

Afrocentric Analysis of the Great Green Wall Initiative viz-à-viz Climate Change Adaptation in the Sahel

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Abstract

Climate change poses a profound challenge to livelihoods, ecosystems, and sociopolitical stability across Africa, particularly in Nigeria's part of the Sahel region, where desertification, land degradation, and water scarcity increasingly threaten survival. To respond to these threats, the African Union (AU) launched the Great Green Wall Initiative of the Sahel and Sahara (GGWISS) to restore degraded landscapes, combat desert encroachment, and enhance climate resilience across eleven countries. Despite its achievements and technical ambition, existing evaluations of the GGWISS have mainly neglected the cultural and philosophical dimensions of the climate adaptation strategy. This study adopts an Afrocentric analytical lens to critically examine the Great Green Wall Initiative (GGWI) in the Sahel by exploring how its strategies align with indigenous philosophies, knowledge systems, and community-led approaches. The study employs a theoretical framework and qualitative methodology, drawing on policy documents, official GGWI reports, secondary literature, and case-based observations from affected regions in northern Nigeria. It evaluates the initiative's objectives, implementation strategies, and impact while assessing Afrocentric components such as community participation, traditional ecological knowledge, and local governance structures. Findings reveal that while the GGWI has made notable gains in land rehabilitation and environmental awareness, it remains constrained by centralized governance, insufficient cultural integration, and gaps in local ownership. The Nigerian Sahel's experience illustrates the promise of Afrocentric adaptation anchored in communal stewardship and indigenous wisdom and the limitations of externally framed interventions. The paper calls for recalibrating the GGWI through culturally grounded, participatory and locally intelligible frameworks.

Keywords: Afrocentric Philosophy, Great Green Wall Initiative, Spiritual Ecology, Climate Change Adaptation, Indigenous Knowledge System

Introduction

Climate change has been characterized to represent one of the most formidable global challenges of the 21st Century, exerting multifaceted impacts across environmental, economic, political and sociocultural domains (Seddon et al. 2020). Its repercussions are increasingly palpable, with rising global temperatures, shifting precipitation patterns, intensifying extreme weather events, and ecological degradation occurring at alarming rates (Jha and Dev, 2024). According to the National Aeronautics and Space Administration (NASA) (2023), Earth's average temperature has increased by approximately 1.1°C above pre-industrial levels, with projections indicating a likely breach of the 1.5°C threshold within the next two decades if current emission trajectories persist (Health Policy Watch, 2019). While climate change is a universal threat, its impacts are disproportionately distributed, with Africa bearing a significant burden despite contributing minimally to global greenhouse gas emissions (Odeku, 2022).

Africa, particularly its semi-arid and arid regions, has emerged as one of the most vulnerable continents to climate variability and change. The African Sahel, a transition zone between the Sahara Desert to the north and the savannah regions to the south, exemplifies this vulnerability (Odeku, 2022). Stretching across more than a dozen countries from Senegal in the west to Djibouti in the east, the Sahel is characterized by low rainfall, frequent droughts, desertification, and land degradation. The 2024 Ecological Threat Report by the Institute of Economics and Peace reveals that the Sahel region of Nigeria, which constitutes a vital segment of the Sahel belt, has witnessed significant ecological deterioration in its northern regions, primarily driven by erratic rainfall, rising temperatures, and human-induced environmental stressors (Ray, 2021; Tesfaye, 2022). In northern Nigeria alone, approximately 351,000 hectares of land are lost annually to desertification (Eshiemogie et al., 2023), endangering livelihoods, exacerbating food insecurity, and fueling socioeconomic instability (Ani, Anyika and Mutambara, 2021). Considering this alarming ecological crisis, adaptation to climate change has become a strategic imperative. Adaptation refers to the process of adjustment to actual or expected climate impacts by seeking to moderate harm or exploit beneficial opportunities (Williams et al., 2021). In Africa, where adaptive capacity is generally low due to limited financial, technical and institutional resources, adaptation is not merely a policy option but a necessity for survival and resilience. Various regional and international frameworks have been formulated to promote adaptation and environmental restoration across vulnerable landscapes, among which the Great Green Wall Initiative (GGWI) stands as a landmark continental endeavor (Trautman et al., 2024).

Launched in 2007 by the African Union (AU), the GGWI aims to combat desertification, enhance food security, and promote sustainable land use across the Sahel-Saharan region. Envisioned as an 8,000-kilometre belt of vegetation stretching from Senegal to Djibouti, the initiative has since evolved into a broader strategy for climate resilience, environmental sustainability, and socioeconomic development (Orakwue, 2020; Trautman et al., 2024). In its revised scope, the GGWI seeks to restore 100 million hectares of degraded land, sequester 250 million tons of carbon, and generate ten million green jobs by 2030 (Trautman et al., 2024). In Nigeria, the implementation of the GGWI spans 11 frontline states: Adamawa, Bauchi, Borno, Gombe, Jigawa, Kano, Katsina, Kebbi, Sokoto, Yobe, and Zamfara, where efforts are underway to plant trees, improve soil fertility, and engage local communities in reforestation and sustainable land management practices (Orakwue, 2020).

Despite the promise of the GGWI, there remains a critical gap in contextualizing and

evaluating its implementation through indigenous lenses. Mainstream environmental governance and adaptation strategies in Africa have often been shaped by external paradigms, frequently marginalizing local epistemologies, traditional ecological knowledge, and culturally rooted practices (Amo-Agyemang, 2021). This trend raises questions regarding the 'appropriateness, acceptability and sustainability of such interventions in complex local contexts. There is, therefore, a compelling need to reexamine large-scale climate initiatives like the GGWI through Afrocentric perspectives frameworks that prioritize African worldviews, histories, cultures, and experiences in interpreting and solving African problems.

This paper undertakes an Afrocentric analysis of the GGWI as a climate change adaptation mechanism in the Nigerian Sahel. Specifically, the main objective is to interrogate the extent to which Afrocentric philosophies rooted in communalism, environmental stewardship, and endogenous knowledge systems are reflected in the design, implementation, and outcomes of the GGWI in Nigeria. The paper foregrounds the argument that African climate adaptation must transcend technical fixes and embrace culturally consonant strategies that resonate with local populations' lived realities, aspirations, and environmental ethics. Thus, the central question here is about how the GGWI incorporates Afrocentric principles to improve land management and enhance climate change adaptation, and the implications for local communities become essential. The significance of this inquiry lies in its potential to bridge the epistemological gap in climate adaptation discourse. While numerous studies have examined the biophysical and institutional dimensions of the GGWI, few have explored the initiative through an Afrocentric framework that critically engages indigenous agency, cosmology, and ecological wisdom. This study, therefore, contributes to the growing decolonial environmental scholarship that challenges Eurocentric assumptions and reclaims African epistemologies as legitimate foundations for sustainable development by centring African voices and knowledge systems.

The paper is structured as follows: following this introduction, the second section outlines the theoretical framework and research methodology. The third section, "Afrocentric Philosophy in Climate Change Adaptation", elaborates on the theoretical foundations of Afrocentric thought as applied to environmental stewardship. The fourth section, "Afrocentric Components in the GGWI", examines how these principles are embedded in the initiative's Nigerian implementation. The fifth section, "Experiences from the Nigerian Sahel," contextualizes local perspectives, project outcomes, and adaptive practices. The sixth section, titled "Challenges and Afrocentric Solutions", critically assesses the initiative's limitations and offers culturally grounded alternatives. Finally, the "Conclusion and Recommendations" section synthesizes the findings and proposes actionable pathways for enhancing the GGWI's effectiveness and Afrocentric integrity.

Theoretical Framework and Research Methodology

This study adopts the Afrocentric Theory by Asante (2017) that emphasizes centralizing African culture, values and perspectives on social change issues by placing Africans at the center of their own historical and cultural narratives for their agency and dignity (Asante, 1980, 2017, 2021; Emelianenko, 2022). The framework highlights the importance of indigenous knowledge systems and cultural values in shaping contemporary development practices (such as the GGWI) and evaluation (Baadu, 2023; Baadu and Ile, 2023). The framework also heightens the interconnectedness of individuals within the community because it promotes the relational and communal dimensions of social life. Some scholars criticize the framework's scarce

epistemological and methodological reliability due to its historical reliability, which clashes with conventional methodology (Bussotti and Nhaueleque, 2018; Duarte, 2020).

Also, the framework is believed to be academically marginalized and has ideological challenges within Africa (Mekoa, 2018; Lateef et al., 2023). The scholars state that although the Afrocentric framework offers valuable perspectives for re-centering African narratives in contemporary development practices, the challenges it faces concerning epistemological and methodological reliability, marginalization and African competitiveness, addressing the challenges is crucial for acceptance and application in African-centered projects such as the GGWI.

This study also adopts a qualitative, interpretive research approach grounded in Afrocentric Theory and critical environmental analysis. The qualitative paradigm is appropriate for unpacking the philosophical and cultural dimensions of climate adaptation, as it facilitates an in-depth understanding of meanings, worldviews, and lived experiences that cannot be easily quantified (Lim, 2024). An Afrocentric lens guides the study's analytical orientation, enabling the examination of the GGWI not merely as a technocratic intervention but as a sociocultural and ecological phenomenon embedded within African cosmologies and indigenous knowledge systems. This approach allows for deconstructing dominant, externally imposed narratives surrounding climate adaptation and reconstructing contextually rooted perspectives that prioritize African agency, values, and epistemologies. Data for the study were drawn from a combination of secondary and primary sources, including peer-reviewed journal articles, books, policy documents, official reports from the AU and Nigerian Ministry of Environment, project evaluation reports from international agencies such as the United Nations Convention to Combat Desertification (UNCCD), and community-level case studies documented by non-governmental organizations working in the Nigerian Sahel. These sources were purposively selected based on their relevance to the GGWI, climate change adaptation in northern Nigeria, and Afrocentric environmental frameworks. Thematic content analysis was employed to identify recurring patterns, Afrocentric principles, and culturally embedded adaptation practices within the documented experiences. Particular attention was paid to discourses around land use, communal environmental stewardship, traditional ecological knowledge, and participatory governance. This method facilitated a critical synthesis of empirical evidence and philosophical reflections, culminating into a culturally attuned evaluation of the GGWI's implementation and resonance with local realities.

Afrocentric Philosophy and Spiritual Ecology in Climate Change Adaptation

The global challenge of climate change demands multifaceted responses; yet adaptation discourse has mainly been shaped by Western scientific and technocratic paradigms that often marginalize indigenous and culturally specific approaches (David, 2024). Within the African context, such external models frequently fail to capture the richness of local knowledge systems, community dynamics, and spiritual relationships with nature (Adeola et al., 2023; David, 2024). Afrocentric philosophy presents a corrective epistemological shift that reclaims African agency and frames climate adaptation through indigenous knowledge, cultural continuity, and communal ethics (Adeola et al., 2023). It posits that adaptation should not be a one-size-fits-all technical solution but a process deeply rooted in Africa's historical, ecological and sociocultural experiences (Johnson et al., 2022). Central to Afrocentric thought is African agency, as articulated by scholars like Adeola, Evans and Ngare (2023), who argue that Africans must be

subjects of their own narratives. In environmental adaptation, this means rejecting externally dictated interventions that disregard local realities (Johnson et al., 2022). For instance, in Burkina Faso's Central Plateau, smallholder farmers such as Yacouba Sawadogo have revitalized ancient 'Zai' techniques by planting pits that retain moisture and improve soil fertility, leading to the greening of over three million hectares of land (Ouédraogo et al., 2022). Such practices exemplify Afrocentric adaptation by integrating traditional knowledge with environmental resilience. The region's experience challenges the perception that innovation is synonymous with modern technology, proving that African-rooted knowledge can produce sustainable, contextually appropriate solutions instead. Communalism, a hallmark of Afrocentric environmental philosophy, contrasts sharply with the Western neoliberal emphasis on individual property rights. In many African societies, the land is communally owned, with strong traditions of collective resource management (Coetzee, 2024). For example, the Awramba community in Ethiopia's Amhara Region has successfully implemented communal farming and shared labor practices to sustain agriculture in the face of climate variability (Ekimie, 2021). Similarly, in Senegal, local communities involved in the GGWI have collectively formed village-level forest management committees that oversee tree planting and maintenance (Ouédraogo et al., 2022). These examples illustrate how communal values underpin climate adaptation strategies that are more inclusive and resilient, particularly in arid and semi-arid zones where cooperation is essential for managing scarce resources.

The spiritual ecology embedded in African cosmologies offers another dimension to climate adaptation. In various African traditions, nature is not merely a physical entity but also a spiritual one (Ombati, 2021). For example, the Kaya Forests in Kenya are sacred groves protected by the Mijikenda people, serving as biodiversity hotspots and spiritual sanctuaries. These forests have persisted for centuries due to religious taboos and customary practices restricting exploitation. In Ghana, the Ashanti and Ewe peoples view rivers as sacred abodes of deities, which have historically contributed to water conservation practices. Such spiritual orientations reinforce environmental stewardship and can be leveraged in adaptation planning (David, 2024; Ombati, 2021). The GGWI, for example, could gain greater acceptance and sustainability if it aligns tree planting and conservation efforts with sacred ecological spaces and rituals recognized by local communities.

A core tenet of Afrocentric adaptation is validating and integrating indigenous knowledge systems. From the use of windbreaks made of millet stalks in Niger to rainwater harvesting techniques employed by the Himba in Namibia, African communities have long adapted to environmental changes through locally evolved practices (Johnson et al., 2022). In northern Nigeria, Hausa and Kanuri farmers traditionally observe the behavior of insects like crickets and ants to predict seasonal rainfall patterns. This practice rivals scientific meteorology in accuracy at the local scale (Iskil-Ogunyomi et al., 2024). In Mozambique, communities along the Zambezi River have developed flood-resilient housing and seasonal migration patterns that reduce climate vulnerability (Johnson et al., 2022). These diverse practices, rooted in generational experience, represent a knowledge reservoir underutilized in mainstream adaptation programs. Afrocentrism philosophy advocates for preserving and integrating their culture into formal climate strategies (David, 2024).

In addition, Afrocentric adaptation insists on participatory governance and bottom-up approaches by emphasizing that communities should have a decisive voice in how adaptation initiatives are conceptualized and implemented. In Niger's Maradi and Zinder regions, the farmer-managed natural regeneration (FMNR) model has restored over five million hectares of

degraded land by enabling communities to protect and manage regrowth of native trees on farmland. This success emerged not from top-down instruction but from local participation and leadership. Similarly, in Mali and Chad, women-led cooperatives have played critical roles in seed preservation and drought-resilient crop cultivation efforts often neglected in state-led projects but essential to grassroots resilience (Johnson et al., 2022). Afrocentric principles thus reject tokenistic inclusion, advocating for genuine co-production of knowledge and policy with African communities at the center.

Historically, African vulnerability to environmental degradation is tied to the colonial and post-colonial imposition of extractive economic systems and disempowering governance models (David, 2024). Afrocentric philosophy brings historical consciousness into climate conversation, recognizing that colonial dispossession and the destruction of traditional ecological systems have exacerbated the continent's environmental crises (David, 2024). In Southern Africa, colonial policies that displaced indigenous peoples from ancestral lands to make way for commercial agriculture led to erosion and deforestation (Carlos et al., 2021). The Afrocentric lens insists that adaptation must confront these historical injustices by promoting environmental justice and restoring indigenous governance systems (Johnson et al., 2022). For instance, in South Africa, the land restitution process for communities around the Kruger National Park includes the reintegration of traditional land management methods in conservation, providing a model for climate justice (Carlos et al., 2021).

Finally, the Afrocentric approach calls for a reorientation of education and policy to reflect African values and epistemologies (Mpofu, 2023). Environmental education that incorporates oral traditions, folktales, and proverbs such as the Yoruba saying "Igi kan ko da igbo se," meaning "a tree does not make a forest," can foster ecological consciousness from a young age (David, 2024). Policy frameworks likewise should accommodate customary land tenure systems, traditional leadership structures, and community-based natural resource management (Mpofu, 2023). For instance, Uganda's National Adaptation Plan recognizes the role of indigenous knowledge and includes community input mechanisms, aligning partially with Afrocentric ideals (Nkuba et al., 2020). Scaling such models across Africa would deepen the legitimacy and efficacy of adaptation strategies.

Afrocentric philosophy therefore, provides a culturally grounded, historically informed, and ethically coherent framework for climate change adaptation in Africa. Reclaiming indigenous knowledge, communal values, and spiritual connections to nature challenges the hegemony of Western models and centers African voices in the climate discourse. As initiatives like the Great Green Wall move forward, grounding them in Afrocentric principles will enhance their effectiveness and affirm the dignity and resilience of African communities in shaping their ecological future.

Afrocentric Components in the GGWI

The GGWI stands as one of Africa's most ambitious and transformative responses to the multifaceted crisis posed by climate change, land degradation, and desertification in the Sahel region (Turner et al., 2023). Conceived in 2005 under the leadership of the AU and officially launched in 2007, the GGWI initially aimed to establish a continuous wall of vegetation approximately 15 kilometers wide and 8,000 kilometers long, stretching across the entire breadth of the African continent from Senegal in the west to Djibouti in the east (PAGGW, 2018; Orakwue, 2020). Its early conceptualization was primarily rooted in afforestation as a physical

barrier against the southward expansion of the Sahara desert. Nonetheless, the initiative has evolved into a more integrative ecological restoration and development program (GGW, 2022; Orakwue, 2020). It now encompasses land rehabilitation, poverty reduction, climate resilience, and community empowerment, reflecting broader ambitions to restore 100 million hectares of degraded land, sequester 250 million tons of carbon, and generate ten million green jobs by the year 2030 (Turner et al., 2023; Trautman et al., 2024).

As of 2023, the GGWI has restored over 20 million hectares of land and generated more than 350,000 jobs across the Sahel (Turner et al., 2023). Countries such as Senegal, Niger, Nigeria, and Ethiopia have made notable progress in reforestation, farmer-managed natural regeneration (FMNR), and sustainable land management (Sileshi et al., 2023; Turner et al., 2023). In Senegal, over 12 million drought-resistant trees have been planted, while Ethiopia has rehabilitated more than 15 million hectares of land using terracing and agroforestry methods. In Niger, FMNR has led to the regrowth of over 200 million trees across five million hectares of land, primarily driven by local farmers (Sileshi et al., 2023). These interventions reflect the growing understanding that effective climate adaptation in Africa must go beyond technocratic fixes to incorporate sociocultural, spiritual and historical dimensions of human-environment relations (Johnson et al., 2022).

This broader framework aligns with Afrocentric philosophy, which centers African knowledge systems, cultural values, communal agency, and ecological harmony in articulating development pathways (David, 2024). A central Afrocentric component of the GGWI is its emphasis on communal land stewardship, an ethos that resonates deeply with traditional African ecological practices. Historically, land in African societies has been viewed not as a commodity for individual exploitation but as a communal asset to be preserved for future generations (Ekimie, 2021). This worldview is embedded in practices such as shifting cultivation, sacred forest conservation, and communal grazing systems.

The widespread adoption of FMNR in Niger exemplifies this ethos. Initiated by farmers such as Yacouba Sawadogo, who championed the regrowth of native trees on farmland, FMNR revives local stewardship by allowing natural tree stumps to regenerate rather than be cleared (Coetzee, 2024; Iskil-Ogunyomi et al., 2024). These trees provide shade, improve soil structure, enhance biodiversity, and offer fodder and fuelwood, thereby strengthening local economies. This practice echoes the Afrocentric worldview that land is a living entity, an ancestral trust linking the past, present, and future rather than a mere physical resource (Moloi, 2020).

Equally reflective of Afrocentric adaptation is integrating indigenous knowledge systems into land restoration efforts (Mpofu, 2023). Across the Sahel, traditional practices have proven remarkably effective in reversing land degradation and increasing productivity. In Ethiopia, the GGWI has supported terracing and planting indigenous tree species such as *Cordia africana* and *Faidherbia albida*, both valued for their environmental benefits and cultural symbolism. The success of these strategies underscores the validity of African ecological knowledge, long marginalized by colonial and post-colonial development paradigms (Agribilcha, 2022). Some of these traditional practices and innovations adopted by farmers in the Sahel region have helped to improve food security. The integration of traditional conservation practices such as Zai and Half moon, stone rows, mulching, grass strip, filter dikes and controlled irrigation, which vary by country, has been utilized to loosen crusted soils, reduce water evaporation, and improve soil fertility (Keugmeni et al., 2025).

Another notable Afrocentric feature of the GGWI is the promotion of participatory governance and community empowerment. Traditional African political systems often operate

through consensus-building, kinship networks, and communal responsibility. In several GGWI implementation zones, participatory structures have been introduced to allow communities to identify degraded lands, select appropriate species, and oversee planting and maintenance (Goossen, 2020). In Senegal, for instance, local forest management committees have taken ownership of restoration sites. At the same time, women's cooperatives have been instrumental in nurturing tree nurseries (Turner et al., 2023). These forms of bottom-up governance contrast with technocratic, top-down models often imposed through externally funded programs. They reflect Afrocentric ideals of autonomy and self-definition, whereby communities act not as passive recipients of aid but as active agents in shaping their ecological futures (Odeku, 2022).

Nevertheless, while the GGWI incorporates several Afrocentric elements, notable divergences call into question the depth of its alignment with Afrocentric climate adaptation philosophy (Odeku, 2022). One of the most significant shortcomings is the persistent technocratic frame of restoration efforts. Much of the discourse surrounding the GGWI remains dominated by metrics such as hectares restored, carbon sequestered, and jobs created (Adeola et al., 2023). Although these indicators are essential, they often overshadow local narratives, knowledge systems, and ontologies that define the relationship between people and the environment (David, 2024). For instance, international reports frequently highlight the GGWI's contribution to global climate goals, such as the Paris Agreement or the Bonn Challenge, while giving minimal attention to indigenous priorities, beliefs, and environmental ethics (Turner et al., 2023).

Moreover, the influence of international donors and development agencies has reinforced a top-down implementation structure in many GGWI countries. In Nigeria, the National Agency for the Great Green Wall (NAGGW) coordinates projects in 11 northern states. While the agency is mandated to work with local governments and traditional rulers, its operations are often centralized and bureaucratic, with limited transparency or community control (Turner et al., 2021). There have been reports of project delays, underutilized funds, and politically motivated site selections. These challenges reflect a broader structural problem wherein the GGWI risks becoming an externally driven initiative with limited resonance at the grassroots level, contrary to Afrocentric principles that prioritize endogenous development and communal agency (Turner et al., 2023).

Another gap in the Afrocentric orientation of the GGWI lies in the limited integration of African cultural expressions into project design and outreach. While some cultural institutions have been engaged, the initiative has yet to fully leverage African languages, proverbs, storytelling, music, and visual arts as tools for promoting environmental stewardship (Goossen, 2020). In many African societies, these media are not mere entertainment but vehicles for transmitting values, history, and collective memory (Agribilcha, 2022; Wilkinson, 2021). By failing to incorporate them into environmental education and public mobilization, the GGWI misses an opportunity to embed its objectives within the cultural consciousness of the communities it seeks to serve. Afrocentric adaptation requires more environmental success; it demands cultural affirmation and historical continuity.

In addition, the role of traditional institutions in the governance of the GGWI remains underdeveloped. Historically, elders, lineage heads, and customary councils have played crucial roles in land use regulation and conflict resolution (Sileshi et al., 2023). In countries such as Mauritania and Chad, these institutions wield significant influence at the local level but are seldom integrated into formal restoration programs (Ombati, 2021). Their exclusion not only weakens the legitimacy of GGWI interventions but also disregards systems of accountability and

knowledge that have sustained African communities for centuries. A truly Afrocentric GGWI would recognize and revitalize these traditional structures as integral components of environmental governance.

Despite these shortcomings, there are promising examples that suggest a path forward. In Chad, the GGWI has supported the formation of women-led cooperatives engaged in producing non-timber forest products such as shea butter and moringa (Turner et al., 2023). These activities generate income, enhance food security, and contribute to ecological regeneration while addressing gender inequality, an issue that Afrocentric philosophy frames as central to holistic wellbeing (Ani et al., 2021). Similarly, in Burkina Faso, youth mobilization through environmental education programs has fostered a sense of ownership and pride in restoration efforts (Turner et al., 2023). These initiatives demonstrate that when properly aligned, the GGWI can serve as a vehicle for Afrocentric renewal, thereby integrating ecological restoration with cultural resilience, social justice, and economic empowerment.

Experiences from the Nigerian Sahel

The Nigerian Sahel constitutes one of the most climate-vulnerable regions in West Africa. Extending across the country's eleven northernmost states, ranging from Kebbi and Sokoto in the northwest to Borno and Yobe in the northeast, the region is typified by arid and semi-arid ecological characteristics, marked seasonal rainfall, and increasing desertification (Orakwue, 2020; Ray, 2021). Over the past four decades, the Nigerian Sahel has experienced significant ecological deterioration driven by anthropogenic and climatic pressures. Irregular rainfall patterns, increasing temperatures, prolonged dry spells, and shifting growing seasons have combined to diminish agricultural yields and pastoral viability, exacerbating poverty and food insecurity (Eshiemogie et al., 2023). Data from Nigeria's Federal Ministry of Environment indicate that desert encroachment in the region is progressing at an estimated rate of 0.6 kilometers per year, threatening the livelihoods of millions of people and rendering over 350,000 hectares of land unproductive annually (Federal Ministry of Environment, 2022).

The adverse impacts of climate change in the region are manifold. Agriculturally, erratic rainfall has disrupted traditional planting calendars, leading to lower productivity and increasing susceptibility to crop failure (Ani et al., 2021). Staple crops such as millet, sorghum, and cowpea, which are rain-fed, have suffered from prolonged dry spells. At the same time, pastoral communities have witnessed shrinking grazing fields and drying water points, leading to increased competition between herders and farmers, a dynamic that has contributed to recurring conflict (Ani et al., 2021). Furthermore, high temperatures, sometimes exceeding 45°C during peak periods, have compounded the region's vulnerability, affecting human health, reducing labor productivity, and increasing water scarcity (Eshiemogie et al., 2023). Socially, these pressures have precipitated migration from rural to urban areas and, in some cases, across borders, thereby intensifying urban sprawl and straining social infrastructure in neighboring communities (Turner et al., 2023).

Accordingly, the GGWI has introduced sustainable agricultural practices to increase soil fertility and water retention. In Bauchi and Sokoto, contour bunding and stone lines have been constructed on sloped farmlands to combat runoff and enhance soil moisture. Composting and organic farming techniques have been promoted through farmer field schools, allowing communities to reduce reliance on chemical inputs and strengthen the resilience of local farming systems. Livelihood diversification has also been pursued through the training of women and

youth in the production of seedlings, honey, and moringa-based products, thereby creating employment opportunities and reducing overdependence on subsistence agriculture (Turner et al., 2023).

The GGWI in Nigeria has also prioritized water resource management, recognizing the critical role of water access in climate adaptation. In Gombe and Borno states, the initiative has supported the construction of small-scale water harvesting infrastructure, including earth dams and solar-powered boreholes. These interventions have improved access to clean water for domestic use, irrigation, and livestock, particularly in communities previously reliant on seasonal streams (Orakwue, 2020; Turner et al., 2023). In addition, the GGWI has established green corridors along degraded watercourses, supporting the regeneration of riparian vegetation and the recharging of aquifers. These integrated efforts have helped to rehabilitate vital ecological functions and strengthen adaptive capacities in vulnerable communities (Turner et al., 2023).

Indeed, the Nigerian experience offers essential lessons for regional cooperation and policy innovation. As climate change transcends political boundaries, there is a growing need for cross-border collaboration on issues such as water management, livestock mobility, and early warning systems (Turner et al., 2023). Nigeria's engagement with regional frameworks under the AU and the Pan-African Agency of the Great Green Wall can facilitate the sharing of best practices and the development of harmonized strategies that reflect the diverse ecological and cultural landscapes of the Sahel (Ray, 2021).

In sum, the Nigerian Sahel encapsulates the urgency and the promise of climate adaptation in Africa. The region's experience with desertification, resource conflict, and environmental degradation underscores the complex interplay of ecological, social and political factors in shaping vulnerability. Nevertheless, through the GGWI, Nigeria has embarked on a path that holds the potential to transform degraded lands into zones of productivity, resilience, and dignity. While substantial challenges persist, the incorporation of Afrocentric principles rooted in community agency, indigenous knowledge, and cultural affirmation can help redefine the contours of environmental governance in the Sahel (Turner et al., 2023). For the GGWI to fulfil its transformative vision in Nigeria, it must become more than a technical intervention; it must evolve into a people-centered movement that reconnects communities with their land, heritage, and future.

Challenges and Afrocentric Solutions

Despite its ambitious objectives and growing visibility, the GGWI in Nigeria faces a range of persistent challenges that undermine its capacity to deliver on its ecological and socioeconomic promises (Turner et al., 2023). These multifaceted challenges span institutional, financial, sociocultural, environmental and security-related domains. Notably, many of these limitations stem not only from resource constraints but also from a misalignment between project design and the lived realities, worldviews, and priorities of local communities (Goossen, 2020; Neely, 2022). As such, any effective response must engage with these challenges technically and philosophically by drawing from Afrocentric modes of thought that place people, culture, and the environment in relational harmony. As noted several times, the foremost challenge is inconsistent and inadequate funding (Turner et al., 2023). While the GGWI receives budgetary allocations through Nigeria's national planning process, there have been repeated delays and shortfalls in fund disbursement. Reports by the Ministry of Budget and Economic Planning (2022) indicate that from 2015 to 2020, less than 40% of allocated funds were released, severely

affecting the scale and continuity of field operations. This financial instability hampers tree planting, capacity-building, water infrastructure development, and community sensitization efforts (Orakwue, 2020). Additionally, donor fatigue and fragmented financing mechanisms have impeded long-term project planning.

An Afrocentric response to this challenge lies not merely in seeking external funds but also in cultivating community-driven resource mobilization. Traditional African communal labor systems, such as the *gayya* system in Hausa society or *isusu* in Igbo communities can be revitalized to support ecological activities through collective ownership, local investment, and rotational contributions (Oguzie, 2022). The GGWI can deepen grassroots engagement and enhance sustainability by tapping into endogenous financial and social capital.

Institutional fragmentation represents another major obstacle. The GGWI requires coordination across multiple tiers of government, federal, state, and local, as well as between various ministries, departments, and agencies (Turner et al., 2023). However, weak inter-agency collaboration, overlapping mandates, and bureaucratic bottlenecks have often led to duplication of efforts or inertia (Orakwue, 2020). An Afrocentric solution would involve strengthening traditional governance institutions as complementary structures for project oversight and coordination. As suggested earlier, traditional rulers, elders' councils, and religious leaders retain legitimacy and authority in many Nigerian communities. Empowering these institutions as mediators, monitors, and mobilizers for GGWI activities can create a more coherent and culturally rooted implementation framework. Moreover, their moral and spiritual influence can reinforce values of environmental stewardship grounded in African epistemology. Another challenge is the insufficient integration of indigenous knowledge systems in project design and execution, which has already been thoroughly broached.

Security challenges in northern Nigeria further complicate implementation. Insecurity due to insurgency, banditry, and communal violence has made certain areas inaccessible to field teams, disrupted activities, and displaced vulnerable populations. Borno, Zamfara, and Katsina states have been particularly affected, with some GGWI projects halted due to safety concerns (Adeiyza, 2022; Turner et al., 2023). An Afrocentric approach does not treat security as a purely militarized concern but views peace and environmental regeneration as intertwined. Traditional conflict resolution mechanisms, such as *sulhu* (reconciliation through dialogue), and local peacemaking rituals can be incorporated into GGWI activities to address resource-based conflicts and promote social cohesion. Integrating peacebuilding with ecological restoration affirms the Afrocentric view that human and environmental well-being are inseparable.

Finally, a broader philosophical challenge concerns the framing of the GGWI itself. Too often, the initiative is interpreted through technical or economic lenses, focused on metrics such as hectares restored or tonnes of carbon sequestered (Adeola et al., 2023). While these are important, they risk overshadowing deeper questions of identity, belonging, and value (Turner et al., 2023). An Afrocentric climate philosophy urges a reframing of adaptation as a process of cultural renewal, land reconnection, and ethical responsibility. Climate interventions must not only repair soils and watersheds but also rekindle ancestral relationships with land, revalorize indigenous environmental ethics, and foster narratives of hope and regeneration.

Conclusion

The GGWI, conceived as a bold ecological and developmental intervention to combat desertification and climate vulnerability in the Sahel, represents one of Africa's most ambitious

responses to the climate crisis. In Nigeria, where the northern region faces escalating climate-related threats, mainly from desert encroachment and dwindling livelihoods, the GGWI provides a vital framework for restorative environmental action. This paper has critically examined the GGWI through the lens of Afrocentric philosophy, positioning climate change adaptation not merely as a technical imperative but also as a culturally rooted, people-centered, and philosophically grounded undertaking.

The Afrocentric paradigm, with its emphasis on relationality, indigenous knowledge, communal responsibility, and ecological harmony, provides a compelling framework for reimagining climate resilience in Africa. As detailed in the paper, this philosophical orientation insists that adaptation strategies must emerge from within African epistemologies, reflect the lived realities of African communities, and sustain the moral and spiritual bonds between people and their environments. In this context, adaptation becomes an act of cultural self-affirmation and intergenerational responsibility. The GGWI exhibits several Afrocentric components, particularly in its emphasis on land restoration, poverty reduction, and the involvement of local communities, but it also falls short in several areas. Instances of technocratic dominance, limited integration of indigenous ecological knowledge, and inadequate community participation reveal disjunctions between project design and local cultural realities.

The Nigerian Sahel's experience underscores these tensions. Communities across states such as Borno, Yobe, Kano, and Katsina continue to endure the compounded effects of erratic rainfall, soil degradation, and scarcity. Nonetheless, these communities hold deep repositories of indigenous ecological wisdom as reflected in traditional land-use practices, conflict resolution mechanisms, and environmental ethics. While the GGWI has introduced meaningful interventions from afforestation and water harvesting to youth empowerment and land rehabilitation, its full potential remains unrealized due to funding challenges, institutional fragmentation, insecurity, and insufficient cultural alignment. As this paper has argued, addressing these challenges requires more than structural reform; it necessitates a paradigmatic shift that reclaims adaptation as a culturally intelligible and locally owned process.

The integration of Afrocentric solutions offers a path forward. Community-driven financing mechanisms, the revitalization of traditional governance institutions, the deployment of indigenous agro-ecological techniques, and the fostering of cultural expressions that celebrate environmental stewardship all reflect this philosophy. These approaches deepen ownership, reinforce sustainability, and ensure that adaptation strategies are contextually relevant and ethically grounded. They affirm that climate action in Africa cannot be detached from its people's cultural, historical and spiritual realities. Rather than viewing African societies as passive recipients of global interventions, an Afrocentric lens restores their agency as innovators, custodians, and coauthors of their environmental futures.

The implications of this analysis extend beyond Nigeria and the GGWI. As the continent continues to grapple with the intensifying impacts of climate change, there is a pressing need for policies, programs, and research agendas that are grounded in African thought systems. Global climate discourses must increasingly make room for diverse epistemologies and localized forms of knowledge. Moreover, development institutions must move beyond instrumental engagement with local communities to authentic partnerships that respect cultural sovereignty and ecological ethics. The Afrocentric critique presented in this paper thus invites a broader reconsideration of what counts as valid knowledge and effective intervention in the climate adaptation space.

Future research should deepen the empirical basis for Afrocentric climate solutions by documenting and analyzing successful indigenous adaptation practices across the Sahel.

Longitudinal studies that track the socioecological outcomes of Afrocentrically designed interventions will provide critical insights into their efficacy and replicability. Furthermore, interdisciplinary approaches drawing from anthropology, environmental science, political ecology, and philosophy are essential to fully apprehend the complexity and richness of African responses to climate change. Comparative studies between regions and countries within the GGWI corridor could also illuminate context-specific strategies and shared principles, thereby informing a more nuanced and locally attuned continental climate agenda.

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