# New pathways to resilience

## Outcomes of the Climate Change Adaptation in Africa research and capacity building program 2006-2012

Starting Points

Foundations

Outcomes

People

Legacy

*Professor Henry Mahoo*

IDRC | CRDI

Adaptation

DFID Department for International Development

www.idrc.ca/ccaa

**About CCAA**

The Climate Change Adaptation in Africa (CCAA) research and capacity development program was launched in 2006 and was jointly funded by Canada's International Development Research Centre (IDRC) and the United Kingdom's Department for International Development (DFID). It was managed by IDRC from headquarters in Ottawa and three regional offices in Africa.

**About IDRC**

IDRC is a Canadian Crown corporation that works in close collaboration with researchers from the developing world in their search for the means to build healthier, more equitable, and more prosperous societies.

www.idrc.ca

**About DFID**

DFID is the part of the UK government that manages Britain's aid to poor countries and works to get rid of extreme poverty.

www.dfid.gov.uk

**About this report**

This report draws upon conclusions found in the final report and final evaluation of Climate Change Adaptation in Africa. It also integrates available online resources and results from the program. To access the full range of material linked within, the report should be read while connected to the Internet. The speed of access to these resources will depend on your connection speed, and other factors on the host web sites on which resources are posted. Linked material, and other interactive contents, are not accessible when this report is printed.

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***Outcomes:*** Fishers unload their catch in Joal, Senegal. Photo: IDRC/Djibril Sy

***People:*** CCAA advisory board. Photo: IDRC

***Legacy:*** Thomas Osore Omulako in his maize field. Photo: IDRC/Thomas Omondi

# Starting points

Africa's ability to adapt to climate change will ultimately depend on the resilience and ingenuity of its people. For six years, from 2006 to 2012, Canada's International Development Research Centre (IDRC) and the United Kingdom's Department for International Development (DFID) jointly supported an effort to strengthen African expertise and collaboration, to help the continent face this monumental challenge. By fostering research and capacity building, and a culture of knowledge sharing among researchers and those affected by climate change, Climate Change Adaptation in Africa (CCAA) contributed to a growing body of expertise that will benefit those most vulnerable.

This report presents a brief and interactive summary of the program's chief contributions. It provides a guided tour of the program's efforts and legacy – its aims and means, the principal outcomes of the funding and mentoring it provided to African researchers, and the lessons it offers for future adaptation efforts in Africa and elsewhere. Throughout this report, you will find links to program and project resources, and directions for delving further into its scientific findings. These continue to unfold even after the program's conclusion.

***Jump in at any of the entry points above. Internal links allow you to navigate this report from many directions, so let your interests be your guide.***

# Foundations

In 2006, the International Development Research Centre (IDRC) and the United Kingdom's Department for International Development (DFID) undertook a ground breaking effort: over six years, they invested 16.25 million CAD and £25.25 million respectively in the Climate Change Adaptation in Africa (CCAA) program. It responded to gaps in research capacity in the area of adaptation to climate change, and the need to strengthen the knowledge base of African scientists in ways that would benefit the most vulnerable.

In all, CCAA would fund 41 research projects in 33 countries, with participatory action research (PAR) as the preferred methodology.

## Rationale

Though Africa is rapidly urbanizing, most of its one billion people depend heavily on rainfed agriculture and other natural resources directly affected by weather. The growing frequency and severity of extreme events such as droughts, floods, and heat waves, along with shifting rainfall patterns, threaten to overwhelm the natural resilience of African communities, risking livelihoods and food security. Africa's vulnerability to climate change is increased by widespread poverty, fragile ecosystems, weak institutions, and fragmented climate information systems.

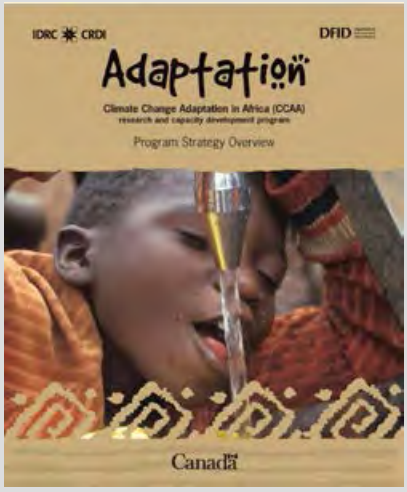
Background consultations in 28 countries revealed important gaps in knowledge and institutional capacity. Many organizations lacked qualified personnel for adaptation-related research, and access to databases and institutions that would allow them to exploit synergies for research. Many were underfunded by their governments, and did not prioritize climate change adaptation. Existing knowledge and capacity was fragmented by distance, language, and institutional barriers.

In response, DFID and IDRC set out to support a research process that would foster shared experimentation and learning not just among researchers, but including policymakers, the vulnerable groups most directly affected by climate change, and the development and extension agencies that work with them.

# Structure

The program was delivered by IDRC, an organization with over 40 years of experience in research for development. IDRC's "grants plus" business model goes beyond financial support: it ensures that staff engage with researchers as peers, providing mentoring and advice that help improve not only the results of supported projects, but also long-term capacity to carry out quality research. Staff members were based in IDRC's regional offices in Egypt, Kenya, and Senegal, and at its Ottawa headquarters in Canada. An Advisory Board, comprised of African experts and representatives from DFID and IDRC, provided strategic orientation.

- Read more on the origins, structure, and approach of the Climate Change Adaptation in Africa program in the CCAA strategy booklet.
- Explore the layers of investment in research and capacity through the CCAA program in this map.



# Outcomes

The Climate Change Adaptation in Africa (CCAA) program set out to be more than a catalyst for scientific research and publication. It aimed to produce practical results in terms of new knowledge, new capabilities, and new collaborative ways of thinking and working on adaptation that would ensure tested options would increase the resilience of the poor.

***Explore outcomes in each of the following areas:***





# Research capacity

Building African capacity to adapt to a changing climate was central to the CCAA mandate. Background consultations and the response to the program's first call for proposals revealed gaps in both the biophysical and social sciences. Researchers would need, for example, more knowledge of climate risk assessment and participatory ways of working with communities to address the needs of vulnerable groups. More broadly, there was little understanding of the links between adaptation and development. The continent had weak infrastructure and limited technical and organizational capacity to undertake effective research in this area. And climate change adaptation barely registered in higher educational programs and university research agendas.

*African Climate Change Fellow David Kuria (on right) receiving certificate from supervisor Julius Arinaitwe.*
Photo courtesy of START International

## The results

### *Stronger institutions*

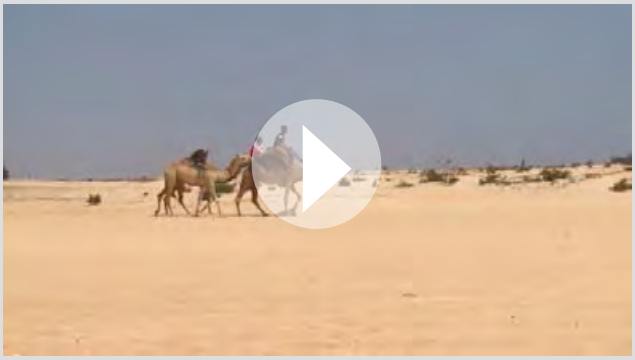
The program gave many research teams their first opportunity to explicitly address climate change issues. Many are now regional leaders in the field of adaptation. In some cases, research helped create new institutions to address gaps in resource governance and increase the involvement of affected communities. For example:

In Benin, which has experienced devastating floods and unpredictable rains in recent years, the NGO Initiatives pour un développement intégré et durable (IDID) led an effort to improve the use of climate information among the country's rural producers. Previously, IDID had focused mainly on agricultural extension services and had not addressed climate change. It has since gained the attention of the national government, playing a linking role between communities and officials in Benin's National Water Partnership, and as a partner to the country's National Adaptation Program of Action. It has attracted follow up funding from the United Nation's Development Program's Climate Change Adaptation and Development initiative, and was among seven institutions selected for funding under IDRC's African Adaptation Research Centres initiative.

- **Read more on IDID's work on bringing improved seasonal forecasts and agricultural advice to producers in nearly half of Benin in this *Adaptation Insights* brief.**

In Senegal, the Centre de suivi écologique gained experience as leader of the Infoclim project. It worked with local communities to build climate observation skills and experimented with farmers to better match agricultural practice to seasonal forecasts. In 2010, Centre de suivi écologique was the first organization designated a National Implementing Entity by the UN Adaptation Fund.

- **See more on the Infoclim project in this video.**



In Western Kenya, research led by the IGAD (Intergovernmental Authority on Development) Climate Predictions and Application Centre brought together traditional forecasters from the Nganyi "rainmaker" clan with officials from the Kenya Meteorological Office. The aim was to test whether the local relevance of seasonal forecasts could be improved by linking scientific and indigenous knowledge. As a result, the Kenya Meteorological Office has now established a community resource centre to sustain local forecasting knowledge, and maintain the links created. The project thus brought new resources to the community, while strengthening the national weather service.

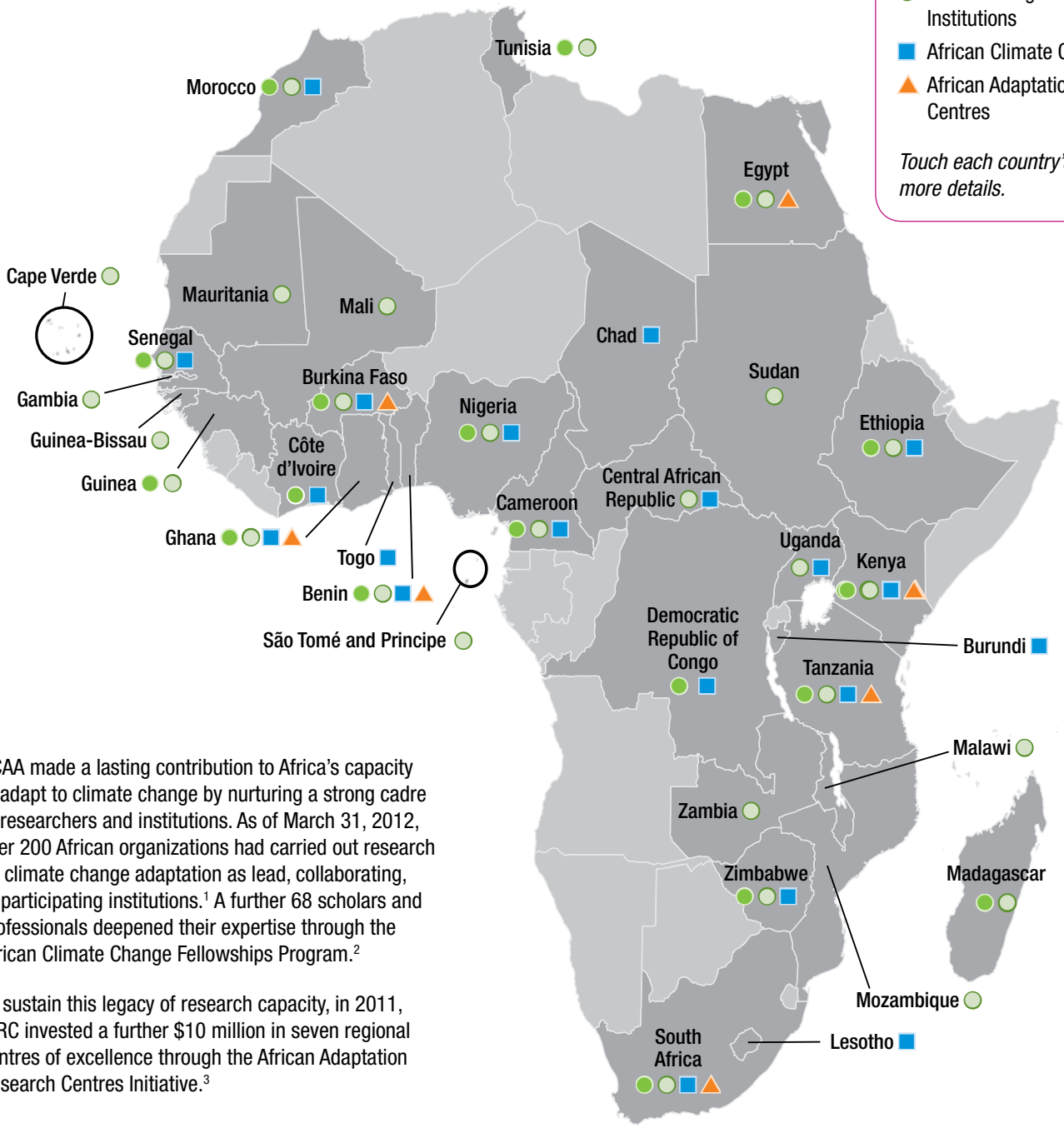
- **See how meteorologists and rainmakers came together in this slide show, and watch this video on Nganyi indigenous knowledge.**

## *A growing base of expertise*

New capacity for research in adaptation to climate change is now in place at several levels – in African research organizations and universities, and in new networks that link researchers, policymakers, and community-based organizations. New curriculum on climate change adaptation is now available in many of these research organizations and universities.

### New capacity, by the numbers

- Some **212** African organizations gained experience in carrying out adaptation research.
- **39** African organizations gained leadership experience, directing **89%** of all projects.
- By the end of 2011, **47** graduate students had completed theses through research projects.
- As of March 2012, **68** Fellows have pursued advanced research through a scholarship program on adaptation to climate change.
- **11** people associated with CCAA are working on the Fifth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC).




CCAA made a lasting contribution to Africa's capacity to adapt to climate change by nurturing a strong cadre of researchers and institutions. As of March 31, 2012, over 200 African organizations had carried out research on climate change adaptation as lead, collaborating, or participating institutions.[1] A further 68 scholars and professionals deepened their expertise through the African Climate Change Fellowships Program.[2]

To sustain this legacy of research capacity, in 2011, IDRC invested a further $10 million in seven regional centres of excellence through the African Adaptation Research Centres Initiative.[3]

[1] Lead and collaborating institutions propose research to IDRC and receive funds directly from the Centre. Participating institutions take part in conducting research, but do not receive funds directly from the Centre.

[2] African Climate Change Fellows are mapped according to the country from which they applied.

[3] Funding for the African Adaptation Research Centres was made possible through the Government of Canada's fast-start climate financing.

# The approach

The program rolled out a multipronged effort to build scientific capacity for adaptation to climate change:

- The key methodology favoured by the program – **participatory action research (PAR)** – involves researchers, community groups, and other stakeholders in a shared process of "learning-by-doing". While PAR itself is not new, there was limited experience in applying it to the field of adaptation in Africa.
- **African research leadership** was a criterion used for funding research proposals. Project proponents were also encouraged to integrate new scientists – Masters and PhD students – within their teams to develop a next generation of adaptation experts.
- A series of **training** workshops addressed key gaps in scientific knowledge and research methods. Workshops were held on integrated climate risk assessment, monitoring and evaluation, proposal development, social and gender analysis, and research-to-policy linkages. The program sought out African training organizations to deliver these workshops, to maximize capacity within Africa. To give teams further hands-on support in applying PAR, the program funded a mentoring project that also documented lessons learned.
- The program funded two phases of the **African Climate Change Fellowships Program** (ACCFP). It targeted African mid-level professionals and academics, providing funds for graduate and post-doctoral studies in climate change and adaptation. The program also built capacity for climate change research within participating host universities and organizations, and expanded the curriculum base.
- In strategic areas, CCAA supported **North-South partnerships**. For example, the first phases of the ACCFP and the AfricaAdapt knowledge sharing network were led by northern institutions before leadership was transferred to African partners.
- In the final two years, as projects were ending, the program also supported several **research-into-use** initiatives to help teams disseminate their findings and see them applied in policy and practice. Read more on this in the section Shared knowledge.

***For more on the program's capacity building efforts, see:***

- Adaptation Insights: Lessons from participatory research in Africa
  This series of briefs, written by teams that participated in the PAR mentoring project presents case studies on applying participatory research in Benin, Burkina Faso, the forests of Congo Basin, Kenya, Madagascar, Senegal and Zimbabwe.
- The African Climate Change Fellowships Program. Learn about the personal experience of ACCFP Fellow Nancy Omolo in the section People.
- Read insights from other researchers and Fellows on the new skills and knowledge they gained in the section People.
- Consult a list of institutions involved in the program here.

# Shared knowledge

Communications, networking and knowledge sharing activities were integral to meeting core objectives, particularly those on shared learning and policy influence.

*In partnership with community radio networks, AfricaAdapt co-hosted climate change training for broadcasters.*
Photo courtesy of AfricaAdapt

## The results

### *Multi-stakeholder innovation*

The participatory research supported by the program promoted collaboration between researchers and groups affected by climate change. In many cases, these linkages resulted in practical new approaches to adaptation. For example:

Through a five-city network led by the International Council for Local Environment Initiatives, municipalities and community groups shared knowledge and tested adaptation options in Cape Town, South Africa; Dar es Salaam, Tanzania; Maputo, Mozambique; Port Louis, Mauritius; and Walvis Bay, Namibia. The project aimed to equip municipal authorities to plan for the impacts of climate change. Network members pilot-tested options that local people identified as priorities, to bring immediate and tangible benefits to communities. In Mamre, just north of Cape Town, where people living in social housing have high rates of lung disease due to poor and damp living conditions, 236 homes were equipped with ceiling insulation. The new roofs were designed to increase community resilience to the potential effects of climate change on variations in temperatures of nearby sea waters, which influence the climate in Mamre. The new roofs also save energy and improve wellbeing. At the project's wrap-up in early 2012, the five cities planned to broaden the network so that others could benefit from their experience.

- **Read more about the project** Sub-Saharan Cities: A Five-City Network to Pioneer Climate Adaptation through Participation Research and Local Action.

In Sudan's Gedarif state, joint experimentation among researchers, state government officials, local farmers, and private sector seed and equipment suppliers resulted in new tools and approaches to maximize water harvesting in rainfed soils. With input from research partners, the Agricultural Research Corporation designed and tested a mechanized planter – the Water-Harvesting Inter-row Planter (WaHIP) – that makes deep furrows and allows deep sowing of seeds. Stakeholders reached consensus on blending these characteristics into a single farm implement, building on local knowledge and traditional methods. In field trials, sorghum yields improved by 39%.

- **Read more on the project Managing Risk, Reducing Vulnerability and Enhancing Productivity under a Changing Climate and its outcomes in Kenya, Ethiopia, and Tanzania in this story from the field.**

*The WaHIP planter*
Photo courtesy of Sokoine University of Agriculture

## *AfricaAdapt network*

First funded by CCAA in 2007, AfricaAdapt has evolved into a multi-media platform that links researchers, development organizations, donors and others with a stake in African adaptation – online and on the ground.

In its first phase, the network's web site attracted some 1100 registered members – 80% of them in Africa. It recruited and built a strong cadre of knowledge sharing officers, housed in each of its four partner organizations. It provided two rounds of small grants for outreach projects targeting hard-to-reach groups. The network published newsletters, helped launch the new adaptation magazine JotoAfrika, and hosted a series of 'meet-and-greet' gatherings at national and community levels. In early 2010, it hosted its first continent-wide symposium, drawing nearly 200 participants. As of July 2011, there had been some 7000 downloads of information from the symposium website.

- For more on AfricaAdapt, visit its web site: www.africa-adapt.net.
- Get a sense of AfricaAdapt's role in synthesizing adaptation knowledge in this brief report on a recent e-discussion on adapting agriculture through local knowledge.
- Find more discussion on phase 2 of AfricaAdapt, and its transition to African leadership, in the section Legacy.
- Watch this video, which introduced the program.

## *A growing body of literature on adaptation in Africa*

African researchers face significant barriers to publication, with the result that their research findings are underrepresented in the literature on adaptation to climate change, as in many other fields. To address this gap, and help results reach wider audiences and more potential users, the program provided support to help research teams synthesize and publish their findings in a variety of formats. By March 2012, CCAA's PAR and capacity building partners had produced nearly 500 research outputs in a range of media and publication types.

- Read the outputs of a learning forum on climate information – the synthesis paper Integrating meteorological and indigenous knowledge-based seasonal forecasts for the agricultural sector and the accompanying policy brief Tailoring climate information to user needs.
- This web summary will link you to fact sheets on participatory research in agriculture and a guidebook on applying PAR to adaptation research.
- Read more on the barriers faced by African researchers, and efforts to increase their visibility, in the International Institute for Environment and Development (IIED) brief Getting African climate change research recognised.
- This web summary will tell you more about efforts, with IIED, to help partners produce high quality, peer-reviewed literature.

# The approach

The CCAA program supported multiple layers of communications, networking, and knowledge sharing, within, among and beyond the projects it funded.

- **To ensure stakeholder involvement**, within PAR projects, research partners applied a range of communications practices – from participatory monitoring and evaluation, and stakeholder-engagement meetings, to press briefings, and presentations and briefs for policymakers and other research users.
- **To facilitate interaction** among researchers, policymakers, journalists, and other key stakeholders, the program funded a bilingual, pan African knowledge sharing platform and launched a conference support fund to increase African participation in regional and international events related to climate change. It also brought research teams together to share learning and create synthesis papers on themes that cut across projects.
- **To achieve public accountability**, and to inform donors and others in the adaptation community about program aims and results, the CCAA team developed project profiles and briefs, shared research stories with journalists, and published five annual reports. It organized dozens of roundtables and regional and international outreach events targeting government officials, the media, adaptation donors, researchers and development practitioners.
- **To see research findings published and put into practice**, the program supported a series of research-into-use activities. This included bringing teams together in learning forums to share lessons and findings on cross-cutting topics, and hosting "writeshops" that produced lessons and case studies from participatory research on agriculture. In the program's final stages, it drew on the experience of IIED to help research teams publish peer-reviewed articles, supported by technical experts.

# Vulnerable populations engaged

From its outset, the program aimed to involve groups vulnerable to climate change directly in the research process, so they could see their own knowledge and coping strategies validated alongside new approaches and technologies.

*In Morocco, researchers brought decision-makers and local stakeholders together to develop strategies that protect coastal resources and livelihoods.* Photo: IDRC/Mary O'Neill

## The results

### *A clearer understanding of vulnerability*

Vulnerability is a key concept in adaptation research. Involving those considered most vulnerable to climate change directly in research supported new understandings of the concept. For example:

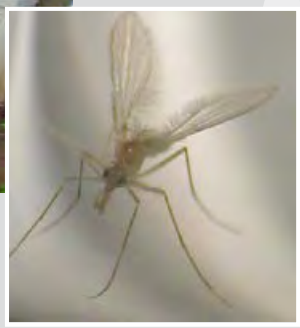
In Madagascar, research on climate change and agrarian systems led by the University of Antananarivo began by getting a clear read on the just how farmers in different regions of this highly diverse country were vulnerable. By creating reflection groups at the local, regional, and national levels, the project created a stream of dialogue that, together with the use of remote sensing and other diagnostic techniques, helped pinpoint where livelihoods were most at risk, and the climate conditions that posed the greatest threat.

- **Read more about research leader Lilia Rabeharisoa in the section People.**
- **Read more about the resulting adaptation options the team developed and tested with farmers in different regions in these *Adaptation Insights* briefs:**
  - Adaptive options for growing Atriatry rice in the context of climate change: the case of Marovoay
  - Adapting to cyclones in Madagascar's Analanjirofo region

In Tunisia, researchers led by the National Observatory for New and Emerging Diseases looked at the health impacts of climate change and related water conservation measures. They connected with existing stakeholder groups to examine factors increasing the incidence of *zoonotic cutaneous leishmaniosis* – a vector-borne disease which scars its victims. Working through the regional farmers' union and local agricultural development groups, the research team was able to pinpoint the connections between irrigation practices and exposure to sandflies that transmit the disease to humans. The team also paid particular attention to the vulnerability of women, as the disfiguring effects of leishmaniosis can marginalize them in particular.

- **Read more on the project's findings in this story from the field.**

*Research team members preparing traps for a vector count.* Photos courtesy of the National Observatory for New and Emerging Diseases



*The sandfly* P. papatasi *transmits the parasite that causes ZCL.*

## *Sustainable, field-tested solutions*

Engaging vulnerable populations in research allowed teams to apply known techniques in new contexts. For example:

In four drought-prone countries of East Africa, researchers led by Tanzania's Sokoine University of Agriculture tested a number of practical options to enhance farmers' use of seasonal forecasts and other climate information. In Tanzania and Kenya, for example, farmers learned to use rain gauges to monitor rainfall in their fields, and make cropping and seed choices suited to seasonal conditions. At the same time, the research team brought together traditional forecasters with scientists from the national meteorological agencies, to develop and test the value of consensus forecasts downscaled to local levels.

- Read more about how farmers in Tanzania and Kenya absorbed these lessons in the story When every drop of rain counts and in this related photo essay.
- Read more about the team's work on improving climate information for producers in the brief Improving farmer adaptive capacity by integrating local and indigenous knowledge in climate forecasting and adaptive response.
- The journal article Climate variability and change: farmer perceptions and understanding of intra-seasonal variability in rainfall and associated risk in semi-arid Kenya provides more depth on how Kenyan farmers' are experiencing climate variability.
- Read more about research leader Henry Mahoo in the section People.

*These indigenous weather forecasters base their predictions on close observation of insects, certain tree species, and other natural phenomena.* Photo: IDRC/Thomas Omondi

## *New respect for traditional knowledge*

African communities have relied on traditional knowledge in the face of some of the most extreme conditions on Earth. Revisiting this knowledge in the context of a changing climate can lead to practical results. For example:

In Zimbabwe, participatory research helped revive *Zunde raMambo* – a traditional practice that communities once used to feed the poorest during hard times. Farmer experimentation was essential to the process. In learning centres in seven countries, farmers experimented with early-maturing crop varieties and soil-fertility management practices that combine locally available manure and chemical fertilizers. The centres connected farmers to seed networks, and tested high-protein fodder legumes to supplement livestock feed. In Zimbabwe's Nyahava district, 18 villages collectively tilled a two-hectare parcel of land donated by a local chief. Using guidelines developed at learning centres with the research team and other service providers, yields improved dramatically. The results helped to renew faith in a lost local safety net practice whereby a parcel of land was put aside, to be collectively tilled to feed community members in need.

- **Read more on this community effort in Mobilizing local safety nets for enhanced adaptive capacity to climate change in Zimbabwe.**
- **Read more on the University of Zimbabwe's multi-country research on soil fertility approaches to adaptation in this story from the field.**
- **Read more about research leader Paul Mapfumo in the section People.**

A project looking at adaptation options in the Congo Basin worked with stakeholders in six sites in the Democratic Republic of Congo (DRC), Central African Republic, and Cameroon. Researchers found that while the forest is the main source of livelihood for hunter-gatherers such as Pygmies, it also serves as a safety net for farming populations living on the forest margins. Fishing, hunting, and gathering, which are less sensitive to climate variability, were used as a coping strategy in the face of diminishing returns on slash-and-burn agriculture. But as key forest products are over-exploited, this safety net is threatened. Drawing on the traditional knowledge and practice of forest-dwellers, the team worked with communities to test whether domesticating some forest species could be a viable adaptation option. In DRC, for example, the project organized training on beekeeping; established nurseries for trees on which edible caterpillars can be raised; and set up experimental plots for cultivating mushrooms and an edible vine called *gnetum*.

- **Read more on this research led by the Center for International Forestry Research in the paper Climate impacts, forest-dependent rural livelihoods and adaptation strategies in Africa: a review, published in the *African Journal of Environmental Science and Technology*.**
- **This Adaptation Insights brief reflects on additional supports needed to enhance local adaptive capacity in Congo Basin communities.**

## The approach

By making PAR its primary research approach, CCAA created the conditions for research teams to experiment with a range of means to engage the poor in research.

- One mechanism was the creation of **multi-stakeholder reflection groups**. In some cases, entirely new groups were created; in others, teams built on existing stakeholder processes. These groups conducted participatory diagnoses of climate change vulnerability; they looked at the effects of climate change and possible adaptation options; they discussed research results; and in many cases, members were a conduit for sharing research results with the communities they represented.
- Many projects allowed for collaborative testing of promising adaptation options: several agricultural research teams involved producers in testing options through **farmers' field schools** or **learning centres**.
- A number of projects also explicitly **linked indigenous and scientific knowledge** as an area of research focus. The program produced a number of emerging lessons on the value and limits of indigenous climate knowledge, and how to support and validate local knowledge.
- The program also funded the Support Fund for Local Adaptation Strategies, a project in West Africa that **helped vulnerable communities to shape research** that responded to their needs. The lead organization, Innovation, Environnement, Développement Afrique (IED) in Senegal, which had not previously included climate change in its research agenda, subsequently added community adaptation to its capacities.

# Informed policies

The program set out to increase the supply of – and demand for – policy-relevant research on adaptation. But influencing adaptation choices is complex: multiple levels of decision-making determine the scope of options people have for responding to climate change. Adaptation is essentially local, but it can be strengthened or undermined by policies at the national and regional levels. Project teams differed in their points of entry, with some targeting primarily national stakeholders, while others worked mostly at local and district levels.


*CCAA Program Leader Fatima Denton shakes hands with Senegal's Minister of Environment, Djibo Leity Ka, at an international conference hosted in July 2010.*
Photo courtesy of Centre de suivi écologique

## The results

### *Enhanced policy dialogue and coordination*

A number of projects stimulated policy interest in climate change, where officials had not yet come to recognize the impacts it might have on their areas of responsibility. In some cases, research projects provided a vehicle for coordinating policies.

Similarly, in the capital cities of Ghana and Ethiopia, the URAdapt project created platforms for dialogue between policymakers, scientists, and those representing vulnerable groups. Researchers led by the International Water Management Institute were examining ways to make African cities – especially those where urban and rural dwellers compete for shared water resources – more resilient to the expected effects of climate change. In Addis Ababa and in Accra, the project created research-to-strategic-action platforms – ReSAP committees – to bring together technical experts and representatives from key local and national institutions. For example, health, agriculture, water resource officials and city staff met with water user groups and community development workers for scientific briefings and to exchange ideas and priorities to ensure their cities' vulnerable water resources would meet future needs.

- **Read more on these efforts in the story Helping African cities prepare for climate change.**
- **Get the viewpoint of city stakeholders in the story Looking upstream and down: addressing climate change impacts in Accra and Addis Ababa and this related photo essay.**

In seven countries of West Africa, a project led by the Réseau sur les politique de Pêche en Afrique de l'Ouest (REPAO), an initiative of Environnement et Développement du Tiers-Monde, has helped national committees harmonize in developing regional policies that address shared concerns with the future of coastal fisheries. Building on the Sub-regional Fisheries Commission for West Africa – a regional body mandated to coordinate policy – REPAO brought a new focus on adaptation. The project linked decision-makers and resource users at the local, national, and regional levels, giving fishers, boat owners, and others who depend on fishing a voice in plans and policies. Research teams in Senegal, Guinea, and Cape Verde also worked with national fisheries organizations and strengthened the capacity of local fishers' associations. Research results, including policy recommendations from participatory workshops at local levels, have been examined in national and regional meetings. As a result of the project, a three-year agreement was signed between REPAO and the Economic Community of West African States to implement its program for sustainable fishing policy. Participation in the regional workshops has since grown to include representatives from 16 countries.

- **Read more on the project in the story** Adapting fishing policies to address climate change in West Africa.

*Karim Abdou Sall, president of Joal's young fishers' association, was among those who took part in dialogue on fisheries policy as a result of research.*
Photo: IDRC/Djibril Sy

## *Uptake of research in adaptation plans*

It proved challenging for research teams to stimulate demand for their work among policymakers, particularly where awareness of climate change risk was low. But in a number of instances – especially where decision-makers were already aware of the need for adaptive plans, or where teams enjoyed institutional links with research users – projects helped to inform new adaptation plans and policies. For example:

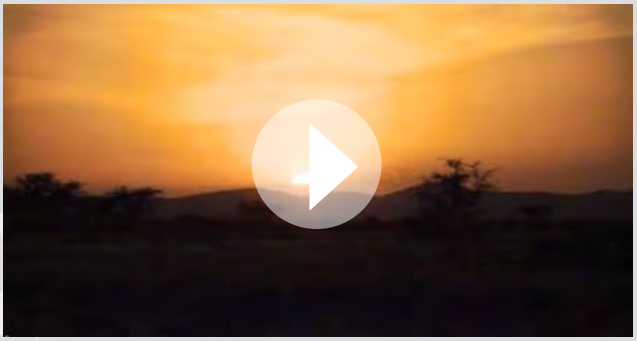
In northern Morocco, fragile coastlines and communities are threatened by sea level rise, flooding and erosion, and other expected climate change impacts. A research team led by the École nationale forestière d'ingénieurs worked with national and local policymakers to develop coastal adaptation strategies for two governorates. In the absence of a policy coordination process among governorates, the team built on established coastal planning contact groups. These cellules de littoral became forums for participatory analysis of project findings, and a means for knowledge exchange. With regular meetings over three years, the cellules became key contributors to adaptation strategies. These strategies were ultimately approved by local governors. The Ministry of Environment has formally mandated the cellules and is looking to replicate this model across the country. Various studies carried out by the project were also instrumental: they provided authorities with basic data on subjects ranging from erosion hotspots to locations of fisheries that could be used in other planning and policymaking processes.

- **Read more on the project Moroccan Coastal Management in the paper Assessing the regional impacts of climate change on economic sectors in the low-lying coastal zone of Mediterranean East Morocco and other project outputs on this web page summary.**

*Inshore fishing on Morocco's northern coast*
Photo: IDRC/Mary O'Neill

Pastoralists in northern Kenya are among the country's most vulnerable groups, given the recurring droughts and erratic rains that have afflicted the region in recent years. This vulnerability is now recognized in Kenya's National Climate Change Response Strategy, thanks in part to a project co-lead by the National Environment Management Authority (NEMA) and the development organization Practical Action. In Turkana and Mandera, district-level officials used research findings to raise community awareness on the importance of weather information and seasonal forecasts for natural resource management. The national strategy, which was being formulated as the research was conducted, now recognizes the pastoralists' right to enjoy freedom of movement and control over resources on which their livelihoods depend.

- **Read more on the project's findings and its policy contributions in the story Reducing vulnerability among pastoralists in northern Kenya.**
- **Watch this video to learn more about how Turkana herders are affected by climate change, and their options for survival.**



## *Greater understanding of policy processes*

While not all projects succeeded in informing or influencing policies to the extent they had aimed for, the program as a whole – and one project in particular – generated learning on how African researchers can more effectively work with policy processes.

From 2009-2011, the Institute of Development Studies and three African partner organizations conducted the participatory project Linking African Researchers with Adaptation Policy Spaces. The project worked with seven CCAA research teams to understand the policy processes most relevant to each and helped teams identify policy openings and tools to engage decision-makers. The project tested an analytical framework for conducting policy process analysis and engagement. A total of seven case studies were compiled based on the analysis. In some cases, teams were able to more clearly articulate key factors in their policy engagement context. In others, entirely new policy entry points were identified and tested, such as in Malawi, where a National Consultative Group was formed, providing a channel for crop diversification research to reach key ministries.

- **Read more on the lessons derived from this research on adaptation policy spaces in the project's final report.**
- **Read CCAA program lessons learned on the challenges of working in the adaptation policy terrain in this reflection brief, Strengthening research's influence on adaptation policies in Africa.**

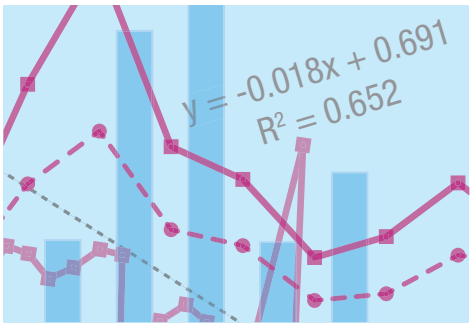
## The approach

- **In selecting projects**, policy relevance was an important criterion. Proponents were encouraged to define policy objectives and a plan for achieving them, as an integral part of their research plans. Where officials were not directly involved in research teams, many established stakeholder committees that included them, or connected with existing policy dialogue bodies. Many teams included policy influence objectives in their strategic communication plans, identifying policymaker audiences and crafting research outputs attuned to the needs of decision-makers.
- The program **funded gatherings that brought together researchers and policymakers**; it included research teams in IDRC's delegation to the annual UN Climate Change Conference so they could present their work;
- It **provided training** in research-to-policy linkages and supported a research and mentoring project that involved teams in active learning on policy influence, led by the Institute of Development Studies.
- The program also **responded to requests from African regional bodies** interested in developing their capacity to address climate change adaptation. For instance, it provided training in climate risk assessment to African Development Bank staff; it shared assessments of African adaptation expertise with the New Partnership for African Development's interim environmental secretariat; and it helped the Southern African Development Community and the Lake Victoria Basin Commission strengthen their climate change units.


*Dr. Batilda Buriani, Tanzania's Minister of State for the Environment, addressing a 2009 climate change sensitization workshop for parliamentarians.* Photo: IDRC

# Findings

As a research and capacity building program, CCAA set out to increase the impact of adaptation research on development and add to the body of scientific literature on climate change adaptation in Africa. Elsewhere in this report, you will find links to lessons and findings that resulted from researchers' engagement with communities. This section highlights some additional scientific findings in areas key to Africa's resilience. Many more articles resulting from research supported by the program can be found in IDRC's digital library.

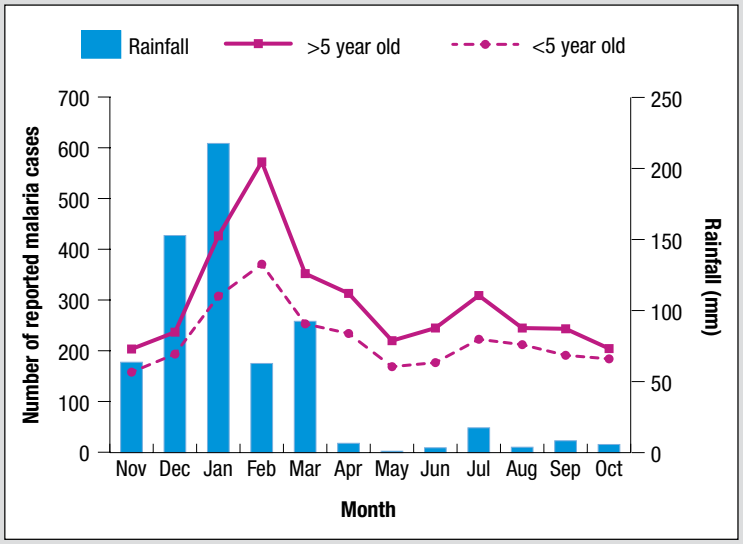


# Investigating the links between irrigation and malaria

In many parts of Africa where rainfall is unreliable for agriculture, irrigation is an important coping strategy for farmers. In a changing climate, it may become even more essential. In Malawi, the national Greenbelt Initiative promotes large-scale irrigation as a means to enhance food security. There are concerns, however, that irrigation may increase the incidence of malaria by multiplying breeding grounds for the mosquitos that transmit the disease.

Researchers with the University of Malawi's Chancellor's College and with Malawi's Department of Climate Change and Meteorological Services explored the potential link between irrigation and malaria in an area of Chikhwawa District. Using data on rainfall, temperature, and humidity for the period 1971-2009, and confirmed cases of malaria in the district hospital from 2002 and 2009, the team explored potential correlations between rainfall and malaria. Their analysis suggests that the malaria pattern, in this specific context, was mainly associated with rainy season flooding and not irrigation.

- Read the article Linking rainfall and irrigation to clinically reported malaria cases in some villages in Chikhwawa District, Malawi, by Ruth Kalinga-Chirwa et al. in the journal *Physics and Chemistry of the Earth*, Volume 36, Issues 14–15, 2011.
- Read other results from the project Strengthening Local Agricultural Innovation Systems in Less Favoured and High Potential Areas of Tanzania and Malawi.



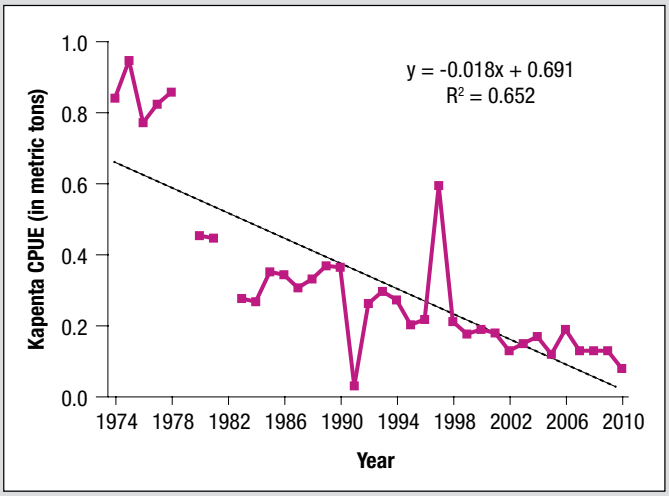

From Ruth Kalinga-Chirwa et al. Linking rainfall and irrigation to clinically reported malaria cases in some villages in Chikhwawa District, Malawi. *Physics and Chemistry of the Earth* 36 (14-15) 887-894, © 2011. Reprinted with permission from Elsevier.

# Exploring climate change impacts on inland fisheries

A growing body of literature has explored the impacts of climate factors on phytoplankton and fish stocks in temperate lakes and oceans. But less has been done to analyse these effects in Africa's lakes, which provide an important source of income and sustenance for local fishing communities.

African Climate Change Fellow Mzime Regina Ndebele-Murisa carried out research on Zimbabwe's Lake Kariba, the third largest man-made lake in the world. The sardine Limnothrissa miodon (locally known as kapenta) was introduced in 1968 and is now the basis of an important commercial industry. But stocks have been declining in recent decades. Through analysis and modelling based on water level, temperature, and evaporation data, and sampling of the composition of phytoplankton populations, research shed light on how climate factors are affecting the food chain that supports kapenta. It suggests that climate factors – maximum temperature trends in particular – and nutrient compositions affected by water levels are the primary factors influencing kapenta production in Lake Kariba. Data records indicate that rainfall is declining in the area at a rate of 0.63 mm per year, while evaporation rates have increased 31% since 1963, in tandem with increasing temperatures. Correspondingly, fish production has decreased significantly since 1974, at an average rate of 24.19 metric tons per year.

- Read The implications of a changing climate on the Kapenta fish stocks of Lake Kariba, Zimbabwe by Mzime Regina Ndebele-Murisa et al. in *Transactions of the Royal Society of South Africa*, Volume 66, Issue 2, 2011.
- Read more about Ms Ndebele-Murisa and her doctoral research with the CCAA-supported African Climate Change Fellowship Program here.
- You can read further discussion of the paper and the authors' response in Changing fish stocks in Lake Kariba: climatic or human-induced impact? by R. Grant Cawthorn, and The decline of Kapenta fish stocks in Lake Kariba – a case of climate changing? by Mzime Regina Ndebele-Murisa et al., both published in *Transactions of the Royal Society of South Africa*, Volume 66, Issue 3, 2011.




*Kapenta catch per unit effort, 1974-2010*

From Mzime Regina Ndebele-Murisa et al. The decline of Kapenta fish stocks in Lake Kariba – a case of climate changing? *Transactions of the Royal Society of South Africa* 66 (3) 220-223, © 2011. Reprinted with permission from Taylor and Francis Ltd. on behalf of The Royal Society of South Africa.

# Testing field dispersion as a strategy for coping with climate risk

Rainfall in the Sahel is highly erratic, and can vary greatly even within small areas. While there is still some uncertainty about what climate change will mean for the Sahel, in recent decades the region has experienced increasing drought and greater variability in rainfall. One strategy used by smallhold farmers in southwest Niger to cope with this variability is to scatter small plots throughout village territory, rather than depending on yields in single, larger fields. Although the value of this strategy is seen as common wisdom in the area, it had never been scientifically evaluated.

African Climate Change Fellow Pierre Akponikpè and colleagues, who also received funding from Belgian Development Cooperation, tested the strategy of field dispersion using spatial analysis that integrated GIS-based land tenure information, soil fertility strata, and spatial rainfall information with the APSIM millet growth simulation model. Impacts were assessed by looking at how yields varied from year to year by household, and how they varied between different households. Findings suggest that the dispersion of farm fields had a modest but significant impact, increasing the stability of yields from year to year, and among households. The authors conclude that, while further research is needed on longer term rainfall distribution, any land reforms should take into account the benefits of this local strategy to mitigate climate risk.

- Read Spatial fields' dispersion as a farmer strategy to reduce agro-climatic risk at the household level in pearl millet-based systems in the Sahel: A modeling perspective by Pierre B.I. Akponikpè et al. in the journal *Agricultural and Forest Meteorology*, Volume 151, 2011.
- Read more on Dr Akponikpè's postdoctoral research with the African Climate Change Fellowship Program.

# Addressing soil fertility in a changing climate

Crop and livestock management are closely intertwined in the communal areas of northeast Zimbabwe, with cattle providing draught power for ploughing fields, and manure for fertilizing fields. Crop residues in turn are an important feed stock for cattle in the dry season, when grazing is poor; they are also an important ingredient for maintaining fertile soils. These links create competition among farmers for limited organic resources, which intensifies with rainfall variability.

Researchers studied the connections between crop and cattle production in Zimbabwe's Murewa communal area using NUANCES-FARMSIM, a dynamic farm-scale model that simulates village level interactions. They assessed how these interactions affected carbon and nutrient flows, and the long-term productivity of different farm types under climate variability.

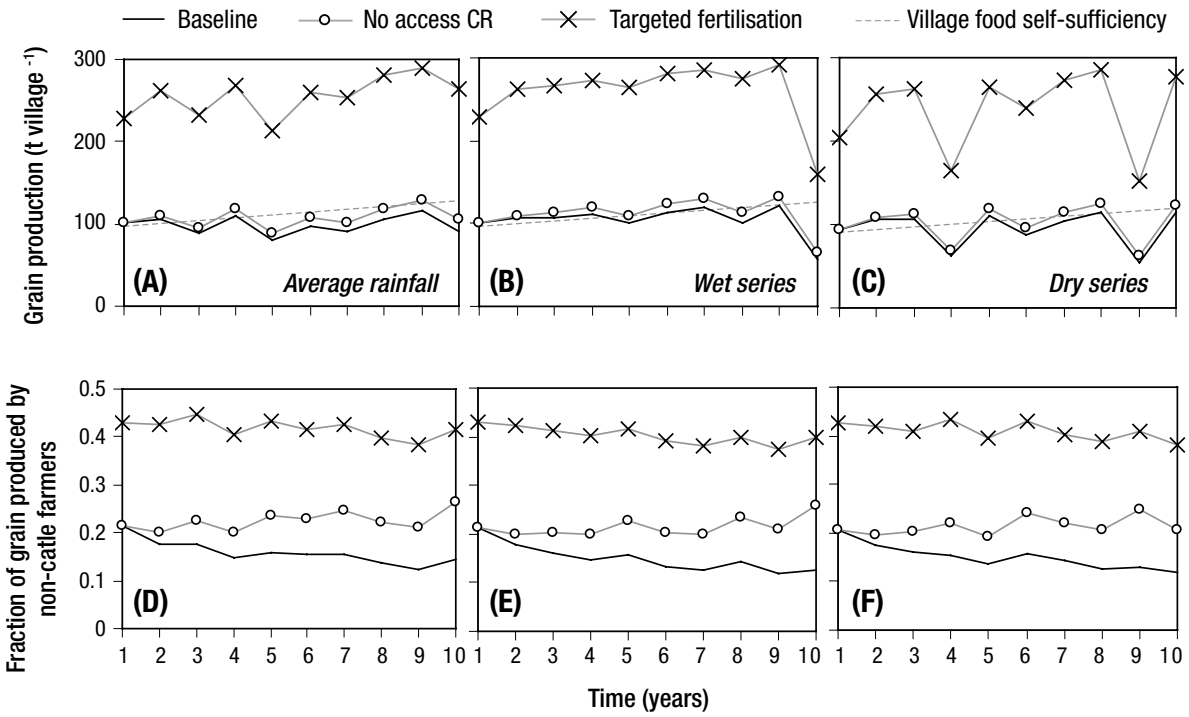



**Figure.** Simulated grain production for the whole village under three management scenarios (baseline, no-access to crop residues of the non-cattle farmers (RG3 and RG4), and targeted fertilisation), and using three different rainfall series: (A) average series, (B) a wet series and (C) a dry series, and fraction of total grain produced by non-cattle farmers (RG3 and RG4) for (D) average rainfall series, (E) a wet rainfall series and (F) a dry rainfall series.

From M.C. Rufino et al. Competing use of organic resources, village-level interactions between farm types and climate variability in a communal area of NE Zimbabwe. *Agricultural Systems* 104 (2) 175–190, © 2011. Reprinted with permission from Elsevier.

Soil fertility was found to be highly variable, with the lands owned by cattle owners being among the most fertile, and those managed by non-cattle owning farmers being the least fertile. Collective management of cattle at the village level, with non-cattle farmers tolerating grazing on their crop residues, appeared to contribute to this uneven distribution of nutrients. Increasing mineral fertilizer use, in combination with keeping crop residues in fertile fields and applying manure to poor fields, was found to be a promising strategy to boost crop and cattle productivity. Results suggested that three times more fertilizer than currently used was necessary to compensate for the removal of carbon and nutrients through grazing and boost productivity to improve food security for both cattle and non-cattle farmers. The authors note that while these levels may be unrealistic for a smallholder village in Zimbabwe under current conditions, they may be feasible with donor assistance.

- Read Competing use of organic resources, village-level interactions between farm types and climate variability in a communal area of NE Zimbabwe by M.C. Rufino et al., published in the journal *Agricultural Systems*, Volume 104, 2011.
- See more results from the project Resilience and the African Smallholder : Enhancing the Capacity of Communities to Adapt to Climate Change and read this profile of project leader Paul Mapfumo.

# People

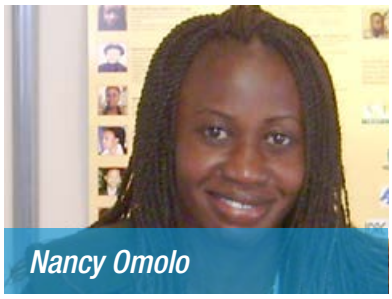
The greatest strength of the Climate Change Adaptation in Africa program was its people – the Fellows and teams that conducted research, shared knowledge, and built capacity; the staff members who conceived and carried out strategies; and the advisors who provided guidance and ensured plans were in tune with the African context. Here you will find just a few of the extraordinary people behind the accomplishments of the program.


*Henry Mahoo*


*Saïd K. Hounkponou*


*Paul Mapfumo*


*Lilia Rabeharisoa*


*Nancy Omolo*


*Mohamed Kouni Chahed*


*Advisory Board*


*Staff members*

Photo: IDRC/Nyani Quarmyne

*"The institutions that participated are now experts in climate change projections and adaptation studies."*

## *Henry Mahoo*
## *Project Leader, Sokoine University of Agriculture*

With a background in hydrology and irrigation engineering, Professor Henry Mahoo leads the Soil Water Management Research Programme at Tanzania's Sokoine University of Agriculture. He is dedicated to building homegrown expertise to serve East Africa, a region where water is precious. In leading the project Managing Risk, Reducing Vulnerability, and Enhancing Productivity under a Changing Climate, Professor Mahoo witnessed a four-country team develop new skills and knowledge to help farmers confront increasing drought and erratic rainfall.

"The institutions that participated in the project are now experts in climate change projections and adaptation studies. They've gained experience in downscaling global climate change scenarios, using crop simulation models in projecting yields, and developing decision tools for adaptation," says Mahoo. "Several team members are consulting on climate change with other institutions and securing new research funds."

This learning fed into new curricula at the university to extend the base of expertise: climate change courses were developed for Ph.D. candidates and undergraduate students. And this new-found expertise reaches well beyond researchers. According to Mahoo, "Farmers, stockists, policymakers, extension workers, and NGOs are now seeking out seasonal weather forecasts for making agronomic decisions. This started after our project raised awareness. In Kenya, localized seasonal information is now the first agenda item for district development committees."

Following on its successful research completed through the CCAA program, Sokoine University of Agriculture was selected as a recipient of an African Adaptation Research Centre award, to further its work on climate change adaptation strategies for agriculture and water resources in Ethiopia, Kenya, Sudan, and Tanzania.

■ **Read more on the project in the section Vulnerable populations engaged.**

Photo: IDRC/Nyani Quarmyne

*"Adaptation needs to be integrated into programs, projects, and development plans at all levels."*

## *Saïd K. Hounkponou*
## *Project Leader, Initiatives pour un développement intégré durable (IDID)*

The launch of the project Strengthening the Capacity to Adapt to Climate Change in Rural Benin coincided with extreme flooding in 2007 that ravaged crops and destroyed close to 50 villages. Through its experience in providing agricultural extension services to rural producers, IDID recognized just how vulnerable these people were to climate variability and change because of a simple lack of clear and accessible information.

According to project leader Saïd K. Hounkponou, involving local people in developing their own solutions is crucial.

"Although there is evidence of international awareness of climate change risks, we see very little real action at regional, national, and community levels. So, vulnerable populations remain at risk from climatic extremes every day."

By combining field testing of options with multiple platforms for information sharing and analysis, the project aimed to better inform and prepare stakeholders at all levels.

"In the future," says Hounkpounou, "I hope to see policymakers, researchers, the private sector, civil society, and technical and financial partners collaborate on adaptation to climate change. Adaptation needs to be integrated into programs, projects, and development plans at all levels."

Through its leadership of CCAA-supported research, IDID attracted the attention of national ministry officials in Benin, and went on to become a partner to the country's National Action Programme on Adaptation and its National Water Partnership. In 2011, IDID was also awarded an African Adaptation Research Centre grant to continue its focus on building resilience in local communities threatened by food insecurity and rural poverty due to climate change.

■ **Read more on the project Strengthening the Capacity to Adapt to Climate Change in Rural Benin in the section Research capacity.**

Photo courtesy of Sokoine University of Agriculture

*"The realities of a changing climate spell disaster for communities that already struggle..."*

## *Paul Mapfumo*
## *Project Leader, University of Zimbabwe*

Growing up on a small farm in Zimbabwe, project leader Paul Mapfumo faced daily worries about erratic rainfall and a lack of food security. His quest for soil fertility solutions grounded in scientific evidence stems from a strong personal desire to end the suffering he has seen people endure.

Now with some 20 years of scientific training and research on food security and natural resource management behind him, Mapfumo sees more worries on the horizon for African smallholders. Though they have long experience with drought and failing rains, the impacts of climate change may overwhelm their usual coping mechanisms. In the multi-country project he led from 2007 to 2010, he was surprised at the extent to which communities rely on indigenous knowledge to make their decisions on potential coping practices.

"I see an increasing band of vulnerable smallholders, and widening knowledge gaps among these communities, their service providers, and those who champion development – policymakers and development donors. The realities of a changing climate spell disaster for communities I know already struggle with perennial food deficits and limited options for livelihoods."

Through participatory action research conducted in field-based learning centres, Dr Mapfumo's team experimented with integrated soil fertility management techniques tailored to farmers' unique circumstances.

"The study demonstrated that with good facilitation and knowledge sharing, the capacity of farming communities to mobilize and organize themselves can improve rapidly. They identified resources to adopt improved crop production technologies and took collective action to revitalize traditional social safety nets and gain access to agricultural markets. And they were able to draw the attention and contributions they needed from different policy-making levels."

- **Read more on the project** Resilience and the African Smallholder: Enhancing the Capacity of Communities to Adapt to Climate Change **in the section** Vulnerable populations engaged.

Photo: IDRC / Nathalie Beaulieu

*"Many rural producers need only starter funding and technical advice to launch their own initiatives..."*

## *Lilia Rabeharisoa*
## *Project Leader, University of Antananarivo*

As leader of the project Vulnerability and Adaptation to Climate Change: Agricultural Systems in Madagascar, Lilia Rabeharisoa saw first-hand the challenges local communities face, and how much they must rely on their own initiative to address them.

Increasing productivity to achieve food security is Madagascar's top agricultural priority. Dr Rabeharisoa points out that local decision-makers don't have the funds to help farmers confront the basic problem of water scarcity in rice production:

"Many rural producers need only starter funding and technical advice to launch their own initiatives and organize themselves," she says. "But the state cannot provide all of the necessary means to effectively implement the farmers' ideas, so other options, such as support from international and private donors, are crucial to their chances of success."

In spite of the challenges her country faces, Rabeharisoa sees a silver lining to climate change adaptation, if it serves as an engine for developing innovative practices such as conservation agriculture. Of all the countries in the Indian Ocean, she sees Madagascar as having the greatest potential to become an agricultural leader.

"My most optimistic vision? To see Madagascar attain food self-sufficiency in 10 years, have a fully adaptive agricultural system in 20 years, and to become the breadbasket of the region in 50 years."

■ **Read more about the project in the section Vulnerable populations engaged.**

Photo courtesy of Nancy Omolo

*"There was a tremendous amount of capacity building for us."*

## *Nancy Akinyi Omolo*
## *Researcher and African Climate Change Fellow*

For researcher Nancy Omolo, the CCAA program provided the opening to conduct research on one of the least understood dimensions of climate change impacts – how women may be affected, and how their adaptation options might differ from men's.

Ms Omolo's interest in climate change, gender, and conflict among pastoralist communities was the subject of a study she pursued as one of the first-round recipients of the African Climate Change Fellowships Program. She was also a principal researcher on a project on pastoralist adaptation in northern Kenya.

"Little had been done to explore the links between gender, climate change, and pastoralism," says Omolo. "When we first began to ask pastoralists about climate change, they said they felt they were all equally vulnerable. But it became clear that as their society is changing (…) Women's roles are also changing. Women for example are walking further to collect fire wood. But during drought, men don't want the women walking these distances because of the risks."

The research coincided with the development of Kenya's National Climate Strategy, and so was able to contribute, along with other research underway, to fleshing out plans to address the vulnerability of pastoralists. But Omolo saw the value of the research even more in the impact on the researchers themselves.

"There was a tremendous amount of capacity building for us – through training, through working for the first time with officials in the meteorological office (…) Taking part in the ACCFP and in the program at a time when climate change was just starting to be taken seriously was an enormous advantage. It's given us good leadership skills in the field, maybe a certain level of recognition and increased authority."

- **Read about Nancy Omolo's research with the African Climate Change Fellowship Program in this project summary.**
- **Read Ms Omolo's paper Gender and climate change-induced conflict in pastoral communities: case study of Turkana in North-western Kenya in the March 2010 volume of the African Journal of Conflict Resolution.**
- **Read more about the project Enhancing Adaptation to Climate Change among Pastoralists in Northern Kenya in the section Informed policies.**

Photo courtesy of Mohamed Chahed

*"I was very enthusiastic about taking part in this program because it pushed us beyond earlier, more academic research."*

## *Mohamed Kouni Chahed*
## *Project Leader, National Observatory for New and Emerging Diseases*

Mohamed Chahed, a professor and specialist in preventative medicine, has served as General Director of Tunisia's National Observatory of New and Emerging Diseases and as Chief Medical Officer of the communicable diseases control unit of the Ministry of Health. From 2008-2011, he led research on the health impacts of climate change adaptation strategies in Tunisia, one of a group projects jointly funded by CCAA and IDRC's EcoHealth program. The project focused on the incidence of zoonotic cutaneous leishmaniasis (ZCL).

According to Dr Chahed, the project provided a unique opportunity to apply new approaches to a longstanding challenge. "We've been working on this disease now for over 20 years, trying to find solutions. There has been a lot of effort to develop a vaccine, but the ecosystem approach allows us to look at the interaction between climate and the biotopic determinants behind outbreaks of ZCL."

"I was very enthusiastic about taking part in this program because it pushed us beyond earlier, more academic research. The multidisciplinary approach also makes for exciting interaction among specialists from a range of backgrounds."

Given the importance of influencing farmer behavior and informing local health officials, the team established a local project committee, including a core group that helped collect data. In spite of the upheaval Tunisia experienced over the course of the research project, Chahed is proud to say they never missed a day. As a result, he says, "We now have very complete data sets, including satellite images of the vegetation cover. This provides an excellent base for an epidemiological early warning system, and we are seeking ways to continue this vital research beyond the life of this project."

- **Read more about the project "Analysis of the health impacts of climate change adaptation strategies: the case of zoonotic cutaneous leishmaniasis from Leishmania Major in Tunisia" in the section Vulnerable populations engaged.**

Photo: IDRC

# Advisory Board

From its launch in 2006, the CCAA program was guided by an Advisory Board consisting of African regional experts, representatives of the program's donors (IDRC and DFID), and the Program Leader.

To ensure the board reflected regional expertise and priorities, at least four members at any time were citizens of African countries, preferably working for an African institution and active in the field of adaptation to climate change. These African advisors were:

### *Mbareck Diop, Chair*

A committed Board member since 2006, Mbareck Diop was Advisory Board Chair from November 2008 to March 2012. Between 1994 and 2002, he served as Technical Adviser to the President of the Republic of Senegal, advising on environment, energy, town planning, agriculture, and other issues. Since 2003, Mr Diop has been the Country Director of the Institute for Transportation Policy.

### *Balgis M.E. Osman Elasha, Vice-chair*

Recipient of a 2008 Champion of the Earth Award, Dr Balgis Osman Elasha has served as lead author on a number of Inter-governmental Panel on Climate Change (IPCC) initiatives and reports, including the Africa chapter of the Fourth Assessment Report of Working Group 2.

### *Alexander Alusa*

Former director of Kenya's Meteorological Services, Alexander Alusa worked with the Office of Kenya's Prime Minister to establish a Climate Change Coordination Unit. He is a former Deputy Director of the United Nations Environment Programme (UNEP) Division of Environmental Law and Conventions.

## *Estherine Lisinge Fotabong*

An environment adviser to the New Partnership for Africa's Development (NEPAD) Secretariat, and National Program Coordinator for UNEP's Division of Global Environment Facility Coordination in South Africa, Estherine Lisinge Fotabong lectures in Law at the University of Soa in Yaounde, Cameroon.

## *Mohamed Senouci*

Dr Mohamed Senouci is Engineer-in-Chief and Professor at the Hydrometerological Research Institute in Oran, Algeria. He is founder and former President of the Association for Research on Climate and Environment (ARCE) in Algeria, and Honorary President since 2003.

## *Coleen Vogel*

Professor Coleen Vogel chaired the Sustainability program of the School of Geography, Archaeology and Environmental Studies at the University of Witwatersrand in Johannesburg, South Africa. She was a key contributor to Africa chapter of the IPCC Fourth Assessment Report.

## *Noel Oettlé*

A board member from 2006 to 2008, Noel Oettlé was the founding director of the Farmer Support Group, an agricultural extension unit of the University of Natal. As Rural Program Manager with the Environmental Monitoring Group, Mr Oettlé has worked extensively with resource poor farmers in South Africa's arid west.

## *Shem O. Wandiga*

A distinguished Kenyan scientist and educator, Professor Shem Wandiga served as the first Advisory Board Chair, from 2006 to 2008. A professor of chemistry at the University of Nairobi, Prof. Wandiga has published and lectured widely. He has chaired several national committees on university education.

# Staff members

The program was staffed by a multilingual and multidisciplinary team with expertise in the diverse regional, social, environmental, and economic dimensions of climate change impacts in Africa.

*CCAA team members in 2008. From left to right, front row: Guy Jobbins, Fatima Denton, Mary O'Neill, Aïda Marie-Jeanne Diouf, Heidi Braun, Anthony Nyong. Back row: Jabavu Nkomo, Senior Fellow John Stone, Alioune Badara Kaere, Victor Orindi, Nathalie Beaulieu*
Photo: IDRC

*CCAA Program Leader Fatima Denton*
Photo courtesy of AfricaAdapt

Led by Dakar-based Program Leader Fatima Denton, staff worked together from IDRC headquarters and African regional offices. Over the six-year course of the program, the following people formed the CCAA team:

### *Cairo*

Guy Jobbins, PhD

### *Dakar*

Nathalie Beaulieu, PhD
Aïda Marie-Jeanne Diouf
Aliou Diouf, PhD
Marie Fal
Alioune Badara Kaere
Henri Lo, PhD

### *Nairobi*

Evans Kituyi, PhD
Jabavu Nkomo, PhD
Anthony Nyong, PhD
Victor Orindi
Florence Waiyaki

### *Ottawa*

Heidi Braun
Marjolaine Côté
Julia Fryer
Mary O'Neill
Hayley Price

# Legacy

The scope and ambition of Climate Change Adaptation in Africa presented new challenges and opportunities, and, in "learning-by-doing," produced many lessons. Much of this experience has been captured in various ways, and may prove invaluable for others looking to support climate change adaptation. Research projects continue to publish their findings beyond the life of the program, and a growing body of new, locally-generated knowledge on African adaptation is accumulating.

The program was conceived as a time-bound initiative which, by its conclusion, would transfer or "devolve" significant areas of programming to African leadership. In addition to supporting this transition, IDRC and DFID, the founding donors, are building on the lessons of CCAA with new investments in the field of adaptation research.

Here then are some brief highlights of the program's lessons and legacy, and suggestions on where you can access its growing archive of research outputs.

## Lessons learned

A final evaluation was conducted by a team of four experts with complementary expertise and experience. They examined CCAA results and the effectiveness of its management and governance, and distilled lessons about its approach to building capacity and supporting research and knowledge sharing on adaptation to climate change.

Evaluators found the program had, to a significant extent, achieved its overall goal: to improve the capacity of African people and organizations to adapt to climate change in ways that benefit the most vulnerable. They found that it succeeded in building a range of capacities among African researchers, communities, and organizations, but less so those of decision-makers. They noted the program had raised awareness of climate change, vulnerability assessment, and adaptation strategies, and had helped develop the knowledge base and the practice of knowledge sharing on adaptation in Africa.

- Read more conclusions and recommendations from the final evaluation report.

# Devolution to African institutions

From the program's launch in 2006, shifting leadership of program activities to strong African institutions was planned as an important part of CCAA's legacy. The program extension agreed between DFID and IDRC in 2010 prioritized devolution of two major initiatives: capacity building through the **African Climate Change Fellowship Program** (ACCFP) and knowledge sharing through the **AfricaAdapt network**.

*Staff and recipients of the African Climate Change Fellowship Program*
Photo courtesy of START and IRA

Originally led by the Washington-based START (Global Change System for Analysis, Research and Training), the ACCFP was funded for a second phase, now under the leadership of Tanzania's Institute of Resource Assessment (IRA) at the University of Dar es Salaam, one of the African partner organizations involved in delivery of Phase 1.

Leadership of AfricaAdapt likewise transferred from a northern-based institution – the UK-based Institute of Development Studies – to Environment and Development in the Third World (ENDA-TM), a Dakar-based NGO. In both these projects, a plan for capacity building and devolution to African leadership had been built into the projects' initial phase.

To sustain ongoing research-to-policy links in the African adaptation community, through its Climate Change and Water program, IDRC also funded the research-to-policy platform Africa Interact. Led by the West and Central African Council for Research on Agriculture and Development, the forum aims to link scientists and policymakers, facilitating the uptake of research in adaptation decision-making.

- Learn more about the vision for Phase 2 of AfricaAdapt in this interview with network coordinator Moussa Na Abou Mamouda of ENDA-TM.
- Read more about the transition between the first and second phases of AfricaAdapt in this lessons-learned summary.

# New investments in adaptation

The CCAA experience has helped to inform follow-up investments in adaptation research for both the program's founding donors. Most recently, IDRC and DFID have signed a new agreement to launch a new research program on adaptation in Africa and Asia. It will focus on cost-effective and sustainable adaptation solutions in three climate change 'hot spots': semi-arid regions, highly populated low-lying deltas, and glacier- and snow pack-dependent river basin systems.

A number of research teams supported through the CCAA program also received follow-up support though the African Adaptation Research Centres (AARC) initiative, part of Canada's fast-start climate financing funded through IDRC's Climate Change and Water program.

- Read more on DFID investments in adaptation in this R4D web summary.
- Find out more about other IDRC investments in adaptation by visiting the web sites of the Climate Change and Water program, the African Adaptation Research Centres initiative, and the International Research Initiative on Adaptation to Climate Change.
- Explore the investments in African Adaptation Research Centres on this map.
- Watch this video on the launch of the African Adaptation Research Centres initiative to hear from Canada's Minister of Environment Peter Kent, IDRC President David Malone, and CCAA partner and AARC recipient Saïd K. Hounkponou.

## A wealth of new knowledge and expertise

This report has presented just a few highlights of the program's findings and lessons. A number of projects originally funded by the CCAA program will continue into late 2012, and many other synthesis products and project findings are still to come.

- **Access and search a much more complete set of program results by visiting the CCAA Community site in IDRC's open access digital library.**

Since the program's launch in 2006, the demand for knowledge to inform adaptation to climate change in Africa has increased significantly. The many researchers and scholars who gained new insights, networks, and skills through CCAA remain committed to informing new pathways to resilience in Africa.