ASSAR
Adaption at Scale in Semi-Arid Regions

RESEARCH BRIEF

USING PARTICIPATORY MODELING PROCESSES TO IDENTIFY SOURCES OF CLIMATE RISK IN WEST AFRICA

Top-down climate models often fall short in representing the local risks experienced by farmers. Participatory modelling is a tool which allows those at risk to be involved in modelling processes, by incorporating local knowledge for locally-relevant assessments, and to improve the resilience of farmers to multiple stressors.

WHAT WAS DONE, AND WHAT WAS NOVEL?

In recent years, participatory modeling has been widely recognised as a powerful tool for dealing with risk and uncertainty. By incorporating multiple perspectives into the structure of a model, we hypothesised that sources of risk can be identified and analysed more comprehensively compared to traditional 'expert-driven' models.

We sought to identify climate risks in West Africa using participatory methodologies and to assess the relative strengths of these methodologies. With few exceptions, assessment of climate risk in the region has been expert-driven and top-down, using quantitative modeling techniques to assess the potential impacts of climate change on cropping systems at a large scale.

We conclude that participatory approaches are valuable additions to the suite of methodologies for analysing climate risks, and that scientists and policymakers would do well to consider dynamic interactions between drivers of risk when assessing the resilience of agricultural systems to climate change.

KEY FINDINGS

Two new techniques in participatory climate risk assessment – Transformative Scenario Planning (TSP), and Causal Loop Diagramming (CLD) – showed promise for making climate risk assessment more holistic, and for linking climate risk to other sources of long-term change. TSP incorporated more potentially disruptive and surprising events into the risk assessment, which could help communities become more resilient to these events.

CLD explicitly highlighted the causal mechanisms and interactions which are currently keeping agricultural production low in West Africa and which could become worse under climate change.

A combination of these methods could harness the relative strengths of each.

KEY IMPLICATIONS FOR POLICY, PRACTICE AND RESEARCH

Water availability and management, political will and attention to agriculture, and land access were seen as critical drivers shaping the agricultural risk landscape for Ghana, Mali and Nigeria in the medium-term future.

Going forward, it will be important for both scientists and policymakers to consider how climate change will interact with these drivers of change, and to communicate these interactions to stakeholders in the agricultural system.

Our study represents an innovation in methodology for conducting climate risk assessment in Africa, particularly in comparing scenario planning with CLD. Through these methods, stakeholders can identify key vulnerabilities and adaptation options that have not been discussed extensively elsewhere in the climate adaptation literature.

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