

Adaptation

Climate Change Adaptation in Africa • Research and Capacity Development Program

Climate Change and human mobility Dialogue for a strategic cooperation between Italy and Africa

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The connections between environmental vulnerability & mobility

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Chair, Advisory Board, The Climate Change Adaptation in Africa Program



Presentation Outline

- ❑ **Definitional clarity – what do we mean by human mobility?**
- ❑ **Vulnerability as the main driver to human mobility**
- ❑ **The African continent and climate change**
- ❑ **Links between climate change, human mobility and environmental degradation**
- ❑ **Building adaptive capacity and resilience – CCAA's action research strategy, objectives, & responses**
- ❑ **Concluding Remarks**



What do we mean by mobility?

- **Usually refers to the quality of being mobile – able to move from one place to another**
- **Also refers to the movement of people – from one social group to another**
- **In an environmental context – it refers to migratory tendencies – it is the extent to which vulnerability drives individuals to move to better social and economic conditions**
- **Hence vulnerability can be both a driver and enabler**
- **In short, environmental migration can also be an opportunity and a constraint**

Vulnerability – the main driver leading to migration

Vulnerability is multilayered & multifaceted

- **Biophysical; Social**

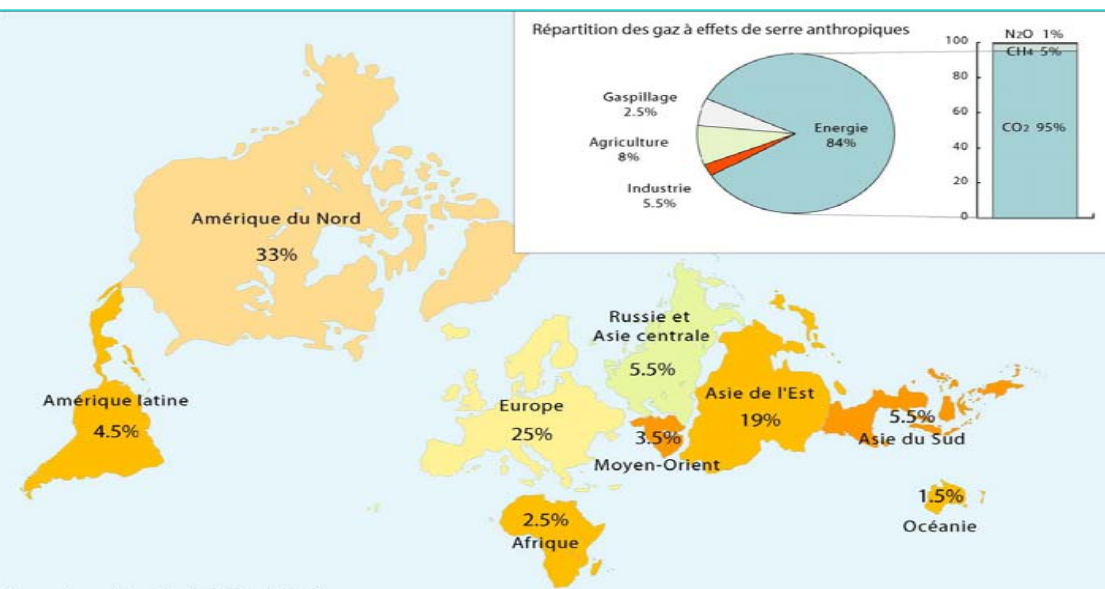
Vulnerability is complex; geographically specific

Africa is vulnerable with the least capacity to adapt

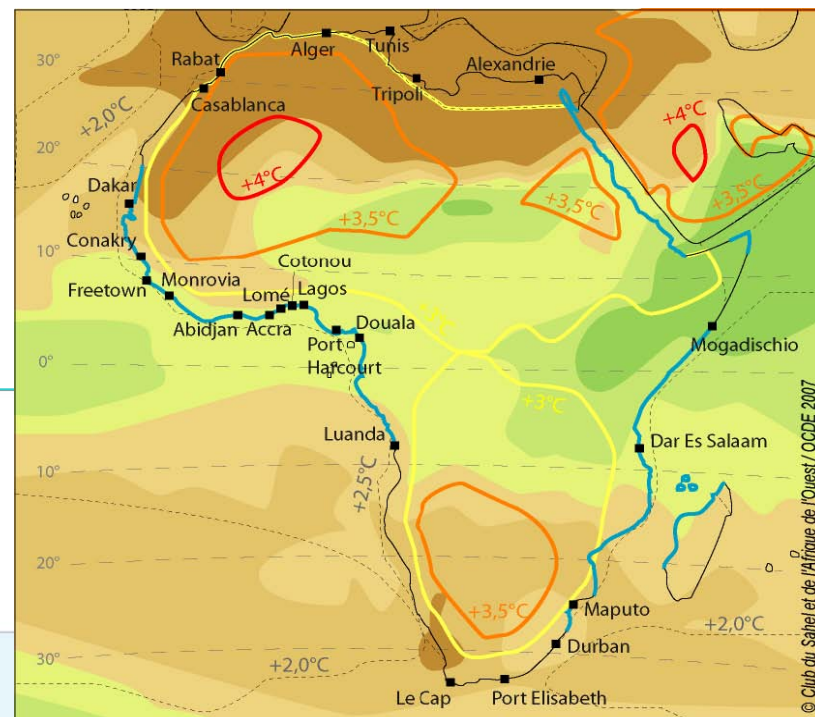
- **Our natural environment is sensitive and fragile**
- **Most of our sectors are highly dependent on ecological goods and services**
- **Our capacity to resist perturbation and withstand hazards is low**
- **Our climate is diverse and poorly understood**
- **The continent has one of the lowest human development indicators**
- **Vulnerability is heightened amongst certain social groups - based on existing stressors and adaptive capacity**

Africa & Climate Change

Even, if...

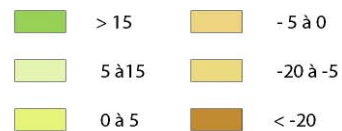


...However...



Projections (2080/99 comparée à 1980/99)

Variation des précipitations (%)



Variation des températures
+ 3,5°C

— Mangroves, écosystèmes fragiles et deltas menacés
■ Agglomérations côtières de plus d'un million d'habitants

Source : GIEC, Atlas de l'environnement (2007)

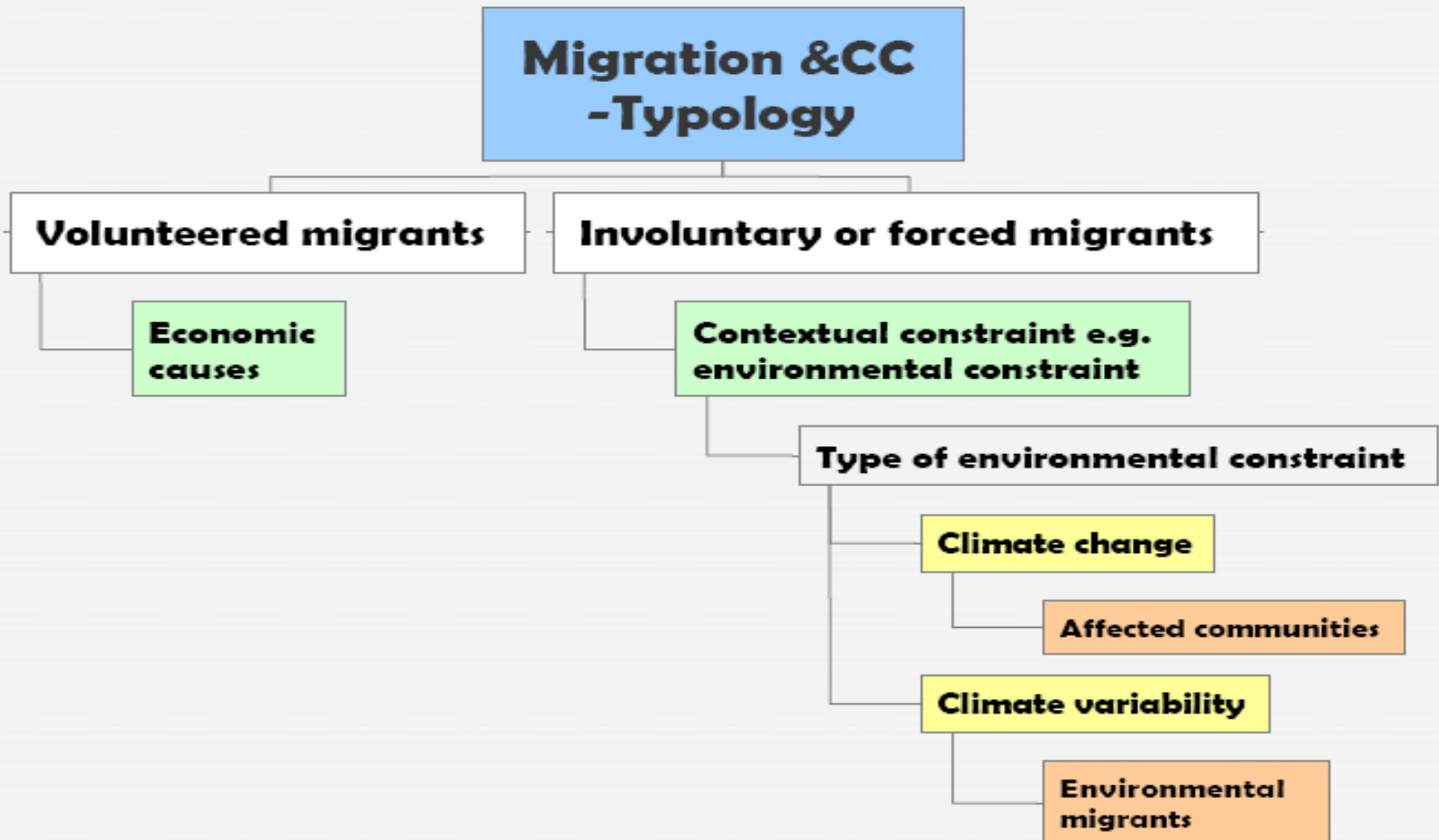
Migration & CC – Understanding the linkages

- **Estimation: About 200 millions of migrants, due to CC by 2050 (Myers, 2002)**
- **However:**
 - **Evidence of observed impacts of climate changes from socioeconomic systems, is much less known than from biophysical systems, and methodologically it is much more difficult given the complexities of these livelihood systems**
 - **lot of uncertainties on:**
 - **Figures of migrants affected**
 - **From where To where?**
 - **How much will be the costs?**
 - **What are the existing local strategies ?**

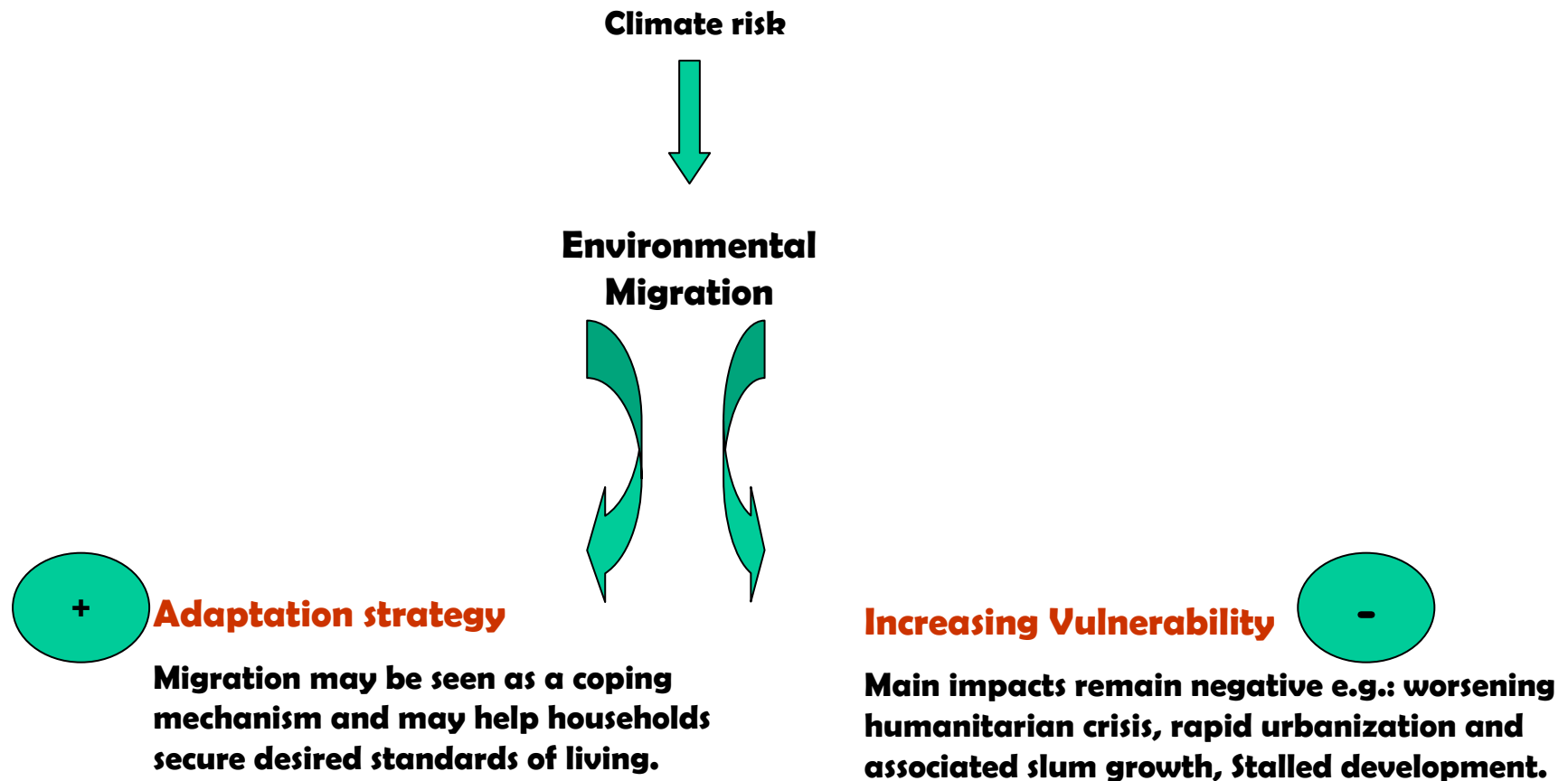


Importance of research on CC, particularly on vulnerable areas of Africa.

Migration & CC – Understanding the linkages



Migration & CC- Understanding the linkages



Migration & CC- Understanding the linkages - Causes

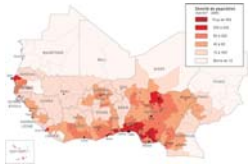
- **Poor environmental conditions – degraded ecosystems**
- **Increased water stressed African populations (75-250 Millions by 2025, and 350-600 Millions by 2050, **IPCC**) and areas (Northern and Southern Africa by 2055, **IPCC**)**
- **Reduced rainfall - decrease in length of growing periods (LGP)**
- **Competition for limited resources amongst resource poor communities**
- **Limited diversification – most African economies are largely dependent on rainfed agriculture which in turn is highly susceptible to climate related hazards**
- **Growing poverty – incidence of poverty remains worrying in many African countries**

Migration & CC- Understanding the linkages - Consequences

- **More Interdependence between rural and urban (migratory flux)**
- **Harsh environmental conditions and high incidence of poverty leads to a search for greener pastures**
- **Conflicts (e.g. farmers & herders in sahelian countries)**
- **Limited resources (water, land, food) is tension & conflicts amongst resource dependent communities**
- **Disintegration of the social fabric**
- **Search for livelihoods is leading to the collapse of the social fabric leaving a growing number of female headed homes with well know inherent gender related consequences**

Key vulnerable sectors – challenges and opportunities

Agriculture



-Loss of agricultural productivity -2 to 4% of regional GDP (from now to 2100- West Africa



-Predicted decrease in the length of growing period (LGP)- Eastern Africa

Strengthening the Capacity to Adapt to Climate Change in Rural Benin

-Reducing food insecurity and rural poverty in Benin

- Encouraging optimal use of water and agricultural potential,
- Using available research results
- Valorising local knowledge
- Testing adaptation options i.e. integrated soil management.

Managing Risk, Reducing vulnerability and Enhancing Agricultural Productivity Under a Changing Climate

By increasing the flexibility in management of vulnerable systems

- Working with rural communities to build adaptive capacity of smallholder farmers in the Greater Horn of Africa (Ethiopia, Kenya, Sudan and Tanzania).

Key vulnerable sectors – challenges and opportunities

Water resources



Coastal flooding
Decreasing of water resources
- run offs & groundwater (10 to 15% from 2000 to 2020)-
High risk of rainfall decreasing- North Africa



Reduced rainfall (IPCC).
South Africa

Enabling stakeholders in Moroccan coastal management to develop sustainable climate change adaptation policies and plans

- Developing capacity for policy and decision-making for strategic coastal land use planning and management,
- reducing the vulnerability of coastal communities to sea level rise, coastal flooding, and related extreme weather events

Managing climate risk to agriculture and water resources in South Africa: Quantifying the costs, benefits and risks associated with planning and management alternatives

- Integrate the current seasonal and annual climate variability with decadal forecasts
- Support private and public institutions to better integrate information on climate change and climate variability into water resources policy, planning and management.

CCAA point of departure – action research central to reducing vulnerability

- **Research as an entry point – using action research to better understand vulnerability and its many layers**
- **Poor understanding of linkages between climate change and variability and migratory tendencies calls for stronger research**
- **Action research captures perspectives of different actors and their perceptions and understanding of the problem and potential solutions**
- **Better management of environmental resources and good research can provide information on the root causes of environmental migration and ways to improve adaptive capacities of vulnerable groups**
- **Enhancing adaptive capacity and building resilience can reduce the likelihoods of environmental migration**

Building adaptive capacity and enhancing resilience

CCAA's objectives -

1. **Strengthen the capacity of African** researchers, development agents and policy-makers to contribute to adaptation to climate change.
2. Support adaptation by rural and urban people, particularly the **most vulnerable**, through action research.
3. **Generate** a better shared understanding of the findings of scientists and research institutes on climate variability and change.
4. Inform **policy processes** with good quality science-based knowledge.

Building adaptive capacity and resilience - CCAA current action research projects

Countries in which CCAA
projects have been funded (2006-2009)



Building adaptive capacity and resilience – CCAA's project responses

i. Enabling stakeholders in Moroccan coastal management to develop sustainable climate change adaptation policies and plans. Morocco

Overview: Developing capacity for, and contributing to, policy and decision making for strategic coastal land use planning and management, to the purpose of reducing the vulnerability of coastal communities to the impacts of sea level rise, coastal flooding, and related extreme weather events.

Some results

- Four studies performed: Downscaling of scenarios, Coastline evolution, Meteo marine climate scenarios, Coastal dynamic modeling**
- Map of local vulnerability including the natural and socio-economic components**
- Educational guidebook written for helping Moroccan teachers to integrate climate change education in their curriculum**
- Finalizing and application of adaptation strategies with stakeholder involvement**

Building adaptive capacity and resilience - CCAA's project responses

ii. Managing Risk, Reducing Vulnerability and Enhancing Agricultural Productivity under a Changing Climate. (Ethiopia, Kenya, Sudan and Tanzania).

Some results

The overall knowledgebase on impacts of climate change and variability and associated physical and economic vulnerabilities, enhanced

- Four country reports on past and current information on climate variability and change and its impacts on agricultural systems**
- Database of high quality climate data sets for characterizing and quantifying climate variability and its impacts on agricultural systems**
- Studies performed on stakeholders' perception of climate change risks and its role in decision-making**
- Ex-ante analysis to assess risk and profitability of the indigenous and improved management strategies using identified tools and approaches**

Decision aides that support strategic and tactical decision making in selecting appropriate responses to manage risks and reduce vulnerabilities and capitalize on opportunities created by variable climate, developed and availed

- Climate information needs of various stakeholders identified (farmers, input suppliers, output marketers, financiers and policy makers) for improved management of their enterprises**

Building adaptive capacity and resilience - CCAA's project responses

iii. Enhancing Adaptation to Climate Change among Pastoralists in Northern Kenya.

- **The 2 year project led by Practical-Action seeks to shed light on pastoralists' vulnerability and coping strategies vis a vis climate change.**

- **In Kenya as in other pastoral areas, policies to date have tried to restrict herd movement and settle pastoralists but with limited access to critical resources**

- **examine indigenous technologies, best practices and existing institutional arrangements for adapting to climate change**

- **With increasing occurrence and severity of drought, herd movement may become critical. The project is seeking practices that improve herd movement (e.g. livestock corridors) while securing pastoralists rights to water and forage.**

Building adaptive capacity and resilience - CCAA responses

iv. Rural Urban Cooperation on Water Management in the Context of Climate Change in Burkina Faso

Hypothesis: climate adaptation in the city depends to a great extent on climate adaptation in the country

Objective:

- reinforce cooperation between cities and rural areas in order to better cope with climate change and variability
- facilitating a process of dialogue and coordination between urban and rural stakeholders in three cities with a view to reducing vulnerability to water supply and water management
- supported by the research teams through modeling, economic analyses and other knowledge, as well as by technicians and students recruited locally.

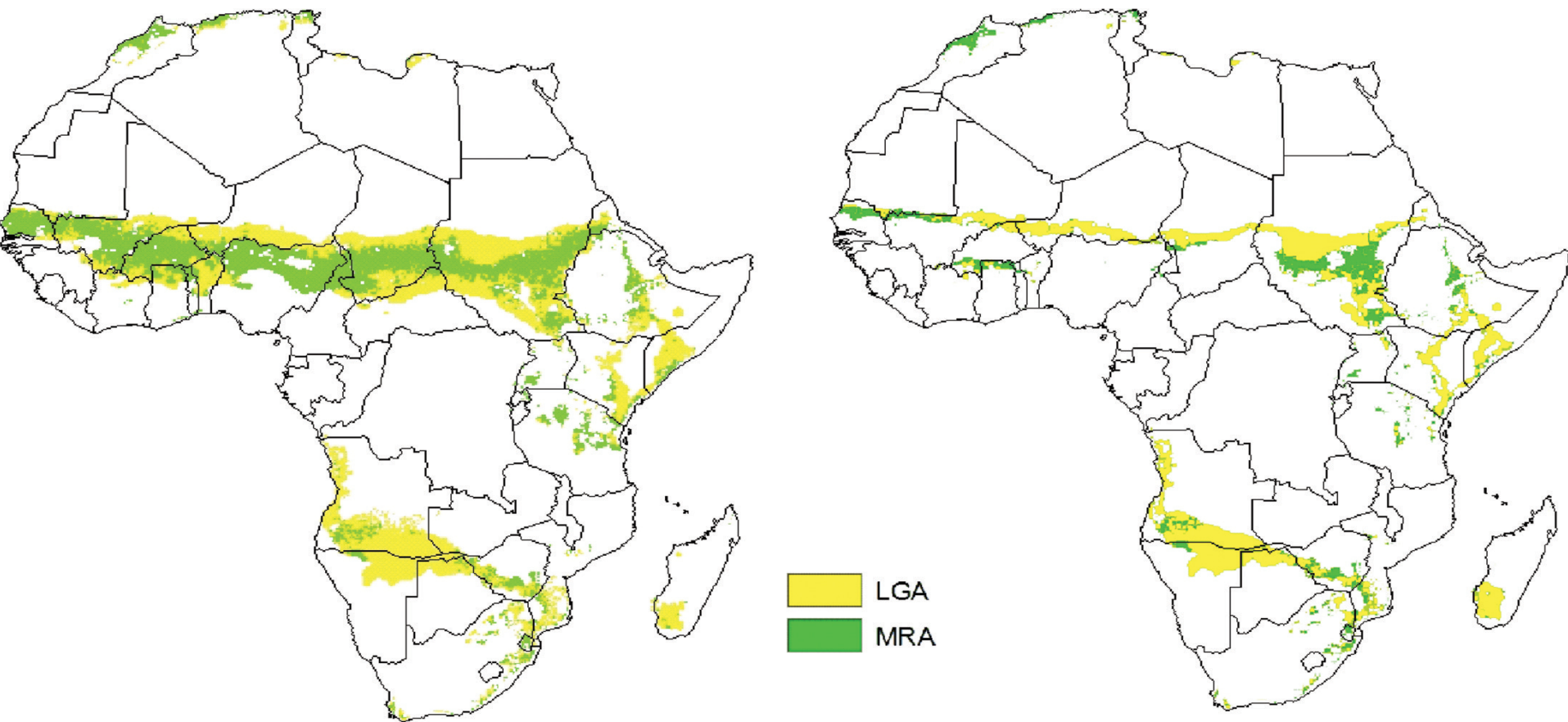
Concluding Remarks

- **Good research can help our understanding on environmental migration**
- **Enhancing adaptive capacity can reduce environmental migration and build resilience amongst vulnerable groups**
- **Migration needs to be understood as part of adaption – measures taken by resource dependent communities to reduce pressure on land and improve their livelihoods**
- **Better understanding of regional dynamics and management of common pool resources can help better integration between African regions and opportunities to integrate regional markets**
- **Good climate information services are fundamental to reducing vulnerability and anticipating climate risks which will in turn help predict migratory fluxes**
- **Climate change and variability will increase migratory tendencies especially in water stressed areas and areas where food security is threatened**
- **Reducing climate induced migratory fluxes will need action by different stakeholders as well as political will from African governments – Action research increases the dialogue between key actors**

THANKS!



length of growing periods (IPCC, 2007)



Agricultural areas within the livestock-only systems (LGA) in arid and semi-arid areas, and rain-fed mixed crop/livestock systems (MRA) in semi-arid areas, are projected by the HadCM3 GCM to undergo >20% reduction in length of growing period to 2050, SRES A1 (left) and B1 (right) emissions scenarios, after Thornton et al. (2006).

Poverty & Climate Variability (e.g. Zimbabwe)

