Lessons Learned from the START Programs’ Capacity Building Experiences

Prof. Roland Fuchs, Director START

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Introductory Remarks

• Global change is occurring at an accelerated pace. Sustainable development requires addressing the challenges of global change.

• Responses must be informed by scientific understanding: we do not yet have sufficient knowledge on many critical issues.

• Improved scientific understanding requires capacity building especially in the developing countries and emerging economies.
Growing Concerns:

- Accelerated Temperature Rise
- Increasing Number and Intensity of Storms
- Glacial Lake Outbursts
- Melting of Glaciers and Ice Caps
- Sea Level Rise
- Ocean Acidification
- Abrupt Change
  - Ocean Circulation
  - Monsoon System

Future Impacts of Climate Change

**Six Sectors:**
Fresh water Resources and their Management; Ecosystems, their Properties, Goods, and Services; Food, Fiber, and Forest Products; Coastal Systems and Low-lying Areas; Industry, Settlement and Society; Human Health

**Eight Regions:** Africa, Asia, Australia and New Zealand, Europe, Latin America, North America, Polar Regions and Small Islands
Intergovernmental Panel on Climate Change Working Group II

SECTORS:

Water: Water supplies stored in glaciers and snow cover are projected to decline, reducing water availability in regions supplied by melt-water from major mountain ranges, where more than one-sixth of the world population currently lives.

Ecosystems: ~20-30% of plant and animal species assessed so far are likely to beat increased risk of extinction if increases in global average temperature exceed 1.5-2.5°C.

Food: At lower latitudes, crop productivity is projected to decrease for even small local temperature increases (1-2°C). At higher latitudes crop productivity is projected to increase for temperature increases of 1-3°C, then decrease beyond that.

Sectors continued:

Coasts: Many millions more people are projected to be flooded every year due to sea-level rise by the 2080s.

Industry, Settlement and Society: The most vulnerable industries, settlements and societies are generally those in coastal and river flood plains, those whose economies are closely linked with climate sensitive resources, and those in areas prone to extreme weather events, especially where rapid urbanization is occurring.

Human Health: Projected climate change-related exposures are likely to affect the health status of millions of people, particularly those with low adaptive capacity.
START’s Major thrust:

Capacity Building for Managing and Adapting to Climate Change and Variability

“climate related risk is one of the central development issues of our time and the achievement of the UN Millennium Goals will not be possible until climate related risks are significantly managed and reduced.”

UNDP: United Nations Development Programme 2003

START Mission

• To develop regional networks of collaborating scientists and institutions to conduct research and assessments
• To enhance scientific capacity in developing countries
• To mobilize the resources for activities in developing countries
START Organizational Relationships

- WMO
- IOC/UNESCO
- ICSU
- ISSC
- WCRP
- IGBP
- IHDP
- DIVERSITAS
- ESSP
- START
- Region A
- Region B
- Region C

Capacity Building
Underlying Principles of START’s Capacity Building Programs

- Human capacity building is much more than training
- If capacity building is to become sustainable it must be research-driven
- Active participation in long-term research initiatives with other scientists and international science programs is an important goal
- A multiplier effect is best achieved with early / mid-career scientists

Modalities of Capacity Building

- Regional science planning
- Collaborative research networks
- Research workshops
- Institutional development
- Support of attendance at international conferences
- Partnering organizations
- Short-term fellowships
- Visiting scientists
- Visiting lecturers
- Dissertation / long-term fellowships
- Small grants programs
- Overseas affiliations
- Young Scientist opportunities
START Visiting Fellowship Programs

Goal
• Increase the number of developing country scientists who contribute to global change research

Process
• Global Change Fellowships are offered at the graduate and post-graduate levels to young scientists from Africa, Asia, and Oceania
  • The duration of these fellowships is ordinarily one or two semesters (i.e. typically 4-8 months).
  • Fellows collaborate with senior mentors in leading laboratories or institutions in any part of the world, where research is being conducted on relevant regional aspects of global change.

Desired Outcomes
• Participants contribute to related aspects of sustainable development strategies for their respective countries and regions through collaborative relationships with their colleagues, both in developing and developed countries.
  • Publication in a peer-reviewed journal and/or development and submission of a research proposal.
  • Long-term collaboration between the individuals and institution involved is another desired outcome of the programme.

Fellowship Program Example: African Doctoral Research

42 Fellowships awarded
11 PhD degrees completed

• Project funded for five years (2002-07) by Norwegian Agency for Development (NORAD) in an effort to promote regional capacity building for global environmental change research in Africa.

• Fellowships available only to African nationals, tenable at African Universities for up to two years of study leading to completion of PhD dissertation or for the final year of graduate study combined with one-year of post-doctoral research.

• Awards provided for tuition, research materials, and a small living allowance.

• Program prepares participants for various positions in academia, governments and the private sector where they may continue their work on GEC issues pertinent to national priorities.
Fellowship Program Example: African Climate Change Fellowships

• New project funded by IDRC
  – In conjunction w/ Climate Change Adaptation in Africa Program (CCAA)
  – $2 million in funding

• Partners: START, University of Dar es Salaam, African Academy of Sciences

• Program will support:
  – 20 Policy Fellows
  – 20 Doctoral Research Fellows
  – 10 Post-doctoral Fellows
  – 8 Teaching Fellows

• Workshop Jan 2008 in Nairobi

Advanced Institutes: General Model

1. Intensive workshop
2. Research grant
3. Synthesis Workshop
Advanced Institutes Example: CLIMAG

Initial Workshop: Advanced Training Institute on Climatic Variability and Food Security, Palisades, New York, USA 8 - 26 July 2002

Research: A total of 19 seed grants were given to develop research

Synthesis Workshop: Held at the World Meteorological Organization (WMO) in Geneva, Switzerland on 9-10 May 2005

Results:
Objective is to promote Global Carbon Project and Global Water Systems Project-related research in SARCS member countries, and to provide advanced training on the carbon measurement, water resources, monitoring and modeling techniques; foster a regional research network in the region.

Each year 30 participants selected from 80 applications from Southeast Asia and East Asia regions;

Most participants are senior technicians and junior faculty members from government, NGO institutions and academic communities including: Agency for the Assessment and Application of Technology, BPPT, Indonesia; Philippine Rice Research Institute, the Philippines; University of Malaysia; National Physical Lab. (Center on Global Change, SASCOM), Delhi, India; SEA START RC at Chulalongkorn U. in Bangkok; etc.
Photos of Participants

Why Regional Research Networks?

Regional research networks play an important role in enhancing research capacity and producing research results. They may:

- Serve as focal points for research cooperation
- Mobilize researchers for specific research tasks
- Act as research councils in the region
- Enable cooperative analyses and joint undertakings to address shared problems
- Provide a platform for joint advocacy

Collaborative Research Networks: Miombo

Miombo occupy about 5 million square km, and support about 100 million people with food, fuel, building materials, medicines and water.

OBJECTIVES
To develop a better understanding of:

• How land use and land-use change in miombo affect land cover and associated ecosystem processes
• What impacts these changes are having on peoples livelihoods
• What contributions these changes are making to global change
• How global changes affect land-use dynamics and ecosystem structure and function?

The Miombo Network is a vehicle for mobilizing and enhancing regional scientific capacity in sub-equatorial Africa to study the patterns, causes and consequences of land use and land cover change in the miombo ecosystem of Southern Africa.

Regional Nodes of the Miombo Network in Southern Africa and Points of Contact

Sokoine School of Agriculture (Rogers Malimbwi)
Univ of Dar es Salaam (Pius Yanda)
Malawi - FRIM (Denis Kayambazinthu; Steve Makungwa)
Nampula - Mecuburi Forest Reserve (Patrick Mushove; Zacharias)
Catholic University, Beira (Father Mike Schuilteis)
Zambia Met Services (Allan Mulando)
Univ of Zambia (Michael Banda); Kafue National Part MA Project (George Kisali)
Zimbabwe Forest Commission (Dominick Kwesha); University of Zimbabwe (Tim Lynam; Chris Magadza); Met Services (Leonard Unganai)
Unif of Witwatersrand (Bane Marjanovich); CSIR (Bob Scholes)
Stellenbosch University (Isla Grundy)
Mozambique: Eduardo Mondlane University (Almeida Sitoe); Cenacarta (Manuel Ferrao) INIA (Mario Ruy Marques); IUCN (Islda Nahtumbo)
Assessments of Impacts & Adaptation to Climate Change (AIACC)

- Project period: 2001 - 2007
- Objectives
  - Build scientific capacity
  - Advance knowledge
  - Link science & policy communities
- Management: START, TWAS, UNEP
- Collaboration with IPCC
- Donors: GEF, CIDA, USAID, USEPA, Rockefeller Foundation, + co-funding

AIACC on the Map

Countries Involved in AIACC Regional Studies

24 REGIONAL STUDIES involving 46 COUNTRIES
5 projects in Latin America
11 projects in Africa
5 projects in Asia
3 projects in Small Island States
(Fiji, the Cook Islands, Seychelles, Comoros, Jamaica, Barbados, Trinidad and Tobago, and St. Kitt)
"The record and outputs of the AIACC are impressive" and "benefited substantially the IPCC's Fourth Assessment Report. In view of this success, it is imperative that we build on the experience and achievements of AIACC and develop the next phase of such work to help advance new knowledge for a possible Fifth Assessment Report."

-R.K. Pachauri, Chairman, IPCC
Recognizing Young Researchers

- START Young Scientist Awards
- START Young Scientists' Conferences
  - 2003 - Trieste, Italy
  - 2006 - Beijing, P.R. China

START Young Scientist Awards

- START's Young Scientist Award program recognizes the achievements of outstanding young scientists from developing countries in Africa, Asia and the Mediterranean region.

- Award decisions are based on peer reviewed published journal articles. In keeping with START's mission of conducting research on regional aspects of global change, the journal article should focus on some aspect of global change research that is being conducted on a regional level or has a strong regional focus.

As of 2007, START has made over 263 young scientist awards.
1st International Young Scientists’ Global Change Conference

16-19 November 2003
Third World Academy of Science/ICTP
Trieste, Italy

Organized by START on behalf of ESSP
Partners: APN, IAI, DGIS, ICSU & USGCRP

CONFERENCE GOAL: to identify the future global environmental change leaders and to engage them in the GEC programs and regional research networks

>1000 Applications
640 Applications chosen for review
84 Applications selected

Keynote presenters: Prof. Paul Crutzen, Dr. Kathy Hibbard, Sir John Houghton, Dr. Roberto Sanchez and Dr. Will Steffen

2nd International Young Scientists’ Global Change Conference

5-8 November 2006, Beijing, People’s Republic of China

- c. 1000 letters of interest
- c. 700 applications
- 100 young scientists selected
- 93 attended (40 papers, 53 posters)
- Conference Chair: Peter Tyson
- Keynote speakers: Paul Crutzen and Congbin Fu
- Interaction with ESSP scientists
- All participated in the OSP
- Funding Partners: NSF, APN, IAI, DGIS, WOTRO, Norway, Switzerland, EC, ESF, AIMES
- Local host: CMA
Concluding Remarks: Lessons Learned

- To be sustainable, capacity building must be research driven
- Many types of research-linked capacity building should be used;
  - One size does not fit all
  - One type can reinforce another
- Capacity building is much more than training
- Importance of building self-confidence through;
  - recognition
  - rewards
- Importance of senior mentors/champions
- Importance of engaging in international collaborative programs for capacity building