Introduction

Securing food production remains a critical challenge. In many world regions, environmental change, including land use change, constrains food production, especially in contexts characterized by competing land demands, and high population pressure.

Our understanding of how changing land use shapes the resilience of food production systems (FPSs) in smallholder family farming contexts is still limited. As producers of the bulk of our food, smallholder farmers have a huge role to play in curtailing the sustainability challenges of our time.

United Nations
Decade of
**FAMILY
FARMING**
2019-2028

Objective 1

Identify and quantify social-ecological dynamics of agricultural land use.

Objective 2

Assess the resilience of FPSs in SWN.

Objective 3

Scenario modelling of agricultural land change effects on the resilience of FPSs.

Objective 4

Co-produce knowledge about desirable land use futures with stakeholders.

Project description

Land use constrains the future of food production in the face of climate change. It is a major driver of processes degrading both land and marine-based natural resources. The production of food is affected as agroecosystem functions and services diminish when agricultural lands degrade. Hence, threatening the resilience of FPSs. How agricultural land change builds or undermines food production and the resilience of FPSs is still poorly understood.

LucFRes integrates agricultural land use change analysis from remote sensing and machine learning with stakeholders' perceptions of resilience and desirable land use futures. Using Southwest Nigeria as a test case, an empirical basis for modelling FPSs under changing land use and policy conditions will be provided. Aimed at enhancing their resilience, LucFres contributes to understanding how land use and change impact FPSs resilience.

2 ZERO HUNGER

15 LIFE ON LAND

Southwest Nigeria, Africa

Southwest Nigeria (SWN) is predominantly a smallholder farming region and urbanizing. The region is important for food crops (e.g., cassava, maize, yam) and cash crops (e.g., cocoa, cashew, oil palm) due to its varied agroecology. With the coexistence of different farming systems,

This context makes SWN suitable for examining how agricultural land change impacts the resilience of farming systems in smallholder contexts. Nigeria ranks first in Africa and second globally for malnutrition, especially among children. Hence the urgent need for land and food sustainability.
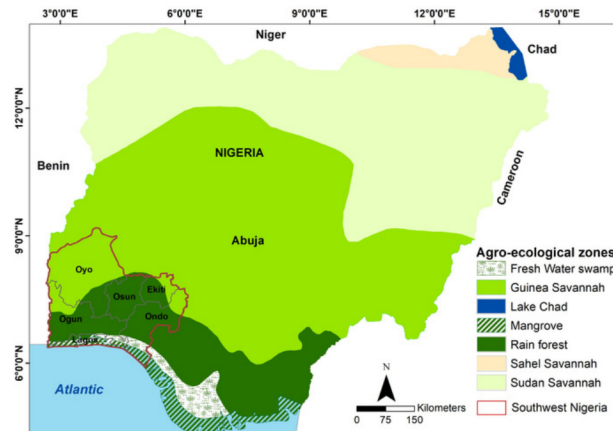
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Land use change and the Resilience of Food Production Systems (LucFRes)