Climate Change Adaptation Research Initiatives by LEAD

SADC Regional Workshop on Climate Change Adaptation in Agriculture

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Crossroads Hotel

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Research Activity 1: When and what to plant: Challenge to farmers of shifting onset of rainfall patterns in Malawi

Introduction

- There are two main seasons in Malawi: the rainy season (from November to April) and the dry season (from May to October)
- Historical rainfall data analysed by Jury and Mwafulirwa (2002) shows that rainfall increases rapidly from a meagre 20 mm/month to a peak of 200 mm/month between December and March, with November and April as drier transition months

Introduction cont.

- Lamentations by Mr. Kabota Kanyara (63 years) old (ActionAid, 2006) that "Previously rains used to start in October. We used to regard this as the rain that makes mangoes ripen or puts off bush fires. The pattern started changing in the 1970s when we started getting these rains in November. These days we get planting rains in December."
- Because of changing rainfall patterns and higher average temperatures, farmers in Malawi are forced to adapt to the short growing season and also change the varieties of crops grown (Oxfam, 2009)

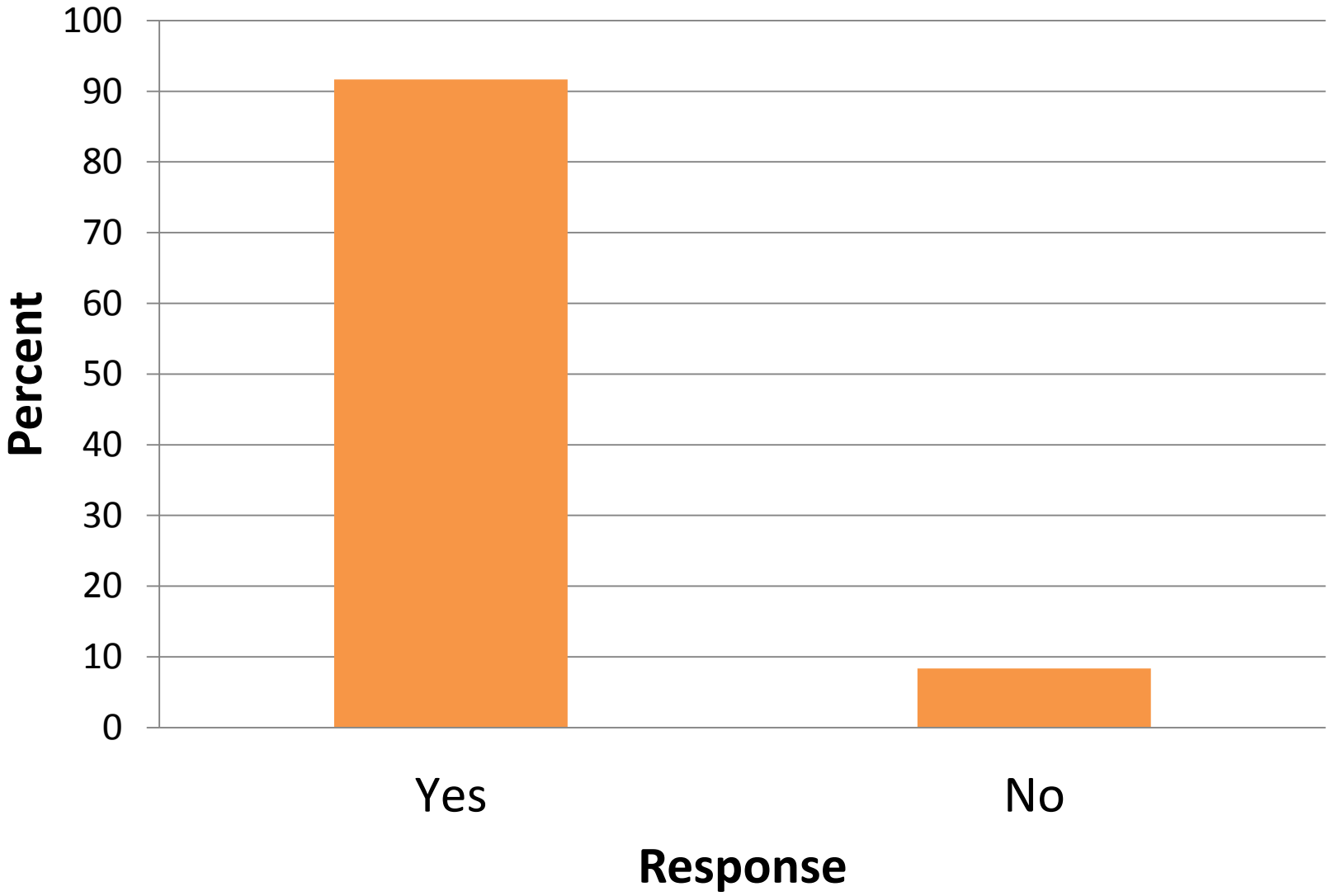
The Study Area: Domasi EPA in Machinga District

Some farmers planted with October (2011) rains, others ignored them

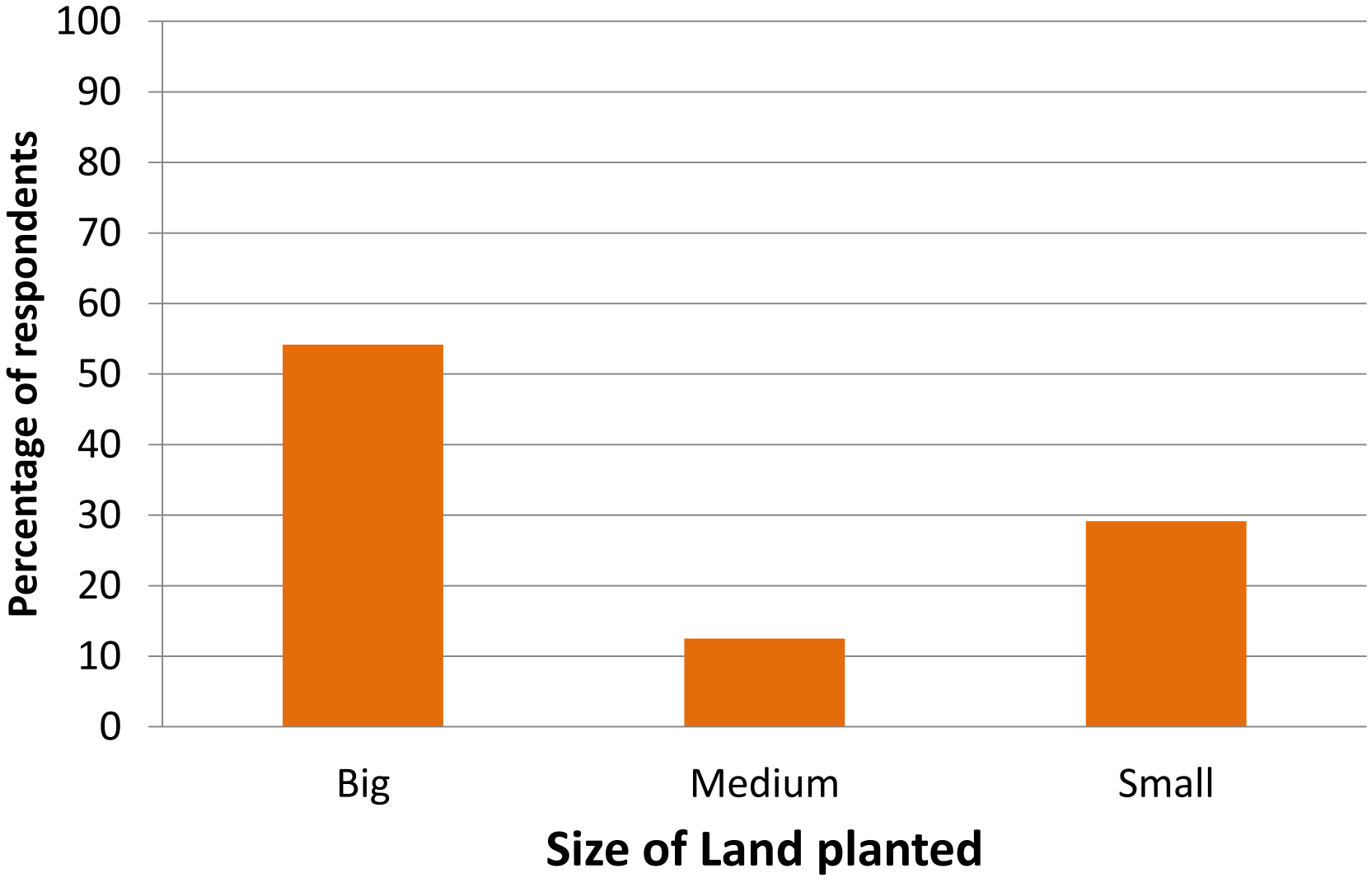
Research Questions

- Rainfall amount was 39 mm in the EPA but was this amount adequate for planting?
- Who influenced the farmers to plant?
- How much land was planted?
- Which type of land was planted?
- What is the condition of the crops planted in October?
- Are there any management challenges?

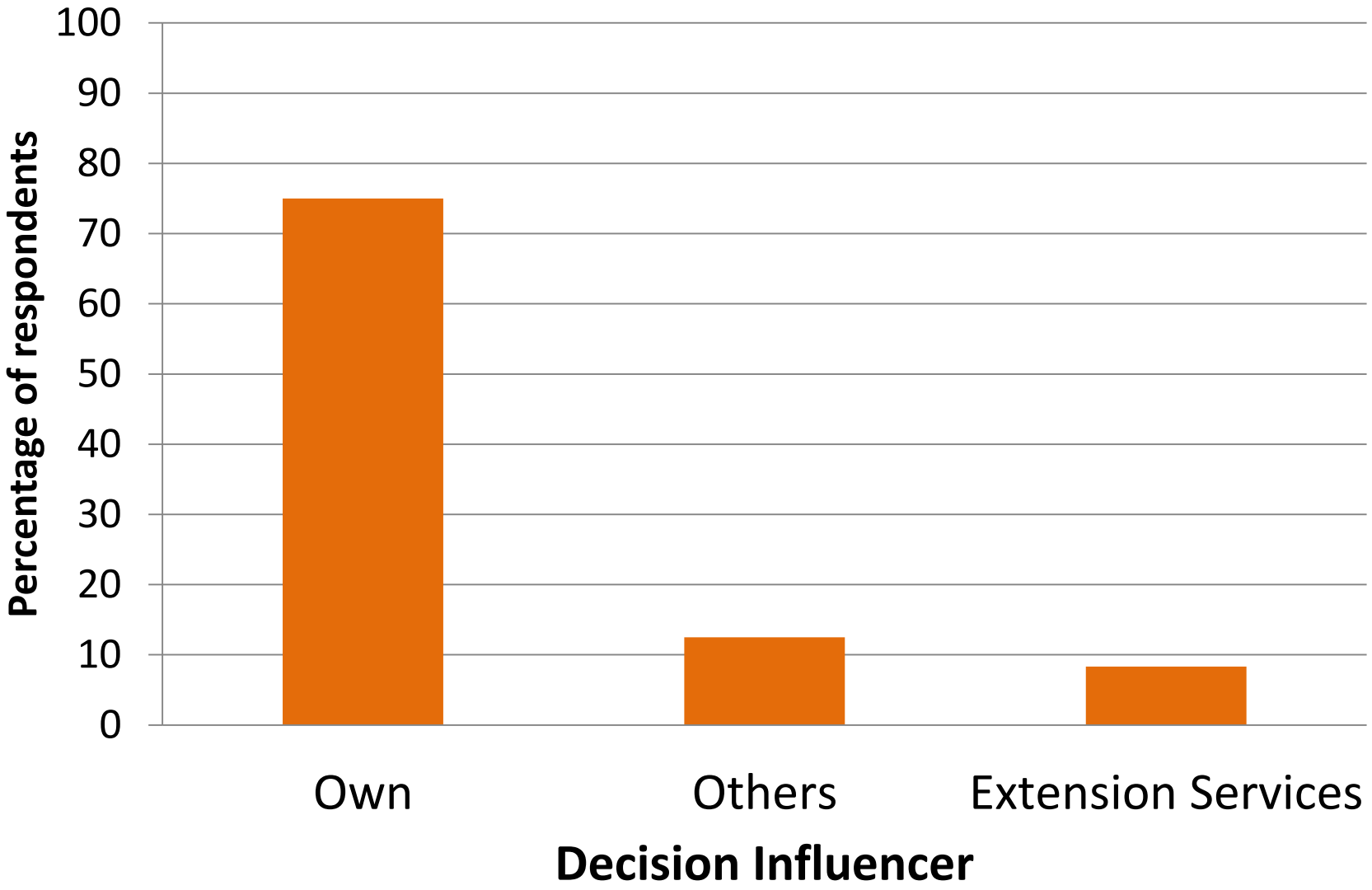
Were the rains that fell in October 2011 adequate for planting?



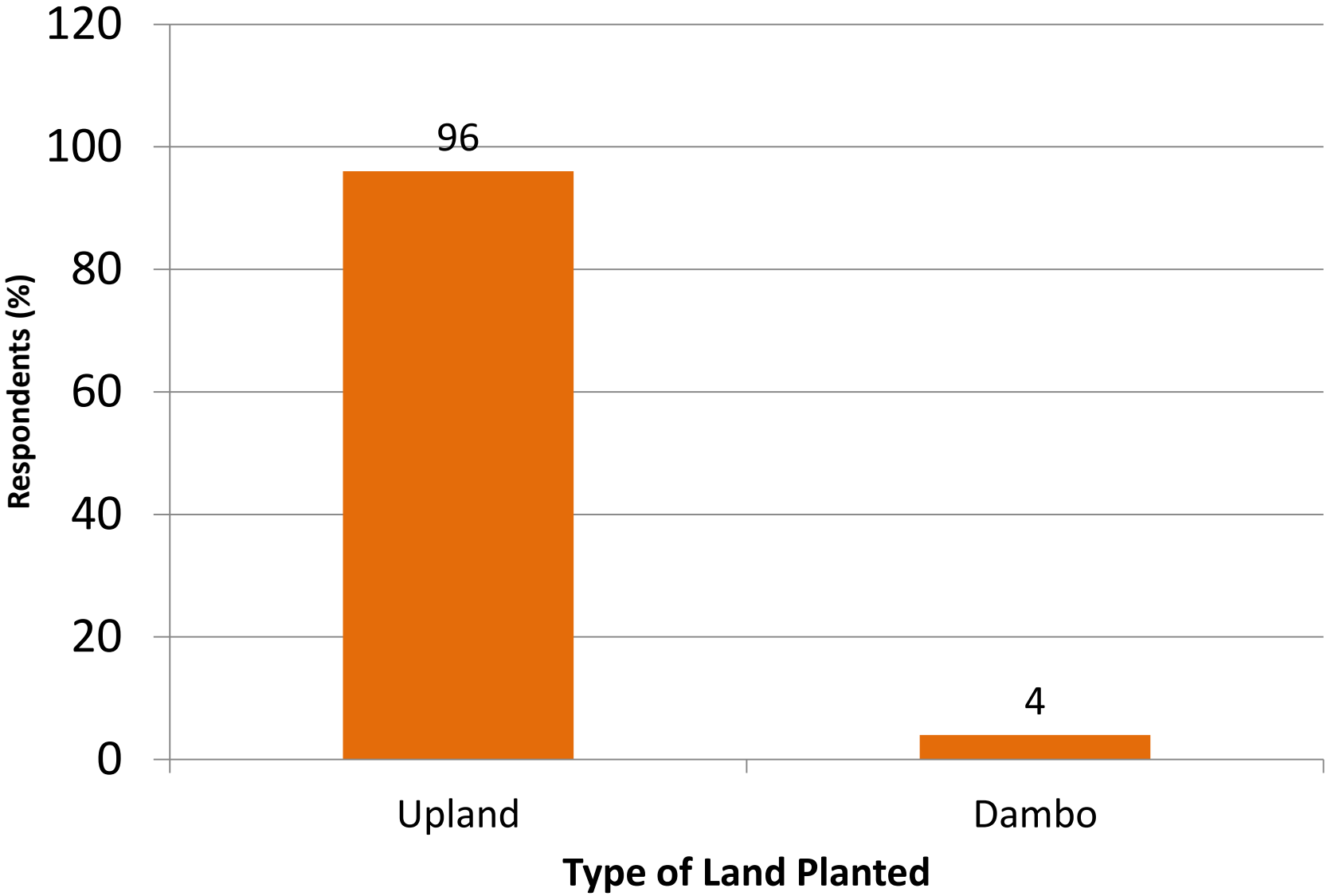
How much land, relative to the total holding was planted with the first rain?



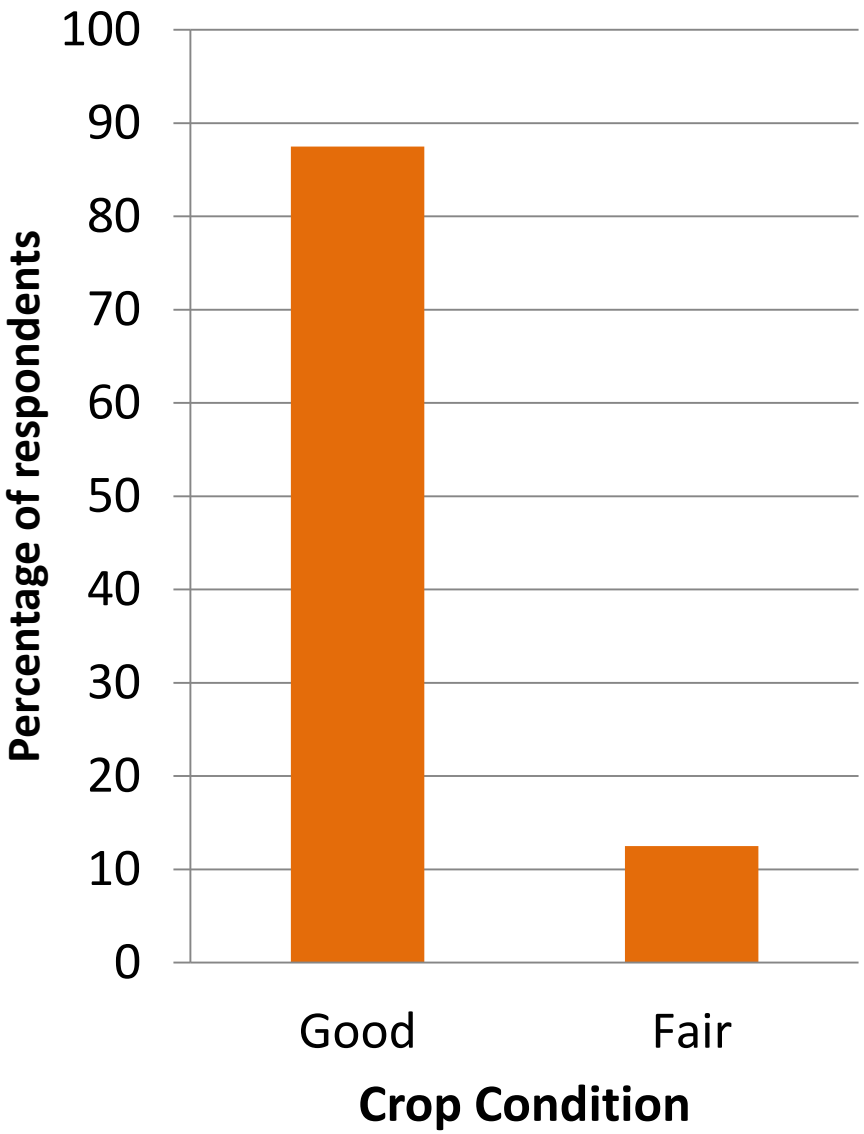
Who influenced your decision to plant?



Where did you Plant with the first rain?



What is the current condition of your crops?



Attribute	Categorisation	
	Good	Fair
Prevalence of Pests and diseases (%)	<1	>1
Nutrient deficiency (%)	<1	>1
Survival Rate (%)	>75	<75
Permanent Wilting (%)	<1	>1

Good Crop Condition: No fertilizer applied

Some management challenges

Pest attack: stalk borer

Nitrogen and Phosphorus deficiencies

Conclusion?

- Who (which farmers) made the right decision and why?
- How effective has the technical support on when and what to plant been?
- What lesson (s) could be learnt from this years' rainfall and planting experience?

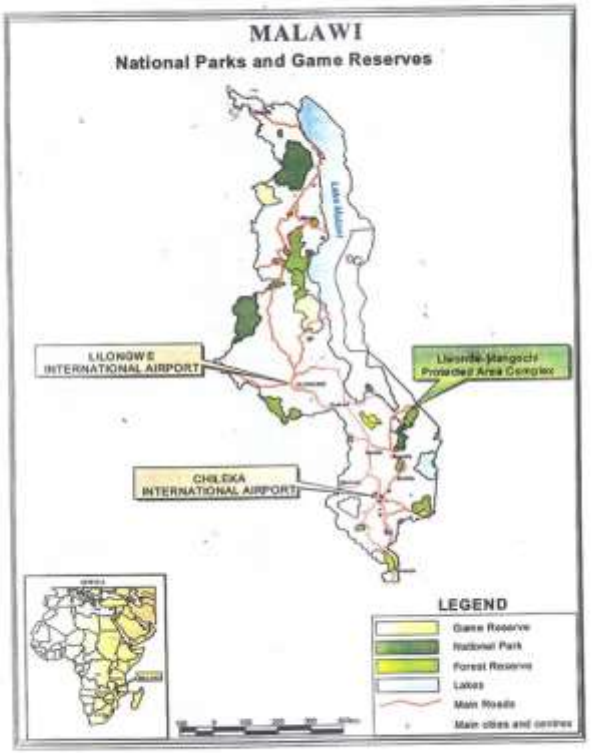
Research Activity 2: Adaptation to Climate Change on access and use of water and forestry resources in Liwonde – Mangochi Protected Area Complex to enhance food security

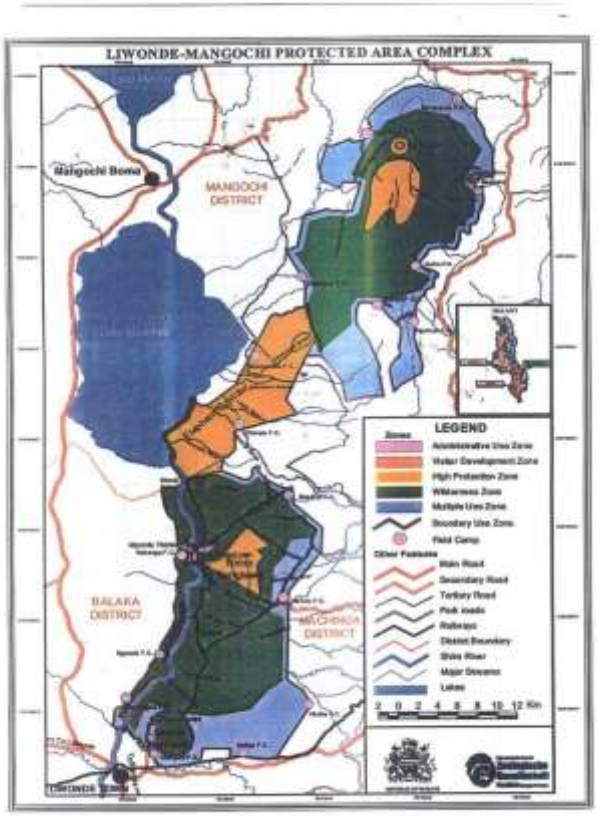
IDRC CRDI

enda

lead

THE STUDY AREA





PROJECT AIM

- Investigate Climate Change Adaptation Strategies by communities in relation to access and use of water and forest resources with a focus to their contribution to food security using Participatory Geographic Information System (P-GIS)

Components

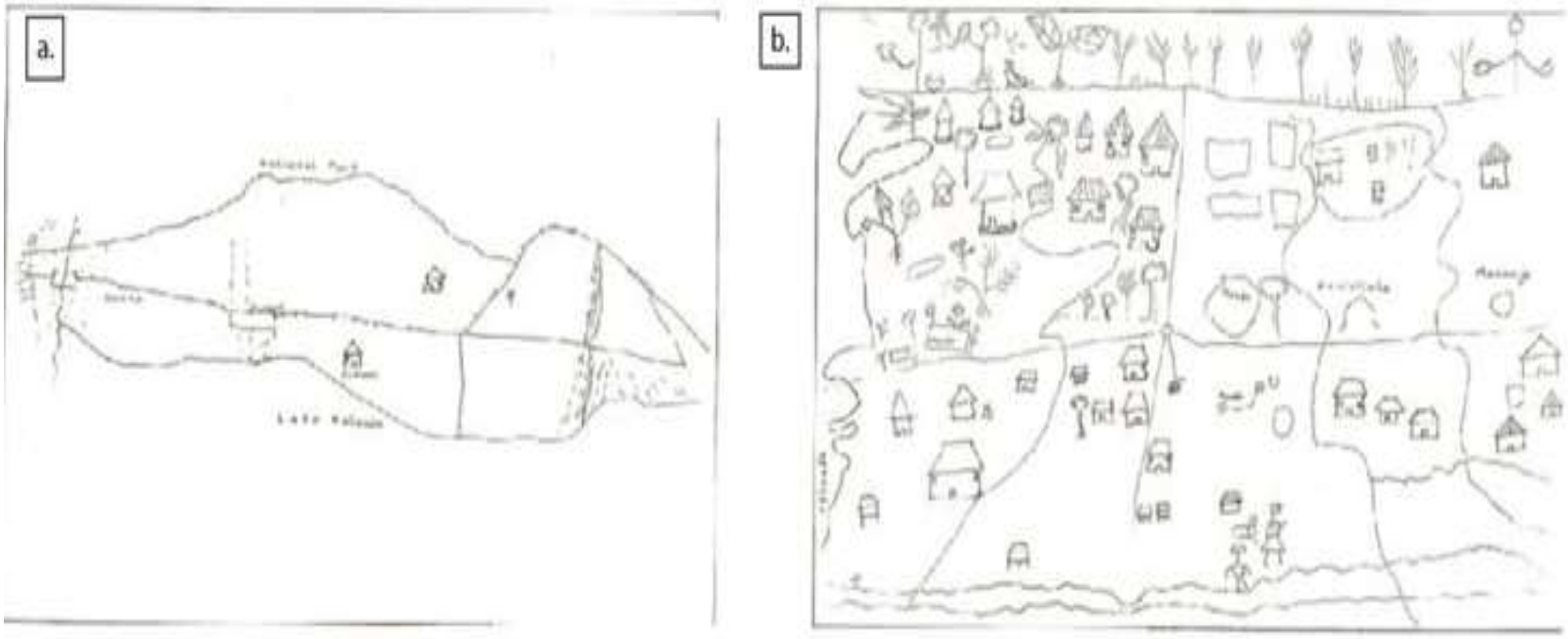
- **Gender and Spacial Environment**
- **Land-Use, gender and food security**
- Forestry, climate change and food security
- Water, Climate change and food security

METHODOLOGY

- Key informant interviews
- Focus group discussions
- Validation of some issues

Results: On gender and spacial environment

a = Men's Group; b = women



Results: on gender and spacial environment

- The female groups seemed to pay particular attention and detail to their spatial environment compared to the male groups.
- Female-drawn maps included some additional rivers or streams, other forests surrounding their households, which were not depicted from the male-drawn sketches.
- However, all the maps lack a clear sense of compass orientation and certain features tended to be scale-exaggerated compared to others.

Component 2: Land, Gender and Food Security

Results

- Agricultural land mostly owned by females—matrilineal system
- While the women have access, the men seem to be controlling it, despite the fact that they live at wives' homes.

Component 2: Coping strategies under food insecure situations

Coping strategy	Male headed households	Female headed households	All households
Purchase	94	89	93
Reduce meals	44	48	44
Eat wild foods	11	13	11
Food for work	18	17	17
Friends	36	45	38
Government	4	1	3
Eat pre-mature crops	38	41	38

RESEARCH ACTIVITY 3:SCEINTIFIC VALIDATION OF TRADIONAL EARLY WARNING SIGNALS

Objectives

a) To document the most common traditionally used naturally occurring early warning signals for floods and drought known to local communities in Nsanje
b) To assess the extent to which each of these early warning signals have a scientifically valid basis
c) Recommend potential use of the scientifically valid early warning signs for Disaster Preparedness structures in Malawi

METHOD

- Key informant interviews
- Desk research

EWS: Results

	Signal	Indigenous Explanation	Conclusion
1	Prevalence of Northerly Winds	Sign of good rainfall	During rainy season in Malawi the prevalence of warm and moist northerly winds generally lead to rainfall however this rainfall is very much enhanced if there is convergence with southerly airflow as well.
2	Prevalence of Southerly Winds	Signals poor or no rainfall at all	Southerly winds are not a good signal of poor rainfall in themselves as they may also enhance rainfall.
3	Too Windy	Signals no or little rainfall	Scientific evidence shows that windy conditions are not specifically associated with no or little rainfall conditions. Wind may also facilitate rainfall and there are so many factors involved. Signal has to be improved and repackaged.

EWS:RESULTS

4	**When Pangolins are sighted frequently**	**Signals drought**	**IK needs further analysis as it is consistent with drought occurrence in Malawi. However, reliability and sustainability of this IK relies on the availability of pangolins which are presently scarce as acknowledged by people interviewed.**
5	Too many ants	Signals rainfall	IK only adequate to explain behaviour of ants in certain seasons. Not valid as an early warning signal for rainfall.
6	Nkhandwe (fox) comes to the village	Signal of drought	IK is consistent with the behaviour of most wild animals during periods of drought when food and water are scarce in the bush.
7	Midzodzo (black ants) moves together in a long column	Signal of drought	This behaviour of ants does not necessarily signify drought.

OTHER INITIATIVES

The Lake Chilwa Basin Climate Change Adaptation Programme

a) The effect of the 2012 recession of the Lake on birds, vegetation and livelihoods
b) Water level monitoring
c) Weather Monitoring

OTHER INITIATIVES

Attaining Sustainable Services from Ecosystems through Trade-off Scenarios (ASSETS)—a full ppt is available

Aim: To explicitly quantify the linkages between the natural ecosystem services that affect – and are affected by – food security and nutritional health for the rural poor at the forest-agricultural interface

Themes:

1) Drivers, pressures and linkages between food security, nutritional health and ES
2) Crises and tipping points: Past, present and future interactions between food insecurity and

Themes

3) The science-policy interface: How can we manage ES to reduce food insecurity and increase nutritional health?

RESEARCH GAPS?

- Water Quality Time Series data under both wet and dry regimes
- Soil quality measurement & monitoring
- Like tobacco, is hardening off an option for low tree survival rates?
- Carbon stocks and energy flows
- How livestock and problem animals like elephants complicate already existing climate change impacts on crop production

RESEARCH GAPS?

- The interactions between climate change and other environmental variables like soil fertility loss, crop pests and diseases”
- Traditional early warning signals: How can these be integrated with scientific knowledge?
- The challenge of feeding pigs: are there options for cheap feeds befitting vulnerable communities?
- The challenge of fire management: Is a community based fire management a feasible approach.

Many thanks