



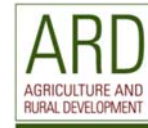
Towards an Agricultural Risk Management Framework

Risk Management in African Agriculture:
Taking Stock of What Has and Hasn't Worked

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African Agriculture: High Risk Exposure

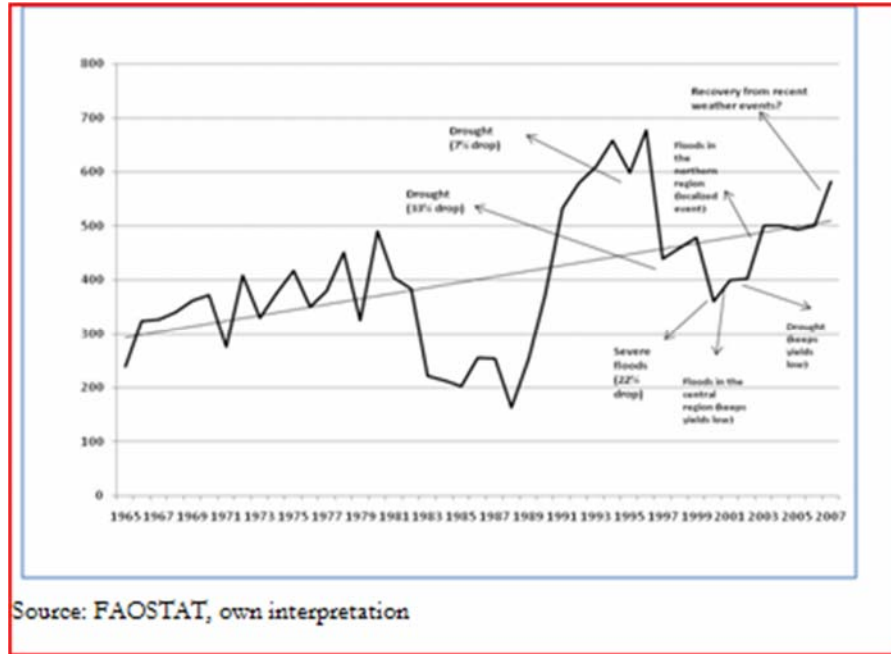
- ❑ Risk + uncertainty widespread in food/ agri system:
 - Agro-climatic factors
 - Complex biological/environmental processes
 - Geographical span of supply chains
 - Political economy of food/agriculture

- ❑ Major structural and demographic changes

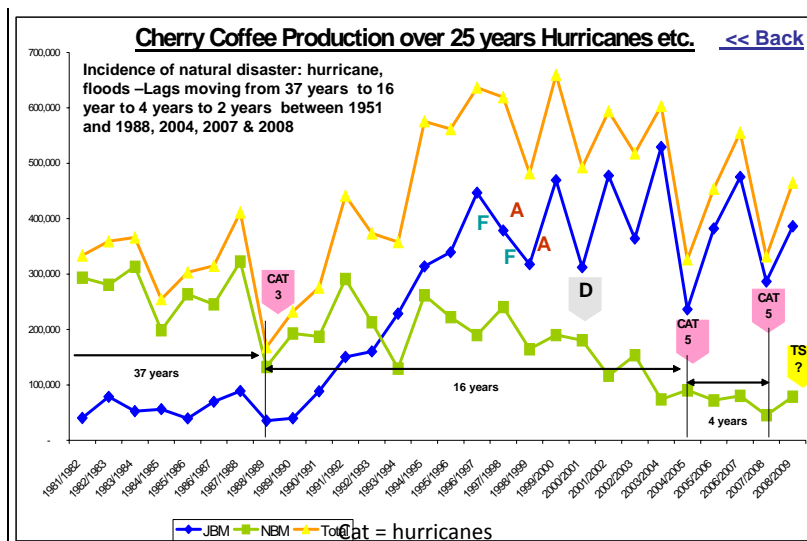
- ❑ Risky business = 'old risks' + 'new risks'
 - 'Old Risks': weather, price variability, pests, logistical bottlenecks, food safety hazards, policy shifts
 - 'New Risks': climate change, new disease transmission, biosafety, bioterrorism, environmental imprint + social concerns

Agriculture Production is Sensitive to Risks

Mozambique: Trend and Variability of Cotton Yields



But, not just Weather Risks



F = Crop Financing issues D = Drought Issues
 A = Major Agronomy Issues

- Note: X axis = years; Y axis = boxes of production; JBM = Jamaican Blue Mountain; and NBM = Non Blue Mountain (Low lands)

Ghana loses in average around US\$228 million a year due to various production risks

“Over the past 18 years for which yield data are available, the average value of lost production at the 100% coverage level has been GHC 328 million per year (US\$ 228 million), representing 5.5% of the total value of national crop production for the 8 most important crops.”

(Stutley 2010)

In 10 years it represent US\$2.2 billion losses

Uganda shows losses in livestock of around US\$86m a year for risks that could be better managed

Cost of Shocks e.g. cattle diseases

Annual losses from cattle diseases : US\$86.3 million

Morbidity – 58%

Mortality – 30%

Post slaughter condemnation – 10%

Poor quality dictation during milk processing – 2%

Cumulative losses in the past 10 years = **US\$866.3 million**

(Source : DSIP- MAAIF 2010)

Current Catastrophe Risk Management System in Agriculture

1. Catastrophe coverage for small vulnerable farmers is ex-post, and with slow response.
2. Commodity Boards and/or individual farmers have no instruments for transferring risks.

→ High vulnerability to natural disasters !!

Components of a Risk Management Framework for Agriculture

1 Identify Objectives/ target

Social vs commercial objective

Target groups:

- Traditional crops sub-sector
- Emerging crops sub-sector
- Commercial farming segment
- Subsistence farming segment

2 Agricultural Risk Assessment

Risk identification

Risk quantification

Vulnerability Assessments

Risk Prioritization

4 Resources

Data management

Regulatory/supervisory framework

Information and education

Technical expertise

Program administration and monitoring

3 Risk Management Strategy

Mitigation

Transfer

Coping

Strategies are client/supply chain/country specific

Supply Chain Vs Farmers Risk Assessments

MOTIVATIONS

- Multiplicity of risks impacting farmers + agro-enterprises
- Patterns of risk transmission; also distribution of risks
- Interventions at one level may have impacts elsewhere
- Scope for complementary measures + partnerships
- Consider scope/costs/benefits of alternative RM approaches
- "Supply Chain" as unit of analysis
- to understand interdependencies

APPLICATIONS

- Inform value chain competitiveness
- Prioritize focal risks + entry points for interventions—project ID
- Input to sectoral reform processes
- Input to agri finance planning

Agri-Food Supply Chain



Illustration of Risk Categorization in a Cotton Supply Chain in Africa

Probability of Event	Potential Severity of Impact					
	Negligible	Moderate	Considerable	Critical	Catastrophic	
Highly probable	Sudden change of orders for chemicals		Farmers credit default (chemicals)	Cotton international price volatility	Crop substitution	
Probable	Port delays	Weather (droughts, floods, etc.)	Ginners credit default	Pests (aphids, worms, etc.)		
Occasional	Carrying large quantity of cash Sample testing delays	Fire Unreliability of transportation market	Loss of soil fertility	Exchange rate risk		

Prioritization of Risks According to Capacity to Manage

	(-)-----Capacity to Manage Risks-----(+)				
Expected losses	1	2	3	4	5
High	Exchange rate risk	Crop substitution Cotton international price volatility	Pests and disease		
Medium	Weather	Farmers credit default (chemicals)	Ginners credit default (banks)	Loss of soil fertility	Fire
Low				Carrying large quantities of cash Sample testing delays Unreliable transportation	Sudden change of orders for chemicals Port delays

Note: The table includes diagonal lines labeled T1 through T5, representing risk transfer paths from high/medium loss and low capacity to low loss and high capacity.

Mitigation – Transfer -Coping

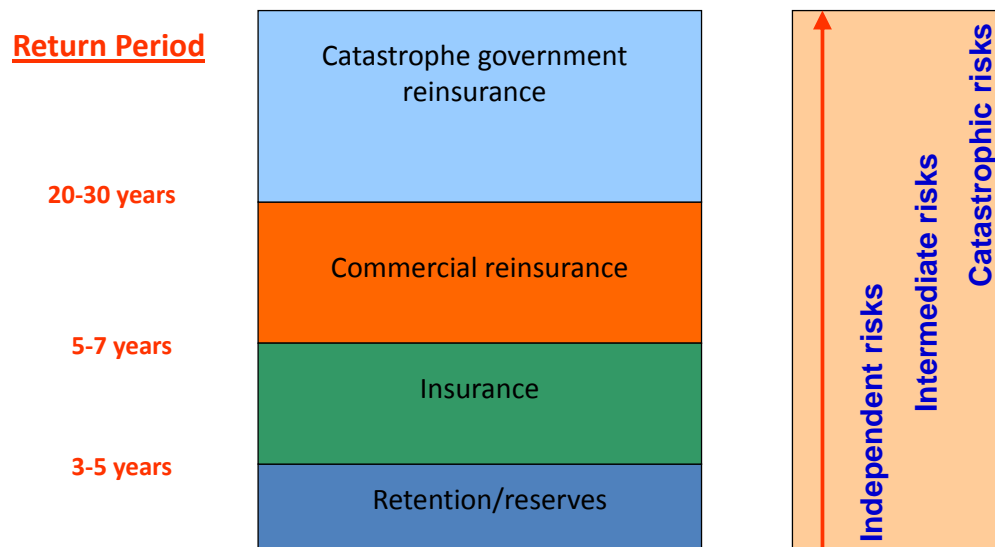
Identified Risks	Proposed Risk Mitigation (ex ante)	Proposed Risk Transfer Tools (ex ante)	Proposed Risk Coping (ex post)
Crop substitution (Losing farmers in dynamic areas, side selling, trans-border selling, crop substitution, farmers credit default, collapse of gineries, etc.).	- Revise concessionary system and incentives for different participants along the value chain.		- Concessionaries diversify to other crops - Increase trust / relationship between ginners and farmers (e.g. paying farmers and delivering inputs on time).
International cotton price volatility		- Train ginners on price risk management tools	
Weather Risks	- Weather risk mapping for cotton sector by agro meteorological zone - Designing a weather risk management strategy. - Drainage plan for agriculture at watershed level. - Efficient ex-ante mechanism in place for helping farmers after disasters. - Specialized research and extension services to mitigate weather risks.	- Consider feasibility of Risk transfer insurance	- Efficient and transparent distribution mechanism for public sector assistance to farmers.
Pests	- Scale up IPM initiatives - Increase access to		- Post-infestation measures

Identifying the Role of Public Sector

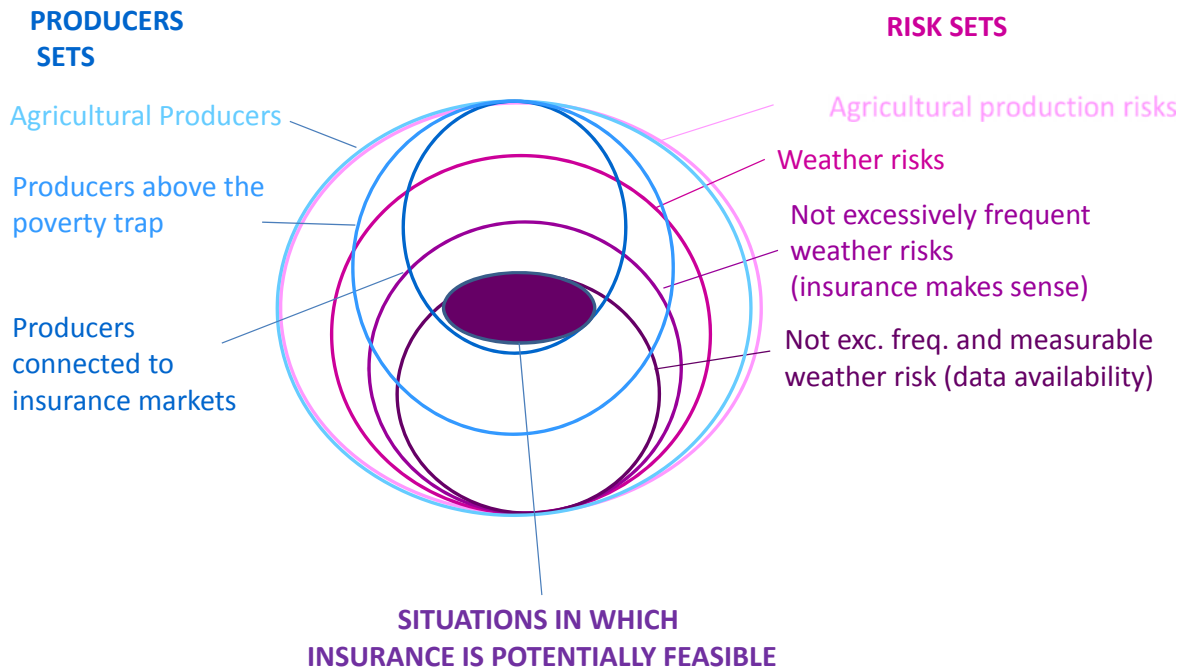
- ❑ Assuming Catastrophic layers in an ex-ante approach
- ❑ Services and investments for risk mitigation.
 - ❑ Agriculture Research & Extension
 - ❑ Sanitary & Phytosanitary Services
 - ❑ Pest Controls,
 - ❑ Drainage, etc
- ❑ Investments for supporting private sector initiatives
 - ❑ Weather data reliability and access
 - ❑ Access to reliable agronomic information
 - ❑ Access to financial agro information
 - ❑ Training
- ❑ Improving delivery channels to support small farmers after adverse catastrophic events.
 - ❑ Transparency
 - ❑ Efficiency
 - ❑ Accountability
- ❑ Adaptation to climate change

13

Need to Adopt a Layered Risk Transfer Structure



Role of Insurance in a wider Risk Management Approach



Key Messages

- Need to design a comprehensive Country Risk Management Strategy for Agriculture.
- This RMS may include Mitigation- Transfer – Coping mechanisms and tools.
- Risk Layering and Risk Financing are important
- Ex Ante is better than Ex-Post
- Define clear role of public sector
- Supply Chains Versus Farmer level risks
- Agricultural Insurance will play an important role, but it is only part of the Strategy

Thanks !
www.worldbank.org/agrm