

# ZAMBIA CLIMATE CHANGE

**Seminar on Building Small Holders' Resilience under  
Climate Chain along Value Chain  
18 September 2017  
Kunming  
China**

# Presentation Outline

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**Background**

**Zambia Agricultural Sector**

**Risks And Vulnerabilities**

**Climate Change And Agriculture**

**Policy Framework**

**Climate Risk Management Strategies**



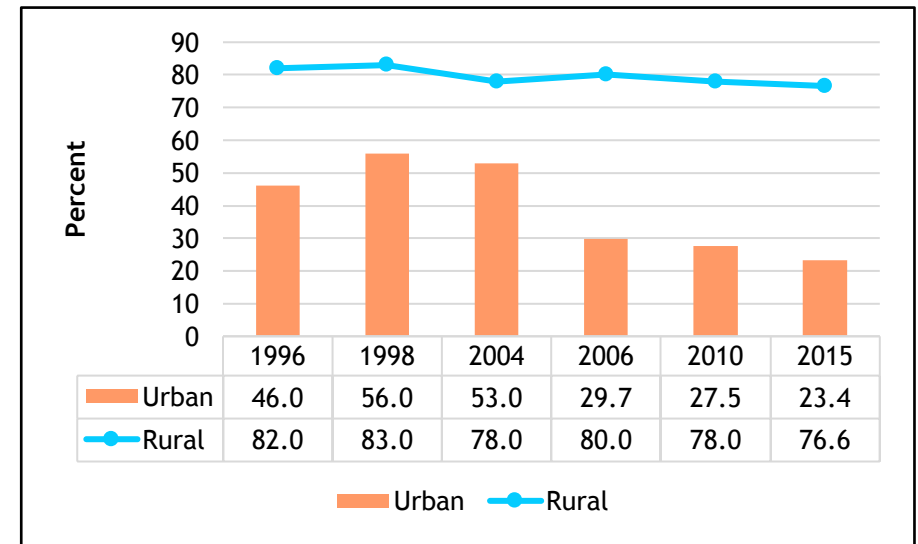
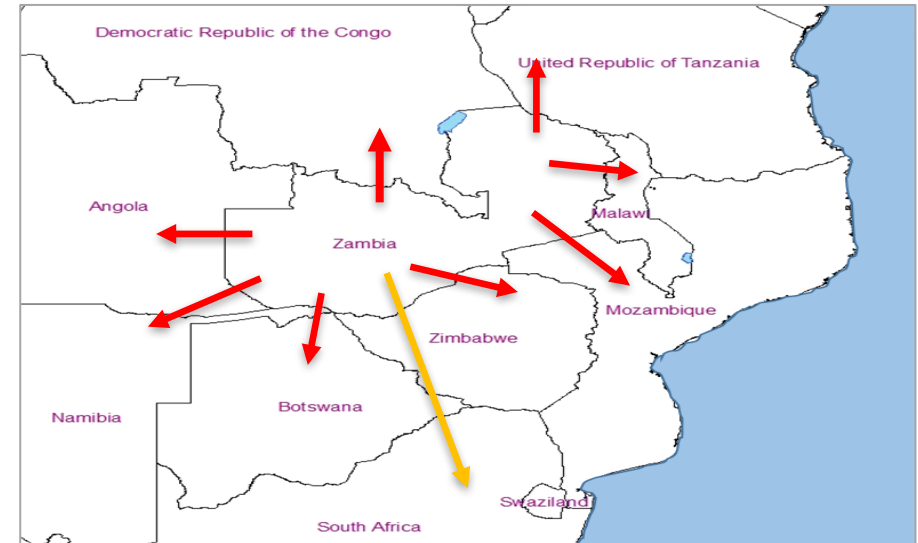
**Tomorrow  
belongs to people  
who prepare for  
it today...**  
**African Proverb**

# Background



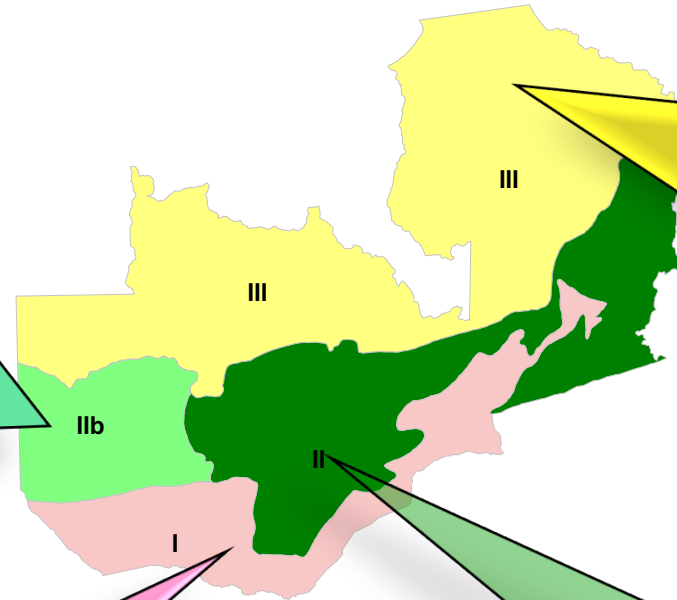
# Zambia Overview

- Both a land-linked and landlocked country, covering an area of 752,620 square kilometres (sq. km)
- Population of 15.5 million...
  - ✓ 58.2% live in the rural areas and rely on agriculture for survival (LCMS 2015).
  - ✓ 1.5 million are farmers
  - ✓ 96% are subsistence and cultivate 76% of the total cropped area.
  - ✓ All dependent on rain-fed agriculture.
- In 2015 rural poverty was estimated at 76.6 % compared to urban poverty levels of 23.4 %.
- Maize is the single most important crop
  - 90% production by smallholders
  - Provides about 60% of the country's caloric requirements (LCMS, 2015; Mason and Myers, 2011).



# Zambia Agricultural Sector

*Rainfall, Soil and Crop Suitability by agro-ecological Region*



## Region IIb:

- Rainfall range 800 - 1,000 mm/annum
- Loamy to sandy soils
- Cassava, sorghum, millet, sesame, cashew nuts, livestock, fisheries

## Region I:

- Rainfall Less than 800mm/annum
  - Loamy to clay soils
- Cotton, sorghum millet, sesame, cashew nuts, livestock, fisheries

## Region III:

- More than 1,000mm of rainfall/ annum
- Very deep soils, sandy clay loam.
- Cassava, millet, sorghum, beans, groundnuts, rice, coffee, tea, pineapples, fish farming, livestock.

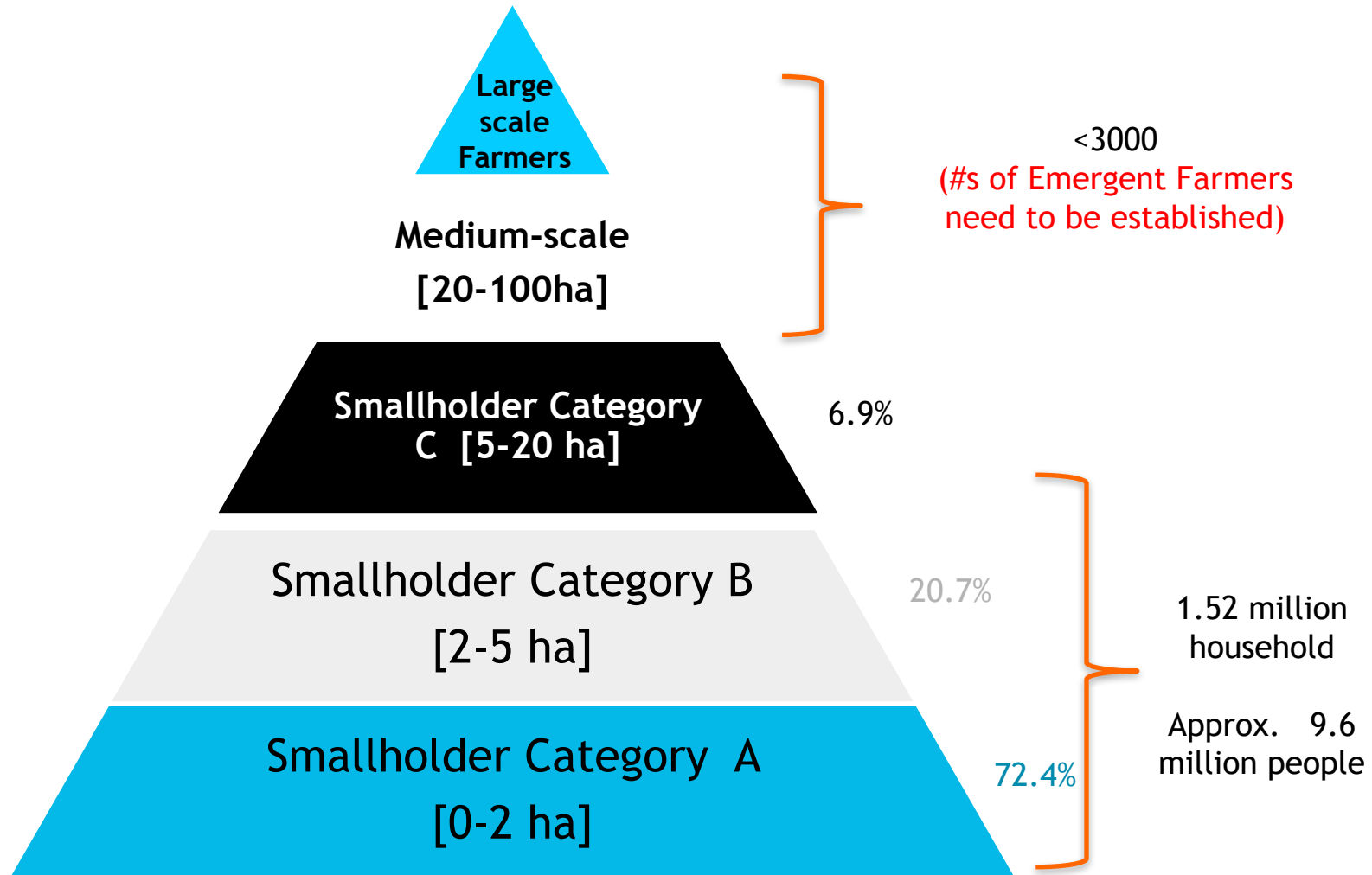
## Region IIa:

- Rainfall range - 800 to 1,000mm/annum
  - Inherent fertile plateau soils.
- Maize, cotton, tobacco, sunflower, soybeans, irrigated wheat, groundnuts, flowers, paprika, vegetables, cassava, millet, horticulture, livestock.

Source

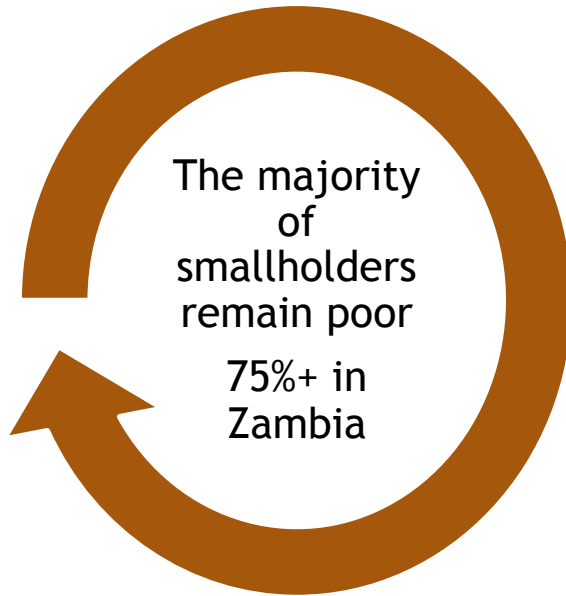


# Zambia Agriculture Sector



Source: RALS 2015

# Zambia Agricultural Sector



- Land constrained
- Low productivity
- High post harvest losses
- Limited input and output markets
- Unpredictable weather
- Liquidity constraints and limited access to financial services (credit, insurance)
- High transport costs
- agricultural policies





# Defining Risk

**Risks:** Uncertain events that lead to losses

- Symptoms: yield volatility, price volatility, etc.
- Causes: droughts, pest and disease outbreak, price spike, etc.

**Different from:**

**Constraints:** Certain contextual conditions that lead to sub-optimal performance

- Symptoms: low yields
- Causes: lack of access to inputs, poor technology, depleted soil, access to finance, extension services, information etc.

**Trends:** Longer term patterns (reversible or irreversible) that provide context

- Symptoms: declining yields, declining production, reduction in area, etc.
- Causes: structural changes in agriculture, changes in climate patterns etc.

**There are linkages between these three concepts.**

## Broad Based Risks that affect Agriculture - Relevant to R4

<b>RISK</b>	<b>EXAMPLES/ FACTORS</b>	<b>EFFECTS</b>
Weather risks	Rainfall or temperature variability or extreme events	Lower yields, loss of productive assets or income
Biological risks	Pests, disease, contamination	Lower yields, loss of income
Price risks	Low prices, market supply and demand, volatility	Lower prices, loss of income
Labor and health risks	Illness, death, injury	Loss of productivity, loss of income, increased costs
Policy and political risks	Regulatory changes, political upheaval, disruption of markets, unrest	Changes in costs, taxes, market access

Source: Agriculture and Rural Development Discussion Paper, World Bank

# Reduced resilience of vulnerable population due to increased exposure to shocks (natural and human induced)

## Immediate Causes:

- ✓ Poor dietary diversity
- ✓ Poor agronomic practices (soil and crop management approaches)
- ✓ Increased use unsustainable livelihood strategies
- ✓ Limited access to early warning information at lower levels of the country (district/satellite)

## Root Causes

- ✓ Poor market infrastructure
- ✓ Social Norms (gender inequality that leads to stereotypes)
- ✓ High Poverty levels
- ✓ Poor policy enforcement
- ✓ Limited access to quality education

## Underlying Causes:

- ✓ Over dependency on maize (mono cropping)
- ✓ High post harvest losses
- ✓ High malnutrition rates
- ✓ Increased Environmental degradation
- ✓ High disease burdens (hiv/aids, malaria)
- ✓ Increased recurrence climate shocks
- ✓ rapid population growth

# What is happening

- ❖ Poor enforcement of legislation to provide better enabling environment;
- ❖ Limited synergies between policies which limits enhancements of livelihoods
- ❖ Limited livelihood diversification (e.g. mono-cropping culture)
- ❖ Weak/uncoordinated institutional management / arrangements within key line ministries (dmmu, mal, mcdmch, mwstc) in early warning and disaster preparedness;
- ❖ Increased land degradation due to use of high cost livelihood strategies
- ❖ Reduced food production due to change in climatic patterns and agronomic practices
- ❖ Increased inequality due to limited mainstreaming of key cross cutting issues such as gender, social norms in programme design
- ❖ Poor dietary diversity among most population

# Climate Change and Agriculture

Research suggests that Zambia is experiencing the effects of climate change (Mulenga and Wineman, 2014, World Bank, 2017)

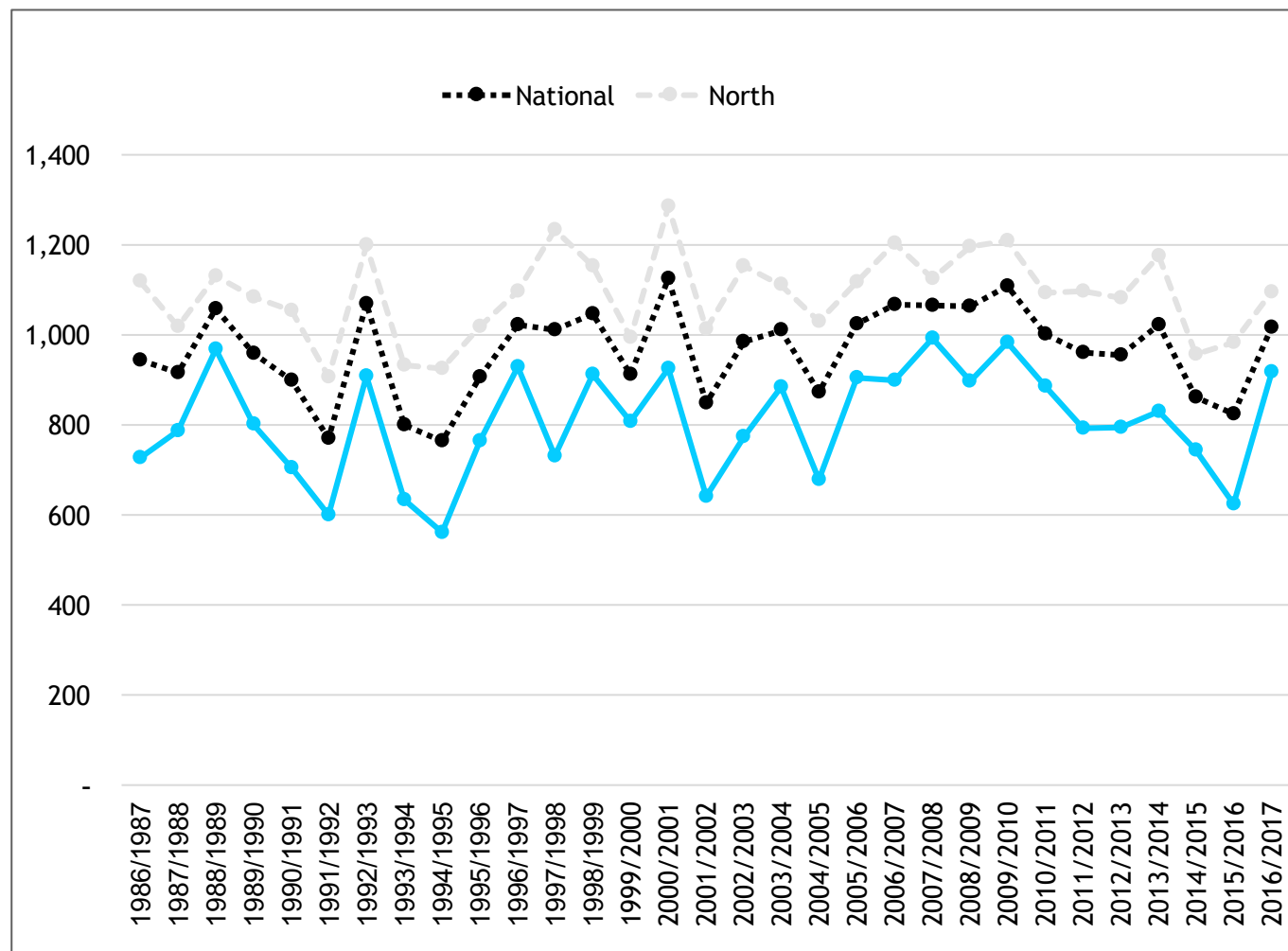
- The future trends in the country are toward a higher average temperature, a possible decrease in total rainfall, and some indication of more intense rainfall events (World Bank, 2017)

Zambia (GRZ) estimates losses worth US\$ 4.3-5.4 billion, over 10-20 year due to climate change; **agriculture sector alone - US\$ 2.2 to 3.1 billion**

Agriculture highly vulnerable to changing climatic conditions

Extreme weather events anticipated to increase - droughts, excess rainfall, flooding, Pests and disease outbreaks also expected to increase

# Zambia Rainfall patterns: 1986-2016



- North includes: Central, Copperbelt, Luapula, Muchinga, Northern and North-Western Provinces
- South includes: Eastern, Lusaka, Southern and Western Provinces.

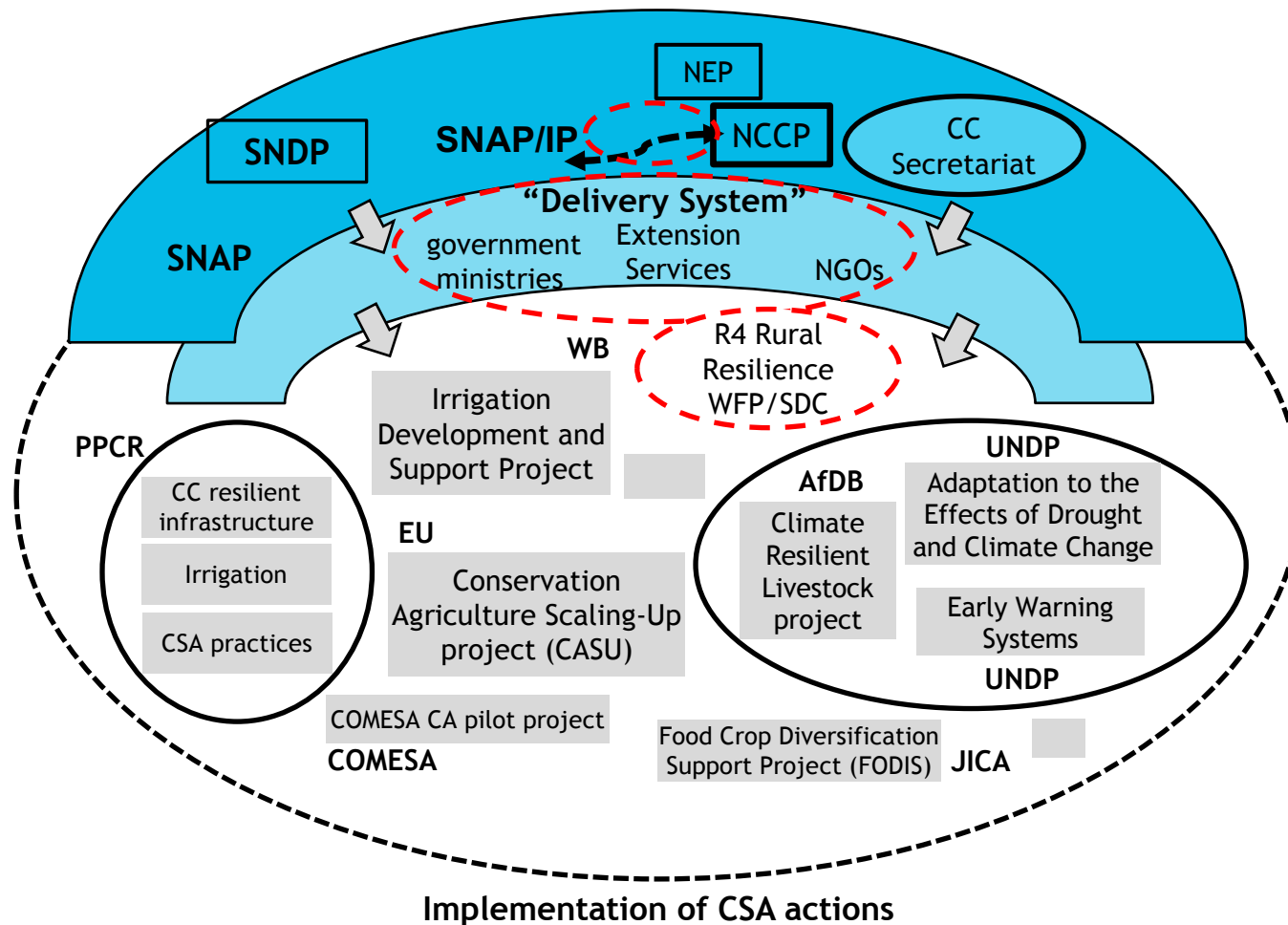
Source: Zambia Meteorological Department

# Zambia - Major Climatic Events

Year	Event
1997/98	El Nino (drought, excessive rains)
2001/02	La Nina (floods)
2004/5	Prolonged dry spells
2009/10	Prolonged dry spells
2012/13	Floods, dry spell
2015/16	El Nino

Data source: CSO, Wikipedia, FEWSNET, Govereh, Jayne and Chapoto,  
2008

# Policy, Legal & Regulatory framework for CC in Zambia





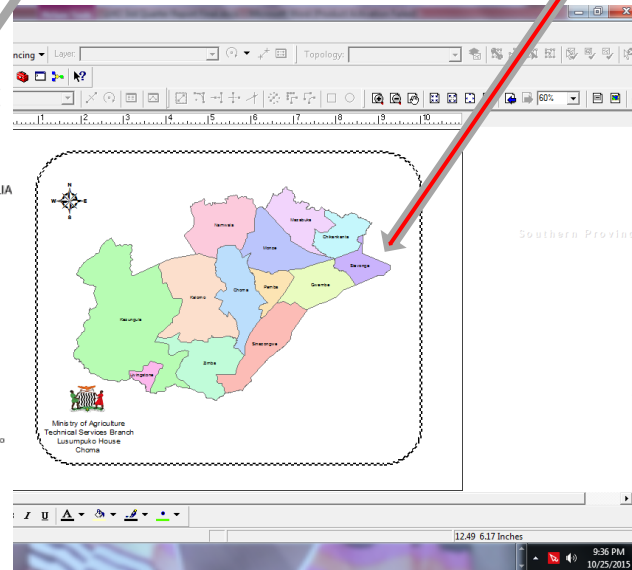
# Climate Risk Management Strategies to enhance SHF Resilience

- To mitigate against the effects of Climate Change, The Ministry of Agriculture, Zambia, with support from European Union (EU) and Food Agriculture Organisation (FAO) has been implementing the Conservation Agriculture Scaling Up programme (CASU) since 2013.
- **CASU covering 264,000 farmer: lead farmer and framer schools approach**
- The overall goal of the project is to contribute to reduced hunger, improved food security, nutrition and income while promoting the sustainable use of natural resources in Zambia. The project is its 4<sup>th</sup> year.
- To enhance these resilience outcomes, WFP and partners that include the Ministry of Agricultural piloted the R4 project (Rural Resilience Project) in Pemba District (**500 farmers**) in Southern Zambia using the CASU programme as an entry point, thus providing an integrated risk management package to SHF to deal with the effects to climate change..

# Location of Zambia and Southern Province (Pemba)



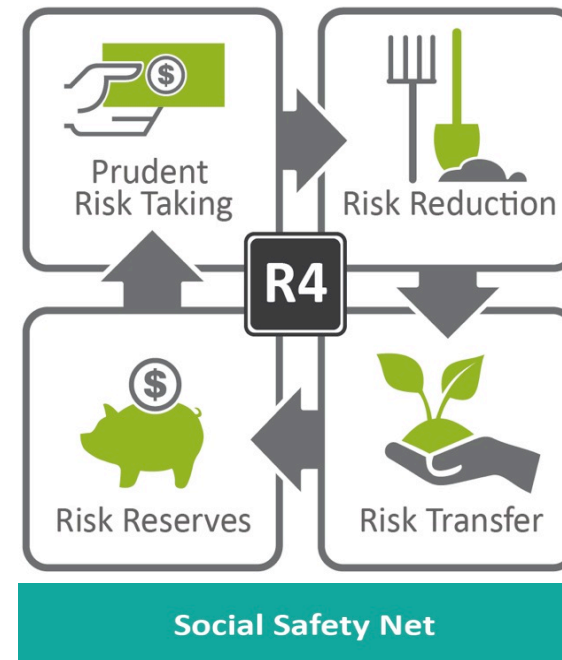
Map of Africa showing Zambia's Geographical Position



Map of Southern Province showing location of Pemba

# Global R4 Concept

- ❖ Build the resilience of food-insecure smallholders through integrated risk management strategies that aim at:
  - Protecting livelihoods and provide guaranteed transfers through integration of Productive Safety Nets
  - Reducing risks by contributing to community assets (e.g. Financial, Physical and Skills)
  - Protecting the gains households make through insurance and other financial services
- ❖ Strengthen government's capacity to develop and implement integrated risk management programs
- ❖ Contribute to the development of a rural financial market (e.g. Credit and Insurance)



# R4 Rural Resilience Initiative

**Objective: enabling vulnerable rural households to increase their food and income security in the face of increasing climate risk**

**Integrated climate risk management tool**

- Risk Reduction
- Risk Transfer
- Risk Reserves
- Prudent Risk Taking

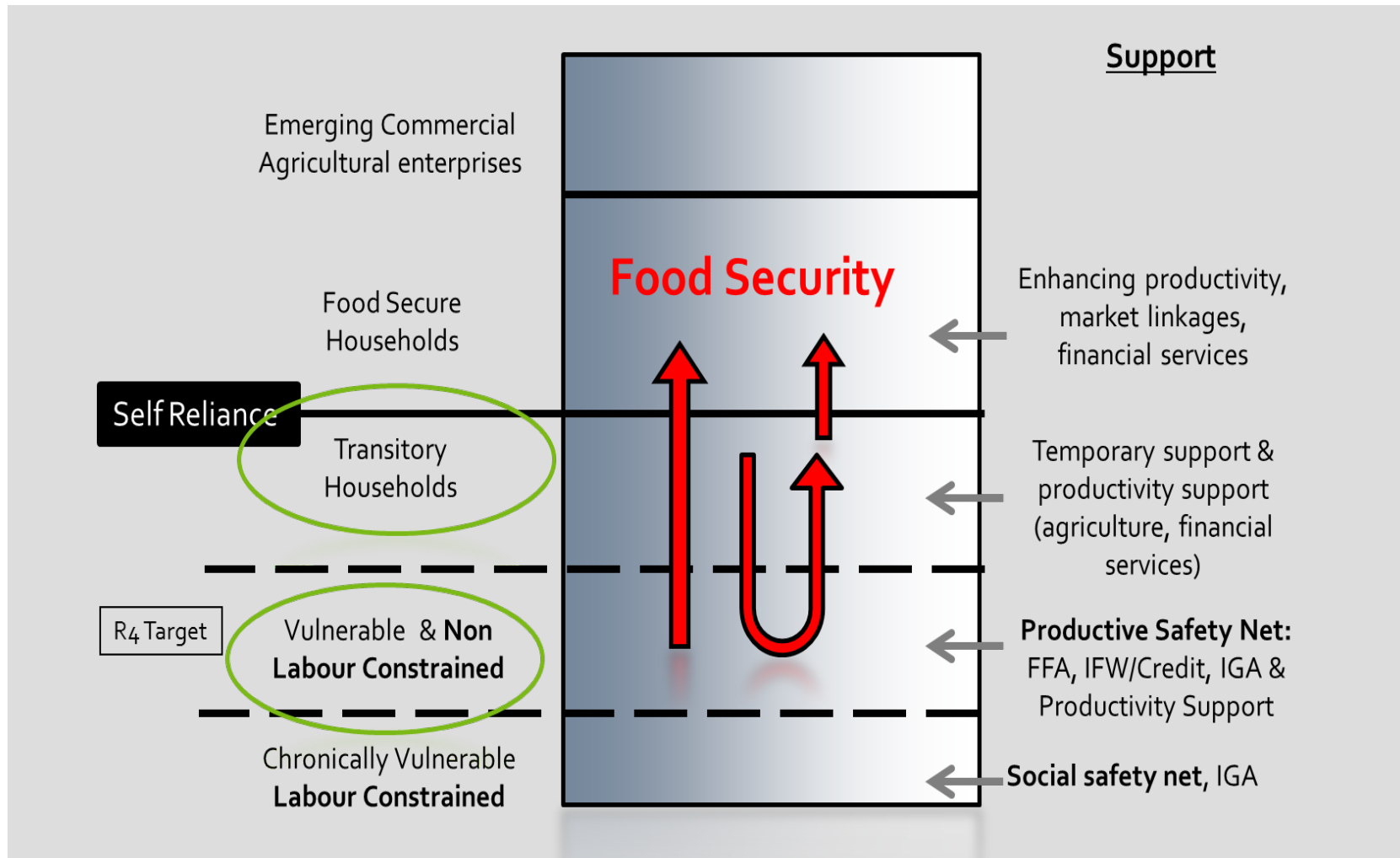


# HOW IT WORKS

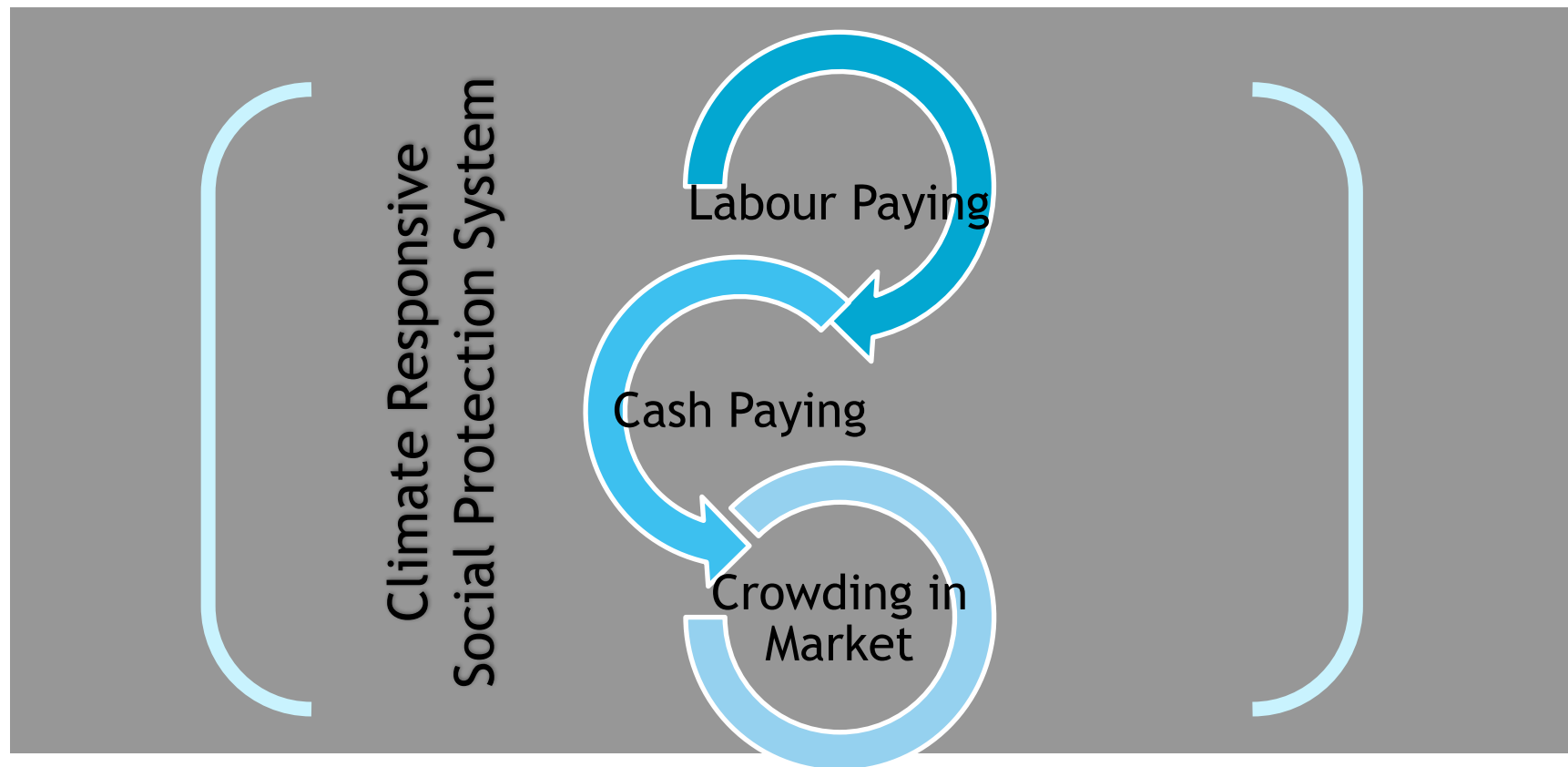


Social Safety Net

# R4 TARGET



# SCALABILITY AND SUSTAINABILITY



# What Worked Well

- Increased awareness and knowledge of climate risks.
- Increased use of CA practices and adaptation - ripping, crop diversification, crop rotation and residue retention
- Creation of linkages with the private sector through provision of services such as insurance (**adopted by govt**), credit, input/output markets etc.
- Improved access to climate information and services through the installation of an automatic weather stations and manual rain gauges managed by farmers.
- Increased extension support and services
- Crop diversification.





# Challenges & Opportunities

- Access to technologies and information still a challenge.
- Labour constraints due to use of hand held tools. Mechanization is limited.
- Rain fed production - mechanization and irrigation expensive.
- Use of recycled seed.
- Farmer organisation and linkage to markets/off takers (access to certified seed, inputs, irrigation, herbicides, financial credit)
- High post harvest losses (no value addition/processing, storage technologies)
- Limited investment in agro research.
- Unpredictable markets and commodity prices

# Challenges & Opportunities

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- High interest rates and limited financial products for SHF
- Private sector engagement still very limited
- Access to climate information. Densification of weather stations and delivery mechanisms and products for SHF still a challenge.
- Extension support very limited

# South - South Cooperation needs

- Mechanization promotion among smallholder farmers
- Input supply
- Promotion of e-extension, including use of mobile technologies
- Information sharing on best agro practices and exchange visits
- Markets access including global markets for small holder farmers
- Improved access to climate information and infrastructure/technologies and skills.



# Conclusion

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**Climate change is real but now we have an opportunity to mitigate through South to South Cooperation in areas that have been outlined above.**

**African proverb again**

**Wisdom is like a baobab tree; no one individual can embrace it. ~ Akan proverb**

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**Thank you**  
**Xie Xie.**