdom-based assets to forthcoming generations. Addressing these gaps, this study develops a local wisdom-based sustainable recreation and eco-edu tourism framework tailored to empower early-stage community organizations in emerging rural destinations.

Theoretical Framework

Based on academic literature and a systematic literature review by Gutiérrez Oblitas (2025), the relationship between Community Development (CD) and Sustainable Tourism is not a unidirectional path, but rather a symbiotic, interdependent, and causal relationship. Scholars place Community-Based Tourism (CBT) as the primary operational bridge connecting these two paradigms. Credible literature outlines this connection across three dimensions: community development as the cornerstone, sustainable tourism as a holistic tool for empowerment, and the bottom-up approach as the optimal synergy. Community-based Eco-edu Tourism (CBET) is defined as " a form of ecotourism in which local communities have substantial control over, and involvement in, its development and management, and a major proportion of the benefits remain within the community" (Honey, 2008). For community-based ecotourism to work, the involvement of, and participation of communities is vital and integral within the aspects of management, and operationalization of the ecotourism activities.

Community-Based Eco-edu Tourism (CBET), ecotourism, and sustainable tourism are closely related concepts that are often used interchangeably despite important distinctions. Before delving further into what constitutes CBET, the distinctions among community-based ecotourism, ecotourism, and sustainable tourism must be understood. In many cases, there seems to be a vague line between the distinctions of these three concepts. Ecotourism is a form of responsible tourism conducted in a nature-based setting with the involvement of local communities living in or surrounding the areas. It contributes to the conservation of the areas and supports the well-being of the local communities (TIES, 2015; Fennell, 2020). In this situation, nature-based settings refer to a variety of settings. It can be managed by protected area managers (in the case of national parks), or it can be managed privately by individuals or local authorities, or local ecotourism groups. Therefore, the involvement of local communities in this case may or may not be wholly involved within the ecosystem.

In contrast, sustainable tourism refers to a broader concept of responsible tourism regardless of where tourism is located or conducted. Sustainable tourism, while sharing the same principles of ecotourism, differs in this case as sustainable tourism may be conducted in various settings, and these include non-nature areas such as urban settings (e.g., theme parks), zoos, and other areas. Sustainable tourism seeks to balance economic, social, and environmental impacts across tourism sectors and can therefore be implemented in urban destinations, heritage sites, theme parks, zoos, coastal resorts, and nature-based attractions (UNEP & UNWTO, 2005; GSTC, 2024). These involve large-scale developments or investments by corporations, particularly in terms of building accommodations (e.g., hotels, restaurants and shopping centres) surrounding the tourism area.

Community-based ecotourism differs from these two concepts in that the ecotourism activities are usually participated in, conducted, and managed mainly by the communities themselves within a specified natural area. The area is usually designated as belonging to the communities themselves, or communities have a special permit to manage.

Foundations and Pillars of Community-Based Eco-Edu Tourism (CBET)

The structural foundations of Community-Based Eco-edu Tourism (CBET) correspond closely with ecotourism and sustainable tourism frameworks. These frameworks guide organized CBET growth. Furthermore, CBET development should leverage a holistic

approach ensuring all parameters of sustainable ecotourism are thoroughly evaluated. Prominent frameworks guiding this sector encompass international policies and protocols related to community-driven and sustainable tourism, such as the UNWTO Sustainable Tourism Guidelines and the APEC Handbook on Community-Based Tourism (How to Develop and Sustain CBT). For the scope of this study, three core pillars are elaborated to provide a foundational conceptual overview.

Resource Conservation

Resource conservation in ecotourism targets the immediate and long-term stewardship of a destination's assets, comprising natural landscapes, cultural traditions, and tangible heritage. Destination managers must guarantee that all ecotourism development and operational activities prioritize resource preservation. Resources represent the foundational pillar of CBET, serving as the primary asset of the destination. Hence, localized activities must safeguard ecological integrity, cultural authenticity, and the capacity to sustain local livelihoods.

A recurring challenge in community-level tourism development is the risk of environmental degradation driven by unmanaged visitor activities. Sensitive ecosystems are highly vulnerable; unchecked activities such as pedestrian trampling, off-road vehicle usage, and unregulated structural expansions can cause soil compaction, vegetation loss, and hydrological cycle disruptions. This degradation intensifies if resource planning and conservation strategies are ignored prior to site commercialization. A study by Purnomo (2015) revealed that unsustainable tourism practices aggravate ecosystem degradation in peatlands, reducing climate change resilience. Therefore, designing low-impact ecological practices remains a key objective. This is achievable by deploying carrying-capacity management, green infrastructure, and rigorous environmental impact monitoring to minimize ecological risks.

Socio-Economic Benefits for Local Communities

A core pillar of CBET dictates that tourism development must generate direct benefits for the local community residing within, adjacent to, or near the tourist zone. This encompasses primary stakeholders operating the core CBET services and secondary stakeholders providing auxiliary support, such as homestays, food and beverage provisions, and local souvenir or craft outlets. Well-managed CBET sites catalyze positive societal externalities, generating extensive economic spillovers and stimulating vibrant social dynamics. Because CBET depends heavily on locals as primary custodians, social advancements emerge through expanded knowledge, skill acquisition, and governance empowerment. Kaur et al. (2016) noted that community members acquire critical competencies—including entrepreneurship, communication, and administrative decision-making—when managing a destination. Empirical evidence indicates that active civic engagement strengthens administrative acumen, cognitive knowledge, and community empowerment.

In mature CBET settings, established communities often begin empowering nascent networks, facilitating valuable peer-to-peer knowledge transfers. Judijanto (2025) characterizes this phenomenon as a compounding multiplier effect, where inter-community knowledge transfer expands the entrepreneurial skills necessary to sustain long-term paratourism networks.

Across tropical, developing zones like Indonesia, rural or underdeveloped tracts can be uplifted through sustainable tourism initiatives. Local populations capture financial returns through direct employment (e.g., eco-guides, hospitality staff) and indirect channels like heightened demand for indigenous goods. Ecotourism also creates economic

incentives for conservation, demonstrating that ecosystem preservation yields superior, long-term financial security compared to extractive practices.

Education and Interpretation

In general, ecotourism is a tourism concept in which natural destinations are developed in an environmentally friendly manner and promoted for tourism (Wells and Brandon, 2007). The natural attractions of ecotourism areas make it suitable for nature appreciation activities and educational visits provide opportunities for the development of ecotourism. In community-based ecotourism, education and interpretation is not only targeted to the visitors, but also to other stakeholders as well. This pillar can be viewed as a dual faced mechanism, where communities and visitors each benefit in terms of education.

Within this pillar, education and interpretation refers to also to educating local communities on the importance of the environment and instilling a sense of responsibility to individuals. Communities who are involved in ecotourism are able to instil a sense of pride for their culture and ecological resources and are also ready to carry out behaviours that does not harm the environment. They (locals) evolve from passive to active participants who partake in the conservation of natural and cultural resources (Ham, 2013; Wells & Brandon, 2007). Communities that are educated on their rights and participate in the decision-making earlier on enhance their ability to identify conflicts such as imbalanced benefit sharing, inequalities and resource privatization (Scheyvens, 1999). A recent study by Situmorang et al. (2026) identifies the role of indigenous rights and community well-being in Lake Toba, Indonesia.

In terms of education for visitors, the aesthetic and educational appeal of CBET areas can be enhanced through guided tours that educate visitors about the role of ecosystems. This not only provides a learning experience but can also drive greater conservation awareness (Bonn et al., 2014). The appeal of the ecotourism area can be enhanced through well-designed educational and interpretive materials for the visitors. Education and awareness of ecosystem functions in ecotourism areas can be enhanced through personal interpretation such as guided tours and non-personal interpretation panels that are engaging for all ages. In this article, we used the term Community-Based Ecotourism as CBET

Bonn et al. (2014) further state that the combined aesthetic and educational appeals to engage visitors during visitation will support heightened awareness and long-term conservation behaviours. Therefore, the incorporation of provoking designs should be taken into consideration when designing visitor experience.

METHOD

This community outreach project utilized Participatory Action Research (PAR) approach by using training, workshops, and intensive mentoring to enhance the competencies of Pokdarwis (20 participants) and local MSMEs (20 participants) in Tapian Tabiang Barasok, located in Bukit Apit Puhun Village, Guguak Panjang District, Bukittinggi, West Sumatra. The method of Community Development Program Implementation is as follow:

Preparation Phase

This phase is divided into two areas: staff (facilitator) preparation and field preparation. It ensures that facilitators share a unified vision, possess effective communication skills, and hold a solid sociological understanding of the local community. Initial contact is established both formally and informally with the Tapian Tabiang Barasok

Pokdarwis (Tourism Awareness Group) and local community leaders to secure authorization and build foundational rapport.

Need and Resource Assessment

The community service team identifies the authentic needs of the local *Pokdarwis* and MSMEs based on their existing community potential. Community members are engaged to independently map their challenges, problems, and local assets (including social, natural, and economic capital). This ensures that external interventions strictly align with local realities.

Participatory Planning

In this phase, the facilitators (Community Service Team) act as catalysts to nurture ideas originating from the community rather than imposing solutions. The community and facilitators collaborate to prioritize issues, define program goals, draft action plans, and establish a local steering committee. Roles and responsibilities are clearly defined—particularly the community's localized contributions (such as labor, venues, or local materials)—to cultivate a sense of ownership from the outset.

This study implemented three intervention stages involving diverse community stakeholders, with a total of 81 participants across all sessions. The first intervention—a training and workshop on Sustainable Recreation, Community-Based Ecotourism (CBET), and the Sustainable Development Goals (SDGs)—engaged 46 participants, comprising 20 Tourism Awareness Group (*Pokdarwis*) members, 20 Micro, Small, and Medium Enterprise (MSME) actors, 3 traditional community leaders (*Niniak Mamak* and *Bundo Kanduang*), and 3 local government representatives (*Lurah, RT, and RW*). The second intervention focused on video production and social media management training, involving 15 participants consisting of 10 *Pokdarwis* members and 5 MSME actors. Finally, the third intervention addressed *Pokdarwis* organizational governance training and workshop, which was attended by 20 participants.

Program Implementation

This represents the execution phase of the co-designed plan, guided by the principle of learning by doing. The primary focus of the facilitators extends beyond delivering physical outputs; it centers on human capacity building. Concrete actions include delivering technical skills training, conducting workshops, improving organizational governance, and simulating problem-solving scenarios throughout the program's lifecycle.

The first program implementation of this community service comprises a conceptual workshop to instill deep understanding regarding the importance of Sustainable Recreation, CBET, and the SDGs in managing nature assets. This phase integrated a cross-border academic partnership with Universiti Putra Malaysia (UPM), featuring Dr. Sheena Binti Bidin, a Senior Lecturer specializing in Environmental Education and Ethics, Marketing, Sustainable Recreation, and Ecotourism. She was selected due to her direct academic alignment with the project's goals. The participants included executive officers, general members of Pokdarwis, and localized MSME operators. The second stage trained Pokdarwis managers in digital content creation and social media management. The third stage focused on a specialized workshop addressing Pokdarwis Organizational Governance.

Participatory Monitoring and Evaluation

Evaluation is conducted collaboratively with the community on a regular basis (e.g., monthly) rather than solely by donors at the end of the program. The purpose is to assess whether field implementation remains on track, identify potential bottlenecks early (such as internal conflicts or elite capture), and adapt strategies with necessary flexibility.

Evaluation of the program was started from the preparation stage to the last program all together about 4 months. It was in line with the purposes of this program by using the indicators of institutional codification formulation, economic indicators (the growth of sales of MSMEs, ticket sales), Human Resources Literacy score 1 (unfamiliar) to 5 (very much familiar), the percentage of community participants, the availability of environmental guidelines, and SDGs Alignment.

RESULTS AND DISCUSSION

The project was situated directly at the Tapian Tabiang Barasok tourism site, geographically positioned in the Bukik Apik Puhun sub-district along the Ngarai Sianok Geopark fault-line, specifically within the Lapau Batu hamlet (RW 03). The primary occupations of the local inhabitants and youth consist of construction labor and traditional farming, with a high prevailing rate of underemployment. A prominent local social habit among men involves gathering at neighborhood coffee shops (warung kopi) during evening hours.

Brief historical context of the Pokdarwis, in mid-2024 (May), informal discussions at a local coffee shop sparked an initiative among several youth leaders to clear land along the canyon's edge for nature tourism. Upon securing community consensus, land clearing commenced. Over time, the youth systematically engaged broader community pillars, including formal figures, customary elders (tokoh adat), and matriarchal leaders (bundo kanduang). This culminated in the official formation of the Kampung Wisata Tapian Tabiang Barasok Pokdarwis, legally inaugurated on December 21, 2024, alongside the grand opening of the tourism zone. By June 2026, the Pokdarwis was approximately 1.5 years old, operating with minimal experience and zero external training or formal mentoring prior to the introductory baseline assessments conducted by the Faculty of Economics and Business (FEB) Universitas Andalas team in early 2025.

The results and discussion focus on the implementation across the three developmental stages.

Training and Workshop on Sustainable Recreation, CBET, and SDGs

Before the collaborative workshops, a concise training on "Natural Tourism Zone Management Models Based on Sustainable Recreation and CBET" was delivered to community figures—including formal administrators, traditional leaders (niniak mamak), Pokdarwis executives, and MSME owners. This seminar established a unified conceptual foundation among all stakeholders regarding sustainable tourism governance. It aimed to foster a shared mental model and collective commitment toward managing the Tabiang Barasok landscape. Furthermore, stakeholders gained international insights into how neighboring nations, specifically Malaysia, apply local wisdom-based sustainable recreation and ecotourism models.

Following the training, an interactive workshop was conducted with Pokdarwis members, local authorities (Lurah, RT, RW), traditional niniak mamak elders, and local MSE operators. Guided by the academic team, participants collaboratively developed a baseline framework for the destination's Vision and Mission statements, incorporating Sustainable Recreation, Ecotourism, and local wisdom principles. Stakeholders then mapped localized environmental and cultural assets, aligning them with the strategic development plans of Tabiang Barasok. Stage 1 successfully generated a localized Vision and Mission document alongside draft outlines for short-, medium-, and long-term action plans.

Three core conclusions emerged from this stage: first, the community development-driven nature tourism model at Tapian Tabiang Barasok aligns well with local wisdom-

based Sustainable Recreation and Ecotourism standards. Second, the high level of community interest and active participation was evident through their engagement in Q&A sessions and active involvement during the FGDs. Finally, the local community demonstrated a strong capacity to comprehend, internalize, and commit to implementing sustainable ecotourism governance.

Video Production and Social Media Management Training

The target demographic exhibited high diversity in age (predominantly above 35 years old) and formal education (majority holding middle and high school diplomas). Consequently, this technical training specifically targeted younger Pokdarwis and MSE members, 15 participants who possessed baseline smartphone literacy and active social media accounts. To ensure success despite educational constraints, the pedagogical model employed a 90% practical application and 10% theoretical instruction ratio. The training avoided complex algorithmic concepts, focusing instead on three fundamental skills: capturing stable, well-lit natural landscapes using mobile devices; editing videos using trending mobile application templates; and publishing content with accurate location tags and clear contact details.

Post-training assessments indicated that while full mastery was not widespread, a few younger members successfully produced promotional short-form videos that integrated environmental education elements. Those younger participants also demonstrated proficiency in managing official promotional accounts on Instagram and TikTok. See photo documentation for all activities in Figure 1.



Figure 1: Photo documentation of community service program

Pokdarwis Organizational Governance Training & Workshop

The final phase encompassed three thematic areas: First, instilling an accessible comprehension of Organizational Governance as a system of rules, structures, and practices designed to steer an organization toward efficient, effective, and accountable

goals. Second, linking the Vision, Mission, and strategic objectives formulated in the initiating stage with concrete implementation plans centered on CBET (Community-Based Eco-edu Tourism) principles. Third, facilitating a collaborative session in which Pokdarwis members designed an operational roadmap for CBET tourism activities, incorporating local wisdom and initial strategic plans, attended by 20 participants.

This stage produced concrete administrative tools, including basic Standard Operating Procedures (SOPs) to ensure operational consistency and efficiency, such as a Site Cleanliness SOP and a Tourism Event Management SOP. The Pokdarwis also secured a structured Project Implementation Draft categorized into: (1) pre-event planning, (2) event execution, and (3) monitoring of socioeconomic outputs and benefits.

The program was successfully implemented across multiple dimensions of development. Institutionally, Pokdarwis and the local community established official Destination Vision and Mission statements to guide future initiatives. From an economic perspective, the three-month community service initiative generated tangible financial gains for the local ecosystem. Driven by a structured series of targeted interventions—comprising (1) a Training and Workshop on Sustainable Recreation, CBET, and the SDGs; (2) Video Production and Social Media Management Training; and (3) a Pokdarwis Organizational Governance Training & Workshop—the project effectively elevated destination visibility and operational management. Consequently, during the intervention period, the community achieved an approximate 20% increase in income from ticket sales, benefiting both the Pokdarwis site management and local micro, small, and medium enterprises (MSMEs). From an economic perspective, the three-month community service initiative generated tangible financial gains for the local ecosystem. Driven by a structured series of targeted interventions—comprising (1) a Training and Workshop on Sustainable Recreation, CBET, and the SDGs; (2) Video Production and Social Media Management Training; and (3) a Pokdarwis Organizational Governance Training & Workshop—the project effectively elevated destination visibility and operational management. Consequently, during the intervention period, the community achieved an approximate 20% increase in income from ticket sales, benefiting both the Pokdarwis site management and local micro, small, and medium enterprises (MSMEs).

In terms of human resource capacity, participants' advanced management literacy improved from a baseline score of 1 (unfamiliar) to 3 (understanding), demonstrating enhanced comprehension of the definitions, interrelations, and long-term operational values of Community Development (CD), Community-Based Eco-Edu Tourism (CBET), and sustainability concepts. Socially, the program fostered strong local engagement, achieving an 80% collective participation rate among community members. Environmentally, Pokdarwis, local MSMEs, and informal leaders demonstrated both awareness and commitment by formulating basic zoning maps and general conservation guidelines. Finally, the program contributed to Sustainable Development Goal (SDG) alignment; specifically, it generated quantifiable localized contributions to SDG 1 (No Poverty) by elevating community income and participation, while advancing SDG 8 (Decent Work and Economic Growth) through the expansion of tourism operations in the Tabiang Barasok destination.

In general, the project yields distinct anticipated benefits across four primary stakeholder groups. For Pokdarwis Executives, the initiative fosters the acquisition of collective awareness and managerial skills tailored specifically for local wisdom-based Sustainable Recreation and Ecotourism. For MSMEs, it provides enhanced business capacities and strategic insights necessary to build long-term commercial models while simultaneously preserving local cultural identities. Furthermore, the Local Community gains expanded opportunities for economic participation alongside a heightened sense of pride in their indigenous cultural heritage. Finally, for the Local Government, the project

results in the creation of an empirical, Local Wisdom-based Sustainable Recreation and Ecotourism Model that is suitable for replication in other destinations.

The Local Wisdom-Based Sustainable Recreation & Eco-Edu Tourism Model: Integrating the concept of CD, CBET, and Sustainability

Derived from the collaborative action research involving the FEB Universitas Andalas team, Universiti Putra Malaysia (UPM), and the Tapian Tabiang Barasok Pokdarwis, this study proposes the Local Wisdom-Based Sustainable Recreation & Ecotourism Model by integrating the concept of CD, CBET, and Sustainability" (see Figure 2).

This conceptual model illustrates how Community Capacity Building (CB / CD) serves as the essential foundation for running effective Community-Based Tourism centered on Eco-Edu Tourism (CBET). By empowering local communities with skills, environmental awareness, and organizational strength, the destination delivers educational eco-tourism experiences that ultimately drive holistic Sustainability across environmental, social-cultural, and economic dimensions.

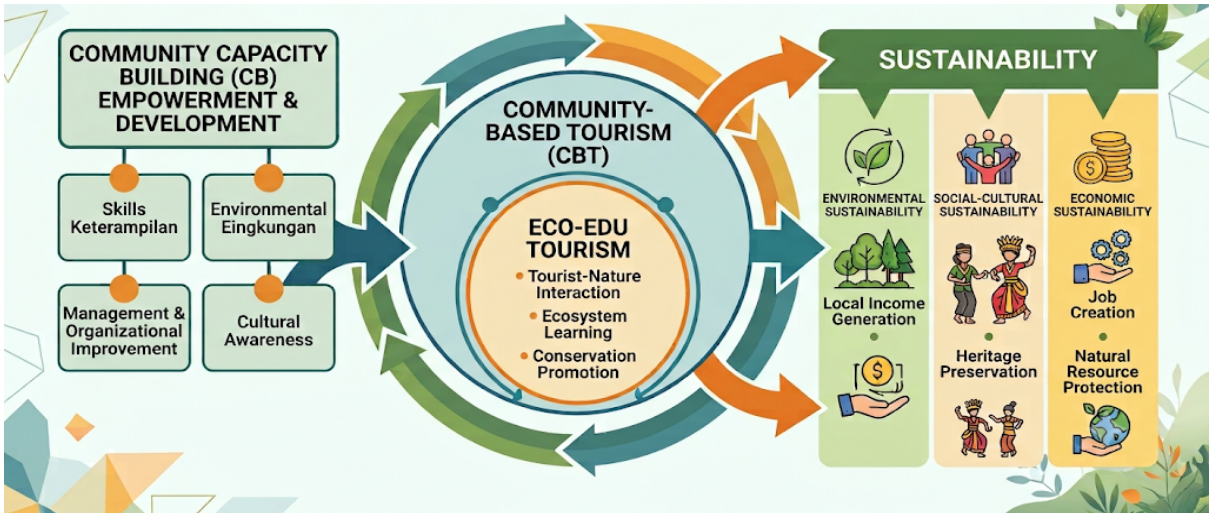


Figure 2: The local wisdom-based sustainable recreation & eco-edu tourism model: integrating the concept of cd, cbet, and sustainability

This conceptual model illustrates how Community Development CD), through Community Capacity Building, serves as the essential foundation for running effective Community-Based Tourism centered on Eco-Tourism (CBET). By empowering local communities with skills, environmental awareness, and organizational strength, the destination delivers educational eco-tourism experiences that ultimately drive holistic Sustainability across environmental, social-cultural, and economic dimensions.

Community Development (Foundation): Building Capacity & Empowerment

Located on the left, this component represents the input phase. For a tourism initiative to be sustainable and community-led, local capacity must first be developed across four key areas: Skills Development such as training and workshop for local residents in hospitality, tour guiding, service management, and entrepreneurship; Environmental Education, building community awareness and understanding of local ecosystems and conservation needs; Management & Organizational Improvement, strengthening local institutions, governance, and management structures to ensure equitable decision-making and efficient operations; and, Cultural Awareness, encouraging the preservation, value, and integration of local wisdom and cultural traditions into tourist activities.

CBET: Community-Based Tourism (CBT) & Eco-edu Tourism (Core Process Engine)

At the center of the model is CBET, the operational mechanism that connects community capabilities to sustainable outcomes. Community-Based Tourism (CBT), the overarching structure ensuring that tourism is owned, managed, and directly beneficial to the local population rather than external entities. Eco-Edu Tourism (Core Activity), the core product offering within the CBET framework, focusing on three educational and experiential pillars: Tourist-Nature Interaction, immersive experiences that foster a deep appreciation for the natural environment and local wisdom; Ecosystem Learning, structured activities where visitors actively learn about local cultural values, flora, fauna, and ecological balance; and, Conservation Promotion, engaging tourists and locals in active conservation initiatives, cultural events and environmental stewardship.

Sustainability (Outcomes & Impact)

On the right, the model highlights the Triple Bottom Line of Sustainability achieved through the integration of capacity building and eco-educational tourism. Environmental Sustainability through Natural Resource Protection, minimizing environmental degradation and safeguarding ecosystems through responsible tourism practices. Social-Cultural Sustainability, such as Heritage Preservation, safeguarding local traditions, indigenous knowledge, and cultural identity while building community pride and social cohesion. Economic Sustainability by improving Local Income Generation, creating direct financial benefits and diversified revenue streams for community members. Job Creation, generating sustainable employment opportunities in guiding, accommodation, local crafts, and culinary services.

This model has a linear & cyclical flow. It has capacity building that directly feeds into the CBT/Eco-Edu Tourism (CBET) framework (represented by the primary arrow). As tourism yields economic, cultural, and environmental rewards (sustainability outcomes), these benefits loop back to further strengthen community capacity and incentivize ongoing conservation efforts, creating a self-sustaining ecosystem.

Special Note: Cross-Border Knowledge Spillover

A key finding of this initiative is the positive impact of international knowledge sharing between the Faculty of Economics and Business (FEB) at Universitas Andalas and its international partner, Universiti Putra Malaysia (UPM), represented by Dr. Sheena Binti Bidin. Her expertise in environmental education and ethics, marketing, and sustainable recreation and ecotourism significantly enhanced the community's adoption of sustainable, ecotourism-oriented Community-Based Tourism (CBT) practices. Furthermore, this collaborative partnership establishes a strong foundation for future cross-border knowledge spillovers.

Training Module Assimilation through Cultural Proximity

Adopting modern tourism concepts often faces community resistance due to cultural differences and language barriers. However, collaboration with an academic partner from a culturally related nation (*serumpun*) facilitated smoother knowledge transfer. *Conceptual Precision*, we shared linguistic roots (Malay-Indonesian) allowed technical terms such as hospitality management, carrying capacity, and homestay operations to be translated clearly into local dialects without losing their academic meaning. *Shared Traditional Conservation Values*, both regions share similar cultural philosophies regarding nature stewardship and customary obligations (such as *gotong-royong* and adherence to customary norms). This shared perspective allowed the CBT modules to complement existing traditions rather than appearing as imposed external systems, optimizing local potential.

Sustainable Human Capital Development

Knowledge gaps present a primary challenge to the longevity of rural tourism initiatives. International academic intervention delivered structured improvements across three cognitive dimensions, particularly in management skills. This included sharing frameworks from UPM and Universitas Andalas on designing integrated CBT, ecotourism, and sustainability strategies.

Opening Cross-Border International Market Channels

The ASEAN Tourism Strategic Plan emphasizes sub-regional integration initiatives, such as the Indonesia-Malaysia-Thailand Growth Triangle (IMT-GT) and the BIMP-EAGA. The international academic partnership served as an institutional bridge for networking. *Multi-Destination Tour Packages*, academic networks can help map cross-border community ecotourism trails, such as linking community-managed zones in West Sumatra with Negri Sembilan, Malaysia. Moreover, the involvement of an international university helps connect the destination with academic networks, student groups, and the Muslim-friendly travel markets prominent in both nations.

Internal Conflict Mitigation through Knowledge-Oriented Leadership

External academic knowledge sharing also helped refine leadership structures within the local Pokdarwis. Heightened Community Attachment in the form of external validation from international scholars increased local pride (sense of belonging) regarding their native landscape and assets. Equitable Economic Distribution, where academic teams provided neutral, research-backed perspectives focused on social equity. Educating the community on transparent governance helped prevent the concentration of financial benefits among local elites, reducing potential internal conflicts.

International knowledge transfers are least effective when utilizing top-down approaches. The best outcomes occur when academics apply participatory models that balance modern scientific frameworks with the local community's right to guide their indigenous wisdom (*Local Wisdom Empowerment*).

CONCLUSION

This study suggests that integrating community capacity building with Community-Based Eco-Tourism can provide an initial institutional and organizational foundation for sustainable tourism. Through a structured, three-stage participatory intervention at the Tabiang Barasok destination, the project successfully transitioned the local community from informal site management to codified, accountable governance.

Key empirical findings indicate a significant shift in community literacy regarding sustainable tourism concepts (moving from score 1 to 3), an 80% collective participation rate, a 20% increase in local MSME and ticket revenues, and tangible governance outputs, including formal Vision/Mission codification, digital marketing accounts, and operational Standard Operating Procedures (SOPs).

Ultimately, the proposed Local Wisdom-Based Sustainable Recreation & Ecotourism Model confirms that empowering local communities with practical skills, environmental awareness, and organizational structures enables them to offer impactful Eco-Edu Tourism experiences. These experiences generate direct economic gains, safeguard cultural heritage, and protect natural resources, thereby contributing directly to SDG 1 (No Poverty) and SDG 8 (Decent Work and Economic Growth).

Recommendations

Based on the research findings and implementation challenges, the following recommendations are proposed for future development and research: Long-Term Digital Literacy and Mentorship: While initial digital marketing tools were established, technical adoption was concentrated among younger members due to demographic constraints. Future interventions should implement a structured, peer-led mentorship program where tech-savvy youth continuously train older MSME operators in digital storefront management and content creation.

Establishment of Monitoring & Evaluation (M&E) Frameworks: To maintain operational standards, local stakeholders should fully implement the drafted Project Implementation Draft and monitor compliance with the newly established Site Cleanliness and Event Management SOPs. Regular quarterly audits are recommended to track environmental impacts and financial accountability.

Multi-Stakeholder Partnerships and Institutional Support: Local government agencies and academic institutions should maintain longitudinal support by providing formal regulatory backing and facilitating market linkages with regional tour operators, thereby expanding the destination's market reach.

Model Replication and Longitudinal Validation: Future research should focus on conducting longitudinal studies to measure the long-term socioeconomic and environmental impacts of the model over a 3–5 year period. Additionally, empirical testing of this model in other rural or eco-tourism destinations with different socio-cultural contexts will validate its broader applicability and adaptability.

In summary, the integrated governance model deployed at Tabiang Barasok demonstrates that sustainable tourism requires building community capacity while respecting local wisdom (Local Wisdom Empowerment). This established framework offers a viable model for replication in comparable nature tourism destinations.

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