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Country of origin: Ghana

**Master's degree in
Climate Change, Biodiversity, Policy
and Practice
Université Félix Houphouët-Boigny**



A Comparative Financial Analysis of Crop-livestock Integrated Systems (CLI) Versus Traditional Cropping Farming Systems (TCFS) in Kumbungu, Ghana

Introduction and problem statement

Smallholders in Kumbungu District face declining soil fertility and frequent climate shocks. Many rely on Traditional Cropping and Farming Systems (TCFS), in which depleted soils and low yields reduce farm income. Crop-Livestock Integration (CLI) combines crops with livestock. Farmers use manure to improve soil fertility and feed crop residues to animals. This simple nutrient recycling strengthens yields, stabilizes income, and improves resilience.

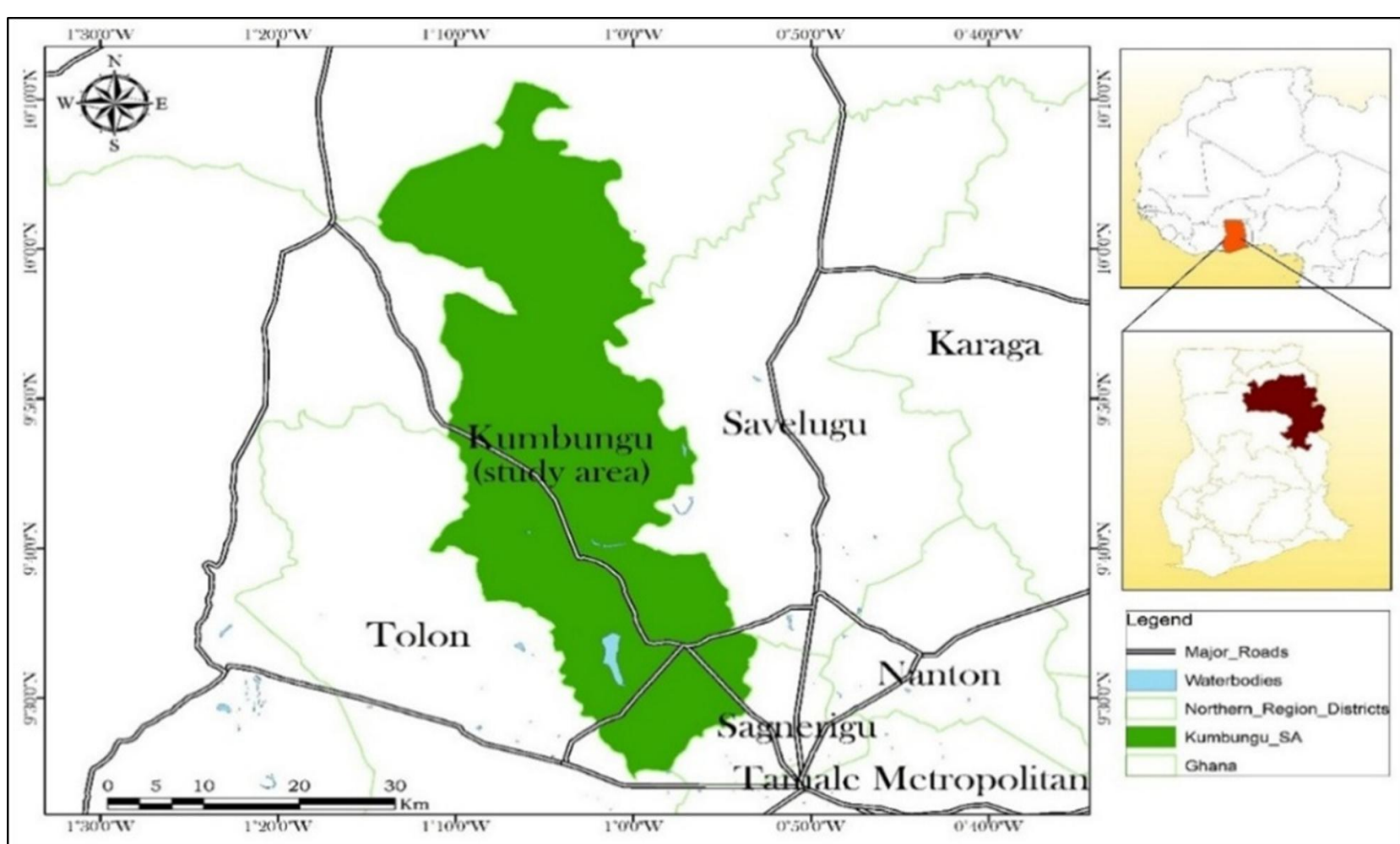


Figure 1: Location of Kumbungu District in Northern Ghana. Credit: Author (QGIS, 2025).

Objectives

1. To conduct a comparative financial profitability analysis of CLI systems and TCFS in Kumbungu, Ghana.
2. To assess the technical efficiency of CLI vs TCFS
3. To determine the factors influencing the adoption of CLI and TCFS.

Methods

A household survey was conducted with 480 farmers across Kumbungu District. The research team collected information on crop yields, livestock, labor use, soil practices, farm income, and access to extension services. The study compared households practicing CLI and TCFS with regards to resource management, maintenance of soil fertility, and their coping with climate risks.

Partner institutions:



Results

- CLI farmers earned more than TCFS farmers (see Figure 2).
- CLI farms produced more per acre due to manure use and better soil fertility.
- CLI households showed more stable returns and greater resilience to climate shocks.

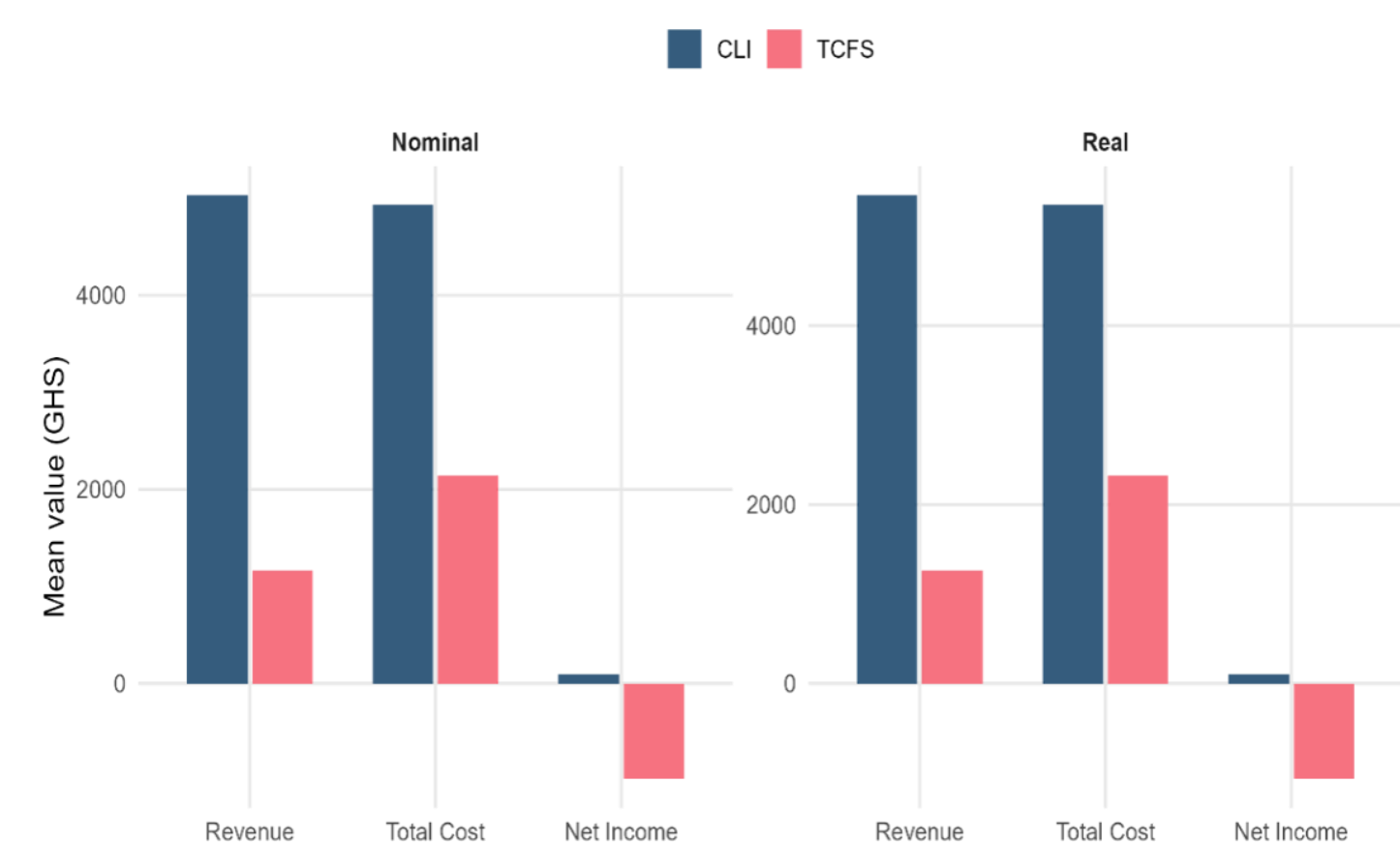


Figure 2. Average farm revenue and cost under CLI and TCFS in Kumbungu District.

- Farmers receiving extension advice were more likely to adopt CLI.
- High labor needs, limited knowledge, and poor access to credit lead to slow adoption, especially among women and youth.

Conclusion and recommendations

Compared to traditional systems in Kumbungu District, CLI improves soil fertility, strengthens resilience, and increases household income, yet adoption remains constrained.

Policy recommendations:

- ✓ Strengthen extension support and farmer training on CLI practices.
- ✓ Provide starter resources and targeted support for women and youth.
- ✓ Improve access to credit, micro-insurance, and local savings groups.
- ✓ Integrate CLI into district planning as a core climate resilience strategy.

Funded by:

