

Zimbabwe Case Study

Contextual Profile:

Transformative, transgressive &
transdisciplinary learning for climate
change adaptation in a semi-arid district of
Zimbabwe

*Presentation by Mutizwa Mukute at the
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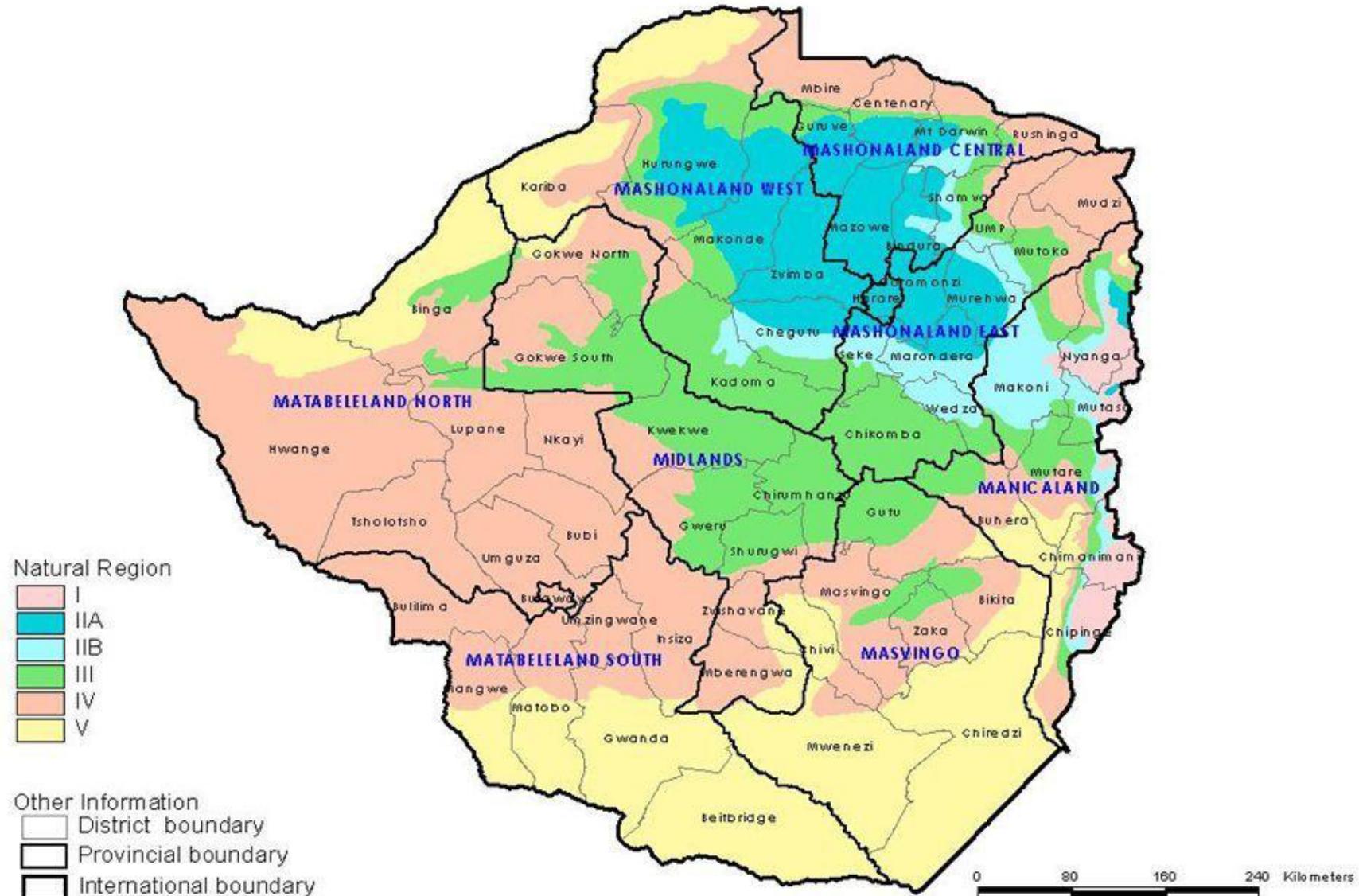
Purpose of the presentation

1. To highlight the climate change related livelihood *matters* in Zimbabwe with a special focus on the semi-arid Uzumba-Maramba-Pfungwe district (UMP) of Zimbabwe; and
2. To reveal the climate change related *learning* processes and practices in

General information

1. A population of about 13 million people.
2. 65 % rural; 35 % urban dwellers.
3. 10 administrative provinces, and over 50 districts.
4. Agrarian economy ã 11 % arable land.
5. Rainfall and soil based 5 agro-ecological regions:
 - a. V ã below 450 mm,
 - b. IV ã 450-650 mm,
 - c. III ã 650-800 mm,
 - d. II ã 750-1 000 and

Zimbabwe agro-ecological context



Climate and climate change in Zimbabwe

1. Zimbabwe has cool-cold winters and warm-hot summers during which rain falls (November-March).
2. It is divided into 5 agro-ecological regions are determined by rainfall, soil and vegetation.
3. Climate change manifests in:
 - a. Declining rainfall (5 % since 1900), increased inter-annual rainfall variability (16 %-48 %), late start of the rainy season; and shorter rainy seasons,
 - b. Higher temperatures (0.4 °C since 1990; 15 fewer cold days/century), and
 - c. More frequent droughts and floods (1-3 per decade) & heavier winds.
4. The drier areas (IV-V = 64 %) are more negatively affected by climate change than the wetter areas (I, II

Climate change & water

1. Water availability is determined by rainfall quantity and spread, and varies from year to year.
2. Surface water (from rivers and dams) accounts for 90 % of the water that is used in Zimbabwe.
3. 80 % of the water that is withdrawn is used in agriculture.
4. Zimbabwe has 7 major river systems and catchment areas (and they need attention) ã land degradation & siltation.
5. Climate change is projected to cause a 40 % decline in water that flows into rivers and dams.
6. Climate change will there reduce water

Climate change & food security

1. Zimbabwe's food security is dependent on crop and animal production, which are predominantly rain-fed.
2. Poor soils, inappropriate crops, low soil fertility and erratic rainfall undermine food security.
3. Regions III-V are & will experience higher food insecurity due to climate change (seasonal rainfall variability, declining rainfall & higher temperatures).
4. Increased carbon dioxide concentrations will benefit some crops.

Benefits accrued from enhanced photosynthesis are expected to be greater for C3 plants compared to C4 plants; and annual compared to perennial plants. C3 plants in smallholder sectors include groundnut, bambara nut and cowpeas → sugar bean and soya bean.

(Musiviwa, et al., 2014, 399)

Energy and climate change

1. Zimbabwe imports petroleum and some of its electricity and its energy policy promotes energy diversification & conservation.
2. The major energy sources are fuel wood (61 %), liquid fuels (18 %), electricity (13 %), and coal (8 %).
3. Six million tonnes of fuel wood are consumed annually but 4.6 million tonnes are produced.
4. Most of the electricity come from hydro-power.
5. Climate change is likely to reduce

UMP District

1. It is a rural communal area in which about 112,150 people, mostly smallholder farmers live and work.
2. Most of the district lies in region IV.
3. The main economic activities are agriculture (crop & livestock production) and gold panning.
4. The data that was generated from the study came from 9 farmers from wards 6 and 16; and 3 agricultural extension officers

Some of the research participants



Historical timeline of droughts in UMP

1. 1983 ã **Post independence** , government handouts, strategic food reserves
2. 1992 ã **Severe drought**, donor, NGO and government support (yellow maize), gold panning & government borehole drilling
3. 1995 ã **ESAP**, food for work, re-introduction of small grains
4. 2002 ã **Fast Track Land Reform**, barter for grains ã women playing active role, food for work
5. 2008 ã **Elections, empty shelves & hyper-inflation** ã Diaspora support, household food importation.
6. 2010 ã **Short rainy season & long dry spell**, started after Christmas, effectively ended in

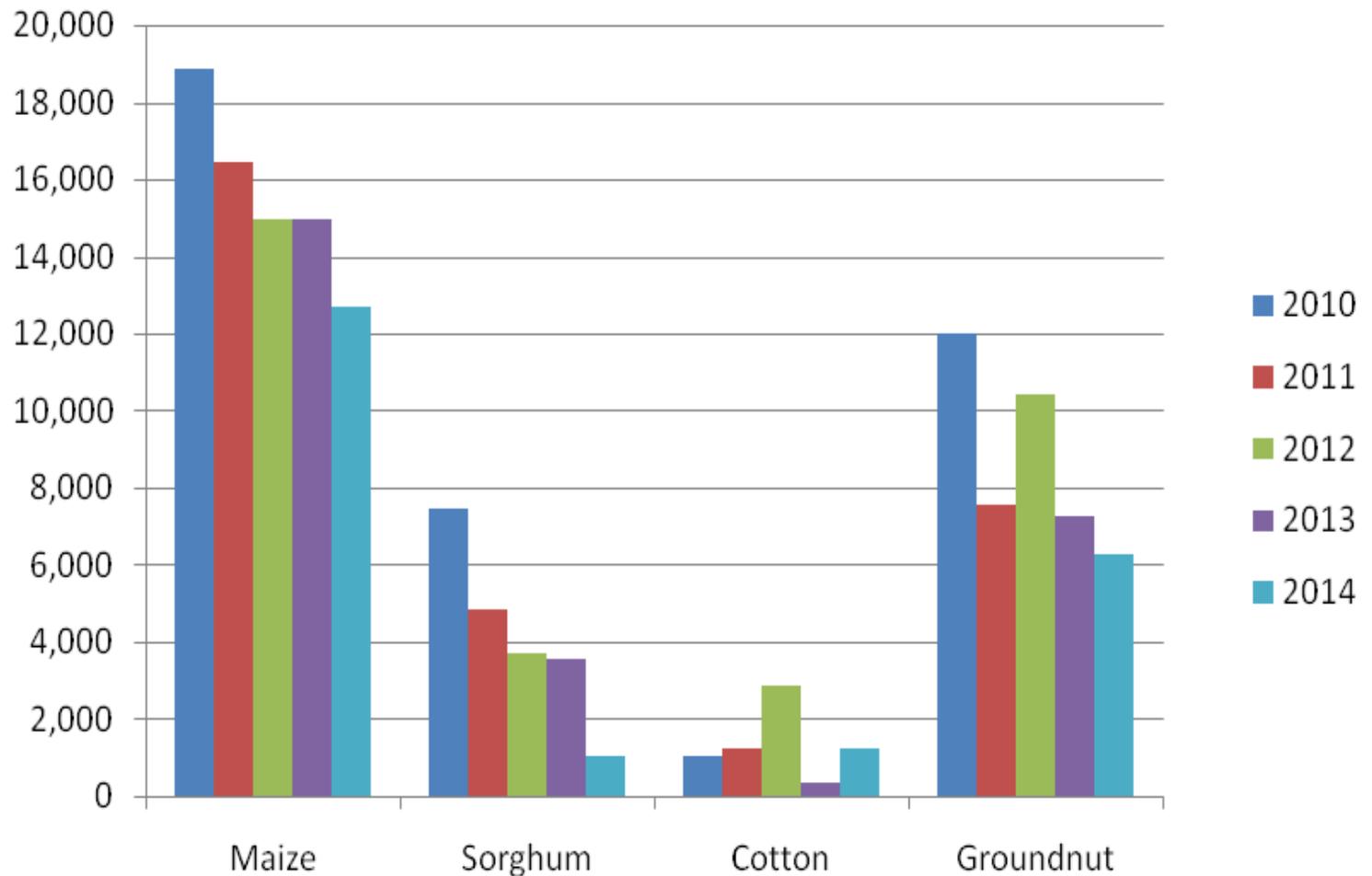
Water stories



Climate change & food security story: 15/1/15



Crop acreage trends linked to climate change-induced late onset of rains



General responses to challenges

1. *Governance:* Enacting & mainstreaming of climate change policies and establishment of related institutions; more attention to sustainability and social justice.
2. *Knowledge generation & dissemination:* Climate change research and education involving multiple actors.
3. *Adaptation:* Climate smart crops & animals; ecosystem conservation, watershed management, water harvesting, soil and

Climate change related responses in UMP

1. Government constructed small dams and sunk several boreholes since 1992.
 - ❖ ***But siltation is a problem (e.g. 2 of the 3 dams in Ward are filled with silt).***
2. NGOs, donors, ARIs and government have re-introduced and popularized drought adapted small grain crops. These are the same crops that used to be grown in the area based on traditional knowledge & include C3 crops.
 - ❖ ***But there is too much focus on horticultural crops and too little on livestock, which are the most suitable agricultural activity in region IV.***

Climate change related responses in UMP

3. NGOs, donors and government promote water conserving Organic and Conservation Agriculture. Nearly 100 % households practice Conservation Agriculture.

- ❖ ***But use it on less than 10 % of their croplands because it is labour intensive. Little attention is paid to watershed management and dam rehabilitation.***

4. Farmer diversification of livelihood options to include agro-processing, value-addition and gold panning.

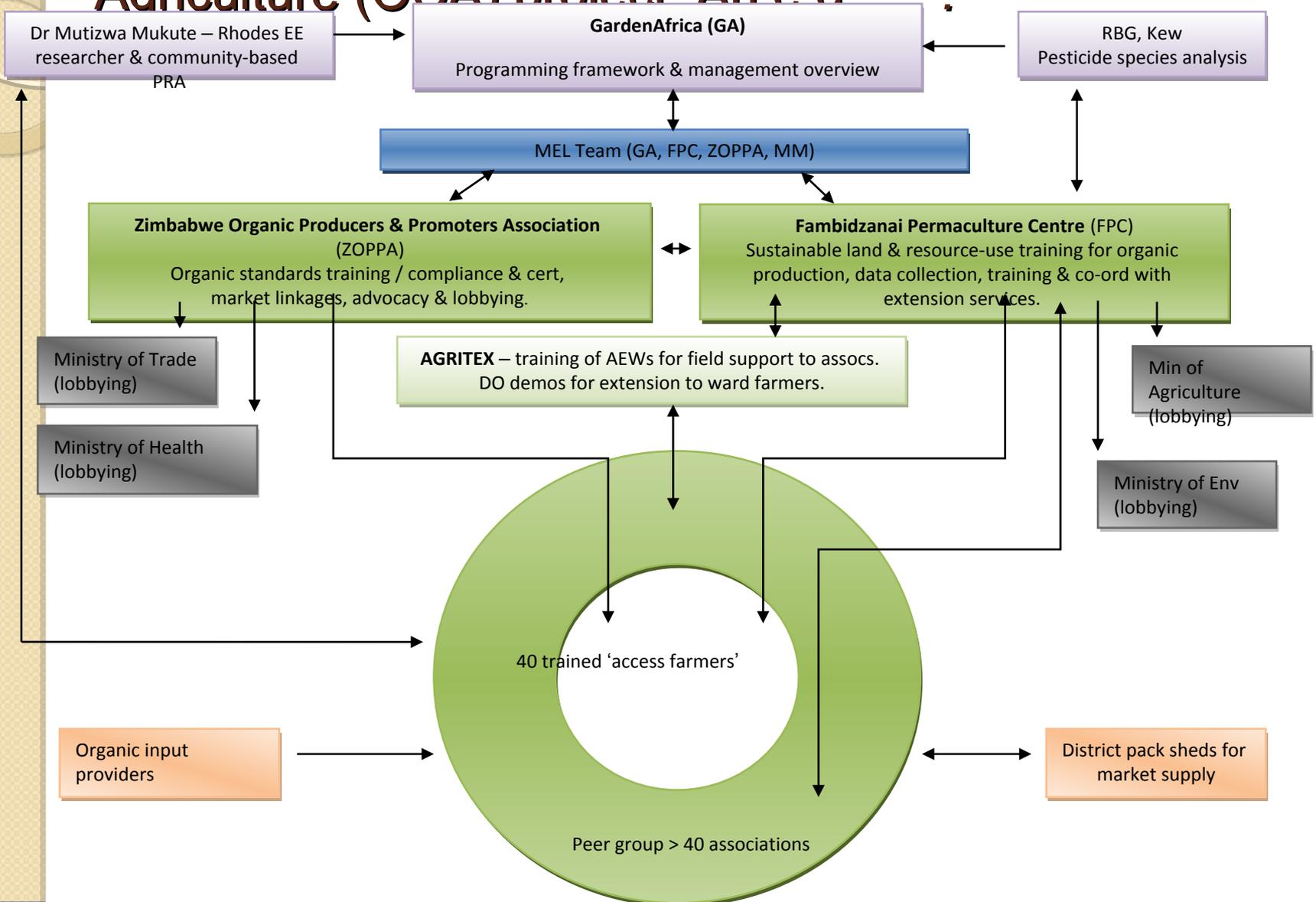
- ❖ ***But they lack the necessary facilities, equipment and energy generating tools.***

Gold panning worsens siltation but generate

Climate change related responses in UMP

5. Group approach to address local matters of concern, which include water, food security and income generation.
 - ❖ *But the approach is narrow and largely sector-based.*

The Livelihood Security in a Changing Environment: Organic Conservation Agriculture (OCA) project: An e a



OCA achievements (2011-2014)

1. Established 40 farmers associations in 8 districts of Mashonaland East (including UMP)
2. Developed the OCA capacities of about 1,000 farmers;
3. Certified over 35 of the 40 farmers associations through;
4. Facilitated the collective production, bulking, s and marketing of certified organic produce; and
5. Establishment of market linkages for organic produce and the selling of over 50 tonnes of the produce in 2014.

Stories from OCA farmers in UMP

You want me to tell you about what we are good at? It is very simple and yet very important. We are good at working together to develop our area. We have cooperated in this ward and in other parts of our district to build schools for our children. Now we have many schools. Recently we mobilised ourselves and built a dip tank for our livestock. As an Organic Farmer Association, in 2012, we organised a trip to Chimanimani in the eastern districts of Zimbabwe and learnt about water harvesting from farmers like us. Our experiences there motivated us to harvest water for our cattle. When we got back, we mobilised community members from three neighbouring villages (Makamba, Chisaya and Chibundu) and reconstructed a small dam on Guyu River in 2013. The small dam had been destroyed by flood over 20 years ago. It took us three

Another story

In the past people used to determine whether there was to be a good agricultural season by observing production patterns of certain wild fruit trees; and the direction in which the nests of certain birds faced; and by the abundance of certain insects. The predictive value of these observations was high but now this role has been taken over by the Department of Meteorological Services. No efforts have been made to try and link these different ways of predicting weather.

A story about the future

I want my children to be exposed to successful farming experiences so that they value and profit from farming. I want my children to be educated in a way that enables them to perform tasks not just to know them. They must have practical knowledge in what they choose to do, whether it is agriculture, building, carpentry or any other field of work. The education must practically benefit them and the community.

Making sense of the stories

1. Material, relational and cognitive resources are recognised and valued by the smallholder farmers.
2. Exchange visits are important for developing the farmers' capacities to aspire and transform.
3. Traditional climate related knowledge is being replaced and displaced by modern knowledge.
4. Education must help communities not just

Conclusion

1. Agriculture is major livelihood activity in UMP
2. Climate change is been experienced through higher temperatures, less rainfall, increased duration of dry spells in the rainy season and the shortening of the wet season
3. The climate change-water-food-energy nexus issues include:
 - a. Inappropriate crops;
 - b. Low attention to livestock production;
 - c. Poor land husbandry and siltation of water bodies;
 - d. Lack of technologies and energy for water harvesting, pumping and irrigation and agro-processing; and
 - e. Under-developed *culture* and practice of trans-sectoral and transdisciplinary collaboration .

Conclusion (continued)

The smallholder farmers in UMP can benefit from T-learning. BUT how will it:

1. Facilitate multistakeholder mobilisation and organisation; cultivation and expansion of common ground that leaves cognitive trails and dispositions?
2. Pay attention to the real matters of concern, while at the same time drawing on plural ways of knowing?
3. Work with incomplete facts and inadequate experiences to address new & emerging problem?



Thank you for listening