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Harnessing Indigenous Knowledge Systems for Climate Resilience: The Case of the Hwesa in Zimbabwe

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Abstract

The beginning of the 21st Century has witnessed massive climate change, which in turn negatively affect the livelihoods of many agrarian communities. A century after the adoption of Western methods in weather-related paraphernalia, contemporary African societies have come to realise that indigenous knowledge systems play a critical role in climate adaptation and mitigation, particularly in disaster and risk management initiatives. It is upon this background that this paper investigates the role of Indigenous Knowledge Systems (IKSs) in enhancing climate resilience, for instance, among the Hwesa of Nyanga District in Manicaland Province, Zimbabwe. This study argues that despite centuries of colonial and postcolonial marginalisation of local epistemologies, Hwesa IKSs continue to play a vital role in climate adaptation and mitigation. It further argues that sole dependence of Western ideologies on climatic adaptation and mitigation is a misnomer, as IKSs has been filling that gap since time immemorial. This study is informed by the decolonial theory, which challenges the hegemony of Eurocentric knowledge by advocating for epistemic delinking, a process through which marginalised communities assert their right to produce knowledge on their own terms. Data were collected through qualitative methods, including in-depth interviews, focus group discussions, and document analysis, with purposive and convenience sampling guiding participant selection. Findings reveal that Hwesa IKSs encompass indigenous farming practices, water management techniques, forest preservation, weather prediction, and communal resource sharing, all of which enhance resilience to climate change. The paper concludes that Hwesa IKSs, when recognised and integrated with Western scientific approaches, can contribute to sustainable and culturally grounded climate resilience strategies.

Keywords: Hwesa, Culture, Indigenous knowledge, Climate, Climate change, Resilience

Introduction

Climate change is increasingly recognised as one of the greatest existential threats of the twenty-first century, with its impacts being unevenly distributed across the globe. While industrialised nations possess the resources and technologies to buffer themselves against its harsh effects, rural communities in the Global South remain disproportionately vulnerable. Zimbabwe exemplifies this vulnerability, as its economy and food security are largely anchored in rain-fed agriculture that is highly sensitive to shifting climatic patterns (Moyo & Magadza, 2014). This reality has created a crisis of adaptation in rural areas, where extreme weather events, prolonged droughts, and erratic rainfall have become recurrent. In this context, the (re)turn to Indigenous Knowledge Systems (IKS) as viable pathways for climate resilience has gained prominence. Yet, in both policy and academic discourse, IKSs continue to be undervalued and overshadowed by an overreliance on

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Western scientific models that do not always speak to the lived realities of rural African communities.

The Hwesa of Nyanga District in Manicaland Province in Zimbabwe provide a compelling case through which the significance of IKS can be interrogated. Residing in areas around Ruwangwe, Nyamahumba, Chifambe, Kazozo, Fombe, Mukunza, Kadzere, and Katerere, among other places, the Hwesa have historically depended on finely tuned ecological practices for survival, which has since ancient times, acted like a buffer zone towards weather-induced disasters (Chirimaunga, 2025). Their strategies encompass food production methods that maximise crop diversity, water harvesting techniques adapted to semi-arid conditions, soil conservation practices that preserve fertility and moisture, and weather forecasting informed by natural indicators. However, these practices are increasingly endangered by the combined effects of climate change and cultural erosion, driven by modernisation, urban migration, and the continued privileging of Western scientific paradigms. It is in this space of tension that questions arise regarding the sustainability of Hwesa IKSs, their adaptability to contemporary climatic shifts, and their recognition within national and global climate governance frameworks.

Grounded in decolonial theory, the study seeks to expose the epistemic hierarchies that consistently subordinate indigenous systems of knowing to Western scientific authority. Decoloniality allows us to recognise that Hwesa IKSs are not static, nor are they a vestige of the past; rather, they are a dynamic and evolving system that continues to generate effective adaptation strategies rooted in local contexts. This study positions Hwesa IKSs as an indispensable component of climate resilience, one that challenges the epistemic monopoly of Western science and affirms the value of pluriversality in knowledge production. Amplifying the voices of the Hwesa makes this study stress the urgency of reclaiming indigenous epistemologies as part of broader struggles for knowledge sovereignty, ecological justice, and the reconfiguration of climate governance in Zimbabwe and beyond.

Historical Background

The marginalisation of IKSs in Zimbabwe must be understood within the broader context of colonial domination and its systematic devaluation of African epistemologies. Colonial administrators and missionaries routinely dismissed indigenous knowledge as superstition or irrational belief, while positioning Western science as the only credible form of knowledge (Mawere, 2010). This epistemic violence was not confined to discourse but was reinforced through education, governance, and land management systems that undermined traditional authority and eroded confidence in local ways of knowing. In Manicaland Province, where the Hwesa people have long inhabited their ancestral lands, colonial rule imposed new agricultural and administrative models that disregarded indigenous ecological wisdom. Such interventions disrupted established systems of

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farming, water management, and forest stewardship that had for generations sustained both livelihoods and environmental balance. I argue that these colonial practices constituted a deliberate strategy of epistemic domination, an attempt to delegitimise land-based knowledge and replace it with externally defined scientific paradigms.

Despite the disruptions by the colonial rule, the Hwesa people retained crucial elements of their indigenous knowledge, particularly in agriculture and resource management. Practices such as rain-requesting ceremonies, rotational farming, sacred forest preservation, and reliance on natural indicators for weather prediction remained integral to community life. These systems persisted as subtle forms of resistance against the colonial imposition of Western knowledge systems. Yet, the establishment of mission schools and colonial curricula further entrenched Western epistemologies by elevating them as modern, scientific, and progressive, while framing indigenous ways of knowing as backward (wa Thiong'o, 1986). As a result, a generational gap emerged, whereby younger generations were socialised into distrusting or neglecting the very practices that had historically sustained their communities. In my view, this was a deliberate Western project of cultural alienation, intended to portray indigenous cultures and knowledge systems as primitive, uncivilised, and irrational, thereby legitimising Western science and religion as superior and fostering dependency on Western expertise.

As noted by Mawere (2010), the post-independence period in Zimbabwe opened possibilities for reclaiming indigenous practices through various cultural renaissance programmes, but these efforts were often piecemeal and rhetorical rather than transformative. National policy frameworks have continued to operate within global climate governance regimes, particularly those informed by the Intergovernmental Panel on Climate Change (IPCC), where Western scientific expertise remains dominant (Chikozho, 2010). This reflects the enduring coloniality of knowledge, where African epistemologies are acknowledged symbolically but rarely integrated into actionable policy frameworks. For the Hwesa, this has meant that while their knowledge systems are celebrated as part of cultural heritage, they remain excluded from formal climate resilience planning. I contend that this contradiction exposes the limits of post-independence reforms, which often reproduce colonial hierarchies of knowledge under the guise of modernisation and international alignment.

Crucially, the resilience of Hwesa IKSs in the face of these historical disruptions demonstrates their adaptability and continued relevance. Practices such as water harvesting, sacred forest protection, and soil conservation techniques are still actively deployed in Hwesaland. However, these practices operate largely at the margins of state recognition, surviving more through community agency than institutional support. The neglect of such systems is not only a loss of cultural identity but also a missed opportunity for building climate resilience that is locally grounded and sustainable. I argue that

situating Hwesa IKSs within historical trajectories of dispossession, survival, and adaptation is essential for understanding both their current marginalisation and future potential. Without acknowledging this historical context, attempts to integrate IKSs into climate governance risk becoming superficial, tokenistic, and complicit in perpetuating epistemic injustice.

Theoretical Framework: Decolonial Theory

This study is grounded in the Decolonial theory. Decolonial theory provides a critical framework for interrogating the marginalisation of IKSs in Zimbabwe and, more specifically, in Hwesa communities of Nyanga District. Central to decolonial thought is the concept of coloniality of power (Quijano, 2000), which argues that even after formal decolonisation, colonial patterns of domination continue to shape knowledge production, cultural hierarchies, and social organisation. Western science has historically been constructed as universal and objective, while indigenous epistemologies were relegated to the realm of superstition or cultural heritage. This epistemic hierarchy has ensured that communities such as the Hwesa are systematically excluded from climate governance frameworks, despite the demonstrable resilience embedded in their practices. I contend that decolonial theory is indispensable in unpacking these power dynamics because it refuses to treat the subordination of indigenous knowledge as accidental or temporary, but rather as an entrenched structural reality requiring deliberate dismantling.

The decolonial turn in scholarship challenges the hegemony of Eurocentric knowledge by advocating for epistemic delinking (Mignolo, 2011), a process through which marginalised communities assert their right to produce knowledge on their own terms. For the Hwesa, this implies reclaiming their ecological wisdom not as a supplement to Western science but as a legitimate and autonomous body of knowledge. The idea of pluriversality, central to decoloniality, insists on the coexistence of multiple knowledge systems rather than the dominance of a single epistemology. In my view, this principle is particularly important in climate resilience discourse, where universalist approaches often fail to account for local variations in environment, culture, and history. When we situate Hwesa IKSs within a pluriversal frame, I argue that we move from tokenistic recognition to genuine integration that values indigenous practices as co-equal in shaping adaptation strategies.

A further contribution of decolonial theory is its focus on the coloniality of being (Maldonado-Torres, 2007), which highlights how colonial legacies affect not only systems of knowledge but also the dignity, identity, and agency of formerly colonised peoples. The marginalisation of Hwesa IKSs is not just an epistemic issue; it is also ontological, shaping how the Hwesa view themselves and their relationship to the environment. When their knowledge is consistently delegitimised by state and international actors, the community risks internalising the view that their practices are inferior. I argue that reclaiming Hwesa IKSs within decolonial thought is therefore both an intellectual and an existential project,

aimed at restoring the community's agency and self-worth. Climate resilience cannot be achieved without addressing these deeper dimensions of colonial injury.

Building on this, scholars such as Ndlovu-Gatsheni (2013) have argued that decoloniality must be understood as a continuous struggle rather than a completed project. In the Hwesa context, this struggle entails resisting the continued dominance of Western scientific frameworks in national climate policies and advocating for the meaningful inclusion of IKSs. Decoloniality pushes us beyond mere acknowledgement of indigenous knowledge towards a radical rethinking of what counts as knowledge in the first place. My position is that unless we embrace decoloniality in both theory and practice, climate governance in Zimbabwe will remain complicit in perpetuating epistemic injustice. Hwesa IKSs should not be mobilised as symbolic add-ons but as substantive contributions capable of reshaping resilience strategies in ways that are contextually grounded, culturally sensitive, and environmentally sustainable.

Research Methodology

This study adopted a qualitative research design to investigate the role of IKSs in enhancing climate resilience among the Hwesa of Nyanga District, Manicaland Province in Zimbabwe. A qualitative approach was most appropriate because it prioritises depth over breadth, allowing for the exploration of lived experiences, practices, and beliefs that cannot be reduced to mere statistics (Creswell & Poth, 2018). The emphasis was on capturing the voices of community members who are custodians of ecological wisdom and whose practices continue to inform climate adaptation strategies. I contend that a quantitative-only approach would have risked abstracting away the finer details of Hwesa knowledge, thereby reproducing the very epistemic silencing that this research seeks to challenge. To strengthen the study, document analysis was also incorporated, enabling triangulation with primary data and enhancing validity.

Data were collected using three primary tools: semi-structured interviews, focus group discussions (FGDs), and document analysis. In-depth interviews were conducted with thirty participants, including elders, traditional leaders, farmers, and women custodians of agricultural practices. These individuals were purposively selected because of their experiential knowledge of the Hwesa's ecological systems and their roles in sustaining indigenous practices (Guba & Lincoln, 1994). Focus group discussions were held in Ruwangwe, Kadzere and Kazozo where community members collectively reflected on climate-related challenges and strategies. FGDs provided a dynamic platform for uncovering community consensus and intergenerational perspectives that may not emerge in individual interviews. Document analysis focused on government climate policy papers, NGO reports, and ethnographic records on Hwesa cultural practices, which were examined to assess the extent of recognition and integration of IKSs in formal climate

governance. This multi-pronged approach allowed the study to balance community perspectives with institutional narratives, thereby producing a more holistic account.

Sampling combined purposive and convenience strategies. Purposive sampling was used to deliberately select participants with specialised knowledge of Hwesa IKSs, while convenience sampling allowed access to broader community members who were available and willing to participate during field visits. This combination ensured diversity in representation while addressing practical challenges of accessibility in rural contexts. While critics may argue that non-probability sampling limits generalisability, I maintain that the objective of this study is not statistical generalisation but analytical depth and transferability of insights to similar contexts (Bryman, 2016). A sample size of fifty-five participants with thirty interviews and three FGDs (of 8-10 discussants) was considered adequate given the qualitative orientation, as data saturation was reached when no new themes were emerging.

Data analysis was conducted thematically, guided by Braun and Clarke's (2006) framework of farmiliarisation, coding, identifying themes, defining and naming themes, reviewing themes, and synthesising patterns across the dataset. To ensure clarity and consistency in the analysis, interview participants were coded sequentially as INT1 through INT30, while focus group discussions were coded as FGD1 through FGD3. This coding system enabled the systematic organisation of responses and facilitated the identification of convergences and divergences in perspectives. Through this process, several themes emerged, notably indigenous weather forecasting, water harvesting and conservation, soil management and agricultural practices, sacred rituals and spiritual dimensions of resilience, and communal cooperation in decision-making processes. Through the use of this rigorous thematic approach, the study captured the depth of Hwesa IKSs while preserving participant anonymity and highlighting how climate resilience is locally understood and practised.

Ethical considerations were central to the research design. Participants were briefed about the purpose of the study and gave informed consent before interviews and FGDs commenced. Anonymity was guaranteed by using pseudonyms, and data were handled with confidentiality to respect participants' dignity and cultural sensitivities. Given the historical marginalisation of indigenous communities in research, particular care was taken to avoid extractive tendencies. Instead, the study sought to create a dialogic space where participants' knowledge was valued as legitimate and authoritative. This ethical stance is consistent with decolonial commitments to restoring agency to historically marginalised communities (Smith, 2012).

Findings and discussion

The findings of this study reveal that the Hwesa of Nyanga District possess a rich repertoire of IKSs that directly contribute to climate resilience. Through interviews, focus group discussions, and document analysis, it became discovered that Hwesa ecological knowledge is deeply embedded in local practices of weather forecasting, soil conservation, water management, and ritual observances. These practices are not static remnants of the past but living, adaptive strategies that continue to sustain communities in the face of climatic variability. The discussion that follows integrates empirical insights with the decolonial theory to illustrate how Hwesa knowledge both challenges the epistemic dominance of Western science and provides viable alternatives for climate adaptation. This section highlights the resilience, adaptability, and continued relevance of IKSs by examining thematic areas such as weather forecasting, water harvesting, soil management, and communal cooperation, while also interrogating the challenges of cultural erosion and policy neglect.

Indigenous Weather Forecasting and Environmental Indicators

The findings from interviews and FGDs show that the Hwesa possess a highly sophisticated system of weather forecasting that directly contributes to climate resilience. Through ecological observation, they are able to predict rainfall patterns, prepare their agricultural activities, and protect livelihoods against climate variability. For INT2, INT16, and INT24, vegetation is central in this system, as the abundance or scarcity of certain fruits and the flowering of trees act as reliable indicators of rainfall for the forthcoming season. For instance, plentiful yields of *nchenje* (Diospyros mespiliformis) and *mbumbu* (Lannea edulis) signify a favourable rainy season, whereas the abundance of *nheme* (Strychnos spinosa) is associated with drought or heatwaves locally termed *mhare*. Similarly, INT5, INT1, and INT15 said the flowering of *mikuhu* (Senegalia caffra), *mitondo* (Cordyla africana) *mikuyu* (Ficus gnaphalocarpa), and *minyenza* (Dalbergiaella nyasae), also known by the common name *Mane-pod*) trees or the sprouting of new leaves '*mpfumvudza*' signal a coming rainy season. Such detailed knowledge allows communities to plan crop cycles, allocate labour, and manage food reserves in advance. I argue that these observations demonstrate that the Hwesa do not merely endure climatic shocks but actively build resilience by embedding environmental indications into their adaptive strategies. This challenges Western meteorological models, which rely narrowly on instruments, often overlooking the embodied ecological intelligence that sustains communities at the margins.

FGD1, FGD2, and FGD3 all confirmed that animal, bird, and insect behaviour also provide crucial meteorological signals that strengthen community resilience. FGD3 highlighted that the arrival of migratory birds such as *khoche* (Limosa lapponica), guided by moisture-laden winds, announces imminent rains, a fact captured in the proverb *Urendo*

hwaKhoche kutowera kuri kuyenda mhepo (The migration of the Khoche bird is seen by following the wind). The calls of frogs '*mitawa'* and the *nyamaroro* bird, as well as the presence of swallows and the *tsuramurowe* (stork), are equally seen as rain signals. For FGD1, insects such as the *nyenze* 'Christmas beetle', *mapfurepfure* 'large white butterflies', flying termites '*huruhumbi'*, and *zvimusawakuru* (spiders) are closely monitored to anticipate the timing and intensity of rains. It also emerged from INT23, INT6, INT7, and INT11 that the *songosongo* (Sunbird) not only signals the onset of the rainy season but also indicates the direction of incoming rain. The bird instinctively builds its nest with the entrance facing away from the prevailing wind and rain direction. This orientation prevents rainwater from entering the nest and thus serves as a reliable natural indicator of rainfall direction. Embedding such observations in proverbs, taboos, and storytelling enables the Hwesa to institutionalise the intergenerational transfer of climate knowledge, ensuring its continuity despite external disruptions. These practices reveal that Hwesa weather forecasting is both ecological and social, binding together environmental observation with cultural reproduction. I contend that this holistic practice embodies resilience more fully than fragmented Western science, which often isolates meteorology from social and cultural systems.

Cosmological readings further expand Hwesa resilience strategies by linking celestial and atmospheric phenomena to weather outcomes. INT18 and INT4 revealed that a halo around the moon (*thawara ramadzi*) is interpreted as a sign of heavy rains, while the transition between the birth and death of the moon is always associated with cleansing rains. According to INT26, INT19, INT27, as well as FGD3, a dark circle around the sun indicates destructive storms, while hazy skies *(umi)* warn of extreme heat requiring behavioural adjustments such as hydration or reduced exposure to the sun and heat. Moreover, FGD1 and FGD2 said that wind direction is equally significant: easterly winds (*Nyakatubu)* are considered an assurance of rainfall, while violent gusts are interpreted as suppressing precipitation. Grey storm 'cumulonimbus' clouds alert communities to imminent flooding, prompting protective measures such as driving livestock home. These observations reveal that Hwesa cosmology is not superstition, as colonial discourse often suggested (Mawere, 2010), but a dynamic epistemology grounded in centuries of empirical engagement with the environment. I argue that the exclusion of such systems from formal climate governance is a form of epistemic injustice that deprives Zimbabwe of effective resilience strategies. Incorporating Hwesa ecological forecasting into national frameworks would enrich climate adaptation by aligning modern meteorology with context-specific, time-tested knowledge systems.

Water Harvesting and Conservation Practices

This study has unearthed that water management has always been at the core of Hwesa resilience to climate variability. INT5, and INT12, as well as FGD1, FGD2, and FGD3, noted that traditional water sources such as *kaduduwa* or *mbiruwiru* (springs), *turudzi* (rivers and streams), *michera* (wells), *zvithabwira* (pools), makhuwi and *mathawara* (dams) have been maintained for generations as reliable supplies during dry spells. The Hwesa also rely on natural *makhuwi* (rock depressions) locally found on dwalas, known scientifically as gnammas, as in Manda Mountain, which serve as temporary reservoirs for harvesting and storing rainwater during wet seasons. These sources are not merely physical infrastructure but are embedded within a wider cultural framework of conservation and respect. For instance, taboos prevent the disturbance of *kamba* (tortoises) or *mitawa* (frogs) that use water sources as their habitat, as these creatures are considered guardians of the water and symbols of its permanence and cleaniliness since there is life in it. I argue that these taboos are more than ritualistic beliefs; they are conservation mechanisms that safeguard fragile water ecosystems. Through the regulation of behaviour around water bodies, the Hwesa ensure that these resources remain viable for longer periods, particularly during recurrent droughts.

In addition to preserving natural water bodies, the Hwesa have historically employed indigenous methods of water storage and extraction. FGD1 and FGD3 highlighted that water is sometimes extracted from bulbous plants such as *matsongwa*, which provide supplementary sources during critical shortages. Similarly, the community recognises the importance of trees along riverbanks, forbidding their cutting because they help store groundwater and prevent erosion. Such practices reveal a sophisticated understanding of hydrology that Western models often overlook. The Hwesa also identify sacred water sources, known as *mathawara yanayera*, which are believed to be spiritually protected and therefore never run dry, as long as residents observe the dos and don’ts surrounding them. For example, sacred springs in Nyaman’ombe Mountain are considered a water source for *mhondoro* (spirit mediums), and their perpetual flow is tied to both ecological balance and spiritual observance. In my analysis, these practices illustrate how water conservation is embedded in spirituality, ecology, and social regulation, thereby ensuring resilience in an environment of uncertainty.

INT2, INT7, and FGD3 said the community also reinforces water availability through rituals such as *dendemaro*, a rain and water-invoking ceremony that seeks to replenish dwindling water sources. Evidence from fieldwork indicates that attempts to enclose or privatise fountains, as occurred in Mangezi area in 2012 led to their drying up, which locals interpret as punishment for violating IKSs principles. This demonstrates not only the fragility of these ecosystems but also the enduring authority of indigenous regulatory frameworks. To strengthen resilience, FGD1, FGD2, and FGD3, as well as all

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interviewees, revealed that the Hwesa also complement their water harvesting with short-season, drought-resistant crops such as *mhunga* 'pearl millet', *nyemba* (cowpeas), *nyimo* (roundnuts), and sorghum varieties such as *mashiya* (short white sorghum) and *chibuku* (short red sorghum). These crops require less water and mature quickly, making them a crucial adaptation strategy in seasons of erratic rainfall. When they combine ecological conservation with crop diversification, the Hwesa create a multi-layered resilience system that sustains food security even under extreme climatic stress.

Despite these adaptive strategies, the reliance on IKSs also exposes the neglect of rural water infrastructure by the state. The absence of functional boreholes, irrigation schemes, and modern dams in Hwesa areas means that communities remain heavily dependent on traditional systems. While these systems have proved resilient over generations, they are not infallible, especially under intensifying climate change. I contend that Hwesa practices should not be romanticised as timeless solutions but recognised as context-specific strategies that require support, and integration into broader climate governance frameworks. No form of validation is more compelling than knowledge sustained through intergenerational transmission and millennia of successful application. Ignoring them perpetuates epistemic injustice, while romanticising them risks overburdening local communities with the sole responsibility of resilience. Therefore, water harvesting in Hwesaland should be understood as both a testimony to indigenous ingenuity and a reminder of structural neglect by the state.

Soil Management and Agricultural Practices

The Hwesa community has cultivated agricultural strategies that are deeply intertwined with climate resilience, particularly in their management of soils. INT25 and INT29 said practices such as rotational farming, mixed cropping, and the use of organic fertilisers such as leaf organic manure (*murakwani*) and ash *(madotha)* are deliberately designed to sustain soil fertility and maintain food production in periods of climatic stress. INT2 and INT7 also said that through rotating crops, especially cereals with legumes, the Hwesa restore soil nutrients while minimising pest infestations and crop failure risks. Mixed-cropping ensures that if one crop fails due to erratic rainfall, another may survive, providing a safety net against food insecurity. FGD1 and FGD2 revealed that the application of organic fertilisers further strengthens soil health by improving water retention capacity, an essential factor during prolonged dry spells. The Hwesa consider that the use of chemical fertilisers, as making the soil 'sour' and not good for the crops. I argue that these practices represent proactive resilience-building measures, ensuring that Hwesa households are not entirely destabilised by the unpredictable rainfall patterns associated with climate change.

Equally significant is the Hwesa practice of terracing, particularly on Ruwangwe hilly terrain, where erosion is a constant threat. Through the construction of ridges, stone

bunds, and other barriers, farmers slow down water runoff, reduce the risk of flooding, and preserve valuable topsoil. These measures make agricultural fields more resistant to heavy downpours, which are becoming increasingly frequent due to climate variability. Terracing also conserves soil moisture, making it possible to sustain crops during intermittent dry spells. I maintain that such practices reflect a sophisticated understanding of land management that directly enhances community resilience. They ensure continuity of farming activities even in seasons marked by climatic extremes, effectively acting as a buffer against environmental shocks that would otherwise devastate rural livelihoods.

According to INT13, INT18, INT21, and INT25 the incorporation of *pfumvudza*, locally known as *kugagadira*, further demonstrates the Hwesa people's capacity to adapt traditional knowledge to contemporary climatic challenges. This technique involves planting crops in small basins that conserve water and concentrate fertility, thereby maximising yields on limited land and under conditions of unreliable rainfall. While *pfumvudza/Intwasa* is often promoted nationally as a state-driven programme, among the Hwesa it is understood as part of a long tradition of water-conservation farming that has always been rooted in local practice. Adopting and refining *kugagadira* makes the Hwesa farmers actively build resilience against drought and food shortages, ensuring that even during seasons of low rainfall, some harvests can be secured. I contend that this practice illustrates how indigenous systems are not relics of the past but evolving adaptive mechanisms that directly respond to climate stressors.

Taken together, Hwesa soil management and agricultural practices reveal a holistic model of resilience. Through maintaining soil fertility, preventing erosion, and conserving water through locally grounded techniques, the community reduces its vulnerability to both drought and flooding. These strategies, as Mugambiwa (2018) notes, provide empirical evidence against the colonial stereotype that African agriculture is unscientific, showing instead that Hwesa practices embody ecological sustainability and adaptive intelligence. In the context of decolonial theory, recognising these methods is not only an act of validating indigenous knowledge but also an essential step in integrating plural systems of resilience into national and global climate policy. I argue that failure to acknowledge such contributions perpetuates epistemic injustice and risks undermining the very resilience that communities like Hwesa have carefully nurtured over generations.

Sacred Sites, Rituals, and Spiritual Dimensions of Resilience

Among the Hwesa, resilience to climate variability is not only anchored in agricultural and technical practices but also in the spiritual domain. As revealed in FGD1, FGD2, and FGD3, rainmaking ceremonies such as *kubzva mafuwe* (petitioning for rainfall) and *kujara nkhurumbi* (closing ill winds that block rainfall) remain central to ecological governance. These ceremonies, led by *mhondoro* (territorial spirit mediums), are not merely symbolic acts but interventions designed to restore harmony between people, land, and climate.

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They reaffirm the belief that environmental well-being is inseparable from social and spiritual order. As Bourdillon (1993) and Chavunduka (1994) have argued in the Zimbabwean context, spirit mediums serve as custodians of ecological morality by regulating relationships between humans and the environment. I argue that by integrating ecological concerns into spiritual rituals, the Hwesa create a holistic framework for climate resilience that links meteorological processes with community responsibility and collective morality. This holistic approach challenges Western secular frameworks that divorce climate science from cultural and spiritual dimensions (Mawere, 2010).

The preservation of sacred sites, such as forests, rivers, wells, ponds, and springs, also plays a significant role in sustaining resilience. INT8, INR14, and INT20 said taboos against cutting certain trees or desecrating sacred groves that effectively conserve biodiversity and water sources, ensuring ecological balance in times of scarcity. These sites are not only centres of worship but also critical ecological reserves that provide refuge for flora and fauna and preserve groundwater systems. Scholars such as Mapara (2009) and Sheridan and Nyamweru (2008) have demonstrated that sacred groves across Africa act as indigenous conservation zones where biodiversity is safeguarded through cultural prohibitions. For example, sacred forests serve as natural windbreaks and rain catchments, while sacred wells maintain water access during prolonged droughts. From a climate resilience perspective, these practices function as indigenous conservation strategies that safeguard ecological buffers. My argument here is that Hwesa taboos and spiritual practices are not superstitions, as colonial discourses once labelled them, but adaptive institutions that embed environmental protection within cultural norms (Gelfand, 1977; Mawere, 2010).

INT2, INT5, and INT13 believe that the observance of *chisi* (sacred day) and *mhinda* (phases of the new and old moon) further illustrates how spirituality regulates ecological rhythms. On *chisi*, no farming is carried out, allowing the land to rest, while *mhinda* ceremonies mark the cyclical transition of seasons that are believed to bring rainfall. Failure to respect these observances is thought to repel rain and other consequences such as pests and diseases for crops, while adherence invites ecological harmony. Similarly, the ritual of *kubzva janjahwe* (land cleansing) addresses both rainfall provision and the replenishment of groundwater. These practices echo Ranger's (1985) observations on the ritualisation of land use in Zimbabwe, where spirituality and ecology are intertwined to maintain balance. They ensure that agricultural and climatic activities are synchronised with spiritual cycles, thereby reducing uncertainty and enhancing resilience to drought and unpredictable rains. I contend that this integration of spirituality and ecology demonstrates that Hwesa knowledge is dynamic and purposeful in sustaining environmental stability (Hallen, 2009).

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Taken together, sacred sites and rituals represent more than religious practices; they are indigenous systems of climate governance. By linking community ethics with ecological conservation, the Hwesa embed climate adaptation within everyday life. These practices illustrate that resilience is not merely about technical interventions but also about sustaining relationships with the environment through spirituality. In my view, ignoring these dimensions in national and global climate frameworks constitutes a serious epistemic oversight. Decolonial theorists such as Santos (2014) and Mignolo (2011) remind us that pluriversality entails recognising spiritual epistemologies as legitimate forms of knowledge. For the Hwesa, sacred sites and rituals are not relics of the past but enduring institutions that safeguard ecological balance and strengthen community capacity to withstand climate variability.

Communal Cooperation and Collective Resilience

In Hwesa society, climate resilience is not only a matter of ecological practices but also of social organisation and collective action. Systems of communal labour-sharing, particularly *nhimbe*, embody this ethos. Respondent INT6, INT11, INT16 said under *nhimbe*, households pool labour to accomplish major agricultural tasks such as land preparation, planting, or harvesting. This ensures that vulnerable households, such as those headed by the elderly or widows, are not excluded from food production. Scholars such as Mawere (2010) argues that communal labour systems remain a cornerstone of African rural survival strategies because they enhance social capital while addressing resource scarcity. FGD1 also highlighted that by spreading the burden of labour, the Hwesa build resilience against climatic shocks, since timely planting and harvesting are critical in seasons of erratic rainfall. I argue that *nhimbe* represents an adaptive social safety net that cushions households against the worst effects of climate variability while simultaneously fostering solidarity and reciprocity within the community.

FGD2 and FGD3 observed that equally important is the practice of collective grain storage through *zunde ramambo* (the chief's granary). In this system, community members cultivate a field together and store the harvest under the custodianship of the chief. The grain is then distributed in times of drought, food shortages, or to vulnerable members of society. From a climate resilience perspective, *zunde ramambo* is a form of communal insurance against famine. As Chitongo (2019) observes, the practice embodies traditional mechanisms of disaster risk reduction that are far older and often more effective than externally imposed interventions. It ensures that food security is not left to individual households alone but is managed at a collective level, thus creating buffers against climate-induced crop failures. I maintain that this practice challenges the neoliberal tendency to individualise resilience (Davies, 2016) and instead demonstrates the strength of communal responsibility in sustaining livelihoods under environmental stress.

Intergenerational knowledge transmission further strengthens Hwesa resilience strategies. INT18, INT23, INT29, and FGD3 said elders play a pivotal role in teaching younger generations about weather patterns, soil conservation, rituals, and ecological taboos that safeguard the community. As Odora-Hoppers (2002) reminds us, the survival of Indigenous Knowledge Systems depends on such oral pedagogies, which resist epistemic erasure by passing ecological wisdom across generations. This process of knowledge transfer ensures continuity of adaptive practices and prevents the erosion of strategies critical for surviving climate shocks. I contend that this transmission of knowledge is itself a resilience mechanism, because it keeps the community equipped with a repertoire of adaptive strategies. Without such transmission, indigenous knowledge risks extinction under the pressures of globalisation and modernity (Battiste, 2013), leaving younger generations more vulnerable to climate disruptions.

Taken together, *nhimbe*, *zunde ramambo*, and intergenerational pedagogy highlight that Hwesa resilience is both ecological and social. These practices illustrate that adaptation to climate change is not only about conserving soils or predicting rainfall but also about building social cohesion and collective capacity. Scholars such as Manyena (2006) argue that resilience cannot be reduced to material resources but must also include cultural and social processes that sustain communities through crisis. I argue that in overlooking such social dimensions, mainstream climate adaptation policies often miss a critical resource that rural communities like the Hwesa continue to rely upon. By embedding resilience in social structures, the Hwesa demonstrate that survival under climate stress is best achieved through collective action, not isolated individual efforts.

Challenges to Hwesa IKSs

Although Hwesa IKSs continue to play a critical role in strengthening climate resilience, they face numerous challenges that threaten their vitality and sustainability. One of the most prominent threats is cultural erosion brought about by modernisation and missionary influence. Missionary teachings, which historically branded Hwesa rituals such as rain-requesting, sacred site observances, and taboos as “pagan” or “superstitious,” undermined the legitimacy of these practices in the public sphere. As Mazrui (1986) notes, colonial and missionary ideologies framed African cosmologies as irrational, thereby accelerating the erosion of indigenous epistemologies. Consequently, many young people today associate IKS with backwardness, preferring Western models of knowledge that are portrayed as more “scientific” and “modern.” This intergenerational disinterest poses a significant risk to the continuity of IKS, since the oral transmission of knowledge from elders to youth is being disrupted. Without deliberate safeguarding, much of this ecological wisdom risks disappearing within a generation, thereby potentially weakening the community’s adaptive capacity to climate change.

Another challenge is the impact of labour migration and urbanisation, which have fragmented Hwesa communities. Many economically active men and women migrate to towns and farms in search of employment, leaving behind the elderly and children who have limited capacity to maintain rituals, agricultural practices, and conservation rules. The erosion of communal cohesion means that cooperative systems such as *nhimbe* and *zunde ramambo* are increasingly difficult to sustain. As Manyena (2006) argues, resilience is not only ecological but also social, and when these social structures weaken, the adaptive strength of the entire community is undermined. This challenge is compounded by state and policy marginalisation, where national climate governance frameworks continue to privilege Western meteorological science while sidelining Indigenous knowledge (Chikozho, 2010). By failing to recognise Hwesa IKSs as legitimate bodies of climate knowledge, the state reinforces the coloniality of knowledge (Mignolo, 2011), perpetuating epistemic injustice (Santos, 2014) and diminishes the space for local agency in climate resilience strategies.

The tension between global climate policies and local realities reveals the urgency of safeguarding Hwesa IKSs. While global institutions emphasise technological solutions, the lived experiences of the Hwesa show that resilience must be grounded in cultural continuity, ecological stewardship, and collective solidarity. The danger lies in treating IKSs as expendable or secondary to Western scientific models, rather than recognising them as coequal systems of knowledge. Odora-Hoppers (2002) stresses that the integration of indigenous epistemologies into modern governance requires a philosophy of articulation rather than assimilation, where each system retains its integrity. I contend that climate resilience in Zimbabwe will remain fragile unless policy frameworks confront this epistemic imbalance and create platforms where Indigenous voices are not only heard but given authority in decision-making. Protecting Hwesa IKSs is therefore not simply about preserving culture but about ensuring the survival of effective, locally rooted strategies for confronting climate change.

Conclusion

This study has demonstrated that Hwesa Indigenous Knowledge Systems (IKS) constitute a vital foundation for climate resilience in Zimbabwe. Anchored in agricultural practices, water harvesting, weather forecasting, sacred rituals, and communal solidarity, Hwesa knowledge illustrates a holistic approach to adaptation that is deeply embedded in local ecologies and cultural values. Yet, the continued marginalisation of these practices within state policies and global climate frameworks reveals the persistence of colonial epistemic hierarchies that privilege Western science while dismissing indigenous wisdom. By employing decolonial theory, this paper has argued for epistemic delinking and pluriversality, which allow multiple knowledge systems to coexist and complement one another. I contend that without deliberate recognition, protection, and promotion of

Hwesa IKS, Zimbabwe's climate governance will remain incomplete and exclusionary. The way forward requires not only policy integration but also grassroots empowerment and scholarly advocacy to restore indigenous agency. In so doing, Hwesa IKS should be repositioned not as peripheral supplements to science but as central pillars of sustainable climate resilience.

Recommendations

To secure the sustainability and recognition of Hwesa IKSs, concerted action is required from key institutions including the Government of Zimbabwe, the Ministry of Environment, Climate and Wildlife, the Ministry of Primary and Secondary Education, local traditional leadership, and higher education institutions. The following recommendations identify these actors and the roles they should play in strengthening climate resilience through Hwesa IKS.

- The Government of Zimbabwe, through the Ministry of Environment, Climate and Wildlife, should take the lead in integrating Hwesa IKS into national climate adaptation frameworks such as the National Climate Policy and the National Adaptation Plan. Hwesa ecological indicators and agricultural practices should be formally recognised as complementary to scientific models of resilience. The Meteorological Services Department should collaborate with Hwesa traditional experts to co-produce seasonal forecasts that combine indigenous and scientific methods. This would ensure that adaptation strategies are context-specific, inclusive, and grounded in lived experience rather than externally imposed models.

- The Ministry of Primary and Secondary Education, in partnership with local schools, community learning centres, and traditional leaders under Chief Katerere, should establish educational programmes for documenting and transmitting Hwesa ecological knowledge. Oral traditions, proverbs, and field-based practices should be integrated into environmental education curricula and community workshops. Such programmes would ensure that Hwesa youth inherit a repository of adaptive skills essential for future climate resilience. International partners such as UNESCO and UNDP could support this initiative through funding and capacity-building aligned with Sustainable Development Goal 13 on climate action.

- Universities and research institutions such as Midlands State University, the University of Zimbabwe, and Chinhoyi University of Technology should lead in developing hybrid knowledge systems that blend Hwesa indigenous weather forecasting with meteorological science. Researchers should work closely with local practitioners to validate traditional ecological indicators such as bird migration, tree flowering, and cosmological signs through participatory research.

As Nyong, Adesina and Osman-Elasha (2007) suggest, integrating indigenous and scientific knowledge enhances trust and the practical applicability of climate adaptation interventions.

- Local government authorities, NGOs, and development agencies such as EMA (Environmental Management Agency), CARE International, and the Zimbabwe Resilience Building Fund should support Hwesa communal resilience practices including *nhimbe* (labour-sharing) and *zunde ramambo* (chief's granary). These initiatives should receive technical and financial support as viable community-based adaptation strategies rather than cultural heritage projects. Funding could focus on strengthening communal grain banks, promoting drought-tolerant crops such as *mhunga* (pearl millet), *mashiya* (white sorghum), and *chibuku* (red sorghum), and facilitating access to water conservation technologies. Such interventions would enhance food security and strengthen household resilience during prolonged droughts.

- Finally, I recommend that academic and policy institutions prioritise indigenous climate research to counter epistemic erasure. Hwesa practices such as *kugagadira*, rain-requesting rituals, and the cultivation of short-season crops must be theorised not as primitive but as sophisticated resilience strategies. Universities should establish research programmes that document, validate, and disseminate these practices at national and international levels. This would not only affirm Hwesa IKSs as valid knowledge systems but also contribute to global discourses on pluriversality in climate governance (Santos, 2014). I contend that by repositioning Hwesa IKSs as coequal with Western science, Zimbabwe can move towards a climate adaptation model that is ecologically sustainable, socially inclusive, and epistemically just.

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