

# newsletter

## NCCR North-South

Research Partnerships for Sustainable Development

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### Focus on East Africa



*Rapid technical development and increased accessibility of high-precision satellite imagery is gradually promoting the use of spatial data and information in local development initiatives. Photo: Albrecht Ehrensperger*

### Data for development

Scarcity continues to be a salient theme in the context of East Africa: scarcity of natural resources such as water and fertile soils, but also scarcity of data for use in solving various challenges. Having the right type of data to inform decision-making can make all the difference. In some cases the right data may indeed be available, but not in a user-friendly form. Scientists provide evidence which can guide decision-making; by packaging it in ways that facilitate its wide dissemination and use, they can help to ensure access to those who need it.

Filling in the gaps in data may lead development interventions in unforeseen directions. For example, while it may seem self-evident that interventions in a water-scarce area should simply address water shortages, data collected on the priorities of local residents may reveal other more pressing concerns. In one project highlighted in this newsletter, researchers working in a particularly water-scarce area found that local residents viewed the need for better education and infrastructure services as more acute.

Generating good development data is crucial; putting it to good use equally so. Data relevant to development must not be left to collect dust in university archives – it must be placed in the hands of those who will act on it.

## Editorial



Boniface Kiteme  
Regional Coordinator  
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Director of CETRAD  
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NCCR North-South research in East Africa focuses on devising and implementing participatory approaches to environmental and socio-economic development challenges. Our research in the region – Kenya, Tanzania, Uganda, and now, Burundi – also seeks ways of tapping into existing potentials in order to enhance sustainability. Since its establishment nine years ago, the Nanyuki, Kenya-based NCCR North-South office has overseen nine PhDs and over 30 master's degrees in the management of water and other natural resources; climate variability and change; livelihoods; vulnerability and resilience; and integrative knowledge for syndrome assessment and mitigation.

The results of these research activities have helped strengthen the scientific capacities and competences of participating institutions and researchers, in addition to building a strong knowledge and information base. Through the programme's "PAMS" vehicle for implementing pilot projects and testing research innovations (approaches, methods, tools), NCCR North-South East Africa was able to implement seven projects in concert with researchers, local decision-makers and the beneficiary communities. Besides testing and validating research innovations, these "partnership actions" have provided useful vehicles to promote mutual learning and knowledge-sharing between academic and non-academic partners in sustainable development.

With the NCCR North-South programme now well into its third phase (2009 – 2013), our emphasis has shifted to post-doctoral research. Consequently, the research agenda is patterned around seven research projects that focus on: (1) livelihood options and social exclusion; (2) sexual and reproductive resilience; (3) genderised sanitation; (4) people's access to services and resources; (5) land resource potentials; (6) landscape transformation; and (7) features of resilience and transformability. These broad themes will host another set of more than ten NCCR North-South and associated PhDs and master's that are envisaged in the next four years.

This newsletter summarises some of the key innovations arising from the research activities of the last nine years, and points to the general research direction envisioned for the coming years.

I wish you enjoyable reading.

## Focus on East Africa

### Better data for urban development

For the citizens of Nakuru, Kenya's fourth-largest city, it was difficult – if not impossible – to obtain reliable, up-to-date data necessary for urban development projects. In a survey conducted with local partners, NCCR North-South researcher Albrecht Ehrensperger and a team of the Municipal Council of Nakuru asked city residents about the kind of spatial information they urgently needed, but had no access to.

"People planning to build houses wanted to know the location of water pipes and sewer-

age systems; others wanted better information on schools, including teacher-pupil ratios in given areas," says Ehrensperger. "Security was also a big issue: 'no-go' zones, for example – this is subjective, but we asked people about where they avoid passing at night." This information was later used by the Nakuru business association to plan the improvement of street lights.

With the results of the survey, researchers created a multilayered digital map of the city, enabling users to display one or more layers of spatial information in a highly readable manner. The map and data were then packaged as a user-friendly map viewing software



*A technician from the Nakuru municipal council preparing information mapped by community representatives for inclusion into a Geographic Information System.  
Photo: Albrecht Ehrensperger*

program called NakInfo, and made accessible to the general public on CDs and at an information centre near the town hall in Nakuru.

A wide range of people, from community representatives to students, have since made use of NakInfo, either to plan specific projects, such as refuse collection in low-income areas, or to prove the need for development in certain parts of the city: having a map makes it easier to back up claims that a certain area is lacking a school, for example. Making data available in this way can help to increase the participation of people in local communities, and can facilitate dialogue with policymakers, NGOs as well as private investors. The Local Urban Observatory Project received the ACM Eugene



*Representatives of Nakuru's local authorities and of the community are trained on the NakInfo software program, which features over 40 layers of spatial data for use in urban development planning and monitoring.  
Photo: Albrecht Ehrensperger*

L. Lawler Award for humanitarian contributions within computer science and informatics. Solomon Mbuguah, the project coordinator, was invited to San Francisco to the award ceremony.

“Another one of the project’s major achievements was capacity development,” says Ehrensperger. “To digitise the information, both of our partners at the municipal council were trained as GIS [Geographic Information System] technicians and now manage the project themselves.” In addition, officers from several other municipal departments attended NakInfo training courses.

NakInfo is currently being further developed into an online version, which will be made available on the city’s website and continuously updated. These follow-up activities are funded through the Eastern and Southern Africa Partnership Programme (ESAPP), which is coordinated by the Centre for Development and Environment at the University of Bern, Switzerland.

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## Water: quantity not quality

For development interventions to be truly effective, implementers must take the needs of local people into account. How do they perceive their own development needs? To find out how best to support locals in the upper and lower regions of the Ewaso Ngiro catchment, in the Mt Kenya region, Boniface Kiteme spoke directly with community members.

On the one hand, people living in upstream areas gave a high priority to water – its use and conservation – and other environmental issues, including forest conservation, and conflicts between humans and wildlife. Inhabitants of the downstream regions, on the other hand, prioritised development needs related to public services, such as education, infrastructure, health services, crime and security, and access to markets.

“This was a huge surprise,” says Kiteme, adding that he expected communities in the downstream regions to prioritise water-related issues too. “This can only mean that the communities in the lower reaches, which are actually the dry regions, have developed more effective coping strategies and therefore would

rather be supported in gaining access to better social services, which are largely lacking.”

Also unexpected was that water quality was not cited as a major priority. “Given the growing water scarcity and ever greater competition for it, the amount of available water becomes more important than its quality,” says Kiteme.

Upstream, Kiteme’s team focused on water use and management as well as human–wildlife conflicts, in particular the potentially dangerous proximity of human settlements to areas where elephants roam. Generally encouraged by the successes of existing grass-roots organisations, the team adopted approaches that promoted establishment of further bottom-up organisations aimed at building local capacity.

To tackle the issue of risky encounters between humans and elephants, the research team trained community-based elephant scouts to identify danger areas and to communicate these to the Kenya Wildlife Service. The training efforts culminated in a comic book, produced with the help of the community and funded by ESAPP, on how best to coexist with elephants.

Downstream, Kiteme’s team focused on building capacity within the community in the commercial production and marketing of gum arabic.

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## Water as an ecosystem service

The Pangani Basin is a large watershed shared by Kenya and Tanzania, covering an area of 43,000 square kilometres. A region for which there is decidedly scant environmental data, Benedikt Notter sought to quantify its water-related ecosystem services, with the aim of identifying possible scenarios for 2025.

Notter defines an “ecosystem service” as the provision of a valued output from the (eco) system, which derives its value according to how well it matches stakeholders’ requirements in terms of quantity, quality, location, and timing of availability. Water is a resource; its ability to satisfy these four criteria for a given purpose determines its performance as an ecosystem service. Take drinking water, for example. As an ecosystem resource, it should



*An irrigation furrow in the Usambara Mountains, Tanzania, diverts water from a nearby river to irrigate the fields below it. Lining furrows such as this one would reduce seepage: currently, only 25% of water running through unlined furrows reaches the fields it is meant to irrigate.*  
Photo: Benedikt Notter

(1) be available in a certain quantity per person, per day, (2) fulfil national water quality standards, (3) be available within a certain distance from individuals’ homes, and (4) be available at least 95% of the time.

“Results clearly show that there is not primarily a limitation of naturally available water, but rather of access and efficiency of use,” says Notter. According to the results of his research on the Pangani Basin, provision of water for domestic use and agriculture could be sustained in the region – and, in some areas, even improved – by the year 2025; this despite anticipated higher demand on water supplies. Accomplishing this, however, will require investments in water infrastructure, such as repairing leaks in water mains and lining canals.

However, even if it is possible to make improvements in the water sector, natural land ecosystem services will decrease. As the population expands, its demands on finite land-based resources will increase, thus reducing the per capita availability of land-related ecosystem services – services as diverse as firewood for cooking, materials for building, the production of food, or the availability of sacred spaces that fulfil spiritual functions. Particularly in times of crises, such as when droughts strike, inhabitants will struggle with the diminished availability of essential land-based ecosystem services, warns Notter.

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Benedikt Notter now works as GIS Coordinator at the Office for the Environment in the Swiss canton of Solothurn.

## Integrating water and forest management

The Pangani River Basin in Tanzania is also the focus of Tuli Msuya's recently-completed PhD. Msuya assessed how local institutional frameworks promote or limit sustainability in the basin's watershed management. In the study, watershed is defined as the water and associated forest vegetation managed by multiple stakeholders and institutions.

"The institutional framework is fragmented and poorly coordinated, threatening sustainable watershed management in the Basin. This is in stark contrast to the integrated water and forest management of pre-colonial times," says Msuya.

There are separate institutions dealing with the water and forest sectors. There are nine river basins in Tanzania, including the Pangani River Basin. Each river basin has its own water board, responsible for coordinating available water resources. This division along hydrological boundaries is known as the "basin management approach".

Forests are managed separately, despite their important role in the preservation of water. Catchment forests are tropical, moist forests mainly found in mountainous areas. They are vital for the ecosystem services they provide, such as catching water, stabilising and regulating water flows, and reducing erosion.

Unfortunately, there are few lines of communication between the various institutions overseeing forest management. Further complicating matters, the institutions have limited power or capacity to prevent local deforestation or degradation, owing to a lack of personnel and funding.

At the grassroots level, traditional authorities are starting to play a greater role in managing water and forests in an integrated manner. There are forest caretakers who, on an informal basis, regulate the use of water preserved in the sacred or micro-catchment forests. At the same time, there are caretakers of traditional springs, wells, and furrows who control the management of associated forests, trees, and other vegetation.

Msuya's PhD study seeks ways of improving the integration and coordination of the various watershed institutions at different levels. For the management system to truly function, according to Msuya, the diverse institutions

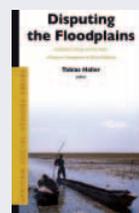


*The Pangani river and its associated forest vegetation are crucial to the livelihoods of people living in the area: irrigation, industry, mining, fishing, water for domestic use and for livestock; forests for firewood and charcoal, building poles, furniture. Photo: Tuli Msuya*

currently handling water and forest management will have to be integrated into a single institutional framework. A number of sub-catchment watershed committees could be formed that would have to report to a basin watershed board. Informal or traditional water and forest caretakers should also be represented. A broader integrated framework would lead to more equitable water distribution thanks to increased bottom-up participation in the decision-making process. This, in turn, could be used to motivate people to pay for the water they consume, supplying the management system with much-needed funding.

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### Book on African wetlands



NCCR North-South Alumnus Tobias Haller has edited a new book, *Disputing the Floodplains: Institutional Change and the Politics of Resource Management in African Wetlands*. It presents case studies from Mali, Cameroon, Tanzania, Zambia, and Botswana and explores how common-pool resources such as fisheries, pastures, and water were managed in pre-colonial, colonial, and post-colonial times. Notably, the book's foreword was written by Elinor Ostrom, winner of the 2009 Nobel Prize in Economics. Tobias Haller is now an associate professor at the Institute of Social Anthropology, University of Bern.

## In a nutshell: NCCR North-South East Africa

The East Africa partnership region is more than just a geographical area of focus for researchers of the NCCR North-South. It is a regional platform of expertise in development-oriented research with extensive infrastructure, databases, knowledge, and experience built up over three decades. This regional research platform has an established partnership network encompassing academic institutions,

government departments, parastatal organisations, civil society, and transnational institutions. Its research is characterised by a highly integrative and context-specific approach. In addition, its integrative scientific capacity and flexible structures allow it to easily accommodate other projects: dissemination of research results, for example, or support of extension services.

## Outlook 2011 – 2013

Constanze Pfeiffer is a senior researcher based in Dar es Salaam, Tanzania, who is co-leading a research project on sexual behaviour in adolescents. Her project co-leader, Collins Ahorlu, is based in Ghana and is investigating the same issues in West Africa. “Adolescents hold the key to our future, as over half the world’s population is under 25,” says Pfeiffer. In many countries, these young people have to overcome numerous challenges to lead healthy lives. Sub-Saharan Africa, for example, has the highest teenage pregnancy rates worldwide, posing a potential threat to health, education, as well as social and economic well-being.



*The research project will provide evidence aimed at developing innovative and effective interventions which are culturally appropriate and socially acceptable, in the field of adolescent reproductive health. Photo: Constanze Pfeiffer*

Current research on adolescents’ reproductive health tends to focus on risk and vulnerability. Pfeiffer and Ahorlu’s project moves beyond these deficit-oriented perspectives by applying the new strength-based concept of “Sexual and Reproductive Resilience”. “Resilience thinking offers policy-makers, practitioners, advocates and researchers a different way of thinking about populations at risk,” explains Pfeiffer. The concept assesses capacities and identifies competences needed on various societal levels – e.g. household, community – in order to overcome sexual and reproductive health risks like teenage pregnancy.

One of the PhD studies occurring within this project is that of Richard Sambaiga, who is studying the sexual behaviour of adolescents in a small but rapidly growing district capital of southern Tanzania, Mtwara Urban.

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Constanze Pfeiffer is currently based at the Department of Sociology and Anthropology, University of Dar es Salaam, Tanzania

- PhD student Edward Bicketi is currently spending time with farmers in one highland and one lowland region in Kenya. Bicketi’s aim is to collect insights into how social learning in farmer groups and farmer field schools triggers change in developing soil and water innovations.
- Also in Kenya, Paul Roden is investigating which development interventions work and which do not in a particular setting. To do so, Roden is questioning local people as well as NGOs in order to determine where there are “matches” or “mismatches” between development interventions and the people they are meant to benefit.
- Urban slum communities in Kampala, Uganda, are the focus of Innocent Kamara’s PhD. In this setting, Kamara is studying the main factors that influence households’ demand for improved sanitation facilities, as well as what factors influence their sustainable use of such facilities.
- Representing the NCCR North-South’s first direct research involvement in Burundi, PhD student Sandra Rubli is examining the dynamics of state reconstruction in the country, which continues to struggle with its legacy of violent conflict.
- Currently based in Dar es Salaam, Tanzania, Provident Dimoso is looking into variations in access to education services across different locations over time. Dimoso aims to identify key socio-economic factors limiting access to education. He is also investigating the effects of limited access to public or private education on household welfare.
- Samuel Kipruto will be asking similar questions in his study area in rural Kenya: what key factors limit people’s access to health and education services, and how do these limiting factors shape household welfare? Kipruto aims to develop spatial datasets to aid poverty analysis and relevant decision-making.

**Alumni Interview**

**Nigerian-born Chinwe Ifejika Speranza currently works at the Bonn-based German Development Institute. She did her PhD within the NCCR North-South on the problem of drought vulnerability and risk in the semi-arid, agropastoral areas of Makueni District, Kenya, and now contributes to NCCR North-South research on adapting to climate change.**

**Chinwe, what brought you to Switzerland and Germany?** After my bachelor's at the University of Nigeria, Nsukka, I got a scholarship to do my master's in Australia, but I also had the option to continue with my studies at the University of Zurich. I chose Zurich. After working for some years in Switzerland and Kenya, I applied for the position of a researcher at the German Development Institute in Bonn.

**You completed your PhD in 2006. How has your research made a difference – can you give a concrete example?** Well, my research has made a difference in various ways. Based on my fieldwork and earlier experience in the field, I designed a training course on "food security and drought management" at CETRAD, targeting relevant government and non-government officers in Kenya and Tanzania. This course has been adapted over time to give more weight to issues such as drought in the context of climate change. I also have to mention that over time, collaborating lecturers and professors from CETRAD and from the Universities of Nairobi and Egerton have contributed to improving the course contents. The course was funded by the Eastern and Southern Africa Partnership Programme (ESAPP) and has run for eight years, with over a hundred alumni. The skills gained through the course have enabled alumni to occupy more responsible positions in Kenya and has become a reference for Kenyan extension practitioners.

CETRAD also designed a local radio programme in Kikamba on agro-pastoral production management, initially based on my research findings, and continuously expanded to incorporate emerging issues. Based on the feedback that CETRAD receives from the many farmers listening to this radio programme, I think we have made some valuable contributions to capacity building. Serving as a resource person, such as in the Nigeria National Stakeholders Workshop on the development of a National Adaptation Strategy and Plan of Action, makes me feel I am making some small but valuable contributions to society.

**What are you currently working on?** I am looking into what I call a resilient adaptation to climate change, how to make such a concept operational, based on the argument that it is not just enough to adapt but that adaptations need to be climate-resilient, to build resilience. So having published my book on resilient adaptation to climate change in African agriculture, I am now focusing on how to make the concept operational, to develop a tool that ministries or organisations can use to monitor their progress towards climate resilience. I am also working on the impacts of development interventions in the context of social-ecological variability in Kenya and what a low-emission development path would mean for agricultural development in Africa.

**What, for you, are the greatest challenges in your current work?** Access to data! I wish I had access to a database of both biophysical and socio-economic data on my study areas in Africa. It takes so much time and resources to collect these data.

**What would you change, if you could?** Well, pertaining to my work, to have better access to data in Africa, and to build up and maintain a really nice database on my African study areas; I wish we could achieve a global consensus on reducing greenhouse gas emissions and on global standards for globally operating actors to be monitored globally and enforced. Personally, if I had the chance and the resources, I would support free education in Africa at least until secondary school level. Without my education I would be among the many Africans whose potentials in this modern world remain dormant. I would also make out more time for learning – the world is changing so fast.

**Where do you see yourself in ten years?** This is now dreaming – I see many options. If I am lucky, I could steadily build up my research capacity to lead a research team of both senior and junior researchers. I could also be a senior researcher in a research team, become a director of an organisation or even the director of my own organisation, provided such positions allow me to maintain an acceptable work-life balance.



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German Development Institute

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## NCCR North-South News

### IGS North-South

Three Swiss universities and two research institutes signed an agreement in July 2010 establishing the International Graduate School North-South (IGS North-South). The IGS North-South has been designed as a follow-up structure to the NCCR North-South, which formally ends in 2013. The participating institutions in the IGS North-South are: the Universities of Bern, Basel, and Zurich, as well as the Swiss Tropical and Public Health Institute and swisspeace. The IGS North-South aims to function as an internationally recognised network of excellence on issues of global change, innovation, and sustainable development.

<http://www.north-south.unibe.ch/content.php/page/id/301>

### CDE: a new interdisciplinary university centre

Sustainable development and global change research have been given a boost in Bern with the official inauguration of the new Centre for Development and Environment (CDE). Originally established in 1988 as a part of the Institute of Geography, CDE is now an interdisciplinary centre of the University of Bern. The CDE will continue to head the NCCR North-South. It will also coordinate the International Graduate School North-South.

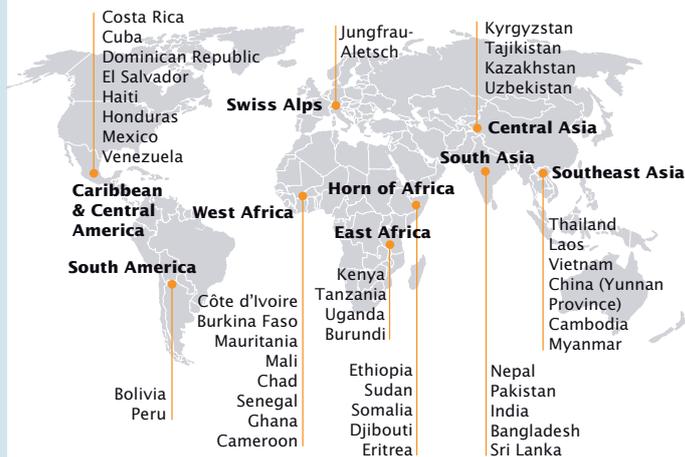
### 5 new Dialogue papers

Five new publications in the NCCR North-South Dialogue series cover:

- Making Research Relevant to Policymakers, Development Actors, and Local Communities (No. 23)
- The State of Statistical Data on Migration and Selected Development Indicators (No. 24)
- Changing Development Discourses over 40 Years of Swiss-Bolivian Development Cooperation (No. 25)
- The Effect of Global Coffee Price Changes on Rural Livelihoods and Natural Resource Management in Ethiopia (No. 26)
- An Analysis of the Coffee Value Chain in the Kilimanjaro Region, Tanzania (No. 27)

Dialogues are working papers that introduce the results of case studies and reflect on concepts and the interface between research and development. <http://www.north-south.unibe.ch/content.php/page/id/230>

## Partnership Regions



## Programme Management

- The NCCR North-South is directed by a board made up of representatives from the Swiss Partner Institutions together with the Regional Coordinators. It is headed by programme directors Hans Hurni and Urs Wiesmann, and coordinated by Thomas Breu.

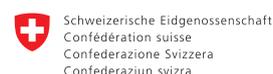
## Swiss Partner Institutions

- Centre for Development and Environment (CDE) University of Bern  
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- Development Study Group (DSG) Institute of Geography, University of Zurich  
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