



## PALM-TREES

# A PAN AFRICAN AND TRANSDISCIPLINARY LENS ON THE MARGINS: TACKLING THE RISKS OF EXTREME EVENTS (PALM-TREES)

## REPOSITIONING AGRICULTURAL EXTENSION SYSTEMS FOR CLIMATE ADAPTATION IN KWARA STATE

POLICY BRIEF

NO. 4, JUNE, 2026, ISSN 0189-4668

### EXECUTIVE SUMMARY

**A**gricultural extension systems play a critical role in bridging the gap between knowledge and practice, particularly in the context of climate change. However, in Kwara State, extension services remain weak and insufficiently equipped to support climate adaptation. Evidence from the PALM-TREES project shows that a large proportion of farmers lack access to training, limiting their ability to adopt climate-smart practices. The study highlights significant gaps in farmer knowledge, extension outreach, and institutional capacity. These gaps constrain the adoption of adaptive practices and reduce the

effectiveness of agricultural interventions. This policy brief draws on PALM-TREES findings and relevant literature to propose a transformation of extension systems into climate adaptation delivery platforms, capable of supporting resilient agricultural systems in Kwara State. Without urgent reform, Kwara State risks continued agricultural underperformance and rising rural poverty.

This brief recommends a systemic transformation of extension systems into climate adaptation delivery platforms, including:

- Expansion and professionalization of extension services

- Integration of climate-smart advisory systems
- Deployment of digital extension tools
- Strengthening research–farmer linkages



### Methodology

This policy brief is grounded in findings from the PALM-TREES (Pan-African and Transdisciplinary Lens on the Margins) project conducted in Kwara State, which employed a mixed-methods and transdisciplinary research approach. The study combined physical climate analysis with social science methods to assess climate risks and adaptive capacity. Physical data included satellite imagery (Sentinel-1, Landsat, MODIS), rainfall datasets

(CHIRPS), and drought indices (SPI, SPEI, SMI), which were used to analyse climate variability and its impacts on agricultural systems. The social science component involved surveys, focus group discussions, and participatory engagement with over 900 respondents across more than 500 communities. These methods provided detailed insights into farmers' access to extension services, training, and adaptive knowledge. The study also applied integrated data analysis, linking

climate risks with institutional and socioeconomic factors to understand barriers to adaptation. This approach enabled the identification of key gaps in extension systems and their implications for resilience. This policy brief synthesises these empirical findings and complements them with national and global literature to develop actionable recommendations for strengthening extension systems in Kwara State.

## Policy Context

Agricultural extension systems in Nigeria have historically played a central role in supporting agricultural productivity and rural development. However, over time, these systems have experienced



significant decline due to underfunding, reduced staffing, and institutional fragmentation (Federal Ministry of Agriculture and Rural Development [FMARD], 2016). In Kwara State, extension services are characterized by limited coverage, weak institutional capacity, and inadequate integration of climate adaptation into advisory services. The ratio of extension agents to farmers is low, and logistical constraints—such as lack of transportation and operational resources—limit field engagement. Moreover, existing extension models remain largely input-focused, emphasizing the distribution of seeds, fertilizers, and other inputs rather than knowledge transfer and adaptive learning. This approach is insufficient in the context of climate change, where farmers require continuous access to information, skills, and support to respond to evolving risks.

The integration of climate change into agricultural policy frameworks is still emerging. While national policies recognize the importance of climate-smart agriculture, implementation at the state level remains weak (FAO, 2013). There is limited alignment between research institutions, extension services, and farmers, resulting in a gap between knowledge generation and application. The PALM-TREES findings reinforce these challenges, highlighting the limited reach of extension services and the lack of climate-focused advisory support. To address these gaps, extension systems must be repositioned as dynamic, knowledge-driven platforms for climate adaptation, integrating research, technology, and farmer engagement.

## Key Issues and Evidence

The PALM-TREES study reveals significant gaps in access to agricultural extension services in Kwara State. Approximately 65% of respondents reported never receiving training in key areas, including farming practices, financial management, and disaster risk reduction. This lack of access to training has direct implications for farmers' ability to adapt to climate variability. Without knowledge of climate-smart practices—such as water conservation, crop diversification, and soil management, farmers continue to rely on traditional methods that are increasingly ineffective under changing climatic conditions. The study also

highlights disparities in access to extension services, with more remote and marginalized communities being particularly underserved. Women and vulnerable groups often have less access to extension services, further exacerbating inequalities.

Where extension engagement was strengthened through project interventions, there were notable improvements in awareness and adoption of adaptive practices. This demonstrates the potential impact of effective extension systems in building resilience. However, existing systems are constrained by inadequate staffing, limited funding, and weak institutional support. Extension agents often lack training in climate adaptation,

reducing their ability to provide relevant advisory services. These findings are consistent with broader evidence indicating that effective extension systems are critical for the adoption of climate-smart agriculture in developing countries (FAO, 2013; World Bank, 2021).

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## Policy Implications

The findings suggest that agricultural extension systems must be repositioned as central pillars of climate adaptation policy. First, there is a need to shift from input-based models to knowledge-driven extension systems that emphasize continuous learning and adaptive capacity.

Second, strengthening extension systems will require significant investment in human and institutional capacity. This includes recruitment and training of

extension agents, provision of logistics and resources, and development of climate-focused curricula.

Third, improving linkages between research institutions and extension services is critical. Bridging the gap between knowledge generation and application will ensure that innovations reach farmers in a timely and relevant manner.

Fourth, digital technologies present an opportunity to expand the reach of extension services. Mobile platforms, radio programmes, and

ICT tools can complement traditional extension approaches and improve accessibility.

Fifth, decentralizing extension services and strengthening local-level delivery will enhance responsiveness and ensure that interventions are tailored to local contexts.

Finally, integrating gender and social inclusion into extension systems will ensure that all farmers, including women and vulnerable groups, benefit from advisory services.

## Priority Policy Recommendations

### 1. Reform Extension Service Delivery Model

#### a. Transition from Input-Focused to Knowledge-Driven Systems

Kwara State should shift extension services from a model centred on distributing inputs (seeds, fertilisers) to one focused on knowledge transfer, problem-solving, and adaptive learning. This requires:

- Reframing extension agents as advisors and facilitators of innovation, not just input distributors

- Providing continuous, season-specific advisory services (e.g., planting decisions, pest management, climate adaptation)
- Embedding climate risk information into advisory services

This transformation will enable farmers to respond dynamically to changing climatic conditions rather than relying on static practices.

#### b. Establish Farmer Field Schools (FFS) and Demonstration Plots

The State should scale up Farmer

Field Schools (FFS) as practical learning platforms where farmers learn by doing.

Key actions:

- Establish demonstration plots in each LGA showcasing climate-smart practices
- Facilitate group-based learning sessions led by extension agents
- Use local lead farmers as peer educators

#### c. Promote Participatory Learning Approaches

Extension services should adopt participatory methods, where farmers actively contribute to learning and problem-solving.

## 2. Strengthen Human and Institutional Capacity

### a. Recruit and Train Additional Extension Agents

Kwara State should address the low extension agent-to-farmer ratio by:

- Recruiting new extension personnel, especially at LGA and ward levels
- Prioritising recruitment from local communities for better contextual understanding

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#### b. Provide Logistics (Transport, ICT Tools)

Extension effectiveness is often constrained by lack of mobility and tools. The State should:

- Provide motorcycles or transport allowances for field visits
- Equip agents with smartphones or tablets
- Supply field kits for demonstrations

#### 3. Integrate Climate Adaptation into Extension Systems

##### a. Develop Climate-Smart Agriculture Training Modules

The State should develop standardized training curricula on climate-smart agriculture (CSA) covering:

- Drought and flood adaptation practices
- Soil and water management
- Climate risk interpretation

These modules should be used consistently across all extension programmes.

##### b. Provide Continuous Capacity Building for Extension Staff

Given the evolving nature of climate risks, extension agents require continuous professional development.

This includes:

- Regular refresher training
- Exposure visits and learning exchanges
- Collaboration with research institutions

#### 4. Leverage Digital Extension Platforms

##### a. Use Mobile Advisory Services and SMS Alerts

Digital tools can significantly expand extension reach.

The State should:

- Develop SMS-based advisory systems delivering timely farming tips
- Use mobile apps for interactive farmer engagement
- Provide voice-based services for low-literacy populations

##### b. Expand Radio-Based Agricultural Programmes

Radio remains one of the most effective communication channels in rural areas. The State should:

- Broadcast regular agricultural programmes in local languages
- Include weather forecasts and climate advisories

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