

newsletter

NCCR North-South

Research Partnerships for Sustainable Development

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NATURAL RESOURCES

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Focus on Natural Resources



The Tunari National Park above the outskirts of the city of Cochabamba, Bolivia, was set up to promote conservation efforts. Often, this means that the people working the land lose important sources of income. Photo: Sébastien Boillat

Reconciling Conservation and People's Immediate Needs

Sometimes, it's the simple solutions that make all the difference. Constructing a terrace, a drainage gutter or simply applying some mulch – spreading dead biomass – on the soil can help to sustain it for long-term use, as research in Ethiopia and Kenya has shown. What's more, increasing soil fertility usually means more carbon is stored. Techniques aimed at reducing dependence on food aid are of relevance in the debate on climate change as well.

But having the technique is one thing; ensuring widespread implementation is another. The challenge of putting good research results to use remains in many regions of the world. One advantage of an extensive global research network such as the NCCR North-South is the intercontinental exchange that takes place, at an individual as well as an institutional level. A second advantage is its excellent connectivity with other international networks working in the same field, such as the World Overview of Conservation Approaches and Technologies (WOCAT).

Of course, what works in one place doesn't always work one-to-one in another; exchanging experiences is indispensable. And so places as distant and diverse as a national park in Bolivia and another in the Swiss Alps are linked in projects on conservation and development.

Editorial



Dr. Thomas Breu
 Coordinator
 NCCR North-South

The world has been changing at an accelerating pace in the last decades, affecting poor countries most. This calls for new knowledge and increased research capacities both in the countries in the North and in those in the South. For this purpose major international donors have increased their investments for development-relevant knowledge in recent years.

Against this background, the NCCR North-South put forth a proposal to continue its partnership-based research programme for a third phase. Main features include the establishment of 15 research projects, continued capacity development and making its research available and usable to policymakers and development practitioners in the South and in the North.

In May 2009, the NCCR North-South was evaluated by an international Review Panel. In its very positive feedback, the Panel particularly highlighted the programme's high-quality research, the strong involvement of the Southern partners and the relevance of the results for development cooperation. Based on this evaluation, the Review Panel has recommended that the NCCR North-South continue for another four years up to 2013, with a total budget of 26 million Swiss Francs.

As we enter our third phase, we would like to extend our thanks to the 400 team members of the NCCR North-South, and look forward to continued contributions to global change research and sustainable development.

NCCR North-South News and Events

“Infopoints” for Swiss Alps Jungfrau-Aletsch

The UNESCO World Heritage Site Swiss Alps Jungfrau-Aletsch has set up a public information system. The system – consisting of “infopoints” – will enable visitors and the local population to obtain information on the natural and cultural highlights of the World Heritage Site and the surrounding region. It will also raise awareness of the topic of sustainable development. The first four infopoints will become available to the public in July 2009, with a special opening ceremony held in the village of Kandersteg on 11 July 2009. The UNESCO World Heritage Site is a research focus of the NCCR North-South in Switzerland. Further information: www.jungfrau-aletsch.ch

Perspectives: Decentralisation

The NCCR North-South has published a new book in its *Perspectives* series. *Decentralisation Meets Local Complexity* brings together eight coordinated case studies that focus on how decentralisation works in three countries in Latin America and three in South Asia. Edited by Urs Geiser and Stephan Rist; Published by: Geographica Bernensia, Bern, Switzerland, 2009; free online access.

Video Clips

Short video clips featuring the people behind the extensive research network that is the NCCR North-South are now regularly being uploaded onto www.north-south.unibe.ch. In the 1-2 minute clips, researchers talk of a particular outcome or result made possible by the NCCR North-South.

Evidence for Policy: Making Migration Safer

The latest issue of the NCCR North-South policy brief series examines the challenges of making migration safer for workers in low-skilled professions and more beneficial for their families left behind. The May edition of *evidence for policy* is entitled “Making Migration Safer” and draws on case studies in Central and South Asia. Contact: nccr-north-south@cde.unibe.ch to order a copy, or download the PDF on www.north-south.unibe.ch

Fertile Soils for Food and Climate

More than 80 per cent of the strongly increasing population of Ethiopia still lives off agriculture. Soils which have been damaged over centuries in the highlands continue to be worked with ox-ploughs and hoes. This, coupled with heavy rainfall and the mountainous topography, leads to human-induced land degradation, which was not much tackled in the past. As a consequence, the productivity of Ethiopian farming was in continuous decline, until government and international aid agencies started to implement soil and water conservation measures in the early 1970s.

Since then, the Centre for Development and Environment (CDE) has been working with local institutions in Ethiopia, strengthened in 2001 by the NCCR North-South. Over the years, the research conducted significantly improved sustainable land management (SLM) by farming families. It was shown that simple measures could be introduced in the fields with little effort and minimal external technical support; these include earth walls, drainage gutters and mulching. Today, about 18 per cent of Ethiopian farmland is worked using SLM methods – the aim is to increase this to 50 per cent. This would allow a long-term use of the soil, while achieving a sustainable increase in harvest volume.

While the primary aim of the SLM measures is to reduce the dependence of the Ethiopian population on food aid, an additional advantage of the measures is their relevance to the debate on climate change: the increased level of humus in the more fertile soil improves its properties for carbon storage. This could be an excellent opportunity for compensation payments, resulting in a truly win-win situation for both Ethiopian farmers and the world climate.

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Biodiversity between Conservation and Development

Biodiversity is one of the most precious but also most endangered natural goods worldwide. Its preservation is not only ethically but also economically and socio-culturally highly justified. Most regions of the world strive for biodiversity preservation by delineating pro-



*Terracing – pictured here in Ethiopia – effectively reduces erosion, improves soil fertility and adds soil carbon.
Photo: Sabina Erni*

tected areas. These efforts have made protected areas the fastest-growing land use category globally, with a total surface area that has become greater than that of agricultural land.

Against this background, the role and impacts of protected areas in the context of sustainable development have attracted the attention of the NCCR North-South. A comparative analysis of cases from all over the world has shown that in general, the role of protected areas differs significantly between the North and the South.

In industrialised countries, biodiversity conservation in protected areas is often confined to peripheral regions with low economic pressure and stakes. The main focus is on attempts to increase the attractiveness of the peripheries, rather than on conservation efforts. By contrast, in developing countries – under influence from the North – conservation efforts often concentrate on regions of significant production value for local populations and national economies. Protected areas take on the dominant function of preventing the over-use of land, but corresponding losses for local livelihoods are not adequately counterbalanced by gains from conservation efforts.

In the cases of the Tunari National Park in Bolivia and the World Heritage Site Jungfrau-Aletsch in the Swiss Alps, transdisciplinary research and participatory pilot actions by the NCCR North-South have shown practical ways of reducing this imbalance in the role of protected areas in the North and in the South. The work has proved promising in promoting locally adapted balances between conservation and development in biodiversity preservation.

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Shrinking Glaciers in Central Asia

Glaciers have been retreating worldwide during the last century, most significantly in Alaska and Central Asia. In Central Asia, glaciers are crucial for the semi-arid agro-ecosystems. They supply major runoff in the most critical period of water demand for irrigation. In addition, populated areas near the mountains of Northern Tien Shan derive their domestic water from snow and ice melt. In view of climate change, a sound understanding of seasonal snow and ice storage and discharge dynamics is fundamental for reliable water management in the area.



Glaciers play a key role for water storage in Central Asia; their rapid melting and retreat over the last decades represents a major challenge for future development. Glacier in the Tajik Pamirs. Photo: Daniel Maselli

Based on an NCCR North-South study which examined glacier variations in the Sokoluk watershed with 80 glaciers, a mixed Kyrgyz-Swiss team of researchers has revealed a clear trend in glacier retreat of 28 per cent for the period from 1963 to 2000. The main reasons for this are the increasing average annual and summer air temperatures as well as the reduced summer precipitation. A significant acceleration of this wastage trend has been observed since the 1980s.

According to the study, glaciers smaller than 0.5 km² have decreased most strongly, with eight glaciers having completely disappeared. In addition, the formerly compact glacier system has suffered disintegration, with separation of ice-covered areas from parent glaciers. Given the close link between freshwater and agriculture, this trend could well become a seri-

ous threat to the Central Asian economies as well as the urban water supply systems. Further, these wastage trends may increase the risks for natural hazards due to more frequent and intense floods, land- or mudslides and rockfall events. This may pose additional threats to the local economy and livelihoods. Assuming a continuation of current trends of wastage, the glaciers of the Sokoluk watershed will shrink to half their current surface area within the next 40 years.

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Full article

Niederer P, Bilenko V, Ershova N, Hurni H, Yerokhin S, Maselli D. 2008. Tracing glacier wastage in the Northern Tien Shan (Kyrgyzstan/Central Asia) over the last 40 years. *Climatic Change* 86:227-234. DOI 10.1007/s10584-007-9288-6 <http://www.springerlink.com/content/t2628813624l8t41/fulltext.pdf>

Atlas for Laos

While the Lao People's Democratic Republic (PDR) ranks among the poorest nations of mainland Southeast Asia, it is also one of the fastest-developing. In this context, the availability and accessibility of reliable and up-to-date socio-economic information is crucial in the planning of development interventions. While both a Population and Housing Census and an Expenditure and Consumption Survey were conducted in 2005 and 2003/04 respectively, access to these data remained limited. They were available only in aggregated form at the district level or in very detailed tables which were difficult to access.

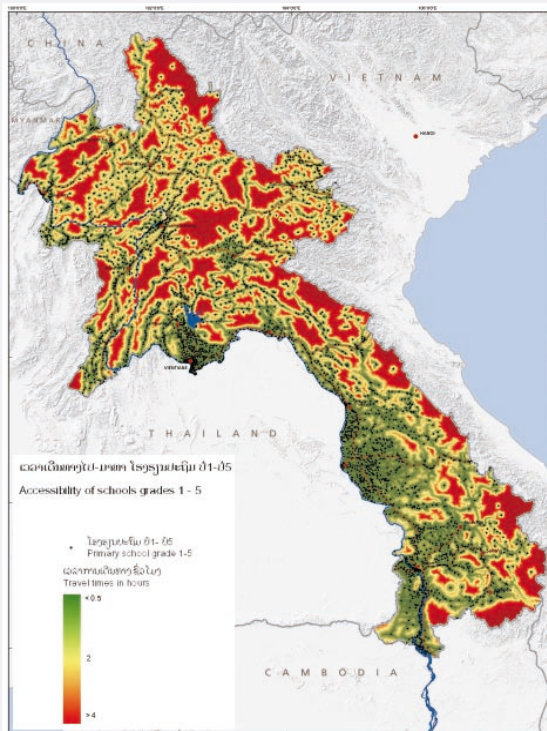
Based on methodologies and approaches developed within NCCR North-South research in Vietnam and with additional support of the Swiss Agency for Development and Cooperation (SDC), this tabular census information and additional poverty estimates were used to create the Socio-Economic Atlas of the Lao PDR. The information was spatially processed to create maps of over 70 socio-economic development indicators for all 10,500 villages in the country.



NCCR North-South research on Natural Resources in Sustainable Development is conducted under the direction of Urs Wiesmann (right) and Hans Hurni of the **Centre for Development and Environment (CDE)** at the University of Bern, Switzerland.

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An analysis has shown that literacy rates may be more affected by actual access to education (e.g. influenced by ethnicity), rather than accessibility (i.e. travel time to school), as is often assumed. Source: Socio-Economic Atlas of the Lao PDR

In addition to making the census data more accessible, the atlas allows certain patterns of development to be identified, contributing to a better understanding of related processes.

For example, the atlas was able to show that almost 50 per cent of the poor population in Laos are not directly addressed in national poverty reduction strategies. This is because the strategies mainly focus on districts classified as “poor” in terms of the percentage of persons below the poverty line. So a densely populated area may be excluded from this classification as it shows up in statistics as having a “low” poverty rate, despite having a high absolute number of poor.

The atlas illustrates the potential of the combination of research – delivering the necessary methodologies and approaches – and development cooperation – having the financial means to enable the production of concrete development-oriented outputs. The Socio-Economic Atlas of the Lao PDR is available in hardcopy as well as online: www.laoatlas.net

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Knowledge for Policy – the Case of East Africa

In drought-prone East Africa, managing natural resources for both the urban and the rural population is a priority. In an interview, Dr. Boniface Kiteme, director of CETRAD, a research and training institute in Nanyuki, Kenya, underlines the importance of generating knowledge through research to inform the policy formulation process.

To what extent is research which is already available used to implement policies?

To a very great extent. For example in the water resource management sector. In work which we had been doing even before our involvement with the NCCR, our research on promoting the sustainable management of water resources coincided with a comprehensive review of the water sector by the Kenyan government. Our research outputs were greatly used to inform the sector review process. What we had done, complemented by NCCR efforts, became important in implementing water reforms.

The other example is the classification of different contexts. Previously, arid and semi-arid areas had been grouped together for policy purposes. However, within the semi-arid context there are differences that require adapted approaches. To effectively address their problems, you cannot look at arid and semi-arid areas as a homogeneous unit. Following the work of the NCCR in the region, a more differentiated classification of these different contexts is now reflected in current draft policy documents. This makes interventions more effective.

How can institutional arrangements best promote the sustainable use of natural resources?

Firstly, institutions must be able to deal with inherent uncertainties. For example, when formulating protective policies such as for forest or water resources, it is important that institutions take into account the livelihoods of the people, so that the policies gain the acceptance of the local stakeholders. The challenge is for institutions to safeguard livelihood systems while at the same time forging a framework to promote the sustainable use of resources.

Secondly, institutions at the different levels – national, regional and local – must be able to work together. The challenge is: how can resource management policies at the national level take into



Both pictures depict plots of maize crops in Kathonzweni, Makeni district, Kenya. Methods of conservation agriculture were only applied in the plot on the right. Photo: CETRAD

account local needs without losing touch with what these policies are supposed to effectuate, and vice versa?

Finally, there is the question of inclusivity – ensuring that all stakeholders play a relevant role in promoting sustainability. Resources that are used at an individual level, also affect the collective level: if I draw water from a river to irrigate 10 acres, I do that as an individual. But my actions (and those of my neighbours) will have an effect on others. Institutions, therefore, must ensure that stakeholders are individually as well as collectively included. If policies and legislation can result from a comprehensive process of participatory consultation, then they will enhance sustainability. A prerequisite for this is capacity development and political empowerment for socially and economically weak people in particular.

Is the awareness of these needs present?

Yes and no. Collaborators within the NCCR have tried to create considerable awareness among key government departments in these countries. There is a mismatch between what is required for sustainability and what may politically be seen as the right move. In many cases, political considerations tend to override the requirements of sustainability. But this cannot be done under the excuse of not being aware of the role of research: the role of research is increasingly becoming clear, and a greater uptake is quite evident in key sectors.



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The United Nations Millennium Development Goals in Kenya call for reducing poverty, attaining food security and promoting environmental sustainability. Whether the MDGs are reached can largely depend on how droughts and their impacts are managed. Has research achieved any breakthroughs here?

Considerably. We have generated data on how droughts can be managed. What needs to be addressed is the government's response to drought. Instead of short-term measures to address a particular drought, we need to implement long-term strategies. Following the droughts in 2000-2002, government institutions and international aid agencies invested 370 million USD into operating relief food services. 20 per cent of this amount was used in food distribution and logistics. If this money had been used to support the formulation and implementation of long-term strategies, the problem of drought and food insecurity would have been better addressed.

Do these long-term solutions exist?

Yes. These solutions must combine indigenous knowledge with modern knowledge systems that generate data. It is vital that we reconsider the kind of crops, that are grown. We have abandoned indigenous crops like millet and sorghum that were suitable to the given climate conditions in favour of commercial crops such as maize, which require more moisture to grow.

We also need to promote dryland farming. A technology such as conservation agriculture, which emphasises minimum soil disturbance, optimal soil cover and/or crop rotation, has proved in the areas where it is practised to make the difference between food security and food insecurity.

The interview was conducted by Tina Hirschbuehl, Communications Officer at the NCCR North-South Management Centre.

Completed PhD Theses with a Focus on Natural Resources

Sustainable water management in the intermediate zone of the Sokuluk river basin, Tien-Shan, Kyrgyzstan: Issues and options from an integrative perspective; Askaraliev, Bakyt S; Kyrgyzstan

Landscape transformation and opportunities for sustainable land management in North-Wello, Ethiopia; Bantider, Amare; Ethiopia

Evaluation of landscape development projects in the Swiss Alps: The method of Discrete Choice Experiments; Baumgart, Kati; Switzerland

Traditional ecological knowledge, land use and ecosystem diversity in the Tunari National Park (Bolivia): An ethnoecological approach to dialogue between traditional and scientific ecological knowledge; Boillat, Sébastien; Bolivia

Sustainable land management in the Tajik Pamirs: The role of knowledge for sustainable development; Breu, Thomas; Tajikistan

Assessing the potential for organic farming for sustainable livelihoods in developing countries: The case of cotton in India; Eyhorn, Frank; India

Potentials, limitations and risks of geo-information technology for sustainable development approaches in Kenya; Ehrensperger, Albrecht; Kenya

The geography of welfare: Spatial dimensions of poverty and inequality in Vietnam; Epprecht, Michael; Vietnam

The impact of land use and climate on the river runoff of Sokuluk River Basin: A contribution to sustainable water management in Chui Valley; Ershova, Natasha; Kyrgyzstan

Towards an improved understanding of collective irrigation management: A system dynamics approach; Gallati, Justus; various partnership regions

Patterns of land cover change in the Lower Mekong Basin: The relevance of mesoscale approaches; Heinimann, Andreas; Laos

Legal and institutional framework for empowerment of rural populations in the Kyrgyz Republic: Contribution to sustainable development; Ibraimova, Asel; Kyrgyzstan

Drought vulnerability and risk in agro-pastoral areas: An integrative approach and its application in Kenya; Ifejika Speranza, Chinwe; Kenya

Multi-dimensional approaches to more sustainable natural resources management in highly dynamic contexts in East Africa; Kiteme, Boniface Peter; Kenya

Negotiating sustainable regional development: The relevance of meaningful spaces in times of change; Liechti, Karina; various partnership regions

An analysis of the use and management of the agroecosystem with emphasis on agricultural activity in the indigenous villages of Talamanca, Costa Rica: An agroecological approach; Martinez, Roger; Costa Rica

Monitoring and modelling crop growth, water use and production under dryland environment north-west of Mount Kenya Gitonga; Njeru, Jeremiah Lewis; Kenya

GIS-based estimation of energy and water consumption, and emissions generated by major human activities in Latin American cities; Ossés, Margarita; Peru

Land degradation in selected landscapes of semi-arid zones in Kazakhstan and Kyrgyzstan: Indicators, processes, dynamics and consequences for mitigation; Plokhikh, Roman; Kazakhstan

Exploring the meaning of money: A study of the impact of microfinance in the Koppal District of India; Premchander, Smita; India

The quest for sustainable soil cultivation in Swiss agriculture: Co-creation of knowledge through network building and social learning; Schneider, Flurina; Switzerland

Livelihoods in transition: Understanding current strategies, challenges and options for improvement (example of Sokuluk Rayon, Chui Valley, Kyrgyzstan); Shigaeva, Jyldyz; Kyrgyzstan

Land use, soil degradation and soil conservation in the loess hills of Central Tajikistan; Wolfgramm, Bettina; Tajikistan

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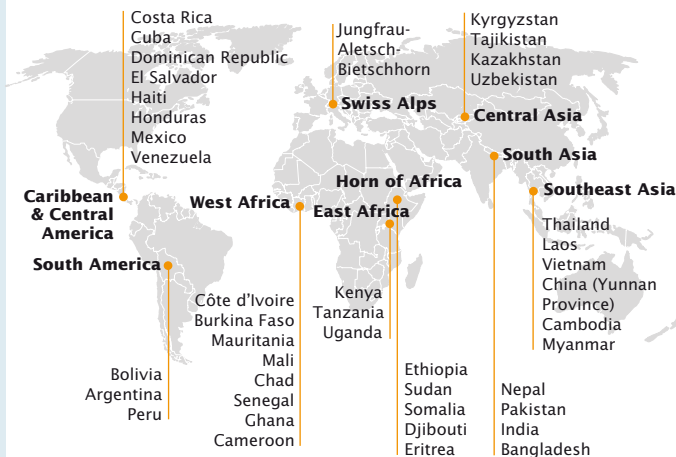
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Partnership Regions



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- 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.

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