SCIENCE for the FUTURE and a FUTURE for SCIENCE



Biennial Report 2012–2013



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About START

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WELCOME

In 1992, the United Nations Conference on Environment and Development held in Rio de Janeiro collectively agreed to the Rio Declaration on Environment and Development from which came the conventions on climate change, biological diversity, and desertification. The major theme of the declaration concerned sustainable development: "humanity has the ability to make development sustainable—to ensure that it meets the needs of the present without compromising the ability of future generations to meet their own needs." START was created in this same year and, in the spirit of the original Rio Conference, was granted the mission to promote research-driven capacity building to advance knowledge on global environmental change in the developing world. START's vision, as initially enunciated at its founding, is to enable communities to address the issues of sustainable development and to "see the future" in their context and for their needs. The concept of "seeing the future" is an essential part of sustainable development. As we have better understood the Earth's environmental system, we have come to understand the interconnectivity between actions and responses across the planet.

A core principle of our mission is to enable scientists, and all sectors of society, to work together to realize the future they want.

START celebrated its 20th anniversary in 2012 and is proud to meaningfully contribute to the continuing aims of the Rio effort as articulated in the June 2012 UN Conference on Sustainable Development (Rio+20) meeting report, which states that "[sustainable development] can only be achieved with a broad alliance of people, governments, civil society and private sector, **all working together** to secure the **future we want** for present and future generations." [emphasis added] A core principle of our mission is to enable scientists, and all sectors of society, to work together to realize the future they want. The ability to "know" possible futures must be built on knowledge generated locally and placed appropriately in a regional-to-global context. The foundation of such knowledge requires building more robust systems for generating, interpreting, and sharing information about environment and development, including climate change, disaster risk management, biodiversity loss, forest degradation, and food security, which in turn requires significant and well-targeted investments in building research capacity through education and training.

One way that the international scientific community is responding to such global challenges is with *Future Earth: Research for Global Sustainability.* The goal of *Future Earth* is "to provide the knowledge required for societies in the world to face risks posed by global environmental change and to seize opportunities in a transition to global sustainability." START is committed to contribute to its capacity building priorities, and more generally to the overall goals of this initiative.

This report describes START's programs and areas of engagement in 2012–2013. Drawing on START's new strategy for the next decade, we also provide a glimpse of the road ahead. We are grateful to our donors, partners, and members of the START family who help us advance global change science for development.



GORDON MCBEAN

President, Board of Directors, START International, Inc.



HASSAN VTR I

/ Executive Director, International START Secretariat

START AT A GLANCE

S TART, founded in 1992, promotes research-driven capacity building that advances knowledge generation and sharing on global environmental change (GEC) issues, including climate change. Our work is carried out by regionally based affiliates and centers in Africa and Asia-Pacific, together with the International START Secretariat based in Washington, DC. In our research-driven capacity building efforts, we actively engage with our strategic partners in the global environmental change community, including the International Human Dimensions Programme on Global Environmental Change, the International Geosphere-Biosphere Programme, and the World Climate Research Programme.



Our programs strengthen skills and capacity for understanding and managing GEC. We promote capacity development through grants and fellowships for research and assessments, university curricula development and advanced training institutes, and multistake-holder dialogues and other activities that promote outreach to decision makers. START's work advances science and strengthens communications among science, policy, and practice on issues where global environmental change and sustainable development intersect. On an annual basis, START engages approximately 1,000 scientists, policymakers, and practitioners from developing countries in its research, training, and communications/

outreach programs. In all of its programs and activities, START's goal is to integrate knowledge generation with knowledge sharing in ways that lead to informed action, which in turn strengthen knowledge systems overall. The figure below illustrates this framework for capacity building.

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> START's programs create opportunities for diverse groups of individuals to come together for exchange and collaboration. START and its partners facilitate exercises that stimulate dialogue and debate, tease out answers to challenging questions, and shepherd participatory processes of investigation, discovery, and reflection. These shared experiences among participants form a strong foundation for follow-on collaboration and partnerships.





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MAR

Advanced Institute on Forensic Investigations of Disasters (FORIN)



APR

MAIRS Scientific **Steering Committee** Meeting

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Science-Policy Dialogue: Challenges of Global Environmental Change in Southeast Asia



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MAY

JUL

Workshop on Participatory Learning and Dialogue for Climate **Risk Management**

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MAY

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2015

Fourth Annual Meeting of the START

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UDSM Curriculum **Review and Faculty** Climate Change Training Workshop

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2012 Global Environmental Change Research & Learning Forum (Africa)



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2013

JAN



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Improving the Integration of Social Vulnerability into Robust Decision Making— HCMC Workshop



MAY

Executive Committee Meeting: Assessments on Urban and Peri-urban Agriculture

APR Climate Games **Facilitator** Training Workshop



Proposal and Academic Writing Workshop with CCCS-UDSM

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Young Scientist Conference 2013



GEC and Governance Workshop—Africa

CONTEXT FOR OUR WORK

The emerging challenges associated with global environmental change (GEC), including climate change, require strong knowledge systems capable of supporting informed decision making about adaptation and risk management. Adaptation planning is moving forward in all regions of the world, but truly proactive planning remains constrained by, among other factors, uncertainties around future vulnerabilities and impacts, insufficient human and institutional capacities, lack of financial resources, and inconsistent political will to support the translation of knowledge into action. These constraints manifest in both rich and poor regions, though the situation is more acute in the global south where systems to support global change science and planning are weak, yet negative impacts of GEC are expected to be quite substantial.

"START genuinely seeks to encourage action and change with its research and puts considerable effort into communicating results."

> —Miles Bredin, Communications Consultant with Well Told Story



Global environmental change is quite complex, with drivers and stresses of vulnerability deeply interconnected and impacts highly contextualized. Addressing critical knowledge gaps with respect to this problem requires research approaches that are systems-oriented and action-based, and START has a strong track record of initiatives that support such approaches in both Africa and Asia. START programs strengthen the capabilities of developing country researchers to undertake integrated place-based research and assessments, as well as gain skills and insights in education and in science communication. We work at the intersection of GEC and sustainable development, with emphasis on a range of issues including disaster risk reduction, land-use/land-cover change, biodiversity conservation, urban resilience, human health, water resources management, agriculture and food security, and regional climate modeling and climate services.

START recognizes that excellence in research must extend beyond advancing science itself. A robust and outcomes-driven way forward must include strong consideration of how research inquiries can be shaped to positively affect decision making. In this regard, we view engagement of stakeholder groups from across policy and practice domains to be a primary determinant of excellence in research, to the extent that such processes prioritize applying research to planning and management.

START programs strengthen the capabilities of developing country researchers to undertake integrated place-based research and assessments, as well as gain skills and insights in education and in science communication.

But how do we get there? We believe a long-term, integrated process of knowledge generation, sharing, and action that depends on the collaboration of diverse expert and user communities is essential. Such efforts can—

- Help to develop a strong cross-disciplinary knowledge base for identifying key risks and vulnerabilities;
- Allow researchers to understand and contextualize end-users' needs and priorities in research queries; and
- Develop the requisite knowledge and skill base within end-user groups to robustly incorporate and apply research findings, such as from climate change projections, in a manner that enhances the ability to make decisions under uncertainty.



Enabling Research for Action

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GRANTS FOR GLOBAL ENVIRONMENTAL CHANGE RESEARCH IN AFRICA

Since 2004, START has promoted place-based integrated research through its program of START Grants for Global Environmental Change Research in Africa. START's GEC grants program seeks to (1) strengthen both individual and institutional capacity for interdisciplinary research; (2) contribute to enhancing knowledge of global change science; (3) create long-term, international collaborative research partnerships among African scientists and scientists in the US and Europe; and (4) provide outreach to policymakers and the public.



Graphic recordings were used to capture GEC grantee's ideas and synthesize complex concepts at the 2012 GEC Research & Learning Forum in Accra, Ghana.

During 2011-2012, the *START Grants for GEC Research* in Africa program supported 16 research projects in 14 African countries. The projects, all concerning the theme of climate change, agriculture, and food security, were topically and geographically diverse. They addressed food production and livelihoods in estuaries, river deltas, and lagoons in northern, western, and southern Africa; agriculture and conservation at the forest fringe in humid areas; and livelihoods derived from agriculture and tourism in semi-arid areas. In addition to the principal investigator for each project, 48 co-investigators provided unique skills from varied disciplines within the natural sciences and social sciences. Many projects included graduate students and junior scientists who received hands-on training in research methodologies; several projects incorporated local stakeholders in research design and implementation. Such stakeholders included subsistence farmers, women leaders, local youth, tribal chiefs, and other community members whose homes, villages, and livelihoods are being affected by changing conditions and pressures.

START grantees consistently indicate that participation in the GEC grants program strengthens international collaborative partnerships and expands their African research networks. High-quality outputs of GEC grants-supported projects also inform follow-on actions at local, national, and regional levels.



A BRIGHTER FORECAST IN A CHANGING WORLD

The 2011/2012 GEC Africa project Engaging Farmers and Climatologists in Adaptation to Climate Variability and Change in the Okavango Delta of Botswana promoted the integration of local/traditional weather forecasting knowledge with scientific knowledge gleaned from model-based seasonal climate forecasts. Throughout their research, project investigators Oluwatoyin Kolawole and Piotr Wolski facilitated social surveys and community discussions that indicated the extent to which information from meteorological services is not readily available in many parts of Botswana. Researchers held a twoday "Weatherman's Workshop" that brought together community members and scientists for discussions around research results and recommendations to more closely link indigenous knowledge to science-based forecasting. One of the workshop participants, speaking through a local chief, noted:

"What you have done today is unprecedented in the history of researcher-farmer engagement in our communities. When people come to ask us questions about what affected us, they never came back to give feedback on their findings. But yours is totally different! Not only have you provided some feedback on your current study, you have also created a forum for us to interact with weather scientists. ... It is our hope that we, the farmers and community people, will continue to benefit from this kind gesture and that we will be able to enjoy our working relationship with weather scientists in addressing challenges posed by climate change."

Key recommendations of the workshop were shared with the Botswana meteorological services in order that they could enhance the effectiveness and increase the use of weather forecasting by local communities. This project reflects START's commitment to research that informs action.

2011/2012 ROUND OF GRANTEES:

Management of Ecosystems Services of the Forests of Southwest Nigeria in Support of Rural Livelihoods and Food Security

Principal Investigator: Victor Adekunle, Federal University of Technology, Nigeria

Reducing Tropical Deforestation and the Protection of Ecosystem Services to Support Food Security in Southwest Cameroon

Principal Investigator: Gordon Ajonina, Cameroon Wildlife Conservation Society, Cameroon

Sustainable Farmland Management in the Context of Climate Change in Inland Valleys of Southern Benin

Principal Investigator: Irenikatche Akponikpe, Universite de Parakou, Benin

Changes in Tree Reproductive Phenology: Causes and Implications in and around Budongo Forest Reserve, Uganda

Impact of Climate Change on Water Resources, Agriculture and Food Security in the Ethiopian Rift Valley: Risk Assessment and Adaptation Strategies for Sustainable Ecosystem Services

Improving Seasonal Forecast Information for Managing On-farm Decisions

Integrating Indigenous Knowledge and Scientific Methods for Flood Risk Analyses, Responses and Adaptation in Rural Coastal Communities in Nigeria

Community-Based Management of Ecosystems and Natural Resources for the Improvement of Rural Livelihoods and Food Security in the Nigerian Savannah

Engaging Farmers and Climatologists in Adaptation to Climate Variability and Change in the Okavango Delta of Botswana Principal Investigator: Fred Babweteera, Budongo Conservation Field Station, Uganda

Principal Investigator: Dagnachew Legesse Belachew, Addis Ababa University, Ethiopia

Principal Investigator: Olivier Crespo, University of Cape Town, South Africa

Principal Investigator: Oluseyi Olubunmi Fabiyi, Regional Centre for Training in Aerospace Surveys, Nigeria

Principal Investigator: Mayowa Fasona, University of Lagos, Nigeria

Principal Investigator: Oluwatoyin Kolawole, Okavango Research Institute, Botswana The Role of Urban and Peri-Urban Agriculture in Enhancing Food Security and Climate Change Resilience in East and West African Cities

The Application of Earth Observation Methods for Monitoring and Assessment of Agro-forestry in Senegal and Ghana

Climate Change Adaptation for Rural Communities Dependent on Agriculture and Tourism in Marginal Farming Areas of the Hwange District, Zimbabwe

Assessing Adaptation Responses by Smallholder Farmers in Northern Ghana to Climate Change and Biodiversity Loss

The Impact of Climate Change on Food Security Among Coastal Communities of Keiskamma, in the Eastern Cape, South Africa

Sensitivity of Coastal Lagoon Ecosystems to Climate and Related Global Changes: Developing a North African Lagoons Network

Targeting Crop Yield Increases Under Future Climate for Greater Food Security in the Upstream Catchment of Lake Victoria Basin Principal Investigator: Shuaib Lwasa, Makerere University, Uganda

Principal Investigator: Cheikh Mbow, University Cheikh Anta Diop, Senegal

Principal Investigator: Charles Nhemachena, Council for Scientific and Industrial Research, Zimbabwe

Principal Investigator: Yaw Osei-Owusu, Conservation Alliance, Ghana

Principal Investigator: Anthony Ribbink, Sustainable Seas Trust, South Africa

Principal Investigator: Maria Snoussi, Institut de recherche pour le développement, Morocco and University Mohammed V-Agdal, Rabat, Morocco

Principal Investigator: John Wasige, Makerere University, Uganda







United States Global Change Research Program

PARTNERSHIP ENHANCEMENT AWARDS

Response of the partnership and critical for advancing knowledge about GEC processes, many of which occur across regions. In order to foster such partnerships, START provided opportunities for five African scientists to spend two to four weeks at US host institutions in 2012. The scientists were recipients of START's first round of the *Partnership Enhancement Awards*, which make available competitive small grants to African scientists to enable the development or strengthening of partnerships with US scientists and/or graduate students for collaborative GEC research. Activities supported by the program include, for example, collaborative proposal development, interactive training or analysis, preparation of joint publications, and related activities that stimulate Africa-US partnership in collaborative research. The program fosters greater integration of science and scientists from Africa with international research and assessment projects and, in doing so, aims to enhance research, training, and networking opportunities for awardees. The 2012 round of *Partnership Enhancement Awards* was specifically targeted toward climate change, agriculture, and food security research.



FROM ONE GREAT LAKES REGION TO ANOTHER

One of the primary responsibilities of Dr. Ismael Kimerei, Research Scientist for the Tanzania Fisheries Research Institute, is to monitor the changing conditions of Lake Tanganyika, one of the Great Lakes of Africa. Supported by a START *Partnership Enhancement Award*, Kimerei spent two weeks in June 2012 at Illinois State University where he partnered with Dr. Catherine O'Reilly to build relationships and initiate cooperation with US researchers who are investigating pertinent issues affecting the US Great Lakes. Kimerei is pioneering an effort that would establish an integrated system of observation buoys across Lake Tanganyika—the first of its kind in Tanzania.

During his visit to Illinois State, he and O'Reilly participated in a workshop on the use of sensors and buoys for long-term monitoring of daily changes in lake conditions, made site visits to research facilities on the US Great Lakes, and met with potential donors for the Lake Tanganyika effort. Since the visit, Kimerei and O'Reilly have prepared collaborative proposals for two intensely competitive international Calls for Proposals. In addition, the scientists have jointly produced two manuscripts based on collaborative research that was initially developed during their time together in 2012.

VISITING SCIENTISTS AND THEIR HOSTS FOR 2012:

Land use change and the impacts on soils in farming areas of Mount Elgon

Visiting Scientist: Yazidhi Bamutaze Makerere University, Uganda *Host:* Tonny Oyana Southern Illinois University, IL

Decision Support System for Agro-technology Transfer (DSSAT) model training for the development of modeling climate changes impacts on maize culture in Ethiopia

Visiting Scientist: Yemenu Desta Fitsume National Institute of Agricultural Research, Ethiopia *Host:* Gerrit Hoogenboom Washington State University, WA

"START brings together people, ideas, organizations and resources. It focuses these on critical questions about our future. The results are enhanced capabilities, relationships and dispositions for collaborative global change science. No one does this better."

> —Neil Leary, Director of the Centre for Sustainability Studies, Dickinson College / Former Program Director at START



Development of sensing systems for measuring climate variables in Lake Tanganyika

Visiting Scientist: Ismael Kimerei Tanzania Fisheries Institute, Tanzania *Host:* Catherine O'Reilly Illinois State University, IL

The influence of ocean changes on the climate of the Sahel

Visiting Scientist: Seyni Salack University Cheikh Anta Diop, Senegal

Host: Alessandra Giannini IRI, Columbia University, NY

The impacts of climate change on groundwater in the Volta River Basin

Visiting Scientist: Sandow Yidana University of Ghana, Ghana *Host:* Duke Ophori Montclair State University, NJ



DISASTER RISK REDUCTION & CLIMATE CHANGE ADAPTATION IN SOUTH ASIA

South Asia's rapid development, while providing opportunities for economic growth, has increased the region's vulnerability to natural disasters. START supports collaborative research in the areas of climate change adaptation and disaster risk reduction in South Asia through grants to interdisciplinary teams of researchers in Nepal, Pakistan, and India.

START, with support from the Climate and Development Knowledge Network (CDKN), awarded six interdisciplinary research projects for integrating disaster risk reduction and climate change adaptation into resilient development in South Asia. Under this broad research theme, scientists are investigating institutional arrangements and governance structures, policy innovations that promote convergence of disaster risk reduction and climate change adaptation into policy and practice, and the changing nature of development factors, all of which shape vulnerability to disasters.

Mountainous regions in South Asia are prone to mudslides that cut off remote villages from resources and assistance.



DISASTER RISK REDUCTION RESEARCH PROJECTS

Getting Smart for Disasters	Principal Investigator: Sumana Bhattacharya, Intercooperation Social Development, India
Disaster Risk Reduction and Climate Change	<i>Principal Investigator:</i> Laxmi Devkota, Nepal
Adaptation in Koshi River Basin, Nepal	Development Research Institute, Nepal
Linking DRR, CCA and Sustainable	Principal Investigator: Sarala Khaling,
Landscape Development Goals	Ashoka Trust for Research in Ecology
in the Eastern Himalaya	and the Environment, India

Main streaming disaster risk reduction and climate adaptation in the Indus Ecoregion, Pakistan

Ability of Local Multi-Stakeholder Action to Catalyze Shifts in Program and Policy Environment towards Mainstreaming DRR & CCA

Towards Integrating Disaster Risk Reduction and Climate Change Adaptation: Understanding Flood Risk and Resilience in Eastern India Principal Investigator: Rab Nawaz, WWF—Pakistan, Pakistan

Principal Investigator: Anshu Sharma, Sustainable Environment and Ecological Development Society, India

Principal Investigator: Shiraz A. Wajih, Gorakhpur Environmental Action Group, India



CATALYZING COMMUNICATION ON BARMER'S CHANGING CLIMATE

Girls from a remote desert village in Barmer, Western India, are stepping out with microphones in their hands to run a community radio program on local issues. They are finding that a large number of local hardships get worse due to climate variability, but are also realizing that local action is key. The pilot community radio group is part of a SEEDS-led and START/CDKN-funded research project in the area. It is being piloted in partnership with the NGO UN-NATI, active in the area and able to provide sustainability to the initiative. Field results highlighted the need for better awareness on climate change risks and possible solutions. Such radio programs can provide the platform for issues, debates, and messages, including on government schemes that many people are unable to access.



SEEDS, www.seedsindia.org/ Sarika Gulati

CITIES AT RISK

G lobal environmental change, including climate change, is expected to exacerbate the risks and vulnerabilities inherent to the multistressor context of urban systems. Indeed, climate change will aggravate existing urban challenges and likely add layers of risk that will continue to threaten urban well-being and growth. Cities also offer opportunities, however—opportunities for innovative collaboration and policy responses to climate change. For these reasons, climate risk management and adaptation in urban areas, particularly in coastal cities at risk, is one of the fastest growing parts of START's portfolio in Asia and Africa.

Through its *Cities at Risk* initiative, START carries out a number of activities each year with the aim of enhancing adaptive capacities for managing and reducing risks and vulnerabilities brought on by the combined effects of climate change and rapid urban growth. In Asia, START convenes international conferences, organizes intensive training institutes, and supports city-specific research, communication, and outreach activities. These activities encourage coordinated action among scientists, policymakers, and the public and the integration of scientific information about vulnerabilities, impacts, and adaptation into planning and policy.



PLANNING INTEGRATED COASTAL ADAPTATION STRATEGIES FOR NORTH JAKARTA SECURITY

Efforts initiated in early 2012 in Jakarta, Indonesia, are supporting collaborative urban planning by researchers, provincial government, and communities at high risk for flooding. The project is uniquely promising for the city of nearly 10 million inhabitants, where much research has been conducted to highlight flood risks but where lack of integration between planning strategies has led to little action on the ground. Indeed, a science-policy dialogue organized in 2011 by the Indonesian Association of Planners (IAP), with START support, emphasized that the greatest challenge in managing climate change and related impacts in Jakarta is "the lack of collaboration among stakeholders to manage the strategic area."

The current START-supported project in Jakarta, *Planning Integrated Coastal Adaptation Strategies for North Jakarta* (PICAS), responds directly to this challenge by designing and facilitating a collaborative process for integrating previous recommendations on climate related risk and disasters in Jakarta; assessing the priorities, feedback, and additional ideas of at-risk populations; and leading collaborative development of a risk management and adaptation action plan for selected study sites in the city.

IAP is the lead organizer for PICAS and has successfully garnered active engagement in the project by eight other Jakarta urban planning and development institutions. One key player is the Provincial Government of DKI Jakarta as a fully committed, collaborative partner in both project design and implementation. PICAS activities and emerging results are receiving significant media attention in Indonesia and the region. A conference marking culmination of the project is scheduled for November 2013.



BUILDING ADAPTIVE CAPACITY FOR MANAGING CLIMATE CHANGE IN COASTAL MEGACITIES

The International START Secretariat and the Southeast Asia START Regional Research Center (SEA-START) support capacity building efforts for this initiative, commonly called the *Coastal Cities at Risk* (CCaR) project. CCaR promotes research and knowledge exchange among cities in Southeast Asia, West Africa, and Canada. The primary objective of the project is to develop the knowledge base and enhance the capacity of mega-cities to successfully adapt to and cope with risks posed by the effects of climate change, including sea level rise, in the context of urban growth and development.

Work on the "City Resilience Model" has included an original systems framework for quantifying resilience and a Generic System Dynamics Simulation Model guide. Knowledge on hazard characterization, health and economic systems, and developing and validating a System for Bangkok and an exchange between Canada and Bangkok led to Bangkok's City System Simulator. Parallel work on adapting the city simulator framework in Manila and Lagos is ongoing.



IMPROVING INTEGRATION OF SOCIAL VULNERABILITY INTO URBAN PLANNING



New 2013 *Cities at Risk* activities in Ho Chi Minh City (HCMC), Vietnam, aim to integrate social vulnerability considerations into the city's decision-making and policy processes. Robust decision making (RDM) is an iterative decision analytic framework that offers a means to evaluate urban plans over a wide range of plausible futures, identify ways to make those plans more robust, characterize the vulnerabilities of such plans, and facilitate discussions with stakeholders. A three-day workshop organized by START and the RAND Corporation in June 2013 brought together practitioners, technical specialists, decision makers, and academics from the region to review and discuss an RDM analysis recently completed for the

"START leverages limited resources to build up leadership, relationship and partnership for facilitating cross-cutting capacity building."

> —Wei-Sen Li, Deputy Executive Secretary, National Science and Technology Centre for Disaster Reduction, Taiwan



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city. Participants generated a list of measures of social vulnerability, potential policy interventions, and relevant uncertainties to consider for HCMC. Discussions focused on how social vulnerability indices could be quantified as an input to the risk model and add richness to model outputs. This initial workshop will inform future analysis that considers tradeoffs and tipping points and helps identify creative new policies that meet the needs of a broader range of groups.



CITIES AT RISK WORKSHOP-AFRICA



START is expanding its cities-related program to Africa. A March 2013 *Cities at Risk Work-shop–Africa* brought together scientists, municipal representatives, and other practitioners to identify priority knowledge and capacity needs for urban risk management and resilience in Africa. Priority messages from the workshop emphasized the following:

- More work needs to be done in bridging gaps in knowledge on climate change impacts and the vulnerability of African cities.
- There is a strong need for scaling up targeted training for urban planners on how to incorporate climate change in their works.
- There is a dire need for "climate translators"—climate information must be presented in terms that are accessible to urban planners as well as the broader public.
- Good governance contributes to resilience in urban areas by enabling effective and integrated action on climate change by all stakeholders.
- Vulnerability of infrastructure and communities in many cities in Africa cannot be meaningfully tackled without addressing urban poverty.
- There is a need to engage African cities in a sustained dialogue on low carbon growth through various initiatives, including the Durban Adaptation Charter.

The four-day workshop included expert presentations, several facilitated discussions, and participatory activities that challenged participants to view urban development from multiple, interwoven perspectives and a one-day "Climate Change Green Tour" that enabled participants to experience examples of mitigation and adaptation activities in and around Durban. Workshop recommendations will inform a new three-to-five-year program of *Cities at Risk* research, education, and training for Africa.



ASSESSMENTS OF URBAN AND PERI-URBAN AGRICULTURE

The relation of the provides an important source of fresh vegetables, poultry, eggs, dairy, and nonstaple foods to cities, thus contributing to dietary diversity in urban areas and stimulating economic activity in the urban food system. However, UPA systems are under pressure because of rapid urban growth, weak governance over land and water allocation in peri-urban spaces, urban pollution, and climate change. START is partnering with several organizations to undertake a nine city assessments on urban and peri-urban agriculture for the purpose of better understanding and characterizing threats to UPA and to identify appropriate actions to ensure its longterm sustainability.

The assessments examine UPA through the lens of intensifying urban pressures and increasing climate risks, with the objective of identifying how these two key drivers could potentially interact to undermine the long-term sustainability of UPA, and what response options are needed. The assessments are intended to examine (I) the current state of knowledge and where key knowledge gaps exist; (2) climate trends and projections in the context of important nonclimate stressors that, if addressed, could reduce exposure to climate risks and build adaptive capacity; and (3) critical areas for strengthening scientific capacity in order to better inform decision making on risk management and adaptation that have direct implications for UPA and urban food systems.







URBAN GROWTH AND CLIMATE CHANGE-Challenges Facing UPA in Dakar, Senegal

Dakar, Senegal is one of the nine cities in this UPA assessment. Dakar has a strong urban/peri-urban agriculture sector that provides a major source of vegetables for its urban residents, and livelihoods for farmers and those involved in transport, processing and marketing. Most of the vegetables are produced in the Niayes, a verdant strip of land that runs through the Cape Verde peninsula. Land around and within the Niaye depression is being rapidly converted from permeable surfaces, many of which supported agriculture, to impermeable surfaces in order to meet housing needs, and aquifers that support agricultural and non-agricultural water needs has become highly degraded. The land and water challenge will become increasingly acute with climate change, given Dakar's peninsular location, as rising sea levels further degrade the already stressed aquifers that provide water for Dakar homes and industries and its large UPA sector. This assessment, to be released in late 2013, is helping to make these connections so that comprehensive adaptation planning will be able to more fully encompass urban food systems in which is placed urban and peri-urban agriculture.



AFRICAN CLIMATE CHANGE FELLOWSHIP PROGRAM

The African Climate Change Fellowship Program (ACCFP) program promotes innovative adaptation research in Africa. Alumni of the program represent a cadre of climate change specialists who are promoting and facilitating adaptation research, education, and decision making across Africa. Since the program's inception in 2008, nearly 100 ACCFP Fellows have been matched with universities, research centers, and other host institutions across Africa 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 actions, and consider approaches for integrating adaptation with planning and practice.

During 2012–2013, two rounds of ACCFP Fellowships were awarded. By design, the 2012/2013 ACCFP Fellowships supported projects that directly responded to and advanced knowledge on one or more critical questions identified with input from experts across Africa. The 2012/2013 questions follow:

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?



What economic, political, cultural, and/or social incentives are needed in the short and longer term to motivate collections action on climate change?

- 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?
- 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?



How can climate change science and adaptation planning help to address other **development challenges**, including poverty, hunger, conflict, justice, illiteracy, and human security?

By requiring that every Fellowship project somehow respond to one or more of the questions, the ACCFP also aims to link Fellowship projects that address critical issues and contribute in meaningful and innovative ways to local, national, regional, and international climate change adaptation discourses.

"The time is here for everyone to collaborate in developing effective and efficient climate change adaptation strategies, including through more sustainable approaches in the educational sector such as curriculum reforms."

—Nicholas Ozor, ACCFP Alumnus, Nigeria



The ACCFP is unique in that it offers Fellowships to not only researchers, scientists, and academics but also to professionals directly responsible for decision making and management of climate-sensitive resources. The rich mix of perspectives, interests, and responsibilities that characterize ACCFP Fellows and the institutions that support them engenders an engaged community dedicated to building scientific capacity in Africa to manage climate change risks. ACCFP projects are directly supporting adaptation decision making, and many program participants collaborate even after their initial ACCFP engagements.

The next phase of the ACCFP, expected to kick off in late 2013, will include additional rounds of 6-to-12-month Fellowship awards as well as intensive adaptation short courses for practitioners and graduate students. Day-to-day management of the ACCFP is now led by the ACCFP Secretariat based at the Institute of Resource Assessment at the University of Dar es Salaam.

ACCFP ROUND II FELLOWS

ADAPTATION SCIENCE			
Amidu Owolabi Ayeni, <i>Nigeria</i>	University of Lagos	Georges Djohy, Benin	University of Parakou
Koulou Jeremie Fontodji, <i>Togo</i>	Université de Lomé	Martial Gapia, Centrafrican Republic	Université de Bangui
Bernard Kibet Kirui, <i>Kenya</i>	Kenya Marine and Fisheries Research Institute	Yao Etienne Kouakou, <i>Ivory Coast</i>	Centre suisse de recherche scientifique
Adnew Mekonnen, Ethiopia	Addis Ababa University	Grace Mudombi, Zimbabwe	University of Zimbabwe
Tolo Casim Umba, <i>Uganda</i>	Mbarara University of Science and Technology	Francis Opiyo Omondi, <i>Kenya</i>	University of Nairobi
Hodabalo Pereki <i>, Togo</i>	University of Lomé	Armel Sambo, Cameroon	Institut Supérieur du Sahel
Galine Yanon, Tchad	University Cheikh Anta Diop, Dakar	Bamutaze Yazidhi, Uganda	Makerere University
	ADAPTATI	ON POLICY	
Happison Chikova, Zimbabwe	Help Initiatives for People Organisation	Charlotte Enjoh Fonocho, <i>Cameroon</i>	Consultants and Intermediaries in Mining, Energy and Environment
Seth Kayomba, Uganda	Biodiversity Conservation for Rural Development	Bessie Madziwa, Zimbabwe	Zvishavane Water Project
Luc Lango Mumbere, <i>RD Congo</i>	Tanya Center for Conservation Biology	Rutendo Nhongonhema, Zimbabwe	Ministry of Agriculture
Godfrey Oluka, Uganda	Kampala Capital City Authority	Comlan Médard Ouinakonhan, <i>Benin</i>	Ministère de l'Environnement
Mahlalele Eunice Thlali, <i>Lesotho</i>	Department of Water Affairs		

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ACCFP ROUND III FELLOWS

ADAPTATION SCIENCE			
Issa Diedhiou, Senegal	Université Cheikh Anta Diop de Dakar	Pauline Noah Makula <i>, Tanzania</i>	University of Dar es Salaam
Nkulumo Zinyengere, Zimbabwe	University of Cape Town	Saloua Rochdane, <i>Morocco</i>	University of Cadi Ayyad, Morocco
Aichata Sako, Mali	University of Bamako, Mali	Emmanuel Zziwa, <i>Uganda</i>	Makerere University, Uganda
ADAPTATION POLICY			
Serge Djohy, Benin	ONG Benin Espoir 2003	Patrick Gwimbi, Zimbabwe	National University of Lesotho, Lesotho
Hilaire Lubweme Nkwe, <i>RD Congo</i>	Régie d'Assainissement et des Travaux Publics de Kinshasa	Jairos Joel Mahenge, Tanzania	Tanzania Coastal Management Partnership, Bagamoyo, Tanzania
Peter Zeddy Matata, <i>Tanzania</i>	Tumbi Agricultural Research Institute Tabora, Tanzania	Victoria Gervas Mwaifunga, Tanzania	Ministry of Water, Mwanza, Tanzania
Nicole Sarah, Benin	LARES, Parakou, Benin	Mireille Zebsa, Cameroon	Centre Régional de la Récherche Scientifique et de l'innovation de l'Est, Cameroon
ADAPTATION TEACHING			
Emiru Birhane Hizikias, <i>Ethiopia</i>	Mekelle University, Ethiopia	Dalitso Richard Kafumbata, <i>Malawi</i>	Chancellor College, Malawi
Julius Bunny Lejju, <i>Uganda</i>	Mbarara University of Science and Technology	Francis Mwaura, Kenya	University of Nairobi
Shakirudeen Odunuga <i>, Nigeria</i>	University of Lagos	Madaka Tumbo, Tanzania	IRA—University of Dar es Salaam



PAN-ASIA RISK REDUCTION FELLOWSHIP PROGRAM

S TART is committed to expanding the *African Climate Change Fellowship Program* model of adaptation research fellowships to Asia and beyond. In September 2013, START organized a planning meeting for the proposed *Pan-Asia Risk Reduction (PARR) Fellowship Program*. The program aims to build research and scientific communication skills, and to develop interdisciplinary curricula and bolder teaching capacities for understanding



complex interlinkages inherent to GEC across the Asia-Pacific region. The two-day PARR Planning Meeting brought together a small group of regional experts for serious discussion of PARR program design, objectives, and expected outcomes as well as evaluation criteria and funding possibilities. During the second day of the meeting, feedback on evolving ideas was sought from a larger group of representatives from US agencies and DC-based research, nonprofit, and funding organizations. The second day closed with a debriefing by the original group of participants, including synthesis of ideas and planning for follow-on roles and responsibilities. The pilot round of the PARR Fellowship Program is expected to kick off in 2014.



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In furtherance of its long-standing GEC-related research and capacity development programs and activities in Africa, the International START Secretariat organized a *Global Environmental Change and Good Governance Workshop–Africa*, held in Accra, Ghana, September 23–24, 2013. A collaborative effort of START, the Earth System Governance Project, and the Institute for Environment and Sanitation Studies at the University of Gha-

COMMON GOALS AND A TEAM APPROACH: THE UNIVERSITY OF GHANA AND START

The University of Ghana, a START Affiliate in West Africa, continues to advance climate change research on several fronts. This includes recent investigations on the political economy of climate-compatible development, enhancing resilience to climate and ecosystem changes in semi-arid Africa, and identifying climate-smart investment strategies for the coastal zone. The University of Ghana also hosted a stakeholder workshop in July 2013, the first step in a collaborative project aimed at developing a prototype of an early warning system for climate change (CLIM-WARN). The project, sponsored by United Nations Environment Programme (UNEP) is jointly implemented by the Division of Early Warning and Assessment (DEWA) and brings together stakeholders from various sectors within Ghana, Burkina Faso and Kenya.

na, this workshop convened a select group of experts and thought leaders from varied disciplines to explore priority knowledge, capacity, and networking priorities in (good) governance dimensions of vulnerability to adverse impacts of climate change in Africa.






Encouraging Effective Communication and Networking

Strengthening Science Communication-START Writeshops and Retreats

Highlights from START Regional Activities in Asia42

OPPORTUNITIES FOR YOUNG SCIENTISTS

R ooted in the values that originally motivated the formation of START, young scientist support aims to elevate the voices of developing country researchers in scientific discussion and debate while also enabling the development of new skills and connections that broaden their professional impact and networks. START support boosts the participation of young scientists from Africa and Asia in national, regional, and international conferences and workshops.

In March 2012, START supported the participation of seven African delegates in the 2012 Planet Under Pressure conference held in London. The conference focused on solutions to the global sustainability challenge and was the largest gathering of global change scientists during preparations for the UN Conference on Sustainable Development (Rio+20). In February 2013, START supported the participation of four young African scientists in the 2013 PAGES Open Science Meeting (OSM), an international, multidisciplinary platform for sharing the latest research results as well as a venue for defining the role of past global change science for the next decade. All START-supported delegates presented their research as part of the respective conference programs and reported substantial exposure to new ideas as well as networking opportunities. Dr. Mayowa Fasona, Lecturer in the Department of Geography at the University of Lagos, attended the 2012 Planet Under Pressure conference with START support. He reflects: "What an experience to be among the gathering of scientists that is charting the trajectory for global change science in the anthropocene."

START supported 50 young scientists for a Young Scientists' Conference on Integrated Research on Disaster Risk, Future Earth, and Sustainability. The event offered an opportunity for young researchers present their work to one another and to leading scientists in the field. The conference was intended to stimulate competition, encourage excellence, reward outstanding performance, and foster the development of personal and institutional networks. The conference was sponsored by the Integrated Research on Disaster Risk (IRDR) International Center of Excellence, Taipei and is being organized by International START Secretariat.



PROMOTING DIALOGUE TO INFORM ACTION

TART's national and regional science-policy dialogues promote effective communication among scientists, policymakers, development professionals, the private sector, media, and civil society organizations. The dialogues review the latest research, determine potential entry points for transiting from knowledge to action, and identify further knowledge and capacity needs for supporting planning and policy measures in critical areas such as urban development, disaster risk reduction, agriculture and food security, health, land-use, and biodiversity conservation.



A series of highly interactive games were played to help participants understand complex issues facing communities and decision-makers in relation to a changing climate.

In July 2012, The International START Secretariat, the Southeast Asia START Regional Research Center, and the Asia Pacific Network for Global Change Research (APN) designed and co-hosted a regional dialogue in Bangkok. This involved keynote presentations, numerous interactive discussions, and a set of collaborative and interactive games aimed at decision making under uncertainty. Participants were from organizations, including APN National Focal Points, APN's Scientific Planning Group, START's regional Fellows and collaborators, and high-level government officials from Thailand, as well as from the media. A report on the event was published by the APN; a summary of the report was presented at the 2013 SBSTA/UNFCCC Briefing. A record of all presentations, dialogues, and a summary is available on the SEA-START RRC website.



SUPPORTING NETWORKS FOR LAND USE AND LAND COVER CHANGE SCIENCE

A lihough remote-sensing earth observation data are readily available to scientists and other users in developed countries, access remains a primary challenge for developing country scientists, practitioners, and decision makers who need it to manage natural resources and develop coping strategies to reduce vulnerability to change. Through its partnership with the *Global Observation of Forest Cover and Land Dynamics* (GOFC-GOLD) project, START contributes to a coordinated effort to improve developing country access to existing data, increase scientists' capacity to utilize and produce the data needed for research and resource management, and foster regional and international networks of scientists interested in forest cover and land dynamics.

START plays a major role in Fellowships to support periodic *GOFC-GOLD Data Initiative and Advanced Training Institutes*. During May 2012, START supported a month-long training that brought eight remote-sensing scientists from developing countries to the U.S. Geological Survey (USGS) Earth Resources Observation and Science (EROS) Center in Sioux Falls, SD. EROS is the global leader in the distribution and application of earth observation data, especially Landsat data. While in residence at EROS, Fellows were provided with access to USGS data archives and received training for writing grant proposals. Fellows then traveled to Boston University for an intensive course on the application of satellite remote-sensing data for monitoring forest and land cover change, including its potential for Reducing Emissions from Deforestation and Forest Degradation (REDD).

START promotes the participation of international scientists in the activities of II GOFC-GOLD Regional Networks and the GOFC-GOLD Implementation Teams that target land use and land cover change issues related to forestry, fire disturbance, agriculture, and carbon cycles. GOFC-GOLD Regional Workshops generate recommendations for data import



and implementation to meet priority regional needs. Many such workshops offer targeted training for participants while also exposing them to larger communities of scientists. During 2012 and 2013, START supported nine GOFC-GOLD Regional Meetings and Training Sessions, and also participated in and co-organized the international GOFC-GOLD Symposium held in Wageningen, Netherlands in April 2013.

GOFC-GOLD REGIONAL NETWORKS

- 1. South-Central European Regional International Network (SCERIN)
- 2. Northern Eurasia Regional International Network (NERIN)
- 3. Baltic-Arctic Regional International Network (BARIN)
- 4. Red Latinoamericana de Teledeteccion e Incendios Forestales (RedLaTIF)
- 5. Southern African Fire Network (SAFNET)
- 6. Miombo (Southern Africa) Land Use Land Change Network (Miombo)
- 7. Western Africa Regional Network (WARN)
- 8. Observatoire Satellital des Forets d'Afrique Central (OSFAC)
- 9. Southeast Asia Regional Research and Information Network (SEARRIN)
- 10. Central Asia Regional Information Network (CARIN)
- 11. South Asia Regional Information Network (SARIN)





STRENGTHENING SCIENCE COMMUNICATION-START WRITESHOPS AND RETREATS

reating a space where authors can separate themselves from day-to-day demands and focus on completing their manuscripts, proposals, or reports is one of the goals of START writeshops and writing retreats. Intensive training in scientific writing and the peer-review process is another.

"START is a thoughtful, provoking network of dedicated researchers and scientists bringing solutions and critical questions to the science-policy interface."

> — Sarah Birch, Program Manager, ICLEI-Local Governments for Sustainability, South Africa



The design of every START writing event is unique but blends elements of facilitated training, expert and peer review processes, one-on-one writing consultations, and targeted personal writing time. Writeshops tend to be directed toward early career scholars who have yet to publish extensively in academic journals. Participants progressively revise and refine a scientific manuscript and are matched with writing mentors who advise them before, during, and after the event. After the writeshop, the polished manuscript is submitted for peer review.



Writing retreats tend to emphasize one-on-one skill building and dedicated writing time for middle career academics. Collaborative paper writing is also common—because a broader goal of START writing events is to enhance the capacity of participants to synthesize knowledge and lessons learned from their work and to prioritize communication and dissemination of that synthesis so that it can inform policy, decision making, and future research needs.



WRITING RETREAT PRODUCES A COLLABORATIVE SPECIAL ISSUE

n February 2012, START organized a Writing Retreat for 10 alumni of the African Climate Change Fellowship Program. Held near Washington, DC, the retreat provided intensive training in scientific writing and the peer-review process, interspersed with dedicated personal writing time that enabled authors to produce multiple iterations of their manuscripts. Participants reported that the experience provided "lifetime input" on writing skills and competencies. Felix Olorunfemi, Round I ACCFP Policy Fellow from Nigeria, called the experience fantastic and noted that he would absolutely recommend participation to others. He said:

> "We are the seeds. ... We can help teach and train our students in this way."

A total of eight individual and two collaborative papers, all based on ACCFP Fellowship experiences, were produced from the event. Most of those papers were later included in a special issue of the Elsevier journal *Environmental Development*,



guest edited by START staff and titled "Climate Risk Management in Africa." Published in January 2013, it is available (open access) at http://www.sciencedirect.com/ science/journal/22114645.

HIGHLIGHTS FROM START REGIONAL ACTIVITIES IN ASIA

SOUTHEAST ASIA REGIONAL COMMITTEE FOR START (SARCS)

The Southeast Asia Regional Committee for START (SARCS) in Taiwan actively promotes climate change research in Southeast Asia. In December 2012, SARCS hosted a regional training workshop on water and health. Junior investigators gathered to share knowledge and receive advanced training on the effects of climate change on health issues.



SARCS is also an active member of the "Taiwan Integrated Research Program on Climate Change Adaptation Technology" through which a number of scholars, government officials, and NGOs are working together to develop and use climate change adaptation technologies. Through this initiative and others, SARCS is committed to strengthening interactions between social and natural scientists in Southeast Asia and holds regular workshops to train social scientists on issues of global environmental change.

TEMPERATE EAST ASIA START REGIONAL RESEARCH CENTER (TEA-START RRC)

In China, the Temperate East Asia START Regional Research Center (TEA-START RRC) has recently upgraded its climate observation facility, the Tongyu Field Station, to give researchers access to better instruments. Several scientific journal articles have been published using new, improved data. Leading the way in research excellence, Professor Jia Gensuo of TEA-START RRC served as section author for UNEP's Fifth Global Environment Outlook. The center also attends Monsoon Asia Integrated Regional Study (MAIRS) Scientific Steering Committee Meetings, an Earth System Science Partnership Program that addresses the coupled system of human and natural processes in the Asia Monsoon Region. In 2012, TEA-START organized a CAS-START training on regional climate change which provided climate change researchers and practitioners with advanced knowledge and skills on climate modeling to enhance regional sustainable development.

TEA-START RRC in Beijing is supporting the emergence of the global Future Earth initiative. The center translated two *Future Earth* documents into Chinese to ensure better participation from Chinese nationals. They have also contributed substantially to development of the *Future Earth* regional action plan for Asia and participated in initiative sponsored regional consultations in Kuala Lumpur in November 2012.

SOUTHEAST ASIA START REGIONAL RESEARCH CENTER (SEA-START RRC)

Bangkok city planners, journalists, and researchers are working together with the Southeast Asia START Regional Research Center (SEA-START RRC) to prepare the city for the effects of climate change. They are collaborating on the *Coastal Cities at Risk* (CCaR) project called "Building Adaptive Capacity for Managing Climate Change in Coastal Megacities." As part of the CCaR project, SEA-START organized a youth scientist forum and a workshop with the UNESCO youth peace group. The events were designed to prepare the young generation to cope with potential future extreme events and uncertainties, particularly on sustainable development and migration issues.

SEA-START RRC facilitated a regional dialogue on water resources management and climate change adaption for the Mekong Basin. This was an important opportunity for different types of people to convene and discuss adaptation issues. SEA-START RRC is also enabling data sharing through its engagement on several projects:

- Improving online access and sharing of environmental data and information through the EnviroProjects Digital Initiative.
- Sharing expertise on coastal system modeling and complex data sets with fellow researchers in Africa's Okavango River Basin.
- Working with the Ramsar Wetland Secretariat to develop a platform to make environmental data publicly accessible, as well as provide a cloud-based work space for the Secretariat.
- Creating a knowledge hub for the Thailand Greenhouse Gas Management Organization Low Carbon Cities.



Promoting Innovations in Learning

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ADVANCED INSTITUTES ON DISASTER RISK MANAGEMENT

S TART Advanced Institutes foster communities of learning and provide research and related capacity-building opportunities that improve scientific capabilities in developing countries. During 2012, two Advanced Institutes were held to improve understanding and management of environmental and natural hazards and disasters.



The 2012 Advanced Institute on Forensic Investigations of Disasters (FORIN) trained 24 international participants in the concepts, theories, and related approaches to disaster research identified by the FORIN project of the international IRDR program. The eight-day intensive training event included educational modules, hands-on interactive exercises, and field visits. As a critical part of the Institute, all participants designed an individual or collaborative project, presented at the conclusion of the event, that aimed to apply one or more of the FO-RIN-related research methodologies. Competitive follow-on research grants were awarded to four research teams to conduct FORIN-related projects in South and Southeast Asia.

"All-in-all, the FORIN institute was an invaluable training experience. I think it has done a good job of getting the next generation of scientists to think outside their traditional disciplinary boundaries and move beyond their comfort zones to create more meaningful collaborations."

> —Charlotte Kendra Gotangco, MEM, Ph.D. Asst. Professor, Department of Environmental Science Ateneo de Manila University



The 2012 Advanced Instituted on Data for Coastal Cities at Risk provided 29 international participants from Asia and Africa with the enhanced understanding, skills, and resources to collect data for coastal cities—related studies in their own countries. Both 2012 Advanced Institutes were hosted and co-organized by the IRDR International Centre of Excellence, Taipei.









RISK INTERPRETATION AND ACTION: DECISION MAKING UNDER CONDITIONS OF UNCERTAINTY

key issue emerging from recent disasters is understanding the ways people interpret risks and how they respond based on these interpretations. Acceptable risk in the context of risk reduction and building safety always involves interactions between natural (physical) and human (social and behavioral) factors. To address this topic, an intensive two-week working seminar in November 2013 in New Zealand explored how the Risk Interpretation and Action-Integrated Research on Disaster Risk conceptual framework for response to natural hazards can be integrated across disciplines and cultural contexts. The seminar brought together young scientists and practitioners from diverse disciplines of social and behavioral sciences, history and the humanities, as well as physical sciences, engineering, and landuse planning.

Participants discussed and challenged each other on issues of determining acceptable levels of risks, an understanding and need of an integrated risk language, the importance of public perception of risk, and engineering performance. Fellows will produce a coauthored report of seminar discussions, which will be submitted to a peer-reviewed publication. Opportunities for further involvement in disaster risk and interpretation activities will include the IRDR general conference in June 2014 and competitive seed grants for collaborative, interdisciplinary research.





FOOD SECURITY IN AN URBANIZING WORLD

F ood security is becoming an increasingly urgent concern in national and international policy debates. High and volatile global food prices and their effect on food access for low-income groups have been an important catalyst for this renewed attention. The March 2013 workshop on *Food Security in an Urbanizing World*, held at the International Livestock Research Institute in Addis Ababa, brought together academics, policy researchers, and practitioners from Africa, Asia, and Latin America. It was convened by START, International Institute for Environment and Development (IIED), and the International Council for Science (ICSU) Regional Office for Africa with support from the US National Science Foundation, the Swedish International Development Cooperation Agency, and the Climate Change Agriculture and Food Security initiative. The workshop was designed to assess the state of knowledge of urban food security from a global south perspective and aimed to encourage interaction among researchers from different regions and perspectives.

The workshop was designed to elicit active discussion and debate about the state of current knowledge on critical issues around urban food security. One of the workshop's key points of debate concerned the extent to which urban food security is about *much* more than the production of food. Progress on urban food security will come about only through better understanding how the urban poor access food (income and social network dimensions); how space and time poverty, environmental hazards, and inadequate infrastructure and housing affect *utilization* of food by the poor; how the movement of food into cities and its subsequent storage and marketing affects food *availability*; and how the continuity in supply and access/affordability affects food *stability* for the urban poor during this period of high food price volatility, utilization, and stability) requires policy frameworks that encourage interconnected poverty reduction/social protection and rural/urban-linked development approaches rather than those that solely emphasize increased food production as a solution to food insecurity.



CLIMATE CHANGE RESEARCH, EDUCATION, AND OUTREACH PROGRAM

ore robust systems for generating, interpreting, and disseminating knowledge about climate change are essential for mobilizing decision makers across society to take actions that promote adaptation to climate change. Enhancing such knowledge systems requires significant and well-targeted investments in education and training. Robust university programs studying climate change are critical for collaborative, interdisciplinary research and education that can lead to a problem-focused, active approach to addressing climate change and supporting adaptation.

The *Climate Change Research, Education, and Outreach Program* (CCREOP) supports the development and implementation of innovative research on climate change at the University of Dar es Salaam (UDSM). CCREOP established the Centre for Climate Change Studies as a university-wide institution for climate change research and teaching. CCREOP united START with the Centre for Climate Change Studies to implement a range of activities for students, faculty, and staff at UDSM and other stakeholders outside the university.

"The Centre for Climate Change Studies at University of Dar es Salaam is a focal point on issues of climate change for various academic units at UDSM and organizations outside the university. The MSc is highly respected by faculty and government ministries and the international community."

> —Abdallah Issa Henku, Programme Officer, Center for Climate Change Studies



The collaboration has resulted in the establishment of a Master of Science in Climate Change and Sustainable Development program at UDSM in March 2013. Faculty workshops in July and December 2012 facilitated curriculum development and training on approaches to interdisciplinary teaching on climate change. The coursework covers the science of climate change, vulnerability, impacts, adaptations, governance, infrastructure and engineering, ecosystem management, gender, and water and food security. The MSc coursework began with 24 students and included more than 25 professors and lecturers teaching interdisciplinary courses.



In addition, CCREOP has supported the training of young faculty members to gain skills in academic writing, including proposal and journal article development. Participants from 10 colleges and departments, including law, geography, anthropology, and engineering, throughout UDSM participated in the five-day workshop in April 2013. The 24 participants engaged in a series of activities and lectures to develop their own concept notes into proposals and learn how to outline the parts of an academic article.

In November 2013, CCREOP organized a workshop with young faculty members at UDSM to mainstream climate change into their disciplinary curriculum. Participants were introduced to the science and impacts of climate change, theoretical perspectives and practical examples of mitigation and adaptation, and current political and economic debates about climate change. Workshop facilitators introduced new, innovative approaches, including videos, games, and social learning activities, for integrating the social and ecological complexity of climate change into courses.

CCREOP also encourages research and education initiatives, including multistakeholder dialogues, intellectual lecture series, and an international conference. In July 2013, the Centre for Climate Change Studies, in collaboration with START, hosted the *International Conference on Urbanization and Development in a Changing Climate* in Arusha, Tanzania. The conference included presentations and discussions that put climate change at the forefront of urban planning and development.



LEARNING FORUM ON AGRICULTURE AND GLOBAL ENVIRONMENTAL CHANGE

S TART promotes knowledge sharing through Learning Forums, four-to-five-day events on specific priority issues that emerge from research supported by START programs. Targeted training sessions, such as preparation of communication materials for scientific and nonscientific audiences or "writeshop" exercises aimed at building participants' manuscript preparation and proposal writing skills, are an important part of the Forums. START is integrating these new Learning Forums into its regional research programs. In these events, START-supported scientists come together with other regional and international subject matter experts to share their research findings and perspectives, identify key messages for synthesis products, and develop innovative communication approaches for reaching decision makers.

Participatory exercises aimed to strengthen future research design and promote increased, more effective communication between communities of science, policy, and practice.



In November 2012, a group of nearly 60 researchers, educators, and development practitioners from 17 countries across Africa and abroad came together in Accra, Ghana, for the first annual GEC Research and Learning Forum. The three-day event was organized by START in partnership with local hosts at the Institute of Environment and Sanitation Studies of the University of Ghana and provided an opportunity for recipients of the 2011–2012 round of START Grants for GEC Research in Africa as well as other regional and international experts to present on climate change, agriculture, and food security in Africa. Targeted training activities offered by Kenya-based *Well Told Story* and other integrative, participatory exercises aimed to strengthen future research design and promote increased, more effective communication between communities of science, policy, and practice.

The Forum was well received, with many participants underscoring the need for more such opportunities for peer-to-peer learning and joint development of ideas.



Several participants committed to follow-on activities, some in partnership with others they met at the Forum. For example, Jane Bemigisha, a researcher at the International Foundation for Science in Uganda, and several new colleagues from the University of Ghana and the Climate Change Agriculture and Food Systems (CCAFS) Program brainstormed ideas for collaboration. Brought together by shared interests in issues of gender and climate change, the group committed to initiating a "think tank network" that enables continued communication and collective planning between East and West African institutions.

Reneth Mano of the University of Zimbabwe, who actively participated in the discussions, challenged all Forum participants to harness their frustration over lack of uptake as fuel for instigating change. Hubert N'djafa Ouaga and Bougouna Sogoba, both based in Mali at the International Union for Conservation of Nature and AMEDD, respectively, took this charge seriously, collaborating on the last day of the Forum to produce the first draft of a concept note that describes a joint program of research and applied action between their organizations. "We want to have a cluster of partners," said Sogoba. "The Learning Forum is helping us get things started."



CLIMATE INFORMATION FOR ADAPTATION PLANNING-CORDEX-AFRICA

The decision making space for adaptation is increasingly awash in climate data but the ability to appropriately transition data into actionable information is lagging, leading to a high potential for misapplication of climate data to adaptation planning and possible maladaptation. Thus there is a strong need for inclusive and context appropriate approaches for developing credible, actionable and defensible climate messages. COR-DEX-Africa seeks to address this challenge through activities that strengthen skills and knowledge in Africa for interrogating climate data, and that cultivate cross-sectoral and interdisciplinary engagement of experts from climatology and hydro-meteorology, as well as from biophysical and social sciences.

CORDEX-Africa also creates space where climate data suppliers and users can come together to better understand the decision making context into which climate information is needed, and create understanding of how to transform climate data into usable information. A February 2013 workshop in Tanzania, led by START and the University of Cape Town's Climate Systems Analysis Group (CSAG), advanced this objective through piloting a methodology on integrating climate and non-climate information streams for understanding risks in coupled human-natural systems. The workshop involved interdisciplinary



teams from Addis Ababa, Kampala, Dar es Salaam, Maputo, and Lusaka, consisting of technical experts in meteorology/climatology, agriculture, water resource management, disaster risk management, and land-use planning within government, university, and nongovernment spheres. The workshop's focus was on peri-urban areas of these five cities, which typify the intensive land-use pressures from urban encroachment that African cities are facing. The step-wise process developed through the workshop allowed the city teams to identifying critical vulnerabilities in livelihoods, infrastructure, and services of their peri-urban environments that then provided a contextual basis for identifying climate sensitivities to which they could integrate climate information.

Following out of this workshop, CSAG and START are developing e-learning materials that will allow data from CORDEX and other climate models to be used across disciplines and decision-making contexts. The materials use place-based approaches to examine climate sensitivities related to, among other things, food production, water resource management infrastructure, and flood risk management. For more information about the global CORDEX initiative and to read three collaborative CORDEX-Africa peer reviewed publications, visit http://wcrp-cordex.ipsl.jussieu.fr.





FORECAST-BASED HUMANITARIAN DECISIONS: DESIGNING TOOLS AND PROCESSES TO LINK KNOWLEDGE WITH ACTION

The Graduate Student Research Opportunity in Climate Risk Management fosters a network of young researchers interested in action-oriented, collaborative research on climate, development, and humanitarian work. The program aims to enhance knowledge about how climate threats and risks should be taken into account to improve humanitarian decisions within Africa. Grants were awarded to 14 graduate students at a workshop in Nairobi in May 2012. This intensely participatory workshop focused on games that simulate the complexity of decision making of people and organizations confronting serious challenges on climate, disasters, and ecosystems. Through presentations, small group tasks, plenary discussions, and gameplay, students discussed how new tools can support existing initiatives for climate-compatible development.

"The workshop on Participatory Learning and Dialogue for Climate Risk Management really added to my conception of my research. It also seemed as valuable as the research funding in terms of exposure to new ideas and new networks."

—Student grant recipient

Grant support allowed graduate students to research climate risk management in Africa. One case study explored the value of participatory approaches for enhancing community disaster preparedness in rural and urban areas. The study, *Innovative Approaches to Engaging Communities in Participatory Dialogues that Enhance Community Disaster Preparedness*, was published by the American Red Cross and coauthored by one of the student grantees from Zimbabwe. It discusses more efficient ways to engage communities in the Caprivi region of northeastern Namibia in a focused dialogue that leads to action on disaster preparedness and risk reduction. In addition to research funding, three grantees joined UNFCCC COP18 in Doha, Qatar, to support Development & Climate Days 2012 and to participate in side events.

As a result of this project and similar initiatives, demand for interactive game design is growing rapidly, as is demand for more facilitation of games-based approaches. In May 2013, partners held a "train the trainers" workshop on climate-related educational games



that have a strong emphasis on humanitarian and development work and climate risk management within Africa. Participants became familiar with game facilitation principles and gained first hand knowledge in order to facilitate these games with professionals and/or with communities in the field.







BRIDGING HEALTH AND CLIMATE KNOWLEDGE IN WEST AFRICA

Insuring effective use of climate information for decision making requires that communication barriers and capacity gaps between providers and users of climate information be addressed, such as with managing climate-sensitive diseases in Africa. In response to this need, START and the Climate Systems Analysis Group-University of Cape Town, together with the International Council for Science (ICSU) Regional Office for Africa, UNDP's Africa Adaptation Program, African Centre of Meteorological Applications for Development (ACMAD), and African Monsoon Multidisciplinary Analyses (AMMA), held a workshop in Ouagadougou, Burkina Faso in May 2012 to foster shared learning around

"START is different, innovative and out of the box."

—Berhanu Abegaz, Executive Director of the African Academy of Sciences, Kenya



climate-sensitive diseases. The climate community gained understanding of the climate parameters that health experts need to make decisions on managing these diseases, while the health community gained insights into using climate information to better manage diseases. However, the workshop also revealed the considerable challenges in moving from a workshop setting, discussing ideas on how to bridge perceptual and communications gaps, to the reality of initiating activities to promote effective integration between climate and health communities.







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LOOKING TO THE FUTURE

S TART is committed to meeting the challenge of helping society anticipate and respond effectively to both risks and opportunities presented by global environmental change. As communicated in the recently released START publication, *Advancing Knowledge for Action on Global Environmental Change: Reflecting on Progress and Strategizing for the Future,* the priority areas for action that are expected to drive our programming in the next several years include:

- Strengthening and expanding interdisciplinary and multisectoral expertise in integrated research and assessment that foster stronger and more engaged south-north and south-south research networks;
- Promoting effective communication among communities of research, policy, and practice that enhances the ability of countries and regions to generate relevant and actionable knowledge and to catalyze research into action; and
- Supporting efforts by universities in Africa and Asia-Pacific to inform and engage society in creating more resilient and adaptive development trajectories.

To assess our impacts and achievements in advancing these priorities, START is committed to consistently evaluating both the effectiveness and reflectiveness of program implementation and results. We also recognize that our work is most influential where strategic partnerships are developed that optimize complementary strengths while also speaking to regional needs and priorities. Such partnerships make long-term and productive collaborations possible.

START has always advocated for capacity building as a critical component of development—it motivates and sustains the leadership required for social change and informed decision making. As such, we encourage a focus on capacity building on all scales and by all partners and institutions. This advocacy also presents a constant challenge to us in keeping ourselves relevant and maintaining our reputation as an innovative thought leader in the field. We take this challenge very seriously and endeavor to remain at the cusp of innovation and creativity in our programs and activities. Our promise to you is that we will continue to encourage and to challenge ourselves and others in this respect for years to come.



Our work is most influential where strategic partnerships are developed that optimize complementary strengths while also speaking to regional needs and priorities. Such partnerships make long-term and productive collaborations possible.



ORGANIZATIONAL MILESTONES, 2012-2013

The 2012–2013 period has been one of continuing transition for START as an independent nonprofit corporation with US 501(c)(3) status. This period is also marked by modifications to START's regional structure in Africa in response to the changing landscape of scientific capacity building in the region. Although these organizational changes have required immense time, energy, and resources, we are seeing positive effects on our relationships, programs, and capacity-building outcomes.

HIGHLIGHTS OF START'S ORGANIZATIONAL CHANGES INCLUDE:

New staff members at the International START Secretariat in 2012. Senay Habtezion, formerly a Harvard Law Fellow and Professor of Law at the University of Asmara in Eritrea, joined START in August 2012. Habtezion brings a depth of experience in governance and climate change issues. Katie Dietrich, a climate change learning and education specialist, joined START in November 2012. Dietrich recently completed her PhD at The Pennsylvania State University where she investigated how rural communities in Ghana learn together with local nongovernment organizations and researchers to imagine and plan for possible futures under climate change. Both Habtezion and Dietrich bring specific expertise to START that strengthens priority areas of our portfolio.

A facelift for human resources and accounting. After 17 years with the same external provider, START contracted with a new accounting firm in 2012 that specializes in supporting nonprofits. START also assumed management of its own human resources, benefits, and payroll activities in 2013.

Prioritizing new pathways in fund-raising. START retained the services of Capital Development Strategies LLC, a Washington-based firm specializing in nonprofit fund-raising. A new START database was created in 2013 that will be used as an important tool in our kickoff of new fund-raising and alumni engagement campaigns in early 2014. Restructuring START's regional presence in Africa and Asia. In recent years, the context in which START's regional structures were initially established has changed, as evident in the growth of large global initiatives that offer opportunities for new kinds of partnerships, and the challenge of securing donor interest in funding core activities of physically based centers. These changes prompted a recent reassessment of what a nimble and effective START structure should look like, resulting in START transitioning to a system of START Regional Affiliates in Africa and an examination of its potential in Asia. The system is characterized by an actions-based coordination model under which the International START Secretariat collaborates with Affiliates and other implementation partners—rather than brick-and-mortar START centers—to carry out joint initiatives and advance common goals.

New START Regional Fellow positions. In addition to direct involvement in ongoing joint activities, some START Regional Affiliates will also host START Regional Fellows—postdoctoral scholars, from the region, who are tasked with a portfolio of various program-based research, education, and training responsibilities as well as a mandate to champion the broader interests of START in the region through awareness raising, outreach, and partnership-building efforts. Three START Regional Fellow positions were initiated during the 2012–2013 period—one at the Institute of Environment and Sanitation Studies at the University of Ghana; one at the Climate Systems Analysis Group at the University of Cape Town (South Africa); and one at the Southeast Asia START Regional Research Center (SEA-START RRC) at Chulalongkorn University (Thailand).

Growth of START's Board of Directors. In 2012, the Board of Directors increased from five to seven members. This larger and more diverse board is expected to help START actively engage with emerging international initiatives and programs and develop a philanthropy campaign to supplement our grant support.

The introduction of annual START Retreats. The First Annual START Retreat, held in February 2012, enabled all START staff to collaboratively review their roles and responsibilities in the context of START's current programs and projected growth areas. Staff worked together to identify gaps in expertise and created action plans for more effectively achieving personal and organizational goals. In September 2013, the Second Annual START Retreat brought together all Board members, staff of the International START Secretariat, and a select number of regional representatives, for intensive discussions about START impact. Priorities for discussion included how to increase impact in strategic and manageable ways and how to tell the story of previous and ongoing impact in more compelling ways. The Retreat produced detailed recommendations that informed development of a new and improved Business Plan for START for 2014–2016. In addition, Board members and staff alike report that the recent Retreat experiences have reinvigorated their enthusiasm for the START mission and objectives.

ORGANIZATIONAL STRUCTURE



BOARD OF DIRECTORS



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INTERNATIONAL START SECRETARIAT STAFF



Jon Padgham Deputy Director



Abby Gwaltney Program Associate



Clark Seipt Director of Programs



Senay Habtezion Program Associate



Charles "Skip" Kauffman Program Associate



Katie Dietrich Program Associate



Sarah Schweizer Program Associate



Jessica Boesl Program Assistant

FINANCIALS

		2012	2011
	ASSETS		
	CASH		
PNC		\$198,586.56	\$78,992.87
Bank of America		571,506.91	784,977.48
Petty Cash		180.00	300.00
Total Cash		770,273.47	864,270.35
Accounts Receivable		4,558.60	129,124.03
Travel Advances		3,760.00	
Meeting Advances		364.00	
Due to/from AGU		687,136.46	289,138.85
Grants Receivable		617,290.62	3,974,405.05
Prepaid Expenses		7,229.74	764.58
	FTXEN ASSETS		
Furniture/computers	TINED NOOL TO	25 346 30	
Accumulated Depreciation		(25 346 30)	
		(25,5 · 615 6)	¢F 2F7 702 9/
IOIAL ASSEIS		\$2,090,612.89	\$5,257,702.80
	I TARTI ITTES		
Accounts Pavable & Accrued Exp		\$26.132.20	\$10.00
Accrued Vacation		82,192.63	95,449.02
Total Payables		108,324.83	95,459.02
Deferred Revenue—Grants		696,316.45	4,148,116.00
Deferred Rent		3,387.66	
TOTAL LIABILITIES		808,028.94	4,243,575.02
	NET ASSETS		
Beginning Net Assets		1,014,127.84	497,751.25
Current Year Change in Net Assets		268,456.11	516,376.59
TOTAL NET ASSETS		1 202 502 05	1 014 127 94
		1,202,303.95	1,014,127.04

2012 REVENUE SOURCES



2012 TOTAL REVENUE: \$3,457,300,25 | \$3,188,844,14 **2012 TOTAL EXPENSES:**



ABOUT START



ENABLING RESEARCH FOR ACTION



ENCOURAGING EFFECTIVE Communication and Networking



PROMOTING INNOVATIONS IN LEARNING



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International START Secretariat

2000 Florida Avenue NW, Suite 200 Washington, DC 20009 USA

http://www.start.org

+1-202-462-2213

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