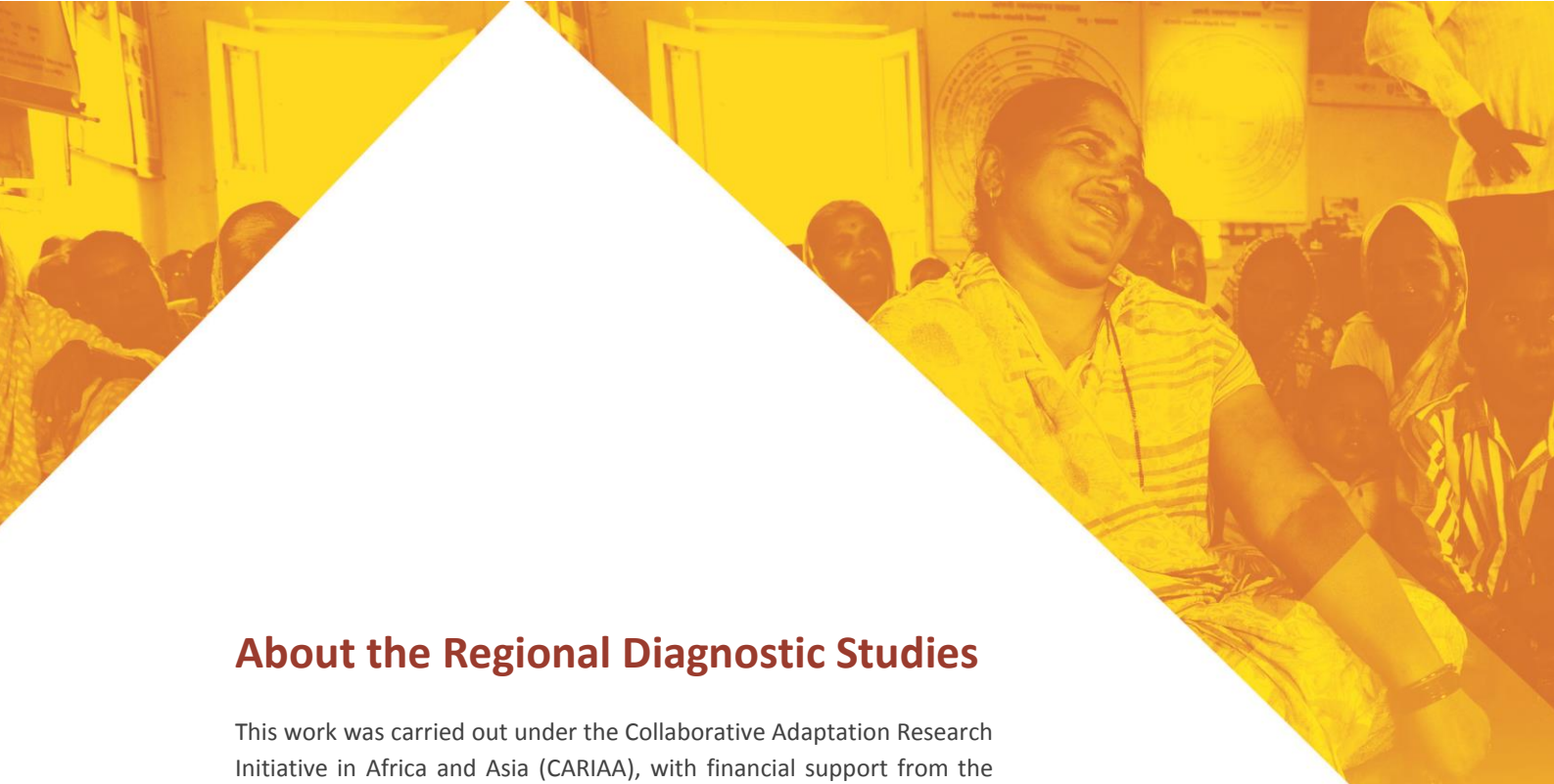
SOUTH ASIA
Regional Diagnostic Study
Report Summary

CARIAA
Collaborative Adaptation Research Initiative in Africa and Asia

ASSAR
Adaptation at Scale in Semi-Arid Regions



About the Regional Diagnostic Studies

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What is ASSAR

Home to hundreds of millions of people, the semi-arid regions of Africa and Asia are particularly vulnerable to climate-related impacts and risks. Working in 11 countries in these regions, ASSAR is a research project that seeks to understand the factors that have prevented climate change adaptation from being more widespread and successful. At the same time ASSAR is investigating the processes - particularly in governance - that can facilitate a shift from ad-hoc adaptation to large-scale adaptation. ASSAR is especially interested in understanding people's vulnerability, both in relation to climatic impacts that are becoming more severe, and to general development challenges. Through participatory work from 2014-2018, ASSAR aims to meet the needs of government and practitioner stakeholders, to help shape more effective policy frameworks, and to develop more lasting adaptation responses.

ASSAR has recently completed its Regional Diagnostic Study phase which took stock of the current state of knowledge on the extant and emergent climatic and non-climatic risks in Africa and India. During this phase ASSAR explored why different people are differentially vulnerable to these risks and how people, governments and other stakeholders at various scales are responding to current and future climatic and non-climatic challenges.

The emerging development dynamics in India

India's economic growth has been notably impressive in the last two decades but the country still faces numerous challenges, such as stagnant agricultural growth, rising regional and sub-regional inequality, unemployment, and inadequate access to public services for the poor. However, there has been a perceptible recent prioritisation aimed at reducing economic and social vulnerability of the poor and building their adaptive capacities.

Households in Maharashtra (left) face biophysical and socio-economic vulnerabilities. Slum dwellers in Bangalore (right) have limited access to resources.

Risks, Impacts and Vulnerability

India faces a dynamic climatic and non-climatic risk profile. These climatic and non-climatic risks, separately and in interaction, make people and systems highly vulnerable. Key vulnerabilities and risks are found to be deeply embedded within the existing social and biophysical conditions of people and socio-ecological systems, which emerge as critical barriers to effective, widespread and sustained adaptation.

Given a dominant natural resource-based livelihoods, high incidence of poverty and inherent socio-economic inequities, a significant section of the rural population is resource-constrained to adapt to the current and projected future climate variability. While households dependent on agriculture are affected directly, those living in urban areas are also affected by declining agricultural productivity, the ongoing agrarian crisis in semi-arid areas and poor quality of life due to lack of basic services and quality livelihood options. The

situation is compounded by rapid and unplanned urbanisation, resulting in an intense competition for resources and land.

Climate Change Trends and Projections

India experienced accelerated warming from 1971-2007, with the warming trend being particularly intense in the most recent decade (1998-2007). During this time a greater number of heat waves and hot days have also been recorded. Over the same time period the Indian Monsoon has weakened but intense rain events have become more frequent in some areas.

Recent climate simulations indicated temperature increases of more than 2˚C over central and northern parts of India for the period 2066-2095. However, changes in rain by the end of the 21st Century were not observed to be significant. At a sub-regional level, while ASSAR's Bangalore and Moyar-Bhavani sub-regions experienced warming temperatures and rainfall declines, the Sangamner sub-region experienced less certain temperature trends and high variability in rainfall patterns (although rainfall has increased modestly since the 1990s).

Currently, available climate information is too coarse to be relevant to local decision-making processes. Statistical downscaling of climate projections to provide useful climate information for medium and long-term decision making, including the possibility of tailored climate information is the key research priority in the RRP phase. The impacts of, and feedbacks from, ecosystem and land use and land cover changes need to be additionally understood in the sub-regional context to efficiently understand the local climate.

Adaptation

Recently, mainstreaming climate change adaptation into development efforts (by multiple actors) has gained prominence due to perceptible climate change impacts across regions and sectors. Recognising that the priorities for development and adaptation are closely related, India's response is primarily shaped by the need to link the development of human, institutional and infrastructural capabilities in building adaptive capacities in people and systems.

Village farm ponds (left) and weather advisories (right) are emerging as risk management strategies in Maharashtra.

Most current development-adaptation interventions in India and the sub-regions focus on water and agricultural sectors. Evidence from various adaptation projects suggests that risk management strategies at various scales and initiated by various actors, are enabling building of local adaptive capacities. However, such changes are not uniform across regions, sectors or scales. India's rural systems have seen relatively higher and longer investment in direct climate change adaptation projects, as well as those that have adaptation co-benefits such as interventions for livelihood diversification, biodiversity conservation, sustainable agriculture and natural resource management. Given large development deficits and the vulnerabilities of the rural poor, coping strategies to manage risk are more common than adaptive action.

Governance and institutional barriers emerge as a key constraint to ongoing and future adaptation. Governance in much of India is fragmented, making coordination across different agencies and scales challenging. Cities in particular accumulate and generate new risks through unplanned development and deepening inequality. Urban settlements are vulnerable to food, energy and water fragility and consequent social and political unrest. Planning, including for risk management, often takes place at higher levels of government, while the role of local bodies, civil society and communities tends to be that of implementation with little room for innovation. The ways in which governance acts as a key barrier to adaptation are a) multiplicity and redundancy of actors and institutions, b) fragmentation of planning and execution, c) prevalence of top-down planning, d) institutional rigidity and path dependency and e) absence of certain actors and sectors in the planning process such as private sector participation and health.

Agriculture-livestock livelihood system in Ahmednagar sub-region, Maharashtra.