Journal of Rural and Community Development

Rural Community Residents' Perceptions and Adaptations To Climate Change Impacts On Heritage and Nature-Based Tourism Resources

Author: Chikezie Osuagwu

Citation:
Osuagwu, C. (2025). Rural community residents' perceptions and adaptations to climate change impacts on heritage and nature-based tourism resources. *The Journal of Rural and Community Development*, *20*(2), 167–195.

Publisher:
Rural Development Institute, Brandon University.

Editor:
Dr. Doug Ramsey

ISSN: 1712-8277 © Authors
www.jrcd.ca

Rural Community Residents' Perceptions and Adaptations to Climate Change Impacts on Heritage and Nature-Based Tourism Resources

Chikezie Osuagwu
University of Agriculture & Environmental Sciences (UAES)
Umuagwo, Imo State, Nigeria
osuagwu.chikezie@uaes.edu.ng

Abstract

Aim: This study examined perceptions, adaptation, and mitigation measures in rural smallholder-dominated agricultural communities of Imo State, Nigeria, in light of habitat degradation, species loss, and tourism destination substitution resulting from climate change.

Objectives: It investigated community perceptions and rural adaptation strategies while offering suggestions for economic diversification through heritage and nature-based tourism initiatives.

Methodology/approach: Primary data was sourced from rural communities around lakes and monkey habitats. Adopting a qualitative approach, observations, personal interviews with *(n=128)* key informants (KI), and three focus group discussions (FGD) were conducted between January and November 2023. The thematic analysis identified community awareness, adaptation strategies, implementation difficulties, and tourism concept awareness, also highlighting additional adaptation strategies.

Findings: Residents adopt diverse mitigation and adaptation strategies for water, forests, heritage resource conservation, and economic support means.

Recommendations: Communities facing the impacts of climate change require support, capacity-building programs, and the development of economic diversification initiatives. Collaboration among stakeholders for conservation is proposed to encourage the adoption and prioritization of heritage and nature-based tourism (H&NBT) through incentives, taking into account the abundance of natural resources in Imo State.

Keywords: climate change, heritage and nature-based tourism, OKOBI, rural communities

Perceptions et adaptations des résidents des communautés rurales aux impacts du changement climatique sur le patrimoine et les ressources touristiques naturelles

Chikezie Osuagwu
University of Agriculture & Environmental Sciences (UAES)
Umuagwo, Imo State, Nigeria
osuagwu.chikezie@uaes.edu.ng

Résumé

But : Cette étude a examiné les perceptions, les mesures d'adaptation et d'atténuation dans les communautés agricoles rurales dominées par les petits exploitants de l'État d'Imo, au Nigéria, à la lumière de la dégradation de l'habitat, de la perte d'espèces et de la substitution de destinations touristiques résultant du changement climatique.

Objectifs : L'étude a porté sur les perceptions des communautés et les stratégies d'adaptation rurale tout en proposant des suggestions de diversification économique à travers des initiatives de tourisme axé sur le patrimoine et la nature.

Méthodologie/approche : Les données primaires proviennent de communautés rurales situées autour des lacs et des habitats des singes. En adoptant une approche qualitative, des observations, des entretiens personnels avec (n = 128) informateurs clés (KI) et trois groupes de discussions (FGD) ont été menés entre janvier et novembre 2023. L'analyse thématique a identifié la sensibilisation de la communauté, les stratégies d'adaptation, les difficultés de mise en œuvre et la sensibilisation au concept de tourisme, mettant également en évidence des stratégies d'adaptation supplémentaires.

Résultats : Les résidents adoptent diverses stratégies d'atténuation et d'adaptation pour l'eau, les forêts, la conservation des ressources patrimoniales et les moyens de soutien économique.

Recommandations : Les communautés confrontées aux impacts du changement climatique ont besoin de soutien, de programmes de renforcement des capacités et de développement d'initiatives de diversification économique. Une collaboration entre les parties prenantes pour la conservation est proposée pour encourager l'adoption et la priorisation du tourisme basé sur le patrimoine et la nature (H&NBT) par le biais d'incitations, en tenant compte de l'abondance des ressources naturelles dans l'État d'Imo.

Mots-clés : changement climatique, tourisme du patrimoine et de la nature, OKOBI, communautés rurales

1.0 Introduction

Climate, heritage, and natural resources significantly influence tourism. The relationship between them is crucial for the growth and sustainability of the tourism industry. Climate change, in particular, has emerged as a major global challenge affecting both natural environments and human systems, with noticeable effects on the tourism sector. Although tourism is one of the fastest-growing economic sectors worldwide, climate change can impact tourist destinations in various ways, including shifts in weather patterns, effects on natural and cultural heritage resources, and changes in wildlife and ecosystems.

Research on the relationship between tourism and climate change has predominantly centered on the global North, with the global South, particularly Africa, receiving comparatively less attention. Additionally, local perspectives and adaptation strategies in rural communities that host heritage and nature-based tourism resources have also been overlooked, yet this knowledge is crucial for effective tourism planning and development. Therefore, this study aims to examine the perceptions of rural residents in Imo State, Nigeria, regarding the impacts of climate change. It will also investigate the potential of heritage and nature-based tourism (H&NBT) as a viable option for mitigation and adaptation. By offering insights into the local context, this research seeks to inform policymakers, communities, and tourism practitioners in their efforts to enhance resilience and adapt to a changing climate, particularly in the tourism sector. This is significant as millions of local inhabitants depend entirely on natural resources for food, energy, medicine, and various socio-economic and cultural needs (Gadinga et al., 2020).

The objectives of this study were:

1. to ascertain community people's perceptions and awareness of climate change,
2. to determine and examine the adaptation techniques implemented in rural areas, and
3. to propose stakeholder cooperation for economic diversification via heritage and nature-based tourism (H&NBT) initiatives.

2.0 Literature Review

Climate, heritage, and natural resources are essential elements that drive visitor flow to tourist destinations and serve as the foundation for tourism development. Climate refers to the long-term prevailing weather conditions in a specific location, while weather represents the manifestation of climate at a particular moment in time and place (Kolawole et al. 2016). Changes in climate occur when various weather elements—such as sunlight, temperature, snow, wind, and rainfall—interact, leading to unstable ecosystems that affect heritage and natural resources (Yohannes et al., 2020).

As the most significant environmental challenge facing the world today, climate change impacts both natural and human systems (Atasoy & Atasoy, 2020). The effects of climate change often vary in magnitude and rate across different continents, countries, and regions.

Research in the field of tourism has grown significantly since the turn of the twenty-first century (Mulet-Forteza et al., 2019). As one of the world's fastest-growing and largest economic sectors (Sofronov, 2018), it encompasses all leisure travel-related activities, providing income for host destinations, neighbouring communities, and intermediary organizations. For some

destinations, weather is a key advantage and attraction for tourists, but as climate changes, some destinations benefit while visits decline in others (Day et al., 2021). Often, these changes lead to the death or emigration of animal species, reduced travel demand, or altered vacation choices (Ngxongo, 2021); destination substitution (Pröbstl-Haider et al., 2021); increased operating costs at tourist attractions; and impacts on heritage resources. Climate change also affects the timing of meetings, conferences, sports, and large events (Kim et al., 2022); cultural events; the availability of wildlife that tourists seek; reduced waterfall flows; and even the accessibility of attractions in remote destinations (Kilungu, 2023). Consequently, all facets of the tourism system, from tourists to the markets generating tourists, transit areas, modes of tourist transport, and destination host communities, must adapt to changes brought about by this phenomenon (Scott & Gössling, 2018). Ma and Kirilenko (2019) identify a dual relationship between climate and tourism, noting that changes in the former have both direct and indirect impacts on the latter. Global warming, a consequence of climate change that can lead to droughts, storms, and floods with visible negative effects on heritage and natural resources, also heightens tourism's economic, environmental, and cultural challenges. Therefore, stakeholders must have information to adapt and strengthen their resilience to the reality of future climate change.

Studies on the relationship between tourism and climate change have mostly come from the global North (Dube & Nhamo, 2020), mainly addressing how polar ice melting could affect tourists, tourism at beaches, and the Winter Olympics. Despite the rapid growth of tourism and predictions of severe impacts along with a lower capacity to adapt to climate change effects, the global South has received less research attention. Recent studies reveal how climate change impacts waterfalls, ecotourism in coastal areas, wildlife parks, cultural sites, and tourism infrastructure (Dube & Nhamo, 2020). However, the African continent still receives less research focus than other global South countries (Hoogendoorn & Fitchett, 2018). Williams et al. (2018) note that while climate change challenges are not uniformly felt across the globe, the tropics experience more pronounced effects. Certain tourism zones are more vulnerable to regional manifestations than others (Scott & Gössling, 2018), resulting in varied direct and indirect impacts. Rural poor populations in developing nations face considerable climate change challenges (Bryan & Behrman, 2013) due to their reliance on natural resources for subsistence (Munanura et al., 2018) and their relatively limited ability to adapt. It remains crucial to understand how climate change will affect the continent's tourism industry (Dube & Nhamo, 2019), as the ability to adjust to climate change threats may vary across destinations.

Stakeholders need to examine the relationship between climate variability and climate change adaptations to identify which strategies could be more effective (Pisor et al., 2023). Understanding the effects of climate change and adaptations is essential for determining strategic initiatives for local and tourism economies (Pandy & Rogerson, 2018). Furthermore, protecting H&NBT resources is crucial in light of climate change.

Climate change directly affects leisure and tourism, leading to changes in consumer attitudes, forest alterations, health issues, infrastructure needs, and heritage resource loss. Stakeholders must respond by strengthening their resilience because indirect effects are uncertain (Day et al., 2021). Sadly, how residents of Imo State, Nigeria, respond to the impacts of climate change on H&NBT resources remains unclear, as research on the attitudes of this population is similarly insufficient. For tourism planning and development,

particularly in regions with H&NBT resources, policymakers, communities, and practitioners need information on climate change impacts.

Growing global concerns about climate change have led to rapid research on its impacts on tourism (Na et al., 2022). However, the tourism industry's adaptation to climate change has not received sufficient academic attention compared to other sectors despite its importance. Scholars point out gaps in current knowledge (Metcalfe et al., 2020; Na et al., 2022; Pandy et al., 2019; Shang et al., 2023; Day et al., 2021), highlighting under-explored themes. Analyzing climate change information is crucial for tourism growth, with perception studies laying the foundation for evaluating adaptation and mitigation efforts. Such research should help stakeholders understand climate change and its policy implications, fostering effective actions in the tourism sector (McGahey & Lumosi, 2019).

This study aims to investigate residents' perceptions of climate change impacts in rural communities of Imo State and the adoption of H&NBT as a viable mitigation and adaptation option. Its objectives include reviewing the current state of knowledge about climate change perceptions and the mitigation/adaptation actions by rural communities. Additionally, it provides options to help vulnerable communities adapt to climate change more effectively through H&NBT.

3.0 Study Frameworks

This study is grounded in two closely related approaches that empower local communities to manage natural resources and adapt to environmental change: Community-Based Natural Resource Management (CBNRM) and Community-Based Adaptation (CBA).

CBNRM emerged in the 1960s, becoming a leading paradigm for conservation and development in the post-1980s era. This approach recognizes the vital role of local communities in managing natural resources and addressing the shortcomings of traditional top-down methods (Child & Barnes, 2010; Rabe & Saunders, 2014). Elinor Ostrom researched common-pool resource management and collective action, while the International Union for Conservation of Nature (IUCN) advanced community-based approaches. The World Wildlife Fund (WWF) also collaborated and established networks to actively participate in the global implementation of CBNRM programs. With an emphasis on sustainable livelihoods, community empowerment, and environmental governance, the United Nations Development Programme (UNDP) supports CBNRM programs globally by funding projects, offering technical assistance, and building capacity. In particular, Ostrom's study on common-pool resources (CPR) provides additional foundation for CBNRM, showing how communities can sustainably manage shared natural resources without external regulation when equipped with appropriate governance structures.

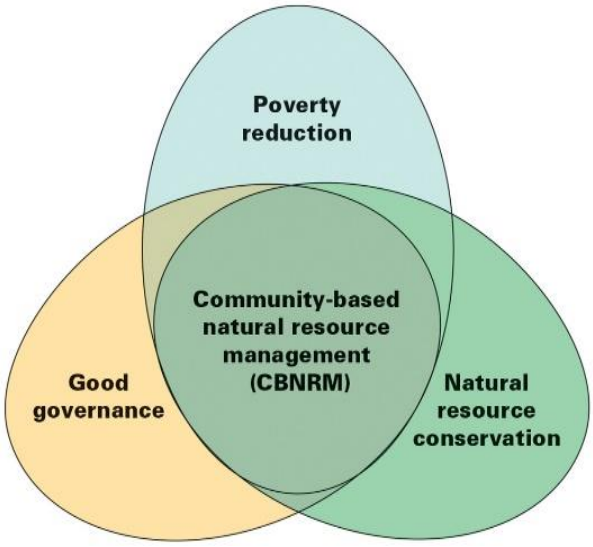
CBNRM's key design features include clearly defined resource boundaries, collaborative decision-making, locally customized rules, effective monitoring, categorized penalties for rule violators, easily accessible conflict-resolution processes, and external authorities' acknowledgment of local governance rights. These ideas are ingrained in its governance structures, where the role of institutions is evidenced in resource management through participatory planning, rule enforcement, and benefit-sharing systems. Successful CBNRM efforts adhere to Ostrom's principles by emphasizing strong local government, stakeholder participation, and adaptive management practices.

Communities are viewed as important stakeholders who offer insightful opinions and expertise, and their involvement is crucial to efficient and long-lasting administration (Zikargae et al., 2022). Among the key tenets of CBNRM is that it combines scientific with traditional ecological knowledge to comprehend ecosystems and the behaviour of species. Hence, sustainable activities do not go beyond ecosystems' self-repair capabilities that balance people's demands and the environment.

However, obstacles such as elite capture form of corruption, inadequate institutional support, and external economic pressures might weaken its effectiveness.

As shown in Figure 1, CBNRM has been recognized in the South Africa Development Community (SADC) due to its contributions to infrastructure development, social welfare projects, poverty reduction, additional income which increases household assets, rural development and other incentives. This is evidenced in Botswana, Malawi, as well as Namibia, Zambia, and Zimbabwe (Child & Barnes, 2010; Foyet, 2024; United States Agency for International Development [USAID], n.d.). For Ghanaian communities, CBNRM has been of benefit by enhancing conservation tactics like protected areas and efficient law enforcement. Though heavily reliant on external assistance, government agencies and NGOs must provide consistent and coordinated assistance to achieve their full potential (Agyare et al., 2024). In a twenty-one-country study by Milupi et al. (2017), water resources management in Honduras, Kenya, Nepal, India, and St. Lucia showed signs of success. In addition, CBNRM was successful in cooperative forest management in Fiji, India, Alaska, Namibia, Malaysia, Mexico, China, Cambodia, Washington, and to a lesser degree, Papua New Guinea. Nevertheless, CBNRM programs were unsuccessful in managing wildlife conservation in Tanzania, Zimbabwe, Uganda, and Nepal for reasons like unequal distribution of the advantages of natural resources, lack of empowerment, and low level of community involvement.

Figure 1: Community-based natural resource management ACCORD (2020).

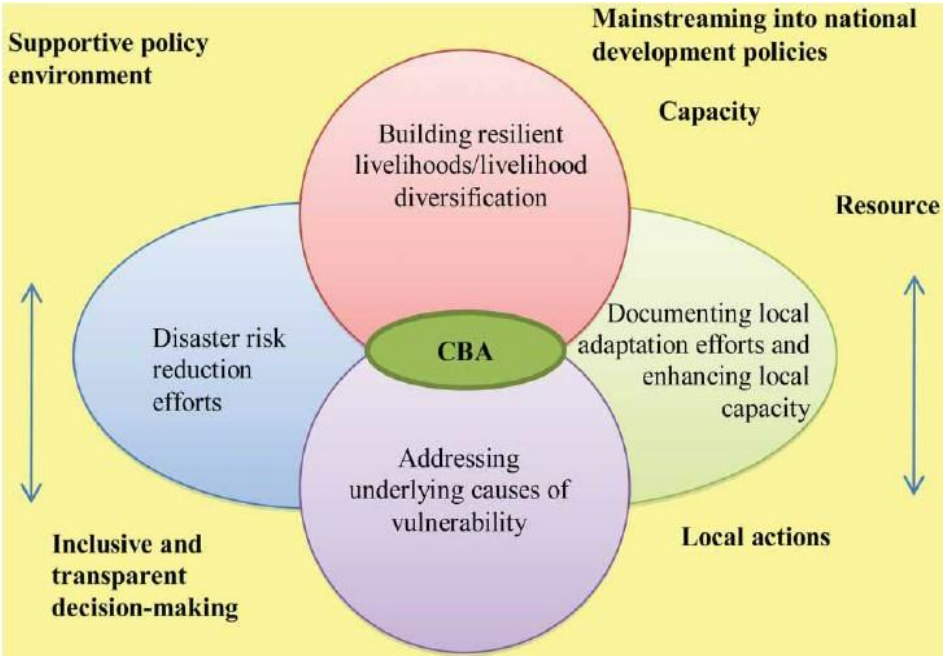


Community Based Adaptation is a bottom-up approach that integrates *Western scientific systems* with local knowledge to enhance community-level adaptive capacity in climate change adaptation (Kirkby et al., 2017). It acknowledges

local communities' unique knowledge and allows them to create and execute adaptation plans. CBA gained prominence in the 2000s with the growing understanding that mitigating climate change is more important than just adapting. Efforts are focused on understanding local poverty conditions and social vulnerability factors and empowering stakeholders in climate change adaptation (Forsyth, 2023). Mfitumukiza et al. (2020) examined regions, risks, and climate change susceptibilities in Bangladesh, Ethiopia, Pakistan, Fiji, and New Zealand, which had adopted CBA experiences. They observed that local communities partner with local governments, businesses, and civil society organizations to develop adaptation measures.

CBA is committed to developing affordable and socially acceptable solutions that align with development priorities. By strengthening partnerships between communities and stakeholders and ensuring that planning processes elevate the voices of poor and vulnerable populations, its actions are to address climate risks effectively. CBA is clearly illustrated in Figure 2.

Figure 2: Community-Based Adaptation (Stott, 2023).



Both frameworks empower local communities to manage natural resources and adapt to climate change. CBA highlights climate change adaptation, while CBNRM focuses on sustainable resource use. Both rely on stakeholder collaboration, participatory governance, and local knowledge. CBNRM seeks to decentralize governance by establishing local institutions, allowing communities to make decisions about land, water, forests, and wildlife (Agyare et al., 2024). Decision-making is participatory, involving resource mapping and consensus-building, with implementation strategies that include long-term livelihood programs and community-led enforcement. However, CBNRM faces challenges such as conflicting interests, power dynamics, cultural sensitivities, limited institutional support, and funding issues (Foyet, 2024). Despite these obstacles, it has achieved successes in resource management, improved governance, and economic benefits through sustainable ventures like ecotourism and agroforestry.

CBA focuses on building local resilience to climate change through bottom-up initiatives that combine indigenous knowledge with scientific data. Community-led climate committees are frequently included in governance structures, where they analyze vulnerabilities, devise adaptation plans, and interact with governments, non-governmental organizations, and scientists.

CBA's implementation techniques focus on ecosystem-based adaptation, including mangrove restoration, agroecology, and diversifying livelihoods through climate-resilient farming and income-generating activities, as well as improving catastrophe preparedness. Key challenges include resource constraints, short-term planning horizons, and socio-economic inequities that limit access to adaptation methods. Many issues stem from a disconnect between implementers' perspectives and the political and social contexts that shape local activities (Barrowman & Butler, 2021). However, when effectively applied, CBA enhances local resilience, promotes cost-effective climate solutions, and demonstrates scalable community-driven responses to environmental change.

4.0 Materials and Methods

This study achieved its objectives by gathering primary and secondary data. A literature review focused on climate change, adaptation, mitigation strategies, agriculture, the environment, lakes, monkeys, H&NBT, and the rural economy. The qualitative field study was conducted in Imo State, South-East Nigeria, from January to November 2023.

4.1 Imo State

Bordered by Abia, Anambra, and Rivers states, Imo State covers about 5,100 square kilometres (IMSG, 2010) with a high population density and rich resources, including agricultural products, crude oil, and natural gas. Rural residents primarily engage in farming, growing staple crops like yam, cassava, and maize through intercropping. Situated in a sub-equatorial climate zone, the state experiences a distinct rainy and dry season and significant rainfall (Ibe et al., 2020); with temperatures in the rainy season averaging around 27°C. The *harmattan* season occurs from December to late January. Ajiere et al. (2021) analyzed data from the Nigerian Meteorological Agency (NIMET) and noted a concerning increase in temperatures, with a decline in annual rainfall over three decades. Similarly, Okon et al. (2021) also reported a decrease in annual rainfall and an increase in temperatures, both linking the trends to a warmer Imo state and indicating that agricultural production could face serious challenges due to changing weather patterns.

Regrettably, while the state's rural areas lack basic infrastructure, urban expansion has encroached on agricultural spaces. The harsher economic climate has also driven many young people from rural areas, thereby leading to a predominance of part-time farmers, primarily elderly rural residents.

4.2 Ethical Considerations

The study followed ethical procedures. Community leaders and some town union representatives were also informed of the research goal, objectives, and parameters. Since the human rights of participants were not violated, each person's consent was sought verbally. While assuring them of confidentiality, they were also informed of the voluntary nature of the study and that they could opt out at any time.

4.3 Sampling Method

A non-probability purposive sampling technique was used to select volunteers based on their knowledge, judgment, skills, and discretion (Obilor, 2023). Purposeful sampling is commonly used in qualitative research to focus on relatively small samples. Gender was also considered to ensure adequate representation. Each discussion group had between six and eight participants for easy coordination, with a research assistant chosen from the community to serve in prompting group members, asking questions, following up, and recording responses. The interactions were conducted in the Igbo language, though some persons sometimes responded in English.

4.4 Reliability and Credibility

Credibility guarantees that the results accurately represent the phenomenon under study. Member checking, participant validation, or triangulation, which is the use of several data sources and viewpoints, can all be used to accomplish this. The ability of the study to be presented in a form that other people can understand, on the other hand, is what reliability emphasizes. Meticulously recording research activities and findings improves reliability (Nassaji, 2020).

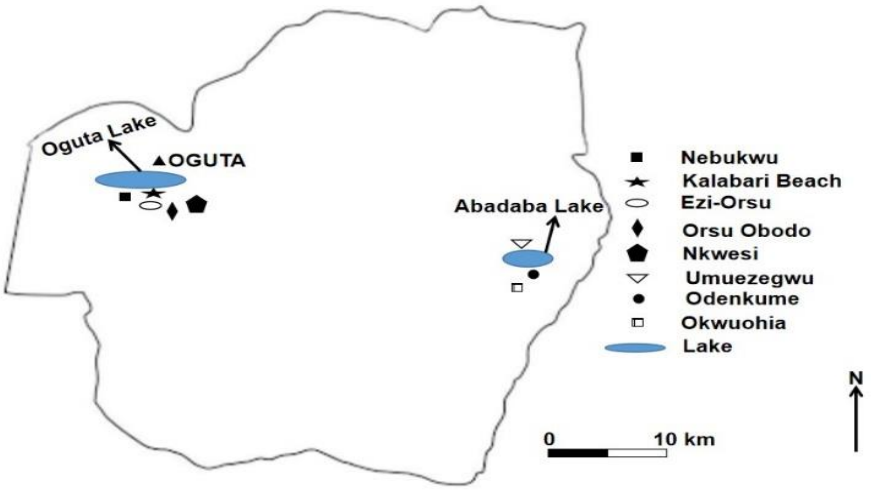
Certain factors helped the researcher establish rapport with the respondents. Familiarity with the local communities, ability to speak the local Igbo dialect, and being a tourism enthusiast are some examples. These made conducting interviews and focus group discussions easier.

The communities around H&NBT resources where this study was conducted and the techniques adopted for the exercise are described in the next section.

4.5 Study Sites

As shown in Figure 3 are Okwuohia, Odenkwume and Umuezegwu in Obowo Local Government Area; Oguta, Orsu Obodo, Nnebukwu, Kalabari Beach, Ezi-Orsu, Nkwesi and Ejemekwuru in Oguta Local Government Area; Lagwa, Umunokwu, Okwuato, in Aboh Mbaise Local Government Area; Umuezukwe, Awo Ommama in Oru East LGA of Imo sate.

Figure 3: Oguta and Abadaba Lakes.



Source: Author's creation.

4.5.1. Oguta Lake. British colonialists expanded into Igbo hinterlands through Oguta, leading to increased socio-economic development opportunities. The lake, a natural depression in the river Niger floodplain, is the largest natural freshwater body in Southeastern Nigeria (Francis et al., 2014). Serving as a navigation, transit, sightseeing, tourism, and fish supply source for the region, it is a perennial drainage for the Njaba, Utu, and Awbuna rivers and has a surface size varying from 180 to 300 hectares and an average depth of 5.5 meters.

The lake pictured in Figure 4 is also culturally and spiritually significant to many surrounding communities. As a cultural heritage site, it represents the pride and uniqueness of the communities that surround it. Its aquatic components contribute to the preservation of the local way of life and economy.

Figure 4: Pontoon jetty at Oguta Lake.

The lake's spiritual significance is enhanced by the traditions and ceremonies carried out on it to ask ancestral spirits for guidance and blessings. It draws tourists as the hub of cultural celebrations and festivals, as shown in Figure 5, which are all linked to this unique waterbody. Tourism-related activities, like boating and cultural events, generate employment and increase awareness of the area's natural and cultural heritage. Some forests south of the lake are home to the endangered Sclater's guenon (RAMSAR, 2008).

Figure 5: Okorosha Cultural Festival, Izombe, Oguta LGA.

4.5.2. Abadaba Lake. Located in a valley, the lake's temperature fluctuates between 25°C and 34°C in the dry season and 15°C and 20°C in the rainy season. As Figure 6 shows, its tranquility and peaceful weather make it an excellent location for recreation. It was the site for the planned Imo hotel, with several abandoned

buildings for the hotel still dotting the landscape near the lake. The neighbouring Okwuohia, Odenkume, and Umuezegwu communities are rural. The lake is surrounded by lush raffia palm and is close to Umuariam, Obowo community, where another species of monkeys live. Cultural events in the surrounding communities attract visitors and locals, such as *Iwa-Akwa*, a triennial initiation to manhood, *Mbomuzo*, *Ntumaka*, *Igbu-Ewu Ukwu*, and *Okonko* Masquerade.

Figure 6: Abadaba Lake, Ihite Uboma LGA.

Monkey habitats exist in the three communities Lagwa, Ejemekwuru and Umuezukwe indicated in Figure 7.

Figure 7: Monkey habitats in Imo State.

Source: Author.

4.5.3. <u>Lagwa.</u> Located in Aboh Mbaise Local Government Area of Imo State, Lagwa, with seven villages, has a coexisting Sclater's monkey that has gained popularity over 300 years. Habitat loss and hunting pressure have led to the monkeys' raids on farms and gardens, making them a common pest (Baker, 2013). The monkeys are believed to know their boundaries and are protected by the legend of being *no threats* as they *belong to the gods*.

4.5.4. Ejemekwuru. This rural community in the Oguta Local Government Area has a unique culture, customs, and social systems. The community uses two-thirds of its land for agriculture, with occupations including subsistence farming, animal husbandry, and wildlife hunting. A study by Ihemedu (1997) revealed

Ekwuru as the founder of the community's ancestral genealogy. Before the advent of Christianity, the worshippers who settled in the community built shrines and oracles in the sacred forests, know as *Oke Ohia*, as pictured in Figure 8. These shrines were dedicated to their patron deity, Ezeala. The community also protects sacred monkeys in the forest, which is home to a diverse range of wildlife and abundant flora (Baker et al., 2009). *Owu* and *Okorosha* are cultural dances practiced in the community.

Figure 8: Oke Ohia (Great Forest), Ejemekwuru, Oguta LGA.

4.5.5. Umuezukwe, Awo-Omama. Umuezukwe, a rural community on the Njaba River, was a farming community, ancient port, and commerce route. The community has maintained farming and trade partnerships with communities within the state and up to Rivers State, supported by cashew nuts from the Aba-Umuezukwe valley, oil palm, cassava, and yams. It is home to monkeys at the *Afo* sacred forest shown in Figure 9, an oil palm forest, and the St. Anthony's Primary school established by Irish missionaries in the 1890s.

Figure 9: Afo Sacred Forest, Umuezukwe, Oru East LGA.

4.2 Data Sources

Researchers have various qualitative data collection methods, often using multiple approaches within a single study to gain deeper insights into partially understood phenomena (Denzin & Lincoln, 2018). Preliminary observation (reconnaissance), in-depth interviews, and focus group discussions (FGD) were employed for this study. This triangulation of methods allows for analysis from diverse but complementary perspectives.

4.2.1 Observation. Preliminary reconnaissance was conducted to gather insights about the communities and collect baseline data regarding the research area's current conditions (Dey et al., 2020). As Rossetti (2020) noted, participant observation is a key method in tourism studies. Systematic observations were performed in the study communities using an observation checklist that included locations of interest, human activities, agricultural practices, tourism resources, fishing sites, construction, environmental conservation, resilience strategies, entrepreneurial efforts, and climate change initiatives. Additional field data on land and environmental degradation, as well as soil and habitat deterioration, were also recorded. The ongoing observations aimed to validate the accuracy of data obtained from interviews and FGDs, capturing authentic behaviours and events in their natural settings (Kumar & Sharma, 2023).

4.2.2 Interviews. Following Azad et al. (2021), this research utilized in-depth face-to-face interviews to explore differing views on environmental concerns, animals, and climate change. Participants shared various perspectives: some acknowledged non-human causes, others blamed human actions, and a few attributed the issues to spiritual beliefs. Environmental scenarios prompted meaningful discussions.

4.2.3 Focus group discussions (FGDs). This is a valuable qualitative method for exploring social issues (Ochieng et al., 2018). Instead of a statistically representative sample, FGDs gather insights from a carefully chosen group. Following Busetto et al. (2020), the study ensured that all participants felt comfortable sharing their views and that no one dominated the conversation, with the moderator summarizing their contributions.

4.2.4 Sample size. Czernek-Marszałek and McCabe (2024) assert that there is no standard formula for sample size in qualitative interview studies. The number of participants emerges through dynamic data collection and analysis, influenced by study assumptions, participant and researcher characteristics, and the research context (Bekele & Yohannes, 2022). Additionally, time, funding, and ethical considerations require researchers to reflect thoughtfully on their sample size choices.

Community-based key informants (KIs), numbering 128 in total, participated in the research interviews, with three focus group discussion sessions held in the Lagwa, Odenkwume, and Osru-Obodo communities. All participants were aged 35 and above and were recruited from five local government areas in Imo State. Women comprised 56.25% of respondents, while men made up 43.75%. Those aged 50–65 represented 50.98%, and individuals over 66 accounted for 44.12%, indicating a larger elderly population in rural areas. The research utilized both historical and descriptive phenomenological approaches, highlighting the importance of the perspectives of rural stakeholders (Kaján & Saarinen, 2013).

As shown in Table 1, community respondents work in a range of occupations, but almost half of them are farmers. Their earnings base is diversified to some extent by their other occupations. Due to the unstable nature of the economy and environment, they work part-time jobs in farming and animal husbandry to supplement their incomes.

The study employed phone voice recorders and notebooks for interviews and discussions, using global positioning system (GPS) devices to identify study sites. Personal interviews lasted between 30 and 45 minutes, while FGDs lasted at least two hours. Oral literature was significant in distinguishing meaningful facts from exaggerated responses.

Table 1. *Respondents' Occupations*

Respondent's occupation	**Frequency**	**Percentage %**
Farmer	58	45.31
Hunting, fishing, herbalist, palm wine tapping	6	4.69
Trading, restaurateur, transporter	10	7.81
Teaching/civil service	2	1.56
Pastor	3	2.34
Politician	7	5.47
Community leadership	5	3.91
Retired	19	14.84
Others—unemployed, in transition employment	18	14.06
Total	**128**	**100.00**

Phenomenology is frequently used in sociological research to highlight the subjectivity of human experiences. By focusing on human consciousness, these studies aim to understand the shared experiences of social actors through in-depth interviews, observations, and documentary analysis. Creswell (2013) noted that ethnographic studies involve extended participant observation to examine shared cultural values, behaviors, interactions, and language. In light of climate change's significant cultural and socio-economic effects, ethnographic approaches allow researchers to explore how communities perceive and respond to these challenges.

Recent advancements in ethnography have led to phenomenological ethnography, a valuable framework for studying climate change at the intersection of personal subjectivity and cultural practices. Gabay (2015) notes that this approach combines the strengths of both methodologies, allowing for an exploration of how individuals construct cultural meaning in specific contexts. It provides insights into how affected communities navigate socio-ecological realities and find meaning in environmental changes. While ethnography examines adaptive behaviors and responses to environmental shifts, the psychological and personal impacts of climate change are phenomenology's focus (Li, 2020).

This study employed phenomenological ethnography to document the cultural adaptations and personal experiences of communities affected by climate change. This method examines cultural practices influencing responses and explores how individuals perceive environmental changes. Combining phenomenology's focus on lived experience with ethnography's emphasis on social context provides a comprehensive understanding of the human dimensions of climate change.

4.3 Data Analysis

Thematic analysis is widely used to analyse data acquired through qualitative instruments. According to Creswell's (2014) description, it is a methodical approach to data coding that involves analyzing and classifying individual statements into themes that best capture the phenomenon of interest. Usually, it involves the collection of transcripts of interviews, recurring themes, topics, concepts, and patterns of meaning found in participants' responses. In this study, the researcher carefully scrutinized the majority of the qualitative data and related participants' responses at the first stage.

The coding process involved the transcription of FDG and interview transcripts, open coding to identify key topics, and participant comments to support key issues. Member checking ensured trustworthiness and reflexive journaling recorded the researcher's thoughts. The coding process and thematic interpretations were externally evaluated through peer review, resulting in five themes. The five emerging themes are discussed in the following section.

5.0 Findings

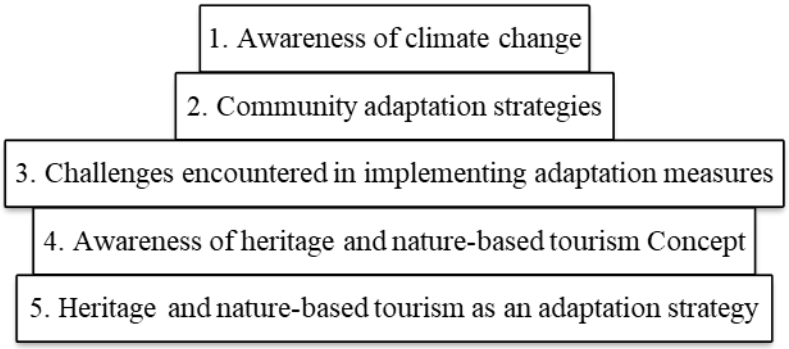
Climate change is altering weather patterns, causing extreme weather events, and shifting species distribution, significantly impacting rural communities with natural tourism resources. While efforts from governments, environmental organizations, and the media aim to raise awareness, socio-economic challenges often take precedence over long-term environmental issues, leading to varying levels of awareness.

Increased environmental consciousness can help mitigate the negative impacts of human activity (Huang et al., 2017) by emphasizing the importance of nature preservation. However, socio-economic demands are causing environmental disturbances that diminish forest quality and threaten tourism potential, particularly around Oguta and Abadaba lakes, as well as Lagwa, Ejemekwuru, and Umuezukwe, where ecological imbalances and declining primate populations are evident.

Many rural communities lack essential infrastructure and face significant economic challenges, leading to youth migration to urban areas. This leaves primarily women and the elderly involved in part-time or full-time farming, making them the main interviewees in the study. The themes discussed below emerged from this context.

Participants' responses based on the identified themes in Figure 10 are discussed below.

Figure 10: Emerging themes.



5.1 Theme 1—Awareness of Climate Change

5.1.1. Changing weather patterns. Most study participants are aware of climate changes, and the responses below summarize their understanding of the phenomenon in various ways. A resident and farmer in the Ihite Uboma community confirmed the existence of visible effects in these terms:

> Times are changing, and there is increased intensity of rainfall, long-term droughts, and extreme weather occurrences, as well as changes in weather patterns. Rains no longer come at its usual times [sic] and lasts till late November, unlike before.

5.1.2. Loss and fragmentation of habitats. In summarizing the observation of many community residents, a farmer and community leader in Ejemekwuru noted:

> Our monkeys depend on fruiting trees and other food plants. Unfortunately, the availability and timing of these fruit trees have been impacted by temperature variations and increased human activity in the areas previously inhabited by the primates. This has resulted in a shortage of food sources, thereby increasing malnourishment and heightened rivalry among monkey groups for the few remaining resources. This further causes conflicts between humans and wildlife.

5.1.3. Ecosystems and biodiversity loss. Participants during the FGD were worried that some plant and animal species are getting extinct (Francis et al., 2014). A farmer noted that, "chemical fertilizers and pesticides have killed our edible termites." Another farmer said, "Some edible butterfly caterpillars which inhabited our forests and were delicacies in the 1960s till 1980s are no more available." At Oguta Lake, a local fisherman aligning with the views of others stated that "some fish species are no more available in the lakes". Another fisherman opined that "even the fishes are reduced in number."

5.2 Theme 2—Community Adaptation Strategies

A 60-year-old female farmer noted, "We cultivate different crops with varying characteristics and climate requirements since some fail to yield as desired. This helps distribute my risk because not all crops can withstand heavy rains or floods." According to a farmer and hunter, "Some of our people source water from lakes in the dry season. Others buy pure water sachets or buy from nearby bore holes sunk by affluent individuals." A traditional ruler in the Oguta area commented, "Nearly every four years, communities around Oguta axis experience floods. So, we have a way to warn residents of impending floods to improve readiness and response to climate-related risks."

Many community residents have diversified their income sources. At Umuezukwe, a respondent and farmer noted, "I have been doing alternate jobs like palm kernel supply. While others engage in mixed cropping, some opt to plant fast-growing crops." These common adaptation tactics by farmers align with previous research works carried out by Asayehegn et al. (2017).

5.3 Theme 3—Challenges Encountered in Implementing Adaptation Measures

As observed by Foyet (2024), power dynamics and conflicting directives are also some of the concerns with implementing adaptation measures. During the FDG in Oguta, a community leader stated some challenges where conflicting directives came from state and local government officials:

> During the last flood, we approached the state government for assistance. The head of the agency complained of a lack of funding. At some point, they came with some palliatives, made up of a few bags of rice, noodles, and groundnut oil, and promised to assist us more in the future. They asked us to relocate for some time. While we were moving, a local government official asked us to go back to our communities. Unfortunately, no efforts have been made to address the perennial flood, which has been a regular occurrence. We have to farm and feed our families. These inconsistencies in government directives make our people unsure of government actions. As stakeholders, we face difficulties in carrying out programs as a result of such inconsistent directives, policies and regulatory frameworks.

A community leader in Orsu Obodo responded that:

> These seeds are still too costly for us, despite governments' constant claims that they will guarantee that small community farmers have access to high-quality seeds. In addition, the dearth of essential services and infrastructure in our rural communities presents serious challenges. This a significant barrier that prevents us from implementing and reaping the benefits of climate-resilient technologies and behaviors.

5.4 Theme 4—Awareness of H&NBT Concept

A farmer and community member in Odenkwume noted:

> In addition to our popular Abadaba lake, we have many cultural festivals, traditional dances, and a stream. These all attract many people from various parts of the country and outside, but we don’t know how to package them to make money and to complement the reducing outputs from agriculture.

5.5 Theme 5—H&NBT as an Adaptation Strategy

A community leader in Orsu Obodo, Oguta II argued that:

> This Oguta lake has existed for ages. In the past, many people from all over South East visited the golf course and enjoyed their holidays at this

> moribund Oguta lake resort, while boating on the lake was exciting. Communities also have several festivals. Unfortunately, these attractions need to be rejuvenated to attract the public. I wish the government can support us with capacity building, financial support and infrastructure to create tourism-related programs, to help our people develop and comprehend these new ideas you are bringing. Honestly, we can use our heritage to make money, especially after the farming seasons.

These excerpts reflect the views of many respondents who, primarily rural farmers, recognize climate change as a significant concern. The observed variation in their understanding is based on exposure to climate events and access to information. Declining crop yields and financial losses attributed to reduced water availability, linked to changing precipitation patterns, were reported by many farmers. This also leads to the variation of water levels in Abadaba and Oguta lakes. Communities are also increasingly worried about diminishing water supplies for drinking and agriculture (Nwufo et al., 2016; Andong et al., 2019). While rainwater collection is practiced during the rainy season, it does not sustain residents through the dry season. There are also concerns about climate change's impact on water quality, pollution, and waterborne diseases. Additionally, rural aquatic ecosystems face threats, with fears of species extinction and the overall biodiversity being compromised in water bodies like Oguta Lake (Francis et al., 2014).

Rising temperatures and altered rainfall patterns are degrading forests, affecting wildlife like monkeys. Factors like wildfires, habitat encroachment, and non-native species exacerbate this issue. Habitat fragmentation restricts monkey access to resources, reduces genetic diversity, and disrupts food sources, leading to crop damage and negative human interactions (Zhao et al., 2019).

Rural communities are diversifying their livelihoods through small-scale enterprises, handicrafts, and animal husbandry. Many are adopting agroforestry practices that combine trees and crops for resilience. However, limited resources hinder investment in adaptation measures, and sociocultural factors affect the acceptance of these strategies.

These findings resonate with Adom et al. (2023), who point out that weak institutional frameworks and governance impede adaptation measures. Fragmented responsibilities, insufficient funding, and poor stakeholder coordination hinder effective policy execution. Respondents highlighted limited financial resources and access to agricultural supplies as key constraints on productivity, echoing Osuji et al. (2014). Additionally, Islam and Winkel (2017) stress that poverty, inequality, and restricted resource access complicate adaptation efforts, a viewpoint supported by Eriksen et al. (2021), who identify inadequate infrastructure, especially in roads, energy, and irrigation as significant challenges.

Heritage and nature-based tourism activities hold significant potential by leveraging local traditional knowledge. However, rural populations' ability to benefit from these opportunities depends on their awareness, which varies due to factors like cultural values, tourism exposure, education, and local activities (Ferreira & Sánchez-Martín, 2022). Research indicates that rural communities can develop cultural tourism activities that offer authentic visitor experiences. Engaging locals as guides fosters social cohesion, benefiting both residents and tourists (Seraphin et al., 2020). This involvement can provide a competitive

advantage during off-peak seasons in areas where agriculture falls short (Ngxongo, 2021). Additionally, Alamineh et al. (2023) highlight that tourism exposure enhances local understanding of H&NBT concepts.

Infrastructure development is essential for implementing tourism initiatives in rural communities, enabling effective project execution. Integrating H&NBT into climate change strategies can address various challenges.

Shang et al. (2023) highlight that successful tourism promotion requires strategic and practical policy planning. Initiatives like *one kindred one business* (OKOBI) empower rural agricultural communities to leverage their cultural and natural resources, fostering economic growth through culturally oriented enterprises (Amaeshi, 2023) and innovative products that align with cultural entrepreneurship (Dobreva & Ivanov, 2020).

6.0 Discussion

This research was conducted in rural communities in Imo State, Nigeria. It gathered insights into community members' experiences and adaptation strategies to climate change's impact on H&NBT resources. FGDs method facilitated dialogue that revealed common challenges and adaptation approaches, although responses may have been influenced by dominant voices. Interviews provided personal narratives, offering a deeper understanding of family-level adaptations. This combination ensured a comprehensive view of rural residents' perspectives on climate change.

Findings highlight the complex relationship between tourism and climate variability, showing that climate change threatens both natural ecosystems and essential cultural heritage. The discussion explores local adaptation strategies, challenges faced, and the potential of cultural and nature-based tourism as a response to climate impacts.

6.1 Perceptions of Climate Change

Residents are aware of changing weather patterns and their negative impacts on ecosystems, highlighting their understanding of climate change. Concerns about species depletion and habitat degradation affecting wildlife and tourism were noted. This aligns with previous research on climate change's effects on biodiversity and tourism (Dube & Nhamo, 2020). The community's understanding is vital for shaping responses and adaptation strategies. Enhancing awareness is essential for developing effective mitigation measures that bolster both environmental and economic resilience, particularly for vulnerable rural populations.

6.2 Adaptation Strategies and Community Resilience

The study highlights the proactive approach of community members to climate challenges, including resource management and crop diversification. Traditional knowledge is used to highlight resilience in rural communities. Community-led adaptation efforts foster local ownership and tailor solutions, with frameworks like CBA integrating scientific methods with indigenous practices to enhance adaptive capacity (Kirkby et al., 2017).

6.3 Challenges in Implementing Adaptation Measures

Despite residents' efforts, climate-resilient practices are often hindered by insufficient infrastructure and inconsistent government regulations, affecting public confidence and collaboration. Rural populations also face challenges due

to the high costs of quality seeds and supplies. A unified policy framework is needed to align government support with community needs and enhance resilience against climate change impacts.

6.4 Heritage and Nature-Based Tourism as Adaptation Strategies

The study highlights the growing recognition of heritage and nature-based tourism as an adaptation strategy, highlighting the need for capacity enhancement through training and infrastructure development. This approach can help address climate change, strengthen tourism, and preserve heritage while supporting local economies.

7.0 Conclusion

This study examines rural residents' perceptions of climate change impacts in Imo State, Nigeria, and explores heritage and nature-based tourism as potential mitigation and adaptation strategies. It highlights how the community interprets environmental changes and their effects on tourism and livelihoods. Findings reveal that biodiversity loss, habitat fragmentation, and changing weather patterns are consequences of climate change. In response, communities have diversified crops, created alternative water sources, and expanded income sources. This research enhances our understanding of rural adaptation to climate change and offers recommendations for promoting sustainable economic growth through tourism.

Implementing these steps may present challenges due to conflicting government directives and inadequate institutional support. The research emphasizes the significance of stakeholder collaboration, adaptive strategies, and local knowledge in enhancing climate resilience. It advocates for cooperation among stakeholders to foster economic diversification, engaging local communities, policymakers, and tourism stakeholders in sustainable development efforts. Moreover, a solid understanding of the concept of H&NBT is vital, along with effective planning, infrastructure development, security measures, and government support to establish revenue-generating tourism programs.

7.1 Contribution of the Study

This study enhances our understanding of how rural communities can adapt to and mitigate climate change through tourism initiatives. It identifies gaps in climate change mitigation and highlights the roles of the tourism sector, community protection, and stakeholder collaboration. The findings show that reducing climate change impacts requires the active participation of all stakeholders. Open communication, education, and community engagement can increase awareness of climate challenges and foster effective solutions.

7.2 Management Implications

Understanding the implications of climate change is essential for individuals, who must also translate this knowledge into practical action. Communities need innovative strategies to mitigate its effects, and forming strategic partnerships is vital for enhancing resilience and promoting sustainable use of heritage and natural resources.

The growth of travel and tourism is driven by consumer demand, stimulating economic activity and developing destinations. By creating tourism products in rural areas, particularly in Imo State, we can attract tourists from developed nations, increasing visitor numbers to these communities.

For example, communities around Oguta and Abadaba lakes can offer village tours, boating, ecotourism, camping, and cycling. By fostering environmental awareness and sustainable tourism, they can become appealing destinations for those seeking unique experiences and connections to rural lifestyles.

8.0 Recommendations

The study recommends the following to improve the implementation of climate change adaptation efforts in Imo State, Nigeria:

1. *Special attention for impacted communities*

   Communities with heritage and nature-based tourism resources require focused attention to tackle issues like declining natural resources, reduced agricultural output, and market failures that threaten conservation efforts. Advocacy and educational campaigns by governments, NGOs, and civil society should raise public awareness about climate change and its environmental impacts.

   Programs might include sustainable land management, reforestation, wetland restoration, and alternative socio-economic strategies. Additionally, stakeholders should prioritize tourism and allocate more resources to this sector, recognizing it as a strategy for climate change mitigation, economic growth, poverty reduction, and community development.

2. *Linking the H&NBT initiative and rural development*

   Imo State should launch a specialized and incentivized H&NBT initiative to showcase its rich natural and cultural heritage, enhance community income, and address climate change. This program would integrate agriculture and tourism through artisan and cultural centers, agricultural tour routes, rural experiences, community engagement tours, climate change education, and sustainable accommodations. The *Okobi* initiative could further support H&NBT projects by formalizing grassroots businesses, boosting the local economy, and improving livelihoods.

3. *Research collaboration*

   Research institutes and scientific associations can work with other interested parties to develop conservation plans and encourage community-specific environmentally friendly management strategies. They can also provide expert advice on ecological well-being based on evidence. Researchers and environmental organizations can assist in identifying possible risks, and town unions and community associations can use the information they receive to create plans for resilience, protect the environment, manage water resources, and promote tourism.

4. *Stakeholder groups resources and involvement*

   Future generations, youth, and women should be involved in climate change adaptation efforts to ensure a sustainable future. Conscious afforestation efforts should be made to restore ecosystems and reduce climate change's impacts. Stakeholder collaboration by governments, civil society organizations, and communities can provide valuable resources and expertise for climate change adaptation.

5. *Policy recommendations*

   This study emphasizes the need for policy support and the prioritization of rural populations affected by climate change. Enhancing community awareness of climate challenges and tourism potential through education and capacity-building is essential. Additionally, fostering collaboration among NGOs, government agencies, and community members can support H&NBT projects. Policymakers should consider incentives for communities to develop tourism initiatives that align with their natural resources and cultural heritage. By addressing these factors, H&NBT can serve as an effective adaptation strategy, enhancing resilience and sustainability in rural communities in Imo State.

Research Limitations and Directions for Future Research

This study has limitations, including demographic factors that may influence views, a potentially unrepresentative sample size, and a short timeframe from January to November 2023 that may miss long-term climate trends. It focused on only two lakes and two monkey habitats in Imo State, indicating a need for broader research on climate change impacts in Nigeria. Additionally, economic constraints on residents regarding adaptation strategies were not thoroughly examined, which could affect the feasibility of suggested measures.

Declaration

The author declares that no competing interests exist in any material discussed in this paper.

Funding

No funding was received from any organization to conduct this research.

References

Adom, R. K., Simatele, M. D., Das, D. K., Mukalazi, K. A., Sonwabo, M., Mudau, L., Sithole, M., Kubanza, S., Vogel, C., & Zhou, L. (2023). Enhancing climate change adaptation governance through transforming institutions in Kwa-Zulu Natal Province, South Africa. *International Journal of Climate Change Strategies and Management*, *16*(4), 413–438. https://doi.org/10.1108/IJCCSM-12-2022-0157

Agyare, A. K, Holbech, L. H., & Arcilla, N. (2024). Great expectations, not-so-great performance: Participant views of community-based natural resource management in Ghana, West Africa. *Current Research in Environmental Sustainability, 7*, 100251. https://doi.org/10.1016/j.crsust.2024.100251

Ajiere, S., Diagi, B. E., & Edokpa, D. O. (2021). Impacts of climate variability on sustainable agriculture in Imo State, Nigeria. *Journal of Geographical Research, 4*(1), 9–17. https://doi.org/10.30564/jgr.v4i1.2531

Alamineh, G. A., Hussein, J. W., Endaweke, Y., & Taddesse, B. (2023). The local communities' perceptions on the social impact of tourism and its implication for sustainable development in Amhara regional state, *Heliyon, 9*(6), e17088. https://doi.org/10.1016/j.heliyon.2023.e17088

Amaeshi, K (2023, March). What we can learn from collective economic empowerment in Nigeria. *la Repubblica.* Retrieved November 12, 2013, from https://firenze.repubblica.it/cronaca/2023/03/15/news/what_we_can_learn_from_collective_economic_empowerment_in_nigeria-392214296/

Andong, F. A., Ezenwaji, N. E., Melefa, T. D., Hinmikaiye, F. F., Nnadi, O. V., & Oluwafemi, O. (2019). Assessment of the physico-chemical properties of Oguta Lake compared to the established values of the Federal Ministry of Environment, Nigeria: Water quality of Lake Oguta, Nigeria. *Advances in Oceanography and Limnology*, *10*(2). https://doi.org/10.4081/aiol.2019.8522

Asayehegn, K., Temple, L., Sanchez, B., & Iglesias, A. (2017). Perception of climate change and farm level adaptation choices in central Kenya *Cahiers Agricultures*, *26*(2). https://doi.org/10.1051/cagri/2017007

Atasoy, M., & Atasoy, F. G. (2020). The impact of climate change on tourism: A causality analysis. *Turkish Journal of Agriculture – Food Science and Technology*, *8*(2), 515–519. https://doi.org/10.24925/turjaf.v8i2.515-519.3250

Azad, A., Sernbo, E., Svärd, V., Holmlund, L., & Björk Brämberg, E. (2021). Conducting in-depth interviews via mobile phone with persons with common mental disorders and multimorbidity: The challenges and advantages as experienced by participants and researchers. *International Journal of Environmental Research and Public Health, 18*(22), 11828. https://doi.org/10.3390/ijerph182211828

Baker, L. (2013). Links between local folklore and the conservation of Sclater's monkey (Cercopithecus sclateri) in Nigeria. *African Primates, 8*, 17–24.

Baker, L. R.; Tanimola, A. A.; Olubode, O. S.; Garshelis, D. L. (2009). Distribution and abundance of sacred monkeys in Igboland, southern Nigeria. *American Journal of Primatology, 71*(7), 574–586. https://doi.org/10.1002/ajp.20690

Barrowman H., & Butler, J. R. A. (2021). Beyond challenges in community-based adaptation: Critical insights from the human ecology framework. *Human Ecology Review, 26*(1), 73–94. https://doi.org/10.22459/HER.26.01.2020.07

Bekele, W., & Yohannes, F. A. (2022). Sample size for interview in qualitative research in social sciences: A guide to novice researchers. *Research in Educational Policy and Management,. 4*(1), 42–50. https://doi.org/10.46303/repam.2022.3

Bryan, E., & Behrman., J. (2013). *Community–based adaptation to climate change: A theoretical framework, overview of key issues and discussion of gender differentiated priorities and participation*. CAPRi Working Paper No. 109. Washington, DC: International Food Policy Research Institute. https://doi.org/10.2499/capriwp109

Busetto, L., Wick, W., & Gumbinger, C. (2020). How to use and assess qualitative research methods. *Neurological Research and Practice, 2*(14). https://doi.org/10.1186/s42466-020-00059-z

Child, B., & Barnes, G. (2010) The conceptual evolution and practice of community-based natural resource management in southern Africa: Past, present and future. *Environmental Conservation, 37(3),* 283–295. https://doi.org/10.1017/S0376892910000512

Creswell, J. (2014). *Research design: Qualitative, quantitative, and mixed methods approach* (4th ed.). Thousand Oaks, CA: Sage.

Creswell, J. W. (2013). *Research design: Qualitative, quantitative, and mixed methods approaches.* London: Sage.

Czernek-Marszałek, K., & McCabe, S. (2024). Sampling in qualitative interview research: Criteria, considerations and guidelines for success. *Annals of Tourism Research, 104*, 103711. https://doi.org/10.1016/j.annals.2023.103711

Day, J., Chin, N., Sydnor, S., Widhalm, M., Shah, K. U., & Dorworth, L. (2021). Implications of climate change for tourism and outdoor recreation: An Indiana, USA, case study. *Climatic Change*, *169*(29). https://doi.org/10.1007/s10584-021-03284-w

Denzin, N. K., & Lincoln, Y. S. (Eds.) (2018). *The SAGE handbook of qualitative research* (5th ed.). Los Angeles, CA: Sage.

Dey, T., Kamruzzaman, M., Islam, M. A., Bachar, B. K., & Pitol, M. N. S. (2020). Attitudes of local people towards community based eco-tourism in the Sundarbans. *International Journal of Business, Management and Social Research, 9*(2), 528–535. https://doi.org/10.18801/ijbmsr.090220.55

Dobreva, N., & Ivanov, S. (2020). Cultural entrepreneurship: A review of the literature. *Tourism & Management Studies*, *16*(4), 23–34. https://dx.doi.org/10.2139/ssrn.3824265

Dube, K., & Nhamo, G. (2020). Tourist perceptions and attitudes regarding the impacts of climate change on Victoria Falls. *Bulletin of Geography. Socio-economic Series, 47*(47), 27–44. https://doi.org/10.2478/bog-2020-0002

Eriksen, S., Lisa, E., Schipper, F., Scoville-Simonds, M., Vincent, K., Adam, H. N., Brooks, N., Harding, B., Khatri, D., Lenaerts, L., Liverman, D., Mills-Novoa, M., Mosberg, M., Movik, S., Muok, B., Nightingale, A., Ojha, H., Sygna, L., Taylor, M., Vogel, C., & West, J. J. (2021). Adaptation interventions and their effect on vulnerability in developing countries: Help, hindrance or irrelevance? *World Development*, *141*, 105383. https://doi.org/10.1016/j.worlddev.2020.105383

Ferreira, D. I. R., Sánchez-Martín, J.-M. (2022). The assessment of the tourism potential of the Tagus International Nature Reserve landscapes using methods based on the opinion of the demand. *Land*, *11*(1), 68. https://doi.org/10.3390/land11010068

Forsyth, T. (2013). Community-based adaptation: A review of past and future challenges. *Wiley Interdisciplinary Reviews: Climate Change*, *4*(5), 439–446. https://doi.org/10.1002/wcc.231

Foyet, M. (2024). Community-Based Natural Resource Management (CBNRM) in southern Africa: History, principles, evolution and contemporary challenges. *Namibia Journal of Environment*, *9*(C), 1–15.

Francis, A., Sikoki, F. D., & Agorua, U. N. (2014). Fish families of Oguta Lake, South Eastern Nigeria, and sustainability issues. *Journal of Natural Sciences Research, 4(9).*

Gabay, L. A. (2015). *I hope I don't see you tomorrow: A phenomenological ethnography of the Passages Academy school program*. Rotterdam: Sense Publishers.

Gadinga, W. F., Tchamba, N. M., & Eno-Nku, M. (2020). An appraisal of ecotourism's impact on biodiversity conservation: The case of Campo Ma'an National Park, Cameroon. *International Journal of Biodiversity and Conservation, 12*(2),142–152.

Hoogendoorn, G., & Fitchett, J. M. (2018). Tourism and climate change: A review of threats and adaptation strategies for Africa. *Current Issues in Tourism, 21*(7), 742–759. https://doi.org/10.1080/13683500.2016.1188893

Huang, H., Wu, D., & Gaya, J. (2017). Chinese shareholders' reaction to the disclosure of environmental violations: A CSR perspective. *International Journal of Corporate Social Responsibility, 2*(12). https://doi.org/10.1186/s40991-017-0022-z

Ibe, F. C., Enyoh, C. E., Opara, A. I., & Ibe, B. O. (2020). Evaluation of pollution status of groundwater resources of parts of Owerri metropolis and environs, Southeastern Nigeria, using health risk and contamination models. *International Journal of Energy and Water Resources, 4*, 357–374. https://doi.org/10.1007/s42108-020-00071-8

Ihemedu, I. E. (1997). *Ejemekwuru - A case study in socio-cultural evolution.* Owerri, Imo State, Nigeria: I-O Publishers.

Imo State Government. (2010). Website of the Government of Imo State. *IMSG.* Retrieved June 23, 2024, from https://www.imostate.gov.ng/.

Islam, N. S., & Winkel, J. (2017, October). *Climate change and social inequality*. DESA Working Paper No. 152. United Nations, Department of Economic & Social Affairs. https://www.un.org/esa/desa/papers/2017/wp152_2017.pdf

Kaján, E., & Saarinen, J. (2013). Tourism, climate change and adaptation: A review. *Current Issues in Tourism*, *16*(2), 167–195. https://doi.org/10.1080/13683500.2013.774323

Kilungu, H. (2023). A decade of climate change and tourism research in Tanzania: Where are we? *Tanzania Journal of Forestry and Nature Conservation*, *92*(1), 185–201.

Kim, E. G., Chhabra, D., & Timothy D. J. (2022). Towards a creative MICE tourism destination branding model: Integrating heritage tourism in New Orleans, USA. *Sustainability, 14*(24), 16411. https://doi.org/10.3390/su142416411

Kirkby, P., Williams, C., & Huq, S. (2017). Community-based adaptation (CBA): Adding conceptual clarity to the approach, and establishing its principles and challenges, *Climate and Development, 10*(7), 577–589. https://doi.org/10.1080/17565529.2017.1372265

Kolawole, O. D., Motsholapheko, M. R., Ngwenya, B. N., Thakadu, O., Mmopelwa, G., & Kgathi, D. L. (2016). Climate variability and rural livelihoods: How households perceive and adapt to climatic shocks in the Okavango Delta, Botswana. *Weather, Climate, and Society, 8*(2), 131–145. https://doi.org/10.1175/WCAS-D-15-0019.1

Kumar, A., & Sharma, A. (2023). Observation method: A review study. *Library Philosophy and Practice* (e-journal). 7820. https://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=15046&context=libphilprac

Li, Y. (2020). Research Methodology. In Y. Li (Ed.), *Educational change amongst English language college teachers in China* (pp. 25–44). Springer, Singapore. https://doi.org/10.1007/978-981-15-3053-1

Ma, S. (D.), & Kirilenko, A. P. (2019). Climate change and tourism in English-language newspaper publications. *Journal of Travel Research*, *59*(2), 352–366. https://doi.org/10.1177/0047287519839157

McGahey, D. J., & Lumosi, C. K. (2018). Climate change communication for adaptation: Mapping communication pathways in semi-arid regions to identify research priorities. *Journal of Sustainable Development in Africa*. *20*(1), 87–107.

Metcalfe, S. E., Schmook, B., Boyd, D. S., De la Barreda-Bautista, B., Endfield, G. E., Mardero, S., Manzón Che, M., Medina González, R., Munguia Gil, M. T., Olmedo, S. O., & & Perea, A. (2020). Community perception, adaptation and resilience to extreme weather in the Yucatan Peninsula, Mexico. *Regional Environmental Change*, *20*(25), 1–15. https://doi.org/10.1007/s10113-020-01586-w

Mfitumukiza, D., Roy, A. S., Simane, B., Hammill, A., Rahman, M. F., & Huq. S. (2020). *Scaling local and community-based adaptation.* Global Commission on Adaptation Background Paper. Rotterdam and Washington, DC. Available online at http://www.gca.org/global-commission-on-adaptation/report/papers

Milupi, I. D., Somers, M. J., & Ferguson, J. W. H. (2017). A review of community-based natural resource management. *Applied Ecology and Environmental Research,* *15*(4), 1121–1143 DOI: 10.15666/aeer/1504_11211143

Mulet-Forteza, C., Genovart-Balaguer, J., Mauleon-Mendez, E., Merigó, J. M., (2019). A bibliometric research in the tourism, leisure and hospitality fields. *Journal of Business Research, 101*, 819–827. https://doi.org/10.1016/j.jbusres.2018.12.002

Munanura, I., Backman, K., Hallo, J., Powell, R., & Sabuhoro, E. (2018). Understanding the relationship between livelihood constraints of poor forest-adjacent residents, and illegal forest use, at Volcanoes National Park, Rwanda. *Conservation and Society, 16*(3), 291–304. DOI: 10.4103/cs.cs-14-83

Na, X., Sun, B., Jiang, L., & Cui, H. (2022). Spatial effects of climate change on tourism development in China: An analysis of tourism value chains. *Frontiers in Environmental Science*, *10*. https://doi.org/10.3389/fenvs.2022.952395

Nassaji, H. (2020). Good qualitative research. *Language Teaching Research, 24*(4), 427–431. https://doi.org/10.1177/1362168820941288

Ngxongo, N. A. (2021). The impact of climate change on visitor destination selection: A case study of the Central Drakensberg Region in KwaZulu-Natal. *Jamba: Journal of Disaster Risk Studies, 13*(1). https://doi.org/10.4102/jamba.v13i1.1161

Nwufo, M. I., Uzoma, H. C. Dike, M. U., & Maduka, O. G. (2016). Limnological assessment of Abadaba Lake in Imo State, Nigeria. *International Journal of Multidisciplinary Research and Development*, *3*(1), 320–324.

Obilor, E. I. (2023). Convenience and purposive sampling techniques: Are they the same? *International Journal of Innovative Social & Science Education Research, 11*(1):1–7.

Ochieng, N. T., Wilson, K., Derrick, C. J., & Mukherjee, N. (2018). The use of focus group discussion methodology: Insights from two decades of application in conservation. *Methods in Ecology and Evolution*, *9*(1), 20–32. https://doi.org/10.1111/2041-210X.12860

Okon, E. M., Falana, B. M., Solaja, S. O., Yakubu, S. O., Alabi, O. O., Okikiola, B. T., Awe, T. E., Adesina, B. T., Tokula, B. E., Kipchumba A, K., & Edeme, A. B. (2021). Systematic review of climate change impact research in Nigeria: implication for sustainable development, *Heliyon*, *7*(9), e07941. https://doi.org/10.1016/j.heliyon.2021.e07941

Osuji, E. E., Maduike, I. A., Oguegbuchulam, M. N. & Eze, E. U. (2014). Effects of farm inputs on productivity of farmers in Imo State, Nigeria. *International Journal of Applied Research and Technology, 3*(1), 3–9.

Pandy, W. R., & Rogerson, C. M. (2019). Urban tourism and climate change: Risk perceptions of business tourism stakeholders in Johannesburg, South Africa. *Urbani Izziv*, *30*, 225–243. http://dx.doi.org/10.5379/urbani-izziv-en-2019-30-supplement-015

Pandy, W. R., & Rogerson, C. M. (2018). Tourism and climate change: Stakeholder perceptions of at-risk tourism segments in South Africa. *EuroEconomica, 37*(2), 104–118.

Pröbstl-Haider, U., Hödl, C., I., Ginner, K., & Borgwardt, F. (2021). Climate change: Impacts on outdoor activities in the summer and shoulder seasons, *Journal of Outdoor Recreation and Tourism*, *34*, 100344. https://doi.org/10.1016/j.jort.2020.100344.

Pisor, A. C., Touma, D., Singh, D., & Jones, H. J. (2023). To understand climate change adaptation, we must characterize climate variability: Here's how. *One Earth, 6*(12), 1665–1676. https://doi.org/10.1016/j.oneear.2023.11.005

Rabe, L., & Saunders, F. (2014) Community-based natural resource management of the Jozani-Pete Mangrove Forest: Do they have a voice? *Western Indian Ocean Journal of Marine Science, 12*(2), 133–150.

Ramsar Sites Information Service. (2008, April 30). *Oguta Lake*. Available at https://rsis.ramsar.org/ris/1757?language=en

Rossetti, G. (2024). Conceptualising participant observations in festival tourism, *Current Issues in Tourism, 27*(12), 1884–1897. https://doi.org/10.1080/13683500.2023.2214850

Rubino, F., & Chartier, M. H. (n.d.). The current and future promise of livelihood generation of CBNRM in Africa, through improved land tenure security [draft]. Retrieved June 18, 2024, from https://archive.uneca.org/sites/default/files/uploaded-documents/LPI/CLPA_2017/Presentations/cbnrm-in-africa.pdf

Scott, D., & Gössling, S. (2018, March). *Tourism and climate change mitigation embracing the Paris Agreement: Pathways to decarbonisation*. European Travel Comission, Brussels. https://etc-corporate.org/uploads/2019/03/ETC-Climate-Change-Report_FINAL.pdf

Seraphin, H., Ivanov, S., Dosquet, F., & Bourliataux-Lajoinie, S. (2020). Archetypes of locals in destinations victim of overtourism. *Journal of Hospitality and Tourism Management, 43*, 283–288. https://doi.org/10.1016/j.jhtm.2019.12.001

Shang, Y., Bi, C., Wei, X., Jiang, D., Taghizadeh-Hesary., F., & Rasoulinezhad, E. (2023). Eco-tourism, climate change, and environmental policies: Empirical evidence from developing economies. *Humanities and Social Sciences Communications*, *10***,** 275. https://doi.org/10.1057/s41599-023-01777-w

Sofronov, B. (2018). The development of the travel and tourism industry in the world. *Annals of Spiru Haret University, Economic Series, 18*(4), 123–137. https://doi.org/10.26458/1847

Williams, P. A., Crespo, O., Abu, M., & Simpson, N. P. (2018). A systematic review of how vulnerability of smallholder agricultural systems to changing climate is assessed in Africa. *Environmental Research Letters, 13*(10), 103004. http://dx.doi.org/10.1088/1748-9326/aae026

Yohannes, Z., Teshome, M., & Belay, M. (2020). Adaptive capacity of mountain community to climate change: Case study in the Semien Mountains of Ethiopia. *Environment, Development and Sustainability, 22*(4), 3051–3077. https://doi.org/10.1007/s10668-019-00334-3

Zhao, X., Ren, B., Li, D., Xiang, Z., Garber, P. A., & Li, M. (2019). Effects of habitat fragmentation and human disturbance on the population dynamics of the Yunnan snub-nosed monkey from 1994 to 2016. *Peer J*, 14(7), e6633. https://doi.org/10.7717/peerj.6633

Zikargae, M. H., Woldearegay, A. G., & Skjerdal, T. (2022). Assessing the roles of stakeholders in community projects on environmental security and livelihood of impoverished rural society: A nongovernmental organization implementation strategy in focus, *Heliyon, 8*(10), e10987. https://doi.org/10.1016/j.heliyon.2022.e10987