



## The Global Change SysTem for Analysis, Research and Training (START) Submission to SBSTA 40

START International Inc. (START) is an internationally recognized research NGO that promotes research-driven capacity building to advance knowledge on GEC in the developing world. START's vision is *a world in which developing countries strengthen their capacities to produce and use science for sustainability*. Founded in 1992, START has been incorporated, and over the past two years transitioning into an independent nonprofit organization, with a US 501 (c)(3) status. START's commitment to building capacity through promoting multidisciplinary and multi-sectoral research and assessment activities and science-based communication has contributed significantly to enhancing the capabilities of individuals and institutions in Africa and Asia-Pacific to undertake global environmental change research which not only help inform local and national policy and decision-making processes but also contribute towards global processes (e.g. IPCC reports). This brief report highlights START's recent research and capacity development programs and activities in light of this year's research dialogue at the Fortieth Session of the Subsidiary Body for Scientific and Technical Advice (SBSTA 40).

### Highlights form START programs

#### *GEC Research in Africa*

START's Grants for GEC Research in Africa Program supports one-year projects for researchers from African universities, research institutes, and research-oriented non-governmental organizations. The research teams are required to be multi-disciplinary and are typically comprised of individuals from more than one institution, sometimes in collaboration with European or North American partners. The research projects cover a range of global environmental topics, spanning such issues as livelihoods and food security in rural communities in Tanzania and South Africa to validation of regional climate models of the West African monsoon to biogeochemical processes in the Great Lakes region.

Since 2004, START has promoted place-based integrated research through this program which 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. To date, the Program has supported 105 projects with principal investigators from 24 countries. The increasing number of proposals submitted for program consideration since 2008 suggests the high level of demand and need for such a program in Africa. The GEC Grants Program has, to date, involved over 125 institutions in collaborative research amongst African, and between African, European, and North American universities, research institutes, and non-government organizations. Principal investigators (PI) have represented 65 institutions across 24 countries. Also, over 300 students, predominately at the postgraduate level have worked on awarded grants.

In 2011, START awarded grants to research teams in 16 African countries to examine how changes in ecosystem services affect livelihoods and food security, the potential for promoting adaptation through diversification of farming systems, and climate change impacts on staple food crops. In November 2012, START also convened a Research and Learning Forum created a space to present research, and catalyze knowledge sharing, creative strategizing and future collaboration through face-to-face interactions among recipients of 2011 GEC grants and other regional and international experts. Targeted training was designed to strengthen future research design and promote increased and more effective communication between communities of science, policy and practice. In 2013, START awarded 11 research teams from Morocco, Nigeria, Uganda, Zimbabwe, South Africa, Colombia

and the US; the theme of 2013 GEC research is *global environmental change, agriculture and food security*, with an emphasis on understanding linkages to ecosystem services and sustainable livelihoods. START is currently working to secure funding for the next phase of this program 2015-2019.

### *Adaptation research in Africa*

The *African Climate Change Fellowship Program* (ACCFP), collaboration between the University of Dar es Salaam and START, promotes innovative research and education on adaptation in Africa. The program 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, through Policy Fellowships, Doctoral Research Fellowships, Post-Doctoral Fellowships and Teaching Fellowships. Through three rounds of the program, 180 Fellows from 25 countries in Africa have worked at 15 African ‘host’ universities and research centers to complete their studies. The Fellowships cover areas of food security, human health, ecosystem services, and disaster risk reduction. In 2012, START organized a 5-day *ACCFP Writing Retreat* designed to enable a small, committed group of ten Round 1 Fellows to rework, refine and improve manuscripts based on their ACCFP Fellowship projects. The manuscripts have been published in a Special Issue of *Environmental Development* entitled: *Climate change risk management in Africa*, Vol. 5, (2013) 1-182.

The next phase of the ACCFP, expected to kick off in late 2013, will include additional rounds 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. Funded by IDRC, the Program’s expected results include: 30 African experts in climate change science, policy, and teaching; journal articles and thematic synthesis papers; and, empirical evidence to guide adaptation planning and policy in Africa. The program will link the existing network of fellows, alumni, and participating organizations to policymakers to support knowledge exchanges and to stimulate adaptation action.

### *Advancing knowledge about global environmental change, agriculture and food security in the urban context*

**Assessments of urban and peri-urban agriculture and climate change:** START in partnership with UNEP, WMO, IPCC, USAID, the University of Ghana, the University of Dar es Salaam and the Bangladesh Centre for Advanced Studies is leading a 9-city assessment effort on urban and peri-urban agriculture that includes examination of climate issues that have bearing on urban agriculture. Interdisciplinary teams of scientists are carrying out the assessment in Dakar, Senegal; Tamale, Ghana; Ibadan, Nigeria; Dar es Salaam, Tanzania; Kampala, Uganda; Addis Ababa, Ethiopia; Dhaka, Bangladesh; Kathmandu, Nepal; and Chennai, India. The assessment focuses on how rapid urbanization and global environmental change, including climate change, could affect food production systems in and around these cities. Such production systems generate much of the non-staple foods that contribute significantly to nutritional security for urban dwellers and are a key livelihood resource of the urban poor.

**Workshops on urban/peri-urban issues:** START hosted a pair of workshops that examine critical climate information needs for urban areas in 2013. In February, START, with the support of CDKN, co-organized a workshop with the University of Cape Town in Dar es Salaam, on the role of climate information for decision making in the context of peri-urban areas facing land-use pressures from urban encroachment. Teams of experts from 5 African cities participated. In March, START, with the support of SIDA, USNSF and CCAFS, organized a workshop in Addis Ababa, focusing on potential interactions of urban food security and climate change

### *Building skills for interpretation, analysis and application of climate model data in Africa*

START is partnering with the WCRP, the Climate Systems Analysis Group at the University of Cape Town, the International Center for Theoretical Physics and the Swedish Meteorological and Hydrological Institute, the Climate and Development Knowledge Network and the UNDP Africa Adaptation Programme to promote skill

development for analyzing and interpreting data generated from the WCRP-led Coordinated Regional Downscaling Experiment (CORDEX) initiative. The training program engages African hydro-meteorology and climate experts with vulnerability and adaptation experts. Over 40 Africans have been engaged. In 2012, START, the University of Cape Town's Climate Systems Analysis Group, ACMAD and UNDP-AAP held a workshop in Ouagadougou, Burkina Faso, examining how climate information can be better utilized to inform the management of climate sensitive diseases in West Africa, engaging 35 participants from 12 African countries.

### *Supporting adaptation planning in vulnerable cities*

START's ongoing, multi-year program "*Cities at Risk (CAR)*" promotes and supports the development of urban adaptive capacities in Asian coastal megacities, with particular emphasis on integrating science and policy in managing and reducing risks and vulnerabilities brought on by climate change and urban growth. The program engages scientists, city planning professionals, representatives from policy and development organizations and other civil society practitioners in visioning exercises, training on vulnerability assessments and communication initiatives. This effort is in collaboration with START's Southeast Asia Regional Research Center, the East West Center, Asia-Pacific Network, and Academia Sinica based in Taipei. START is currently working on application of tools such as social vulnerability mapping and robust decision-making in Asia. Currently, the cities at risk program is being expanded to cover African cities; a scoping workshop was held in Durban in March 2013, bringing together 34 participants mostly from Africa, including academics, practitioners and municipal representatives to assess knowledge and capacity needs in urban Africa.

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.

### *Promoting research on disaster risk reduction and global environmental change*

*Integrated Research for Disaster Risk (IRDR) Program.* Over the next several years, START will be engaged in international capacity building activities to support the Science Plan of the Integrated Research for Disaster Risk (IRDR) program— a global initiative co-sponsored by ICSU, the United Nations International Strategy for Disaster Reduction, and the International Social Science Council. The three IRDR priority themes are characterization of hazards, vulnerability and risk; understanding decision-making in complex and changing risk contexts; and reducing risk and curbing losses through knowledge-based actions. In October 2012, START and the IRDR International Center of Excellence (ICoE) in Taipei, together with IRDR International, ICSU and Taiwan's National Science and Technology Center for Disaster Reduction (NCDR) co-convened Advanced Institute on Data for Coastal Cities at Risk, providing 29 international participants from Asia and Africa with the enhanced understanding, skills, and resources to use and collect data for coastal cities related studies in their own countries. The 6-day intensive training event included educational modules, hands-on interactive exercises and field visits.

### *Risk Interpretation and Action: Decision Making under Conditions of Uncertainty*

A 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 land-use 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.

### ***Disaster Risk Reduction and 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.

### ***Promoting Global Change Research, Education and Outreach***

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 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.

### *Global Observation of Forest and Land Cover Dynamics (GOFC-GOLD)*

START, with funding from NASA, is involved in capacity building in the developing world on Global Observations of Forest Cover and Land Dynamics (GOFC-GOLD). The effort aims to improve the quality and availability of remote-sensing observations of forests and land cover at regional and global scales, and to produce useful, timely, and validated information from these data for application in land cover/land use management and research by a wide variety of users. During May 2012, START supported the "GOFC-GOLD Workshop on Monitoring of Land Cover Change using Remote Sensing" for young scientists with skills and experience in spatial data analysis and management of large datasets of space-based and in-situ observations of forests and other land cover. The 8 selected Fellows, from Argentina, Congo Brazzaville, D.R. Congo, Ghana, Mexico, Mozambique and Vietnam, spent two weeks at the USGS Earth Resources Observations and Science (EROS) Center in Sioux Falls, South Dakota for training on earth observation data. This was followed by two weeks of advanced training at Boston University, which focused on data analysis and applications. The Fellows have submitted proposals for funds in support of activities in their home countries for analysis, application, and dissemination of region-specific earth observation data, which can be used by a wide range of stakeholders. START has also helped facilitate similar meetings in Russia, Bulgaria and Chile in 2012 and, in 2013, in Tanzania and India. In April 2013 START will be facilitating participation of 15 scientists for a GOFC-GOLD Symposium with Land Cover and Fire Implementation Team in Wageningen, the Netherlands. Four similar meetings were held in Japan (June 2013), Maputo (June 2013), Prague (June 2013) and Tashkent (Oct 2013). In 2014, START is facilitating, among others, participation of developing country scientists in training sessions on biodiversity monitoring with earth observation held in London (June 2014); Air Quality in Asia and South East Asia (to be held in Hanoi 2014) and Data initiative to be held in South Dakota and Boston (August 2014).

### *Young Scientist Sessions and Support*

START supports the participation of young scientists from Africa and Asia in national, regional, and international conferences and workshops. Rooted in the values that originally motivated the formation of START, this 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.

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. 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.

### **START Achievements and link to the UNFCCC and IPCC Processes**

#### **Achievements of START, related to the UNFCCC/IPCC process, working with its partners, include:**

- Establishment of a network of regional science committees and research centers for global change research and capacity building in Africa, Asia and the Pacific;
- Leveraging of substantial resources to strengthen the START network and support the programmatic work of the network;
- > 1000 developing country scientists involved in global change research and training;
- 100s of peer-reviewed papers published in journals;
- > 35 START project participants involved as authors of IPCC 4<sup>th</sup> Assessment, Millennium Ecosystem Assessment, and International Assessment of Agricultural Science and Technology; many more have been taped in the just released IPCC 5<sup>th</sup> Assessment report;
- > 120 START supported papers referenced in IPCC 4<sup>th</sup> Assessment and many more used in AR5.

#### **Sample publications (2013) by START grantees and alumni include the following:**

- Gondwe, M.J. and W.R.L. Masamba. 2013. Spatial and temporal dynamics of diffusive methane emissions in the Okavango Delta, northern Botswana, Africa. *Wetlands Ecology and Management*.
- Fabiyi, O.O and J. Oloukoi. (2013) Indigenous knowledge and local adaptation strategies to flood in coastal communities of Nigeria. *Journal of Indigenous Social Development*. 2(1): 1-19.
- Nguetsop, V.F., I. Bentaleb, C. Favie, S. Bietrix, C. Martin, S. Servant-Vildary, and M. Servant. (2013) A late Holocene palaeoenvironmental record from Lake Tizong, northern Cameroon using diatom and carbon stable isotope analyses. *Quaternary Science Review*. 72:49-62.
- Shiferaw, A., H. Hurni, and G. Zeleke. (2013) Long-term changes in soil-based ecological services at three sites in Ethiopia. *Journal of Ecology and Natural Environment*. 5(8):172-180.
- "Incorporating traditional knowledge in post disaster recovery to integrate climate change adaptation and disaster risk reduction" in *Disaster Recovery- Used or Misused Development Opportunit*. (2013) Anshu Sharma, Sahba Chauhan (ed. Rajib Sgaw) Springer
- J. Zake & M. Hauser (2014): Farmers' perceptions of implementation of climate variability disaster preparedness strategies in Central Uganda, *Environmental Hazards*, DOI: 10.1080/17477891.2014.910491

#### **Contact:**

Dr. Hassan Virji, Executive Director: [hviri@start.org](mailto:hvirji@start.org)

Dr. Jon Padgham, Deputy Director: [jpadgham@start.org](mailto:jpadgham@start.org)

Website : [www.start.org](http://www.start.org)