

Investigating the Role of Traditional Conservation Knowledge in Tourism Resource Management in Akwanga, Nasarawa State, Nigeria

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Abstract

Traditional Conservation Knowledge (TCK) has become crucial for biodiversity conservation and sustainable tourism in rural Nigeria; however, it is underutilised in tourism resource management. This study investigated TCK in Akwanga, Nasarawa State, utilising a mixed-methods approach that included field observations, questionnaires, and interviews. Descriptive and inferential statistics, including Chi-square tests, were employed to analyse the relationship between socio-economic factors and conservation practices. Findings revealed a high awareness of TCK, with sacred groves (31%) and cultural taboos (26%) as dominant conservation strategies. Statistical analysis showed a significant association between occupation and conservation practice ($\chi^2 = 9.76$, $p < 0.05$), indicating that livelihood dependence strongly influences environmental stewardship. TCK was found to enhance biodiversity conservation, preserve cultural heritage, and promote sustainable tourism. The study concludes that TCK integration into tourism policy through legal recognition, education, and co-management is essential for preserving tourism resources in Akwanga and other rural destinations.

Keywords: *Traditional Conservation Knowledge, Biodiversity conservation, Tourism Resource Management, Sustainable tourism, Indigenous Practices*

1. INTRODUCTION

Ecological knowledge, methods, and attitudes that have been passed down through the generations to manage natural resources sustainably are referred to as Traditional Conservation Knowledge (TCK) (Johannes, 2000; Rangel et al., 2024). In order to preserve environmental balance, TCK frequently integrates cultural, spiritual, and ecological viewpoints. TCK includes soil conservation, water management, biodiversity protection, and sustainable agriculture (Begam & Kumar, 2026; Berkes, 2017; Gadgil et al., 1993; Khosravi Mashizi & Escobedo, 2025; Posey, 1999). It has been

demonstrated that indigenous conservation strategies like taboos, seasonal limits, and holy groves are essential to the preservation of biodiversity (Begam & Kumar, 2026; Ormsby, 2013; Olsson & Ouattara, 2013; Posey, 1999). By maintaining ecological integrity and increasing community involvement, TCK enhances ecotourism and cultural tourism activities in the tourism industry (Gadgil et al., 1993; Sangha & Russell-Smith, 2015; Scheyvens, 1999; Timothy & Nyaupane, 2009).

However, urbanisation, modern education, and religious transformation are causing adherence to TCK to decline, and

indigenous systems are frequently marginalised by policy frameworks (Gontul et al., 2014; Johannes, 2000; Musa, 2023; Berkes, 2017). Traditional Conservation Knowledge (TCK) is a more focused subset of Traditional Ecological Knowledge (TEK), which is defined as “a cumulative body of knowledge, practice, and belief, evolving by adaptive processes and handed down through generations by cultural transmission, about the relationship of living beings (including humans) with one another and with their environment,” has been found to present similar difficulties (Berkes, 2012:7). TEK offers a broad framework for understanding indigenous environmental practices worldwide. The majority of TEK research has concentrated on savanna ecosystems in West Africa (Biboye, Umaru & Oyigbenu, 2026; Inkani, Mashi & Sani, 2024; Olsson & Ouattara, 2013), South America (Mistry et al., 2019), and Australia (Sangha & Russell-Smith, 2015). However, few studies have focused on TCK in tourism resource management, particularly in Nigeria.

Indigenous customs like taboo systems, community forest management, and sacred shrines have historically controlled access to rivers, forests, and wildlife in Nigeria (Alao, 2009). However, modernisation and policy neglect have undermined these systems (Musa, 2023). However, culturally protected landscapes and sacred groves continue to be both conservation areas and tourist destinations (Ormsby, 2013). Additionally, cultural tourism experiences are enhanced by cultural festivals, storytelling, and rituals associated with conservation traditions (Timothy & Nyaupane, 2009). Research (Sangha & Russell-Smith, 2015) demonstrates that incorporating indigenous knowledge into tourism design enhances resilience to environmental change and improves sustainability results.

Despite these benefits, there are also drawbacks, such as policy marginalisation, declining adherence among younger generations, and poor documentation (Gontul et al., 2014; Johannes, 2000; Musa, 2023; Olsson & Ouattara, 2013). Nonetheless, co-management frameworks with legal recognition and participatory planning that integrate scientific and indigenous knowledge present prospects (Berkes, 2017; Scheyvens, 1999). Formal recognition of indigenous conservation organisations in Nigeria might significantly increase the expansion of sustainable tourism, particularly in rural areas (Iirmdu, Anyamele & Bombom, 2025). Thus, the objective of this study is to investigate TCK's role in the management of tourism resources in Akwanga, Nasarawa State. The study aims to promote sustainability by identifying indigenous conservation strategies and investigating how they might be integrated into contemporary tourism governance. The study advances international discussions on sustainable tourism governance by providing quantitative and qualitative data on TCK practices in rural Nigeria. Encouraging biodiversity and ecosystem protection also supports policy considerations aligned with Sustainable Development Goal 15.

2. MATERIALS AND METHODS

Study area

The study was conducted in Akwanga, Nasarawa State, Nigeria (Figure 1), which is situated in the Guinea Savannah ecological zone, which is between 8° 54' 38" N and longitude 8° 24' 23" E (GeoNames, 2026). The region has distinct wet and dry seasons (Dauda, Ibrahim & Okafor, 2020) and is known for its natural features, such as Mada Hills, Numa Rock, Peperuwa Lake, and Farin Ruwa Waterfalls, as well as its cultural legacy (Agbu & Raji, 2020) (see Figure 2).

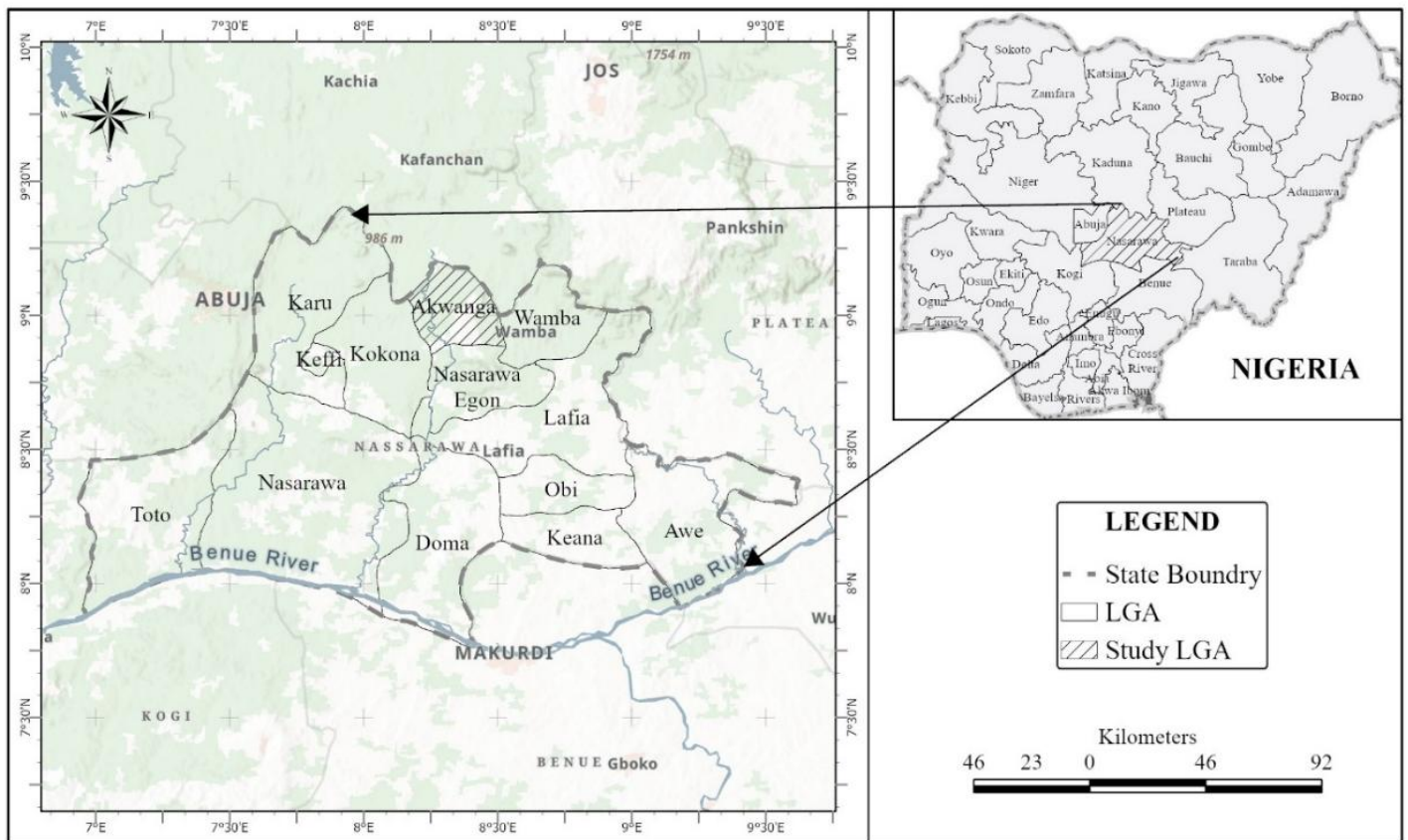


Figure 1: Akwanga, Nasarawa State

Source: Laka (2026)



Figure 2: Selected Tourism Resources in Akwanga

Photo Credit: Felicia Dangtis, 2025

Data Collection

To obtain reliable data, twenty postgraduate students of Plateau State University, Boko, were trained as field assistants for data collection. These assistants, together with the researchers, collected data through questionnaire administration and interviews. The study adopted a mixed-methods research design, integrating quantitative and qualitative approaches to ensure methodological triangulation and enhance validity. The quantitative component involved structured questionnaires administered to community members and tourism stakeholders, while the qualitative component included key informant interviews (KII) and field observations. This design enabled the study to capture both measurable patterns and contextual explanations regarding traditional conservation practices and tourism sustainability. The target population comprised local community members, traditional rulers and elders, tourism operators, government officials, and visitors/tourists. A total of 120 questionnaires were distributed. Out of these, 108 valid responses were retrieved, yielding a 90% response rate, which is considered statistically adequate for social science research.

Purposive sampling was used to select traditional leaders and key stakeholders due to their expertise in indigenous conservation practices and as caretakers of sacred sites, taboos, and ceremonies. Their views were critical in comprehending the cultural and ecological components of Traditional Conservation Knowledge (TCK). In contrast, random sampling was applied to community members to reduce selection bias. Random sampling was used to ensure representativeness and decrease selection bias among community members. This approach enabled the study to capture varied opinions across age, gender, and employment, offering a broader perspective of how TCK is practiced and perceived in the general community. Letters of introduction were issued to relevant authorities, and verbal and written consent

were obtained from all participants. Fieldwork was conducted respectfully, ensuring sacred sites and rituals were not disrupted.

Data Analysis

Following data collection, the responses were subjected to rigorous analysis to ensure validity and reliability. Additionally, 15 key informants were interviewed to provide qualitative depth. The instrument was subjected to expert review for content validity and a pilot test was conducted with 10 respondents outside the study sample. Reliability analysis using Cronbach's Alpha yielded a coefficient of 0.81, indicating high internal consistency (acceptable threshold ≥ 0.70). In social science research, scores above 0.70 are generally considered acceptable, whereas coefficients above 0.80 show strong reliability, demonstrating that the instrument consistently captured the target constructs among respondents. Quantitative data were analysed using descriptive statistics (frequencies, percentages, tables) and inferential statistics (Chi-squared test of independence). The inferential test was conducted at a 0.05 level of significance. Furthermore, qualitative data were analysed using thematic content analysis to complement quantitative findings.

3. RESULTS AND DISCUSSION***Demographic characteristics of respondents***

The demographic characteristics of respondents in Akwanga (Table 1) reveal patterns that are consistent with broader African experiences in indigenous conservation governance and tourism management (Chirima, 2025; Lekgau & Tichaawa, 2025; Tichaawa & Lekgau, 2024). The majority of responders (59.3% in this study) are male, reflecting the male-dominated customary systems that historically administer land and sacred sites in rural Africa. While this maintains custodianship continuity, it also suggests that men have the majority of ecological

knowledge and authority, potentially marginalising women's responsibilities in conservation. Recent research (Chirima, 2025; Iirmdu et al., 2026; Lekgau & Tichaawa, 2025) demonstrates that inclusive and participatory governance (particularly the inclusion of women and youth) improves

conservation, biodiversity outcomes, and tourism sustainability. Thus, the Akwanga case emphasises both the persistence of traditional male custodianship and the critical necessity for gender-inclusive conservation strategies.

Table 1: Demographic characteristics of respondents

Gender	Frequency	Percentage (%)
Male	64	59.3
Female	44	40.7
Age Group (Years)		
18–25	14	13.0
26–35	22	20.4
36–45	31	28.7
46–55	24	22.2
56 and above	17	15.7
Education Level		
No Formal Education	19	17.6
Primary	27	25.0
Secondary	34	31.5
Tertiary	28	25.9
Occupation		
Farming	39	36.1
Trading	21	19.4
Tourism-related	17	15.7
Civil Servants	16	14.8
Traditional Leaders	08	7.40
Others	07	6.60

Source: Fieldwork, 2025

Women's significant participation (41% in this study) illustrates the often-overlooked but crucial role women play in environmental stewardship, notably in agriculture and traditional ritual practices in Nigeria. For example, male custodians usually oversee the Osun-Osogbo Sacred Grove, but women priestesses perform critical responsibilities in ceremonial preservation (Adeyanju, 2024). Male chiefs administer Olumo Rock, but women sustain cultural tourism through festivals and oral traditions. Men control forest use on the Mambilla Plateau, although women's agroforestry methods improve biodiversity (Aliyu & Musa, 2024). Even in state-managed areas such as Yankari Game Reserve, women's increased participation in

eco-cultural tourism indicates their vital but often underappreciated role in environmental management (Sifon, 2025). Similar gender dynamics have been documented in Kenya. In Kenya's community conservancies, women have increasingly been integrated into conservation committees, leading to improved biodiversity outcomes and enhanced community cohesion (Western, Waithaka, & Kamanga, 2015a). As a result, inclusive governance that includes women and youth in conservation committees and tourism planning is not only equitable, but also necessary to protect TCK. Policy frameworks that fail to recognise these groups risk exacerbating knowledge loss and reducing community resilience, whereas

their active engagement improves biodiversity outcomes and secures the continuation of conservation traditions (Western, Waithaka, & Kamanga, 2015b; NACSO, 2019). These localised examples reinforce the Akwanga findings and highlight the need to strengthen women's inclusion in formal tourism governance frameworks.

The concentration of respondents aged 36 and above (66.6% in this study) implies that Traditional Conservation Knowledge (TCK) is still widely held among older generations. This is consistent with studies from Mali and Burkina Faso, where elderly people hold the majority of holy grove knowledge, whereas younger populations exhibit decreased allegiance due to urban migration and religious transition (Olsson & Ouattara, 2013; Ponge, 2026; Sinthumule, 2024a). Similarly, in South Africa's Limpopo Province, traditional ecological practices weakened in the absence of young participation mechanisms (Shackleton, Shackleton, & Cousins, 2007; Sinthumule, 2024b; Sinthumule, 2025). The Akwanga instance emphasises the importance of formalising intergenerational transmission mechanisms. Without structured youth involvement through education, tourist internships, or cultural heritage programmes, loss of knowledge could jeopardise long-term tourism sustainability.

Given that more than half of the respondents in this survey have a secondary or tertiary education suggests that TCK in Akwanga is not restricted to individuals with no formal education. This is congruent with reports from Botswana's Okavango Delta, where educated community members serve as liaisons between traditional governance systems and institutional conservation agencies (Mbaiwa, 2014). Similar occurrences have been found in larger African contexts, where educated youth and professionals are increasingly documenting and transmitting sacred grove knowledge, supplementing elders' custodianship

(Sinthumule, 2024a; Ponge, 2026). In Namibia's communal conservancy model, hybrid governance structures that combine indigenous knowledge with scientific conservation principles have considerably improved the sustainability of wildlife tourism (NACSO, 2019). Similar trends are visible in Nigeria. For example, at the Osun-Osogbo Sacred Grove, educated cultural caretakers have worked with UNESCO and government organisations to formalise conservation techniques while maintaining indigenous authority (Adeyanju, 2024). Local graduates have served as liaisons between forest-dependent communities and park authorities in Cross River National Park, transforming indigenous traditions into policy frameworks (Eze & Okonkwo, 2023). Similarly, educated youth in Olumo Rock have established cultural festivals and tourist initiatives that integrate traditional rites into modern tourism management (Iirmdu, Anyamele, & Bombom, 2025; Ogunleye, 2023). Thus, Akwanga's educational diversity provides a chance for co-management frameworks in which educated stakeholders can translate indigenous practices into formal tourism policy language, thereby minimising institutional marginalisation of TCK.

The predominance of farming (36.1%) among respondents reinforces the link between livelihood dependence and conservation engagement. Across sub-Saharan Africa, resource-dependent communities often demonstrate stronger conservation behaviour because environmental degradation directly affects subsistence and income (Berkes, 2017). For example, in Tanzania's Ngorongoro Conservation Area, pastoralist communities actively support wildlife conservation where tourism revenues are reinvested locally (Homewood, Kristjanson, & Trench, 2012). In Zimbabwe's CAMPFIRE programme, communities engaged in wildlife-based tourism exhibited stronger environmental stewardship when direct economic benefits were evident (Frost & Bond, 2008). The significant presence of tourism-related workers (15.7%) in Akwanga further

indicates emerging economic diversification tied to natural resource preservation. Moreover, linking tourism revenue directly to community conservation initiatives could reinforce TCK practices and strengthen environmental accountability.

The traditional conservation methods employed by the local communities

Examining the specific traditional conservation practices employed by local communities is essential for assessing the role of Traditional Conservation Knowledge (TCK) in tourism resource management. Figure 3 presents the major traditional conservation methods identified during fieldwork and their relative prevalence among respondents.

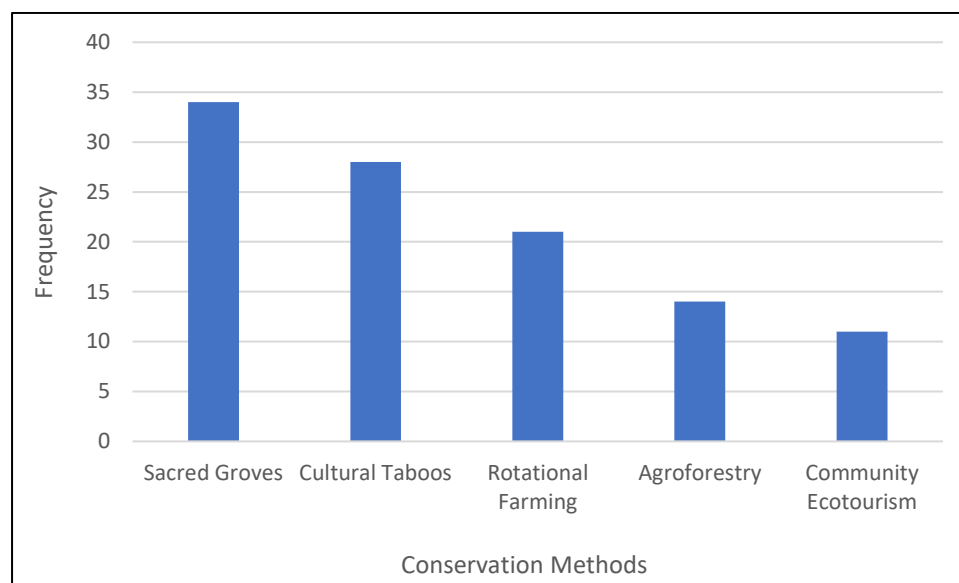


Figure 3: Sacred Groves as dominant conservation method

Source: Field work, 2025

Sacred groves emerged as the most common conservation strategy, accounting for 31.4% of respondents. These woodland places are regarded as spiritually significant and are protected under customary laws. Exploitation activities including logging, hunting, and farming are either outlawed or heavily regulated. The prevalence of sacred groves shows that spiritual organisations continue to serve as effective environmental governance tools in Akwanga. This quantitative conclusion was corroborated by conversations with traditional experts. A community elder stated:

“These forests are not ordinary places. They belong to our ancestors. No one dares to cut trees there because it is not just law,

it is spiritual” (Traditional Leader, Field Interview, 2025).

Similarly, a local tourism operator stated:

“Tourists are always interested in our sacred sites. The fact that they are preserved makes them attractive and unique” (Tourism Operator, Field Interview, 2025).

These responses demonstrate that sacred groves function not only as ecological buffers but also as cultural tourism assets. Similar findings have been documented in Ghana, where sacred groves serve as biodiversity reservoirs and eco-cultural tourism sites (Ormsby, 2013). This present study show that cultural taboos ranked second (26%). These include restrictions on overfishing, hunting certain species, and

entering sacred areas during designated periods. Unlike formal regulatory systems, taboos are enforced by moral and spiritual means. One youth respondent remarked:

“We were taught not to fish in certain rivers during some months. It gives the fish time to multiply” (Community Member, Field Interview, 2025)

However, concerns about weakening adherence were also expressed:

“Some young people don’t fear the taboos the way we used to. That is where the danger lies” (Elder, Field Interview, 2025).

The relatively high percentage suggests that informal social controls continue to be influential, despite the fact that modernisation pressures may endanger compliance. Similar weakening of taboo systems among youth has been reported in Burkina Faso and Mali (Olsson & Ouattara, 2013). Findings from this present study indicate that rotational farming (19.4%) reflects indigenous land-use strategies aimed at restoring soil fertility through fallow seasons. Farmers stressed its practical value:

“If you keep planting on the same land every year, the soil becomes weak. Our fathers taught us to allow it to rest” (Farmer, Field Interview, 2025).

This illustrates the integration of livelihood sustainability with ecological resilience. Agroforestry (13%) combines trees and crops, contributing to soil stabilisation and microclimate regulation. A civil servant involved in local planning observed:

“Planting trees on farms is not new to us. It protects the land and even improves harvest” (Local Official, Field Interview, 2025).

Community-led ecotourism recorded the lowest frequency (10.1%). While conservation practices exist, their structured integration into tourism remains limited. A tourism stakeholder noted:

“We have the resources, but we have not fully organised them for tourism benefits” (Tourism Operator, Field Interview, 2025).

This suggests that economic potential remains underdeveloped despite ecological strength. Building on respondents’ demographic profiles, it was necessary to investigate whether socioeconomic factors, particularly occupation, influenced conservation behaviours, revealing how livelihood dependency influences environmental stewardship in Akwanga.

Determinants of Conservation Engagement: A Socioeconomic Analysis

To examine whether conservation practice is influenced by socio-economic characteristics, a Chi-square (χ^2) test of independence was conducted between occupation and conservation practice.

$$\chi^2 (3, N = 108) = 9.76$$

$$p = 0.021$$

Since $p < 0.05$, a statistically significant association exists between occupation and conservation engagement. This indicates that conservation behaviour is not evenly distributed across occupational groups. Farmers and tourism-related workers demonstrate stronger participation in sacred grove protection compared to civil servants and other groups. The statistical result corroborates interview narratives emphasising livelihood dependence:

“If the forest is destroyed, our farms will suffer. We protect it because our survival depends on it” (Farmer, Field Interview, 2025).

This finding aligns with broader African conservation experiences. In Namibia’s communal conservancies and Zimbabwe’s CAMPFIRE programme, resource-dependent households showed higher conservation compliance when linked to livelihood benefits (Frost & Bond, 2008; NACSO, 2019). Thus, Akwanga exemplifies a culturally viable but economically underutilised conservation system. The statistical evidence validates the claim that conservation engagement is intrinsically linked to livelihood dependency, emphasising the need of tourism policies that formally recognise

traditional authorities and include revenue-sharing systems. Such strategies would ensure that Traditional Conservation Knowledge (TCK) is both culturally and commercially sustainable, improving the long-term viability of tourism resource management.

The impact of traditional conservation methods on the sustainability of tourism resources

Traditional Conservation Knowledge (TCK) plays a pivotal role in maintaining and enhancing tourism resources, particularly in regions where ecological and cultural assets are intertwined with local livelihoods. In many communities, indigenous practices are not only strategies for environmental stewardship but also mechanisms for sustaining tourism potential over time (Gadgil, Berkes & Folke, 1993; Iirmdu et al., 2026). By embedding conservation within cultural norms, beliefs, and rituals, TCK ensures that natural and cultural resources are protected, while simultaneously offering unique experiences that attract tourists. In the present study, data collected from participants revealed that TCK significantly contributes to sustainable tourism by enhancing biodiversity conservation.

Respondents highlighted that sacred groves, community forests, and ritual-protected areas act as sanctuaries for local flora and fauna. One interviewee remarked, *“We do not hunt or cut trees in the forest because our ancestors forbade it. This has kept the animals and plants safe, and visitors come to see these forests and wildlife.”* Such practices align with ecotourism principles, where the protection of biodiversity underpins visitor attraction and long-term ecological stability (Pretty et al., 2009).

Traditional beliefs and conservation methods are integral to cultural identity by promoting cultural heritage tourism. Participants emphasised that these practices attract tourists interested in authentic experiences. As one local chief explained, *“Our festivals and sacred sites are not just*

for us; tourists come to witness our customs and respect our traditions.” This demonstrates how TCK serves as a cultural asset, fostering intercultural exchange and enhancing the diversity of tourism offerings (Timothy, 2011).

The study found that community-led conservation initiatives encourage local participation through involvement in tourism planning and management. Respondents noted that being custodians of natural and cultural resources motivates them to engage actively, ensuring equitable benefits. One respondent stated, *“When we manage our sacred sites, we also decide how visitors behave and how we benefit from tourism; it gives us pride and income.”* This participatory approach strengthens community ownership, reduces conflicts, and contributes to the resilience and sustainability of tourism operations (Berkes, 2004).

The findings emphasise the need of including TCK into tourism development frameworks. By recognising and supporting indigenous conservation practices, policymakers and tourism planners may promote sustainable resource use, improve visitor experiences, and empower local people. Furthermore, these findings imply that disregarding TCK may jeopardise both environmental and cultural sustainability, potentially reducing tourism appeal and community well-being. Overall, utilising traditional conservation approaches provides pathways for eco-friendly, culturally genuine, and socially inclusive tourism.

The challenges and opportunities in integrating TCK with modern tourism management strategies

The incorporation of Traditional Conservation Knowledge (TCK) into modern tourism management presents both potential and challenges. While TCK provides locally based, culturally rich, and environmentally sustainable methods to resource management, current tourism systems are frequently dominated by

standardised policies, market-driven agendas, and globalised practices. Recognising the interplay of these systems is critical for establishing sustainable tourism outcomes that respect cultural heritage and environmental integrity (Berkes, 2004; Pretty et al., 2009).

In this study, one of the major findings on the challenges affecting the incorporation of TCK into modern tourism management strategies is modernisation and cultural erosion. Respondents indicated that younger generations increasingly prioritise urban lifestyles and globalised values over traditional conservation practices. As one interviewee explained, *“Most youths prefer to live in the town and do not understand why we protect certain forests or rivers. They think these practices are old-fashioned.”* This trend threatens the continuity of TCK and may reduce the effectiveness of community-led conservation initiatives (Gadgil, Berkes & Folke, 1993).

Several respondents noted a lack of policy integration. Respondents observed the disconnect between government policies and indigenous knowledge systems. A community leader commented, *“Officials sometimes insist on modern conservation laws that contradict our sacred rules. This creates confusion and sometimes discourages locals from participating.”* Such gaps can lead to conflicts, reduced compliance, and missed opportunities for leveraging TCK as a complementary strategy within formal tourism management frameworks (Timothy, 2011). Financial constraints were frequently highlighted as a barrier to TCK integration. Interviewees emphasised that limited resources hinder documentation, awareness campaigns, and the promotion of traditional practices as tourist attractions. One respondent stated, *“We have knowledge that can attract tourists, but we cannot fund proper guides, signage, or cultural festivals to showcase it.”* This limitation restricts the potential of TCK to contribute to sustainable tourism and economic development (Pretty et al., 2009).

Despite these challenges, this study found prospects for improving tourism sustainability through TCK. Respondents proposed that targeted interventions, such as youth engagement programmes, policy reforms that recognise indigenous customs, and funding assistance for community-based tourism projects, could bridge the gap between traditional and modern management systems. Destinations can create culturally authentic, environmentally responsible, and economically advantageous tourism experiences by blending TCK capabilities with contemporary tourism planning (Berkes, 2004). The findings of this study highlight the importance of multi-level coordination among communities, policymakers, and tourism stakeholders. Ensuring that TCK is documented, recognised, and integrated into tourism strategies can help to increase resource sustainability, cultural identity, and community participation. Furthermore, addressing financing and policy gaps may boost cultural resilience and open up new opportunities for inclusive and innovative tourism development. Failure to recognise these variables risks marginalising indigenous knowledge systems and jeopardising the long-term viability of tourism resources.

4. CONCLUSION AND RECOMMENDATIONS

This study demonstrates that Traditional Conservation Knowledge (TCK) is critical for biodiversity protection, cultural heritage preservation, and tourism sustainability in Akwanga. Sacred groves and cultural taboos are the most often employed conservation measures, and statistical research shows that livelihood dependency has a substantial impact on conservation engagement. TCK is culturally robust, but commercially underutilised, highlighting the need for official integration into tourism governance. TCK is necessary to be integrated into tourism governance through practical techniques in addition to legal recognition and co-management. For starters, revenue-

sharing programmes can link conservation efforts to community livelihoods, whereas community tourism boards encourage inclusive decision-making. In addition, incorporating sacred grove protections and taboos into local government rules establishes enforceable safeguards. Furthermore, capacity building for women and youths enhances conservation knowledge transmission between generations, and participatory planning frameworks guarantee that tourism development is respectful of indigenous custodianship. When taken together, these aspects provide a governing framework that is culturally acceptable, commercially successful, and environmentally sustainable.

To strengthen tourism resource management in Akwanga, customary authority and indigenous conservation practices must be integrated into tourism policy, thereby legitimising traditional government institutions. Integrating tourism revenue directly into community conservation initiatives through revenue-sharing schemes encourages stewardship and ensures that local livelihoods benefit from tourism. Furthermore, capacity building through education and structured intergenerational transmission of TCK is essential, along with intentional engagement of youths and women to broaden government participation. Finally, developing co-management frameworks that combine indigenous knowledge and scientific approaches would increase ecological resilience and safeguard tourism resources' long-term survival.

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