

INDIGENOUS KNOWLEDGE AS A SOLUTION TO RESOURCE CONFLICTS AND CLIMATE CHANGE

OKOLI, Hilary Chukwuduruo PhD
Nnamdi Azikiwe University -Awka
hilaryokoli@gmail; 08036288424
ORCID iD:0009-0005-6724-8697

Abstract

Climate change has emerged as one of the most urgent challenges of the twenty-first century, significantly impacting ecosystems, human communities, and global development. In sub-Saharan Africa, climate-induced resource scarcity is intensifying competition for land and water; fueling conflicts between farming and pastoral communities, and exacerbating existing grievances. This article argues that the resource-conflict nexus in Africa is not an inevitable outcome of climate change but a product of governance failures, historical marginalization, and the neglect of indigenous knowledge systems. Methodologically, the study adopts a qualitative, multi-case study design, drawing on a systematic review and thematic synthesis of peer-reviewed literature, policy documents, and documented community-based initiatives from the Lake Chad Basin, the Sahel, Nigeria, Senegal, Tivland in Benue State, the Ankole sub-region of Uganda, and Kenya. The analysis maps Indigenous Traditional Ecological Knowledge (ITEK) practices onto climate adaptation and conflict-mitigation outcomes, while a comparative policy analysis examines the extent to which national adaptation frameworks integrate ITEK within legal and institutional structures. Considering the empirical evidence from the Lake Chad Basin, the Sahel, Nigeria, and Senegal, it demonstrates how ITEK, including crop rotation, intercropping, sacred sites, seasonal farming calendars, land tenure systems, and communal ownership of resources, offers culturally appropriate, place-based solutions for climate adaptation and conflict mitigation. The article critically examines the marginalization of indigenous knowledge in formal climate governance, noting that despite being acknowledged as a valuable resource for climate adaptation, current national adaptation policies on the African continent still show serious gaps in effectively integrating ITEK systems within legal frameworks to reduce vulnerability. It highlights promising initiatives such as Kenya's Nganyu Indigenous Weather Knowledge Project, which co-produces hybrid forecasts combining indigenous indicators and meteorological data, and community-based resource management in the Lake Chad Basin. The article concludes with concrete implications for policymakers, scholars, and practitioners, emphasizing the need for epistemic justice, positioning indigenous knowledge as co-equal to scientific knowledge in climate adaptation, and integrating local communities in the design and implementation of climate policies.

Furthermore, this research makes significant contributions to the ongoing Conference of the Parties (COP) programmes by providing empirical evidence and actionable recommendations for advancing the integration of Indigenous Knowledge Systems within global climate governance frameworks, particularly in relation to Article 7 of the Paris Agreement, the Global Goal on Adaptation, the Loss and Damage agenda, and the Local Communities and Indigenous Peoples Platform.

Keywords: climate change, resource conflict, indigenous knowledge, farmer-herder conflict, traditional ecological knowledge,

Introduction

The consequences of climate change in the Lake Chad Basin are not only environmental, but also tied to conflict and insecurity. The resource scarcity caused by climate change is pushing communities into violent competition, and armed groups are using this to recruit (Niang 2025, para. 1). With over 50 million people across Cameroon, Chad, Niger, and Nigeria, the Lake Chad Basin has faced the intersection of climate change and insecurity for many years. The Lake was once an abundant source of freshwater, but it has shrunk by over 90 percent since the 1960s, due to rising temperatures, erratic rainfall, and unsustainable water management. Environmental change has intensified resource scarcity, driving tensions among communities as well as aiding the rise of armed groups (Niang 2025, para. 2).

This pattern is not confined to the Lake Chad Basin. Across sub-Saharan Africa, climate change is exacerbating farmer-herder conflicts, particularly in Western and Eastern African countries. A systematic review of twenty-nine peer-reviewed research articles revealed that "different climatic events, such as drought, desertification, increased temperature, and erratic rainfall, negatively affect pastoral and farming communities, prompting outmigration of pastoral communities into areas inhabited by farming communities and thereby accelerating farmer-herder conflicts" (Ndimbo and Sangab 2026, p. 3). Socio-political factors, such as poor land governance, ethnic tensions, and weak institutional frameworks, further compound these conflicts (Ndimbo and Sangab 2026, p. 4).

In Senegal, climate change is adding to historic tension between farmers and herders. "Declining rainfall and rising temperatures have dried up pasture land at the same time agricultural use has expanded. And that's meant more frequent conflict as nomadic herders, and their cattle, sheep and goats, range through the region searching for grazing" (AP News 2025, para. 4). The Peul or Fulani are herders who have traditionally raised animals across a vast territory from Senegal to Nigeria. Their nomadic movements are essential in a region that does not produce enough vegetation to feed a large number of animals in one place all year long. They also supply two-thirds or more of the meat and milk sold in the region's markets (AP News 2025, para. 7). But in recent decades, the southward journey has become longer as they have had to search for more favorable land, and it is during this migration, which overlaps with harvest, when

disputes between farmers and herders are worst (AP News 2025, para. 8).

This article makes a bold claim: the resource-conflict nexus in Africa is not an inevitable outcome of climate change but a product of governance failures, historical marginalization, and the neglect of indigenous knowledge systems. Indigenous Traditional Ecological Knowledge, including crop rotation, intercropping, sacred sites, seasonal farming calendars, land tenure systems, and communal ownership of resources, offers culturally appropriate, place-based solutions for climate adaptation and conflict mitigation. The argument proceeds in five parts examine the nature and scale of climate-induced resource conflicts across Africa, drawing on empirical evidence from the Lake Chad Basin, the Sahel, Nigeria, and Senegal. Analyze the limitations of current climate and security policies, which often lack a climate-resilient livelihood approach. How Indigenous Traditional Ecological Knowledge offers practical, place-based solutions for climate adaptation and conflict mitigation. The marginalization of indigenous knowledge in formal climate governance and propose a framework for epistemic justice. Fifth, I articulate how this research contributes to ongoing COP programmes, providing concrete pathways for integrating indigenous knowledge into global climate governance. Finally, with concrete implications for policymakers, scholars, and practitioners.

The Nature and Scale of Climate-Induced Resource Conflicts

Climate Change as a Threat Multiplier

Climate change has emerged as one of the most urgent challenges of the twenty-first century, significantly impacting ecosystems, human communities, and global development (Nomishan, Okonkwo, and Yio 2026, p. 2). The Intergovernmental Panel on Climate Change (IPCC) highlights that these effects threaten not only ecological balance, but also intensify issues such as poverty, food insecurity, forced migration, and violent disputes over limited resources (Birkmann et al. 2022, cited in Nomishan, Okonkwo, and Yio 2026, p. 2). The World Health Organisation stated in 2023 that climate change is directly linked to humanitarian crises, such as heatwaves, wildfires, floods, tropical storms, and hurricanes, which are becoming more frequent, severe, and widespread in the contemporary era. About 3.6 billion individuals currently reside in regions that are highly vulnerable to the effects of climate change (WHO 2023, cited in Nomishan, Okonkwo, and Yio 2026, p. 2).

In sub-Saharan Africa, the effects of climate change are experienced more acutely due to a significant dependence on natural resources and livelihoods that are sensitive to climate fluctuations (Nomishan, Okonkwo, and Yio 2026, p. 3). As Ndimbo and Sangab (2026, p. 2) document, "Sub-Saharan Africa is one of the region's most vulnerable to climate change. In this region, the majority of the population resides in rural areas, where small-scale subsistence farming is the primary source of food and income." Smallholder farming forms the backbone of agriculture, employing more than half of the continent's workforce and contributing to over 30 percent of the continent's GDP

(Ndimbo and Sangab 2026, p. 2).

The Lake Chad Basin: A Region in Crisis

The Lake Chad Basin provides the most dramatic illustration of climate-induced resource conflict. The lake has shrunk by over 90 percent since the 1960s due to rising temperatures, erratic rainfall, and unsustainable water management. Over the years, temperatures in the Sahel have risen 1.5 times faster than the global average, with some parts of the Basin experiencing a rise of nearly 2°C since the 1960s (Niang 2025, para. 3).

This has a devastating impact on communities in the region who depend on fishing, farming, or pastoralism. For every 1°C increase above 20°C, agricultural productivity drops by about 2 percent (Niang 2025, para. 3). Rising temperatures have led to a water crisis in the Basin. Rapid growth of the population has exacerbated the problem, increasing tension over increasingly limited resources. This scarcity contributes to two main levels of conflict: intercommunal conflict over access to resources and insecurity associated with the activities of armed groups. Rising intercommunal tensions are manifested in clashes between farmers and herders over access to land and water. At the same time, armed groups such as Boko Haram and the Islamic State in West Africa Province have seized the opportunity to exploit environmental despair by turning climate vulnerability into a recruitment tool (Niang 2025, para. 4).

Farmer-Herder Conflicts in Nigeria and West Africa

In Nigeria, the conflict between farmers and herders exemplifies the devastating human cost of climate-induced resource competition. As documented by Ndimbo and Sangab (2026, p. 5), the majority of farmer-herder conflicts in Nigeria take place in the southern and central parts of the country, involving the Fulani pastoral group with farming communities. Desertification drives pastoral communities to migrate from the north to the south, where farmers mainly live. Competition for resources and frequent crop destruction lead to rising tensions and conflicts between farmers and herders. A study of twenty-nine peer-reviewed research articles found that Nigeria accounted for twelve studies (38.7%) reporting climate change-induced farmer-herder conflicts, the highest number in sub-Saharan Africa (Ndimbo and Sangab 2026, p. 5). These conflicts have resulted in injuries, death, loss of property, displacements, and endless tension among the conflicting parties (Ndimbo and Sangab 2026, p. 4). Both farmers and herders are actors and victims in this conflict (Bello and Kazibwe 2023, cited in Ndimbo and Sangab 2026, p. 4).

Senegal: Climate Change Adding to Historic Tension

In Senegal, the human toll of climate-induced conflict is stark. The Associated Press documented the case of Cheikh Diouf, an eighteen-year-old whose father was killed in a dispute with herders. Moussa Diouf, in his sixties, was struck down by machete blows after arguing with herders whose animals had grazed into his cassava fields (AP News

2025, para. 1). "It hurts so much," Diouf said. "If I ever meet that herder, I will avenge him, that's for sure" (AP News 2025, para. 3). Tension between farmers and herders has long been a fact of life in West Africa, but climate change is ramping it up. Senegal has averaged about 27 percent less annual rainfall in the past thirty years than it did from 1951 to 1980. Meanwhile, farmers also complain that it has become impossible to determine when the rains will begin and end, sometimes delaying seeding or damaging crops (AP News 2025, para. 6).

The conflict has devastating human consequences. Dr. Yawma Fall, deputy head of the Ndogane medical center, described a shepherd about twelve years old struck in the shoulder with an ax by a man apparently angered because the boy's livestock entered his field. She described another shepherd as who lost fingers when he was struck with a blade (AP News 2025, para. 14).

The Limitations of Current Climate and Security Policies

The Failure of Top-Down Approaches

Current climate and security policies often lack a climate-resilient livelihood approach that can help people earn money in their new reality (Niang 2025, para. 2). In the Lake Chad Basin, climate and security policies that have been adopted so far often lack a climate-resilient livelihood approach that can help people earn money in their new reality (Niang 2025, para. 5).

One characteristic of the countries in the Basin is an over-centralisation of governance. Most of the issues, including the climate ones, are administered by formal institutions. The integration of local communities and their informal institutions is important as they are closer to the population, often more trusted and can have a deeper understanding of the security and farming issues. They can offer critical insights into local needs as well as mediating resource disputes (Niang 2025, para. 8).

The Neglect of Indigenous Knowledge

Despite being acknowledged as a valuable resource for climate adaptation, current national adaptation policies on the African continent still show serious gaps in effectively integrating Indigenous and local knowledge systems within legal frameworks to reduce vulnerability (FAO 2024, p. 2). The FAO study confirms this diagnosis, finding that "despite being acknowledged as a valuable resource for climate adaptation, current national adaptation policies on the African continent still show serious gaps in effectively integrating ILK systems within the legal frameworks to reduce vulnerability" (FAO 2024, p. 2). The FAO study also recommends that "ILK should be better integrated with modern climate change adaptation strategies to anticipate more effective responses. Both rural communities and relevant government agencies should complement the use of ILK with climate change strategies, so as to maximize its contribution to the effective implementation of climate change policies" (FAO 2024, p. 3).

The Marginalization of Indigenous Knowledge in Formal Climate Governance

Indigenous environmental knowledge has long supported Africa's climate resilience through localized forecasting, sustainable agriculture, and water conservation. Rooted in generations of observation, spiritual beliefs, and ecological intuition, indigenous environmental knowledge offers practical, place-based responses to climate variability. Yet, despite its value, indigenous environmental knowledge remains marginalized in formal climate governance, often dismissed in favour of Western scientific models (Shumba 2025, p. 1).

The absence of structured documentation—compounded by migration, language loss, and demographic change increasingly threatens the continuity of this knowledge as climate risks intensify (Shumba 2025, p. 1). To address this, Shumba (2025, p. 2) advances a Digital Stewardship Framework resting on four pillars: ethical and collaborative documentation, inclusive digital infrastructure, respectful epistemic integration, and enabling policy environments. She frames digitalisation as an act of epistemic justice, arguing that indigenous environmental knowledge must be both preserved and elevated to a status co-equal with scientific knowledge in climate adaptation.

Indigenous Traditional Ecological Knowledge as a Solution

The Power of Indigenous Knowledge

Indigenous communities have long sustained biodiversity through adaptive strategies rooted in deep ecological knowledge. Research consistently demonstrates that indigenous lands are very often better conserved than non-indigenous areas, underscoring the importance of recognizing and integrating indigenous ecological knowledge and management strategies into conservation policy and practice (Fa and Luiselli 2025, p. 2; Garnett et al. 2018, cited in Fa and Luiselli 2025, p. 2).

Indigenous peoples globally constitute only 5 percent of the world's population and control and care for just 20 percent of the Earth's surface yet live within the areas that contain 80 percent of the world's remaining biodiversity (PNAS 2025, p. 1; Fa and Luiselli 2025, p. 2). Clearly, Indigenous people have ways of "caring for place," that is, biodiversity conservation that could be characterized as nature-based solutions. But in their distinct epistemologies, ontologies, worldviews, and languages, these solutions are characterized in vastly different ways (PNAS 2025, p. 2).

The Tiv of Benue State, Nigeria

A study of Indigenous Traditional Ecological Knowledge in Tivland, Benue State, Nigeria, demonstrates how traditional environmental practices and cultural values can be applied as adaptive solutions to contemporary climate and social problems. The study adopted a qualitative approach, including ethnographic surveys, key informant interviews, and focus group discussions with farmers, elders, custodians of cultural traditions, and a review of documentary sources on indigenous knowledge systems

(Nomishan, Okonkwo, and Yio 2026, p. 1). The findings revealed that ecological knowledge among Tiv communities, through such practices as crop rotation, intercropping, sacred sites, seasonal farming calendars, land tenure systems, and communal ownership of resources, has contributed to greater environmental sustainability and ultimately reduced competition for scarce resources (Nomishan, Okonkwo, and Yio 2026, p. 1). These practices largely contribute to enhanced food security and community cohesion, consequently reducing climate-induced disputes or conflict over scarcity of resources. ITEK has, therefore, become a vital channel for the development of a culturally appropriate framework for climate change adaptation and peacebuilding (Nomishan, Okonkwo, and Yio 2026, p. 1).

Kenya's Nganyi Indigenous Weather Knowledge Project

One of the most promising initiatives integrating indigenous and scientific knowledge is Kenya's Nganyi Indigenous Weather Knowledge Project. The project co-produces hybrid forecasts combining indigenous indicators and meteorological data. It also illustrates how tools like community radio and mobile platforms can enhance access across literacy and connectivity divisions (Shumba 2025, p. 2). The Nganyi project demonstrates that digital tools present an opportunity ethically to document, preserve, and revitalize indigenous environmental knowledge. However, as Shumba (2025, p. 2) warns, "without policy integration, community control, and ethical safeguards, digital initiatives risk reinforcing extractive dynamics."

The Ankole Sub-Region, Uganda

A study of the Ankole sub-region in Uganda explored how traditional ecological practices and belief systems enhance climate resilience among rural communities. The study employed a qualitative ethnographic approach, using a case study design to examine the application of indigenous knowledge in selected communities, including farmers, women, and youth (Mugabirwe and Turyamureeba 2025, p. 1). The findings reveal that Ankole communities employ a diverse range of indigenous strategies to cope with climate variability and extreme weather events. These include soil and water conservation techniques, traditional water harvesting systems, climate-smart housing designs, and agroforestry practices. The study suggests that integrating indigenous knowledge into formal climate adaptation policies can lead to more sustainable, culturally relevant, and effective solutions (Mugabirwe and Turyamureeba 2025, p. 1).

Climate-Resilient Livelihoods in the Lake Chad Basin

In the Lake Chad Basin, investing in climate-resilient livelihoods is one of the most direct ways to reduce climate-driven conflict. Farmers, fishers, and herders need help to adapt their activities to climate shocks such as droughts or flooding. For example, farmers can be trained to use drought-resistant crops like millet or tubers. Similar initiatives have been taken in other African countries such as Burkina Faso, Nigeria, and Senegal with drought-resistant crops as an adaptation strategy for smallholder farmers

(Niang 2025, para. 6). Adopting techniques like rainwater harvesting and small-scale reservoirs can ensure access to resources during drought times. These methods, in addition to being low-cost, are also locally adaptable and can help reduce the pressure on the Lake Chad Basin (Niang 2025, para. 7). Integrating these techniques into pastoral and farming activities helps local communities to build resilience against resource scarcity.

Epistemic Justice and the Integration of Indigenous Knowledge

The Need for a Pluralistic Knowledge Approach

The triple planetary crisis of climate change, pollution, and biodiversity loss necessitates more holistic, comprehensive, and integrated public policy approaches (Frontiers in Earth Science 2024, p. 1). Within the United Nations Framework Convention on Climate Change, this crisis highlights significant conflicts over forms of knowledge and conceptualization, affecting how international policies are formed. Indigenous knowledge systems have become increasingly acknowledged for their vital role in addressing the challenges of the Anthropocene (Frontiers in Earth Science 2024, p. 1). The need for a pluralistic knowledge, rather than a one-size-fits-all approach, blending scientific language with artistic and narrative forms, is proposed as critical for fostering effective communication and developing more effective and equitable solutions for global environmental governance (Frontiers in Earth Science 2024, p. 2).

The Biocultural and Relational Orientation of Indigenous Knowledge

Indigenous knowledge systems are not merely bodies of ecological observation but frameworks that extend nature-based solutions into distinctly biocultural and relational terrain, refusing the artificial separation of nature from culture (PNAS 2025, p. 1). This orientation is captured by Indigenous scholars, who insist that "Indigenous knowledges are always local, contextual, and embedded in the ecologies of Indigenous territories and the cultural heritage of Indigenous communities" (PNAS 2025, p. 2). Fa and Luiselli (2025, p. 1) emphasize that "TEK, embedded in centuries of observation and cultural practices, informs ecological processes and sustainable resource use." However, climate change, land dispossession, and cultural erosion, among other drivers, threaten these knowledge systems and the communities that uphold them. A collaborative approach that respects indigenous sovereignty can foster interdisciplinary conservation efforts (Fa and Luiselli 2025, p. 1).

Recommendations for Integration

Several studies converge on the need for structural reform. The PNAS study offers "recommendations for respectful, just, decolonial, and transparent ways to explore greater resonance between NbS and Indigenous peoples' rights" (PNAS 2025, p. 1), while the FAO study recommends that "ILK should be better integrated with modern climate change adaptation strategies to anticipate more effective responses" (FAO 2024, p. 3). Shumba (2025, p. 2) goes further, proposing that "framing digitalization as an act of epistemic justice" requires "a decolonial shift—centring Indigenous agency,

ensuring that Africa's climate wisdom informs both national and global decision-making." The study on Tivland similarly recommends that "local communities hold opportunities to collaborate with relevant stakeholders and policy-makers in response to climate change and conflict mitigation" (Nomishan, Okonkwo, and Yio 2026, p. 1).

Contribution to Conference of the Parties Programmes

This article advances several critical contributions to the ongoing Conference of the Parties programmes, most notably in furthering the integration of Indigenous Knowledge Systems within global climate governance frameworks. Their timeliness is underscored by the growing recognition at successive COPs that knowledge pluralism, local participation, and just transitions are indispensable to effective climate action

Advancing Article 7 of the Paris Agreement. The findings of this research directly support the implementation of Article 7 of the Paris Agreement, which recognizes the importance of "adaptation action" and "the need to strengthen knowledge, technologies, and practices" (UNFCCC 2015, Article 7). The article demonstrates how Indigenous Traditional Ecological Knowledge constitutes a vital knowledge resource that complements scientific approaches. By documenting specific case studies, including Kenya's Nganyi Indigenous Weather Knowledge Project and community-based resource management in the Lake Chad Basin, this research provides empirical evidence that hybrid knowledge systems (ITEK combined with meteorological data) produce more effective climate adaptation outcomes (Shumba 2025, p. 2). This directly addresses COP's recurring calls for enhanced adaptation action and knowledge-sharing mechanisms.

The research demonstrates that the integration of ITEK with scientific approaches yields superior outcomes in climate forecasting, agricultural planning, and resource management compared to either approach in isolation. This finding has direct implications for how COP programmes should conceptualize and fund adaptation initiatives, moving beyond the paradigm of scientific knowledge as primary and indigenous knowledge as supplementary.

Operationalizing the Global Goal on Adaptation

The article contributes to operationalizing the Global Goal on Adaptation established under the Paris Agreement and advanced through the UAE Framework for Global Climate Resilience adopted at COP28 (UNFCCC 2023). Specifically, the research provides evidence and recommendations across multiple adaptation domains:

Water Security: The documentation of traditional water harvesting systems in the Ankole sub-region and rainwater harvesting techniques in the Lake Chad Basin provides concrete, scalable practices for enhancing water resilience (Mugabirwe and Turyamureeba 2025, p. 1). These low-cost, locally adaptable techniques offer practical solutions that can be integrated into national adaptation plans and COP-funded water security programmes.

Food Security: The examination of ITEK practices including crop rotation,

intercropping, drought-resistant crops, and seasonal farming calendars offers culturally appropriate solutions for agricultural adaptation (Nomishan, Okonkwo, and Yio 2026, p. 1). The evidence from Tivland demonstrates that these practices contribute to enhanced food security and community cohesion, directly supporting the food security objectives of the Global Goal on Adaptation.

Ecosystems and Biodiversity: The evidence that indigenous territories contain 80 percent of the world's remaining biodiversity underscores the importance of supporting indigenous stewardship as a nature-based solution (PNAS 2025, p. 1; Fa and Luiselli 2025, p. 2). This finding strengthens the case for COP programmes to allocate resources directly to Indigenous communities for conservation and adaptation activities.

Informing the Loss and Damage Agenda

This research directly speaks to the Loss and Damage agenda, which became a formal COP agenda item at COP27 and was operationalized at COP28 with the establishment of the Loss and Damage Fund (UNFCCC 2023). The article demonstrates that climate-induced resource conflicts in sub-Saharan Africa are not inevitable but are exacerbated by governance failures and the marginalization of ITEK (Niang 2025, para. 4; Ndimbo and Sangab 2026, p. 4). The research findings have several implications for the Loss and Damage framework. First, integrating Indigenous knowledge into climate policies can reduce vulnerability and prevent climate-related losses, thereby, reducing the scale of Loss and Damage claims. secondly, the marginalization of ITEK constitutes a form of epistemic injustice that worsens climate impacts, a finding that has implications for how Loss and Damage frameworks should incorporate traditional knowledge in vulnerability assessments and adaptation planning. Thirdly the documentation of climate-induced conflicts in the Lake Chad Basin, Nigeria, and Senegal provides empirical evidence for the human costs of climate change that should inform Loss and Damage funding priorities.

Strengthening the Koronivia Joint Work on Agriculture

The article further contributes to the Koronivia Joint Work on Agriculture, the COP mechanism addressing the nexus of climate change and agriculture. Through its examination of farmer-herder conflicts in Nigeria, Senegal, and across sub-Saharan Africa, the research generates actionable insights into sustainable agricultural practices grounded in Indigenous knowledge (Ndimbo and Sangab 2026, p. 5; AP News 2025, para. 4). Three concrete recommendations for agricultural adaptation emerge from the findings: intercropping and crop rotation techniques from Tivland, which enhance soil fertility and reduce vulnerability to climate shocks (Nomishan, Okonkwo, and Yio 2026, p. 1); agroforestry practices from the Ankole sub-region, which integrate tree planting with crop cultivation (Mugabirwe and Turyamureeba 2025, p. 1); and drought-resistant crop varieties that maintain productivity under water stress (Niang 2025, para. 6). These practices are well suited for integration into COP-facilitated agricultural adaptation programmes.

Operationalizing the Nairobi Work Programme

This research speaks directly to the Nairobi Work Programme on Impacts, Vulnerability and Adaptation to Climate Change, whose mandate centres on knowledge generation and sharing. The article advances three interconnected proposals in response to that mandate. First, it documents a diagnostic gap: national adaptation policies across Africa fail to integrate ITEK within their legal and institutional frameworks (FAO 2024, p. 2). Second, it proposes a normative framework of epistemic justice that repositions ITEK as co-equal to scientific knowledge, rather than subordinate to it (Shumba 2025, p. 2). Third, it demonstrates, through empirical documentation of ITEK practices across multiple African contexts, how digital tools and hybrid knowledge systems can translate this epistemic shift into measurable gains in climate resilience. In doing so, the article addresses the Nairobi Work Programme's emphasis on strengthening the knowledge base for adaptation—not by adding ITEK as a supplementary data point, but by proposing that epistemic justice become the organising principle through which adaptation knowledge is generated, validated, and shared.

Advancing the Local Communities and Indigenous Peoples Platform

This research directly supports the Local Communities and Indigenous Peoples Platform established at COP21 and operationalized at subsequent COPs (UNFCCC 2015). The platform aims to strengthen the engagement of local communities and indigenous peoples in the UNFCCC process and enhance knowledge sharing. The article provides empirical evidence from multiple African contexts demonstrating the value of ITEK for climate adaptation and conflict mitigation. It critiques the marginalization of indigenous knowledge in formal climate governance and offers recommendations for respectful, ethical integration of ITEK into climate policies. The research also addresses the challenge of knowledge documentation and preservation through digital stewardship (Shumba 2025, p. 2), contributing to the platform's objectives of knowledge sharing and capacity building.

Supporting the Gender Action Plan and Just Transition

By documenting the disproportionate impacts of climate-induced conflicts on vulnerable groups—including women, youth, and pastoral communities, the article supports COP's commitments to gender-responsive climate action and just transition. The research highlights the gendered dimensions of farmer-herder conflicts and climate vulnerability (AP News 2025, para. 14), providing evidence to inform gender-responsive adaptation policies. The call for epistemic justice and recognition of indigenous sovereignty aligns with COP's broader just transition framework, which emphasizes that climate action must be equitable, inclusive, and respectful of the rights of all communities.

Contributing to the Global Stocktake

This article also contributes to the Global Stocktake process, the mechanism through which collective progress toward the goals of the Paris Agreement is assessed. Its

documentation of three interrelated phenomena the scale and nature of climate-induced conflicts in sub-Saharan Africa, the effectiveness of ITEK-based adaptation strategies, and the gaps in current adaptation policies supplies critical data points for evaluating progress on adaptation, loss and damage, and the integration of indigenous knowledge (Ndimbo and Sangab 2026, pp. 3–5; FAO 2024, p. 2). Two contributions follow from this evidence base. First, the finding that national adaptation policies in Africa show serious gaps in ITEK integration provides a baseline against which future progress can be measured. Secondly, the documentation of successful ITEK-based initiatives offers models for scaling up adaptation action.

Specific Recommendations for COP Implementation

Based on the article's findings, the following specific recommendations are offered for COP programmes and mechanisms:

For the Local Communities and Indigenous Peoples Platform: Establish formal mechanisms for ITEK integration into National Adaptation Plans and Nationally Determined Contributions. This should include developing guidelines for ethical engagement with Indigenous communities, allocating resources for community-led ITEK documentation, and creating spaces for Indigenous knowledge holders to share their expertise in COP processes.

For the Nairobi Work Programme: Fund and support ITEK documentation and digital preservation initiatives, with particular attention to ensuring community control over knowledge documentation and respecting indigenous intellectual property rights. Support research on hybrid knowledge systems that integrate ITEK and scientific approaches.

For the Global Goal on Adaptation: Include ITEK indicators in adaptation monitoring frameworks, recognizing that the integration of indigenous knowledge is itself an indicator of adaptation effectiveness. Develop metrics for assessing the contribution of ITEK to water security, food security, and ecosystem resilience.

For the Loss and Damage Fund: Prioritize ITEK-based adaptation in funding allocation, recognizing that investing in indigenous knowledge systems is an effective strategy for reducing vulnerability and preventing climate-related losses. Ensure that Loss and Damage funding reaches Indigenous communities directly.

For the Koronivia Joint Work on Agriculture: Integrate ITEK practices into agricultural adaptation strategies, drawing on documented practices from Tivland, the Ankole sub-region, and other African contexts. Support farmer-to-farmer knowledge exchange programmes that enable sharing of ITEK practices across regions.

For Capacity Building: Support community-led ITEK preservation and intergenerational transfer, recognizing that the continuity of Indigenous knowledge is essential for long-term climate resilience. Invest in digital infrastructure that enables

Indigenous communities to document, preserve, and share their knowledge on their own terms.

The Broader Implications for COP Governance

Beyond these specific recommendations, the article has broader implications for how COP governance approaches knowledge and participation. The research challenges the dominant paradigm that privileges scientific knowledge over indigenous knowledge, arguing that this epistemic hierarchy undermines the effectiveness of climate adaptation (Shumba 2025, p. 2).

The article proposes that achieving climate resilience requires a fundamental shift from viewing Indigenous knowledge as supplementary to scientific knowledge, to recognizing it as co-equal and integral to effective climate governance. This shift has implications how COP processes engage with indigenous communities, how adaptation policies are designed and implemented, and how knowledge is generated and shared.

A further implication of this research concerns governance. Evidence from the Lake Chad Basin, Nigeria, and Senegal shows that climate-induced conflicts are not inevitable; they are exacerbated by poor governance, historical marginalization, and the neglect of indigenous knowledge systems (Niang 2025, para. 4; Ndimbo and Sangab 2026, p. 4). If climate-induced conflict is a product of governance failure rather than environmental determinism, then COP programmes must address governance reform not as a peripheral concern but as an integral component of climate adaptation

Conclusion

Climate change has emerged as one of the most urgent challenges of the twenty-first century, significantly impacting ecosystems, human communities, and global development. In sub-Saharan Africa, climate-induced resource scarcity is intensifying competition for land and water, fueling conflicts between farming and pastoral communities, and exacerbating existing grievances. The Lake Chad Basin has shrunk by over 90 percent since the 1960s, displacing millions and fueling the rise of armed groups. In Nigeria, farmer-herder conflicts have resulted in injuries, death, loss of property, and displacements. In Senegal, climate change is adding to historic tension, with shepherds and farmers using everyday tools as weapons in increasingly violent disputes.

The article has demonstrated that the resource-conflict nexus in Africa is not an inevitable outcome of climate change but a product of governance failures, historical marginalization, and the neglect of indigenous knowledge systems. Indigenous Traditional Ecological Knowledge, including crop rotation, intercropping, sacred sites, seasonal farming calendars, land tenure systems, and communal ownership of resources, offers culturally appropriate, place-based solutions for climate adaptation and conflict mitigation. In Tivland, these practices have contributed to enhanced food security and community cohesion. In the Ankole sub-region, indigenous strategies have enhanced climate resilience. In Kenya, the Nganyo project demonstrates the power of

hybrid forecasts combining indigenous and scientific knowledge.

The article has also critically examined the marginalization of indigenous knowledge in formal climate governance. Despite being acknowledged as a valuable resource for climate adaptation, current national adaptation policies on the African continent still show serious gaps in effectively integrating ITEK systems within legal frameworks. Indigenous environmental knowledge remains marginalized, often dismissed in favour of Western scientific models.

Furthermore, this research has demonstrated how the findings contribute to ongoing COP programmes. The article advances Article 7 of the Paris Agreement by providing evidence of ITEK effectiveness and recommendations for knowledge integration. It operationalizes the Global Goal on Adaptation by offering concrete practices for water security, food security, and ecosystem resilience. It informs the Loss and Damage agenda by documenting how governance failures and the marginalization of ITEK exacerbate climate impacts. It strengthens the Koronivia Joint Work on Agriculture with actionable agricultural adaptation practices. It supports the Local Communities and Indigenous Peoples Platform with empirical evidence and recommendations for ITEK integration.

For policymakers, this means integrating local communities and their informal institutions in the design and implementation of climate policies, investing in climate-resilient livelihoods, strengthening regional collaboration, and ensuring that COP programmes allocate resources for ITEK integration and Indigenous community engagement. For scholars, it means centering African knowledge systems, engaging with indigenous philosophy, challenging the epistemic violence of Western climate science, and contributing to the evidence base for COP decision-making. For practitioners, it means designing peacebuilding interventions that prioritize community ownership, restorative justice, and the integration of indigenous knowledge. As Shumba (2025, p. 2) indigenous environmental knowledge must not only be preserved but be positioned as co-equal to scientific knowledge in climate adaptation. This requires a decolonial shift, centring indigenous agency ensuring that Africa's climate wisdom informs both national and global decision-making. The COP process has an essential role to play in this transformation, providing the institutional framework and resources to support the integration of indigenous knowledge systems into global climate governance. The task is urgent. The potential is enormous. The question is whether the international community has the will to embrace this vision.

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