

Synergies Between Agricultural Adaptation and Mitigation to Climate Change: Insights from Africa



Insights from Africa

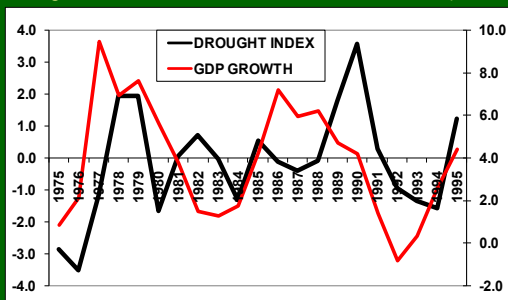


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BACKGROUND AND OBJECTIVES

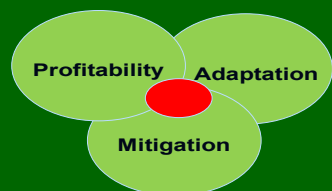
Livelihoods in Sub-Saharan Africa are closely linked to agriculture. Outcomes in agriculture are closely linked to climate. But climate is becoming more variable as climate change is proceeding in the region. African agriculture is most vulnerable to climate change as impacts interact with many other risks and challenges that farmers face (extreme poverty, disease, weak governance, political instability) and due to poor rural infrastructure, as reflected in the high dependence on rainfed agriculture.

Drought and GDP Growth are Linked in Africa (Ex: Kenya)



Source: IFPRI

It is therefore important to identify agricultural practices that increase agricultural incomes and help farmers adapt to climate change. If adaptation options also support agricultural mitigation then additional financial support and environmental co-benefits can be obtained.



The objective of this research project is to identify agricultural adaptation practices that are both profitable and support agricultural mitigation in Sub-Saharan Africa.

METHODS

Farm household surveys in several African countries to identify

- Perceptions of climate change and agricultural mitigation
- Determinants and constraints to adaptation
- Profitability of adaptation methods
- Synergies among adaptation, mitigation, and profitability

Participatory Rapid Appraisal Methods to assess

- How climate information is perceived and used
- How climate change affects women's and men's lives
- How climate change is addressed by communities



Simulation models, including crop models, agricultural sector models, and livestock models to identify

- Government investments in crop and livestock systems that support adaptation, mitigation, and farm incomes
- Farmer-led agricultural adaptation-mitigation options that are profitable under intensifying climate change
- Livestock management practices suitable under 2050 climate



RESULTS

- ❖ According to household survey data for Ethiopia, Nigeria, Kenya, and South Africa most farmers have experienced long-term change in temperature and precipitation.
- ❖ Adaptation methods vary by country and within countries

Adaptation measures	Nigeria	Niger	Uganda	Kenya	Ethiopia	South Africa
Irrigation	+++			++	+	++
Water harvesting		++	++		+	+
New crops	+++			+++		++
Change sowing date	+++	+++		++	+	++
New varieties	+++			+++	++	+
Mulching			+++	+		
Planting trees			+++	++	++	
Fertilizer	+++			+++		
Livestock production	++	--	--			+
Controlled grazing	+	+	+++	+		

Source: IFPRI

- ❖ Lack of access to finance is the key constraint to adaptation in South Africa and shortage of land is the key constraint in Ethiopia (HH survey data)
- ❖ In Kenya, 75% of surveyed farmers are aware of the link between agriculture and climate change, and several farmer-identified agricultural mitigation options—such as irrigation and cover crops—support adaptation needs
- ❖ Preliminary analysis indicates that many adaptation measures are profitable and support mitigation, but location-specific constraints to adoption need to be overcome; moreover, to realize co-benefits from mitigation requires high-start up costs for smallholder farmers to access carbon markets
- ❖ The potential for mitigation through agriculture in Africa is estimated at 17% of the global total mitigation potential; the potential annual value stream from agricultural mitigation for Sub-Saharan Africa is US\$4.8 billion (Bryan et al. 2009 based on Smith et al. 2007) ; thus potential benefits are large

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