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Forest Conservation and Human Security: A Qualitative Study of Forest Reserves in Ondo State, Nigeria

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Abstract. This study examines the relationship between forest conservation and human security in Ondo State, Nigeria, focusing on food security, livelihoods, socio-cultural stability, environmental sustainability, biodiversity protection, land tenure, and political security. Using qualitative methods, including focus group discussions and key informant interviews, the findings reveal that forest degradation threatens food supply, economic well-being, cultural heritage, and biodiversity, while fostering insecurity and criminal activities in forest reserves. Conversely, sustainable forest management enhances community resilience, climate stability, and poverty reduction. The study recommends participatory governance, secure land tenure, alternative livelihoods, and integration of indigenous knowledge for effective conservation and improved human security.

Keywords: Forest conservation, forest management, human security, forest-adjacent communities

1. Introduction

Nigeria is endowed with rich biodiversity, which has historically supported its ecological stability and socio-economic development. However, in recent decades, this natural wealth has come under severe threat due to rapid deforestation driven by multiple factors, including illegal logging, fuelwood and charcoal production, agricultural expansion, infrastructural development, and extractive industries (Cadmus Group, 2020; UN, 2022). The degradation of forest ecosystems has significant implications for human security, as it erodes ecosystem services that underpin food security, livelihoods, and environmental stability.

Forest reserves that once managed for sustainable timber production, have now become highly fragmented and degraded. They have been overtaken by destructive activities such as illegal logging, bush burning, and poaching. More alarmingly, these forests have evolved into safe havens for criminal activities, serving as hideouts for insurgent groups, bandits, and other armed factions (Federal Government of Nigeria, 2021; Amusa, 2024). This reality illustrates the growing intersection between environmental degradation and insecurity.

The scale of forest loss particularly between 2001 and 2021 in Nigeria, amounting to approximately 1.14 million hectares (2.82 million acres) of tree cover, representing an 11% decline and resulting in about 587 million tons of carbon dioxide emissions (EcoHubMap, 2024). This loss has been particularly acute in Ondo State, where humid primary forests declined by 26% from 2002 to 2024, with 37.6 kha lost (Global Forest Watch, 2024).

Historically, Ondo State's Forest reserves were critical in supporting human security by providing food, income, and ecological services to local communities. Today, these reserves are severely fragmented, ecologically degraded, and increasingly associated with insecurity. Forested landscapes have become hotspots for violent crimes, including mercantile kidnapping, insurgent operations, and ritual killings (Ladan, 2014; Odutan et al., 2013). These trends are exacerbated by weak regulatory enforcement, poor governance, and the marginalization of local communities in forest management.

The socio-economic implications of these changes are profound. Indigenous and forest-dependent

communities in Ondo State rely heavily on forests for subsistence, income generation, and ecosystem services such as water regulation and soil fertility. The ongoing degradation and insecurity in forest reserves undermine these benefits, threatening community well-being and resilience. Despite the clear link between environmental integrity and human security, the relationship between forest conservation and human security remains poorly understood, particularly in the context of Ondo State. This gap presents a critical research opportunity to explore how conservation efforts or the lack thereof shape multiple dimensions of human security, including food availability, livelihood stability, environmental resilience, and personal safety. Recognizing forest conservation as more than an ecological concern, but as a cornerstone of human security, is essential for informed policy-making. Inclusive and well-managed conservation strategies that address deforestation, control illegal logging, and promote sustainable land-use practices can deliver substantial human security benefits. Therefore, this paper specifically, examines how forest conservation influences multiple dimensions of human security in Ondo State, Nigeria. Understanding this interplay is not only vital for strengthening local resilience but also for advancing global climate objectives and promoting sustainable development.

2. Literature Review

The concept of human security has evolved significantly since its introduction by the United Nations Development Programme (UNDP) in its 1994 Human Development Report, ahead of the 1995 World Summit for Social Development (UNDP, 1994). The report emphasized the need for a broader framework to address complex and interconnected global challenges that traditional security paradigms, focused primarily on state sovereignty and protection from external military threats, could not adequately capture. Unlike traditional security paradigms, which prioritize national borders, sovereignty, and defense against external military threats, human security adopts a broader, people-centered approach. It encompasses dimensions such as economic, social, health, environmental, food, political, personal, and community security (Zyla, 2019). This holistic approach underscores the principle that peace and stability cannot be achieved without ensuring the survival, livelihood, and dignity of individuals.

Human security advocates for integrated policies that build resilience and empower communities to manage vulnerabilities and risks. It draws attention to emerging global threats such as climate change, pandemics, and resource scarcity, framing them as human-centered challenges that demand coordinated solutions. By placing individuals at the core of development strategies, human security becomes a unifying framework for addressing diverse priorities such as poverty reduction, human rights, inequality, education, health, and sustainable livelihoods. This orientation aligns strongly with the objectives of the Sustainable Development Goals (SDGs) and facilitates multilateral cooperation in tackling issues that transcend national boundaries (World Academy, 2024).

Within the context of land-based resources, particularly regarding forests, human security underscores the critical role of forest conservation in safeguarding biodiversity and ensuring equitable access to ecosystem services including the rights to food, health, and a decent standard of living. International agreements such as multilateral environmental accords explicitly recognize these linkages by addressing illegal logging, biodiversity loss, wildlife trafficking, and pollution (Okumu, 2017).

Forest conservation is widely regarded as a fundamental contributor to human security. Transparent governance, access to information, and community participation in decision-making are essential principles that promote equitable and sustainable use of forest resources while reducing the likelihood of misuse or conflict (Okumu, 2017). Beyond their ecological functions, forests provide a wide range of goods and services—such as timber, non-timber forest products, and watershed protection—while supporting rural livelihoods and contributing significantly to national economies through raw material supply and export opportunities (Siryi et al., 2005; Amusa, 2024).

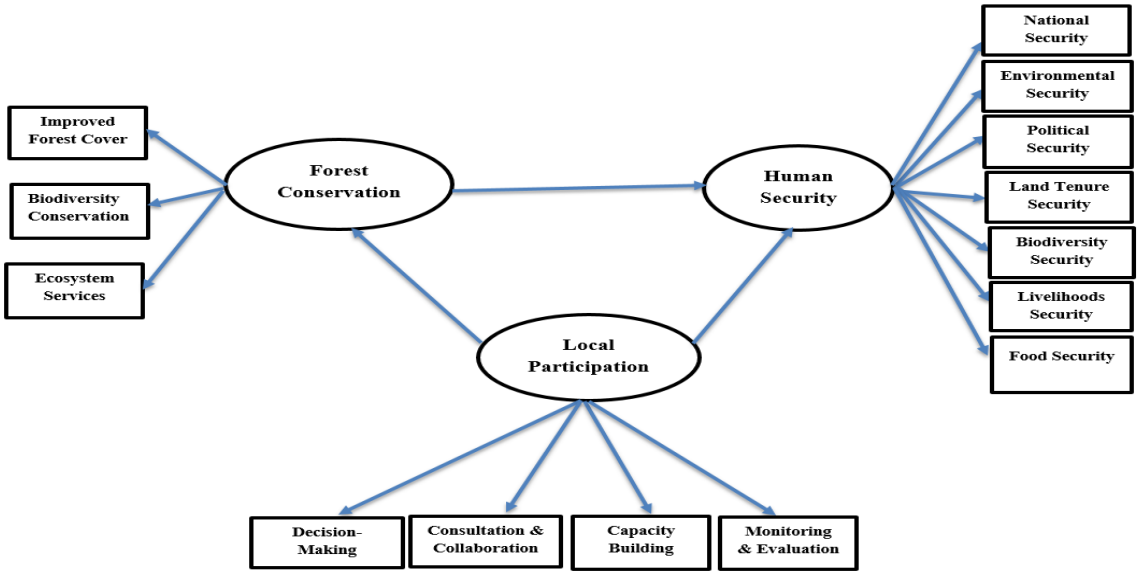

Figure 1: *Conceptual framework*
Source: *Research formulation*

In addition to these economic and ecological benefits, forests are indispensable for sustaining societal well-being and stability. Effective forest conservation not only preserves ecosystems but also enhances carbon sequestration, mitigates climate risks, and reduces environmental vulnerabilities. These measures have direct implications for human security, particularly in addressing food insecurity, livelihood challenges, and resource-related conflicts. The international community has long recognized this relationship, as reflected in global agreements designed to protect biodiversity and promote sustainable resource use (Okumu, 2017).

The interdependence between forest conservation and human security is therefore evident. Conservation efforts that focus on halting deforestation, curbing illegal logging, and promoting sustainable land-use practices can strengthen local resilience while safeguarding environmental integrity. However, such initiatives achieve greater success when they incorporate local knowledge and actively engage communities as partners in resource management. In the context of growing climate uncertainty and socio-economic vulnerabilities, integrating human security principles into forest conservation planning is essential. Doing so not only enhances ecological sustainability but also addresses pressing human needs by improving food security, generating livelihoods, and fostering long-term stability.

3. Theoretical Review

This paper is grounded in Ecological Systems Theory, developed by Urie Bronfenbrenner (1988), to analyze the intersection of forest conservation strategies and human security. The theory outlines five nested environmental systems such as microsystem, mesosystem, exosystem, macrosystem, and chronosystem which interact dynamically to influence both human development and environmental conditions (Bronfenbrenner, 1988; Bronfenbrenner & Ceci, 1994).

The microsystem represents the most immediate environment affecting an individual, involving direct interactions with biotic and abiotic factors, thus exerting the greatest influence (Bronfenbrenner, 1988). The mesosystem encompasses interactions among various microsystems. For a child, this includes relationships between family members, teachers, and peers. Similarly, in forest ecosystems, interactions among different site conditions affect overall forest health. Climate change mitigation efforts must integrate with broader national and local forest management objectives to ensure coherence. The exosystem includes broader community influences, such as mass media and public services, which indirectly affect the individual. In forests, this layer is akin to how external factors like fires or pests impact forest composition. These disturbances influence the forest ecosystem's structure and function; just as external community changes affect a child's

development (Bronfenbrenner, 2005). The macrosystem represents the overarching cultural and societal values, laws, and customs. This layer illustrates the complex interactions between various systems and emphasizes that individuals, like children, are active participants in their environments, affecting and being affected by them (Bronfenbrenner, 1988). The chronosystem is the fifth outermost ring in the Bronfenbrenner's Ecological systems theory, being based on environmental changes overtime and these changes can significantly affect how individuals develop.

In applying this theory to forest ecosystems, the microsystem represents direct environmental conditions such as soil quality, climate, and biodiversity. These elements are analogous to the immediate influences on an individual's development. For instance, empirical studies like Ihenyen et al. (2009) and Akinsoji (2013) highlight the importance of protecting local biodiversity and tree species to sustain forest health, much like nurturing environments are essential for child development. The mesosystem, which focuses on interactions between various microsystems, parallels the interplay among ecological factors and land-use dynamics. Ati et al. (2010) illustrate this through GIS-based analysis showing the loss of forest cover due to agricultural expansion and urban development, a consequence of poor integration of environmental and developmental policies. At the exosystem level, broader societal influences such as policy, remote actors, and economic drivers indirectly affect forests and communities. Studies by Okpiliya (2013) and Oduntan et al. (2013) reveal how logging, grazing, and inadequate regulation significantly contribute to forest degradation. This supports Bronfenbrenner's assertion that exogenous systems like mass media or political decisions can shape outcomes even without direct contact.

The macrosystem, encompassing cultural norms, governance structures, and societal values, plays a pivotal role in shaping environmental outcomes. Jimoh et al. (2018) and Ojo and Asinwa (2022) emphasize how governance quality, enforcement of forestry laws, and socio-political stability impact forest sustainability. Cultural attitudes toward forest use and ownership also influence conservation behavior, aligning with the theory's proposition that overarching systems influence the behavior of sub-systems. Finally, the chronosystem, which considers time-based changes such as environmental succession or policy evolution, reflects long-term trends in forestry management. For example, Neugarten et al. (2024) analyzed deforestation patterns in Madagascar and revealed how political crises impact conservation effectiveness over time. Similarly, Oluwole et al. (2017) demonstrate that continued forest depletion in Uganda correlates with declining environmental security over decades.

Empirical evidence overwhelmingly supports the theoretical claim that dynamic interactions within and across systems determine both environmental and human outcomes. Sidi et al. (2022) show that forest regeneration contributes to climate change mitigation via carbon sequestration, enhancing environmental security. Likewise, studies by Adekunle et al. (2017), Ojo et al. (2019), and Akindele et al. (2020) confirm that community participation in forest management not only enhances conservation outcomes but also improves social equity, livelihood resilience, and conflict resolution.

4. Research Methodology

The study adopted a cross-sectional survey design, primarily employing a qualitative ethnographic approach. The choice of a qualitative ethnographic approach is to gain insider perspectives through immersion and participant observation which provide rich narratives from diverse community actors. The population of this study is 252,464 consisting of the population of two selected local government areas (Akure South and Idanre LGAs) according to 2006 census. A multi-stage sampling approach was employed, involving purposive selection of forest-based local government areas, random selection of eight communities within a five-kilometer radius of the forest reserves, and proportional sampling was employed to select respondents of the study based on the size of the sampled forest reserve communities. The communities were clustered into different categories of respondents, including retired and current staff of the Ministry of Agriculture and Forest Resources, community stakeholders, forest contractors and other forest users. Data were collected through focus group discussions (FGDs) and key informant interviews (KIIs). A total of 136 respondents participated in the study. Data were analyzed through thematic analysis to draw out key themes and patterns from the interview and focus group transcripts.

5. Thematic Analysis

5.1 Forest Reserves in Ondo State Nigeria

There are 17 forest reserves in Ondo State, 12 of which are in the high forest. Out of the 12 forest reserves in the high forests in Ondo State, two were purposively

selected. The selected Forest Reserves were: Akure and Idanre Forest Reserves.

5.2 Akure Forest Reserve

Akure Forest Reserve is a protected area in southwest Nigeria, covering 66 km2 (25 sq mi). The forest reserve was established in 1948 and spanning approximately 32 hectares. It was created with the primary aim of safeguarding the genetic diversity of the forest ecosystem (Adetola, Bukola & Omotomilola, 2023). Approximately 11.73% (8.2 square kilometers) of the area is estimated to have been cleared for cocoa and other crop farming. The forest is owned by the Aponmu and Owena Yoruba-speaking communities, though there are also smaller settlements around it, including Ipogun, Kajola/Aponmu, Kajola, Ago Petesi, Akika Camp, Owena Town, Ibutitan/Ilaro Camp, Elemo Igbara Oke Camp, and Owena Water new Dam.

Within the forest reserve, an area of about 600 hectares of forest was set aside as the Strict Nature Reserve (SNR), often referred to as the "Queen's plot" This site is among Nigeria's Strict Nature Forest Reserves. SNRs, along with wilderness zones, are designated areas primarily intended for research and safeguarding extensive, untouched wilderness regions. Their main goal is to conserve biodiversity and serve as essential reference for scientific research and environmental monitoring.

The Forest Reserve attracts both nature lovers and history enthusiasts who are interested in experiencing the natural wonders and cultural treasures of the region. The forest reserve is characterized by diverse landscapes, including dense forests, grasslands, and rocky outcrops (Anifowose et al, 2014; Orimaye et al, 2017). The vegetation within the reserve consists of various types of trees, shrubs, rocky outcrops, dense forests, grasslands, and other plants, forming a diverse ecosystem. Wildlife species found in the forest reserve include monkeys, antelopes, birds, reptiles, and several species of insects. The area serves as an important habitat for these species and contributes to their conservation (Imarhiagbe, 2020).

The Akure Forest Reserve holds cultural significance for neighborhood groups. it could be associated with conventional beliefs, ceremonies, or practices that are deeply embedded in the cultural heritage of human beings. Some areas within the wooded area are additionally held unique religious or religious significance for positive groups. Sacred groves, for instance, are not unusual capabilities in lots of forests and are respected as sacred places of worship or as a spiritual tribute to the magnificence of nature. The forest also has historical ties to the community, serving as a place of ancient events, settlements, or ancient practices. These connections are of splendid significance to the cultural identification of the neighborhood populace.

Like many natural areas globally, it faces several challenges and threats that endanger its ecological integrity and the benefits it provides to local communities. It is home to diverse plant and animal species, including many endangered ones. Significant challenges to Akure Forest Reserve, including illegal logging, poaching, encroachment, and the presence of bandits and other armed groups. These activities disrupt the ecological balance, threaten biodiversity, and hinder sustainable forest management.

The Akure Forest Reserve is one of the country's significant biodiversity hotspots. Despite being designated for conservation, it has suffered extensive degradation due to weak enforcement of forest policies, and socio-economic pressures. The reserve is home to diverse flora and fauna, and its destruction has far-reaching ecological and socio-economic consequences. Studies have shown that the removal of trees disrupts habitat quality, alters the structure of forest ecosystems, and threatens the livelihoods of communities dependent on forest resources (Onyekwelu, Jonathan, Olusola & Johnson 2016; Uwalaka et al, 2018).

5.3 Idanre Forest Reserve

Idanre Forest Reserve is in Idanre local government area of Ondo. The Forest Reserve is the second largest Forest reserve in Ondo state, covering a total land area of 540.53km2. It lies between the latitude 6o51'28" North and longitude 5o6'20"East. It is bounded by Ore – Benin express road in the south, river Ofusu to the East and river Owena to the West. Idanre Forest Reserve is a protected natural area, and it encompasses a significant portion of the Idanre Hills, which are a cluster of rugged and picturesque hills in the region and it serves as an important conservation area for the local flora and fauna. The forest reserve is characterized by diverse landscapes, including dense forests, grasslands, and rocky outcrops. The Idanre Forest Reserve offers a unique blend of natural beauty, cultural heritage, and adventure. It attracts both nature lovers and history enthusiasts who are interested in experiencing the natural wonders and cultural treasures of the region (UNESCO, 2023; Tella, 2017; Ale, Alade & Ogunruku, 2020).

The Idanre Forest Reserve is known for its rich

biodiversity, supporting a wide range of plant and animal species. The vegetation within the reserve consists of various types of trees, shrubs, rocky outcrops, dense forests, grasslands, and other plants, forming a diverse ecosystem. Wildlife species found in the forest reserve include monkeys, antelopes, birds, reptiles, and several species of insects. The area serves as an important habitat for these species and contributes to their conservation.

The ecological significance of Idanre Forest Reserve extends beyond its boundaries. The reserve is part of a larger forest ecosystem that includes other protected areas, such as the Omo Forest Reserve and the Upper Ogun Forest Reserve. The forest ecosystem provides critical ecosystem services, such as regulating the local climate, maintaining soil fertility, and providing clean water. However, the reserve has faced challenges such as poverty-fueled deforestation and conflicts with farmers who have been evicted from the reserve. These challenges threaten the ecological significance of the reserve and its ability to provide critical ecosystem services.

It is noted that agricultural activities like farming is now taking place in Idanre Forest. This is encroaching on its reservation. It got so bad that the farmers were taking to court. Thought, the court ruled that they will not be forcefully removed from the site. It was stated that the court restrained the Ondo government from forcefully removing the farmers in the forest. There is evidence that there is contention over the forest reserve of Idanre Forest Reserve. This is an indication that the forest is in danger due to human activities. Previously, the villagers were given part of the forest for farming; along the line the Ondo government now thought it worth to sell off part of it to a company and are now planning to take it back from them.

The forest in the recent times has become endangered due largely to widespread incidences of attacks, killings, and kidnapping for ransom by harmed men who are supposedly herders and their local collaborators who have taken over many of the forest estates in Nigeria. This unsavory development has created so much fear/terrorand has negatively impacted on forestry and allied activities in adjoining forest reserve communities in recent times.

5.4 Forest Conservation and Human Security

The forest management approaches employed by the forest management authority have far-reaching security implications that span environmental, social, economic, and political dimensions. As these forests are essential components of the communities' ecosystem and play a pivotal role in the livelihoods of local communities, any mismanagement or unsustainable practices can result in a myriad of security challenges. In this context, it is crucial to examine and understand the multifaceted security implications arising from the current approaches to forest management in the study area.

5.4.1 Forest Conservation and Food Security

Forests act as a natural safety net during agricultural failures or food shortages by providing fruits, nuts, fuelwood, and other essential resources. Consequently, the increasing threats from deforestation and forest degradation pose significant risks to food security. Forest loss affects food security by diminishing forest-based food sources and increasing dependence on less sustainable or more expensive alternatives.

However, addressing threats to forests and promoting sustainable resource use, ultimately enhances food security and well-being. While protecting forests through conservation is crucial for maintaining food security and economic stability. This is noted during focus group discussions (FGDs), participants affirmed that,

"Food security is essential for maintaining health, preventing malnutrition, and ensuring that individuals can live active and productive lives. It is a critical component of overall human security and well-being, that highlighting the positive impacts of forest conservation on food security"

Forest management approaches without effective conservation strategies and policies worsen food supply and health security, because agricultural expansion due to land scarcity pushes farmers to clear forest areas, often causing soil degradation, erosion, and disruption of water cycles. Thus, degradation increases human exposure to zoonotic disease outbreaks. According to the president of the association of women herbal producers, she noted that,

"Forests house medicinal plants and help reduce the emergence of diseases. their conservation contributes to public health and biosecurity; unsustainable practices can result in a myriad of health security challenges"

By ensuring sustainable management of forest resources, it is possible to address food insecurity, support local economies, and reduce economic stress. Effective conservation strategies contribute to a more resilient and secure future.

5.4.2 Forest Conservation and Human livelihoods

Forests resources are essential to the livelihoods of forest-dependent communities. Forests are incredibly valuable for communities located near these reserves, offering a range of benefits that enhance their well-being and economic stability. Forest resources significantly contribute to the income of forest-adjacent communities. Employment related to forests includes direct roles such as forestry jobs and self-employment in activities like beekeeping, fuelwood collection, handicrafts, and cottage industries. To ensure sustainable livelihoods for communities that depend on these natural resources, key informants stressed the importance of training in sustainable practices, and ecotourism skills can empower forest-dependent communities to contribute to conservation while improving livelihoods, as proposed by some of the study participants.

"We rely on non-timber forest products (NTFPs) to survive. The forest provides us with charcoal, mushrooms, and medicinal plants we can sell to make ends meet. The women make a paltry picking and selling products like honey, nuts, and soap leaves. In the past, we could hunt bush meat, but with government restrictions and the fear of getting arrested, that's almost impossible now. Many of us depend on the forest for hunting and logging because there aren't many job options out there."

Responds to livelihood concerns by making conservation economically rewarding. A forest officer in Ipogun/Kajola community emphasized that,

"We support community cooperatives and forest-based enterprises that provide income while promoting reforestation and conservation".

However, the president of the herbal medicine practitioners in Ago Petesi, Akure South local government area countered that,

"Forests are crucial for our community, serving as sources of herbal medicine, fuel wood, bush meat, freshwater protection, and a way to connect with nature. The lack of support for forest-based livelihoods has left us in a vulnerable economic situation and disheartened from engaging in conservation".

Historically, forests offer economic opportunities through ecotourism, resource harvesting, and community-driven enterprises. By integrating conservation with community needs, livelihoods improve, consequently alleviating poverty. Successful initiatives that focus on capacity-building, like training and educational programs, equip community members with the skills needed for effective forest management and conservation, leading to better job prospects and reduced reliance on unsustainable practices.

According to a forest officer in Ipogun/Kajola community maintained that:
"Investing in conservation creates jobs in ecotourism, forest restoration, non-timber forest product value chains, as well as offering pathways to employment and poverty reduction".

Focus group discussions (FGDs) with the women herbal producers highlighted that:
"We're not opposed to conservation, but what support or alternative livelihoods is the government providing for those of us reliant on forest products? We've already lost control over the forest; illegal loggers are exploiting it and bringing in armed men to protect their activities, leaving us fearful of attacks."

In addition, the secretary of Ipogun/Kajola community development association acknowledged that conserved forests could help communities sustain their farming, hunting, and gathering. When people have access to forest resources, there is less tension and more cooperation, building a more secure society.

5.4.3 Forest Conservation and Social-cultural Security

Forest conservation scrutinizes the social and cultural security concerns arising from the potential displacement of indigenous communities and the erosion of traditional knowledge and practices closely tied to these forests. Recognizing and acting upon the interconnectedness of forest conservation, and social and cultural security, focus group discussions (FGDs) noted that,

"Active community participation strengthens commitment and resource allocation towards conservation efforts, driven by deep personal and cultural ties to the forest. The integration of indigenous knowledge with scientific methods significantly improves conservation practices".

The discussions underscore well-managed forests that reduce land-use conflicts and resource-based violence between communities, loggers, herders, and other groups. Conservation policies help maintain peace and stability, preventing conflict over dwindling natural resources.

The discussions also advocate for forest conservation

that contributes to social cohesion and cultural preservation, since many indigenous communities derive their identity, spirituality, and traditions from forests. Conservation protects these cultural values which are essential aspects of human security.

Recognizing how conservation reduces human displacement and social pressure, which can lead to insecurity, the Director of Forestry Department remarked that conservation can help prevent forced migration and ensure stability in forest communities due to rising conflict from deforestation because when forests are protected, there are fewer disputes with external actors. According to the High Chief, Olu-ode of Owena, when forest conservation respects local people, it prevents security threats and promotes human well-being.

5.4.4 Forest Conservation and Environmental Security

Forest conservation is essential for maintaining environmental security because forests play a fundamental role in preserving ecological balance and combating climate change. Forests are vital in mitigating climate change through carbon sequestration; they absorb and store carbon dioxide, which reduces greenhouse gas concentrations in the atmosphere. However, the exploration into the environmental security threats posed by deforestation and habitat loss, which not only disrupt the delicate balance of local ecosystems but also contribute to global issues such as climate change. Rapid environmental degradation and climate change can exacerbate existing challenges and complicate conservation efforts, affecting participatory strategies.

The communities surrounding the Akure and Idanre Forest Reserves play a central and often underappreciated role in forest conservation efforts. These communities are not just passive residents or resource users; they contribute positively in the protection and sustainable use of the forest ecosystems. Their involvement covers a wide spectrum of activities, including sustainable agriculture, traditional ecological knowledge, and cultural stewardship. Such contributions argue for their consideration not only as users of conservation benefits but also as key partners in long-term environmental sustainability.

For instance, local farmers in both Akure and Idanre practice agroforestry by combining agricultural crops and farm trees, for the purpose of conserving canopy coverage and alleviating deforestation pressures. Agricultural crops, including cocoa, kola nut, and various indigenous species of tree, are cultivated in such a manner that promotes biodiversity and the ecological balance of the reserves. They testify that such land-use practices allow traditional farming to go hand in hand with conservation goals, creating synergies rather than conflicts between livelihood and environmental protection.

The qualitative data from the Director of the Forestry Department stated that,

"Forest conservation is not merely an environmental concern but a crucial aspect of human security. By ensuring the health and sustainability of forest ecosystems, we protect the myriad services they provide, which in turn supports the safety, economic stability, and overall well-being of communities"

Forests serve as a climate buffer for vulnerable populations. The conserved forests mitigate the impact of climate change by stabilizing rainfall, reducing flood risks, and preventing desertification, all of which directly affect human security. Forests act as natural protective barriers, shielding people from disasters. The key informant interview with a forest extension officer highlighted that,

"While deforestation often leads to soil erosion, landslides, and flooding, which can displace communities, forest conservation helps prevent such environmental disasters. Without forest conservation, we face more drought, flooding, and road damage, which affects both local people and our logistics".

5.4.5 Forest Conservation and Biodiversity Security

Forests are essential for maintaining biodiversity by providing habitat and resources for a wide range of species. The conservation of forests and related ecosystems is critical for preserving biodiversity.

In Akure and Idanre forest communities, cultural norms and traditional practices are upheld to serve conservation purposes, e.g., protecting sacred groves. These systems of custom provide governance by virtue of being socially accepted and locally enforced, and they thus sustain biodiversity conservation informally but efficiently.

The conservation efforts of these communities in mitigating the adverse impacts of climate change should be recognized. The agroforestry systems, which help forest scapes to maintain some carbon stock through forest cover, provide adaptive

agricultural systems consisting of drought-resistant crops and conservation of water for resilience to climate variability. These grassroots efforts in environmental change ultimately assist in the resilience of the forest reserves.

Forests support diverse species by offering crucial habitats and ecological niches, which are vital for ecosystem resilience and biodiversity health. Protecting forests can enhance biodiversity by maintaining ecological processes that support wildlife. Adopting an ecosystem-based approach improves the effectiveness of conservation efforts and ensures the long-term health and sustainability of both terrestrial and marine environments. Effective governance and sustainable management practices are necessary to address the complex challenges facing biodiversity and achieve comprehensive conservation goals.

5.4.6 Forest Conservation and Land Tenure Security

Land tenure security and agricultural development have significant implications for forest conservation. Weak land tenure security, where the government retains ownership and revoke land-use rights, undermines incentives for sustainable forest management.

In Akure and Idanre forest communities, smallholder farmers with insecure land tenure are less engaged in long-term conservation efforts, increasing the risk of deforestation. Without secure land tenure, land conversion for agriculture is leading to significant forest loss. Insecure land tenures sometimes lead to conflicts over land use and resource control, destabilizing communities and undermining political stability.

In Ondo State generally, lack of secure land tenure or forest user rights is a key reason forest-adjacent communities do not commit to participatory forest conservation. Without such rights, individuals face an uncertain future. However, once people gain land or user rights, they become more interested in forest conservation. Focus group discussions (FGDs) reveal that specific demographics, including indigenous communities face exclusion due to a lack of legal recognition, poor consultation, and conservation models that prioritize external interests over local needs. Indigenous communities lack legal recognition of their land rights. Without formal ownership, they are seen as squatters or encroachers, making it easier to deny them participation.

6. Forest Conservation, Political Instability and National Security

Political instability can affect various aspects of forest governance, including forest management and conservation efforts. Understanding how conservation strategies perform during and after political crises is crucial, especially in biodiversity-rich areas facing both ecological and political challenges. Highly regulated authority may enhance forest management, as local communities may take over or gain the capacity to protect forest ecosystems more effectively. Such transitions can lead to increased land tenure security and improved political and economic stability, potentially reducing poverty and boosting rural employment.

In Ondo State, forest management approaches employed have profound implications for political instability and national security. Forests are increasingly exploited for criminal and insurgent activities. Forests are increasingly used by insurgents to launch attacks and conduct guerrilla operations against the state and its economic interests. These areas provide cover for highway robbers, thieves, kidnappers, and cattle rustlers, complicating law enforcement efforts to address these threats effectively. Different parts of Nigeria exhibit forests being a security threat, as some people have taken these forests for granted for their unlawful activities. Particularly, the Akure and Idanre Forest Reserves in Ondo State have turned into security threats for the people of Ondo State.

Both reserves are used as criminal hideouts, particularly for herders' activities which complicate community access and conservation efforts. The herders have taken large parts of the forest. A female study participant from the Aponmu community shared her experience of how cattle destroyed her farms.

"I remember the day like it was yesterday when I had just returned from the market, one of my neighbors rushed to tell me that a group of Fulani herders had passed through my cassava farm. By the time I got there, I nearly fainted. My cassava, maize, and vegetables were gone, all trampled, eaten, or uprooted by the cattle. Months of hard work, gone in a single day. That farm was my only source of income where I fed my children and paid for their school fees".

The forest has since become a lawless zone. People avoid going to the forests unless absolutely necessary. Some farmers have been attacked on their way to the farm, while others have been kidnapped for ransom. We are often threatened by herders with weapons,

especially when we try to stop cattle from eating our crops, as reported by Olu-ode of the Owena community. He further narrated how illegal armed loggers were threatening people in the areas, expressing that,

"We no longer sleep with our two eyes closed. The forest that fed our fathers and kept our children alive is now a battlefield where strangers, heavily armed, and ready to kill anyone who challenges them. We often confronted them by raising our voices that they have no right here while they also raised their rifles and threatened to shoot. I remember a sad day when one of our youths tried to reason with them. One of the men raised his gun and fired. Just like that. He dropped right there in front of us. We ran for our lives and were helpless. We also had cases of houses being burnt and villagers fleeing due to fear of reprisal attacks. Vigilante groups and other security operations always help address these issues".

A member of the Amotekun network who was interviewed also recounted an experience,
"We heard reports from hunters that kidnappings were taking place. So, we gathered, five of us, and entered the forest around 2 a.m. armed with local rifles, machetes, and prayers. We walked quietly, watching because we know the forest better than they do -the rivers, the tall trees, the hidden paths. That's our only advantage. That day, we spotted their camp near the Osun state boundary. But before we could get closer, they saw us first. Gunfire echoed- real rifles, not our local rifles. We dropped to the ground and crawled back. One of us, Ibrahim, was hit in the leg. We had to carry him for miles before we reached the village".

Insecurity prevents community members from patrolling and monitoring the forest reserves. In Ipogun/Kajola, interviewees report the encroaching presence of criminals, making it diffult for them to engage in conservation activities such as the prevention of illegal logging or poaching. Similarly, in Idanre, the activities of herdsmen and hiding places for criminals hinder conservation efforts. According to an interviewee in Ipogun/Kajola,
"The forest is left open, no security, no checks. That's why herders, bandits, and unknown people are using it freely. They have allowed illegal loggers to exploit the forest. Now, they bring in armed men to protect their illegal activities. We have lost control of the forest, so people now live in fear of attacks."

The lack of consistent government presence, as noted by retired forestry officers involved in the FGDs, leads to the continuous exploitation of these forests in Akure and Idanre. Poor management, which includes insufficient personnel and surveillance technology, enables criminals in these reserves to act without fear. As noted by the interviewees in both forest reserves, there is weak law enforcement of forestry law due to corruption among forestry officials. This is consistent with a study conducted by Akinola (2025), which indicated that 33% of Aponmu respondents cited corruption as a barrier to curbing illegal logging, while 25% pointed to political interference.

7. Discussion

The study reveals that forest conservation plays a vital role in human security across multiple dimensions. Forests provide a natural safety net during agricultural failures by supplying essential resources such as fruits, nuts, and fuelwood. However, deforestation and degradation undermine food security by reducing access to these resources, causing soil erosion, and increasing vulnerability to zoonotic diseases. Effective conservation strategies were noted to enhance food security and protect public health.

The findings also highlight the economic significance of forests for local livelihoods, particularly through non-timber forest products and forest-based enterprises. Many forest-adjacent communities depend on these resources for survival, yet limited government support and exclusion from decision-making discourage participation in conservation efforts. While opportunities exist in ecotourism and sustainable enterprises, lack of alternatives forces reliance on unsustainable practices, creating economic insecurity.

Social and cultural security emerged as another critical dimension, as forests are deeply tied to indigenous identity, traditions, and spiritual practices. Conservation strategies that respect these cultural ties foster community cooperation and reduce conflicts, whereas exclusionary policies risk eroding cultural heritage and fueling tension. Similarly, forests contribute significantly to environmental security by regulating climate, preventing floods and desertification, and sustaining biodiversity. Traditional practices like agroforestry and protection of sacred groves were observed as important for maintaining ecological resilience.

The discussion further establishes that biodiversity security depends on effective forest conservation, which ensures habitat preservation and ecosystem stability. However, insecure land tenure remains a major challenge, as farmers without recognized rights show low commitment to conservation. Granting land

and user rights can increase participation and reduce conflicts over resources. Finally, the study reveals that weak governance and corruption in forest management exacerbate insecurity, with reserves serving as hideouts for criminals, insurgents, and illegal loggers. This insecurity disrupts conservation efforts and endangers local communities, highlighting the need for integrated approaches that link conservation with security and governance reforms.

8. Conclusion

The findings underscore that forest conservation is integral to human security, influencing food availability, livelihoods, cultural heritage, biodiversity, environmental stability, and even political security. However, weak governance, insecure land tenure, and exclusionary policies exacerbate deforestation, resource conflicts, and criminal activities within forest reserves. To address these challenges, policies should prioritize participatory forest governance that empowers local communities through secure land tenure and forest user rights. Government and development partners should invest in alternative livelihoods such as ecotourism, non-timber forest product value chains, and forest-based enterprises to reduce dependency on unsustainable practices. Strengthening institutional capacity for law enforcement, deploying technology for forest monitoring, and combating corruption within forestry agencies are critical to curbing illegal activities. Furthermore, integrating indigenous knowledge into formal conservation strategies and promoting climate-smart agroforestry will enhance resilience and biodiversity protection. Finally, linking forest management with national security frameworks can mitigate the use of forests as criminal hideouts, ensuring both ecological sustainability and community safety.

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