

Integrating Indigenous Knowledge into Climate Change Adaptation Policy: Evidence from Valunia Chiefdom, Bo District, Sierra Leone

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Abstract

Climate change remains a great challenge to rural livelihoods in Sierra Leone, especially in agricultural communities that depend on climate-sensitive resources. Although indigenous knowledge has been used traditionally for many years in adapting to variability in the environment, its applications in climate change policy appear limited. It is precisely for this reason that this study seeks to fill this research gap by investigating the role, effectiveness, awareness, and support for indigenous knowledge for climate change adaptation in the Valunia Chiefdom, Bo District. This study utilised a mixed research methodology that involved qualitative and quantitative data-gathering techniques through systematic random sampling. A total of 322 participants were selected from various communities, with institutional stakeholders also involved in this research. From the results, it is evident that there is a great dependence on Local Methods for predicting the weather, with effectiveness in improving crop production yield. However, the findings also suggest that there is low familiarity with indigenous agricultural practices among the youth, influenced by factors such as a lack of youth enthusiasm, the educational system, urban migration, and the loss of indigenous agricultural practice stakeholders. Moreover, public support for preserving and developing IK was also found to be low. Conclusion, in this regard, can be drawn by pointing out that the importance of indigenous knowledge is brought to the fore by this study, with both the significance of indigenous knowledge and some of the challenges it faces with regard to sustainability being revealed by this study. Community engagement, institutional collaboration, and recognition must be enhanced for the proper integration of indigenous knowledge for climate change adaptation in the Valunia Chiefdom.

Keywords

Indigenous Knowledge, Climate Change Adaptation, Local Knowledge

1. Introduction

Climate change stands as one of the most pressing environmental issues facing the globe today. Its effects permeate every field and grouping within society (Sheffield et al., 2014). As the urgency of climate change grows, there is a noticeable shift among the international community towards adopting more inclusive and sustainable methods for climate adaptation.

The term Indigenous and Local Knowledge (ILK) refers to the collective wisdom, techniques, methods, competencies, traditions, philosophies, and distinctive information developed within specific cultures by local communities over time through a process of experiential learning and informal experimentation, all rooted in a deep understanding of their particular environments (Leal Filho et al., 2022). Within the African continent, ILK plays a crucial role in informing choices regarding essential life aspects, spanning everyday activities to strategies for the future (Leal Filho et al., 2022). Despite the negative impact of climate change and extreme weather on the ability of Indigenous communities worldwide to adapt, there are notable challenges faced by those in Africa, particularly for individuals dependent on rainfed farming for their survival. In these situations, ILK is acknowledged for its significant potential to contribute to climate change adaptation efforts (Pedersen et al., 2021).

However, while indigenous populations are recognised as the most at risk from the consequences of climate change, their distinct knowledge and experiences are still significantly overlooked by initiatives designed to diminish vulnerability or enhance adaptation to evolving conditions (Culas, 2012; Vermeulen et al., 2012; Whitfield, 2015).

Sierra Leone stands at a pivotal moment. The Southern Region, which includes districts such as Bo, Bonthe, Moyamba, and Pujehun, confronts severe threats due to rising sea levels—resulting in the flooding of 12% of coastal agriculture since the year 2000—and increased rainfall variability that disrupts the traditional growing cycles of essential crops like rice and cassava (El-Shahat et al., 2021). These scenarios are not merely theoretical: average temperatures have escalated by 1.2°C since 1975, alongside a 15-day reduction in the rainy season per decade, consequently jeopardising food security for 1.7 million individuals who depend on subsistence farming (Kainyande, 2024). Amidst this crisis, Indigenous Knowledge Systems (IKS)—dynamic, localized forms of knowledge honed through countless generations of careful observation and cultural sharing—serve as a crucial source of adaptive insight (Colombi & Smith, 2012). Ethnic groups such as the Mende, Sherbro, and Krim have crafted intricate biocultural indicators; for example, Mende farmers track the flowering of *Terminalia mantaly* trees to predict the arrival of monsoons, while Sherbro fishermen associate seabird nesting habits with

forthcoming storms (Sterling et al., 2017). This kind of knowledge allows for optimal farming timings and discovers micro-refugia for resilient crop types, resulting in yield stability that is 40% superior to standard monocultures during climatic disturbances (Duvallet et al., 2021).

1.1. Climate Change Adaptation: Local Perspectives

According to Williams (2018), local adaptation is pervasive across ecological systems and is a key evolutionary process that has generated much of the world's biodiversity. Local adaptation is the process by which populations have traits that confer higher survival and reproduction in the local environment than they would elsewhere because of the spatial match between adaptive genetic variation and environmental variation (Blanquart et al., 2013). Considerable empirical evidence indicates that locally adapted phenotypes are commonplace within many species (Lambrechts et al., 1996; Riihimäki et al., 2005). Pertoldi and Bach (2007) posited that there is now recognition that local adaptation is likely to be an important determinant of species' responses to climate change, and an interdisciplinary treatment of this issue, linking evolution and ecology, has already been called for.

1.2. Indigenous Knowledge in Climate Change

Anthropogenic climate change is perhaps the ultimate manifestation of humans' growing disconnect with the natural world, although not all societies share the same burden of responsibility for its creation. Compared to the dominant industrialized societies whose activities in the last 200 years or so have caused most of the climate impacts currently observed, Indigenous people living on their traditional lands bear little responsibility for current and future projected consequences of a changing climate (Green & Raygorodetsky, 2010).

Over the course of history and up to this day, traditional local communities have continued to rely heavily on their own indigenous knowledge systems in observing the environment and dealing with natural disasters. These communities, particularly those in hazard-prone areas, have collectively generated a vast body of knowledge on disaster prevention and mitigation, early warning, preparedness and response, and post-disaster recovery. This knowledge is acquired through observation and study, and is often based on cumulative experience handed down from generation to generation (Pareek & Trivedi, 2011). Indigenous knowledge is now much sought after in the present context of globalization. However, while the diverse knowledge systems of the third world are claimed as heritage that belongs to all humanity, the knowledge about how to apply this diversity is often exclusive to the domain of the people who have developed it (Hussain, 1991).

2. Literature Review

2.1. Global Perspective of IKS on Agriculture

The literature on integrating Indigenous Knowledge Systems into climate adaptation policies reveals a growing recognition of the value of Indigenous perspectives

in fostering resilience. Studies highlight that Integrating Indigenous Knowledge Systems into Global Climate Adaptation Policies IKS not only offer unique, context-specific solutions but also reflect a worldview that emphasises interconnectivity with the natural environment, stewardship, and long-term sustainability (Turnbull et al., 2021). This worldview contrasts with many Western approaches, which often prioritize economic growth and short-term gains. Researchers and practitioners increasingly argue that a more comprehensive approach to climate adaptation should embrace both Indigenous and scientific knowledge, allowing for a collaborative response to climate change that is grounded in mutual respect and shared goals (Amorim-Maia & Olazabal, 2025). The literature globally acknowledges that Indigenous Knowledge, a cumulative body of knowledge, practices, and beliefs evolved through adaptive processes and handed down through generations, is vital for understanding environmental change (Berkes, 2012).

At a global level, scholars argue that IKS offers a context-specific, cost-effective, and socially acceptable repository of adaptation strategies (IPCC, 2022; Okedele et al., 2024). Research highlights examples such as the use of phenological indicators (e.g., animal behaviour, plant flowering) by Inuit communities in the Arctic to predict weather patterns and by Pacific Islanders to read ocean currents for navigation and fishing (Bishop et al., 2025). The global discourse has shifted from viewing IKS as anecdotal to recognizing it as a valid and essential knowledge system that can complement scientific knowledge (hiwisdom) to enhance adaptive capacity (Ijatuyi et al., 2025).

2.2. The Study Area

As stated earlier, the Bo district in the southern province of Sierra Leone faces severe climate issues. This problem manifests as a profound epistemic injustice, where Western scientific paradigms are privileged over place-based knowledge (de Sousa Santos, 2018). Sierra Leone's National Adaptation Plan (2022) and Nationally Determined Contribution (NDC) rhetorically endorse "community-based adaptation" but allocate 87% of climate financing to infrastructure projects, sidelining IKS, driven approaches (Battersby et al., 2024). This bias is not merely institutional but cognitive, dismissing IKS as "anecdotal" despite its documented efficacy (Khupe, 2014). This results in maladaptive outcomes, such as the failure of imported drought-resistant maize in Moyamba District due to soil incompatibility, whereas indigenous sorghum landraces demonstrated superior resilience (Muitire et al., 2021). Compounding this injustice is the accelerated erosion of IKS itself. Colonial education and missionary activities systematically devalued IKS as "backwards" (Munro, 2020). Now, youth outmigration and cultural globalisation disrupt intergenerational learning. A 2023 survey revealed 68% of farmers under 35 in Bo District cannot identify traditional weather indicators, compared to 92% of elders (Lind, 2018).

Furthermore, climate change directly undermines the predictive validity of IKS. Altered environmental cues lead to "forecast failures", for example, mistimed *Azelia*

africana fruiting, which erodes community trust in their own knowledge systems and increases dependence on externally imposed, often ill-suited, solutions.

Lastly, the Valunia chiefdom is one of the fifteen chiefdoms in the Bo district. The chiefdom is known to be heavily impacted by mining and logging activities. Valunia is home to bauxite operations, a key mineral extraction activity in the district mining processes, including exploration and extraction, which leads to land clearing, soil erosion, and water pollution. The chiefdom is also known for its significant timber logging operations. This unregulated and widespread logging has caused severe deforestation in the chiefdom, habitat loss, and destruction of the ecosystem.

2.3. IKS Agricultural Adaptation Empirical Evidence

IKS-driven agricultural practices demonstrate robust climate resilience, particularly in water-scarce regions of Sub-Saharan Africa. The efficacy of these practices is not merely anecdotal but is increasingly supported by empirical evidence, as shown in **Table 1**, which compares IKS practices from across Africa with their documented outcomes.

Table 1. Documented efficacy of IKS agricultural practices in Africa.

Practice & Location	IKS Technique	Documented Outcome	Ref.
Zai Pits, Burkina Faso	Digging microcatchments to concentrate runoff around crop roots.	Reduced erosion by 45%; increased soil organic carbon by 0.8% annually.	(Magni, 2017; Menezes et al., 2024)
Combined Forecasts, Kenya	Blending indigenous rainmakers' predictions with satellite data.	Improved seasonal forecast accuracy by 40% for smallholder farmers.	(Ogutu, 2020)
Sacred Groves, Ghana	Protecting forest patches through traditional taboos.	Buffered ambient temperatures by -4°C , reducing heat stress for adjacent cocoa crops.	(Turner & Wilks, 2022; Vincent, 2022)
Terwah Trenches, Ethiopia	Building stone-faced soil bunds for water management.	Improved rainwater infiltration by 60%; doubled sorghum yields in semi-arid regions.	(Nelson et al., 2020; Nightingale, 2006)

2.4. Barriers to IKS Integration

Despite proven efficacy, multiple systemic obstacles hinder the integration of IKS into mainstream climate adaptation. These barriers are interconnected and create a cycle of marginalization. The dominant paradigm privileges quantitative scientific data over qualitative, place-based knowledge. This is reflected in financial allocations; for example, Sierra Leone's National Adaptation Plan directs less than 5% of its funding to IKS-based projects (Sterling et al., 2017; Turner & Wilks, 2022). Rapid youth outmigration severs the chain of oral knowledge transmission.

In Sierra Leone's Bo District, only 68% of farmers under 35 can identify key traditional weather indicators, compared to 92% of elders, indicating a rapid decline in critical environmental literacy.

The privatisation of communally managed lands dismantles the spatial foundation of IKS. In Sierra Leone, commercial logging concessions have destroyed an

estimated 28% of sacred forests since 2015, eroding both biodiversity and the bi-cultural heritage tied to them (Magni, 2017). The Accelerated environmental shifts are generating unprecedented “forecast failures”. For example, altered fruiting patterns of the *Azelia Africana* tree, a key seasonal marker, lead to mistimed planting, eroding community trust in their own knowledge systems (Nelson et al., 2020; Nightingale, 2006).

3. Materials and Methods

This study used a mixed-methods research design, integrating both quantitative and qualitative approaches to provide a comprehensive understanding of how indigenous knowledge (Ik) can be incorporated into climate adaptation policy in the Bo district. A mixed methods approach was employed because of the context specificity of IK, its cultural embeddedness, and the need to understand it best through in-depth qualitative inquiry, while quantitative evidence establishes prevalence, patterns, and correlations that can inform policy at scale. Qualitative data were collected through Key informant interviews (KIIs) with chiefs, community stakeholders, and local NGOs, and Focus group discussions (FGDs) with farmers, women, and youths.

Quantitative data were collected through the administration of structured questionnaires to the representative sample of households in the Bo district.

3.1. Sample Procedure

To determine an appropriate sample size, Cochran’s (1977) formula for finite populations was applied. The total population was estimated at 37,000 according to the Sierra Leone 2021 mid-term housing and population census. Using a 95% confidence level ($Z = 1.96$), a margin of error 5% ($e = 0.05$), and an assumed population proportion of 0.5, the calculated sample target was 322 respondents.

A total of 322 valid questionnaires were completed and analysed, which indicates that the final sample matched the calculated targets. The sample size was calculated using the formula in the equation below:

$$n = N/(1 + N (e)^2)$$

3.2. Data Analysis

The final sample consisted of 322 respondents to the survey. The responses to the questionnaire were entered into the Statistical Package for Social Sciences (SPSS) software and Microsoft Excel for statistical analysis and interpretation (Monson, 2024). The study’s conclusions are reached through explanatory and descriptive analysis (Kagbeni & Yin, 2025).

4. Results and Findings

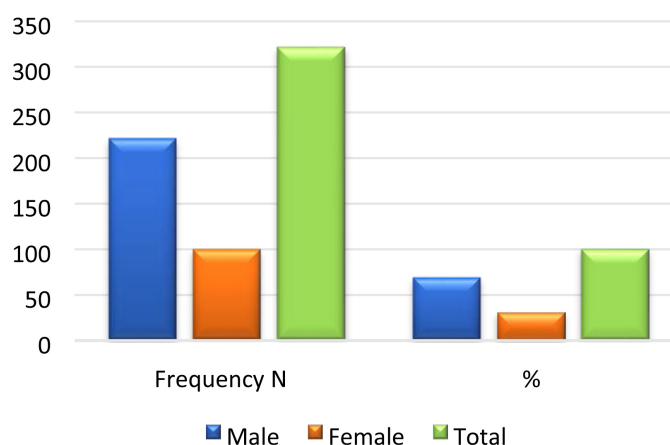
4.1. Respondents Profile

The disaggregated gender analysis shows a notable difference in engagement with indigenous knowledge systems. Although both male and female respondents re-

ported their high reliance on indigenous weather prediction methods, female respondents demonstrated a stronger association with agricultural activities such as seed selection knowledge, whereas men showed more involvement in seasonal forecasting and land preparation practices.

In an FGD with female respondents, they emphasised their role in post-harvest knowledge transmission, food preservation, and crop maintenance. This clearly supports the argument that indigenous knowledge is gendered not only in access but also in function and transmission.

The study sample consisted of 322 respondents drawn from communities within the Valunia chiefdom. Of these, 68.9% were male, and 31.1% were female. This gender distribution reflects an existing socio-cultural and institutional dynamics in rural communities in Sierra Leone, where men are more likely to participate in public decision-making spaces, agricultural consultations, and engagement with traditional authorities. While this gender balance may limit the extent to which women's experiential knowledge is fully captured, it also highlights the gendered nature of indigenous knowledge transmission and participation in climate-related discourse within Valunia, as shown in **Figure 1**.



Source: Author's field work, 2025.

Figure 1. Percentage distribution of respondents' sex.

4.2. Occupation of Respondents

Table 2. Occupation of respondents.

Value	Frequency N	%
Farmer	109	34
House Wife	68	21
Civil Servant	55	17
Student	42	13
Teacher	35	11
Others	13	4
Total	322	100

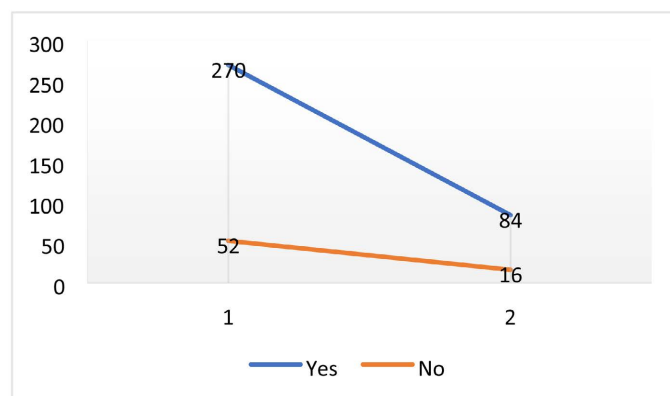
Source: Author's fieldwork, 2025.

Occupation level is linked to reliance on indigenous method use for weather prediction and has a greater connection with indigenous knowledge practices. The investigation into the respondents' occupation level found that 34% were farmers, 21% were housewives, 17% were civil servants, 13% reported being students, 11% reported being teachers, and 4% reported being in other professions. This shows that the majority of the respondents contacted were farmers, as shown in **Table 2**.

4.3. Reliance on Indigenous Methods for Weather Prediction

The study results showed that traditional weather forecasting remains the focal point of the local climate decision process, with 84% of respondents reporting reliance on indigenous indicators, whereas only 16% persons chose Non-use. This heavy dependence demonstrates that indigenous forecasting systems continue to play a crucial role and remain functional where formal meteorological services are lacking or do not exist. More than just preference. However, this dependence is not necessarily a personal choice, but rather a result of structural constraints, such as the lack of dissemination of science-led climate information, infrastructural deficiencies, and historical familiarity with the local environment.

The persistence of endogenous forecasting methods indicates that these systems are adaptive and reliable in the area, being an important part of day-to-day crop planting and risk management within the chiefdom. This finding reinforces the arguments that indigenous knowledge systems continue to serve as viable climate adaptation mechanisms rather than residual cultural practices, as presented in **Figure 2**.



Source: Author's fieldwork, 2025.

Figure 2. Use of indigenous methods to predict weather changes.

4.4. Perceived Effectiveness of Indigenous Practices in Improving Crop Yield

From the study, there was a generally positive attitude of respondents regarding indigenous farming practices with respect to increasing crop yield performance over modern approaches.

Taken together, 74% of participants viewed native practices as “very effective”

(36%) or “somewhat effective” (38%), as presented in **Table 3**.

In addition, the perception of ineffectiveness expressed by 20% and a neutral response from 6% indicates that indigenous practices do not always work in all contexts. These can be due to greater climate variability, pest pressures, or even exposure to new modern agricultural inputs that will create higher short-term yields. The results, therefore, suggest the development of integration approaches combining traditional and scientific agricultural methods as opposed to setting them apart as two contradicting extremes.

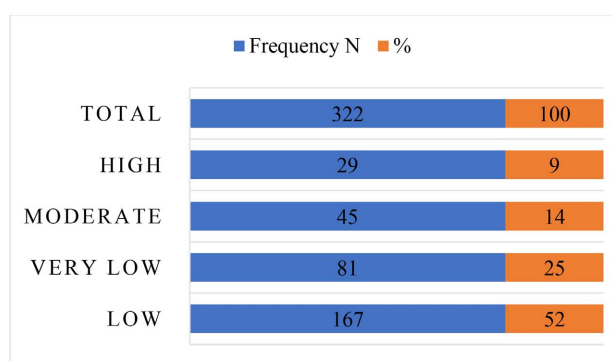
Table 3. Effectiveness of IPs compared to modern methods.

Value	Frequency N	%
Very Effective	116	36
Somewhat Effective	121	38
Not Effective	65	20
Neutral	20	6
Total	322	100

Source: Author’s fieldwork, 2025.

4.5. Awareness of Indigenous Agricultural Practices among Youth

A chi-squared test of independence was conducted to examine the relationship between age groups and awareness of indigenous agricultural practices, and the result indicated a significant association between age awareness level ($X^2 = X$, $df = X$, $p < 0.05$), reinforcing the gap in indigenous knowledge transmission. Older respondents were more likely to report high awareness compared to younger respondents. This validates concerns regarding the demise of intergenerational knowledge transfer.



Source: Author’s fieldwork, 2025.

Figure 3. Percentage distribution of awareness of indigenous agricultural practices among youth.

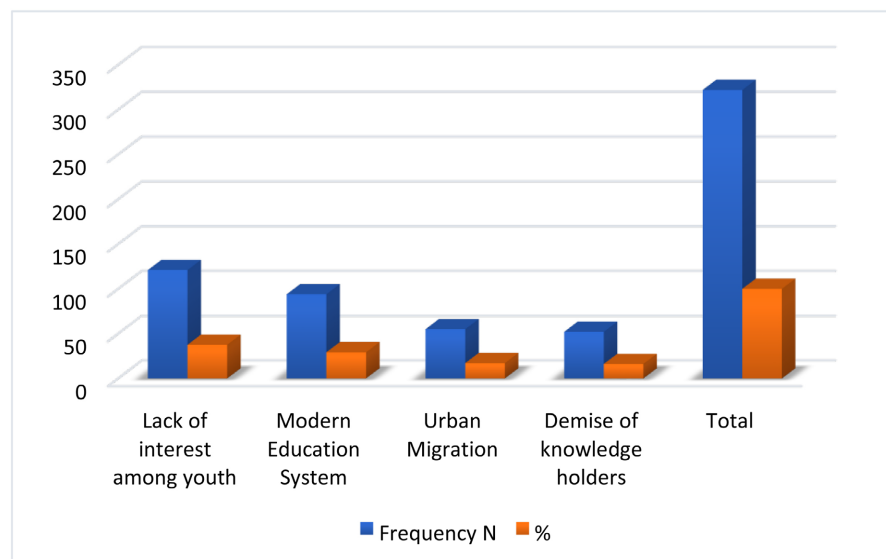
The research findings in **Figure 3** reveal a significant generational gap regarding knowledge of indigenous farming practices. Of the respondents surveyed in

the study area, only 9% perceived youth awareness as high, while 14% regarded it as moderate. In comparison, just 77% of the survey respondents believed youth awareness was low or very low.

This signals a weakening of intergenerational knowledge transmission, raising concerns about the long-term sustainability of indigenous knowledge systems. As younger generations disengage from traditional agricultural practices, the adaptive capacity embedded within these systems risks erosion. The findings highlight the vulnerability of indigenous knowledge to socio-cultural change and underscore the importance of deliberate strategies aimed at revitalizing youth engagement in the knowledge transmission process.

4.6. Contributing Factors to the Decline of IK Transmission

As presented in **Figure 4**, according to the respondents surveyed in the study, many interdependent factors were cited as a decline factor in the transmission of indigenous knowledge to future generations. Among the reasons given was an obvious lack of interest in Indigenous knowledge from today's youth, reported at 38% as the number one cause for the decline. Other major contributors were the influence of modern educational systems at 29%, urban migration to cities at 17%, and the disintegration or death of the Elders who hold this traditional knowledge at 16%. Data from this study clearly identify multiple, intersecting Social, Structural, and Demographic Processes as the determining factors that are contributing to the increasing decline of Indigenous Traditional Knowledge.



Source: Author's fieldwork, 2025.

Figure 4. Percentage distribution of indigenous knowledge transmission.

Furthermore, Formal education systems that prioritise external knowledge paradigms may unintentionally marginalise indigenous practices, while urban migration physically separates youth from spaces where knowledge is traditionally prac-

ticed and transmitted. The loss of elder knowledge holders further compounds this decline, increasing the risk of irreversible knowledge loss in the absence of documentation or mentorship mechanisms.

4.7. Government and Institutional Support for Indigenous Knowledge Preservation

According to the study's findings, in **Table 4**, the vast majority of respondents expressed a negative view toward the role of governments and institutions in preserving Indigenous knowledge. 5% of respondents indicated they viewed the support provided to them as "very strong", with 23.9% rating it as "moderate support". 71% of respondents considered support given by institutions to be either "slight support or no support". This trend points to the marginalization of Indigenous knowledge within formal governance and climate change adaptation systems.

Whereas there has been a great deal of rhetorical attention on community-based adaptation to climate change, the research indicates that there is still a disconnect between the ability of institutions to recognise, utilise, utilize and scale Indigenous knowledge and that there are very limited institutional mechanisms that will allow Indigenous peoples to be involved in shaping policies and to sustain, develop and share Indigenous practices.

Table 4. Effectiveness of IPs compared to modern methods.

Value	Frequency N	%
Very Supportive	16	5.0
Moderately Supportive	77	23.9
Slightly Supportive	117	36.3
Not Supportive	112	34.8
Total	322	100

Source: Author's fieldwork, 2025.

4.8. Stakeholders to be Involved in Designing the Indigenous Knowledge Framework

Table 5. Effectiveness of IPs compared to modern methods.

Value	Frequency N	%
Farmers and Local Authorities	102	32
Government Agencies	66	21
Academic and Research Institutions	45	14
NGOs and Other Development Partners	37	11
All of the Above	72	22
Total	322	100

Source: Author's fieldwork, 2025.

The study's results presented in **Table 5** shows a strong preference for locally grounded leadership in the design of indigenous knowledge, with 32% of respondents identifying farmers and local authorities as the most important stakeholders, underscoring the role of primary knowledge holders and traditional governance. 21% cited government agencies, 14% cited academic and research institutions, 11% cited NGOs and other development partners, and 22% highlighted all of the above to be involved in designing the indigenous knowledge framework.

4.9. Importance of IK for the Future of Climate Adaptation in the Study Area

Data in **Table 6** indicate that indigenous knowledge is considered important for the future of climate adaptation in the study area. A majority of respondents (61%) consider indigenous knowledge to be either very important (37%) or important (24%), demonstrating strong recognition of its value in addressing climate-related challenges. This suggests that many community members view IK as a reliable, locally tested resource for enhancing resilience, managing environmental risks, and guiding adaptation strategies.

However, a substantial proportion 31% perceive IK as less important, while 8% consider it not important, indicating varying levels of confidence in its relevance. This divergence may reflect growing exposure to technologies, changing livelihoods, or the perception that indigenous practices alone may be insufficient in understanding climate variability.

Table 6. Importance of IK for the future of climate adaptation in the study area.

Value	Frequency N	%
Very Important	119	37
Less Important	100	31
Important	77	24
Not Important	26	8
Total	322	100

Source: Author's fieldwork, 2025.

4.10. Qualitative Insights from Key Informants' Interviews and Focus Group Discussions

The focus group discussion (FGD) and the key informant interviews (KIIs) provide contextual depth to the quantitative results and help explain the underlying reasons for the observed trend.

The Reliance on Indigenous Weather Forecasting

During the FGD and KIIs, chiefs and older farmers emphasized the have long established in environmental indicators. One of them clearly stated:

“We have followed the signs of trees, winds, and insects for generations. Even at a time when the rain changes, these signs have always guided us better than the radio forecasts, which we have no access to.”

Youth Disengagement and Decline of Indigenous Knowledge

In an FGD with youth, it was revealed that indigenous practices are often considered outdated and incompatible with the current formal education and urban aspirations. One of the youth participants noted:

“In school, we are not taught these things. We are taught that farming should be, and we have therefore had little or no value in what has been practiced by elders.”

Institutional Neglect of IK

In a key informant interview with local community-based organization and national NGO staff, and agricultural extension officers brought to the fore the complete absence of formal mechanisms to document or apply indigenous knowledge in policy planning. Of the respondents contacted, one stated that:

“We have got no space in the district planning meetings where IK is discussed and everything must come from technical reports.”

5. Conclusion

The study indicates that indigenous knowledge remains a crucial but underused resource in the Valunia Chiefdom. Communities continue to rely on traditional practices for weather forecasting, although institutional recognition is slowly disappearing. Generational gaps and limited involvement of the youth, along with poor policy and institutional support, pose significant threats to the perpetuation of indigenous knowledge systems. The findings of the study emphasize the view that the integration of indigenous knowledge in the climate adaptation policy requires more than recognition. It requires deliberate steps in the direction of preservation, validation, and mainstreaming locally embedded practices within formal adaptation frameworks. Hence, in the absence of such attempts, valuable and adaptive knowledge could be lost, leading to the defeat of community resilience in the face of climate vulnerability.

5.1. Practical Implications of the Study

Results from this study suggest four actionable policy mechanisms for integrating indigenous knowledge into climate adaptation governance.

1. Local councils can institutionalise indigenous knowledge through the formation of committees that can be composed of elders, women farmers, youth representatives, and agricultural extension officers. These committees can formally advise the chiefdom and district on planning processes.
2. Operationalisation of hybrid adaptation models through co-produced seasonal climate advisories, where indigenous indicators are documented and validated through existing agricultural extension services.
3. Incorporation of indigenous knowledge modules into local agricultural training programs and school curricula for onward transmission.
4. District councils to allocate specific budget lines within climate adaptation planning for indigenous knowledge documentation, mentorship programs,

and participatory monitoring frameworks.

5.2. Future Research Direction

Future studies should aim at testing hybrid models of adaptation that seek to blend indigenous and scientific systems of knowledge for their effectiveness in adapting to climate change. Longitudinal research that seeks to study intergenerational transmissions of knowledge, as well as the effects of youth-oriented interventions, would also help to gain insight into indigenous knowledge for adapting to climate change. Research is also desired to study policy implementation processes for incorporating indigenous knowledge related to adapting to climate change into development policies by educational institutions in Sierra Leone.

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Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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