

Adaptation

Climate Change Adaptation in Africa



Summary of the first ten projects supported by the Climate Change Adaptation in Africa (CCAA) research and capacity development program

The projects funded to date from the first call for concept notes are presented below. Each is listed under the broad category with which it fits most closely.

1. Vulnerability and Risk Management in Agricultural Systems

The proposed projects under this category aim at developing innovative strategies for mitigation of, recovery from, and resilience to climate-induced crises affecting smallholder farmers in Africa.

i. Lack of resilience in African smallholder farming: Enhancing adaptive capacity of local communities to pressures of climate change

University of Zimbabwe, CAD 1,319,800, Project No.104140

Countries: Malawi, Mozambique, Zambia, Zimbabwe, Kenya, Uganda, Tanzania, Cameroon, Ghana and Mali

This proposed work assesses the vulnerability of smallholder farming communities in Sub-Saharan Africa (SSA) to the effects of climate change and variability on agricultural productivity and livelihoods and identifies opportunities for enhancing the adaptive capacity of different categories of households and communities. SSA is characterized by high prevalence and intensity of poverty, indicating high vulnerability of the populations to the potential negative impacts of climate change and variability, particularly among rural and peri-urban populations who depend on an already degrading environment. Any short- or long-term climate change will force farmers to adopt new agricultural practices including choice of crop varieties, timing of major operations and designing of alternative food supply systems. The project thus focuses on enhancing capabilities of households, communities and relevant institutions to appropriately respond to these changing circumstances in order to reduce vulnerability and future threats to food security and environmental integrity in Sub-Saharan Africa. Combining participatory action research and integrated systems analysis, the proposed project aims to enhance the knowledge and capabilities of households and communities to adapt to the effects of climate change and variability on agricultural productivity and livelihoods, and to stimulate development of the much-needed expertise among collaborating institutions and stakeholders. The project builds on current research initiatives in major climatic zones of Africa, and takes advantage of active coordinating role of regional networks.

ii. **Renforcement des capacités d'adaptation des acteurs ruraux béninois face aux changements climatiques** (*Strengthening the capacity of farmers to reduce the impact of climate change on agricultural productivity to ensure food security and reduce poverty in Benin*)

Initiatives pour un Développement Intégré et Durable (IDID_ONG), CAD 712,136, IDRC Project No.104142

This action research project aims to help populations reduce their vulnerability and better adapt to climate change. The project will act at three levels in the decision-making hierarchy by facilitating coordination frameworks in six departments, supporting surveillance committees in 35 communes and fostering farmer experimentation in two field-schools in each commune. The main boundary partners will be farmers and elected officials. A device for relaying meteorological information will be set up for each of the three levels (department, commune and field-school). In this way the project hopes to encourage optimal use of water and agricultural potential, available research results, and local knowledge, as well as stimulate experimentation on adaptation options including integrated soil management. The overall aim is to reduce food insecurity and rural poverty in Benin.

iii. **Vulnérabilité et adaptation des systèmes agraires à Madagascar** (*Vulnerability and Adaptation of or agricultural systems in Madagascar*)

Université d'Antananarivo - École Supérieure des Sciences Agronomiques (ESSA), CAD 439,063, IDRC Project No.104143

Madagascar has completed its national plan of action for adapting to climate change. Several actors and decision-makers - agricultural policymakers, regional rural development managers, emergency services coordinators - are involved in the implementation of the plan. Unfortunately, they are far from understanding the spatial dimension of vulnerability to climate change, and lack the information, tools and skills to set priorities. This project will allow the University of Antananarivo to facilitate a dialogue between decision-makers and researchers at the national, regional and local level; to produce spatial information on the factors affecting vulnerability to climate change on the whole island of Madagascar; to better understand existing and possible adaptation strategies; to explore various intervention strategies under different scenarios; and to reinforce national capacity in analysis of climate change vulnerability and adaptation.

iv. **Managing risk, reducing vulnerability and enhancing productivity under a changing climate**

Sokoine University of Agriculture (SUA), CAD 1,626,100, IDRC Project No.104146

Countries: Tanzania, Kenya, Ethiopia, Eritrea, and Sudan

The countries of the Greater Horn of Africa (GHA) are particularly vulnerable to droughts, which characterize the region with increasing economic impacts. This vulnerability is further exacerbated by factors such as widespread poverty and over-dependence on rain-fed agriculture. Even with normal rainfall, the region does not produce enough food to meet its needs and this reinforces the endemic poverty in the region. Consequently, the region experiences frequent climate-induced famines and related disasters. Governments in the region often address drought problems using short-term emergency measures. Little or no strategic attempt is made to encourage primary producers and others to adopt self-reliant approaches to prepare for these droughts.

The project recognizes that opportunities exist to reduce the impacts of droughts and consequently poverty in the region by formulating effective and efficient adaptation strategies aimed at reducing the vulnerability of the marginalized, safeguarding livelihoods threatened by

droughts, increasing the flexibility in management of vulnerable systems, and enhancing inherent adaptability among smallholder farmers. Using case studies in Tanzania, Kenya, Ethiopia and Sudan, this action research project seeks to contribute to the development of such strategies by (a) establishing an informational database that is necessary to understand vulnerability to droughts within different social, political, and economic contexts; (b) developing robust decision making tools for improved strategic and tactical decision making to reduce vulnerability.

2. Capacity Strengthening

The overall aim of the projects under this category is to strengthen capacity of individuals, organizations and systems to adapt to the challenges and opportunities arising from climate change and variability.

i. Strengthening local agricultural innovation systems in less favoured and high potential areas of Tanzania and Malawi

Institute of Resource Assessment (IRA), University of Dar Es Salaam, CAD 1,431,500, IDRC Project No.104141

Countries: Tanzania and Malawi

In many sub-Saharan African countries, poverty is linked to low agricultural productivity, which accelerating climate change and variability threatens to make even worse, notwithstanding the implementation of several initiatives aimed at boosting agricultural production. In Tanzania and Malawi, a key challenge for decision makers is to understand the context and strategies of farmers and other stakeholders in agriculture for adapting to climate change and variability. One reason for this is the lack of interaction between researchers, policy makers and vulnerable farming groups. This action research project seeks to foster processes for effective engagement amongst these stakeholders to develop agricultural innovation systems that are better able to adapt to climate change and variability, using case studies of communities in two different agro-climatic sites in Tanzania and Malawi.

The research intends to facilitate a process of interaction and learning where information/knowledge from different sources (local, national, regional and international) is shared and integrated in a way that results in its novel use by stakeholders in agricultural innovation systems to better adapt to climate change and variability. It will contribute directly to capacity strengthening primarily at the local scale through improving the ability of participating individuals, organizations and systems to utilize knowledge more effectively, efficiently and sustainably in addressing local, national and regional priorities that will contribute to adapting to climate change. The process will systematically identify and share lessons with key decision makers for further capacity strengthening to enhance innovation and adapt to climate change in ways that benefit the most vulnerable.

ii. Evaluating the efficacy of Radio Drama as a means to strengthen the capacity of smallholder farmers to adapt to climate change

African Radio Drama Association (ARDA), CAD 389,650, IDRC Project No.104139

Country: Nigeria

Smallholder farmers in Nigeria, particularly female farmers, are highly vulnerable to the impact of climate change. While Nigerian farmers are adapting and developing some coping strategies independently, there is a need to produce and disseminate information that helps them adapt

their farming methods and mitigate the impact of climate change on their livelihoods. A major challenge facing governments, research institutions, civil society organizations and donors is providing such information to large numbers of people, many with limited literacy, cost-effectively. Radio broadcasts could help address this challenge because they are spoken-word, often in local languages, building on Africa's oral culture and therefore not constrained by illiteracy. The technology for broadcasting and receiving broadcasts are widely available and affordable.

This two-year project proposes to test the efficacy of radio drama to strengthen the capacity of smallholder farmers towards adaptation to climate change, in relation to two projects in Nigeria that have a strong climate change dimension. A twenty-six episode radio drama will be produced locally in two local languages and will be broadcasted weekly by five radio stations over a period of six months. Meetings with focus groups before, during and after the broadcast period will help define the most adequate content of the radio dramas, evaluate the efficacy of the radio dramas and catalyze an action-research process. The scripts of the radio drama will be available in English and in French. The project will be led by the African Radio Drama Association (ARDA) in collaboration with the Women Farmers Advancement Network (WOFAN), the Developing Countries Farm Radio Network (DCFRN) and the University of Guelph.

iii. Building adaptive capacity to cope with increasing vulnerability due to climatic change

Midlands State University, CAD 1,096,800, IDRC Project No.104144

Countries: Zambia and Zimbabwe

This project focuses on the drier regions of southern Zambia and southwest Zimbabwe, and seeks to improve incentives and opportunities for households to cope with and adapt to the increasing vagaries of climate by investing in improved crop production practices of more practical value to diverse groups of small-scale farmers. The adoption of these options will be stimulated by linking their dissemination with complementary investments in climate forecasting, and building linkages to other projects that have either a humanitarian relief focus, or are involved in the development of input and product markets.

The capabilities of the poor rather than their vulnerability provides the starting point for developing demand-led research for development that can moderate the negative effects of climate change on agricultural production and empower them to exploit opportunities. Key interventions include: (1) building local institutions and demand-led rural service provision; (2) strategies and decision-support tools for managing smallholder assets, including livestock; and (3) participatory development of new technologies for natural resource use under variable rainfall. Adaptation strategies, once identified and evaluated, will be used in modifying threats and preventing or decreasing the effects of climate change. The benefits will range from sustained agricultural yields even during years of poor rainfall, ensuring food security at household and community levels, protecting biodiversity, safeguarding aquatic ecosystems and halting desertification.

3. River Basin Adaptation and Food Security

This project will aim at establishing robust climate information. The work will enhance local capacity to use climate-based decision support tools to inform policy processes and mainstream climate adaptation into land and agriculture frameworks that support transboundary integrated water resources management for poverty reduction.

i. **Managing climate risks for agriculture and water resources development in South Africa**

University of the Free State (UOVS), CAD 1,086,900, IDRC Project No.104150

The Western Cape is South Africa's most valuable agricultural producing region and makes a substantial contribution to the country's balance of payments. Against a backdrop of rapid water demand growth and increasing competition between agricultural and urban water users, are the issues of local climate variability and change. It is one of the few regions in which standard IPCC Special Report Emission Scenarios (SRES), consistently suggest a future reduction in available rainfall. Given the potential overlap between adapting to climate change and certain forms of climate variability, this project will seek solutions that integrate the current treatment of intra-annual and annual climate variability with decadal forecasts, projections of observed climate variability and long-term (~ 2050) climate scenario information generated by GCMs.

An important part of this project will be to determine the extent to which adapting/adjusting to the predictable climate variability also reduces the adverse impacts of climate change and the economic value of these climate change damages. The general objectives of this project are to develop the capacity of South African and regional institutions in the private and public sectors to better integrate information about climate change and climate variability into water resources policy, planning and management and to demonstrate how this information can be used to evaluate alternative strategies and projects for adjusting/adapting to climate change and climate variability for application in other regions. The use of a previously tested model and extensive stakeholder engagement as well as capacity building of local scientists are key thrusts of the project.

4. Ecosystem Management

Many African countries are deeply dependent on biodiversity and other key ecosystem services to support a variety of livelihoods and to achieve sustainable development objectives.

Anticipated anthropogenic climate change threatens to challenge the healthy function of ecosystems through reducing species richness and compromising the delivery of services. However, those tasked with the management of these resources – in government as well as in the affected sectors and communities - are poorly equipped to quantify these threats, let alone develop effective adaptation measures. It is also clear that climate impacts on human activities are likely to feed back to increase pressures on natural ecosystems. The projects under this category aim at developing strategies that will ensure ecosystem productivity and health

i. **Mécanismes d'adaptation aux changements climatiques des communautés rurales dans deux écosystèmes contrastés en plaine et montagne du Maroc** (*Climate change adaptation mechanisms for rural communities in two contrasting ecosystems of Morocco - plains and mountains*)

Institut National de la Recherche Agronomique, CAD 361,100, IDRC Project No.104153

The poorest and most marginalized communities in Morocco live in arid and semi-arid areas, and are largely dependent on agriculture for their livelihood and food security. Already subject to episodic drought, increased climate variability is expected to exacerbate poverty and undermine socioeconomic gains made in recent decades in these vulnerable communities. This project aims to build the adaptive capacity of two poor rural communities vulnerable to the effects of climate change. Building on assessments of past and projected climate change impacts on natural resources, agricultural systems and local residents, the research team will analyze risk behaviour under different climatic scenarios and strengthen local capacity to identify and formulate appropriate technical, institutional and policy options. The research will also support the development of community-based action plans.

The project aims to reduce the vulnerability to climate change of marginal rural populations through the strengthening of local capacity to identify and develop appropriate technical, institutional and policy options. The additional objectives are: to assess climate change impacts and local adaptation strategies over the last four decades for the selected case studies; to develop future climate change scenarios; to establish mechanisms for community-based knowledge exchange, analysis, and decision-making on adaptation strategies; to strengthen human and institutional adaptive capacity; and to establish an institutional framework for implementation of the action plan.

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

École Nationale Forestière d'Ingénieurs, CAD 957,900, IDRC Project No.104329

Sea level rise, and the expected increase in impacts from associated extreme weather events such as coastal flooding and storm surges, is a highly challenging public policy issue. The concentration of human population, valuable resources and economic infrastructure in coastal zones, coupled with pressures arising from demographic growth and imperatives for economic development and the dynamics of coastal systems, create diverse and complex problems in planning sustainable development and land use strategies. In areas such as Morocco's northeastern Mediterranean coast, planners, local authorities, and other stakeholders require tools and information to identify vulnerabilities, select land-use options, and develop and deliberate over adaptation strategies in order to formulate strategic coastal planning policies.

The research project will develop capacity for, and contribute to, policy and decision-making for strategic coastal land use planning and management, to reduce the vulnerability of coastal communities to the impacts of sea level rise, coastal flooding, and related extreme weather events. The project will contribute to the development of methods and tools that underpin preparations for, and responses to climate related events, and contribute to the information systems that guide policies of public protection. Its results will inform the Integrated Coastal Zone Management Action Plans of two Moroccan provinces, and support the assessment and implementation of adaptation measures in a regional context. These goals will be pursued through development of vulnerability assessments, participatory deliberation of land-use and climate change adaptation strategies, and the formation of capacity through technology transfer, awareness raising, and institutional strengthening.

