WEST AFRICA
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.

ASSAR in West Africa

ASSAR in West Africa is a partnership between START, the Institute for Environment and Sanitation Studies at the University of Ghana, and the International Centre for Research in the Semi-Arid Tropics (ICRISAT) in Bamako, Mali. The ASSAR project in West Africa focuses on the dry sub-humid band that extends from the Upper West Region of northern Ghana through southern Mali, referred to as the Wa-Bobo-Sikasso transect. The region experiences high exposure to dry spells, and has medium-high to high drought risk and strong multi-decadal fluctuations in climate. The region is also experiencing significant land degradation and processes that can lead to desertification. The ASSAR West Africa group is working closely with CCAFS in West Africa to realize important synergies between the ASSAR and CCAFS efforts.

Regional to Sub-National Context

Development challenges in the West African drylands have traditionally been analyzed through the prism the late 20th century Sahelian drought, which produced significant hardships in the region. In reality, the drylands hosts an enormous variety of biophysical environments intertwined with highly contrasted socio-economic, demographic and land use conditions, not just the iconic Sahel. The dryland region features a sparsely occupied Western half and a more densely populated Eastern half. Across the region, land and water per capita ratios inversely correlate with market access such that the drier Eastern half has greater market integration than the wetter Western half. In West Africa, spatial distribution of poverty is not intrinsically linked to the climate gradient nor to population densities. Areas of high and low poverty are observed in the dry areas as well as in the relatively moist areas and in high and low population densities.

Climate Change Trends and Projections

Temperatures across the region have increased by 1°C on average over the past 50 years. The largest temperature increases have been observed in the March to May season. Warming has been less pronounced in the summer months and some locations have cooled in the summer and winter seasons. Future projections of temperature change show significant increases across the region. Temperatures in the north of the region, from the Sahel to the Sahara, are projected to increase by 2°C on average by the 2040s with increases of over 3°C projected for some parts of the Sahara. Rainfall trends over the past 50 years are less evident than for temperature, and there are large variations in the direction and magnitude of changes across the region. There is evidence of a shift in the rainy season towards later rainfall for some regions. An increase in rainfall in some locations for some seasons is observed but a decrease in rainfall is observed elsewhere. In general, trends are weak. Future model projections of rainfall contradict each other, showing both potentially large increases and decreases. Projections of rainfall vary considerably. At present there is insufficient evidence to support either a shift to drier or wetter conditions in the future in most locations.

Students collecting floodwater

Risks, Impacts and Vulnerability

Drought and high interannual climate variability contribute strongly to underdevelopment in West Africa. High levels of poverty, lack of social safety nets, climate-dependent livelihoods, gender inequalities, and low asset bases increase vulnerability to climatic extremes. Flooding and heavy rainfall events also contribute to vulnerability and are inflicting increasing damage in the region. While meteorological drought is an important proximate cause of diminishing water resource levels, slow-onset changes in land use associated with population growth also have a strong and increasing influence on the sensitivity and exposure to drought.

Decentralization of governance authority over natural resources management, while having potential to better address local management needs, has thus far largely not been successful as local governments are ill equipped to assume responsibilities over natural resource management. This lapse in governance brought on by decentralization has been attributed to an increase in degradation of forests and rangelands, which in turn increase vulnerability to drought. Reduced access to pastoral corridors and other changes underway in pastoralism across semi-arid West Africa exemplify how climate and non-climate drivers intersect to enhance vulnerability. Herder-farmer conflict in West Africa has increased as northern pastoralists have extended further southwards into regions dominated by crop agriculture, while at the same time farmers have expanded crop production into lands used primarily by pastoralists.

Adaptation

There are important complementarities and synergies between sustainable intensification of agriculture and near-term adaptation to climate change. These include timely access to fertilizer inputs, improved crop varieties, contour-ridge tillage, stone lines, tied ridges, terracing, crop residue management and mulching, zaï pits, agroforestry, farmer-managed

natural regeneration of field trees, and rainwater harvesting, and small reservoirs. However the ability to initiate widespread positive change is circumscribed by lack of land tenure security and lack of access to adequate roads and other infrastructure, markets, extension services, and appropriate microcredit schemes.

The development of national level policy frameworks for adaptation planning is proceeding well in both Mali and Ghana. These national policies provide general guidance for investments and actions aimed at addressing adaptation needs. However, there are a lack of effective mechanisms, financial resources, and institutional capacities in place to effectively implement adaptation frameworks. Climate finance mechanisms are increasing in Ghana and Mali, which can help to mobilize resources for adaptation, however these mechanisms do not effectively engage the private sector.

An onion garden in Lawra dry lands

Mud used to retain water in cultivated land in Lawra

A wall built under a bridge in Lawra to retain water

Conclusions

Important barriers to adaptation comprise development, gender, and governance dimensions. Among the key development barriers are: lack of integrated water resource planning, extensification of agriculture onto drought prone soils, reduced access to pastoral corridors, increased encroachment of farming onto rangelands, and under investment in dryland areas. Among the key gender barriers are: traditional gender norms that manifest in unequal access to resources and decision-making processes, limited livelihood and technologic options for women, predominance of male migration that leave women, children, elderly and disabled dependents vulnerable to shocks, particularly where remittance flows are weak or nonexistent. Among the key governance barriers are: incomplete government decentralization, top-down policy interventions for managing natural resources that lack local incentives and lock local communities out of resource access, and lack of coordination within national-level institutions and across national to district scales.

Important enablers of adaptation also comprise development, gender, and governance dimensions. Among the key development enablers are: research agendas that increasingly emphasize participatory processes for knowledge co-generation, greater prominence of appropriate technologies for soil and water conservation and natural resource management, and increasing efforts to better channel weather information to local communities. Among the key gender enablers are that adaptation provides an entry point for better addressing the needs of differentially vulnerable groups. Among the key governance enablers are: a significant increase in national policy development around climate change, leadership that is emerging in key ministries, and increasing evidence of mainstreaming of climate into different sectoral policies and strategies.