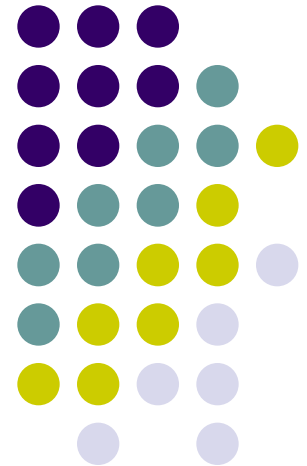


From Vulnerability to Coping Strategies Under Variable Climate – What Next ?

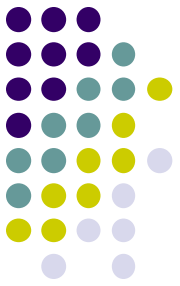
Learning from the Traditional Water Management System in Pakistan

Humaira Daniel

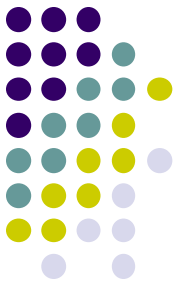
United Nations University, Institute for Environment and Human Security, Bonn, Germany



Structure of the presentation

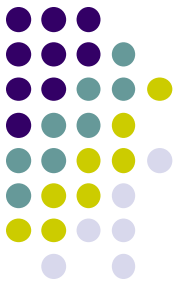


- Vulnerability to Climate Variability (Context)
Global, Regional & Local (with special reference to Pakistan)
- About the Case Study Area
- Traditional Water Management System as Opportunity towards vulnerability to Climate Variability
- What Next?

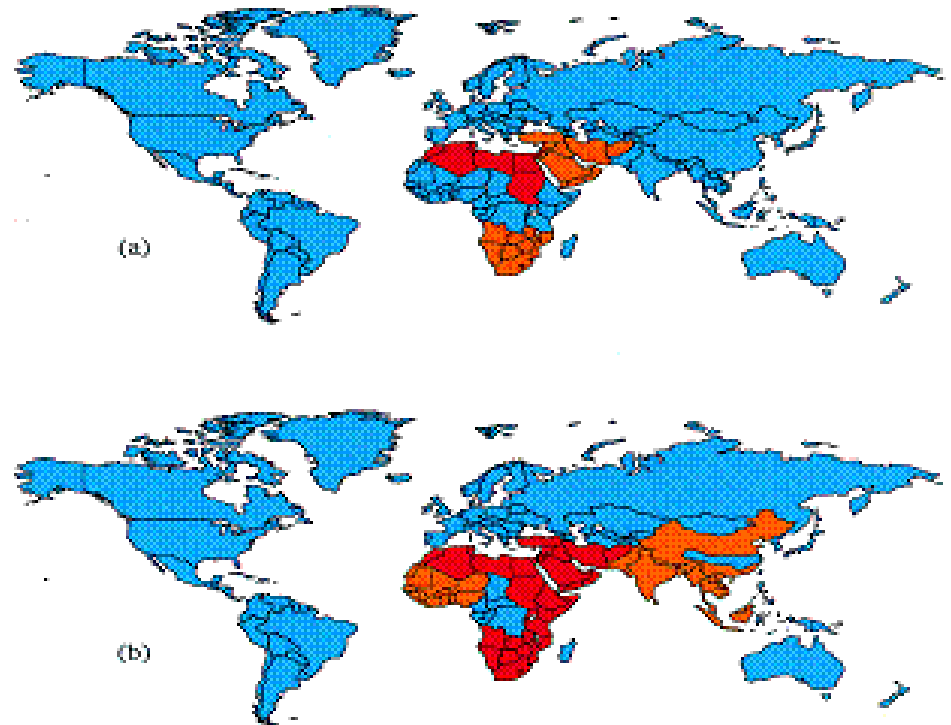


CLIMATE VARIABILITY AND VULNERABILITY.....

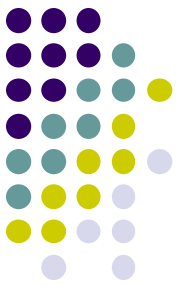
Global Context



Climate change is severely impacting the hydrological cycle and consequently, water management. This will in turn have significant effects on human development and security. (IPPC 2007).



Global water scarcity (a) now and (b) in 2050. Regions are coded according to their per capita annual renewable freshwater resource. Red: less than 1000m³ per person per year, orange: between 1000 and 2000m³ per person per year and blue . Greater than 2000m³ per person per year. (Data from Fischer and Heilig(1997))

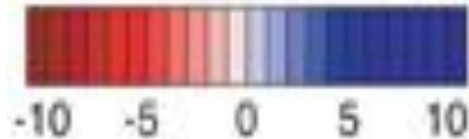
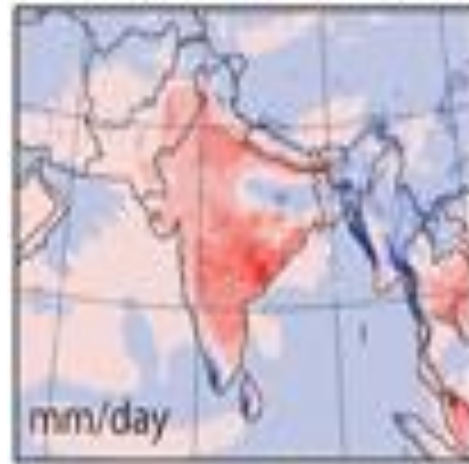


Regional Context

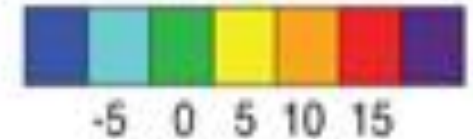
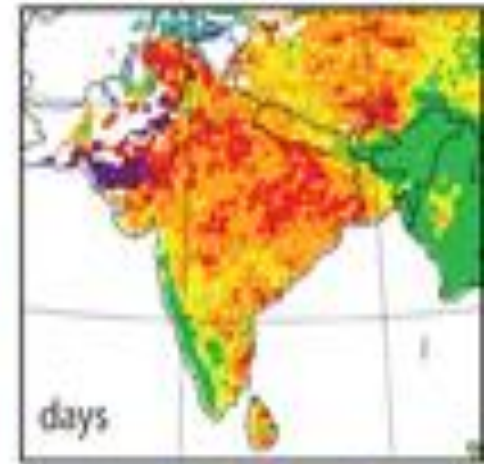
Monsoon Dependency

Large parts of the Indian subcontinent depend on the monsoon rains. The summer monsoon accounts for as much as 90 per cent of annual precipitation in some regions (*Lal et al., 2001*)

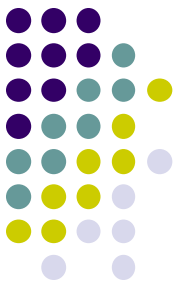
Future Change in Summer Convective Precipitation



Future Change in Monsoon Onset Date



M.Ashfaq. et al,2009,Suppression of South Asian Summer Monsoon in the 21st Century.....

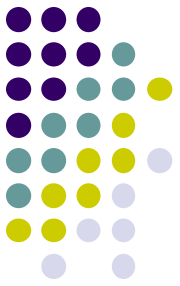


Local Context- Pakistan

Most at Risk

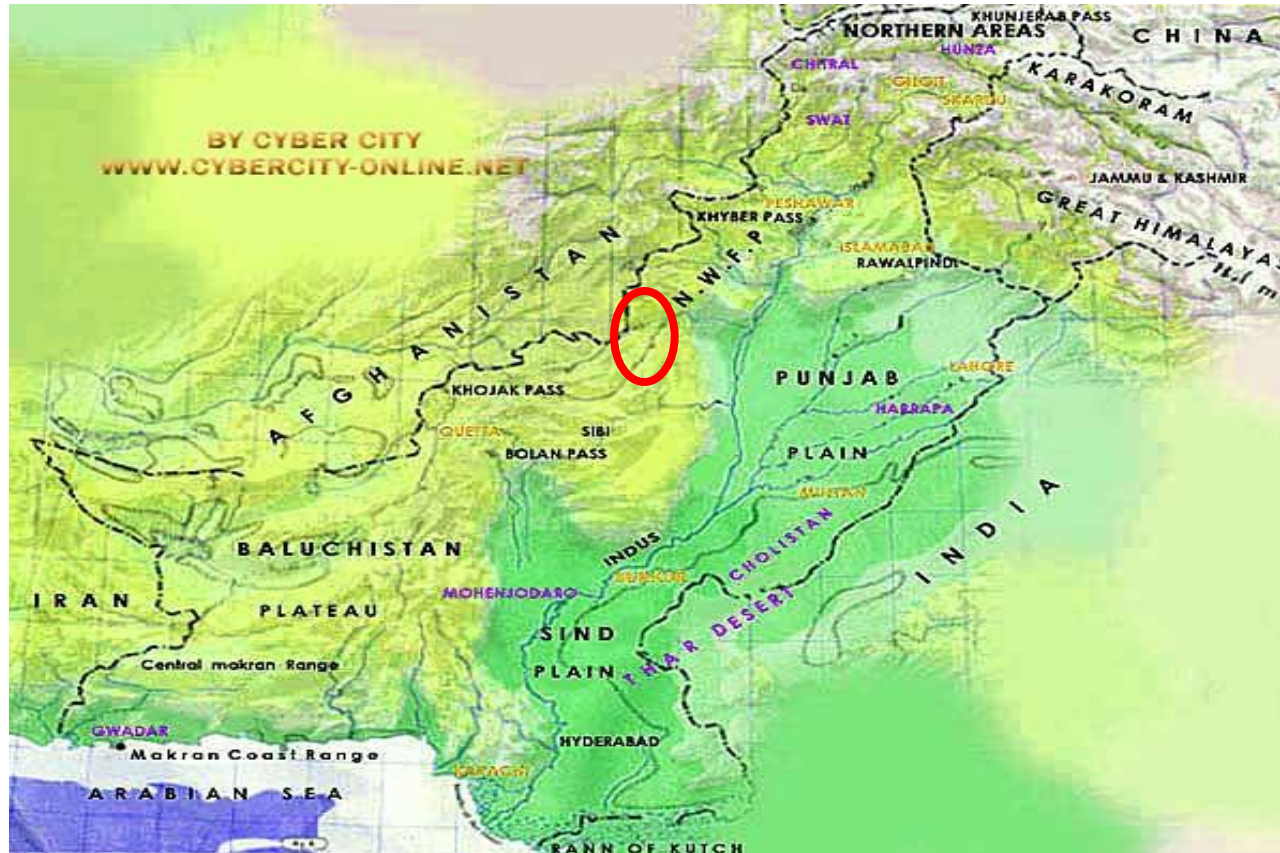
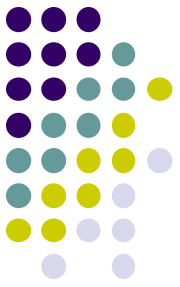
- Exposure to climate-related hazards such as flooding and droughts,
- Human vulnerability in terms of the **capacity of individuals, Communities, and societies to effectively respond** to such hazards based on a combination of natural, human, social, financial and physical factors. (A. Thomas 2010)



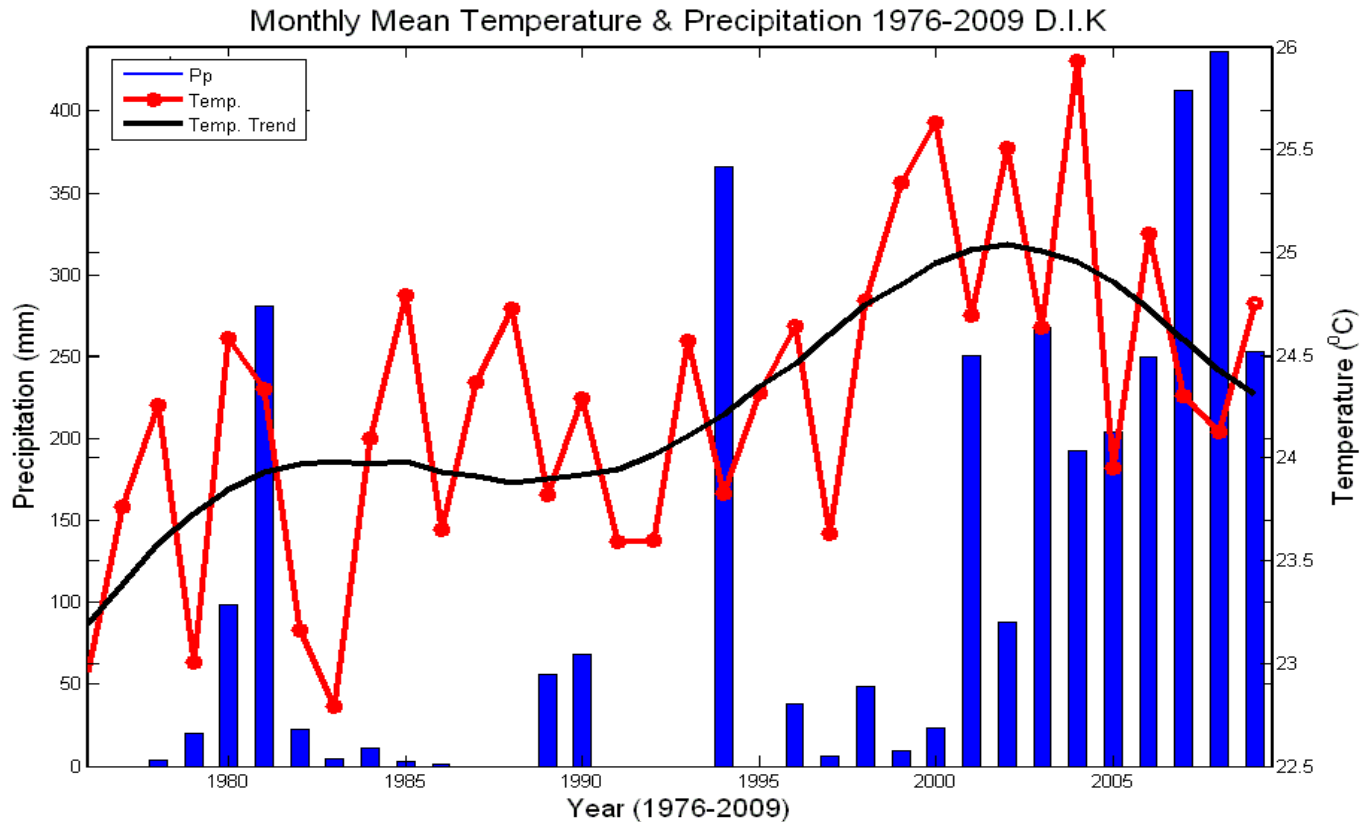
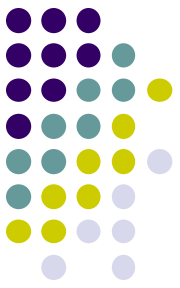


ABOUT THE STUDY AREA.....

Study Area: Dera Ismail Khan

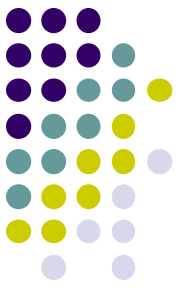


Climate Change(Temp & Precipitation Variability) Trend in Dera Ismail Khan 1976-2009

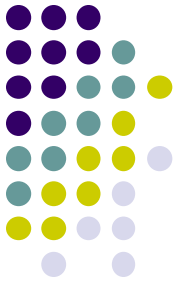


Graph assimilated from the Climate data available at www.tutiempo.net

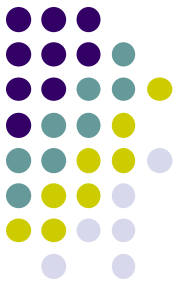
Typical village of the study area in the watershed



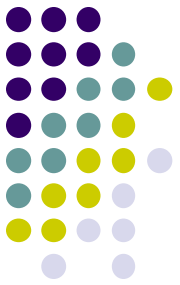
Rural Livelihoods



What makes it vulnerable to climate variability

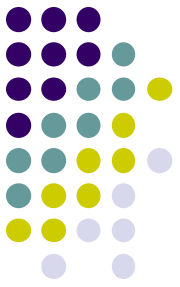


- Arid- Semi Aridity
- Dependence of Monsoon Rainfall for Water
- Extreme Poverty & Remoteness
- Limited and restricted livelihood options
- Security Crisis



Traditional Water Management System As An Opportunity Towards Vulnerability to Climate Variability.....

Water Channels



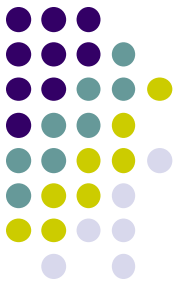
In Dry Months



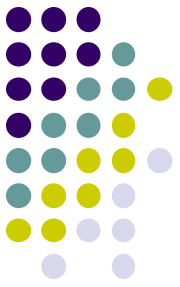
In Monsoon Months



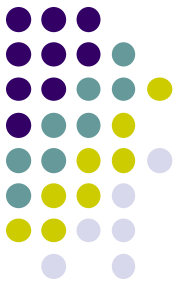
How do they cope?

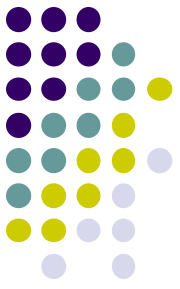


Water Management Under Tribal Rules



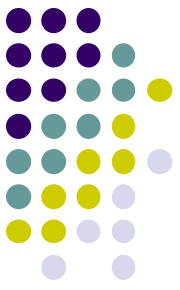
Perrnial Water Management





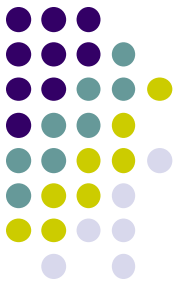
Challenges

- Strong Tribal Influence
- Decreased State Interest
- Large Dams Vs Local Water Management
- Less Funds
- Lack of Monitoring
- Rural - rural and rural –urban Migration
- Fading local institutions



Conclusions

- The Climate Variability, Social Vulnerability and their interaction is a complex research agenda. the ethnography pattern of research methodology can be a very useful methodology since it allows maximum interaction of researcher with the people and the environment
- Difficult to conclude clear connection between extreme weather events with the climate change in the region.
- Monsoon variability have certainly made the livelihood choices of people at risk and combined with the water scarcity issues in the area have created vulnerable situation for the people
- Traditional coping strategies to climate change are acquired through years of accumulated experience and indigenous knowledge. They are still of significant importance.

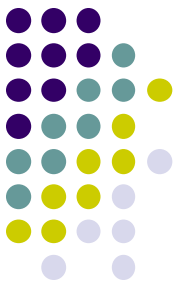


What Next?.....

Climate Change, Vulnerability, Adaptation, Sustainable Development Nexus



- ✓ Vulnerability is linked to access to resources (ecological, economical, social and human, governance, institutions)
- ✓ Climate change is expected to exacerbate current stresses ... (IPCC 2001, 2007)
- ✓ Sustainable Development can reduce Vulnerability.
(Ayer & Dodmann, 2010, Ayer & Haq 2009, Dodmann et al, 2009, Haq et al 2006)
- ✓ Adaptation is about tackling the effects of climate change, mainly through increasing the resilience and capacity to cope with its physical impact.
(Prowse & Scott, 2008)
- ✓ Adjustment in natural & human systems in response to actual or expected climate stimuli or their effects, which moderates harms and exploits beneficial opportunities (IPCC 2001)



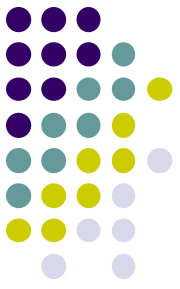
What Next ?

- ✓ Not simple Adaptation rather **Pro -Poor Adaptation**

(Countries in South Asia and Africa are prone to physical impact of climate change even though their contribution in greenhouse gas emission is very less)

- ✓ If pro poor adaptation then should be **Community based adaptation (Huq & Reid,2007)**

Community Based Adaptation



- ✓ Bottom Up
- ✓ Based on people's knowledge and existing coping strategies
- ✓ embedded in participatory approaches to development

(Adger et al, 2003, Chatterjee et al, 2005, Chambers 1983)

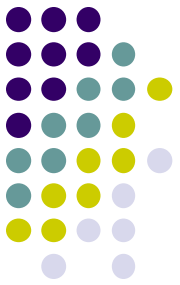
ICARUS II: Climate Vulnerability and Adaptation: Marginal Peoples and Environments



Climate Change , Vulnerability and Adaptation research is not only about gathering informationis about the way you do it...understanding people makes you understand their point of view...at the end its all about people



“FOOD FOR THOUGHT”



Why not acknowledge that we, too are part of the public and that we have much to gain from treating our “subject” as the arbiters of knowledge rather than starting from the premise that people are ignorant.

Political Ethnography , What immersion contributes to the study of power. Edited by Edward Schatz, 2009,179.

Engendering local coping strategies to climate variability:

Evidence from southern Cameroon

Olufunso Somorin

Center for International Forestry Research, Cameroon

Background

Increasing role of **forest ecosystem goods and services (FEGS)** in local **livelihoods**

- NTFPs as food sources
- Fuelwood to meet energy demands
- Herbs for medicinal purposes
- Additional income from NTFP trade
- Soil and water conservation

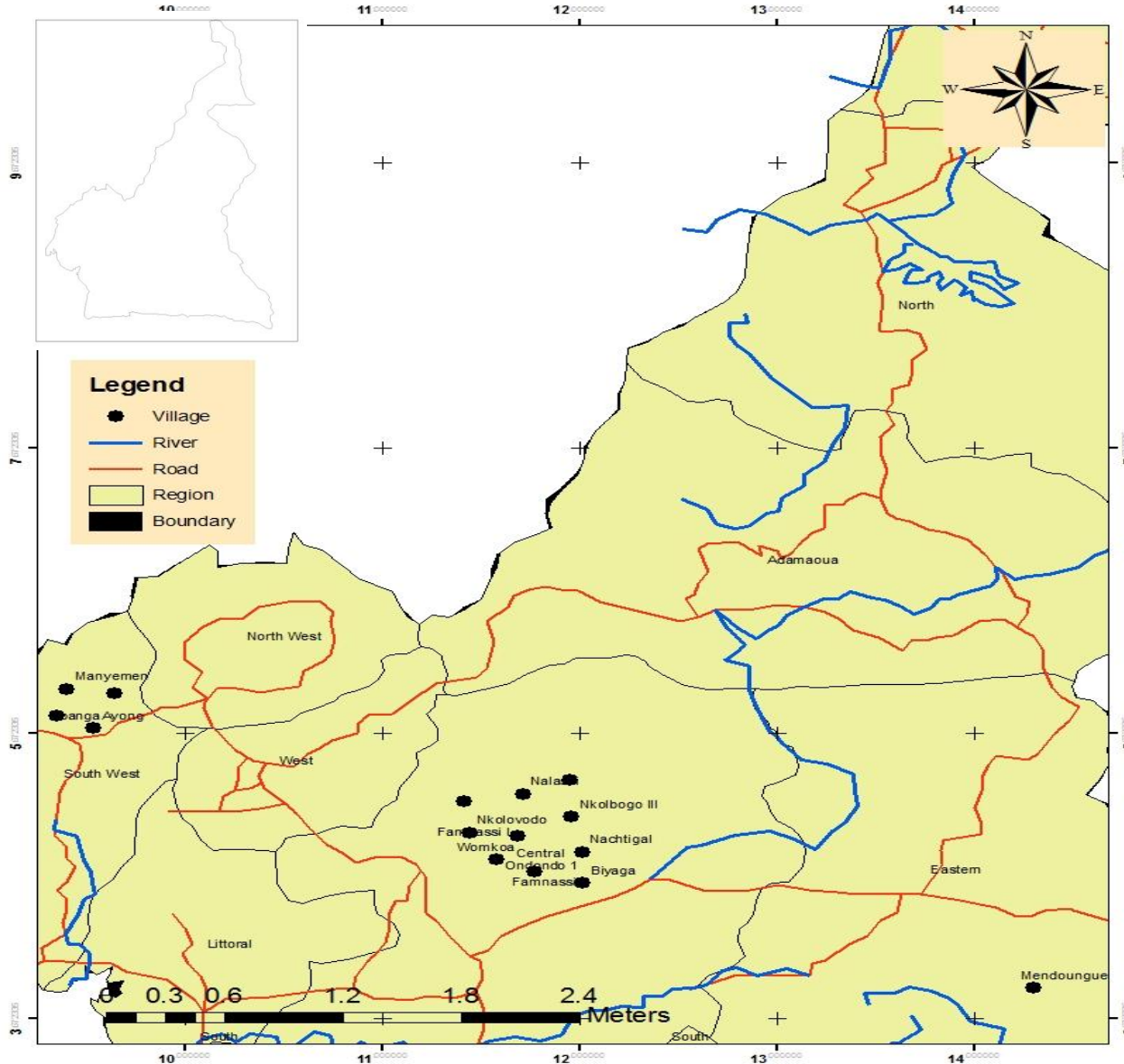


Background

- Impacts of climate variability and change on ecosystems including forests
 - Changing patterns of temperature and rainfall
- Resulting impact on forest-dependent communities
 - Because they depend on ecosystem goods and services
- In response, local communities have developed a range of coping strategies
 - Reducing vulnerability
 - Increasing adaptive capacity

Investigate gender differentiation in local responses to climate risks

Study context – southern Cameroon



Methodology

- Household survey

- 120 households
- 3 regions within southern Cameroon
 - Central (*n* = 40)
 - East (*n* = 35)
 - West (*n* = 45)
- 14 villages randomly selected in total
- 10-12% of total HHs in the villages surveyed

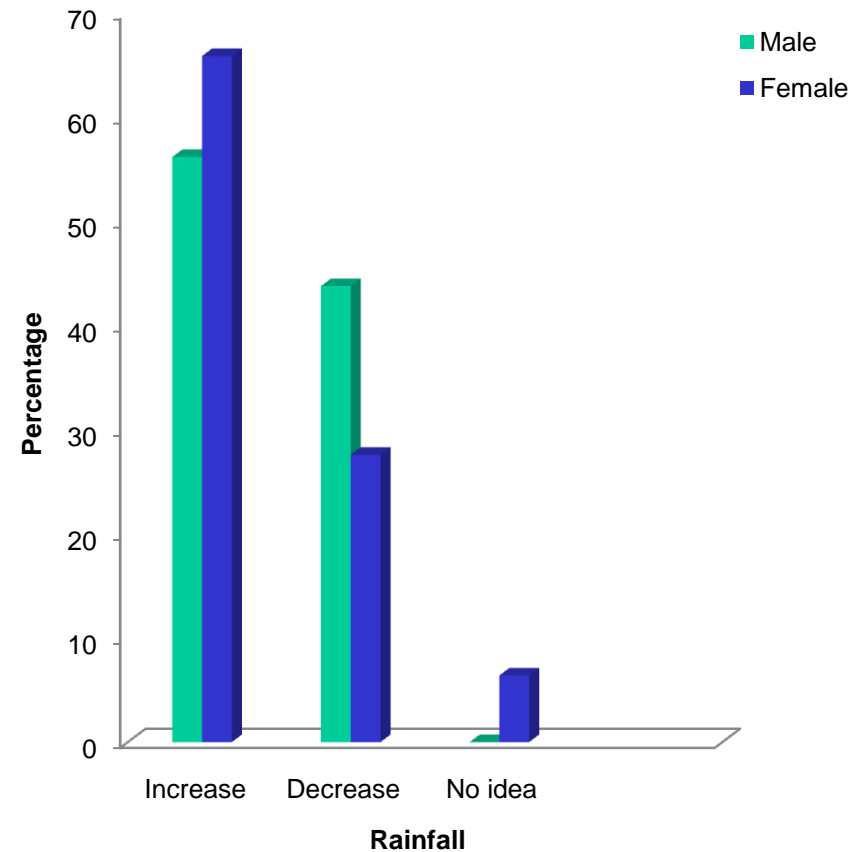
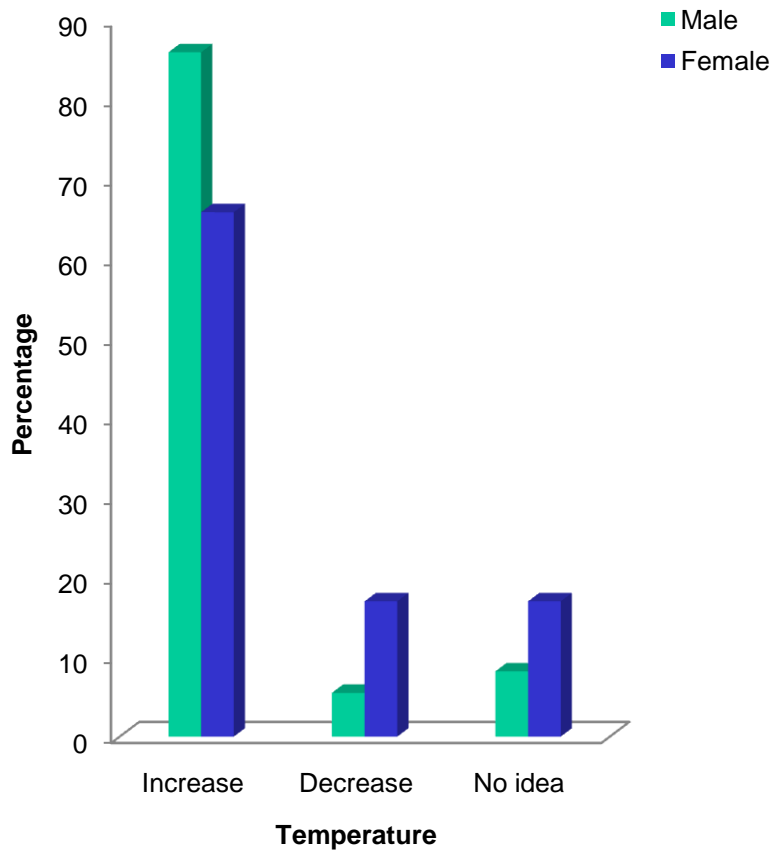
- Data on:

- Household socio-economic characteristics
- Local perception of climate impacts
- Dependency on forest resources
- Local coping strategies

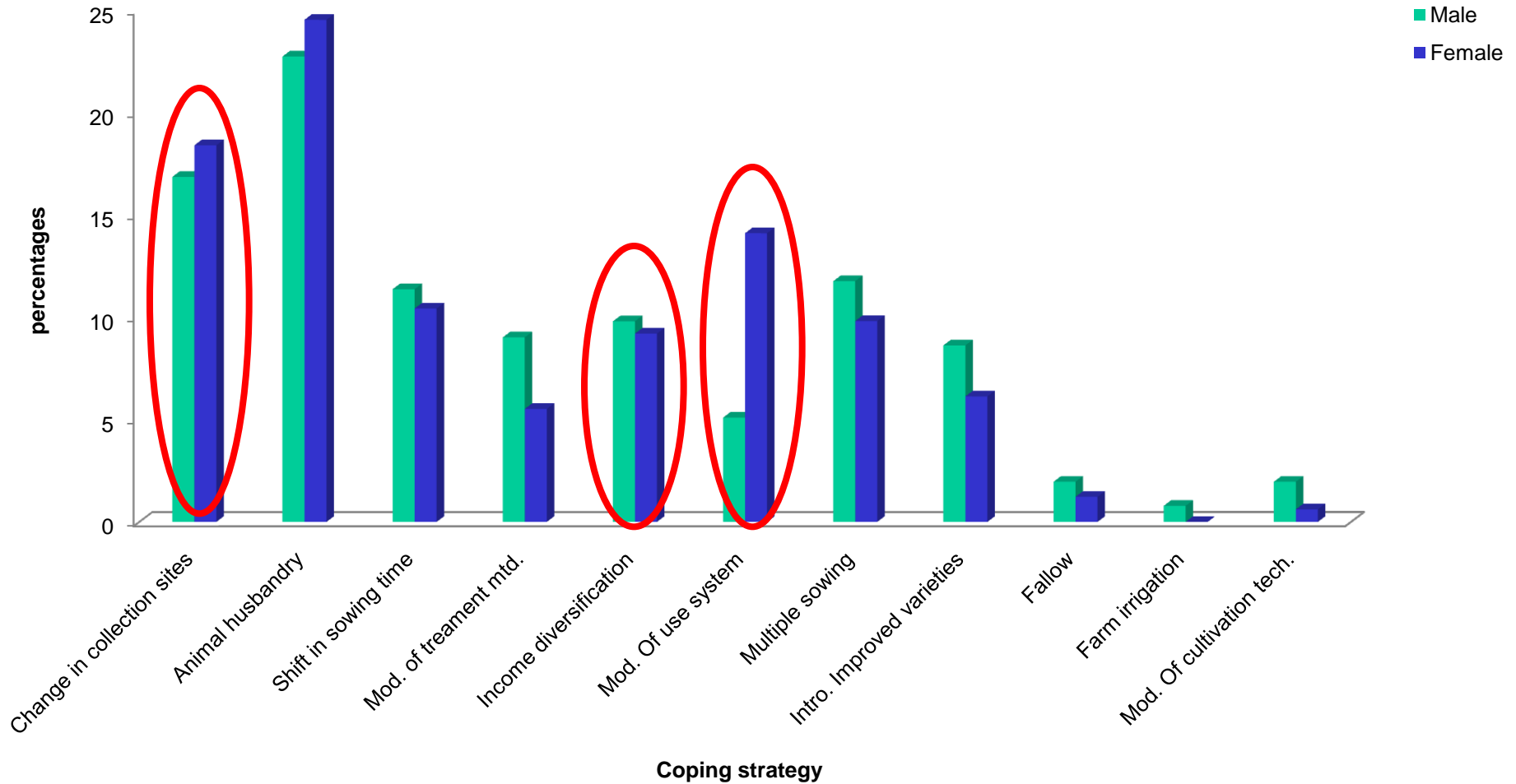
Socio-economic characteristics

Attributes	Female (n=47)	Male (n=73)
Age (years)	49.1 ± 11.8	55.4 ± 13.7
Educational level (%)		
- None	23.4	8.2
- Primary	53.2	43.8
- Secondary	23.4	45.2
- Higher education	0	2.7
Household size (n)	10.2 ± 5.2	9.6 ± 5.3
Ethnicity (%)		
- Native	48.9	93.2
- Migrant	51.1	6.8
Occupations (main livelihood activities)		
-Primary	Agriculture (cash crops)	Agriculture (food crops)
-Secondary	NTFP Gathering, Petty trade	Hunting and Gathering, Paid labour,

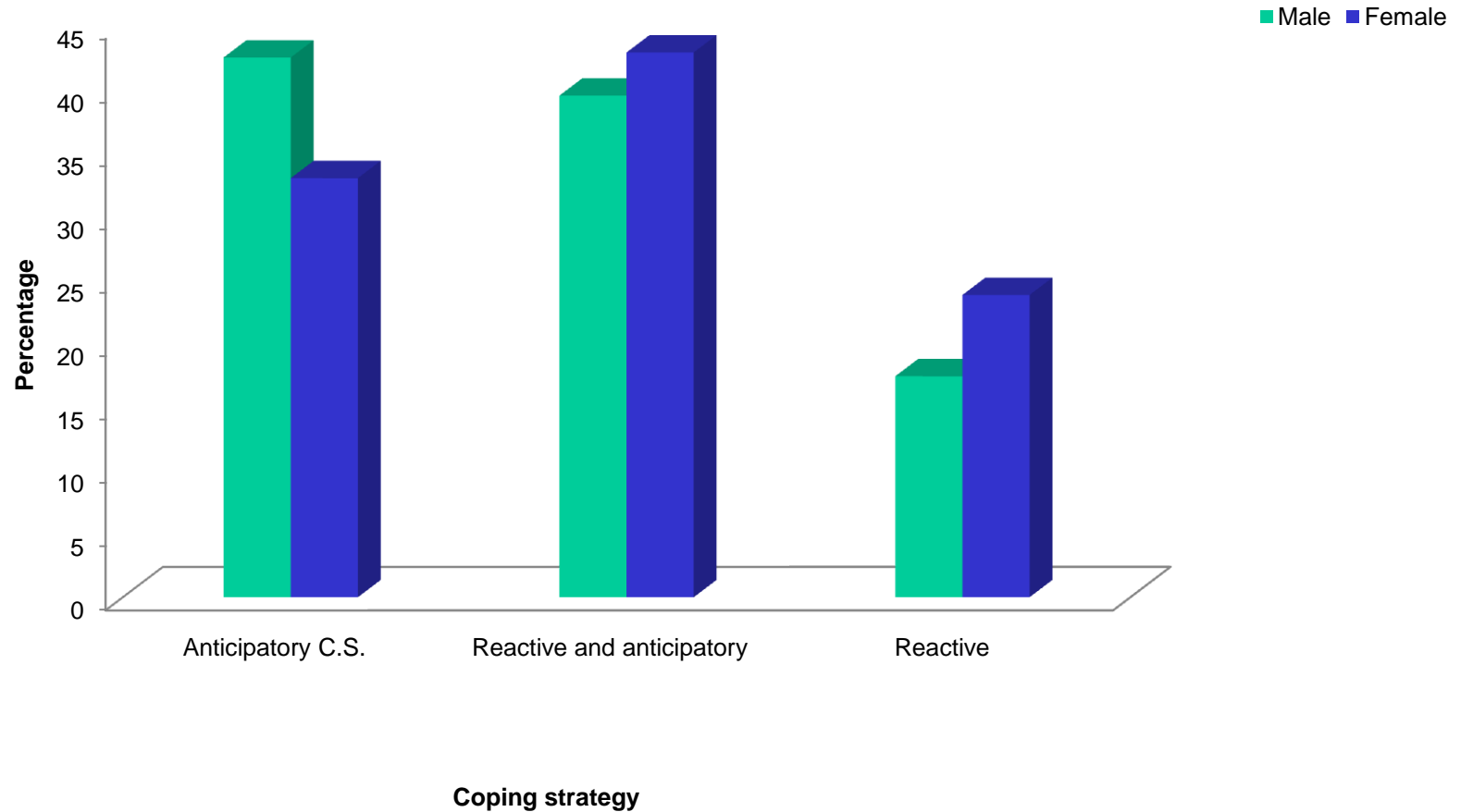
Perception of climate variability



Local coping strategies

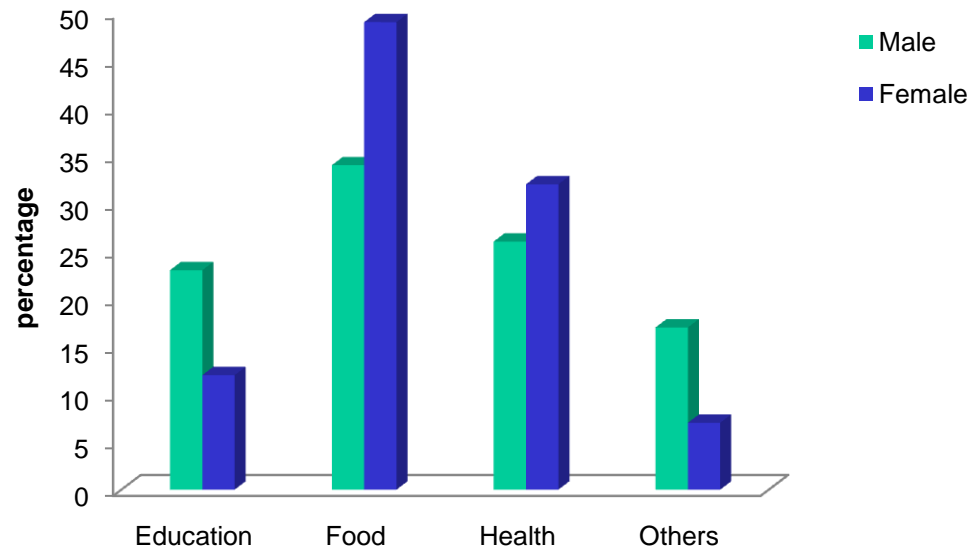


Local coping strategies



Is there a role for forests?

- Food security – provision of food materials to meet household dietary needs
- Income sources – sales of NTFPs (e.g. *Gnetum africanum*)



Conclusion

- Forests offer additional coping strategies for both men and women-headed households
- Socio-economic characteristics determine perceptions of climate risks and coping capacity
- Gender differentiation in local coping strategies
- Livelihood systems- production vs. commercialization
- Gender differentiation in adaptation needs of local communities

Thank you

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THINKING beyond the canopy





From coping to adapting: lessons from forest and livestock dependent communities in Northern Mali

Houria Djoudi and Maria Brockhaus
CIFOR

ICARUS-II, May , 2011 Ann Arbor

Introduction

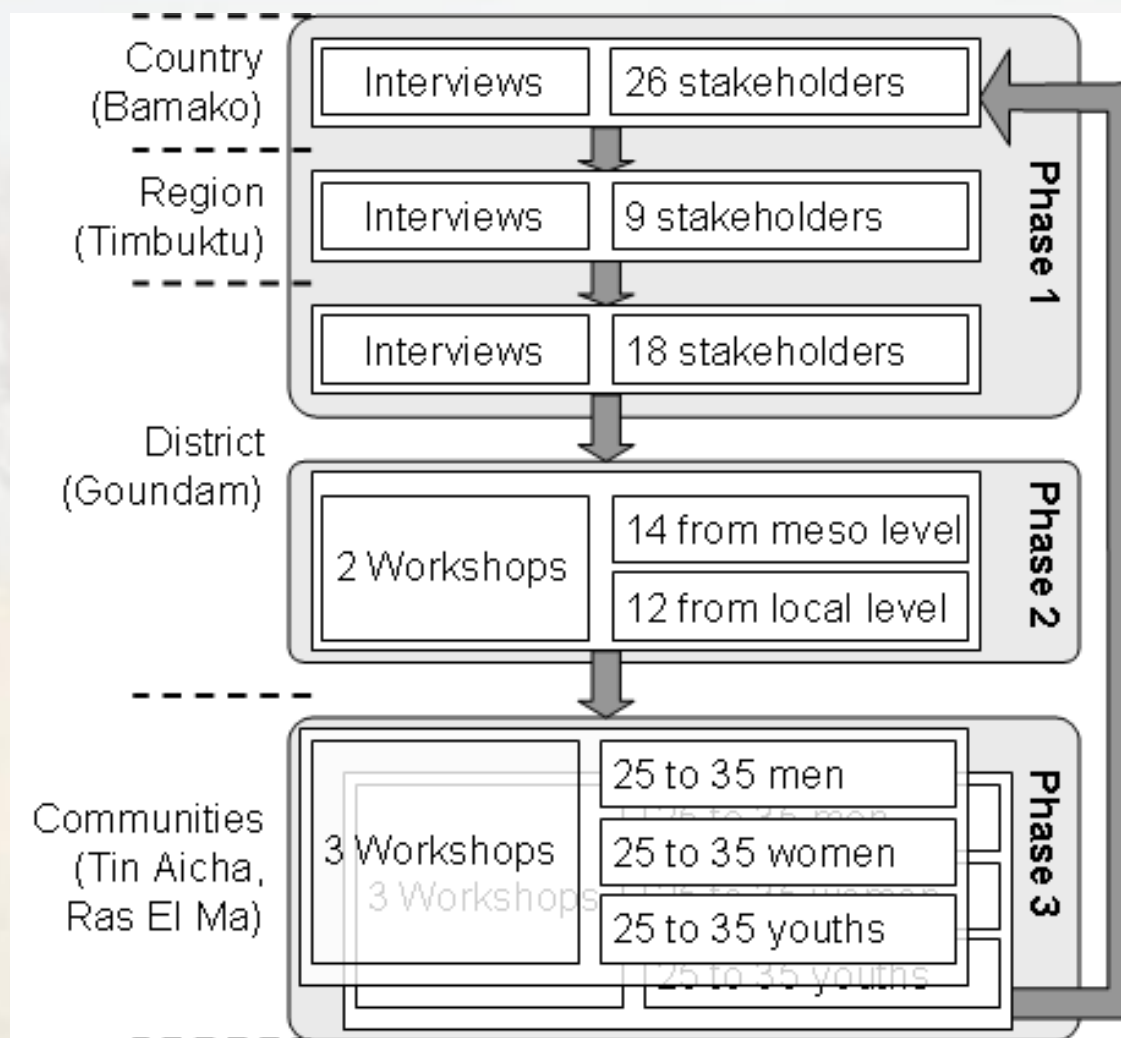
1. Societies are undergoing fundamental economic, ecological, social and political change
2. Climate change adds a new dimension to the already existing vulnerabilities
3. Adaptation is a cross-level, cross-sectoral task to respond to CC
4. Challenges governance structures from local to global level to formulate and implement adaptation strategies

Key Question

Who , how and what shapes [or limits] the outcomes of adaptive decision making processes to support a shift from spontaneous, reactive and autonomous adaptation to strategic and sustainable adaptation?

Objectives, approaches and methods

To assess, with different actors at different levels, adaptive strategies in the context of livestock and forests depending communities





January 3, 1974, & December 26, 1978

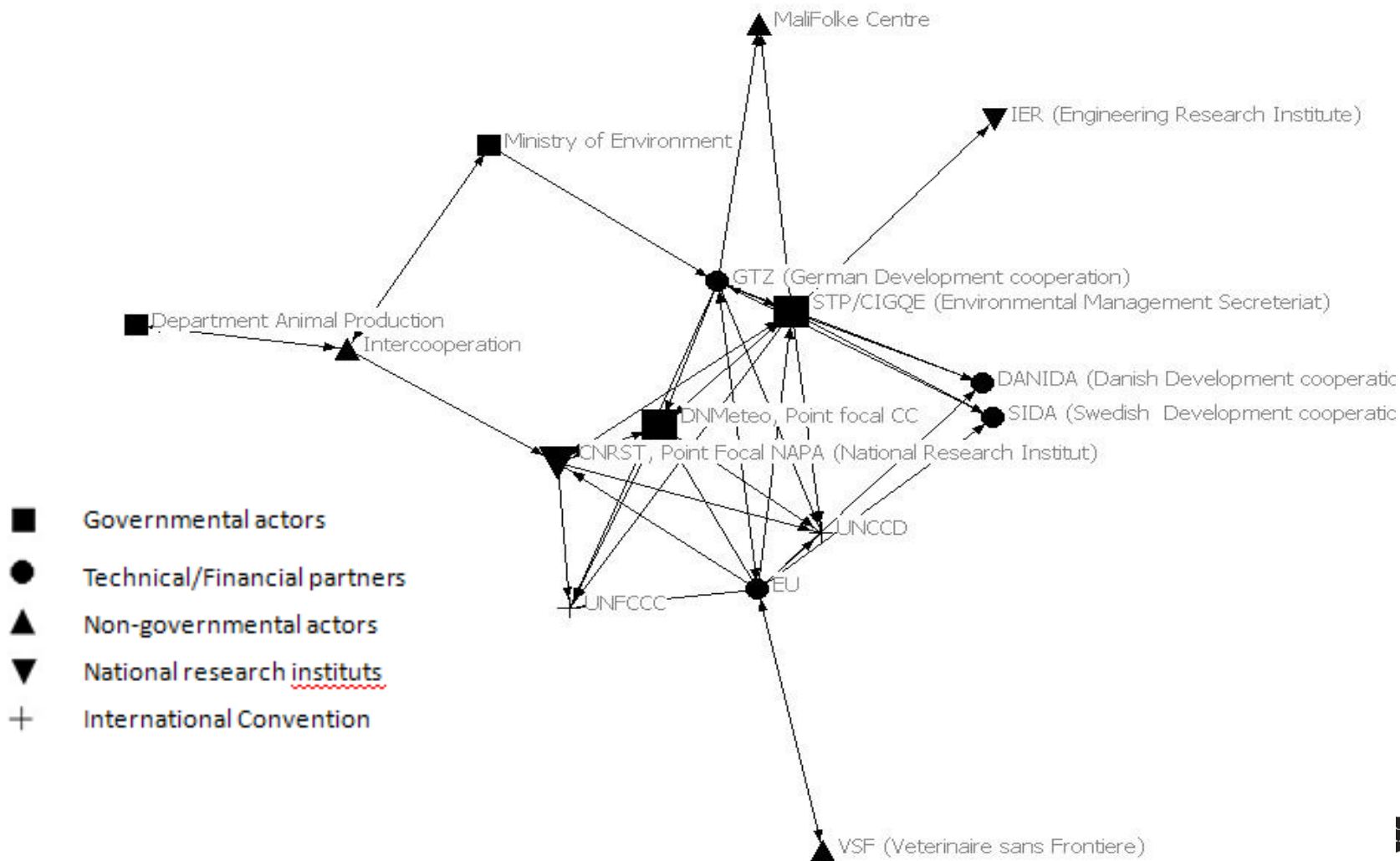


March 17, 2005, & September 28, 2006

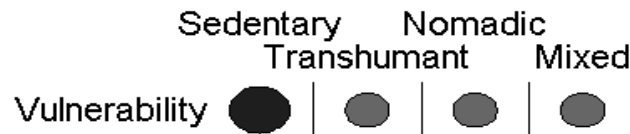
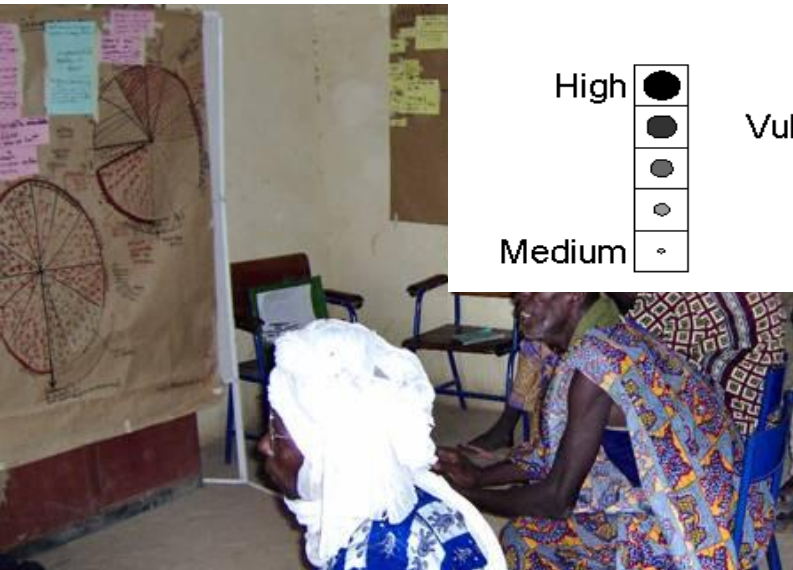
Lake Faguibine

- Social, political and ecological conditions have drastically changed in the past 30 years:
- **Drying out of the lake**
- **Rebellion**

The adaptation arena in Mali: where are the local institutions



Different point of views and different levels (local, sub national, national)



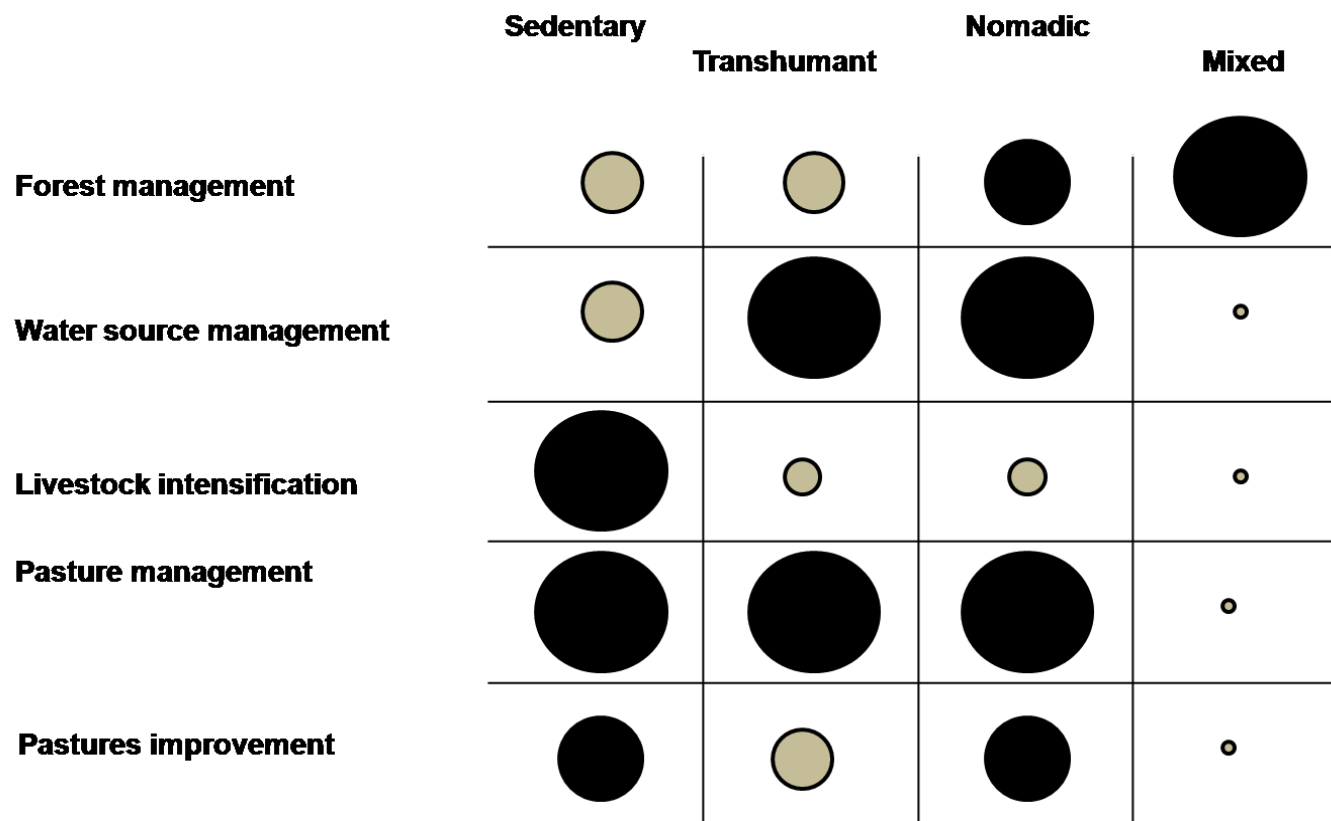
Local level

**Mobility =
Adaptive
strategy**

Sub-nat. level

**Mobility =
Factor of
vulnerability**

Adaptive measures and their importance for livelihoods, ranked by governmental representatives

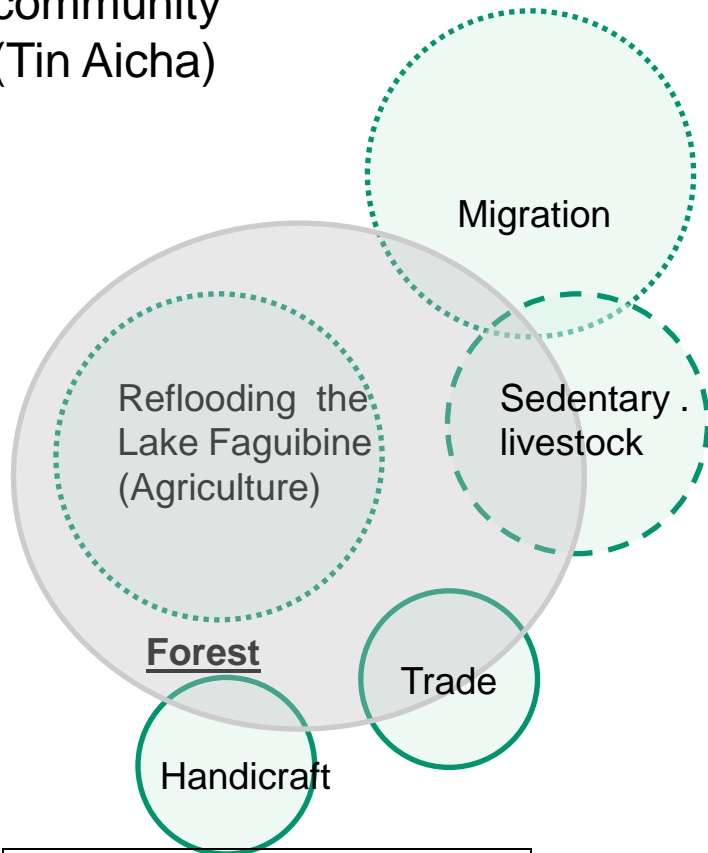


	Sedentary	Transhumant	Nomadic	Mixed
Natural and artificial reforestation	●	○	○	●
Biological dunes stabilisation	●	○	○	●
Creation of protected forest areas for regeneration	●	●	●	●
Water source management	●	●	●	●
Rebuilding livestock herds	●	●	●	○
Improving livestock husbandry system	●	●	●	○
Improving animal health with regular treatments	●	●	●	○
Diversification of activities in addition to livestock	●	●	●	○
Creation of a conflict mediation local institution	●	●	●	●
Pastures improvement by re-seeding high value species	●	●	●	○
Creation of local comities for the regulation of natural resource use	●	●	●	○



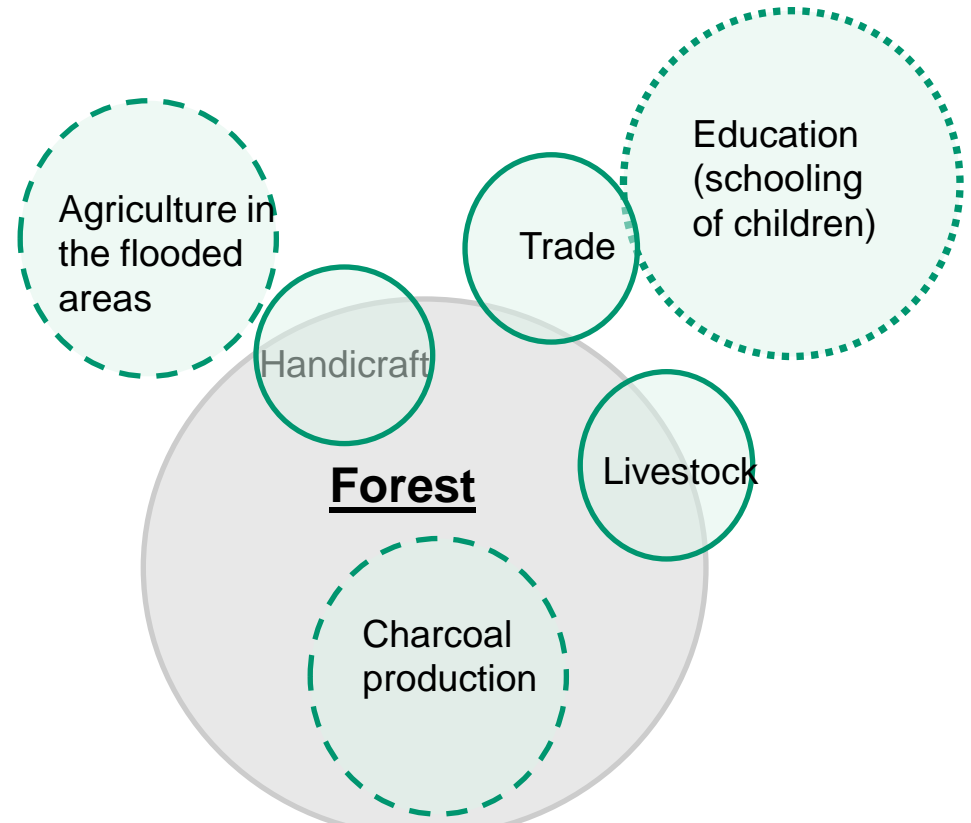
Gender differences

Men in the farmer community (Tin Aicha)



Migration = Adaptive strategy

Women in the farmer community (Tin Aicha)



Migration = Factor of vulnerability

Conclusions

Observable autonomous adaptation, in eco-systems, at individual or community level, but political-administrative system is lagging behind:

- **Horizontal and vertical communication and coordination** of adaptation and development activities is needed
- **Institutional and political governance structure** across all levels needs to show willingness and flexibility to ensure strategic and planned adaptation from the local to the global level.
- **Feedback loops, reflective cycles, institutional learning mechanisms**, across institutions, sectors and across scales, are urgently needed
- **Capacity building**, and technical, financial, and scientific resources, to support the local adaptation are needed
- **Gender sensitive adaptation** analyses and planification are needed



2005/01/12 18:21

Thank you