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Agroforestry Practices and Optimization Pathways: A Comparative Mixed-methods Study in the Savannas of Korhogo (Côte d'Ivoire) and Plateau de Batéké (DRC)

Introduction and problem statement

- ✓ African savannas face a dual imperative: increasing agricultural yields while restoring degraded ecosystems.
- ✓ Agroforestry – the integration of trees with crops – is a leading Nature-based Solution (NbS) to balance productivity and sustainability. Yet, research on this NbS remains fragmented, and comparative studies explaining why agroforestry succeeds or fails across contexts are scarce.
- ✓ In Korhogo (Côte d'Ivoire) and Plateau de Batéké (DRC), agroforestry programs were institutionalized in the 1980s, with similar models focusing on fast-growing, nitrogen-fixing species.
- ✓ Today, the two systems evolved differently. What drove this divergence, and what lessons does it hold for the future of sustainable agriculture in Africa?

Objectives

To compare agroforestry practices in Korhogo (Côte d'Ivoire) and Plateau de Batéké (DRC) for optimization pathways.

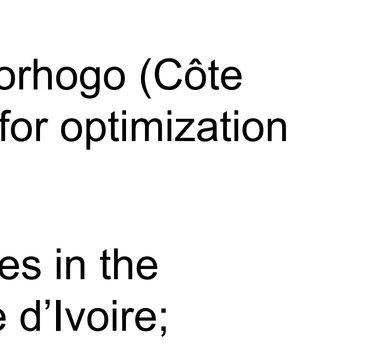
1. 🌱 Characterize agroforestry practices in the savannas of Korhogo, northern Côte d'Ivoire;
2. 🔍 Analyze similarities and differences in agroforestry practices between Korhogo and the Plateau de Batéké;
3. ⚙️ Examine the specific and shared agroforestry-related challenges in the two systems.

Methods

A **comparative mixed-methods approach** was used:

<u>Empirical fieldwork in Korhogo, Côte d'Ivoire:</u>

- ✓ Surveys (100 farmers)
- ✓ Focus group discussions (5)
- ✓ On-farm tree inventories (300 quadrats)
- ✓ Key informant interviews (16)



Data collection sites
(Software: GPS Visualizer)

<u>Plateau de Batéké, DRC:</u>

A systematic literature review (66 documents from 1965-2025), due to security constraints.

Results

Dimension	Korhogo	Plateau de Batéké
🏷️ **System Driver & Types**	Market-driven Fruit & Nut System	Donor-driven Fuelwood & Soil System
🌳 **Dominant Species**	Cashew (*Anacardium occidentale*); 52.7% in abundance	Acacia (*Acacia auriculiformis*); cited in > 80% of studies
🔄 **Soil Fertility Management**	Chemical inputs; 100% of farmers use NPK (Nitrogen-Phosphorus-Potassium) & Urea fertilisers	Ecological practices, cited in 93% of studies (fallow, compost)
💰 **Economic Rational**	Short-term Profit; 76% of farmers satisfied with cashew return on investment (ROI)	Lack of Alternatives, 90% adoption drop due to long ROI

- ✓ Key agroforestry challenges: in Plateau de Batéké, land tenure dualism; in Korhogo, 98% of farmers perceive agroforestry as a threat to food security.
- ✓ **Core insight:** Agroforestry is an economic calculation, not an environmental preference. Farmers lack a "self-evident" agroforestry model that provides competitive short-term benefits.

Conclusion and recommendations

In Korhogo, lack of local proof-of-concept and easy fertilizer access breed skepticism toward agroforestry. In Batéké, high upfront costs, delayed returns, and uncertain sustainability drive its decline. We recommend:

- ✓ Co-design systems with early revenue (short + long term species), and the prioritization of native species.
- ✓ Provide phased input support and establish "Living Lab" demonstration plots to build local proof-of-concept.
- ✓ Secure land tenure, fund long-term experiments, and shift subsidies from chemicals to agroforestry inputs.

<u>Stakeholders:</u> National Ministries of Agriculture & Environment, National Land Administration Agencies (Côte d'Ivoire & DRC), non-governmental organisations (NGOs) and development agencies, research institutions, private sector, and farmer organisations.

Partner institutions:

UNIVERSITY OF NAIROBI

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