



# MAKING AN IMPACT

THE AFRICAN CLIMATE CHANGE  
FELLOWSHIP PROGRAM

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## ABOUT THE ACCFP

The African Climate Change Fellowship Program (ACCFP) supports African professionals, researchers, educators and graduate students to undertake activities that enhance their capacities for advancing and applying knowledge for climate change adaptation in Africa. Participating Fellows receive small grants that enable them to visit other institutions – “Host Institutions” – where they collaborate with mentors to implement individually-designed projects that, for example, assess and prioritize climate risks, investigate current practices for designing and implementing adaptation projects, consider approaches for integrating adaptation with planning and practice and/or develop and implement curriculum that promotes integration of climate change and climate change adaptation into graduate level education.

All ACCFP Fellows participate in periodic program workshops and seminars that include targeted training sessions to add value to the research experience. The trainings challenge Fellows to step “outside the box” in considering the role and potential contributions of their individual work within broader efforts to address climate change adaptation challenges in Africa. Most workshops are organized in conjunction with regional or international conferences in order to foster and enable new opportunities for international cooperative research, partnerships and exchange. Such integrative program activities, particularly those that enable Fellows to be exposed to and participate in discussions, exercises and debates with an international community of experts, are recognized as a critical component of the ACCFP success story.

During Round 1 of the program (2009/2010), ACCFP Fellowships were awarded to 45 individuals



*All of us now have a common understanding that climate change adaptation is necessary. Now we know that we must all rely on one another to make adaptation work at different locations.*

Fritz Tabi Oben, Post-Doctoral Fellow

from 40 institutions in 18 African countries. Many Fellowship projects have directly supported adaptation decision-making, and tangible and sustained links have been made between institutions in Africa that had not interacted prior to program participation. In December 2010, the first class of Fellows graduated from the ACCFP. Program alumni have gone on to excel in institutions across the continent and are the inaugural members of a cadre of African climate change professionals ready and willing to promote adaptation policy and actions.

A second phase of the ACCFP was initiated in early 2011 and includes two, overlapping rounds of Fellowship awards and supporting activities. During Phase II of the program, a total of 50 Fellowships will be awarded, distributed across the following categories: Adaptation Science Fellowships, Adaptation Policy Fellowships and Adaptation Teaching Fellowships.

START, in partnership with the Institute of Resource Assessment at the University of Dar es Salaam (IRA-UDSM) and the African Academy of Sciences (AAS) managed the inaugural phase of the ACCFP. Phase II is managed by IRA-UDSM and is implemented in partnership with the International START Secretariat. The Climate Change Adaptation in Africa (CCAA) program currently provides financial support for the

ACCFP. CCAA is jointly funded by the International Development Research Centre (IDRC) of Canada and the UK's Department for International Development (DFID). For additional information about the ACCFP, please visit [www.start.org](http://www.start.org) and [www.accfp.org](http://www.accfp.org).



Round 1 ACCFP Inception Meeting, Bonn, Germany

# MESSAGES EMERGING FROM ROUND 1 OF THE ACCFP

Individual ACCFP Fellowship projects, each of which was rooted in the specifics of particular places, people and questions, produced a multitude of research results and related outcomes that together provide a compelling narrative of climate change and adaptation in Africa. Comparison and synthesis of lessons learned from the projects yields a series of overarching and more broadly applicable messages:

**The current climate is changing, and people are coping with these changes in many different ways.** A number of ACCFP studies contribute to a wealth of research from Africa and elsewhere that documents current vulnerabilities and the multitude of coping strategies that are being applied by communities at risk, many of which are informed by or rooted in traditional knowledge systems and practices. Experiential knowledge and lessons learned by Fellows in this respect are rich and span multiple sectors, livelihood systems and stakeholder groups.

**Stakeholders' perceptions of current climate conditions influence their overall understanding of climate change and potential adaptation strategies.** Improved understanding of how communities are currently affected by climate variability and change promotes improved understanding of potential future impacts. This, in turn, can inform understanding of options for longer-term adaptive response, and investigation of different scenarios of resource availability, community needs and priorities can help groups select between options. To be effective, integrated and sustainable management of diverse ecosystems must address current threats, situated within the current context of risk, while also prioritizing strategic development and implementation of future adaptive measures.

**Climate variability and change is one of multiple factors that influence decision-making.** Often, economic, social and political concerns as well as environmental factors inform perceptions and decision-making regarding climate risk and livelihood security. Understanding the impacts of other natural and anthropogenic drivers of change and their interactions with

a changing climate can inform short and longer-term planning and response. In addition, climate change impacts are and will continue to be distributed differentially over time, space, sector, scale, income group, age and gender. Appreciation for and understanding of the overall context in which decision-making occurs is imperative. This will include improved understanding of local / traditional knowledge systems, greater appreciation for how scientific knowledge might be received within these systems and identification of potential entry points for integration of science with decision-making. The most effective adaptation plans and strategies will be those that are informed by well-founded science while also situated within, responsive to and supported by social, cultural and economic contexts.

**Weak institutional capacities and poor governance within political and economic systems constrains adaptive capacity.** Many developing countries have policies in place that could help address climate variability and change. However, these policies, and related laws and statutes, often lack sufficient mandate and resources for effective enforcement. Moreover, where policies or structures do exist, most are not harmonized across sectors or regions, resulting in conflicts or unnecessary duplication of efforts. Adaptation requires strategic actions that address these challenges and integrate climate change into development frameworks, policy processes and decision-making across a range of sectors and scales. Collaborative dialogue and partnerships, supported by transparency, credibility and multi-party buy-in, must be fostered to enhance regional cooperation.

**Enhancing knowledge is an adaptation strategy.** Adaptive capacity is the ability of an individual, institution or system to adjust to changes, including taking advantage of opportunities offered by changes as well as managing potential damages or disadvantages. In Africa, low adaptive capacities constrain the ability of many vulnerable groups to cope with current impacts and take advantage of current opportunities, leaving them ill-prepared to effectively manage their future risks. Improving knowledge and skills among

vulnerable groups, through activities that raise awareness and provide education and training opportunities, can improve adaptive capacity. This effort can be most effective when it is done as a partnership between practitioners and universities, such as through combining integrated, collaborative research opportunities with education, training and outreach. Indeed, knowledge enhancement and capacity building initiatives related to climate change adaptation should be included as integral parts of development projects and policies as they have the potential to significantly reduce the impacts of climate related risks.

These messages – both the story that they tell and the context in which they occur – inform current understanding of climate risks and related decision-making as well as future priorities for program design and development. It is important to note that the ACCFP experience, in and of itself, likely influenced the messages that emerged. The ACCFP experience produced substantial changes in the way that Fellows perceive climate change and adaptation. Throughout the Fellow-

ship experience, Fellows were challenged to consider what a dynamic process of adaptation means and looks like. They were challenged to step outside the box and see their own work, and that of others, in different ways and to see the context in which that work was situated with new eyes. Fellows were challenged to investigate



*[We've] broadened our understanding of what we can accomplish.*

David Kuria, Policy Fellow

and understand the role of their work and its potential to contribute in effective and unique ways to collaborative adaptation efforts.

Fellows' individual project reports are rich with examples that bring these and other messages to life. In the pages that follow, excerpts from these reports and interviews with Fellows are highlighted.





ACCFP Fellows & Staff Present to CCAA Advisory Board



Naima Oumoussa Fellowship Research

## ACCFP CREATES CLIMATE CHANGE EXPERTS

After returning from their fellowships, most ACCFP Fellows take on increased responsibilities at their Home Institutions. Often, they become the “go-to” resources for questions related to climate change. “Most inquiries about climate and climate issues in my department, even from the press, are now directed to me,” says Mayowa Johnson Fasona, an ACCFP Post-Doctoral Fellow from the University of Lagos (Nigeria). Another ACCFP Post-Doctoral Fellow Saidu Oseni reports, “I am recognized in [my] home institution as a livestock climate change adaptation specialist.”

The knowledge and skills gained through their research fellowships have made ACCFP alumni even more valuable and sought after experts in their fields. Warvar Isabelle Dabire says “Currently, all activities and work that relate to economic aspects of adaptation are directly recommended to me... I am a resource person in my institution when we talk about economic aspects of climate change.” Policy Fellow Naima Oumoussa says, “Now that I am back, my research study and field experience are highly recognized by my Home Institution.”

The confidence gained via mentorships and research experience is another valuable asset gained through participation in the ACCFP. Policy Fellow Joelle Mukungu Nkombela echoes, “The field investigation with farmers, NGOs, [and] Members of administration, made me more confident and gave me ideas on how to address climatic issues with different stakeholders.” Tiganadaba Lodoun, an ACCFP Doctoral Research Fellow, notes, “After my stay at my Host Institution, I’m now aware of more issues regarding climate change and adaptation in Africa. This allows me to exchange more fluently and confidently with other researchers and professionals on these topical questions.”

As bona-fide climate change experts, the ACCFP fellows have been active in a variety of impressive ways. Felix Olorunfemi represented his Director General at the Nigerian Institute of Social and Economic Research in some high profile climate change events at national, regional and international scales. this year. For Nicholas Ozor, his ACCFP experience translated into a promotion to the position of a Senior Research Officer. Tiganadaba Lodoun is training other researchers in data processing and crop system modeling, and Nicholas Ozor has briefed Kenyan Members of Parliament on climate change issues.



*[My ACCFP Fellowship] became a turning point of my career in climate change.*

Emmanuel Tachie-Obeng, Doctoral Research Fellow

Status as ACCFP Fellows has elevated participants into higher echelons within their universities or other communities of practice. Fellows actively represent their institutions at high profile climate change events at national, regional and international scales. They are creating and sustaining partnerships with scientists and institutions across Africa and continue to apply the knowledge and expertise they have gained. After implementing only a single round of Fellowships, the ACCFP has already earned a reputation as a major platform for education, training and capacity building in Africa.

## ACCFP IMPLICATIONS FOR RESEARCH

The African continent is highly vulnerable to impacts of climate change and variability, largely because of the coexistence and convergence of a number of factors that amplify climate risks. These include endemic poverty, high dependence on natural resource based livelihoods, poor access to basic necessities, inadequate infrastructure and challenges of governance. Extreme climate events such as droughts and floods are particularly common in Africa and significantly affect natural, managed and human systems. These factors also contribute to an overall low level of adaptive capacity, especially in the lowest income countries.

Several recent reports, including the Fourth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC AR4), have strongly recommended increased efforts to improve coping capacity to climate related risks in Africa and development of strat-

egies for adaptation that are consistent with sustainable development. The ACCFP is one of several efforts in Africa that is helping to develop endogenous capacity for advancing and applying climate change adaptation.

In traditional science fields like agriculture, ACCFP fellows have developed new crops, climate models, ecological forecasts, and fishery and livestock management techniques to support climate change risk management. In the social science and policy arenas they have harnessed indigenous knowledge of climate change and adaptation strategies, assessed different populations’ abilities to cope with climate change, and brought stakeholders opinions to the table for policy planning and debates. Several specific examples of ACCFP projects’ implications for adaptation research are provided herein.

### RESEARCHERS TRAINING RESEARCHERS

The ability of Fellows to apply the knowledge and skills gained via their Fellowship experience in training other researchers in the same skills, thus improving those individuals’ capability to advance and apply knowledge on climate change adaptation in Africa, is an important impact of the ACCFP on future adaptation research. For example, ACCFP Doctoral Research Fellow Tiganadaba Lodoun taught crop modeling techniques to other researchers at his Home Institution, the Institute of Environment and Agricultural Research (Burkina Faso) – techniques that he mastered during his one-year Fellowship with Host Supervisors at the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) in Bamako, Mali.

When Policy Fellow Joelle Mukungu Nkombela left OCEAN, her Home Institution in the DR Congo, the non-governmental organization had no access to resources on climate change and only basic understanding of related concepts. When Mukungu returned after a year of working with ACCFP Hosts at the Centre for International Forestry Research (CIFOR) in Burkina Faso, she brought with her knowledge, skills and resources that she immediately shared with her colleagues. Now the point of contact for climate change matters within her organization, Mukungu leads development of climate change projects and is implementing awareness raising activities with the organization’s constituents in the agricultural sector.



Joelle Mukungu raises awareness of climate change

Dr. Andre Lenouo, an ACCFP Teaching Fellow from the Laboratory of Atmospheric Physics (LPA) at University of Douala (Cameroon), used his Fellowship to enable time in residence at the Universite Cheikh Anta Diop (UCAD) in Dakar where he learned from UCAD colleagues’ experience in establishing post-graduate programs related to climate physics. Upon returning to his university, Lenouo instituted changes in LPA masters’ courses on processing data from climate observations and developing medium and long-term scenarios of climate variability. Lenouo continues to integrate activities into program courses that challenge future researchers to apply such scenarios to the sensitivity of regional agricultural yields.



*Working with livestock managers*



*Discussing ways to integrate indigenous strategies with scientific recommendations*

## ACCFP GIVES A VOICE TO STAKEHOLDERS

ACCFP's focus on experiential learning and hands-on research led many fellows to go out and meet the farmers, fishers, pastoralists, city dwellers, women, and marginalized groups they were studying. Surveys and workshops were employed as data gathering tools in many projects. A result of this first-hand interaction between the researchers and stakeholder groups was that individuals who are bearing the brunt of climate change—who have lower crop yields, fewer animals and more miles to walk to gather water—were consulted, considered and given a voice in the research.

Policy Fellow Gerald Muriuki testifies to the benefit that this engagement can have for vulnerable groups: "The communities involved in my research were given water storage tanks and considered in the local water board's decisions. They would have probably otherwise been left out of this process and neglected."

As part of her fellowship project, ACCFP Policy Fellow Linda Phalatse organized a series of workshops in which members of poor communities in Johannesburg, South Africa were enabled to indicate their preferences for climate change communication tools from city officials. As a result of this exchange, the City of Johannesburg has been able to develop more effective communication strategies. Post-Doctoral Fellow Saidu Oseni compiled and integrated indigenous knowledge of adaptation strategies with conventional scientific knowledge to recommend global best practices for smallholder livestock production.

ACCFP researchers not only solicited information from stakeholders, they also engaged in sustained, two-way exchanges with participating groups to encourage shared learning. A Nigerian farmer who participated in climate change awareness workshops organized by Teaching Fellow Nicholas Ozor says, "Through my participation in these workshops, I have learned how to conserve water for my family, livestock and crops, especially during unpredicted drought periods." Doctoral Fellow Emmanuel Tachie-Obeng reports that over time, farmers who participated in his ACCFP project began to realize that his research was recommending risk management and adaptation options that allowed their maize crops to develop favorably under changing conditions.

Many Fellows admit being impressed by the ACCFP's emphasis on linking natural and social scientists with practitioners from government agencies, NGOs and other stakeholder groups. This synergy is believed to have multiplied the implications of their research because knowledge was collected and distributed through a much larger and diverse network of individuals and institutions.

## SEEING THE BIG PICTURE: MODELING FISH PRODUCTION IN LAKE KARIBA

Year after year, fishermen caught fewer fish from Lake Kariba, on the border between Zambia and Zimbabwe. Year after year, the fishermen speculated and the researchers tested hypotheses, but without success. No one knew why fisheries were declining, and no single answer seemed to fit.

This was the situation encountered by ACCFP Doctoral Fellow, Mzime Ndebele-Murisa. She took a different approach, looking at the lake as a system with all the factors as contributors to its function and health. Her holistic research method established the varied causes behind the fish declines. She considered climatic and limnological factors as well as the actual Kapenta fish catches/production and fishermen statistics of vessels, trips and effort.

Her research established both the major and minor factors influencing the fish stocks. She determined the relationships among all the factors and the synergies as well as the feed-back mechanisms in the lake which eventually affect the fish. Ndebele-Murisa concluded that the changes in fish catches were attributed to climate change—in particular, global warming. Temperature changes in the Middle Zambezi, where Lake Kariba is, are occurring at a faster rate than model predictions have projected. The waters of Lake Kariba have warmed up in response to the warming of the air temperatures, leading to an altered phytoplankton community and subsequently, decreasing fish production. In order to mitigate these climate changes, she warned that the fishery management strategy needs to be changed.



*Mzime Ndebele Murisa conducting field research*

The results from her work include four important 'demand-driven' adaptation strategies, which translate her work from the science realm of understanding what's happening, to the policy and practice realms of what to do next to address the problem.

1. Develop a policy framework for effective fisheries management to be adopted in Zambia and Zimbabwe
2. Develop a bio-economic model for Kapenta fisheries in the lake considering the current climate changes.
3. Test the efficiency of projected, downscaled climate data produced by regional climate models to find the best models that capture the climate phenomena and oscillations in the southern African region around Lake Kariba.
4. Promote small-scale fish farming (aquaculture) in rural Zimbabwe in order to boost fish production and as an adaptation strategy against climate change and the resultant declining fish stocks in Lake Kariba. This fish production will also be a diversification strategy for farmers living in the arid to semi-arid areas who depend on rain-fed crop and livestock production as such forms of agriculture are currently being adversely affected by climate change.

Ndebele-Murisa has teamed up with local and international governments and NGOs to move forward on these initiatives, thereby building on her ACCFP research and expanding its influence. Her research is an apt example of how ACCFP brings together science and policy. Her research not only answered scientific questions about how climate change is affecting an ecosystem, but also offered solutions for the stakeholders involved.



Caption

## CHICKPEA BREEDING BREEDS HOPE FOR FARMERS

Peter Kaloki knows chickpeas. In his ACCFP Fellowship project alone, Kaloki worked with 123 different chickpea varieties to analyze their genes and predict what qualities they would have as crops in different ecological zones. Kaloki sees the potential usefulness of this high protein, soil nitrogen-fixing legume in semi-arid areas of Kenya and elsewhere and is hopeful that the results of his Fellowship project can support hybridization of additional high temperature tolerant varieties that will serve to further expand suitable chickpea growing regions and adaptation options.

What Kaloki didn't know before his ACCFP experience, however, was how to connect his agricultural research with farmers and policy-makers.

Kaloki's research primarily focused on identification of chickpea varieties (genotypes) that are tolerant to high temperatures. Typically, increased temperatures cause a drop in chickpea crop yield, but Kaloki was successful in identifying genotypes of chickpeas that were less sensitive to high temperatures. This knowledge is potentially useful to researchers and practitioners who are interested to recommend chickpea as an option in climate risk management. It could also be useful to

other agricultural researchers who want to breed new varieties for high temperature tolerance.

Inspired by participation and training received in the ACCFP, however, Kaloki included a second element in his research. He assessed Kenyan farmers' perceptions of introducing chickpea to their agricultural production systems. In doing so, he was reassured that the majority of farmers surveyed were interested in the benefits offered by high temperature tolerant varieties since they regularly experience drought accompanied by high temperatures.

Kaloki's research has direct implications for both the agricultural science community and farmers who are struggling to adapt to higher temperatures and changing climatic conditions. The ACCFP experience opened this scientist's eyes to the social science and policy aspects of his work and gave him the satisfaction of interacting with the potential end-users of the knowledge that he produced.



PETER KALOKI

This research encompasses a holistic approach where apart from identifying genotypes that can be grown under increased temperatures, farmer perceptions are considered. This will help in giving the farmers what they want and hence faster adoption of climate change adaptation options in agriculture.

## LOOKING AHEAD: THE ACCFP AND FUTURE ADAPTATION RESEARCH

ACCFP partners and alumni acknowledge the complexity of the context in which adaptation research and decision-making are taking place. Messages emerging from Round 1 of the ACCFP, described previously in this document, speak to only a handful of related needs, challenge and opportunities. Looking ahead, the ACCFP recognize the urgent imperative to encourage and support work that advances collaborative thinking, action and partnership on these fronts.

In this respect, Phase II of the ACCFP is designed to attract and support projects that directly respond to and advance knowledge on a number of critical questions – questions that must be effectively addressed to promote climate change adaptation and sustainable development. In responding to these questions, future program supported work will have clear implications for science as well as decision-making, thus advancing knowledge generation and sharing while also promoting informed actions. Multi-disciplinary research and collaboration will weigh heavily in project selection.

During Phase II, ACCFP Fellows continue to carry out investigations of current and projected climate variability and change and the likely implications of those changes for natural and human systems, including potential response options. All Fellows, regardless of Fellowship type or thematic focus area, however, are also required to address one or more of the following questions:

1. What institutional innovations are required to advance development goals and improve the resilience of vulnerable communities in Africa so that they are more able to cope with current and future climate variability and change?
2. What economic, political, cultural and/or social incentives are needed in the near and longer term to motivate collective action on climate change?
3. To what extent does the integration of knowledge systems through co-generation of knowledge and co-learning provide an opportunity for understanding climate variability and change and related actions?
4. What approaches to policy development are needed to generate policies that are well-grounded in relevant priorities and needs, address current risks and vulnerabilities and are supported by strong governance systems that ensure implementation and accountability?
5. How can climate change science and adaptation planning help to address other development challenges, including, e.g., poverty, hunger, conflict, justice, illiteracy and human security?



The questions above are formulated in response to knowledge gaps identified in Round 1 of the ACCFP and in broader climate change and adaptation related research across Africa. By requiring that every Fellow respond to one or more of these questions, the ACCFP aims to link uniquely designed Fellowship projects in their simultaneous attempts to address critical issues and contribute in meaningful and innovative ways to local, national, regional and international climate change adaptation discourses.



Farmers meet to discuss agriculture risk management

## CONNECTING RESEARCH & PRACTICE

It is widely recognized that there is a gap between the people who produce the scientific knowledge that informs adaptation and the people who need and apply that knowledge. The ACCFP recognizes that knowledge generation for the sake of generation alone is inadequate. New knowledge has the potential to inspire new ideas and inform new interpretations of existing knowledge and experiences. This, in turn, has the potential to influence decisions and actions – including climate risk management and adaptation.

It is imperative that knowledge that is generated through research be translated into clear messages and shared with the people who need it in relevant, timely and usable ways. Pathways and mechanisms must also be developed that nurture more demand-driven research initiatives. The complexity of and urgent need for adaptation planning leaves no room for a one-size-fits-all approach.

Overcoming these and other challenges demands collaborative development and implementation of “next steps” that move science forward to change society. To be effective, such efforts must include deliberate outreach to targeted stakeholder groups, innovative communication strategies and goals and sustained partnerships between academic and non-academic communities.

The ACCFP prioritizes and supports adaptation research for decision-making. Facilitated discussions, training modules and participatory exercises built into the ACCFP experience challenge program Fellows to integrate outreach, communication and partnerships into their work. As a result, many Fellowship projects have directly supported adaptation planning and actions.



Caption



ARAME TALL

*How do we enable communities at the frontline of climate change impacts across Africa to access and make use of existing climate services so that they may build their resilience and make more informed choices in an uncertain, changing environment?*

## COMING TO THE TABLE: CLIMATE SCIENTISTS AND HUMANITARIAN AID WORKERS “FACE-OFF” IN DAKAR

Arame Tall witnessed first hand the need to engage communities to make more resilient choices to adapt to a changing climate while working for the Red Cross/Red Crescent Regional Office for West and Central Africa – the largest humanitarian organization in the region. Given her background in climate risk management, the advantages of effectively applying available seasonal climate forecasts to decision-making were clear. Recent interactions with the Red Cross and local communities had also helped her realize that the real battlefield of adaptation was at the national and community levels where communities at risk were neither able to access nor make use of available climate forecasts, tools and services.

Thus, Tall applied to the ACCFP, hoping to use the small grant offered by the program to develop a practical method to bring together two communities of practice in Senegal – climate forecasters and Red Cross volunteers and aid recipients. Her aim was to work alongside climate research institutes in Africa to devise “legible” forecasting tools that were adapted to the needs of community decision-making for disaster preparedness.

Her goals: (1) reduce the communication, knowledge and practice gap that exists between the climate science community and community end-users and (2) increase the use of early warning information and forecasting tools by stakeholders at community and national levels to inform their decision-making processes. “My ACCFP Fellowship gave me the superb opportunity to devise such a method, and much more,” explains Tall.

As a Policy Fellow based at the Université Cheikh Anta Diop (UCAD) in Dakar, Tall’s principal Fellowship activity consisted of designing a training workshop that would bring together climate scientists from UCAD (most of them climate modelers producing longer-term, downscaled climate projections for West Africa) with a targeted group of potential users of the forecasts, i.e., Red Cross volunteers serving in communities across Senegal who could potentially communicate the climate information and train community members to apply it. The goal of the workshop was to initiate a dialogue between providers and select end-users of climate information in Senegal for improved climate risk management at the community level.



*Red Cross volunteers assist community adaptation efforts*

A two-day workshop convened as part of Tall's Fellowship in July 2009 exceeded these expectations. The workshop attracted not only climate modelers from UCAD but also representatives from the National Meteorological Service (who provide short-term weather and climate forecasts in Senegal) and topography experts and hydrologists (whose insight was in high demand in a country recurrently hit by severe flooding). A total of 30 Red Cross volunteers and community organizers met with the participating scientists. Both groups were seeking to communicate messages that resonated with the other.

Tall describes the initial scene: "...on the one end of the dialogue table were the climate scientists, all-knowing experts of their science who had for the large majority, however, never reached out in their life to users who did not understand a word of their scientific jargon ... and on the other, were the Red Cross community volunteers, who had come from all of Senegal's regions, but had never seen a climate forecast before, and for the most part did not see its relevance to their daily lives nor to the humanitarian relief work they conduct."

The challenges were clearly laid out to participants. Both communities were to actively listen to one another as they shared their knowledge – a review of the science of climate forecasting paired with insight on communities' traditional weather indicators, experiences with climate-related disasters and relevant information needs. No one was permitted to use Powerpoint presentations; participants were encouraged to find other tools to illustrate and emphasize their messages as part of sharing with and learning from one another.

A thread that cut across all aspects of project and workshop planning was the belief that the climate science and humanitarian/disaster relief communities are natural partners in building resilience to increasing cli-

mate-related hazards. Both communities can learn tremendously from each other. At the same time, the parties themselves needed to realize this symbiosis on their own so that the groups would develop their own thirst for sustained communication and collaboration. Through participatory sessions, mediated dialogue, formal and informal discussions and interactive games facilitated during the workshop, participants did indeed come to that realization by themselves, and very powerfully so.

Participating scientists, trained and accustomed to holding the microphone and lecturing to groups, sat back and listened to the information needs of the Red Cross community representatives who told them loudly and clearly that the forecast bulletins that they issue on a regular basis were of no use to them as provided. A "Linking Early Warning with Early Action" game brought scientists face-to-face with the reality that users would act on all forecasts that were received, regardless of the probably of occurrence. As a result, participating scientists came to the conclusions that they must issue operational alerts rather than jargon-filled forecasts bulletins and work together with Red Cross volunteers and other community liaisons to identify the communication methods best suited to support decision-making needs.

Red Cross volunteers came to realize the incredible value added that forecasters could bring to their disaster preparedness and relief work. For instance, forecasters could alert them to likely atmospheric conditions and potential hazards at various lead times as well as give them additional information on which to base decisions under conditions of uncertainty. Participating scientists admitted that they never believed that they could communicate their science to untrained "lay people" so effectively and were inspired by seeing their forecasts finally understood and put to use.

The 2009 Dakar workshop, supported by and facilitated as part of Tall's ACCFP Fellowship, concluded with the following joint pledge by both communities that participated:

**"We will never again act without knowing; nor know without acting."**

The methodology used by Tall and partners at the Red Cross / Red Crescent Climate Centre and UCAD when organizing the July 2009 workshop, together with the ultimate impacts of that workshop, have since inspired development of a "Bridging the Gap" methodology for organizing and facilitating similar activities. This methodology is currently being employed with community groups in West Africa and beyond.



*ACCFP Writeshop*



*Brainstorming*

*Collaborating sessions*



## RETHINKING EDUCATION FOR THE NEXT GENERATION

The ACCFP values and prioritizes opportunities in which Fellows learn by doing. Fellows design their own projects based on identified problems or needs and then carry out every aspect of those projects, in collaboration with mentors, from start to finish. This method has proven to increase participants' capabilities for conducting scientific inquiries while also refining their problem-solving skills, building their project management capabilities and strengthening their communication skills.

Now, imagine if this sort of experiential, learning by doing opportunity were available to undergraduate and graduate students as part of the standard university experience? Furthermore, what if university educators ensured that climate change and issues of adaptation and sustainability were addressed in their courses, regardless of course topic, discipline or tradition? What if those same educators engaged their students in exercises

that were problems-based and solutions-focused? What would that do for the next generation of researchers and professionals?

The answer is profound: it would revolutionize the educational experience. It would help to promote climate change literacy in all university graduates, regardless of major, interest or degree. It would better prepare future generations to understand, assess and manage societal risks and vulnerabilities brought about by climate change and other stressors.

The ACCFP is committed to facilitating growth in climate change curriculum in African universities. START, as an ACCFP partner, is partnering with a number of universities across the African continent to expand their efforts to inform and engage society in development trajectories that are resilient and adaptive.



## INTEGRATING CLIMATE CHANGE INTO UNIVERSITY CURRICULUM

ACCFP Teaching Fellowships are designed to support integration of climate change and sustainability issues across university curriculum. The program emphasizes the imperative that even those students who may not directly work in the climate change field should be trained to appreciate and systematically consider climate and related opportunities and challenges as they participate as informed citizens in public decision-making.

In many cases, effective integration of climate change into university curriculum is a two step process. First, careful review of current institutional arrangements improves understanding of how, if at all, climate change is being addressed in and across programs. Second, strategic brainstorming is required with regards to how to package new courses and/or programs and situate those within existing faculties and departments. ACCFP Teaching Fellow Dr. Nicholas Ozor initiated such a process at the University of Nigeria, Nsukka (UNN) with impressive results.



*The time is here for everyone to collaborate in developing effective and efficient climate change adaptation strategies through more sustainable approaches in the education sector.*

Nicholas Ozor, Teaching Fellow

Ozor's ACCFP Fellowship project brought together more than 320 representatives from UNN faculty and administration (including the Vice Chancellor and Deans of various faculties), the student body, local policy arenas, private sector organizations and civil society. Participants engaged in a process of rapid appraisal and sensitization that aimed to chart a path for development of new climate change relevant curricula within the university. The process culminated with a training workshop in which participants developed priority recommendations for revising existing course content to include climate change issues, designing new courses and modules and creating degree-granting programs for climate change and sustainability.



Students participate in climate change conference

Subsequent to completion of Ozor's project, a decision by the UNN Vice Chancellor established a climate change center at the university to coordinate all climate change teaching, research, learning and community development. The center's first activity was an intense audit of climate change capacity in all 15 university faculties, focusing on courses with climate change content, relevant research projects, trainings received and new courses to be introduced. To date, more than 60 undergraduate and 40 postgraduate courses at UNN have been revised to include issues of climate change. Plans are currently underway to transform the center, in the longer term, into an interdisciplinary degree-granting program.

## INTEGRATING RESEARCH, TEACHING AND PRACTICE

Participants of the June 2010 Forum on Climate Change, Education and Capacity Building: A Strategy for Collective Action in Africa (see [www.start.org](http://www.start.org) for more information) recommended the development of problems-based and solutions-focused learning mechanisms at the university level. They emphasized that to be effective, this will require integration of teaching with research and research with practice. The ACCFP also believes that basing lessons on tangible research results can support student understanding of climate change and encourage students to more fully appreciate the valuable role of research in contributing to concrete societal needs. Efforts must also be taken, as part of the education experience, to strengthen the capac-



Student Research Team at Federal University of Technology

ity of students to communicate effectively on relevant issues of policy and practice.

With support from an ACCFP Teaching Fellowship, Dr. Moses Awodun, lecturer at the Federal University of Technology, Akure (FUTA) in Nigeria, worked hand-in-hand with local farmers and graduate students to establish Jatropha nursery sites and demonstration plots at the FUTA teaching and research farm. Over the courses of several weeks, farmers and students learned techniques for nursery establishment, seedling transplantation and care and intercropping options. The project culminated in a workshop attended by nearly 100 members of the university and local farming communities during which the characteristics and potential costs and benefits of the Jatropha crop were discussed and debated. Seedlings and seeds from the nursery and demonstration plots were then distributed to interested planters at no cost.

Awodun's extensive research on Jatropha and its potential for reducing the impacts of climate change on farmers' production systems and livelihoods provided a strong foundation for the course. "We were able to empower rural farmers to trade out poverty through commercial, renewable and sustainable Jatropha farming, using reclaimed wasteland, in Nigeria," summarizes Awodun. "And my students were



Moses Awodun Fellowship Research

able to see, learn and express their views on one of many approaches to managing risk." Jatropha growing groups and societies were formed following the course. Together with Awodun and others from FUTA, these groups will periodically follow up with participating farmers and disseminate information about the plants and other opportunities.



*Teaching is a process of impacting knowledge [and] changing values and actions in human being. ... Give your students an answer and they can solve one problem. Show your students the techniques needed to find the answer for themselves, and they can become self-sufficient in the field.*

Moses Awodun, Teaching Fellow

Many other ACCFP Fellows have also integrated lessons and examples from their ACCFP projects into teaching and mentorships upon returning to their Home Institutions. These exercises are another example of the ripple effect of the ACCFP – although a single individual receives a Fellowship grant, program alumni are actively sharing the skills, knowledge and experiences that they accumulated with others who can benefit. A small group of Fellows is also working together to produce a volume of case studies, based on their Fellowship projects, that can be used as a resource for educators.



# AVERTING FLOOD DISASTERS IN CAPE TOWN AND BEYOND

“Successful adaptation to climate change will require the active participation of local communities,” says ACCFP Policy Fellow Felix Olorunfemi.

For his Fellowship project, Olorunfemi travelled to the University of Cape Town where he studied climate change impacts in the informal settlements of the Western Cape, South Africa. His primary goal was to better understand the preparedness plans, vulnerability measures and adaptation options being employed by residents and government officials in the communities. Olorunfemi is passionate about disaster preparedness and risk reduction and writes:

*“Disaster risk is an intrinsic characteristic of human society, arising from the combination of natural and human factors and subject to exacerbation or reduction by human agency. While the adverse impacts of climate change on society may increase disaster risk, disasters themselves erode environmental and social resilience, and thus increase vulnerability to climate change. Climate change – and the likely increase in disasters – threatens to block pathways out of poverty in developing countries, especially those in Africa.”*

Olorunfemi’s research investigated the current and potential future impacts of flood risk specific to informal settlements in the Western Cape. He also examined the factors determining residents’ vulnerability to flood risk and existing risk management and adaptation strategies being employed at institutional and community levels.

Carrying out informal interviews and direct observations in the communities, Olorunfemi confirmed that many environmental risks in the settlements are compounded by social, physical and economic vulnerabilities that are limiting the communities’ abilities to manage threats and adapt to changes. He specifically noted weak governance systems and lack of initiatives that bring together all of the stakeholders to organize collective efforts. Informed by community residents’ ideas and preferences, he produced a series of recommendations for a more decentralized management approach whereby different government departments are charged with different aspects of managing flood risks.

Olorunfemi is committed to applying knowledge gained in Cape Town to contexts in Nigeria and elsewhere in Africa. Upon returning to the Nigerian Institute of Social and Economic Research, he initiated flooding vulnerability studies in the informal settlements of local cities. One study in Lagos is examining residents’ awareness of and responses to flood warnings issued by the Lagos State Government. Study results will be commu-

nicated to the Lagos State Ministry of Environment – the body in charge of flood risk management for disaster risk and emergency management purposes. This study and others like it are meant to provide inputs to help governments and other stakeholders formulate climate change risk management and adaptation strategies for urban areas.

Olorunfemi has shared his research via journal pub-



*The current and projected levels of flood impacts demand that flood risk reduction, notably in urban areas, be placed high on the political and policy agenda. Understanding the causes of impacts and designing and implementing and investing in solutions which minimize them must become part of mainstream development thinking and be embedded into wider development goals.*

Felix Olorunfemi, Policy Fellow

lications and scientific conferences as well as in a policy brief produced by his institution. This policy brief is being made available to the public, government at all levels and other practitioners involved in disaster risk management and climate change adaptation in Nigeria. Olorunfemi recently presented his research and distributed the policy brief at the 3rd Lagos Summit on Climate Change – the largest gathering of the climate change adaptation community in Nigeria.

Olorunfemi, together with colleagues from other local institutions, is also teaching classes in the newly established Masters Programme in Disaster Risk Management at the University of Ibadan. More than 80% of his students are from National and State Emergency Management agencies. Olorunfemi describes the impact these classes are having: “[My students] are those directly involved in both policy formulations and implementations in the areas of disaster risk and emergency management.” Knowledge sharing via the courses provides a direct link between his research and policy decisions made by these agencies.



## GETTING THE MESSAGE OUT: COMMUNICATING RESEARCH RESULTS AND RECOMMENDATIONS

Making research useful for policy and decision-making demands strategic outreach and communication actions. All ACCFP Fellows are required to produce a manuscript from their work for peer-reviewed publication, but they are also challenged to develop other conventional and nonconventional tools and methods for communicating their research results – and general climate change adaptation information. On multiple occasions, Fellows have come together to discuss factors that enable and constrain effective communication of research.

ACCFP Policy Fellow Caroline Kirungu describes the following important lessons for effective communication: good command of subject matter, trust-building with stakeholder groups, grounded messages, and two-way exchanges.

Kirungu’s recommendations are based in her experiences investigating the usefulness of climate change projections provided by agro-meteorological models for sugar cane production industries in Kenya and South Africa.

Dr. Ladislaus Changa’, an ACCFP Post-Doctoral from the Tanzania Meteorological Agency, organized

climate change awareness-raising campaigns with women and secondary school students in Tanzania following completion of his Fellowship project. During his Fellowship, Changa’ analyzed spatial and temporal trends of 50 years of climatological data in Tanzania and then explored the rich history of applying indigenous knowledge to predict seasonal rainfall in the country. His awareness campaigns came as follow-up to the analytical study and were rooted in a personal desire to ensure that climate change related messages were reaching vulnerable populations who weren’t likely to read scientific reports and technical journal articles.

Changa’ observed a number of obstacles in this work. The first was researchers’ tendencies to lecture rather than listen when working with communities. Another challenge was increasing the involvement of women in climate change issues – this based on the expectation that their consistent and unfaltering presence in communities will help the message of climate change to be heard. A final challenge was targeting and involving young people – the next generation – in climate change adaptation initiatives and actions.

Many ACCFP Fellows spent time building trust and relationships with community members as part of their projects and experiences. In many such instances, Fellows learned that researchers had previously visited the village, organization or group but had never returned to share their research results. This realization inspired ACCFP Fellows Aliou Diouf and Grace Adeniji to organize “giving back” events that ensured that research results were returned directly to the stakeholders with whom they had worked. For more information about these events, please see the inset boxes to the right.

Other Fellows reiterate the importance of packaging and disseminating climate change messages in ways that are innovative, creative and appropriate for target audiences. Gaps in communication can be rooted in language barriers and different ways of conceptualizing underlying science and assumptions. ACCFP Fellows agree that better communicating climate change is a personal responsibility. Even if researchers themselves

do not engage in communication and outreach activities, they are entrusted with a responsibility to produce and make available their results in a medium, format or language that someone else can use. Research partnerships with boundary organizations and civil society groups are recommended, in this respect, to support translation of research results into knowledge that is relevant to user needs.

A number of resources are available to help researchers package and communicate their results. One of these is the AfricaAdapt Network (see [www.africa-adapt.net](http://www.africa-adapt.net)), which offers tools and support for packaging research outputs in ways that facilitate outreach to a maximum possible audience in the developing world. For more insight on the various communication methods, tools and products that ACCFP Fellows have used to help illustrate their messages, please see the inset boxes below and to the right.



Aliou Diouf (center)

[http://www.delphe326nigeria.org/images/phocagallery/Conferences/thumbs/phoca\\_thumb\\_l\\_Picture11.jpg](http://www.delphe326nigeria.org/images/phocagallery/Conferences/thumbs/phoca_thumb_l_Picture11.jpg) Aliou Diouf, an ACCFP Post-Doctoral Fellow, collected data in 16 villages in the Ngayokhème region of Senegal as part of an investigation of climate change impacts and adaptation options in rain-fed agriculture systems. During one of his last visits to the region, Diouf was approached by a farmer who said:

“... Do not come here and tell us the problems of agriculture and its solutions. We do not need that. We know our problems and we have in mind also the

solutions. Our expectations when you come here is that you’ll give us the means to implement solutions to our agricultural problems.”

Diouf realized that many people in the countryside were being asked to participate in surveys and projects, some of which solicit detailed information about their lifestyles and privacy. And, in general, they received nothing in return. In response, Diouf organized a team of colleagues from the Université Cheikh Anta Diop in Dakar to return to the region in which field studies were undertaken. In national languages, the team led discussions about climate change, its causes and impacts and the results of Diouf’s vulnerability assessment and adaptation study.

Reflecting on the experience, Diouf writes: “...I have seen people exhausted, impoverished by the effects of drought, land degradation, reduced diversity and biological density. But I also see courageous people who are struggling with minimal resources in their difficulties. I see people ready to respond to climate change and other environmental problems. What they ask for, what they need, is an organized response to help them adapt to the changes.” Diouf maintains communication with the villages in which he’s worked. He concludes, “Reciprocity is essential in knowledge sharing and collaborative experiences.”



Grace Adeniji Fellowship Research

ACCFP Doctoral Research Fellow Grace Adeniji engaged women’s groups, local government officials, public water and sanitation units, meteorologists and

representatives from the state Agricultural Development Programme and Department of Environmental Health in her research on assessing women’s coping strategies with respect to water variability and vulnerability in the Oyo North region of Nigeria. After her fieldwork was complete, Adeniji prepared clearly written summaries with useful graphics of water-related vulnerability mapping and adaptation options and discussed these with community leaders and officials. The mapping provided inputs from indigenous perspectives, political insight and adaptation planning science. Adeniji emphasizes, “Production of non-technical communication materials as research output is very essential. Decision-makers appreciate simple and graphic documents that convey the adaptation message.”

## OTHER EXAMPLES OF ACCFP FELLOWS’ COMMUNICATION AND OUTREACH ACTIVITIES

- Holding workshops with local governments to improve their abilities to communicate about climate adaptation with their constituents (Linda Phalatse, ACCFP Policy Fellow)
- Presenting research to government agencies at the national and local level (Christian Riziki Kabwe Rize, ACCFP Policy Fellow)
- Collaborating with government officials and local stakeholder groups to devise environmental management recommendations (Mzime Ndebele-Murisa, ACCFP Doctoral Research Fellow)
- Testing new farming techniques to help manage climate change risks and communicating about application of those practices with grassroots community organizations (Emmanuel Tachie-Obeng, ACCFP Doctoral Research Fellow)
- Preparing a brief for use by other researchers and agricultural organizations describing the benefits of chickpea cultivation (Peter Kaloki, ACCFP Policy Fellow)
- Accepting a position as project officer for a water and sanitation NGO to enable direct application of research results in stakeholder communities (Gerald Muriuki, ACCFP Policy Fellow)
- Teaching classes on climate change adaptation and disaster risk reduction to government officials in emergency response agencies (Felix Olorunfemi, ACCFP Policy Fellow)
- Addressing the Kenyan government on the need to raise awareness of gender issues for pastoralist adaptation to climate change (Nancy Akinyi Omolo, ACCFP Policy Fellow)
- Drafting policy documents addressing climate change and desertification for the Moroccan government (Naima Oumoussa, ACCFP Policy Fellow)
- Training young economists in natural resource management with emphasis on topics related to climate change (Isabelle Dabire, ACCFP Policy Fellow)
- Preparing Kenyan Members of Parliament for participation in negotiations as part of the UNFCCC COP (Nicholas Ozor, ACCFP Teaching Fellow)
- Organizing an international conference on “Pastoralism and Climate Change Adaptation in Africa” and contributing to a JotoAfrika publication (Saidu Oseni, ACCFP Post-Doctoral Fellow)
- Preparing a manual of guidelines to help policymakers in understanding the potential climate change induced redistribution of malaria vectors in Africa (Henri Tonnang Zefack, ACCFP Post-Doctoral Fellow)

# ACCFP CATALYZING CROSS-CONTINENTAL COLLABORATION

The ACCFP seeks to create an active and engaged community of individuals and institutions dedicated to building scientific capacity in Africa to address threats from climate change. Providing Fellows with opportunities to travel to and work with new institutions and additional mentors is a key element of the ACCFP experience. Fellows are exposed to new technologies and tools, new ideas and new mentors who share the richness of their own experiences. At the same time, there is potential for the Fellow to become an ambassador who links his Home and Host Institutions, catalyzing knowledge sharing, interaction and exchange that extends beyond the duration of a single Fellowship period. These connections between individuals and institutions are the yeast that helps knowledge grow.

Because of the ACCFP experience, Fellows and Supervisors alike gain insight from working with people they may otherwise have never encountered. These interactions broaden the scope and understanding of their research, communication and outreach activities. Post-Doctoral Fellow Mzime Ndebele-Murisa reports, "I have become a more-rounded Researcher after my ACCFP experience. I'm able to interact more, work more and appreciate the diverse spectrum of researchers, players and stakeholders in adaptation and climate change sciences."

By the completion of Round 1 of the ACCFP, participants were members of, a nascent network of more than 120 people from 58 institutions in African academic, practitioners and policy communities. Many members of the network are already well engaged in national and local level adaptation issues. In several cases, feedback from Fellows and Supervisors indicates that ACCFP engagement is also strengthening institutional interest in climate change and adaptation.

Many Round 1 participants continue to collaborate even after their initial ACCFP engagements. ACCFP alumni are co-designing and implementing new research projects, and some Host and Home Institutions are collaborating on research and education initiatives. Nonetheless, need remains with respect to building and nurturing linkages between these and other institutions so that they can remain meaningful engaged following ACCFP Fellowships. In Phase II of the pro-



Round 1 Host & Home Institutions

gram, ACCFP partners are placing renewed emphasis on catalyzing, supporting and sustaining such interactions and relationship building. Design and facilitation of new opportunities for exchange and collaboration between Home and Host Institutions is designed to help facilitate achievement of this goal. Without a sustained network of institutions that believe in and are committed to the program's mission and goals, ACCFP Fellowships become one-off experiences whose potential for longer-term impacts is muted by individual and institutional obstacles, daily demands and business as usual.

There is also critical need to train more individuals and institutions through the ACCFP. START estimates that over a decade long sustained engagement, approximately 1000 individuals could be trained and engaged in a network of professionals. These individuals, together with their strengthened Home and Host Institutions, would be the critical mass necessary to effectively engage African governments and communities in dynamic actions to cope with challenges of changing climate and sustaining ecosystem goods and services essential for sustainable and resilient development.



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