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HOUSEHOLD VULNERABILITY TO CLIMATE CHANGE DISASTERS: THE CASE OF TWO SOUTH AFRICAN PROVINCES

PRESENTATION TO THE PORTFOLIO COMMITTEE ON AGRICULTURE, FORESTRY AND
FISHERIES STRATEGIC PLANNING WORKSHOP

17 APRIL 2015



*Presentation to the Portfolio Committee on
Agriculture, Forestry and Fisheries
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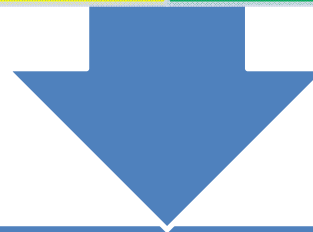


PROJECT TEAM

Core Partners

Financial and Fiscal
Commission

FARNPAN



Research Support

University of
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University of
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University of
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MAIN REPORT

RESEARCH ISSUES AND OBJECTIVES

- The potential of climate change disasters and non climate change disasters destabilizing socio-economic wellbeing of people and economies is real and can no longer be ignored
- Developing countries are vulnerable to climate change because of their heavy dependence on climate sensitive economic sectors
- Rural households are likely to be more vulnerable, they lack the means for adaptation

RESEARCH ISSUES AND OBJECTIVES

[CONT.]

- With limited resources (human, financial and physical), targeting of these scarce resources to those communities most vulnerable to disasters is important
- Policy makers need to be able to know and understand which HH are vulnerable and prioritise those households that are most vulnerable
 - What is the impact of disasters on rural HH?
 - Who is vulnerable to climate change?
 - Which adaptation strategies are more effective?

RESEARCH ISSUES AND OBJECTIVES

[CONT.]

The Report :

- Assesses the impact of future climate change on staple crop in rural South Africa
- Use the Household Vulnerability Index (HVI) tool to evaluate the vulnerability of rural households to natural disasters
- To evaluates cost and benefits of different adaptation options
- Makes recommendations on the financial and fiscal policy measures and instruments that can be used to improve the resilience of households to disasters

*The gender dimensions of household vulnerability is considered

APPROACH

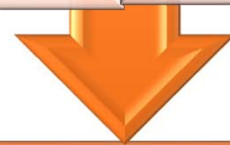
Climate Change Impact Evaluation

Methodology

- a) Climate change projections
- b) Climate change impact modelling

Results

- a) Climate change impact on crop systems
- b) Climate change impacts on mixed crop-livestock systems



Household Vulnerability

Methodology

- a) Use HVI to identify HHs that are vulnerable
- b) Ordinal Logit Model to isolate determinants of household vulnerability

Results

- a) Characteristics of climate change vulnerable households
- b) Factors that influence household vulnerability



Evaluating Alternative Adaptation Strategies

Methodology

- a) Cost benefit analysis

Results

- a) Benefit-Cost ratios of alternative adaptation strategies

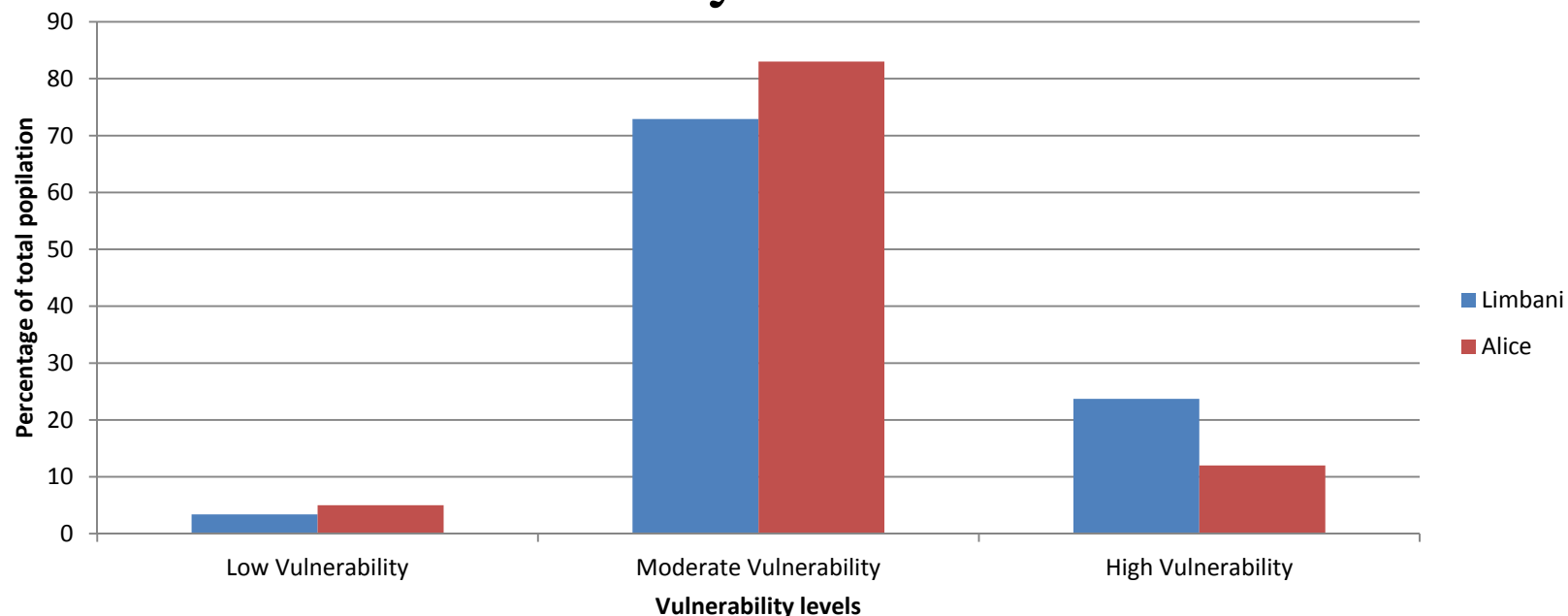
CLIMATE CHANGE IMPACT RESULTS

Climate Change Impacts:

- Simulated changes in maize yields are negative in Eastern Cape for early 21st century (2010-2040) range between -8.2% to -15%) and mid 21st century (2040-2070) (-6.4% to -14.3%): Poor farming conditions in EC and high dependence on social grants
- For Limpopo, the impact is uncertain in early 21st century (+13.7% to +2%) and negative in mid 21st century (more skewed towards negative impact i.e. +5.9% to -19.6%): Diverse agricultural activity in the area provide a buffer in early century which may diminish with time.
- Results concur with other research in Southern Africa.
- But results show that impact is location specific and interventions should be area specific.- (Formula for infrastructure to include climate disaster component)
- Simulations did not take into account potential benefits from adaptation and improved technology which could take place in future.

HVI RESULTS

- Who is vulnerable to the Climate Change disaster and food and water insecurity?



Generally more people are highly vulnerable in Limpopo than in the Eastern Cape

HVI RESULTS

- Gender has important influence on vulnerability
- In the Eastern Cape more women than men are in the high vulnerability category
- While in Limpopo more men are in the high vulnerability category than women
- Elderly and female headed HH more vulnerable
- Participation in HH savings schemes reduces one's vulnerability
- Households receiving extension services were less vulnerable

HVI RESULTS

- Households from Eastern Cape and Limpopo have different shocks but five major shocks cited were: lower yields due to drought, significant increase in food prices, crop diseases, damaged housing and theft
- Other shocks: loss of employment, business failures, non payment of salaries and illnesses on headed household
- All these shocks lead to their vulnerabilities, reduced resilience and capacity to adapt to climate change disasters
- Coping mechanisms: spending cash savings, reduced food consumption, borrowing money, sending children to leave with relatives and relying on external aid , selling assets and children not going to school

COST BENEFIT RESULTS

Benefit Cost Ratio for Eastern Cape

Adaptation strategy	Benefit-Cost Ratio
Sorghum Rain fed	1.93
Zero/Minimal Tillage Maize Farming-Irrigation	1.50
Sorghum Irrigation	1.48
Zero/Minimal Tillage Maize Farming-Rain fed	1.44
Maize Conventional Farming-Irrigation	1.37
Maize Conventional Farming-Rain fed	1.34

COST BENEFIT RESULTS

Benefit Cost Ratio for Limpopo

Adaptation Strategy	Benefit-Cost ratio
Sorghum under irrigation	2.06
SNK Maize-Limited Tillage under Irrigation farming system	1.89
Sorghum Dry land farming	1.81
SNK maize Conventional Farming system Rain fed NO Insurance	1.50
Groundnuts Enterprise	1.49
Crop Rotation: Beans followed by Maize	1.49
SNK Maize Zero/Minimal Tillage Maize Farming-Rain fed	1.38

CONCLUSION

- First micro analysis of impact of climate change.
- Study provides crucial localised evidence base and enhances our understanding of a complex array of stresses caused by climate change in rural areas.
- Study will improve policy targeting of vulnerable households

RECOMMENDATIONS

- Government should consider developing a vulnerability index to isolate households that are vulnerable to climate change and other shocks. An HVI such as the one adopted in this paper, would improve the targeting of limited resources.
- Any fiscal and financial interventions to alleviate the impact of climate change should take into account the differential vulnerabilities of rural communities and aim to support their autonomous adaptation responses. These comprise promotion of multi-purpose crop production, small grains (Sorghum and millet), and drought and water stress tolerant crop varieties, improved agronomic practices (in-field water harvesting, application of appropriate fertiliser amounts, proper timing of sowing dates, conservation agriculture, etc.) The department of agriculture should therefore support these strategies through improved access to inputs, markets and financial resources, improved agricultural extension services and access to climate and weather forecast information. Support for the development of a sustainable and resilient multi-purpose production system could also buffer livelihoods through providing support towards strengthening livestock production; training for pasture-land management, disease control and crop-livestock husbandry.



THANK YOU.

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