

Adapting to Climate Change in Africa

The role of research and capacity development

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ADAPTING TO CLIMATE CHANGE is no longer merely a policy option—it is now an imperative. The Intergovernmental Panel on Climate Change (IPCC) Fourth Assessment Report, released in 2007, concludes that climate change is unequivocal, and a range of impacts over the next few decades are inevitable given the changes we have already made to the composition of the atmosphere. The report also reaffirms that Africa is one of the most vulnerable regions of the globe because of its high dependence on rain-fed agriculture and limited financial and human capacity to adapt to these changes. In sub-Saharan Africa, rain-fed agriculture provides food for roughly 90 percent of the population, generates around 30 percent of GDP, and provides some 75 percent of the poorest people with their livelihoods. Surface water is relatively limited. Five major river basins—the Nile, the Congo, the Niger, the Chad and the Zambezi—are major surface water sources and sustain 45 percent of the continent's people. These basins are projected to be adversely affected by changes in rainfall.

Given the threat climate change poses to the hard won development gains Africa has made over the last half century, Canada's International Development Research Centre (IDRC) and the United Kingdom's Department for International Development (DFID) launched the Climate Change Adaptation in Africa (CCAA) program in 2006. The CCAA aims to establish a self-sustained African body of expertise on adaptation that responds to the needs defined by African communities, decision makers and organizations. In recognition of the long-term nature of climate impacts, DFID and IDRC have made a five-year commitment, with initial five-year funding of Canadian \$65 million.

A need for capacity development

OBSERVED TEMPERATURE INCREASES indicate a greater warming in Africa in recent decades of



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around 0.3°C per decade, although this has not been uniform. Rainfall changes exhibit even greater variation in time and space. Variability between years has increased in recent decades with more intense and widespread drought and floods. Medium-high IPCC emission scenario climate models project a warming for Africa of $3\text{--}4^{\circ}\text{C}$ by 2080, but with considerable differences across the continent.

African societies have continuously developed local adaptation strategies to cope with extreme weather events, such as droughts. But the expected regional changes in climate, and the subsequent impacts—especially on water availability, agricultural production and human health—will severely strain their coping capacity.

To build on existing know-how, while addressing the reality that many African countries cannot cope with the current impacts of climate variability, the CCAA program uses a multi-layered approach to capacity development. The concept of “participatory action research” is central to its approach and is applied at the level of individual projects. Project-level capacity is further reinforced through a series of education and training and knowledge-sharing activities that link individual project partners, and extend learning to the wider regional and international community. The aim is to see researchers, local stakeholder groups and organizations strengthened and capable of informing policies that will benefit vulnerable groups by providing solid, locally tested knowledge.

Learning by doing through participatory action research

PARTICIPATORY ACTION RESEARCH engages research users from the beginning to the end, from defining the problem to carrying out and monitoring the research. Depending on the context, the users may be small-scale farmers, local officials, national ministries, or other individuals or institutions that directly benefit from the shared enquiry. They set the context for the research, bringing an understanding of the many climate-related impacts they experience or expect, and identifying the resources available to respond. Capacity building is inherent, in that it is an active process of “learning by doing” whereby the skills and knowledge of all participants are increased. It is also inherently a development process, in that the research involves the direct testing of adaptation solutions. Implementation is thus built into the research.

Participatory action research weds scientific and local knowledge to assess climate-related impacts and the ability of stakeholders to cope with them, and tests and validates existing local adaptation strategies. The linkages between researchers, decision makers and communities help to ensure that the research is driven by the demands of research users, rather than the available supply of research organizations.



Building a base of strong African institutions for responding to climate change

THE CCAA PROGRAM sees capacity development as an ongoing process that should continue beyond the life of the projects it funds. The program thus aims to leave a legacy of strong African research organizations capable of contributing to the field of adaptation. To further strengthen the existing base, the program supports targeted capacity building activities, including education and training workshops: a program of policy research and teaching fellowships with related curriculum development and the strategic matching of African and international institutions, where outside knowledge and resources can enhance given areas of expertise.

Since July 2007, a series of education and training workshops has been taking place across the continent to enhance the skills and knowledge essential to undertaking action research on adaptation among the program’s first funding recipients. Topics have included integrated climate risk assessment, research on policy linkages and project management. Training on participatory action research and gender analysis is planned for 2008. Training on proposal development for research institutions actively interested in the field of climate change adaptation has also been offered, following the wide response to the program’s first call for concepts, which showed a broad range of organizations with strong potential for future contributions to the field.

In recognition of the existing organizations involved in adaptation research and training in Africa, in 2008 a series of research awards and fellowships will be launched by a CCAA-supported partnership, with START (the global change SysTEM for Analysis, Research and Training), the African Academy of Sciences, and the Institute of Resource Assessment (IRA) of the University of Dar es Salaam. The African Climate Change Fellowships will allow 58 early- to mid-career African professionals and researchers to pursue doctoral and post doctoral, teaching or policy-focused studies. It is hoped that teaching fellowships will permit African faculty to develop and implement new courses related to climate change at African universities.

Sharing knowledge for learning and policy influence

THE CCAA WILL ALSO ACT as a facilitator by creating opportunities for knowledge to be shared and translated into forms that can be applied to practices or policies that will benefit communities most affected by climate variability and change. Knowledge sharing is at the heart of participatory action research and is therefore core to every CCAA-supported project,

each of which aims to test and validate a combination of local and scientific knowledge.

To see the wide benefits that arise within individual projects, the CCAA will support a series of networking and knowledge exchange activities to extend the learning and policy dialogue. These activities will be coordinated by: the Forum for Agricultural Research in Africa (FARA), a pan-African agricultural research organization with its secretariat in Ghana; the Institute for Development Studies, a UK-based organization with extensive experience in developing and hosting knowledge services on international development issues; ENDA-TM, a major international NGO based in Senegal; and the IGAD Climate Predictions and Applications Centre (ICPAC), a leading regional climate information organization based in Kenya. As with other areas of the CCAA program, leadership of knowledge sharing activities will ultimately devolve to African organizations.

Addressing Africa's greatest climate adaptation needs

HELPING TO INCREASE RESILIENCE in the agricultural sector is an obvious priority, given its critical importance to both export revenue and subsistence livelihoods. Effective water resource management is critical in this context of dependency on agriculture. This emphasis can be seen in the focus of a number of initial research projects supported by the CCAA program. For example, in South Africa's Western Cape region, the heartland of the country's lucrative wine and fruit export industries, a team of researchers, led by the University of the Free State, is working with planners and farmers to develop modeling scenarios that will improve access to climate information and offer a range of options to help them prepare for a water-scarce future.

Likewise, in Benin, action research, led by the NGO Initiatives "pour un développement intégré durable," aims to reduce farmers' vulnerability and improve food security. This project involves various municipal-level actors—farmers, village leaders and elected officials—in local committees that will share practical knowledge through field schools and disseminate climate information through pre-alerts accessible to local farmers.

Other priority areas for action research are addressing the impacts of climate change on human health, coastal resources and urban development. An increasing proportion of Africa's population is concentrating in coastal mega-cities, such as Cairo and Lagos, which have poor infrastructure for dealing with rising sea levels and extreme weather events.

Building African leadership on climate change adaptation

THE PROGRAM'S COMMITMENT to building African capacity and supporting African leadership is reflected in the programming and governance structure, location of program staff and in funding criteria that favor initiatives led by or that gradually devolve to African institutions. The majority of



CCAA staff members are located in IDRC's regional offices in Africa—in Dakar, Cairo and Nairobi—ensuring on the ground engagement with stakeholders. To enhance African input into programming directions, while respecting the need for donor accountability, an advisory board, whose members are mainly from African countries, guides the CCAA. Progress is monitored using an approach called outcome mapping, an innovation of IDRC's Evaluation Unit, which focuses on behavioral changes in the program's "boundary partners"—those institutions and groups with which it interacts directly.

While it is still too early in the program's life cycle to point to concrete results, the program strategy developed in the CCAA's first year lays a valuable roadmap for progress. The strategy is conceived as a "living document" to be reviewed as needed over the life of the program, and revised on the basis of partner input and overall program learning. Consistent with the "learning by doing" philosophy at the heart of CCAA's action research orientation, the program itself has been learning continuously. Much of this learning is already being applied in the implementation of capacity development workshops, and in the plans for more targeted niche calls for future concept notes.

CCAA's efforts at fostering partnerships in its immediate constituency in Africa and beyond help the program to embrace emerging issues and trends. Knowledge gained from these initiatives helps to inform strategic directions for the program. Partnerships with other donors, other international programs, and African researchers, policy makers, community representatives and capacity developers will be instrumental in bringing significant benefits to the poorest and most vulnerable people in Africa. These partnerships will lay the groundwork for the gradual devolution of CCAA-supported activities to African institutions.

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