Revitalizing Agricultural Extension in Africa

Current Realities, Challenges, and the Path Forward

Presenter

Stella Kabiri (PhD)

Lead, Regenerative Agriculture

Sasakawa Africa Association

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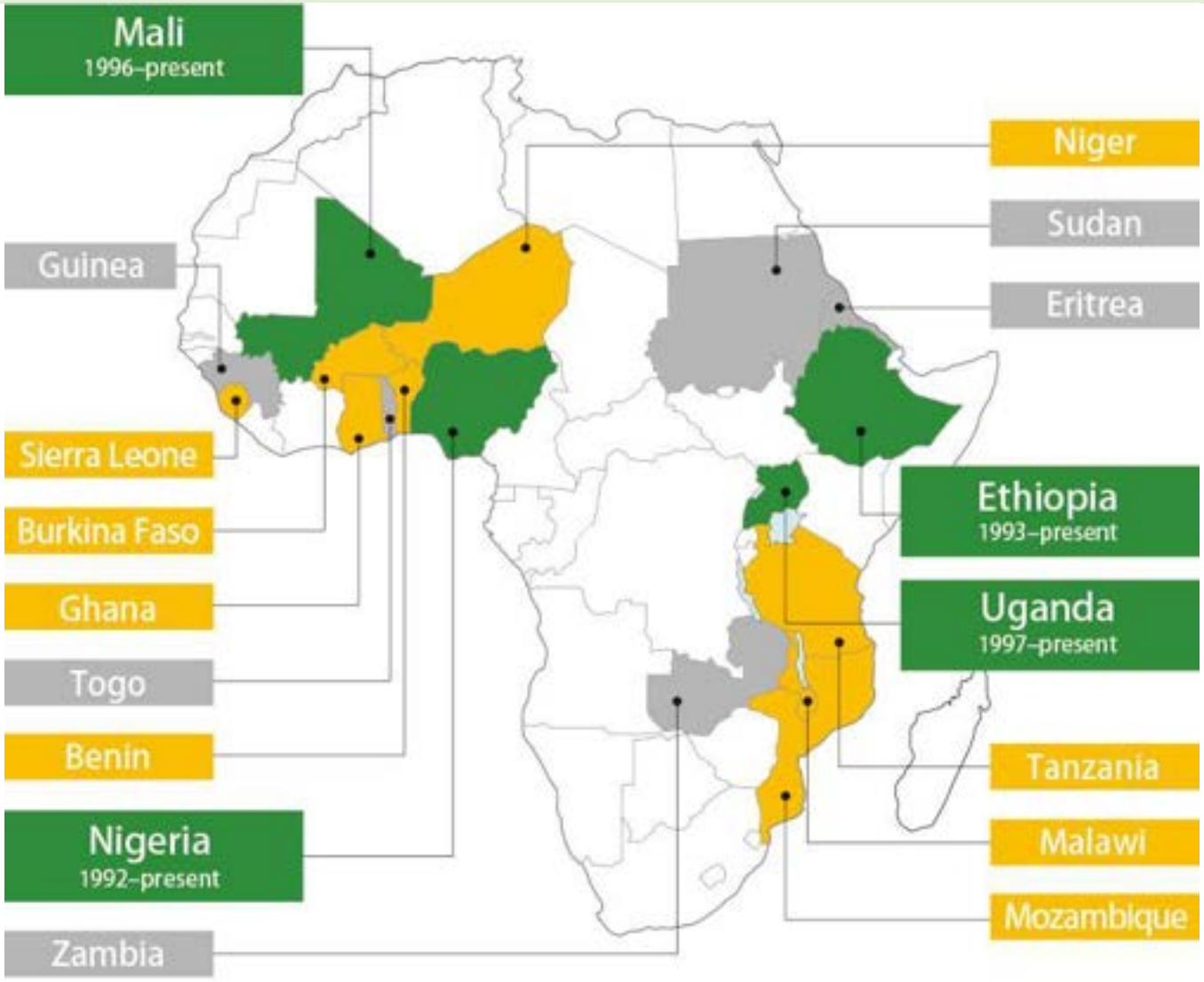
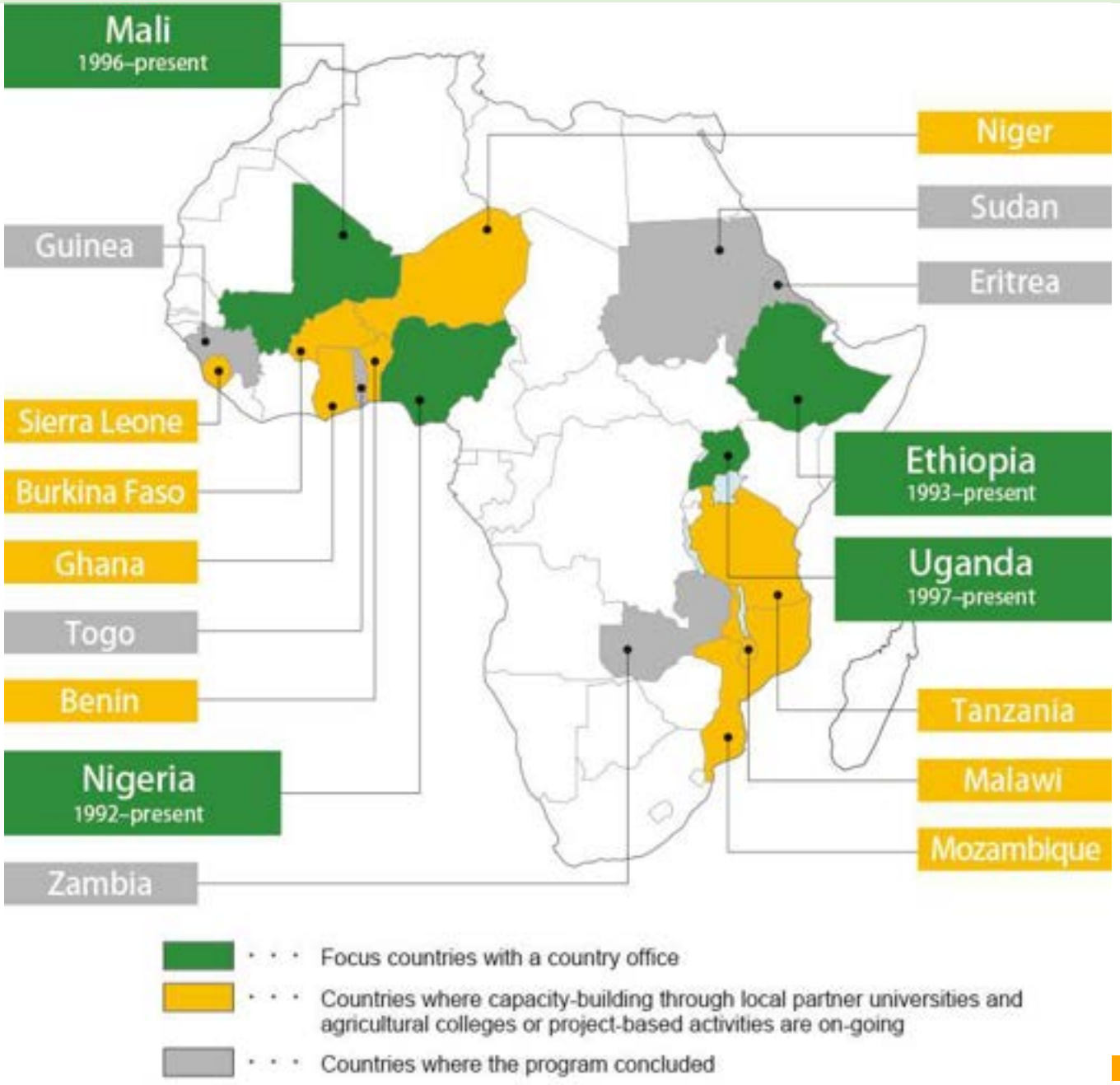
33 million smallholder farmers in Africa

Covering 80% of the Agricultural Landscape

Extension Agent to Farmer Ratio in Africa



Extension Agent to Farmer Ratio in Africa



Africa	1:2000	1:10,000
FA0 Recommended	1:500	
Ethiopia	1:230	1:250
Uganda	1:1800	
Nigeria	1:10,000	
Mali	1:1,500	1:10,000

Contextual factors in Africa

Factor	Impact on Cost & Effectiveness
Low Extension Agent Ratios	Most African countries have <1 agent per 1,000 farmers, increasing workload and reducing farmer-agent contact frequency.
Digital Divide	High mobile phone ownership (80%+), but limited smartphone access and internet penetration in rural areas.
Language & Literacy	Need for voice-based or local-language tools for broad reach.
Infrastructure Gaps	Travel is expensive for agents; weak roads make last-mile delivery costly.
Farmer Trust	Farmers often trust face-to-face interactions more than tech.
Donor & Government Support	Many digital/AI tools are piloted with external funding—costs may not reflect long-term sustainability.

Current

Realities

60%

of Africa’s population is dependent on agriculture

20%

Extension coverage in most countries

Pluralistic systems

Public, NGO, private sector, digital actors

Limited

resourcing, training, and integration with research systems

Key Challenges

- **Institutional Weaknesses**
  - Fragmentation and poor coordination
- **Capacity Gaps**
  - Outdated curricula, limited training infrastructure
- **Youth Engagement**
  - Lack of tailored approaches for young farmers
- **Climate Risks**
  - Inadequate support for climate-smart solutions
- **Digital Divide**
  - Uneven adoption of ICT-based extension

SAA's Practical Innovations

SAA-Mali

SAA-Uganda

SAA's Practical Innovations

SAA-Ethiopia

SAA-Mali

Farmer Learning Platforms (FLPs).

Field-based capacity building

SAA-Nigeria

SAA-Uganda

SAA's Practical Innovations

Women & Youth Hubs.

Inclusive models for the enterprise and advisory

SAA's Practical Innovations

Mechanization & Soil Health.

Extension of regenerative practices

SAA's Practical Innovations

Digital Advisory Tools

App-based knowledge delivery

Extension Delivery Models

Extension Delivery Models

Extension Agent (EA)

Traditional face-to-face advisory services, often through field visits, demonstrations, group training.

Digital Tools

Phone-based apps, SMS, radio, or video platforms offering standard advice to farmers.

AI-Driven Extension

AI tools (chatbots, decision support systems) providing personalized, real-time recommendations via mobile or web interfaces.

Compare Key Cost Elements

Cost Element	Extension Agent	Digital Tools	AI-Driven Extension
Setup/Development	Low (staff recruitment, basic training)	Medium (platform design, content digitization)	High (AI model development, training data, interface)
Operational Cost	High (salaries, travel, training materials)	Medium (server, SMS costs, user support)	Medium-High (cloud compute, model updates)
Cost per Farmer	High (limited reach, often 200–500 farmers/agent)	Low (can reach thousands)	Very low (scalable to millions with minimal marginal cost)
Customization Level	High (contextual advice)	Low (generic messages)	High (personalized, real-time)
Monitoring Cost	Medium (manual reporting)	Medium (usage tracking)	Low (automated feedback, analytics)

Cost per farmer

Based on data from studies in Uganda, Ethiopia, Nigeria, and Kenya

	Extension Agent	Digital Tools	AI-Driven Extension
Annual Cost per Unit	~$10,000–$15,000/agent	~$30,000–$60,000/platform	~$80,000–$150,000 (initial); <$30,000/yr
Farmers Reached/Year	300–500	10,000–50,000	100,000–1,000,000+
Cost per Farmer/Year	**$20–$50**	**$1–$5**	**<$1 (after scale)**
Languages Served	1–2	3–10 (via SMS)	10+ (auto-translation possible)
Personalization Level	Very High	Low	High (weather, soil, crop, etc.)
Adoption Rate (avg.)	40–60% (trusted)	15–30%	25–40%
Trust Level	High	Medium	Low–Medium
Scaling Potential	Low	Medium–High	Very High

Examples in Africa

Model	Example in Africa	Note
Extension Agent	**Uganda NAADS, Ethiopia DA system**	**High cost, effective when supervised**
Digital Tools	**M-Omulimisa (Uganda), Awaaz.De (Nigeria), Shamba Shape Up (TV/radio Kenya)**	**Broad reach, mixed adoption**
AI Extension	**Digital Green AI Chatbot (Ethiopia), PlantVillage Nuru (Kenya, Uganda), Virtual Agronomist (Kenya, Uganda)**	**Personalized, uses image recognition, voice**

Compare Key Indicators

Criteria	Extension Agent	Digital Tool	AI-Driven Extension
Human Touch / Trust	High	Medium	Low (unless hybridized)
Scalability	Low	High	Very High
Timeliness of Advice	Medium (delayed)	High (scheduled)	Very High (real-time)
Context Sensitivity	High (local knowledge)	Low	Medium–High (depends on data)
Cost Effectiveness	Low–Medium	Medium–High	High (after scale-up)

The Path Forward

Considerations

- **For remote areas with poor connectivity,** traditional agents are still essential.
- **For areas with basic mobile access,** digital tools (SMS) are highly cost-effective.
- **For countries with investment in digital infrastructure,** AI extension tools offer massive reach with the lowest marginal cost.

Recommendation

- **Invest in hybrid models (agents + digital).**
- **Build digital public goods (platforms, voice bots).**
- **Scale AI tools, but ensure data governance, local language support, and farmer trust mechanisms.**

Policy reform

- **Policy Reform & Institutional Strengthening**
- **Scaling Digital and Hybrid Extension Models**
- **Linking Extension to Input-Output Markets**
- **Climate-Responsive Advisory Systems**
- **Investing in Human Capital & Knowledge Platforms**

Role of Partnerships

Regional initiatives

- Comprehensive Africa Agriculture Development Programme (CAADP)
- Coalition for Strengthening Extension and Advisory Services C4SEAS

Collaboration with research, the private sector, and farmer organizations

Role of donors, governments, and academic institutions

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