

Digital Agricultural Extension Services: Policy Imperatives for Transforming Rural Farmer Advisory Systems in Nigeria

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PILAF BROWN BAG SERIES

Innovation Lab for Policy Leadership in Agriculture & Food Security,
University of Ibadan

Presented by – DAMILOLA OLAJUBUTU

Founder & Executive Director,
Rural Nuture Initiative (RNI)

www.rnionline.org



The poster features a hand holding a tablet displaying a digital agricultural extension service interface. The text on the poster includes: 'PILAF INNOVATION LAB FOR POLICY LEADERSHIP IN AGRICULTURE AND FOOD SECURITY UNIVERSITY OF IBADAN', 'BROWN BAG SERIES 15th Edition', 'Thursday 28th August, 2025 2:00pm 3:30pm WAT', 'Register via https://bit.ly/pilaf-bbs15', 'Topic Digital Agricultural Extension Services: Policy Imperative for Transforming Rural Farmer Advisory Systems in Nigeria.', 'Speaker Damilola Olajubutu', 'Consortium Partners CPEEL', and 'For enquiries: +234 802 757 3322, info@pilafui.org'. The speaker's photo shows a woman with braided hair wearing a pink top.

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THE FARMER'S VOICE

"I have 2 hectares of cassava but with these changing rains and unpredictable weather, I don't know when best to plant anymore. The extension agent came once last year, but he had no answers for climate change either."

— Nigerian Smallholder Farmer

AGRICULTURAL CRISIS BY THE NUMBERS



Food Security Emergency

33M

Nigerians face severe food crisis (2025)

40.53%

Food inflation rate

33.95%

Annual inflation (28-year high)



The Extension Gap

1:10,000

Farmer-to-extension agent ratio

₦3.5T

Lost annually to poor advisory services

<20,000

Extension workers serving millions

The Fundamental Disconnect: Agriculture contributes 23% to GDP but receives only 1.7% of national budget

INTERACTIVE POLL #1



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WHY TRADITIONAL EXTENSION FAILS

Nigeria's agricultural diversity spans **6 distinct agroecological zones**, yet our extension system operates with critical failures:

Geographic & Systemic Challenges

- **Geographic barriers** limiting agent mobility across vast rural areas
- **One-size-fits-all approaches** ignoring local conditions and crop varieties
- **Poor linkages** between research institutions, input suppliers, and farming communities
- **Severe underfunding** of advisory services (1.7% of national budget)

Capacity & Knowledge Gaps

- **Over 80% of farmers** are smallholders with limited literacy
- **Advisory workers lack skills** in digital innovation & climate-smart practices
- **Youth migration** reducing knowledge transfer and labor availability

The Root Problem: Complete misalignment between 21st-century agricultural challenges and 20th-century advisory systems

THE OPPORTUNITY

Vision 2030

"To make Nigeria one of the top three (3) most food-secure countries in Africa and top 20 largest exporter of standard agricultural produce by 2030 through the use and application of digital technologies and innovations"

Untapped Potential

\$40B

Annual export potential

\$425M

Cocoa beans exports alone

\$170M

Potential in sesame seeds

200M+

People to feed with 40%
unused arable land

DIGITAL EXTENSION TOOLS LANDSCAPE



Current Digital Tools

USSD & SMS

Basic phone accessibility

Interactive Voice Response (IVR)

Local language support

Smartphone Apps

Advanced features for literate farmers

WhatsApp/YouTube

Most preferred platforms

Radio integration

Traditional + digital media



Emerging Technologies

AI Chatbots

Instant personalized recommendations

Blockchain platforms

Supply chain traceability solutions

QR codes

Product information access

SUCCESS STORIES & CURRENT INITIATIVES



Latest Government Initiative

National Electronic Extension Platform (NEEP)

Launched in early 2025, NEEP delivers interactive, multilingual access (English, Pidgin, Yoruba, Hausa, Igbo), enabling farmers to ask questions and receive timely responses—bridging the 1:25,000 extension agent gap.



Private Sector Success Examples

Hello Tractor

Digital platform connecting farmers with tractor owners for mechanization services

Babban Gona

Digital membership organization serving **over 200,000 smallholder farmers**

Farmcrowdy

Digital platform enabling urban-rural investment crowdfunding

Thrive Agric

Value chain financing platform

SUCCESS STORIES & CURRENT INITIATIVES



Proven Pilot Programs

RiceAdvice application

Successfully tested in Jigawa State for rice production optimization

E-voucher systems (GESS)

Digital input distribution reducing transaction costs

NiMet-MTN partnership

Nigerian Meteorological Agency collaborating with MTN Nigeria for mobile weather services

TECHNOLOGY ADOPTION BARRIERS

Infrastructure Constraints

- Limited rural internet connectivity
- Inconsistent electricity supply
- High smartphone costs vs farmer income
- Data costs consuming household budgets

Social & Cultural Barriers

- Digital literacy gaps among farmers
- Gender disparities in technology access
- Language limitations (services in English)
- Trust issues with digital services

Technical & Institutional

- Poor UI design for low-literacy users
- Lack of offline functionality
- Limited integration between services

Policy & Regulatory

- Data privacy concerns
- Regulatory uncertainty
- Lack of quality standards

AGROECOLOGICAL DIVERSITY CHALLENGE



Six Distinct Zones Requiring Localized Solutions

1. Sudan Savanna

Northern dry farming - millet, sorghum, livestock

2. Sahel Savanna

Semi-arid livestock integration - pastoralism

3. Northern Guinea Savanna

Mixed crop-livestock - maize, rice, cotton

4. Southern Guinea Savanna

Root crops & cereals - yam, maize, rice

5. Derived Savanna

Intensive crop - cassava, plantain, cocoa

6. Forest Zone

Tree crops - cocoa, oil palm, plantain



Zone-Specific Digital Content Strategy

Localized Advisory Content

For each zone's specific crops and conditions

Climate Adaptation Modules

Addressing weather pattern changes

Multi-language Platforms

Hausa, Yoruba, Igbo, English

Cultural Integration

Respecting traditional knowledge

Implementation Approach: One-size-fits-all digital extension will fail - we need zone-specific solutions that respect local diversity

INTERACTIVE POLL #2



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THEORETICAL FOUNDATION: HOW POLICY CHANGE REALLY HAPPENS

Kingdon's Multiple Streams Framework (MSF) explains how policy change occurs when three independent streams converge to create policy window that policy entrepreneurs (advocates) can leverage:



PROBLEM STREAM

- **Widespread recognition** of issues requiring government attention
- **Focusing events** (crises, disasters, dramatic changes) that capture attention
- **Indicators** (statistics, studies) that demonstrate problem severity
- **Problem definition** that creates urgency for government action



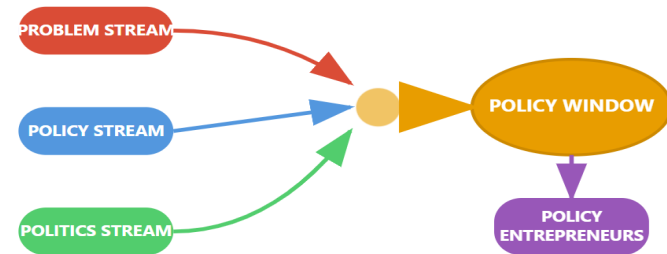
POLITICS STREAM

- **Political climate** favorable to particular types of change
- **National mood**, administrative turnover, interest group campaigns
- **Consensus building** among key political actors



POLICY STREAM

- **Development of policy proposals** and alternative solutions
- **Policy communities** of specialists, researchers, and advocates
- **Technical feasibility** and value acceptability of solutions
- **Policy entrepreneurs** who champion specific alternatives



MSF Application to Nigeria's Digital Agriculture: This framework explains why Nigeria's digital agricultural extension represents a rare convergence moment requiring immediate entrepreneurial action

NIGERIA'S POLICY FOUNDATION



Comprehensive Policy Evolution

Agricultural Transformation Agenda (ATA)

2011-2015

Agriculture Promotion Policy (APP)

2016-2020

Economic Recovery and Growth Plan (ERGP)

2017-2020

National Digital Economy Policy (NDEPS)

2020-2030

National Agricultural Extension Policy (NAEP)

2023

National Agricultural Technology Policy (NATIP)

2022-2027

Current Challenge: Agriculture contributes **23% to GDP** but receives only **1.7% of national budget**

Policy Readiness: We have the frameworks - we need implementation activation and proper resource allocation

THE POLICY WINDOW: Why Now is the Critical Moment



PROBLEM STREAM: Crisis Recognition

- **33 million Nigerians** facing food insecurity - impossible to ignore
- **₦3.5 trillion annual losses** creating economic urgency
- **Climate change** disrupting traditional farming systems
- **Extension system failure** widely acknowledged across sectors



POLICY STREAM: Solutions Ready

- **NITDA Digital Agriculture Strategy** comprehensively developed
- **Proven technology platforms** (Babban Gona, Hello Tractor, NEEP) demonstrating feasibility
- **Three-pillar framework** providing clear implementation pathway

PROBLEM STREAM

POLICY STREAM

POLITICS STREAM

POLICY WINDOW

POLICY
ENTREPRENEURS



POLITICS STREAM: Alignment Achieved

- **Gates Foundation DAES** partnership showing international confidence
- **Multi-stakeholder consensus** through NIFAAS working groups
- **Continental leadership opportunity** politically attractive

NEEP Evidence: The National Electronic Extension Platform launched in early 2025 demonstrates the policy window is already activating - government commitment is moving from strategy to implementation.

MSF ANALYSIS: THE COST OF INACTION

Problem Stream Evolution

- **Crisis deepening daily:** 33 million food insecure → potentially 50+ million without action
- **Economic losses compounding:** N3.5 trillion annually becomes permanent structural damage
- **Climate impacts accelerating:** Window for adaptation narrows with each farming season

Policy Stream Risk

- **Solution readiness deteriorates:** Technology platforms may pivot to other markets
- **Expertise migration:** Key technical professionals may relocate
- **Framework obsolescence:** Digital strategies become outdated without implementation

Politics Stream Vulnerability

- **Stakeholder alignment fragile:** Current consensus requires maintenance through action
- **Political attention shifting:** New crises may crowd out agricultural priorities
- **International partner patience:** Development partners redirect resources

NITDA'S EIGHT-PILLAR STRATEGY



NITDA's Digital Agriculture Strategy (2020-2030)

1. Digital literacy programs

For farmers and rural communities

2. AgTech innovation hubs

Technology development and testing

3. Digital infrastructure

Prioritizing rural areas

4. Data collection & analytics

Evidence-based decisions

5. Mobile technology integration

For advisory services

6. Public-private partnerships

Facilitation and coordination

7. Capacity building

Extension agents in digital tools

8. Youth engagement

Digital agriculture entrepreneurship

THE THREE-PILLAR SOLUTION



PILLAR 1: Digital Infrastructure & Access

"Connecting Every Farmer to the Digital Economy"

National Broadband Expansion

Prioritizing rural areas and farming communities

5G Network Deployment

For IoT and precision agriculture

Solar-powered Digital Hubs

Charging stations and internet access

Satellite Internet Partnerships

For remote areas beyond terrestrial networks



PILLAR 2: Content Development & Capacity

"Localized Knowledge, Global Standards"

Zone-Specific Content

Advisory content for all six agroecological zones

Multi-language Platforms

Hausa, Yoruba, Igbo, English

Gender-responsive Content

Specifically designed for women farmers

Youth-oriented Programs

Entrepreneurship training and career pathways

THE THREE-PILLAR SOLUTION



PILLAR 3: Sustainability & Scale

"Building Systems That Last"

Public-Private Partnerships

Sustainable service delivery models

Data Monetization

Agricultural market intelligence services

Freemium Service Models

Basic access + premium revenue streams

Development Partner Coordination

Catalytic funding and technical assistance

INNOVATIVE FINANCING MECHANISMS



Beyond Traditional Government Funding

Impact Investment Partnerships

Development finance institutions providing patient capital for rural digital infrastructure

Value Chain Financing

Advisory services linked to market access - farmers pay through improved sales

Insurance Integration

Premium reductions for farmers using digital advisory services

Data Monetization

Agricultural market intelligence services for commodity traders and processors

Freemium Models

Basic advisory access free, premium services for subscription fees

Blended Finance

Combining public and private investment mechanisms

Strategic Emphasis: Success requires moving beyond traditional government funding to innovative financing models that create sustainable, scalable solutions while ensuring universal basic access

GENDER & YOUTH FOCUS



Gender-Responsive Digital Extension

Addressing Gender Disparities

Gender disparities in technology access specifically addressed through targeted programs

Women-Specific Content

Delivery channels recognizing different information needs of women farmers

Financial Inclusion

Digital services designed specifically for women farmers

Leadership Development

Programs for women in agricultural technology leadership



Youth Engagement Strategy

AgTech Entrepreneurial Training

Startup development and innovation programs

Digital Agriculture Careers

Pathway development and skills training

Innovation Hubs

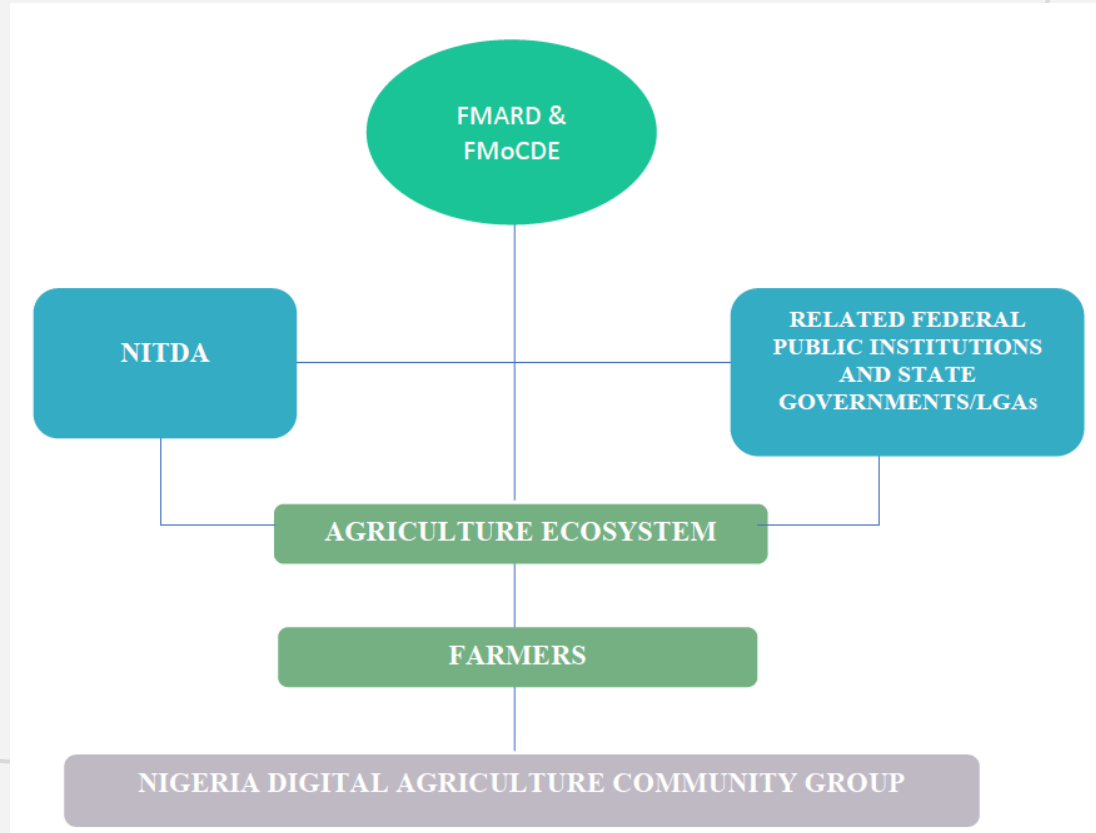
Youth-led agricultural technology solutions

Migration Reversal

Attractive agricultural technology opportunities

Youth as Change Agents: Digital natives who can bridge technology gaps, drive innovation, connect markets, and facilitate farmer-to-farmer learning through social media

GOVERNANCE ARCHITECTURE



Source: NITDA Draft Nigeria Digital Agriculture Strategy 2020

- FMARD (Federal Ministry of Agriculture and Rural Development) *now FMAFS (Federal Ministry of Agriculture and Food Security - 2023)*
- FMoCDE (Federal Ministry of Communications and Digital Economy)
- NITDA (National Information Technology Development Agency)

GOVERNANCE ARCHITECTURE



Leadership Coordination Model

Strategic Level

FMARD & FMoCDE: Joint oversight and policy direction

Inter-ministerial coordination: Whole-of-government approach

Implementation Level

NITDA: Lead technical agency for digital agriculture coordination

State Governments/LGAs: Local implementation and adaptation

Ecosystem Level

Private sector: Technology providers and financial institutions

Farmers: End-user communities at center of decisions

Development partners: Catalytic funding and technical support



Operational Principles

Federal Leadership + State Implementation

Policy consistency + local adaptation

Public-Private Partnership Model

Government framework + private innovation

Farmer-Centered Approach

Communities drive all decisions

Community-Driven Feedback

Regular stakeholder engagement

Success Formula:

3 Pillars × Coordinated Leadership × Farmer-Centered Design = Transformation

IMPLEMENTATION ROADMAP

PHASE 1 (2025-2026): Policy Foundation

"Laying the Groundwork"

- **Approve & fund** National Digital Agriculture Strategy
- **Establish multi-stakeholder governance** structure
- **Develop regulatory framework** for digital extension
- **Launch pilots** in priority LGAs (per zone)
- **Begin capacity building** for digital agriculture champions

PHASE 2 (2026-2028): Scaling & Integration

"Building Momentum"

- **Scale to 50%** of Nigeria's 774 LGAs
- **Register 5 million** smallholder farmers
- **Establish six** agroecological zone digital centers
- **Launch youth entrepreneurship programs**
- **Integrate with existing** value chain systems

PHASE 3 (2028-2030): Sustainability & Leadership

"Achieving Transformation"

- **Comprehensive digital advisory** across all zones
- **Climate-resilient practices** adopted by majority
- **Full financial sustainability** achieved
- **Continental leadership** in digital agriculture established

CURRENT POLICY MOMENTUM



Strategic Initiatives Already in Motion

NITDA Draft Digital Agriculture Strategy

Comprehensive framework ready for implementation

National Electronic Extension Platform (NEEP)

Launched early 2025, demonstrating government commitment

National Agricultural Extension Policy (NAEP)

2023 framework providing modern extension guidelines

Multiple Complementary Policies

From ATA through NATIP creating supportive environment



Stakeholder Alignment

Gates Foundation DAES

December 2024 stakeholder meeting validated transformative PPP solution

Digital Agriculture Mapping

Comprehensive research publication underway

NIFAAS Six Working Groups

Active coordination across all key areas



Implementation Readiness Assessment

Regulatory Framework

✓ READY

Stakeholder Alignment

✓ READY

Technology Solutions

✓ READY

Financing Mechanisms

✓ READY

- NIFAAS - Nigerian Forum for Agricultural Advisory Services

CALL TO ACTION

Kingdon's Definition: Policy entrepreneurs are advocates willing to invest their resources—time, energy, reputation, and sometimes money—in the hope of a future return in the form of policies they favor

The Fundamental Question

Not whether we can afford to invest in digital agricultural transformation – but whether we can afford to waste this rare policy window opportunity

THREE STRATEGIC ACTIONS

1

PROBLEM STREAM MAINTENANCE

Commit to: Keep the agricultural extension crisis visible in policy discourse – prevent problem fatigue

2

SOLUTION STREAM ACTIVATION

Commit to: Champion the comprehensive digital agriculture solutions (three-pillar framework and multi-stakeholder coordination) as ready-made policy solutions

3

POLITICS STREAM COORDINATION

Commit to: Maintain and strengthen current stakeholder alignment

DISCUSSION & QUESTIONS





CONTACT

damilola.olajubutu@rnionline.org
info@rnionline.org

WhatsApp: +234 808 777 6366
www.rnionline.org



Rural Nurture Initiative
Damilola Olajubutu

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