



# ASSAR

Adaptation at Scale in Semi-Arid Regions



**UEA** University of East Anglia



**ihs**  
INDIAN INSTITUTE FOR HUMAN SETTLEMENTS



**OXFAM**



The INTASAVE Partnership & CARIBSAVE

# Adaptation at Scale in Semi-Arid Regions



- ❖ As we understand more about the **global impacts of climate change**, so we need to know how people can **effectively respond and adapt** to these changes.



# Adaptation at Scale in Semi-Arid Regions



- ❖ Home to hundreds of millions of people, the **semi-arid regions of Africa and Asia** are particularly vulnerable to climate-related impacts and risks.
- ❖ These regions already experience **harsh climates**, adverse **environmental change**, and a relative **paucity of natural resources**.
- ❖ People here may be further marginalised by socio-economic challenges, including high levels of **poverty**, government processes that prevent sufficient participation and **low levels of development**.





# Adaptation at Scale in Semi-Arid Regions



- ❖ Although many people in these regions already display remarkable resilience, these **existing pressures are expected to amplify** in the coming decades.



- ❖ Therefore, it is essential to understand how to **empower people, local organisations and government** to adapt to climate change in a way that minimises their vulnerability and promotes their long-term resilience.

# Adaptation at Scale in Semi-Arid Regions



- ❖ ASSAR aims to transform climate adaptation policy and practice in ways that promote the long-term well-being of the most vulnerable and those with the least agency.



# Adaptation at Scale in Semi-Arid Regions

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- ❖ To achieve this ASSAR is:
  - ❖ Working with diverse stakeholders in a coordinated manner across 11 countries in southern Africa, eastern Africa, western Africa, and south Asia, to investigate the **root causes of vulnerability**.
  - ❖ Examining vulnerability through an **interdisciplinary and gender-sensitive lens**, focusing on both **climate and non-climatic stressors**.
  - ❖ Engaging with multiple levels of governance – from local communities to national and regional institutions – to understand what is needed to proactively spur **widespread, effective and sustained adaptation** that has positive and lasting effects on **socio-economic development**.

# Adaptation at Scale in Semi-Arid Regions

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- ❖ Over its 5-year lifespan, the **cross-regional and cross-disciplinary comparison** of research findings will enable ASSAR to develop a **unique and systemic understanding** of the processes and factors that impede adaptation and cause vulnerability to persist.



# Project Phases

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## Phase 1

### REGIONAL DIAGNOSTICS

Investigate what people in semi-arid regions currently know about climate change, and what they're doing to adapt to these changes.

At the same time, compile detailed climate projections to highlight region-specific vulnerabilities and challenges.

## Phase 2

### REGIONAL RESEARCH

Use the information gathered from the first phase, and add to it through novel case study research, to explore strategies for developing adaptive capacity at multiple scales - from individuals to business and governments - within each region.

## Phase 3

### RESEARCH UPTAKE

Promote research into use across all regions, by informing adaptation practices at multiple scales, and in different contexts, and enabling take-up of research insights in policy and practice interventions.





# Regional Diagnostic Study

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## East Africa



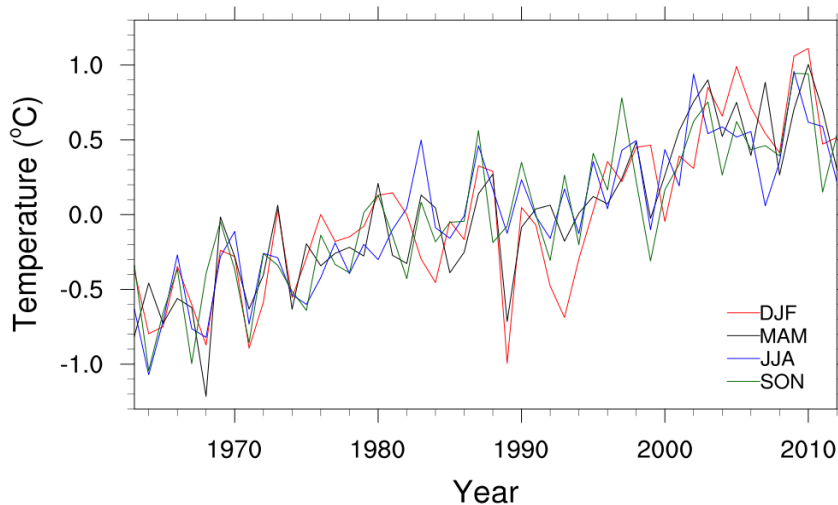
# The regional to sub-national context

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- ❖ Great topographical diversity and a range of local climatic conditions:
  - ❖ Annual rainfall cycles complex
  - ❖ rainfall variability the main climate and weather element affecting ecosystem services, agricultural production, and socio-economic development of the region
  - ❖ frequent drought and flood events.
- ❖ One of the most food insecure regions due to frequent climate risks
- ❖ Rising population and high population growth rates in the region important drivers of change, potential to greatly increase demand for food, water and livestock forage.
- ❖ Largely agrarian political economy:
  - ❖ High dependence on rainfed crop production
  - ❖ In the dryland areas, pastoralism (livestock) and agro-pastoralism (crop-livestock mix) main source of livelihoods and employment.
- ❖ Long-term development plans to transform into industrialising middle income nations (e.g. Kenya's Vision 2030, Uganda's Vision 2040, Ethiopia's Growth and Transformation Plan)
- ❖ Huge capital investments targeting service delivery expansion constrained in semi-arid areas by: remoteness, low population density, pastoral mobility and poor infrastructure.
- ❖ Communal conflict and resulting population displacement and migration have challenged regional security and peace.
- ❖ Climate change is bringing a new dimension to East Africa's vulnerability and food security: Region considered highly vulnerable to climate variability and change, partly due to low economic and institutional capacity to deal with impacts.

# Climate Change, Trends and Projections



**Time series of the land area averaged seasonal temperature changes between 1963 and 2012, for the four seasons: DJF, MAM, JJA and SON. Source: Daron (2014), using data from the CRU TS3.22 dataset.**

- ❖ Broad evidence at the regional level supports increasing trends in temperature from climate baselines.
- ❖ Mean temperatures across the region have increased by 1 to 3°C over the past 50 years.
- ❖ Rainfall trends over the past 50 years are less evident than for temperature, with large variations in the direction and magnitude of changes across the region.
- ❖ Major data and knowledge gaps in our understanding of regional trends in rainfall record
- ❖ Future projections of annual rainfall change are highly uncertain, with considerable variation across models, some indicating potential increases and others decreases.
- ❖ The projected increases in average annual temperatures range from no change to 4°C by 2050
- ❖ Model projections, especially for rainfall are subject to major uncertainties
- ❖ Higher temperatures and associated evaporation rates may exacerbate soil moisture deficiencies in semi-arid areas

# Risks, Impacts and Vulnerability

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- ❖ Social-ecological risks associated with environmental dynamics; climate change only one of several interlinked drivers of change.
- ❖ 8 inter-connected climate-related social-ecological risks affecting people's livelihoods and wellbeing in semi-arid areas of East Africa, each a product of multiple factors and causes:
  - ❖ rainfall variability
  - ❖ drought
  - ❖ flood hazards
  - ❖ resource degradation
  - ❖ resource conflict
  - ❖ food insecurity
  - ❖ human health
  - ❖ plant and animal diseases.
- ❖ Climate change and responses to it cannot be considered in isolation from these. Development trends also intersect with and change vulnerability.
- ❖ Effects of climate change compounded by widespread poverty, human diseases and high population growth rates. Expected to intensify demand for food, water and livestock forage within the region.
- ❖ Different groups and societies in semi-arid areas in the region experience vulnerability to these risks in different ways.
- ❖ Most vulnerable groups are: Females, disabled people, elders and children and the rural (pastoralists; smallholders) and urban poor.
- ❖ Interconnected both in terms of their characteristics and in intersecting vulnerability experiences. Highly vulnerable to the impacts of climate change and variability due to lower adaptive capacities and limited access to resources for adaptation practices.
- ❖ Multiple dimensions of vulnerability also tend to come together in 'vulnerable locales'.



# The Adaptation-Development Spectrum

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- ❖ Multi-sectoral nature of the risks and complexity of environmental and social impacts of climate change means response needs are broad in scope.
- ❖ Relevant sectoral strategies relate to:
  - ❖ ecosystem protection
  - ❖ pastoralism support
  - ❖ crop production
  - ❖ urban planning
  - ❖ water management
  - ❖ environmental health
  - ❖ disaster risk reduction and
  - ❖ climate information services.
- ❖ Key responses focusing on support for livelihoods and wellbeing cover: knowledge and awareness, extension services, livelihood diversification, social safety nets, gender focused approaches, relocation and migration and risk sharing.
- ❖ Across these response fields are actions that may act to reinforce pre-existing adaptability, promote innovation, or, at a most radical level, seek to bring about transformative changes.
- ❖ We refer to responses within an **'adaptation-development spectrum'**: climate change adaptation cannot readily be viewed in isolation from wider societal and environmental concerns.
- ❖ Actions conventionally regarded as adaptation-focussed or development-focussed may serve to reinforce or, at times, undermine one another.

# Conclusions

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- ❖ Barriers and enablers to reduce vulnerability to climate-related risks, especially for poorer and marginalized populations, broadly relate to: knowledge and capacity, livelihoods and access to resources, planning and innovation, governance dimensions, and financial resources.
- ❖ The way these interact with the current dynamics affecting the future of pastoralism is important
- ❖ Major gaps in knowledge on vulnerability, and response to climate-related social-ecological risks remain wide and diverse
- ❖ Key knowledge gaps cover:
  - climate data and its effective dissemination;
  - linkage of climate-related risks to development;
  - dynamics in the strategies and actions of pastoralists;
  - ways in which risk response and adaption activities are implemented and assessed;
  - appropriateness of blueprint response strategies;
  - role and limitations of livelihood-based adaptations;
  - potential of local and 'indigenous' knowledge;
  - governance context of risk response and adaptation;
  - drivers behind policy developments;
  - role of wider environmental and political economic changes;
  - understanding social trade-offs that exist in response to risk.



## SUPPORTED BY

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