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Research for Sustainable Development

Foundations, Experiences, and Perspectives

Edited by
Urs Wiesmann and Hans Hurni
with an international group of co-editors

perspectives
Volume 6

Research for Sustainable Development: Foundations, Experiences, and Perspectives

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Cover photo:
Building a bamboo bridge across the Nam Khan river, near Luang Prabang (Lao PDR). Seemingly tenuous bridges can be powerful links between shores otherwise far apart: they are small and efficient, use adapted local technologies, serve the purpose of rapid connection, and can be rebuilt after floods. (Photo by Thomas Breu, November 2011)

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Foreword

Sustainable development remains an important global vision. This reveals a general conviction that global change and dynamics should not just result in uncontrolled and uncontrollable development, but that development should be goal-oriented. In this context, sustainable development aims to establish a balance between economic, sociocultural, and ecological goals, and strives for intra- and intergenerational equity in a globalising world.

However, although sustainable development has been at the top of global and national agendas for at least two decades, concrete progress remains scanty. Among the societal reasons for this limited success are: lack of concretisation of targets attached to the value dimensions of sustainability; the higher temporal sensitivity of economic by comparison with sociocultural and especially ecological indicators, giving economic values more weight; and economic and political power disparities that lead to power-driven value definitions, with a tendency to neglect the values and visions of the populations concerned in concrete contexts.

At the same time, societal and scientific knowledge production has not succeeded in fully matching the vision of sustainable development. Due to their rather one-sided quantitative and disciplinary-driven reference system, science and research have provided many important sectoral insights and approaches, but they have largely missed out on *(1) contextualisation and concretisation of knowledge and explicit linking of knowledge production to societal values*, and *(2) conceptual integration and mainstreaming of the requirements of sustainable development*. These two aspects remain major challenges of research for sustainable development and require that sound disciplinary and interdisciplinary research be complemented with transdisciplinary approaches in contextually rooted, intercultural research partnerships.

The ongoing Swiss National Centre of Competence in Research (NCCR) North-South programme focusing on "Research Partnerships for Mitigating Syndromes of Global Change" has provided a unique opportunity to contribute to addressing the above two challenges of research for sustainable development. This opportunity has depended on three major factors: the long-term perspective of the NCCR Programme from mid-2001 to mid-2013; joint and coordinated support from a research foundation – the Swiss National Science Foundation (SNSF) – and a development agency – the Swiss Agency for Development and Cooperation (SDC); and well-established inter- and transdisciplinary research partnerships in nine regions worldwide.

In a previous volume of this series (Hurni et al 2010) we presented a synthesis of the achievements of the NCCR North-South with regard to the first challenge mentioned above: contextualisation and concretisation. In the current volume, we present progress achieved with regard to the second challenge, that is, the *conceptualisation and operationalisation of research for sustainable development*. This volume accounts for major progress in research approaches and their application, as achieved by the programme as a whole, as well as by the participating interdisciplinary and partnership-based research groups. These achievements are presented in five parts:

Part I: Foundations of research for sustainable development (2 articles): Reflections on the link between global change in its broadest sense and the concept of sustainable development form the basis for conceptualising related research, and for justifying and clarifying the importance of transdisciplinarity, contextuality, and research partnerships.

Part II: Concepts of research for sustainable development (8 articles): Important specific challenges of research for sustainable development are addressed in greater detail in this section. The articles present considerations on and experiences with how to deal in concrete ways with: intercultural research partnerships and related capacity development; the quest for collaborative knowledge production at the interface between science and society; and giving the gender dimension adequate weight. Some articles also reflect on the links between participation, policy transformation, and governance – which are necessary requirements for an iterative, value-conscious, and societally relevant research approach.

Part III: Actor perspectives in research for sustainable development (6 articles): Actors at multiple levels are agents of change and define the value dimension of sustainable development. Conceptualising "actors" in research is therefore crucial. Starting from a broad concept of actors, this section critically reviews and concretises livelihood concepts in development research and research on multilayered resilience; further articles examine the specific dimensions of gender, livelihood assets, and multilocality.

Part IV: Tools in research for sustainable development (4 articles): Modern information technologies (ITs) have greatly increased the availability and spatio-temporal resolution of information. However, how can this information be transformed into shared knowledge in concrete research approaches aiming for more sustainable development? This section presents

experiences with and tools for dealing with this challenge, and is complemented by a framework for analysing policy processes and governance.

Part V: Thematic foci in research for sustainable development (9 articles): In concrete development efforts, commissioning agencies and societies concerned usually do not ask for research on sustainable development as an overall goal, but for research linked to specific sustainability issues. Starting with insights into a wide range of such issues – ranging from land management to environmental conflicts, nature conservation, commodities, growth and poverty, pastoralism and urbanism, human security, and equity effectiveness in health interventions – this final section illustrates how thematic foci can be embedded into the broader perspective of research for sustainable development.

By collating these different perspectives on research for sustainable development, we hope to contribute to the sustainable development debate from a number of angles, and to further development of concepts and approaches in this field of research. In particular, we hope to contribute to overcoming the deadlock in research for sustainable development, which seems to focus either on global principles and perspectives, or on concrete realities and societal values in specific contexts, without being able to link the two foci. Based on our experience in the past 10 years of research in partnership, we are convinced that integrative research efforts can also trigger innovation in the participating scientific disciplines and thus contribute to science as a whole. This is a secondary effect alongside the ultimate goal of the NCCR North-South, which is to contribute in concrete ways to more sustainable development both in societal debates and in concrete, situation-specific efforts.

Urs Wiesmann and Hans Hurni (editors)

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The Swiss National Centre of Competence in Research (NCCR) North-South programme was established in 2001. It has been a unique opportunity to increase the concrete development impact of research. In addition, as presented in this volume, the programme has also enabled a significant number of research partners to experiment with, reflect on, and develop approaches, concepts, and methodologies with a view to enhancing the relevance and usefulness of research for sustainable development. This unique chance was made possible by the joint effort of our donors from the research (the Swiss National Science Foundation [SNSF]), development (the Swiss Agency for Development and Cooperation [SDC]), and academic communities (the seven NCCR North-South partner institutions in Switzerland, with the lead institution at the University of Bern). We would like to thank them for their bold and continual support of our interdisciplinary and intercultural programme, as well as for their guidance offered through the jointly established Review Panel.

This book presents articles authored by a total of 87 researchers from 19 countries. Over the years, however, many more people have been involved in this international partnership programme and have contributed to the approaches and results presented here; it is impossible to name them all. In addition, a wide range of scholars from the broad institutional network of the NCCR North-South reviewed the articles in this book and made invaluable comments. The Editors would like to express their deep gratitude to all the researchers and institutions involved in the NCCR North-South programme and to all authors for their contributions to pertinent issues of research for sustainable development.

Finally, the Editors wish to thank three groups of people who initiated, coordinated, and produced this volume: first, the core group of NCCR North-South colleagues who, together with the Editors, have led the conceptual reflections resulting in this book on research for sustainable development: Urs Geiser, Andreas Heinimann, Cordula Ott, Didier Péclard, Stephan Rist, and Claudia Zingerli. Second, Ruth Schaffner, who coordinated the synthesis project and the internal peer-review process; and Thomas Breu, Programme Coordinator, who managed the project in the background. Finally, members of the production team: Anne Zimmermann (editing and coordination of the Perspectives series), Marlène Thibault

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Part I
Foundations of Research for Sustainable Development

1 Global Change Research for Sustainable Development

Hans Hurni[1] and Urs Wiesmann[2]
With Nazgulmira Arynova, Bassirou Bonfoh, Thomas Breu, Gilles Carbonnier, Berhanu Debele, Urs Geiser, Laurent Goetschel, Andreas Heinimann, Janet Hering, Elizabeth Jimenez Zamora, Boniface Kiteme, Thammarat Koottatep, Karina Liechti, Peter Messerli, Ulrike Müller-Böker, Cordula Ott, Didier Péclard, Maria Angelina Pérez Gutierrez, Brigitte Portner, Stephan Rist, Marcel Tanner, Marlène Thibault, Bishnu Upreti, Anne Zimmermann, Claudia Zingerli, Jakob Zinsstag, and Christian Zurbrügg[3]

Abstract

This article is the introductory chapter of a book synthesising experiences of an international programme conducting partnership-based research for sustainable development. We argue that global change can be governed for sustainable development, and that research can contribute to this aim by developing and applying intercultural, transdisciplinary, and disciplinary conceptual approaches, by finding ways of reducing or avoiding negative processes and impacts of global change, by designing innovative solutions based on multi-stakeholder and multi-level collaboration, and by developing multi-scale applications for fostering positive impacts of global change. We also argue that while climate change is an important process of global change, many other processes have reached similar dimensions and are equally challenging to address, both in the global North and in the global South. The research insights briefly introduced here and synthesised in the present volume relate to global change triggered by environmental, social, economic, political, and institutional processes that have reached such a large scale because local problems and potentials were overlooked, neglected, or not perceived as important. The negative impacts of global change dominate the current scientific and political debates; however, global change in our analysis can also be considered necessary to achieve sustainable development. The question is to what extent it will be possible to mitigate negative impacts and processes while enhancing or developing innovative solutions to avoid them altogether.

Keywords: Global change; climate change; natural resources; poverty; sustainable development; human–environment systems; normative valuation; knowledge types; governance; research partnership; NCCR North-South.

1.1 Introduction

1.1.1 Avoiding negative and fostering positive impacts of global change

In much of the scientific and political debate on the environment and on development, the term "global change" is used to refer to processes with supposedly negative impacts on societies and the environment at a scale at which several countries or regions of the world are affected. Most prominent among these processes is climate change, which is often perceived as today's most important global threat, affecting the environment, societies, and the economy in multiple ways. Indeed, global warming and weather extremes have started to affect biodiversity, water cycles, sea water levels, food security, and the ecology of entire regions (IPCC 2007). For example, the tropical zone is expected to expand with global warming (Seidel et al 2008). Other potential effects include ecological zones becoming drier or wetter, with unknown consequences, both positive and negative, for ecology and human life (IPCC 2007; UNDP 2007). According to the 2007/2008 Human Development Report,

> *[w]ith the global rise in temperature, local rainfall patterns are changing, ecological zones are shifting, the seas are warming and ice caps are melting. Forced adaptation to climate change is already happening across the world. In the Horn of Africa, adaptation means that women have to walk further to find water in the dry season. In Bangladesh and Viet Nam, it means that small-scale farmers have to cope with losses caused by more intense storms, floods and sea surges.* (UNDP 2007, p 26)

Besides climate change, however, there are many other undesirable processes of global change that tend to be neglected by research and politics, although their impacts are equally widespread. These include the aggravation of poverty, the spreading of human and animal diseases, malnutrition, persistent hunger and famines, as well as changes in the atmosphere and in ecosystems, uncontrolled land cover and land use changes, accelerated degradation of non-renewable natural resources such as soils, biological systems, and water, uncontrolled urban sprawl, undesired side effects of technological innovations and their uses, and increased conflicts between societies and among individuals. These undesirable processes of global change tend to increase existing disparities and hinder human development (Hurni et al 2004).

Only few studies address positive impacts of global change processes; most of these studies have been written in economic fields. For example, the rates of population growth over the past decades have been decreasing, as has the rate of global poverty. Although the absolute number of poor people has remained high, "extreme poverty was reduced worldwide from 52% in 1981 (1.9 billion people) to 26% in 2005 (1.4 billion people)" (Bauer et al 2008, p 6). The gross national products of almost all developing and transition countries have been growing much faster than those of highly developed countries, and education, health, and sanitation systems are being developed at an accelerated pace in most countries, particularly those with lower incomes. These achievements are commendable and need to be emphasised as well. Indeed, although it has become mandatory to understand and avoid or mitigate the negative impacts of processes of global change, it is just as important to explore and support positive impacts that have the potential to make development more sustainable.

1.1.2 Global change as a prerequisite for sustainable development

The term "sustainable development" is used as a common denominator for positive outcomes of development efforts, that is, situations where development efforts succeed in maintaining or enhancing the capacity of environmental, economic, and social systems to evolve and interact in harmony with one another and with a long-term perspective (Barbier 1987, 1989; WCED 1987; Wiesmann 1998). Consequently, development at the local, regional, national, and global levels is only sustainable if it meets the requirements of all three dimensions of sustainability: the social, the economic, and the environmental. When evaluating or estimating sustainability, one should therefore consider that "changes in one of the components of this system […] will have impacts on other components through a complex series of relationships […]; i.e. positive changes on one scale may be linked with negative changes on another scale" (Wiesmann 1998, p 185).

Unfortunately, many researchers and policymakers perceive and address the different dimensions of sustainable development as separate issues – and primarily understand sustainable development as an environmental issue. A prominent example of such a perception is a current global research initiative that claims to be centred on "five Grand Challenges that, if addressed in the next decade, will deliver knowledge to enable sustainable development, poverty eradication, and environmental protection in the face of global change" (ICSU 2010, p 1). Three of the five challenges focus on forecast-

ing, observing, and confining environmental change, based on the premise that humankind has not been able to manage this change so far. Other major dimensions of unsustainable development, particularly the social and economic dimensions, but also the institutional and political ones, are perceived primarily as a means to improve environmental sustainability, rather than as global change processes in themselves, and are addressed only in the two remaining challenges on responding and innovating. Another prominent example of a one-sided initiative is the Millennium Development Goals (MDGs), which focus almost exclusively on poverty as a social issue of unsustainability, to be overcome primarily by means of human development (United Nations 2009). The MDGs – and MDG-related research – thus largely neglect both environmental and economic aspects of sustainability, which may be a major reason why these goals will hardly be fulfilled by 2015.

The shortcomings of these two major international initiatives are understandable: Indeed, the goal of sustainable development always requires a process of finding a balance between the three dimensions of sustainability, based on negotiated norms. Establishing such a normative balance means making choices and setting priorities. As a result, initiatives cannot address all dimensions of sustainability in a perfect way, but they can strive to meet at least the most urgent needs of the stakeholders concerned and the most urgent requirements identified for biophysical systems, with a view to doing things better in future. A mapping of sustainable development debates by Hopwood and co-authors (2005) reveals a growing concern for environmental challenges as well as issues of socio-economic disparities, human well-being, and equality that necessitate reform or even transformation. This confirms that all dimensions of sustainable development have to be addressed.

Global change embraces all aspects of global dynamics in the social, cultural, political, ecological, institutional, and economic spheres. In an earlier synthesis volume presenting partnership-based research for sustainable development, we argued that

> *humankind today is confronted with numerous threats brought about by the speed, scope and unpredictable interconnectedness of global change dynamics. A concerted and informed approach to solutions is required to address the magnitude and severity of the numerous crises we are facing, related to the global economy, climate change and natural resource degradation, food security, poverty and social exclusion, water and sanitation, and conflict*

> *and governance, to name but a few. Generating shared knowledge and developing the ability to cross multiple borders between understandings of realities and issues are a key to addressing such global challenges.* (Hurni 2010, p 13)

As asserted above, however, global change should not be perceived as having only negative impacts: Indeed, some processes of global change have in many respects led to greater sustainability. Economic growth, for example, has enabled people and entire societies to improve their livelihoods, which has in turn led them to pay more attention to their environment. Kuznets (1955) and other authors proved the correlation between economic growth and environmental quality. They showed that "in the course of economic growth and development, environmental quality initially worsens but ultimately improves with improvements in income levels" (Gangadharan and Valenzuela 2001, p 514). When

> *income per capita and the development level rise, institutions are pressed by public opinion to include environmental protection in the policy agenda, therefore playing an active role to designate policy actions (and regulations) oriented towards a sustainable development path.* (Costantini and Martini 2006, p 25)

Whether the outcome of such growth leads to a higher degree of sustainability can, however, only be assessed in hindsight – a challenge that research needs to be well equipped to deal with.

Indeed, according to Raskin (2008, p 461), "sustainability research studies the dynamics and prospects of co-evolving human and ecological systems, a subject of inherent complexity and deep uncertainty". The authors of the present book assume that despite such uncertainty, global change *can* be governed for sustainable development. Drawing on theoretical thinking and research experiences conducted in many regions of the world within the framework of a 12-year partnership-based research programme, they are even convinced that (global) change is needed to achieve sustainable development; but this change has to be steered to avoid negative consequences. Today's global change problems exist mainly because local problems were overlooked, neglected, not addressed, or not perceived as important while they were gradually growing into global issues. Thus the question is not whether or not there should be global change, but to what extent it will be possible to reduce or mitigate its negative impacts and processes, enhance the positive ones, and find innovative solutions while trying not to generate new problems.

Fig. 1
Partnership regions of the Swiss National Centre of Competence in Research (NCCR) North-South research programme. (Source: Hurni et al 2010, p 13)

1.1.3 The approach taken in this introductory article

This article is based on a review of literature on current research concepts and frameworks used to address issues of global change and sustainable development. This review was guided by a conceptual and theoretical reflection on sustainable development, and supported by insights into factors of success drawn from empirical experiences gained during the partnership-based research that has been carried out within the framework of the Swiss National Centre of Competence in Research (NCCR) North-South programme since 2001. Based on a discussion of this material, we introduce the major outcomes of the syntheses conducted by the authors of the subsequent articles in the present volume, and offer conclusions on partnership-based research for sustainable development drawn from these results and from experiences gained in nine regions located mostly in the global South (Figure 1).

1.2 Research for sustainable development: conceptual framework and research experience

1.2.1 Background

Establishing an integrative conceptual framework of sustainable development: The most common definition of sustainable development was established by the World Commission on Environment and Development (also known as the Brundtland Commission), saying that sustainable development is "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (WCED 1987). This definition places human beings at the centre of sustainable development and at the same time implies that all other living beings, that is, plants and animals, as well as other natural resources must not be depleted if they are to remain available to future human generations for meeting needs at various levels, reaching from food supply and ecosystem functions to aesthetic and cultural values.

In the sustainability debate of the 1990s (see United Nations 1997) three major dimensions of sustainable development were postulated, namely the social, ecological, and economic dimensions; moreover, the normative character of sustainable development was put at the forefront of the sustainability concept (e.g. Wiesmann 1998; see Figure 2). The definition of sustainable development presented in Figure 2 is rooted in a systems approach that includes a focus on the biophysical system with renewable natural resources, the social system with political, economic, and institutional characteristics, as well as an interface between the two major systems, namely a land use system where human use and natural resources are linked in a spatial, that is, landscape context (Messerli and Messerli 1978). Although developed in the context of research on rural areas in mountains, such a systems approach is capable of including urban areas as well, as long as they are seen in a broader context of urban–peri-urban systems.

When considering the three dimensions of sustainable development we could argue that the economic dimension is not a basic sustainability dimension with a long-term perspective, but a tool to achieve sustainable use of natural resources between the ecological and social spheres. This priority of the ecological and social dimensions over the economic dimension, however, could be counter-argued by the need to keep goods and services flowing between individuals and societies, requiring a sustainable economy; hence

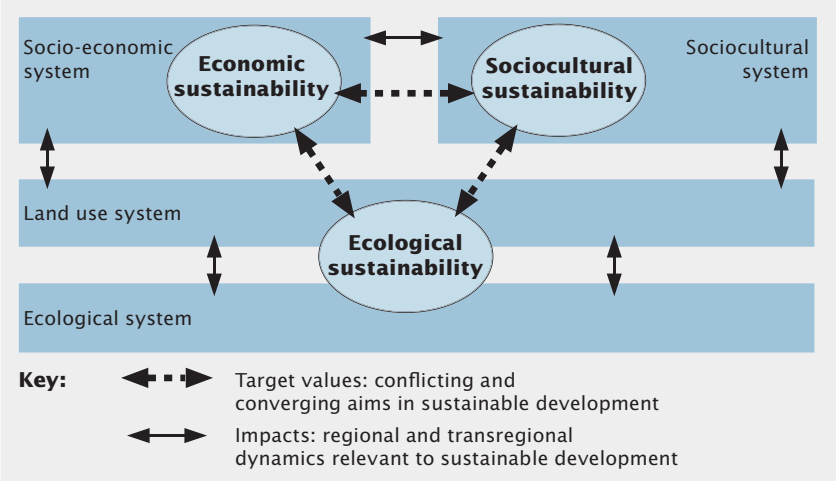

Fig. 2
Conceptual framework combining an analysis of human–environment systems and their interaction with a normative appraisal of sustainable development. (Source: Hurni and Wiesmann 2004; adapted from Wiesmann 1998)

this should also be a fundamental dimension of sustainability. We may further argue that an institutional and political dimension of sustainable development should be considered as well; these two additional aspects could be subsumed under the social dimension of sustainability.

Our understanding of global change research as research that contributes to sustainable development – and not just as research that attempts to better understand global change – raises a number of methodological and conceptual questions:

- Can each of the multiple dimensions of sustainability be dealt with exclusively in a disciplinary manner?
- Can ecological, social, and economic research questions be merged and addressed in a comprehensive and holistic way?
- How can negotiation of the normative elements of sustainable development become part of global change research?
- How can society help to formulate research questions and shape research approaches?
- How can research contribute to more than just a better understanding of processes and increased knowledge about them; how can it help to shape visions and find pathways for more sustainable development?

A first step towards establishing development-oriented research as an approach was made when three distinct types of knowledge were defined in a participatory workshop by Swiss scientists in 1997. They differentiated

between (a) systems knowledge, which leads to a better understanding of systems, (b) target knowledge, which is generated in participatory processes involving scientists and non-scientific stakeholders, and (c) transformation knowledge, which results from research into concrete solutions (ProClim 1997). Based on these knowledge types, research programmes such as the NCCR North-South have shown how disciplinary, multidisciplinary, interdisciplinary, and transdisciplinary methodologies and approaches can be used for defining a common vision, setting multiple goals, listing concrete objectives for research to be conducted by individuals and teams, and shaping the research process and working steps (Hurni et al 2004). The importance of innovative global institutions in linking knowledge and action has been advocated more recently as well by van Kerkhoff and Szlezák (2010), though based on another approach.

An equally important step in the process of developing the conceptual and research policy framework for development-oriented research, as well as the approach and methodology for such research, was the development of transdisciplinary approaches to combine work in the social and natural sciences and involve the local knowledge of non-scientific stakeholders (Hirsch Hadorn et al 2006; Hirsch Hadorn et al 2008). Transdisciplinary approaches were designed to enable more effective research for sustainable development than is possible using participatory approaches, which tap local information for furthering systems knowledge alone, while neglecting target and transformation knowledge. Experience with transdisciplinary research has been well documented, for example by Wallner and Wiesmann (2009) regarding a process of multi-stakeholder management planning for a World Natural Heritage Site in Switzerland. In our experience, global change research for sustainable development, and in particular the above questions, can be handled in a fairly adequate manner using transdisciplinary concepts and approaches.

Current processes of global change: As mentioned in the introduction, in the societies and scientific communities of the global North, climate change is commonly perceived as the most important process of global environmental change. There are, however, many other Earth system processes with global change impacts. According to Rockström and co-authors (2009) these include the rate of biodiversity loss, the nitrogen and phosphorus cycles, stratosphere ozone loss, ocean acidification, global freshwater consumption, land use changes and conversion into cropland, atmospheric aerosol loading, and chemical pollution. Rockström and colleagues claim that certain biophysical thresholds in the above processes have been, or are being, crossed, and that this

may have disastrous consequences for humanity. They argue that identifying and quantifying planetary boundaries that must not be transgressed could help to prevent human activities from causing unacceptable environmental change.

These biophysical, or environmental, processes and impacts have been addressed in numerous research frameworks developed for assessing and understanding processes and finding solutions to influence them (Acutt et al 2000; Biermann 2007; Niemeijer and de Groot 2008; Raskin 2008; Tapio and Willamo 2008; Biermann et al 2009; Reid et al 2009). Much less research has been done on the human aspects of environmental change, such as its cultural, social, or economic consequences and opportunities – a fact pointed out by many authors (e.g. Guha-Khasnobis et al 2007; Hodgson et al 2007; Grimm et al 2008; Poteete et al 2010; Ringler et al 2010). In recent years, the emergence of land change science for global environmental change and sustainability has been a remarkable effort to include the spatial or landscape element into the global change debate (Turner et al 2007). Acknowledgement of the fact that many local effects can easily accumulate into a global threat has led to a widening of system boundaries. This is the case, for example, with all processes of land degradation: One third of the world's total agricultural land has been affected by processes of soil erosion or physical, chemical, and biological soil degradation (Oldeman et al 1990). In sub-Saharan Africa, for example, such land degradation on farmers' fields reduced their productivity and contributed to these farmers' impoverishment; this, in turn, contributed considerably to the emergence of a regional syndrome (WBGU 1997).

In discussions of global change, the global economic and social changes listed in the introductory section of this article have been insufficiently linked to environmental change. In the meantime, poverty has increased in absolute numbers of people affected despite all efforts to reduce it, and the number of the world's poor will soon reach 1 billion (FAO 2009). The other 6 billion, however – that is, the increasing majority of the world population and nations – have mainly experienced positive economic growth and improvements in their well-being over the past two decades. Research on current processes of global environmental change must also look at human disparities, demography, health, environmental sanitation, conflicts, livelihoods, and institutions, as addressed for example in the NCCR North-South programme (Hurni et al 2004).

Consequences for research: Helping to support positive and minimise negative effects of global change is a major goal of research for sustain-

able development. Research can contribute by producing knowledge for improved decision-making as a first but important step. All three knowledge types – systems, target, and transformation knowledge – are required to achieve this purpose. Given the current research foci in the global change debate, there is clearly an urgent need for reorienting scientific research towards addressing all three types of knowledge instead of only systems knowledge. However, apart from generating knowledge and developing technologies, research has to fulfil other requirements in order to foster enabling conditions for human action, which include the ability to take action and adequate heuristic and other tools for action, a positive attitude and the willingness of individuals and groups, and empowerment (Hurni et al 1993).

1.2.2 Frameworks for assessing global change

Integrated studies require useful frameworks for assessing global change and sustainable development. A most prominent framework in global change research which brings together human well-being, (agro)ecosystem functioning, and human land use, as well as their direct and indirect drivers, is the conceptual framework underlying the Millennium Ecosystem Assessment (MA 2005). Apart from the Millennium Ecosystem Assessment, this framework has also been applied in two other international, multidisciplinary, and multi-stakeholder initiatives, namely the Intergovernmental Panel on Climate Change (IPCC 2007) and the International Assessment of Agricultural Science and Technology for Development (IAASTD 2009). The framework is described in more detail further below.

A second framework, called DPSIR, distinguishes Driving forces, Pressures, States, Impacts, and Responses (see Ness et al 2010). According to Kristensen (2004), the National Institute of Public Health and Environment in Bilthoven, the Netherlands, was the first to propose the use of this framework, which has since been widely adopted by many institutions. According to the DPSIR framework, there is a chain of causal links starting with 'driving forces' such as economic sectors and human activities, which create 'pressures' such as emissions or waste, influencing 'states' (physical, chemical, and biological), which in turn have 'impacts' on ecosystems, human health, and functions, eventually leading to political 'responses', such as prioritisation and the setting of targets and indicators. However, according to Svarstad and co-authors (2008), there are discursive biases in what they call the environmental research framework.

A third framework for analysing social-ecological systems is the one proposed by Ostrom (2009). Social, economic, and political settings are related

to ecosystems by looking at interactions between resources (systems and units) and governance (systems and users), which are all influenced by outcomes of these settings and ecosystems, and in turn influence resources, governance, and their interactions.

The first framework was initially applied in the Millennium Ecosystem Assessment. This strongly promoted the concept of 'ecosystem services', which gained international acceptance in science and policy communities (Carpenter et al 2009; Jordan et al 2010). The same framework has also served to define priority research areas for ecosystem services in a changing world (Nicholson et al 2009) and has highlighted the need for interdisciplinary research as a basis for managing ecosystem services (Steffen 2009). Figure 3 shows the framework as it was applied in the IAASTD (2009) initiative. Development and sustainability goals are defined by the societies concerned, while agricultural outputs and services are to be provided by spatially defined ecological or agronomic systems, which are influenced by indirect and direct drivers. Agricultural knowledge, science, and technology systems are seen as the centrepiece, as they can enhance agricultural outputs and services and help to avoid negative effects of agricultural systems on human well-being and the environment. The framework can be used at multiple scales, from local to global, and for multiple dimensions of time, including the past, present, and future.

For the purpose of assessing the performances of a specific (sub)system, such as the climate system (IPCC 2007), ecological systems (MA 2005), or agricultural systems (IAASTD 2009), the framework presented in Figure 3 appears particularly useful, especially when attempting to understand main drivers and major services for human well-being. However, all of the above frameworks are useful in their own way, providing adequate tools to deal with the different types of questions and objectives of research projects, depending on the angle of analysis.

Nevertheless, if the assessment is to go beyond a better understanding of systems and their interactions, the intention being to explore sustainability as target knowledge and improvements of the system as transformation knowledge, a fourth framework may be appropriate: the Sustainable Development Appraisal (SDA) developed by Hurni and Ludi (2000). An SDA begins with a participatory appraisal of the current status and the dynamics of land use and natural resources, as well as of current stakeholders and their social, economic, and cultural settings. Together with these stakeholders, researchers then assess visions, needs, options, and constraints; finally, on this basis,

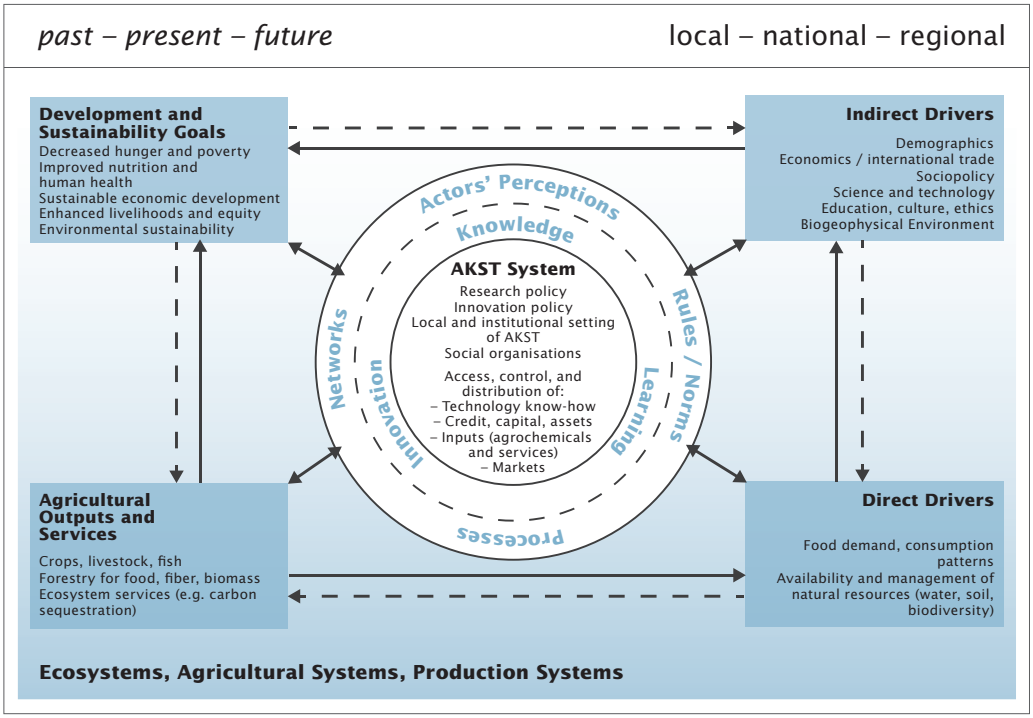

Fig. 3 Framework of the International Assessment of Agricultural Science and Technology for Development, focusing on Agricultural Knowledge, Science, and Technology Systems (AKST). (Source: IAASTD 2009, p 13, slightly adapted)

a common strategy of action is negotiated among stakeholders. By comparison, Tuinstra and co-authors (2008) analyse and stress the effects of learning and evaluation in integrated sustainability assessments, arguing that these activities are an important component of capacity development.

The above four major research frameworks provide guidance in designing research components. However, a research programme that seeks to address issues of global change with the aim of promoting sustainable development worldwide faces challenges at an entirely different level as well, namely the North–South context. As mentioned in the introduction, undesirable processes of global change occur around the globe and affect all parts of the Earth, but many of them are felt most dramatically in the developing countries of the global South, where they tend to aggravate existing disparities and hamper sustainable development. An understanding of these global processes and dynamics can only be achieved through combined research efforts in the global North and South, in broad collaboration among researchers from the different world regions affected (Bradley 2008; Soete 2008).

North–South research partnerships are one way of organising such collaboration. Such partnerships face the challenge of multiple differences and disparities between partners in terms of access to resources, power, knowledge, and capacity, but also with regard to assumptions, world views agendas, and expectations (Johnson and Wilson 2006; UNESCO 2011). How can participating institutions and their researchers bridge these disparities in order to collaborate fruitfully and with equal benefits for all partners? This issue was addressed, among others, by the Commission for Research Partnerships with Developing Countries (KFPE) of the Swiss Academy of Sciences, who developed 11 principles to guide research in partnerships between institutions from the North and the South (KFPE 1998, 2011). These often quoted principles (see Bradley 2007) call for joint agenda-setting, a responsive attitude, clear responsibilities, transparency, mutual learning, capacity development, sharing of data and networks, dissemination of results, equal distribution of profits and merits, and ensuring that results are applied and outcomes secured.

1.2.3 The NCCR North-South approach

Sustainable development is at the core of the NCCR North-South's (2009) research partnership approach, which has been guided by the 11 principles of the KFPE mentioned above. It has recently been recognised that innovative change requires "new, adaptive, and innovative institutional arrangements that can deal with rapidly changing knowledge and have effective learning capabilities" (van Kerkhoff and Szlezák 2010, p 1); the approach taken by the NCCR North-South long ago accommodated such innovative arrangements and has certainly been adaptive, allowing for the programme structure to be modified twice in the course of 12 years to achieve the highest possible degree of integration. The NCCR North-South approach encompasses research efforts in the four directions of specialisation, generalisation, contextualisation, and application. Combining these directions in different ways, four major programme components guide, coordinate, and consolidate research activities (see Figure 4).

Specialisation is essential to capture what is specific. Thus, NCCR North-South research directed towards specialisation leads to increased scientific competence and better systems knowledge in specific fields that are relevant to sustainable development. Sustainability-oriented specialisation within the programme is pursued by thematic, that is, disciplinary, and integrative research projects in the nine partnership regions[4] (see Figure 1).

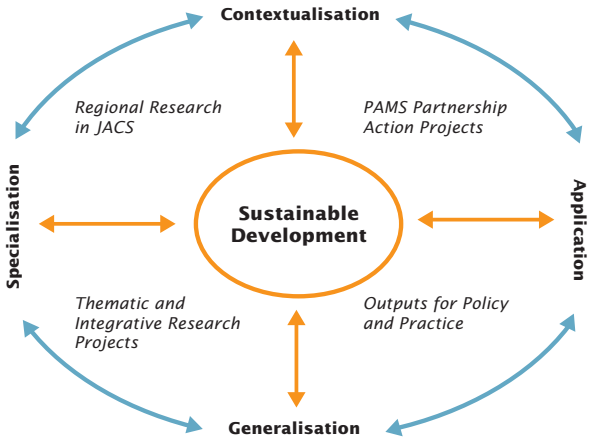

Fig. 4
Research directions (in bold) and components (in italics) that constitute the research approach of the NCCR North-South (2009). JACS: see Endnote 4; PAMS: see Endnote 5.

Contextualisation is the direction taken in research aimed at achieving more sustainable development in concrete situations, as this requires contextual differentiation and, in most cases, transdisciplinary dialogue. The nine partnership regions function as focal points and platforms for concrete partnership-based research, and partnership action projects[5] enable exchange and joint knowledge generation with non-scientific stakeholders. Within its nine partnership regions, the NCCR North-South focused on three main syndrome contexts – the urban and peri-urban, the semi-arid, and the highland–lowland contexts – during its previous phases. These contexts are emphasised less in the final phase of the programme, although at times they are still used as a meta-level reference in the synthesis projects. Contextualisation always involves production of all three types of knowledge – systems, transformation, and target knowledge.

Application guides researchers aiming to develop pathways for concrete mitigation of, or adaptation to, the negative impacts of global change. To conduct application-oriented research, processes of knowledge production and societal action at multiple levels need to be interwoven. Pathways for sustainable development are explored through specific research and action projects, applying research results in concrete situations; they are also taken up in concrete outputs for development policy and practice or in additional projects mandated by development agencies. This type of research concentrates on producing transformation knowledge.

Generalisation is needed to achieve research results that are valid for as broad a research context as possible. It means dealing with sustainable development in an integrative and transdisciplinary manner by applying a 'syndrome mitigation approach' (Hurni et al 2004). This implies looking at patterns of problems and potentials of sustainable development. Research findings from specific case studies and selected contexts are generalised and the overall theoretical, conceptual, and methodological foundations of the programme developed, with a view to gaining more systems knowledge and to some extent also transformation and target knowledge. Generalisation is carried out in scientific synthesis projects, which in turn are used for developing generalised outputs for policy and practice in ongoing global change debates.

In terms of programme components, *regional research projects* usually work towards contextualisation of their (inter)disciplinary specialisation. Conversely, *thematic and integrative research projects* work from regional specialisation towards global generalisation (Hurni et al 2010). The programme recently launched 15 post-doc research projects with regional foci and PhD and Master's studies. In addition, six projects jointly led by pairs of Northern and Southern senior researchers were initiated as contributions to global debates, addressing food security, land transformation, climate change, poverty, water, and migration. The third component, *partnership action projects*, consists of outreach activities that are based on research originating from contextual insights and apply the results at the practical level, with a view to increasing learning opportunities both in science and in society. Finally, generalised insights are made available for policy- and decision-makers at the national to international levels in the form of various *outputs for policy and practice*.

1.3 Experiences

1.3.1 Factors of success

Since 2001 the NCCR North-South programme has had the unique opportunity to gain multiple experiences from a large number of partnership-based research projects on global change for sustainable development. Based on these experiences, the most important principles for this type of research have been extracted here, their fulfilment being considered essential factors of success.

The long-term nature of the programme's global research partnerships has helped to build trust among partners, identify strengths and weaknesses among them, and develop research capacity while pursuing research activities. All partners have been able to rely on guaranteed minimum annual budgets as well as additional funds in case of need or opportunity. Programme steering has been participatory, involving all members of the international board of directors in the North and South. In addition, commonly agreed goals in research, capacity development, societal empowerment, institutional development, application activities, and policy advice have mutually reinforced and augmented the overall quality of each of these components.

The commitment to work not only towards generating systems knowledge, but to equally address target and transformation knowledge, has helped to make the research and capacity development societally relevant and application-oriented. In components directed towards systems knowledge, the programme has attempted to use systemic approaches to the biophysical, social, and economic subsystems, and has applied them at various spatial levels, also looking at genuine stakeholder participation and real process impacts. To enhance the programme's target knowledge, transdisciplinary negotiations were initiated, all activities being strongly oriented to actors and stakeholders. In generating transformation knowledge, finally, we found it crucial to assess systems and target knowledge, find out what actors are involved, and ensure their participation and agency ("Handlungskompetenz").

In relation to global initiatives, possible fields of activity such as mitigation and, to a lesser extent, adaptation were included in the assessments of target and transformation knowledge, as research should provide suitable solutions for these as well. The four research directions of contextualisation, specialisation, application, and generalisation have proved to be particularly useful for understanding where, why, how, and how widely potential solutions could be proposed, and what levels of management and spatial scales are appropriate. Research in support of these activity fields has been mostly cross-disciplinary and has generated extra-disciplinary and combined knowledge using appropriate research tools and approaches, such as biophysical methods, methods from the social sciences and economics, and geo-information methods for spatial and temporal aspects. Last but not least, the NCCR North-South programme considers it essential to also look at itself, observing and reflecting on development-oriented research as an object of research.

1.3.2 Synthesis outputs

The approach to global change research for sustainable development presented in section 1.2.3 is a basic premise of the NCCR North-South programme. The questions "What is global change?" and "What is sustainable development?" are meant to guide research in all four directions – specialisation, generalisation, contextualisation, and application – while putting values at the forefront of research. But who is to determine these values? How should future values be conceived? How should value-explicit strategies be defined and implemented? These questions imply that research takes place at the interface between the scientific community and society. They also imply the need for clarifying what actors participate in defining the fundamental values of development-oriented research, as well as the procedures and conditions under which this is done. These important issues, along with others outlined below, are examined in the present synthesis volume in an attempt to contribute to ongoing debates on research for sustainable development.

Understanding the dynamics of global change from local to global levels is a core issue. The realisation of globally coordinated research for sustainable development raises the central question of how to aggregate and generalise research findings on local, regional, national, and global dynamics.

Knowledge, transdisciplinarity, and reflexivity in research partnerships are other central matters of concern. What form of collaboration do we need, and what knowledge? Sustainable development, transdisciplinarity, and partnership are three concepts that are intrinsically connected to social and societal development processes. They belong together and reinforce each other, like three pillars forming the foundation of research for sustainable development. According to this image, the first pillar supporting NCCR North-South research is a sound understanding of sustainable development. The second pillar is the programme's partnership approach; it bears the challenge of exploring the kinds of research partnership through which sustainable development can best be achieved. Transdisciplinarity – the third pillar of development-oriented research – is implemented in the NCCR North-South through actor- and context-specific combinations of systems, target, and transformation knowledge. A critical question in this regard is how research deals with the threefold frame of reference of (1) one's own scientific discipline, (2) the wider field of interdisciplinary research, and (3) the non-academic knowledge of other societal actors.

Research on sustainable development cannot avoid reflecting upon the role of political structures and practices, since research and researchers both influence and are influenced by power relations and institutions. NCCR North-South experience is therefore investigated in terms of the potentials and limitations of research for sustainable development in reshaping power relations and power flows (politics) in order to reduce existing levels of inequality and exclusion. Important questions are: What knowledge and experience did the NCCR North-South produce regarding the role of political institutions and politics in shaping the human–environment interface? How are power structures and power flows (politics) addressed and tackled in research? Which kind of power relations prevent research for sustainable development from achieving its transformative purposes?

Applying actor-centred approaches is a standard in research for sustainable development. The synthesis findings and experiences of the NCCR North-South regarding the potentials and limitations of research focus on research orientation to actors and systems, providing answers to the following key questions: What role do local stakeholders play in setting the agenda for and evaluating NCCR North-South research and action? What roles do stakeholders in general play in research and mitigation? How can conflicts, dissent, negotiation, and conciliation be dealt with in actor-oriented approaches? What experience has been gained with institutional arrangements that benefit local stakeholders' livelihoods by reducing dependencies and enhancing adaptive capacity?

Access to resources in rural settings is a further core issue in NCCR North-South research. Improving access to natural resources, information, basic sanitation and health services, wildlife habitats, and other assets is a prerequisite and fundamental means of fostering sustainable development, though often this is not underpinned by evidence. This gap calls for NCCR North-South research to provide evidence of, or clarify, important elements and links between access to resources and sustainable development. In this regard, the present synthesis focuses on the following questions: What experience has been gained with links between access to resources and sustainable development? And, more specifically regarding the human–environment interface: How do actions promoting sustainable development influence stakeholder-specific balances of access to natural, social, political, cultural, and financial resources? How are social conflicts triggered or mitigated by changes in access to natural resources? And how are shortages and degradation linked to changing patterns of access to natural resources?

Due to the richness of its epistemological background, NCCR North-South research has evolved through a broad range of approaches. Integrative approaches and multi-level approaches, as well as concepts and approaches grouped under sustainable land management, sustainable health services, or sustainable environmental sanitation, are examples that reflect this diversity of epistemological backgrounds. In this regard, the aim of this synthesis is to elucidate potentials and limitations in dealing with epistemological diversity in research for sustainable development. This includes answering questions about opportunities for combining epistemological diversity on the basis of a common approach. Important questions might be: What commonalities and what differences can be found among the diverse approaches? Is there a common ground for further work? Does 'embracing diversity' supersede a common approach?

1.3.3 Outline of this book

The articles comprising the present volume tackle the above questions from different angles and in the context of different research topics. The book is organised in five parts, focusing on the NCCR North-South's theoretical foundations, as well as concepts, perspectives, and tools applied and developed, and insights into a number of important development issues examined from a sustainability perspective.

Foundations of research for sustainable development: Part I, which includes the present introductory article, reflects on the very foundations of the programme, discussing the overall setting of NCCR North-South research within the global debate on research for sustainable development. In Article 2, Wiesmann and co-authors argue that sustainability must be viewed as a normative concept which calls for societal co-production of knowledge at the interface of scientific communities and society as a whole. Programmatically, for the NCCR North-South, transdisciplinarity and research in partnership are two fundamental preconditions in the quest to bridge the gaps between disciplines (or paradigms) and between science and society.

Concepts of research for sustainable development: Part II discusses important and innovative research approaches taken by the NCCR North-South. The first two articles in this part of the book reflect on the way in which NCCR North-South researchers work together to produce knowledge for sustainable development. Article 3 by Upreti highlights the role of social learning processes in developing capacity among individuals and institutions and shows how NCCR North-South research activities provided an opportunity for partners

in the South to enhance their visibility and recognition. During or after their participation in the programme, many obtained better employment and came to occupy better positions; many were also able to attract more resources for research and publish more, expanded their academic activities, and collaborated more with other institutions. In Article 4, Zingerli examines the role of collaborative and intercultural knowledge production for sustainable development and highlights the importance of this form of research based on experiences from numerous NCCR North-South case studies.

The subsequent articles focus on the relations between research and other parts of society involved in the quest for sustainable development. In Article 5, Goetschel looks at the interface between development policy and research from a development perspective. Article 6 by Rist and colleagues explores the implications that incorporating endogenous knowledge in development processes has for research for sustainable development, and examines under which conditions endogenous and scientific communities can enter into a dialogue in order to jointly produce knowledge for more sustainable development. Lacroix and colleagues underline in Article 7 that social and political participation in sustainable development research and practice is indispensable, and has to be coupled with a focus on governance. Governance is further explored in Article 8 by Hufty, who describes four approaches to this concept – corporate governance and the sociology of organisations, global governance, good governance, and modern governance – and analyses their strengths and weaknesses with a view to developing a new tool for analysing governance processes. In Article 9, Bieri and colleagues present insights from gender-considerate research on global change and show that a gender perspective can function as a tool for thought and transformation. Article 10 by Zinsstag and co-authors, finally, shows how the recognition of gaps between disciplinary knowledge generated from an external perspective and actual development processes has resulted in a new awareness, leading to the incorporation of other disciplines in order to achieve broader social, behavioural, and economic perspectives on the different technical issues under study.

Actor perspectives in research for sustainable development: Part III offers discussions of actor-oriented concepts that have played a fundamental role in research for sustainable development both generally and within the NCCR North-South, including livelihoods, actors, gender, and vulnerability and resilience. In Article 11, Wiesmann and co-authors argue that deeper reflection on the conceptual foundations of livelihoods approaches is crucial in developing an adequate concept of 'actors'. Geiser and colleagues show in Article 12 that by re-theorising livelihoods approaches based on theories

from the social sciences dealing with power, inequality, and everyday social practices, they can be developed into a challenging livelihoods perspective in critical development studies. In Article 13, Obrist and co-authors argue for shifting the focus of mitigation research from vulnerability to resilience and thus on how actors can develop proactive mitigation strategies. Article 14 by Ott and Bieri analyses the NCCR North-South 'gender route', highlighting useful insights into gender mainstreaming policies and strategies both for future research within the NCCR North-South and for other development-oriented institutions. In Article 15, Geiser and colleagues reflect on the concepts of livelihood assets and access to these assets within a broader context of contested political processes and show how this broader understanding of social realities contrasts with the social analyses usually underpinning development interventions. Article 16 by Thieme develops a theoretical basis for transnational migration studies that allows combining a livelihoods approach with a perspective on transnational social spaces in order to examine how migrants manage their multi-local lives.

Tools in research for sustainable development: Part IV discusses a number of tools for working with the above concepts and approaches and tackling various research questions regarding global change and sustainable development. In Article 17, Gallati and Wiesmann show that system dynamics complies with the majority of epistemic requirements of transdisciplinarity, and recommend it as a valuable tool for transdisciplinary research, highlighting its potential for overcoming difficulties in generalising transdisciplinary findings. Article 18 by Ehrensperger and colleagues synthesises experience with the potentials and limitations that geographic information sciences (GIS) and geo-information tools have in developing participatory and multi-stakeholder processes for sustainable development, basing their assessment on considerations of spatial scales and policy levels. Spatial scales are an important focus of Article 19 as well, in which Messerli and co-authors propose a new approach to describing landscape mosaics, focusing on a meso-level spatial scale and interpreting them in terms of human–environment interactions. In Article 20 Hufty, based on his analysis of different approaches to governance in Article 8, develops a practical methodology for investigating governance processes.

Thematic foci in research for sustainable development: The articles in Part V synthesise experiences and insights gained in research projects investigating global change processes from a sustainability perspective. Article 21 by Breu and co-authors, for example, establishes factors affecting land users' efforts to sustain the productive use of natural resources as a crucial

prerequisite for sustainable land management. A similar point is made in Article 22 by Goetschel and Péclard, although in a different context: While confirming that climate change, and especially resource scarcity, can lead to violent conflict, the authors underline that it is crucial to put social and human dimensions at the centre of the analysis when trying to understand the relationships between changes in the environment and violent conflict. Social and human dimensions are also the focus of Article 23 by Haller and Galvin, who argue that grassroots participation in conservation initiatives has to be based on local land rights and the opportunity to take part in crafting the institutional design of protected areas.

The following two articles focus on the relations between economy and development. In Article 24, Ludi and colleagues explore the potential of speciality coffee production as a way out of poverty for small-scale producers in Africa and show that this market still needs to be improved in order to offer producers sustainable development benefits. Another important economic insight is presented in Article 25 by Kappel and Agrawal, who demonstrate that the direction of causality is from income growth to poverty reduction, rather than the other way round. The results from this study in India illustrate how important it is to implement policies and institutional reforms promoting economic growth in order to reduce poverty. In Article 26, based on an analysis of transformations in the livelihoods of livestock-based populations in West Africa, the Horn of Africa, and Central Asia, Bonfoh and co-authors underline the importance of equitable and effective access to pastoral resources based on an appropriate institutional framework and equity-effective basic social services.

Article 27 by Rabinovich shifts the focus from rural to urban contexts. Based on comparative research on different continents she shows that innovation in 'urbanism' thinking has increasingly responded to the need for linking heterogeneous players, diverse scales, and multiple dimensions. In Article 28, Schnabel and co-authors examine human security in urban settings and conclude that a security concept which focuses on humans as a referent object can reveal unexpected causes of urban insecurity and thus guide efforts towards improvement. Article 29 by Zinsstag and colleagues, finally, focuses on equity effectiveness in health interventions. Synthesising findings from various studies in Africa and Asia, the authors argue that equity in the provision of basic services such as health care, drinking water, and environmental sanitation are essential elements and a precondition of development and environmental sustainability.

Endnotes

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[4] The NCCR North-South partnership regions are also known as Joint Areas of Case Studies (JACS). Regional Coordination Offices (RCOs) were established in each of these JACS at the outset of the programme. The original function of the RCOs was to coordinate research; in the ongoing final phase of the programme, RCOs are working to consolidate the existing research network in the South and function as knowledge hubs for generating new research projects and partnerships.

[5] Partnership Actions for Mitigating Syndromes (PAMS) are projects implemented by local actors together with scientific and non-scientific stakeholders. As a component of the NCCR North-South programme they are designed to implement and validate approaches, methods, and tools developed in research, with a view to finding promising strategies and potentials for sustainable development. Moreover, they are intended to promote mutual learning and knowledge-sharing between academic and non-academic partners in sustainable development.

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2 Combining the Concepts of Transdisciplinarity and Partnership in Research for Sustainable Development

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Abstract

The present article elaborates on the specific approach to and practice of research for sustainable development as conceptualised and implemented by the Swiss National Centre of Competence in Research (NCCR) North-South. At the core is the overarching understanding of sustainable development as a normative concept demanding goal-oriented collaboration among disciplines as well as co-production of knowledge at the interface of scientific communities and society. Transdisciplinarity, research partnerships, and a recursive research approach are necessary pillars in the quest to bridge disciplines and paradigms, as well as science and society in sustainability-oriented research. We argue that research for sustainable development faces major conceptual challenges related to system definition, linking to disciplinary discourses and progress, and bridging contextuality and generalisation, alongside operational challenges of conflicting reference systems, conflicting basic objectives, and complex science–society interfaces. With reference to the NCCR North-South we show how these challenges can successfully be dealt with. Finally, we argue that sustainability-oriented development research, transdisciplinarity, and research partnerships can be strengthened in science and knowledge societies by systematically addressing the basic challenges at the levels of scientific concepts and methodologies, underlying ontologies, and scientific and social interactions and collaborations, as well as at the level of management and communication. This will require major efforts within broadly based research networks backed by political commitment and support – as is the case in the NCCR North-South.

Keywords: Sustainable development; transdisciplinarity; research partnerships; knowledge forms; development research; science–society interface; contextuality; research management.

2.1 Introduction

There are many ways of defining and practising 'development research'. The literature refers to research for development, research on development, development policy research, or, rather generally, international development studies (e.g. Habermann and Langthaler 2008; Sumner and Tribe 2008). The emphasis of the respective definitions and practices of development research depends considerably on the research community, their objectives, and the sources of funding available to them. Overall, development research is a hybrid, cross-disciplinary, pluralist field of inquiry which requires – but often lacks – specification of goals, approaches, and underpinning theories. This also holds true for research that specifically aims to contribute to sustainable development.

We argue that this lack of specification is a major reason why the vision and concept of sustainable development have not yet fulfilled their potential. Recent global assessments (e.g. MA 2005; UNDP 2005; IAASTD 2009) and shortcomings in the implementation of global approaches (Millennium Development Goals, United Nations Convention to Combat Desertification, United Nations Framework Convention on Climate Change, post-Kyoto process) clearly indicate that the global community has not progressed enough in efforts to mitigate problems of global change. Indeed, the world's natural resources are still deteriorating, and the quest for equity is often contested and thwarted by short-term social, environmental, and economic problems (Rockström et al 2009). It is clear that the fundamental implications of reorienting and reorganising the interplay between science and society based on the concept of sustainable development are not easy to comprehend (Jäger 2009). Moreover, implementation of such a reorientation opens a box of challenges. Reflection on the theory of sustainable development and practical experience can help us to eliminate stumbling blocks and open avenues for conceptually sounder and societally more relevant research for sustainable development.

The present article elaborates on the approach to and practice of sustainability-oriented development research of the Swiss National Centre of Competence in Research (NCCR) North-South. This international research programme oriented towards 'Mitigating Syndromes of Global Change' has, since its inception in 2001, pursued a specific type of development research. This research is deemed to provide a better understanding of global development challenges characterised by multi-scale linkages and high complexity,

as well as ideas about how to mitigate these challenges (NCCR North-South 2002). At the core of the NCCR North-South's research approach is the overarching understanding of sustainability as a normative concept requiring societal co-production of knowledge at the interface of scientific communities and society (Hirsch Hadorn et al 2008; Pohl et al 2010). For the NCCR North-South, transdisciplinarity and research partnerships form two fundamental pillars in the quest to bridge disciplines and paradigms, as well as to link science and society in sustainability-oriented development research.

In this article, the authors aim to clarify and justify the conceptual links between 'sustainability-oriented development research', 'transdisciplinarity', and 'research partnerships', which are elements that are often mentioned as necessary in the context of development research but are seldom clarified (section 2.2). Drawing on a decade of experience, the authors point to core challenges in the theory (section 2.3) and practice (section 2.4) of sustainability-oriented research, and show how the programme responded to these challenges over time. Based on this analysis, the authors draw conclusions for the fairly young field of transdisciplinary sustainability-oriented development research.

2.2 Transdisciplinarity and partnership in sustainability-oriented development research

2.2.1 The value dimension in the sustainability concept

The declaration of the United Nations Conference on the Human Environment (UNEP 1972), followed by the adoption of the Brundtland definition of sustainable development (WCED 1987) and the declaration on sustainable development at the UN Conference on Environment and Development (United Nations 1992), have fundamentally changed the global agenda for policy on, and practice of, development and cooperation (Funtowicz et al 1998; UNESCO 2000). By linking equity with sustainability, the advocates of sustainable development inevitably framed a normative concept (Wiesmann 1995, 1998; Wiesmann et al 2008). This concept encompasses values and targets in three mutually dependent dimensions – the economic, sociocultural, and ecological dimensions, visually captured in the 'magic triangle' of sustainability. These dimensions have to be weighed against one another in terms of trade-offs and symbioses in order to delineate how inter- and intra-generational equity can best be achieved. The sustainability concept

implies a reconceptualisation of the relation between science and society, making all accountable for realising a shared vision of inter- and intra-generational equity. As a sociopolitical model for societal change, sustainable development has been broadly taken up in science and policy (Becker 2000; Hirsch Hadorn et al 2006; Hirsch Hadorn et al 2008). Accordingly, 'transdisciplinarity' and 'partnership' have been framed as concepts to bridge science and society, and as a means to make research both a part and a driver of social learning processes for societal problem solving (Wiesmann 2009).

Ideas of transdisciplinarity and partnership in research are not new. Yet the concept of sustainable development has brought them to the fore (Meppem and Bourke 1999; Standing and Taylor 2007). Consequently, Northern approaches to combining knowledge systems, integrating stakeholders from society in attributing weight and value to knowledge generated by science, and conducting various types of action research have fruitfully been merged with a Southern perspective on integrating local actors into development agendas, bottom-up and participatory development, and local partnership (Wiesmann 2009; Zingerli 2010). The debate on complementarities between Northern and Southern theories of social action and societal transformation has generated new ideas on 'reflexive learning' between actors who belong to different systems of knowledge; such reflexive learning is conceived of as a dialogue between different 'epistemic communities' (Rist et al 2004; Hirsch Hadorn et al 2006; Rist 2007, pp 24–25). Indeed, development research has taken up the challenge of a 'new contract' between science and society, as Lubchenco (1998) termed the demand for a new commitment of researchers to tackling the problems of society in the 21st century (Jäger 2009). The resulting and far-reaching implications for research are considered and taken up by the NCCR North-South as described below.

2.2.2 Scope and relevance of transdisciplinary partnership approaches

The NCCR North-South views transdisciplinary partnership approaches as appropriate where strongly "coupled human–environment systems" – sometimes also referred to as "socioecological systems" (Young et al 2006, p 1) – are the basic unit of analysis. These systems are characterised by high complexity and insecurity. Despite the fact that progress in science and technology has broadened our capacity for intervention, understanding and controlling of system complexity is beyond our ability. Uncertainties even increase with new knowledge and experience, and scatter system boundaries. The normative concept of sustainability implies that only by attributing, nego-

tiating, and agreeing upon values are we able to identify the problems to be addressed, find ways to reduce system complexity – that is, delineate new system boundaries – and identify appropriate simplification and structuration that enable meaningful and goal-oriented scientific contributions (Sterman 2002; Hurni and Wiesmann 2004; Pohl and Hirsch Hadorn 2007). Otherwise, the system stays infinite, the complexity remains overwhelming, and interventions and impacts necessarily become random and unsustainable. As a result of the normative dimension of sustainability and the need for related social references, each socioecological system represents a unique case (Wiesmann and Messerli 2007). It is this contextuality that allows us to grasp the meaning and implications of 'sustainability', yet this same contextuality also limits the significance of results to basically one context. The NCCR North-South programme, however, has sought to go beyond the level of the unique case by synthesising contextualised insights, models, and approaches in order to achieve a level of generalisation about sustainable development.

2.2.3 Reconsidering knowledge: three knowledge types for sustainability

The concepts of sustainability and sustainable development have fundamentally reshaped our understanding of what knowledge is necessary for defining policies and strategies. It has been argued that knowledge is not always what is needed most for adequate action, and science has to be humble about its capacity to reach an understanding of the complexity of existence and succeed in managing it (see Hirsch Hadorn et al 2006; Stilgoe et al 2006). But far beyond this, the concept of sustainable development as a vision implies that the relevance of knowledge about 'what is' is tied to knowledge about 'what ought to be', and must be complemented with knowledge about 'how to get there' (Wiesmann 1998). These three questions refer to three knowledge types (ProClim 1997) that are taken up in the NCCR North-South as *systems knowledge*, that is, knowledge about contexts exposed to and reacting to global change; *target knowledge*, encompassing negotiated and agreed-upon values and goals; and *transformation knowledge*, which bridges what 'ought to be' and what 'is' by identifying the most adequate ways and measures for getting from the 'is' to the 'ought'. Combining these knowledge types and reflecting on them makes it possible to respond in a flexible way to: (1) the complexity of the socioecological system despite a high degree of uncertainty with regard to system dynamics and impacts; (2) a broad range of conflicting stakes within societies, since it is a way of analysing and modifying the system that directly takes into account everybody's interests and future life-world; and (3) determining the role of val-

ues as ethics and attitudes of stakeholders, by endorsing 'what is' and 'what ought to be'. Such an understanding makes it obvious that even without contemplating the 'real nature' of reality, or truth, science has no monopoly on knowledge (Funtowicz et al 1998). But science and society are bound to enter into processes of knowledge generation and valuation for sustainable development. These processes require a transdisciplinary and partnership approach (Gallopín et al 2001; Hirsch Hadorn et al 2006; Bradley 2007; Zingerli 2010).

2.2.4 Transdisciplinarity

Within the NCCR North-South, transdisciplinarity is understood in terms of actor- and context-specific combinations of the three different knowledge types – systems, target, and transformation knowledge. This understanding incorporates three fundamental positions within the concept of transdisciplinarity (Thompson Klein et al 2001; Hurni and Wiesmann 2001; Wiesmann et al 2008): (1) Transdisciplinarity intends to build bridges in the world of science. Here, mainly in the generation of systems knowledge, transdisciplinarity goes beyond interdisciplinary approaches (of often neighbouring disciplines) by integrating the natural, technical, and social sciences and the humanities – notably disciplines separated by different epistemological paradigms. (2) Transdisciplinarity intends to bridge science and society. As a consequence, researchers and other actors have to play their respective part in social and political processes for sustainable development. Their new roles are basically defined by the fact that sustainable development can only be meaningfully understood and negotiated in a specific socioecological context by taking into account the values and knowledge of the actors involved. (3) As a combination of the first two positions, transdisciplinarity is devoted to the question of how best to organise co-production of knowledge and social learning processes at the interface of science and society.

As for sustainable development, neither the problem itself nor ways of solving it can be formulated in advance. The contributions of scientific disciplines are not predefined; research designs, their institutions, interaction, and procedures undergo constant modification. This 'new way of doing research' implies neither a hierarchy within science nor the replacement of disciplinary or interdisciplinary research by transdisciplinary research (Wiesmann et al 2008; Herweg et al 2011). Disciplinary contributions are embedded in sustainability-oriented research in a reflexive and recursive process. The rationale for bridging disciplines and disciplinary paradigms as well as science and society strongly binds transdisciplinarity to a partnership approach.

2.2.5 Research in partnership

Very early in the discourse on sustainability, a consensus emerged about the value of 'equitable development'. This implies a need for reflecting on power issues not only with regard to the goals of sustainable development, but also regarding ways to achieve such development (Zingerli 2010). Basically, the transdisciplinary partnership approach within the NCCR North–South responds to the need to link disciplines as well as science and society and to make transdisciplinarity operational. The partnership component mainly consists of a North–South and South–South network of partners (Upreti et al, in press). The programme intends to combat the profound lack of integration of perspectives, perceptions, and values of countries in the South in the conceptualisation and implementation of sustainable development. Thus it also addresses the quest for correcting global development disparities, which are extremely pronounced in the realm of research (UNESCO 2010), and the quest for devolution of power from usually dominant, Northern science-based research programmes to participating institutions and partners of the global South (KFPE 1998, 2009; Hurni and Wiesmann 2004; Bradley 2007). Many of the collaborating partner institutions and organisations in the programme not only engage in academic research but also establish connections with policy, implementation, and advocacy. In development research, networks consisting of academic and non-academic members require various modes of knowledge co-production (Gibbons et al 1994; Sumner and Tribe 2008). Such interaction allows not only for negotiating values, goals, and strategies of sustainable development and organising adequate structures and processes of interaction and exchange, but also for reducing the tensions between shared concepts (consensus) and maintaining required and acceptable differences (dissent) between the partners involved. As a consequence, working in partnership increases the relevance of research contributions to sustainable development and enables researchers to try and meet basic ethical demands such as enhancing equity, ownership, and transparency within partner institutions.

2.2.6 Challenges in reflective and recursive research processes

To summarise, research for sustainable development has to be conceptualised and practised in a manner different from conventional approaches to basic, disciplinary, and interdisciplinary research. The difference lies in integrating analytical and normative knowledge. The question of how to realise such integration bears profound challenges for the scientific community. The NCCR

North-South has been responding to this need by supporting joint reflexive and recursive research processes at the science–society interface (Dumoulin 2005). The rationale is to make explicit and negotiate values and norms, integrate different forms of knowledge, and attribute weight and value to knowledge generated by science in order to produce socially acceptable, broadly based, high-quality, and sustainable solutions. Such a process involves restructuring of problems and modification of assumptions, which in turn calls for a research design that is basically recursive (Wiesmann et al 2008).

Although the combination of transdisciplinarity and research partnerships provides a conceptually sound basis for such research, no formula or blueprint exists for how to make this combination operational. Moreover, in practice researchers obviously face a broad range of epistemological and operational challenges that affect not only them but also all other parties involved. In what follows, we capitalise on the NCCR North-South's experience of implementing transdisciplinary research in partnership. This rich experience provides insights into the specific epistemological and practical challenges facing transdisciplinary research partnerships for sustainable development, as well as pathways for tackling these challenges.

2.3 Coping with conceptual challenges of sustainability-oriented research in partnership

2.3.1 Three major conceptual challenges

Acknowledging that the concept of sustainable development combines a value perspective (the 'ought to be') with a systemic perspective (the 'is') has implications for the operationalisation of this concept in research and practice. Some of these implications prevent sustainability-oriented research from making meaningful contributions (Wiesmann and Messerli 2007). In the process of conceptualising the NCCR North-South programme, three of these challenges received special attention:

1) **The challenge of system definition:** This challenge is related to the need for defining a system as the relevant analytical unit of sustainability-oriented development research. As long as the system to be addressed remains infinite and vague, any conclusion or intervention is in danger of being arbitrary. Additional scientific efforts might then solely provide more insight into overwhelming complexity and uncertainty, without detecting pathways for sustainable development. The way out is to

keep in mind that a "system" is basically a model (Sterman 2002) which depends on the problems or questions we have. Consequently, the general quest for 'sustainable development', which leads to an infinite system definition, has to be specified to a level that enables a researchable definition of elements, relations, and boundaries of the system. In other words, the more clearly the goals of sustainable development are formulated, the more clearly the analytical unit can be delineated. To put it bluntly, the key to system definition in sustainability-oriented research lies in the normative dimension of sustainable development, and not in its systemic dimension. Negotiating the normative dimension in partnership therefore becomes an essential foundation for sustainability-oriented research.

2) **The challenge of linking transdisciplinary research to disciplinary progress:** Due to the normative dimension of sustainability, research for sustainable development ultimately has to be transdisciplinary. However, as outlined above, transdisciplinarity is neither a new nor a meta-discipline; its quality depends – besides the science–society interface – largely on the quality and integration of disciplinary contributions and underlying theories. Experience shows that this quality is frequently jeopardised in sustainability-oriented research by undertheorised forms of holism, a discourse trapped at a meta-theoretical level, or a retreat into simple pragmatism. For this reason, transdisciplinary practice often lags behind disciplinary discourses and is unable to incorporate disciplinary progress in terms of insights, and even less so in terms of theories and methodologies. The resulting danger of amateurism also strongly restricts the innovative potential that transdisciplinary endeavours can have for the participating disciplines (Wiesmann et al 2008). This challenge requires close consideration of how to define the system as well; indeed, the more clearly the system is defined, the more adequately will disciplinary concepts be linked with the research endeavour. Therefore, in multidisciplinary partnerships, negotiating and reflecting on the normative dimension of sustainability and its consequences for the definition of the system, as well as on the system's linkages to the theories and ontologies underlying disciplinary methods and tools, become a key to high-quality research for sustainability.

3) **The challenge of contextuality and generalisation:** This challenge results from the fact that sustainability, or the 'ought to be', can only be defined in concrete sociopolitical contexts through the attribution by the people concerned of values related to development. This contextuality of the normative dimension implies that any sustainability-oriented endeav-

our – at whatever scale – is basically a unique case; thereby it limits the possibility of generalising results. Generalisation through formulation of sustainability principles or through the dissemination of successful and usually sectoral sustainability measures may have practical importance. Yet there is a need for more profound solutions that reduce the tension between the contextuality necessary in sustainability-oriented endeavours and the generalisation required in them. Theoretical, conceptual, and methodological development of generalisation is therefore a prerequisite to increasing the practicability, quality, and relevance of sustainability-oriented development research.

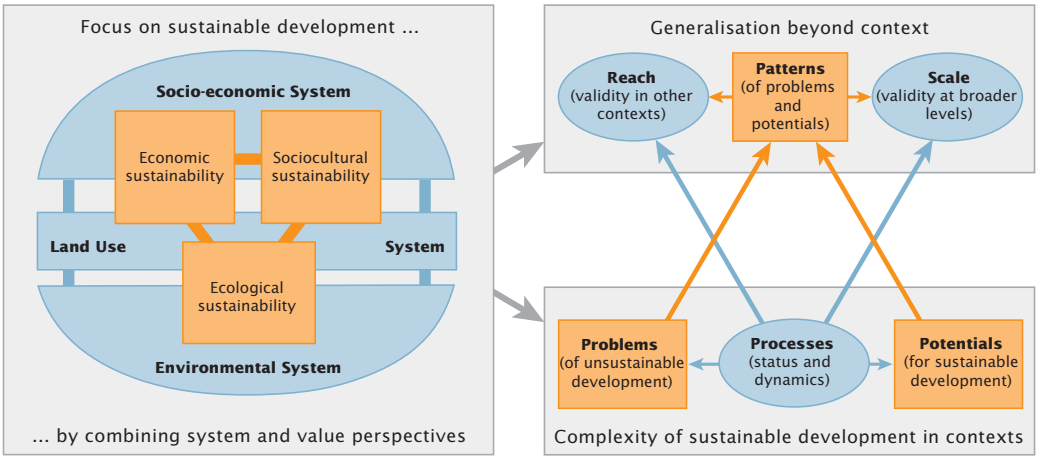
2.3.2 Meeting conceptual challenges in the NCCR North-South

At the outset of the NCCR North-South, these conceptual challenges were taken into account by introducing the so-called 'syndrome concept'. This conceptual framework aimed to form the bracket for sustainability-oriented research in three major contexts (semi-arid areas, highland–lowland systems, urban and periurban areas) in nine partnership regions or 'Joint Areas of Case Studies' (JACS)[5] on four continents. The concept of syndromes of global change had originally been proposed by the German Advisory Council on Global Change (WBGU 1997) and the Potsdam Institute for Climate Impact Research (PIK) (Schellnhuber et al 1997; Petschel-Held et al 1999), but was significantly modified to incorporate the normative dimension of sustainable development and to frame the sustainability-oriented research of the NCCR North-South (Cassel-Gintz 2003; Hurni et al 2004).

The basic assumptions of the modified syndrome concept are twofold. First, it is assumed that it is easier to negotiate the normative dimension of sustainability by naming problems of unsustainability than by defining sustainability targets. If, in addition, the concrete manifestation and severity of such problems in specific contexts is left aside, a list of core problems of unsustainable development can be negotiated between different contexts that form a comparative basic set of variables for sustainability-oriented research. Second, it is assumed that the concrete manifestations of several of these problems can be similar in different contexts, thus forming specific clusters or patterns of core problems. Such a pattern of core problems is called a syndrome of unsustainable development. It can be hypothesised that similar processes and dynamics underlie a syndrome. In other words, the normative dimension of sustainable development is captured by patterns of core problems, and the systemic dimension by the hypothesis of similarities

in the underlying dynamics of global change and contextual responses. This basic concept was further extended by supplementing patterns of problems with patterns of potentials for more sustainable development. This, in turn, made it possible to include the dimension of transformation knowledge. The 'syndrome concept' was thus reconceived by the programme as a conceptual framework for mitigating syndromes of global change. In sum, the syndrome concept of the NCCR North-South aimed to respond to (1) the challenge of contextuality and generalisation through its pattern component; and (2) the challenge of system definition through a process of negotiating core problems of unsustainable development and potentials for sustainable development; therefore (3) it also aimed to lay the foundations for linking transdisciplinary research to disciplinary theories (Figure 1).

Most crucial in framing sustainability-oriented research was a major participatory research effort at the outset of the NCCR North-South to negotiate and define a list of core problems of unsustainable development among all partners and partner regions of the NCCR North-South (Hurni et al 2004; Wiesmann and Hurni 2004). The participating researchers and regional representatives came up with a list of 30 core problems grouped in five scientific realms (Table 1). The joint negotiation process allowed for delineating the system boundaries, identifying the problems at stake, and setting the starting point for a common research agenda. Most importantly, negotiated results represented the views from both the North and the South, creating a broadly based ownership of the NCCR North-South research approach. In addition,



Key: blue = system perspective; orange = value perspective

Source: NCCR North-South; Wiesmann 1998, 2008

Fig. 1 Conceptual framework for mitigating syndromes of global change: contextuality and generalisation in sustainability-oriented research. Blue elements pertain to the systemic perspective, orange elements to the normative perspective. (Source: NCCR North-South, internal documents; Wiesmann 1998, 2008)

it enabled the development of specific regionally based JACS research strategies and outputs (Hurni and Wiesmann 2010) without jeopardising cross-JACS collaboration and synthesis. As an open framework the syndrome concept made it possible for joint reflection and adaptation of the research design to take place continually over time. For the participating scientific disciplines, the negotiated definition of core problems of unsustainability enabled a clear framing of disciplinary contributions, for example through PhDs, against the background of a broader common view of problems and the corresponding systems. This triggered not only inter- and transdisciplinary collaboration in the empirical research that was initiated, but also debates on underlying theories and ontologies (Dumoulin 2005). In several cases, this cross-disciplinary reflection led to generic and innovative contributions to global theoretical debates, for example the contribution to the emerging concept of "resilience" in several disciplines (Obrist et al 2007) or the concept of "one health" (Schelling et al 2008; Schelling et al 2009).

In sum, in nine years of NCCR North-South experience, the syndrome concept proved to be an important tool for overcoming crucial conceptual challenges of sustainability-oriented research and a means of framing transdisciplinarity and research partnerships within the programme. We can state that the conceptual framework of the NCCR North-South was (1) theoretically sound enough to enable mastering of the three above-mentioned conceptual challenges facing sustainability-oriented research, (2) unifying enough to trigger high-quality transdisciplinary collaboration and balanced and reflexive partnerships, and (3) open and flexible enough to accommodate innovative disciplinary and interdisciplinary, as well as contextually rooted contributions to more sustainable development. On a critical note, one could add that the term adapted from WBGU (1997) and the original concept of 'syndrome' placed too much emphasis on problems and did not sufficiently showcase the development potentials upon which the NCCR North-South has also strongly been focusing. In addition, systematic analysis of the patterns of problems, potentials, and processes analysed in the individual research projects has not yet been concluded, leaving room for further conceptual development. However, comparisons of patterns have already been conducted for a wide range of topics, enabling the NCCR North-South to make substantial synthesis contributions to current debates on global issues of sustainable development.

Table 1

Core problems of unsustainable development as negotiated and defined in nine Joint Areas of Case Studies (JACS).

Scientific realms	No.	30 core problems
Political and institutional	1	Weak international geopolitical position and negotiation power
	2	Dominating and conflicting world views and ethical values
	3	Contradictory policies and weak formal institutions at different levels
	4	Inadequate legal framework and regulations, lack of enforcement and means
	5	Erosion of traditional and/or indigenous institutions
	6	Governance failures, insufficient empowerment and decentralisation
	7	Unequal distribution of power and resources, corruption
Sociocultural and economic	8	Social, cultural, and ethnic tensions and insecurity
	9	Prevalence of crime, violence, and violent conflicts
	10	Unused or restricted innovative capacities and knowledge
	11	Great socio-economic and gender disparities
	12	Incompatible and fragile economic systems with limited market and employment opportunities
	13	Dominance of the global economy over national development
Population and livelihoods	14	Restrictions on human rights and individual development potential
	15	Poverty and livelihood insecurity
	16	Health risks and vulnerability to ill health
	17	Population pressure and multidimensional migration
	18	Unfavourable dynamics and imbalances in sociodemographic structures
Infrastructure, services, and land use	19	Poor water supply and environmental sanitation
	20	Lack of adequate infrastructure and management (e.g. transport, energy, and irrigation)
	21	Limited and inadequate socio-economic services such as education, health, and markets
	22	Discrimination in information and communication flows and technologies
	23	Inequality of ownership and access to land, natural, and common-property resources
	24	Inadequate and conflicting land use systems and technologies
Biophysical and ecological	25	Inadequate availability of freshwater
	26	Degradation of land, soil, and vegetation cover
	27	Degradation of forests and other natural habitats
	28	Pollution and overuse of renewable and non-renewable natural resources
	29	Loss of biological and agrobiological diversity
	30	Risks of natural and human-induced hazards and climate change

2.4 Coping with operational challenges in transdisciplinary partnership-based research

2.4.1 Three important operational challenges

We have argued that sustainability-oriented development research ultimately requires a transdisciplinary and partnership approach based on sound disciplinary contributions. This implies major operational challenges that are rooted in the social constellations and interfaces typical for transdisciplinarity and partnerships, including the intercultural dimension of research partnerships, the need for crossing epistemological borders in interdisciplinary collaboration towards sustainable development, and the difficulty of dealing with a science–society interface in which power relations tend to dominate knowledge relations (Pohl et al 2010). This triple social exposure of sustainability-oriented research implies that the related operational challenges are significantly more pronounced than in disciplinary research endeavours. In the course of conceptualising and running the NCCR North-South programme, three major operational challenges received special attention.

1) **The challenge of conflicting reference systems:** Due to the multiple social embeddedness of sustainability-oriented research, individual researchers and whole programmes are exposed to a range of highly conflicting reference systems. Among these reference systems are: (1) disciplines and respective academic home institutions, where careers and positions are determined by the level of disciplinary contributions and their recognition within the system of peers, (2) the interdisciplinary research team and the partnerships involved, where merits stem from the capacity to collaborate and produce goal-oriented contributions, although these receive less formal recognition in academia, and (3) the society concerned, its stakeholders, decision-makers, and commissioning agencies, as well as each researcher's own livelihood background, where outcomes in the form of societal uptake may be recognised, but are difficult to assess. These reference systems do not coincide at all. At the individual level, the researcher is under pressure regarding whom he is responsible to and to what degree. Depending on the team members' career stages and their scientific and cultural background, they will respond differently to these tensions and set different priorities within the various reference systems. This may lead to misunderstandings and even to conflicts within teams and projects – a danger which is even greater in intercultural partnerships. Commonly, conflicting reference systems lead to two reactions, both of which

reduce the quality of transdisciplinary endeavours. First, the pressure to perform disciplinary and interdisciplinary outputs and outcomes is internally – and externally – increased to a level where reproduction tends to replace innovation. Second, the profiles and roles of individual researchers are cemented according to their disciplinary origins or along gender or North–South divides to a degree that cross-disciplinary communication is easily interpreted as trespassing, thereby hindering interdisciplinary innovation. The way out of this challenge is to find an appropriate mix between compulsory and open components within transdisciplinary and partnership-based research endeavours that enable a balance between individual and collective orientations. A clear phasing of these components is essential, implying that socially sensitive allocation of time and sequencing in timing become key concerns and key factors of success.

2) **The challenge of conflicting objectives:** The triangle of innovative research, capacity development, and societal impact very often forms the basic goal orientation of transdisciplinary and partnership-based research endeavours, and in fact, many commissioning agencies explicitly demand a focus on this triple goal (Figure 2). The corresponding assumption is that high-quality research leads to high societal relevance and is accompanied by significant capacity development. However, experience has

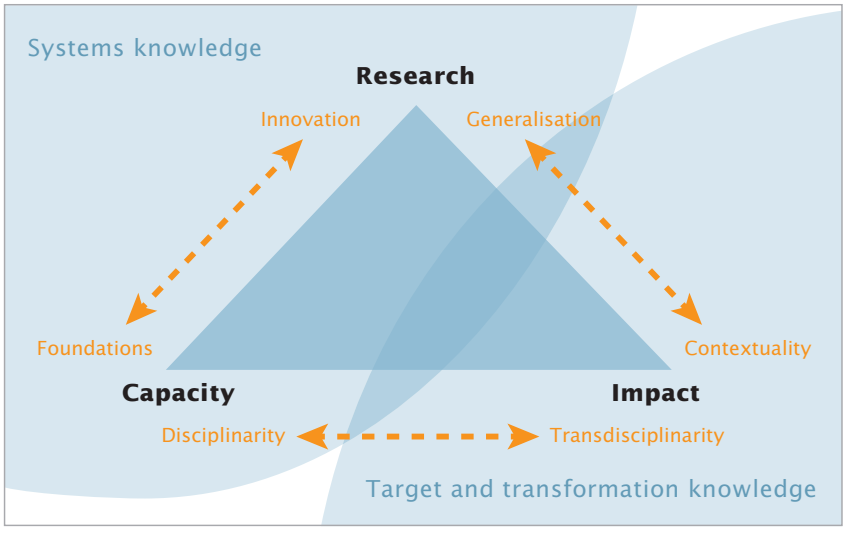


Fig. 2
Conflicting basic objectives of sustainability-oriented research endeavours.

shown that these goals are in conflict: High-quality research has to deal with the 'unknown' at the forefront of knowledge and aims to produce findings that can be generalised, whereas capacity development requires concentration on consolidated knowledge and methodologies, and societal relevance and impact are based on concrete, contextualised knowledge and innovations. In addition, research and capacity development tend to focus on understanding processes and dynamics in the sense of systems knowledge, whereas society expects answers regarding what can be done, therefore demanding increased target knowledge and particularly transformation knowledge. These conflicting orientations are also reflected in the disciplinary composition: While capacity development primarily requires concentration on disciplinary foundations, innovative research findings often emerge at or across the boundaries of established disciplines, and high societal relevance requires science–society interfaces in the sense of transdisciplinarity and negotiated values. Facing the challenge of conflicting objectives requires well-balanced phasing and structuring of respective research endeavours in components suited to generate outputs as well as outcomes in line with all three basic objectives: innovation, capacity development, and societal impact.

3) **The challenge of the science–society interface:** Unless one takes the widespread but untenable attitude that – predominantly male and Northern – researchers and experts represent all relevant societal values and can therefore define the normative dimension of sustainable development, science–society interactions become a necessity in sustainability-oriented research. However, the required science–society interface is caught between two contradicting poles. On the one hand, concrete sociopolitical development contexts are usually characterised by a broad range of conflicting values and complex power relations that are intensified in developing countries by countless stakes and demands of development agencies and other stakeholders. On the other hand, the peripheral political position of development cooperation in Northern societies and the weak position of transdisciplinarity in science imply that sustainability-oriented research faces a dual marginalisation in science and society. This dual marginalisation provokes an externally and internally driven pressure on output, visibility, and success that hinders adequate attention to the complexity of the concrete sociopolitical contexts. This, in turn, increases the danger that the science–society interface in transdisciplinary endeavours may be reduced to superficial participation or to purely demand-driven and largely power-insensitive approaches. The way out is to phase and structure sustainability-oriented research in a way that allows for well-defined and concentrated

science–society interactions, and to embed research endeavours in long-term and contextually rooted partnership networks.

2.4.2 Meeting the operational challenges in the NCCR North-South

When the NCCR North-South was initiated and designed, major operational challenges were generally anticipated, but their full weight was only discovered and felt in the course of the programme's execution. Due to its anticipated duration of three four-year phases, as well as to the bottom-up approach underlying the Swiss NCCRs, it was, however, possible to steer and adapt the programme and its structure periodically in a participatory manner, with a view to mastering the operational challenges described above. The following operational measures of packaging and phasing proved to be essential:

1) **Sequencing modes of knowledge production:** One basic assumption was that transdisciplinary research has to build on disciplinary and interdisciplinary contributions and that, accordingly, adequate time and space have to be allocated for these contributions. This was taken into account by designing periods in the NCCR North-South programme where transdisciplinarity prevailed, and other periods with a concentration on disciplinary and interdisciplinary work (Figure 3). The transdisciplinary negotiation and definition of core problems of unsustainable development that marked the start of the NCCR North-South (see section 2.3.2) set the frame and paved the way for sound and innovative disciplinary research in the following periods. In addition, it was anticipated that not

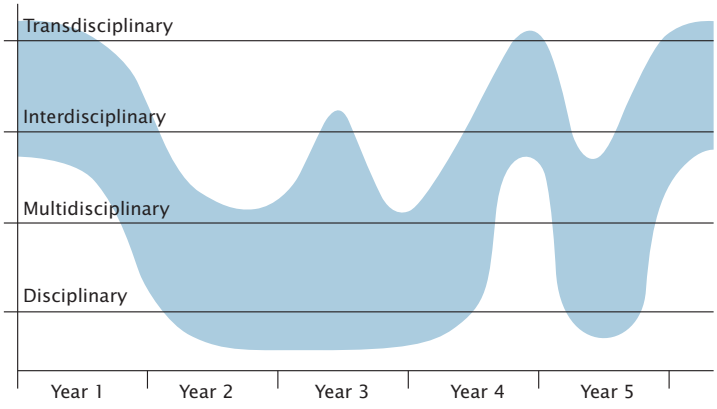
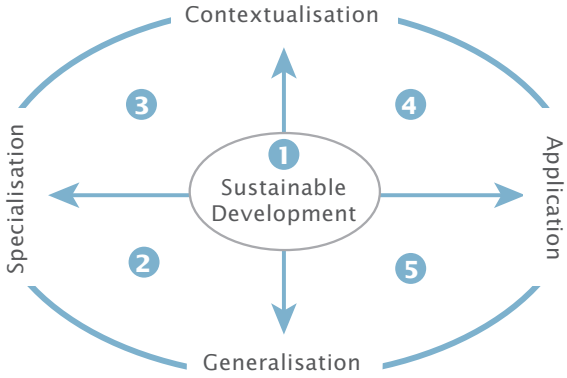


Fig. 3
Variation of modes of knowledge production in the course of a transdisciplinary research endeavour. (Source: Hurni and Wiesmann 2004)

all researchers would need to master all modes of knowledge production to make the NCCR North-South a transdisciplinary endeavour: PhD and post-doctoral research was designed to concentrate on disciplinary research into the topics previously defined in transdisciplinary negotiations, supported by a basic knowledge of transdisciplinarity acquired in integrated training courses. These measures made it possible to master the challenge of conflicting reference systems and to enable participating researchers to build individually adapted careers inside and outside academia. Results from interviews with former researchers (Zingerli et al 2009; Upreti et al, in press) indicate that participation in the transdisciplinary endeavour of the NCCR North-South did not jeopardise but rather promoted careers in both the North and the South.

2) **Varying complexity of research components over time:** To allow iterative balancing of the conflicting basic objectives mentioned above and adequate configuration of research teams and the science–society interfaces at regular four-year programme intervals, the packaging of the NCCR North-South into research components changed over time. In the first phase, eight disciplinary and institutionally based *Individual Projects (IPs)* were the main components, enabling research groups to create their position within, and ownership of, the overall programme. In the second phase, these individual projects were regrouped into four *Work Packages (WPs)* and a *Transversal Package (TP)*, in order to increase the emphasis on interdisciplinary collaboration and cross-cutting scientific synthesis. Each WP dealt with specific aspects of syndromes of global change and focused on a particular interdisciplinary field in several regions. The TP further developed the theoretical, conceptual, and methodological foundations of the programme. Finally, in the third, still active phase, 16 competitively established *Research Projects (RPs)* were initiated. These RPs are co-led by Northern and Southern researchers; they address core issues of sustainable development based on comparison between regions and using disciplinary and interdisciplinary methodologies. These research projects are an expression of the stage of maturity that the NCCR North-South has reached in balancing conflicting reference systems, enabling innovative and goal-oriented collaboration in partnership, and finding a balance between a unifying overall conceptual framework and the freedom required to foster innovation.

3) Components of integration and impact: In addition, the NCCR North-South established a number of components that are based on the consideration that sustainable development requires contributions situated at various positions between the poles of contextualisation and generalisation, as well as specialisation and application (Hurni and Wiesmann 2011, in this volume). Three of these components were successfully maintained throughout the lifespan of the NCCR North-South and proved to be essential in mastering the operational and scientific challenges of the programme (Figure 4):



	Research components	Capacity development	Target outcomes
1	Integrative Node and Synthesis	Integrative capacities in core institutions	Foundations of sustainability and transdisciplinarity
2	Research projects in Thematic Nodes	Scientific capacities at PhD and post-doc levels	Contributions to global issues and debates
3	Regional research in Joint Areas of Case Studies	Institutional capacities in regional networks	Contextualised research and development impacts
4	Pilot applications through Priority Actions (PAMS)	Transfer capacities at all levels	Insights for development practice
5	Products for policy and practice	Development capacities at expert level	Contributions to development discourses and policies

Fig. 4
Goal-oriented packaging of the NCCR North-South and its relation to the objectives of sustainability-oriented research, capacity development, and societal impact.

– *Priority Actions for Mitigating Syndromes of Global Change (PAMS)* were established to test the application of results and recommendations in pilot development projects. Besides having positive and concrete impacts, PAMS proved to be essential in training individual researchers and in informing the overall programme about how to adequately address the science–society interfaces (Messerli et al 2007; Heim et al 2011).

– *Joint Areas of Case Studies (JACS)* were established in nine regions around the world, primarily to enable contextualised interdisciplinary and partnership-based research collaboration. The JACS, however, proved to be much more than frames for North–South research partnerships. Not only did they develop into important training and scientific coordination nodes, but they also emerged as triggers of an increasingly Southern-driven agenda setting in the programme, and as pivots of growing South–South and South–North collaborative research networks that go beyond the NCCR North-South. In relation to transdisciplinarity, many JACS institutions have now also become absolutely crucial for well-balanced, participatory, and power-conscious science–society interfaces and are therefore the most essential programme component for concrete societal outcomes and uptake of the sustainability-oriented research of the NCCR North-South (Upreti et al, in press). This was made possible by the strong contextual and institutional anchoring of some JACS, and, in particular, through the long-term research partnerships that were built on the basis of the KFPE principles for such collaborations (KFPE 2009, 2011).

– Finally, the *Management Centre (MC)* – in conjunction with the *Regional Coordination Offices (RCOs)* – has played a key role in mastering the operational challenges mentioned above. Originally established to facilitate scientific collaboration and capacity development through a broad range of services – among which its integrative training component has been felt to be particularly successful – the MC increasingly emerged as a key component in the transdisciplinary science–society interface, in particular in the North and at international and global levels. This was based on the insight that the manifold roles of facilitators, moderators, or brokers in this interface cannot be left solely to the researchers but require specific and professionalised capacities supporting the various research teams and opening avenues for recognition, outcomes, and impacts.

Figure 4 illustrates that the various programme components mentioned above not only allow for specific foci and concentration of research in the

field delineated by the poles of contextualisation and generalisation and the poles of specialisation and application in sustainability-oriented research, but that they also enable specific orientation of capacity development, as well as targeted outcome and impact orientation.

In sum, the packaging and phasing of the NCCR North-South has evolved in such a way as to optimise response to the key operational challenges of conflicting reference systems and conflicting basic objectives (research, capacity, impact), as well as of the complex science–society interface. Basic structures were built that play a key role in mastering these challenges – in particular the network of JACS, the instrument of PAMS, and the professionalised management structures. Based on these, structurally flexible research projects and initiatives can respond in an innovative way to issues of sustainable development and respective societal demands. On a critical note, it must, however, be added that the basis for the exemplary mastering of key challenges by the NCCR North-South both structurally and institutionally is not consolidated and almost entirely depends on time-bound project funds. This is particularly true for the long-term research partnership network sustained by the JACS. If no structural support in academia and/or development cooperation can be found for this high-quality transdisciplinary network, the danger of losing key assets for sustainability-oriented research will be high.

2.5 Conclusion

In development research in general and in sustainability-oriented development research in particular, both the quality and relevance of research greatly depend on the capacity to integrate the normative perspective of – sustainable – development and link it to the largely systemic perspective of science. We have argued that this necessarily implies a transdisciplinary mode of knowledge production that bridges disciplines and paradigms and includes science–society interfaces, thus leading to generation of systems, target, and transformation knowledge. Such development-related transdisciplinarity requires research partnerships between the global North and the global South. Given these premises, we have shown that sustainability-oriented development research faces major conceptual challenges of system definition, of linking transdisciplinary research to disciplinary debates and progress, and of bridging contextuality and generalisation, alongside the operational challenges of conflicting reference systems, conflicting basic objectives, and complex science–society interfaces.

The NCCR North-South successfully dealt – and continues to deal – with these major challenges. We have pointed out the crucial role of a flexible, unifying, and reflexive conceptual framework – in this case the syndrome mitigation concept – as well as the need for iteration between disciplinary, interdisciplinary, and transdisciplinary modes of knowledge production. We have also highlighted the crucial role of contextualised and long-term research partnerships, as well as the need for structural components that specifically address aspects of the said challenges through participatory processes jointly steered by the partners.

Due to its duration and size, as well as to the enabling support provided by the Swiss National Science Foundation (SNSF) and the Swiss Agency for Development and Cooperation (SDC), the NCCR North-South was and is a unique case for testing, studying, and implementing the requirements for innovative, scientifically sound, and societally relevant sustainability-oriented development research, transdisciplinarity, and research partnerships. It has become clear that these requirements are interdependent and challenging at the levels of scientific concepts and methodologies, underlying ontologies, scientific and social interactions, and collaboration in complex settings, as well as at the level of management and communication. Facing these requirements contributes to increasing the scientific quality and relevance of sustainability-oriented research and to sharpening the profiles of transdisciplinarity and research in partnership that are required by an orientation towards sustainability. In conjunction with advocacy and the continual building of peers, this honing of a clear profile and production of quality output will hopefully strengthen the still rather weak position of transdisciplinarity and related partnership approaches in the scientific community and in knowledge societies (Hirsch Hadorn et al 2008).

It can therefore be concluded that cutting-edge sustainability-oriented development research cannot be meaningfully conducted in short-term projects that are either treated as an applied offspring of conventional disciplinary research or that are driven exclusively by the demand coming from commissioning agencies. Such research requires underpinning academic and institutional structures with sufficient critical mass, as well as stability – a requirement that is valid for participating Northern partners but is even more important for partners in the global South. Investment by science and development actors into building and maintaining such structures is therefore an important, relevant, and highly effective contribution to sustainable development.

Endnotes

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[5] The NCCR North-South partnership regions are also known as Joint Areas of Case Studies (JACS). Regional Coordination Offices (RCOs) were established in each of these JACS at the outset of the programme. The original function of the RCOs was to coordinate research; in the ongoing final phase of the programme, RCOs are working to consolidate the existing research network in the South and function as knowledge hubs for generating new research projects and partnerships.

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Part II
Concepts of Research for Sustainable Development

3 Research Partnerships and Capacity Development in the South: A Social Learning Perspective

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Abstract

This article examines the impact of research partnerships on capacity development among individuals and institutional partners in the South, within the context of a major twelve-year international programme, the Swiss National Centre of Competence in Research (NCCR) North-South: Research Partnerships for Sustainable Development. The programme was set up both to enable state-of-the-art research and to enhance individual and institutional academic capacity within partnership regions worldwide. Using recently gathered data from a self-analysis entitled "Exploring Partnership Dynamics", the article argues that North–South and South–South research collaboration with a focus on sustainable development have made the programme's capacity development component a successful strategic contribution. Southern partners were able to increase their visibility and recognition through the NCCR North-South partnership. At the individual level, a good proportion obtained better employment and came to occupy higher positions. At the institutional level, many partners were able to allocate more resources for research and support more publications, including in higher-ranked scientific journals; they also expanded their academic activities and collaborated more with other institutions. The article also highlights the role of social learning processes in developing capacity among individuals and institutions. It identifies conditions enabling or hindering capacity development efforts, and concludes that properly forged research partnerships and the application of principles of mutuality not only develop capacity among Southern partners but also enhance social learning, ultimately contributing to sustainable development.

Keywords: Research partnerships; capacity development; individual and institutional partners; social learning; visibility and recognition.

3.1 Capacity development and social learning in the context of research partnerships

Developing research capacity is an important prerequisite for successfully addressing societal problems and the challenges of sustainable development in the South (Gaillard 1998; Maselli et al 2006; Bradley 2007, 2008). This article examines the role played by research partnerships between the North and the South in developing research capacity among the Southern partners of a twelve-year international programme.

Capacity development is a very broad term with differing definitions. Trostle defines capacity development in the context of research as "a process of individual and institutional development which leads to higher levels of skills and greater ability to perform useful research" (Trostle 1992, p 1321). In the present article, the term "capacity development" is used to refer to a learning process that leads to development of knowledge, attitude, skills, competence, and confidence in research actors and institutions, enhancing their ability to undertake socially, environmentally, and developmentally relevant research. It therefore goes beyond the development of the mere capacity to conduct research in a specific project arrangement. Rather, it is a process of developing the material, human, and intellectual resources of Southern research institutes and individuals and fostering their participation in deciding on, as well as specifying, accessing, analysing, synthesising, disseminating, and applying research to address the challenges of sustainable development.

Learning is an individual as well as a social phenomenon. Individual learning alone is not sufficient to address complex societal problems; social learning is also required. Social learning creates an environment conducive to addressing contemporary challenges (Goldstein 1981). Social learning is an action-oriented paradigm (encompassing epistemology, ontology, and methodology) for dealing with complex social problems using critical self-reflection and effective communication (Röling 1997; Röling and Wagemakers 1998; Maarleveld and Dangbegnon 1999). It builds on individual learning, recognising multiple perspectives, and creating common platforms for concerted action, interactive goal-setting, and accommodative and collective vision-building that acknowledges multiple realities. Therefore, it comprises learning through observation and interaction within a specific socio-political context, leading to collective decisions and concerted action (Maarleveld and Dangbegnon 1999) that promote dialogue among

stakeholders (planners, policymakers, researchers, politicians, managers, and resource users). Hence, this whole process structures learning to change human attitudes and behaviour in order to address societal challenges and problems of sustainable development.

3.2 Moving towards equal partnership in research

The challenges of global change call for new forms of knowledge production in a North–South context (Gaillard 1998; Bradley 2007, 2008); these challenges include the increasing speed and reach of changes, large-scale human–environment interactions, leading to major uncertainties about phenomena that affect an increasing number of humans worldwide, and persistent disparities between the North and the South. At the same time, research capacities must be strengthened, particularly in the South, where education and science have often not received the attention and funds necessary to support development (Maselli et al 2006). Against this background, in the past 30 years major international donors have increased their investment in development-relevant knowledge generation (e.g. the Dutch, British, Canadian, and Swiss governments, as well as the European Union and Nordic research institutions, see Bradley 2008). However this investment has been largely one-sided, as research relevant to development in the South has been conducted mainly in the North and/or by Northern scientists. In a critique of this one-sidedness, Gaillard (1996, 1998) for example highlighted a need for change in the donor-driven approach to research collaboration between North and South, and the Swiss Commission for Research Partnerships with Developing Countries (KFPE) developed 11 principles for research partnerships (KFPE 1998) to address this limitation. However, investment in research partnerships – meant to correct the one-sided North–South research relationship – generally received too little attention until the recent past.

Historically, research partnerships have been dominated by the North, as they have been based on the conventional understanding of 'doing good science for development' that resembles the 'technology transfer' model they have been trying to overcome. Commenting on this phenomenon, critics such as Stiglitz (2000) have argued that the dominant type of technology transfer – top-down and donor-led research assistance from North to South – is a new form of colonisation, and therefore it cannot serve as a basis for building collegial partnerships between North and South. An assessment conducted by the KFPE in 2001 pointed out inequities in partnerships and recommended

the need for translating the principles and guiding frameworks into action more systematically (e.g. the 11 principles for research partnerships proposed by the KFPE in 1998) to make research more socially relevant by enhancing Southern partners' ownership of research (KFPE 2001);[2] meanwhile, the KFPE is also in the process of adapting the 11 principles based on current trends and experience (KFPE 2011). Toni and Velho (2000) and Velho (2002) confirmed that Southern partners were used mainly as research assistants to provide raw data for Northern researchers; such experiences provided an important research policy basis for developing a new model of research partnerships between North and South. Similarly, Hurni and colleagues (2004) and Pohl and Hirsch Hadorn (2007) have underlined the need to adapt the practice of research partnerships and seek greater equality between North and South. Aware of the drawbacks of hands-off research support to the South, the Directorate General for Development Cooperation of the Dutch Foreign Ministry developed a new modality – a multi-annual, multi-disciplinary research programme to be jointly designed with partners from countries in the South (Velho et al 2004). Other research donors have meanwhile also responded to this process of addressing inequalities in implementations of research partnerships.

Here and elsewhere, learning from past experiences has led to initiation of innovative partnership arrangements that promote joint decisions on research themes, joint management of research activities, and joint publication of research results. However, to date, only few national donor agencies in the North have been supporting this type of research partnership. The Swiss National Centre of Competence in Research (NCCR) North-South is therefore one of very few innovative arrangements promoting equal research partnerships between North and South.

3.3 Empirical evidence of capacity development in the South

The NCCR North-South Regional Coordinators' Forum[3] conducted a global study among the programme's members and partners to examine the effects of NCCR North-South research partnerships on partners mainly in the South (Upreti et al, in press). The study was funded by the Swiss Agency for Development and Cooperation and the NCCR North-South, and managed and implemented by a core group put together by the Regional Coordinators' Forum from among its members. One of the objectives of this study was to

analyse capacity development in selected countries. The data for this study were collected by means of a questionnaire survey involving 104 respondents in 20 countries across Asia, Africa, Western Europe, and South America. The present section of this article is based on some of the qualitative and quantitative results obtained in this study. In what follows, institutional and individual capacity development is assessed in terms of employment status, training and education, visibility and recognition, and managerial capacity.

3.3.1 Employment status

Of a total of 104 respondents, 102 responded to the question related to employment. Sixty per cent of the 102 respondents were employed at the time of the survey in 2008. Most of the respondents who reported being unemployed were PhD students. Regional comparison of employment status shows that employment ranged from 61.5% in South Asia to 100% in East Africa. One respondent from Pakistan who had recently completed his PhD within the NCCR North-South wrote: "Yes, [as a result of the NCCR North-South partnership], immediately after obtaining a PhD degree I was promoted to Assistant Professor at the University of Agriculture, Faisalabad, and also started a post-doc within the NCCR North-South."

3.3.2 Technical capacity: training and education

Out of 104 individuals, 73 participated in different training programmes organised by the NCCR North-South; more than 90% of these respondents reported that this training was relevant. Most of the training was related to research methodology, concepts, data collection and analysis, and scientific writing and publishing. The field survey revealed that on average 70.2% of the individuals took some kind of training offered by the NCCR North-South. The percentage of respondents that participated in training offered by the NCCR North-South regionally or globally varied from region to region: In South Asia, all respondents participated in training, followed by the Horn of Africa (91.7%), Southeast Asia (85.7%), Central Asia (81.8%), East Africa (75%), West Africa (65%), Central America and the Caribbean (55.6%), and South America (41.8%).

One of the observations made in the survey conducted by the Regional Coordinators (Upreti et al, in press) is that local Master's and PhD programmes tied to different training packages developed in the NCCR North-South were a fundamental means of capacity development in the South. Integrat-

ed training courses and joint regional training courses involving researchers from all NCCR North-South partnership regions demonstrated that learning is enhanced by peer learning, sharing of experiences and knowledge, individual and collective writing, and reflection involving consciously constructivist and cognitive social processes. Education and training arrangements with NCCR North-South collaboration provided opportunities for the participants to acquire knowledge, skills, orientation, perspective, and avenues for collective learning and societal interaction. However, in terms of the time frame for education, Southern researchers felt that time was short. For example, one of the respondents from Côte d'Ivoire wrote:

> *It is a very good partnership for the development of science in the South, particularly the training of young researchers to ensure a new generation of scientists and to reduce brain drain. But the programme must understand and take into account the realities in Southern universities. For instance, the time for writing a thesis in the South, due to the difficulties with local academic supervision, may be 4 to 6 years, while the Programme limits fellowships to 3–4 years.*

Respondents indicated that education, training, and career orientation opportunities in the NCCR North-South partnership have enabled Southern researchers to modify their accustomed behaviour and helped them to develop new forms of adaptive behaviour to tackle societal challenges requiring a conscious dealing with social constructions of reality. In many cases, for example, Southern researchers had focused on case studies and narrow disciplinary research before entering into research partnerships within the NCCR North-South. In active collaboration within the NCCR North-South, they began to link their research with societal problems, expanded conceptual and theoretical understandings, and also used and – even more importantly – actively engaged in inter- and transdisciplinary research to address societal problems.

In addition, the study revealed that transdisciplinary learning is a heuristic process of generating both scientific-academic and societal knowledge through a combination of 'finding out' and 'taking action' (through partnership action projects), adjusting to circumstances, and gaining new experiences and insights, both by adapting to change and by using new understanding and building on feelings, attitudes, and values. Hence, it was a form of social learning as defined above. In this regard, one of the respondents said:

"[A]t the beginning I was a purely technocratic water specialist, but now, after NCCR North-South support, I have started thinking more and more about human aspects, and we integrate them now in our research activities." Another respondent, a member of a sheep breeders' association, said,

> *I for the first time feel a totally different approach to our organisation as a farmers' organisation – we feel trust. We feel that we are not only an organisation supported by a grant but first of all an organisation that is responsible to our members for the implementation of our goals. This gives us other significant meaning.*

3.3.3 Visibility and recognition

Visibility and recognition are important factors in capacity development and even go beyond it. They are important elements in the empowerment of researchers. In empirical terms, 68% of the responses (282 of 415 responses from the 104 respondents) expressed the perception that collaboration with the NCCR North-South had raised their visibility and recognition.

Table 1 shows that 68% of the Southern researchers reported their visibility and recognition to have been generally enhanced. Of these researchers, 77.6% earned more prestige than before, 65.7% felt more heard than before, 71% got a promotion, 54.5% got a salary increase, and 69% published more after they started collaboration with the NCCR North-South. An academic partner in Kyrgyzstan said that "the Programme influenced our world out-

Table 1

Respondents	Northern		Southern		Overall	
Statements	**Agreed**	**%**	**Agreed**	**%**	**Agreed**	**%**
Felt more heard than before	13	56.5	46	65.7	59	63.4
Got a promotion	19	82.6	49	71.0	68	73.9
Earned more prestige	11	52.4	52	77.6	63	71.6
Gave more public speeches and produced more scientific papers	13	52.0	50	69.4	63	64.9
Got a salary increase	15	62.5	36	54.5	51	56.7
Published more	18	78.3	49	69.0	67	71.3
Total values	89	64.0	282	68.0	371	67.0

Perceived increase in visibility and recognition at the individual level after collaboration with the Swiss National Centre of Competence in Research (NCCR) North-South.

Source: Field survey conducted in 2008.

look, our approach to research, and the significance of human factors". Many respondents specifically stated that participation in integrated and regional training courses[4] gave them international exposure and helped to increase their professional competences, reflected in the number and quality of publications. At their workplaces, their status was enhanced based on their academic degrees and their expertise. "Due to the NCCR North-South programme, I got international exposure and this exposure gave me an edge over my colleagues", wrote a PhD graduate from Pakistan. In reply to the question whether conducting research within the NCCR North-South helped individual researchers to earn more prestige and recognition and strengthen their capacities, one respondent, a PhD student from Nepal, said, "Yes, it has positive effects – academically and in network-building. It has made me more mature academically, and it has helped me develop useful networks. I've presented papers in important workshops regarding my area of research."

Regarding the effect of a socially enhanced position for researchers after collaboration with the NCCR North-South, 71.6% of the researchers reported that they enjoyed more prestige in society than before (Table 2). Regional data indicate that the partnership's effect of enhancing researchers' visibility and recognition was markedly weaker in Central America and the Caribbean than in the other regions, for all five indicators. Possible reasons include already high salaries, while language difficulties may have limited publications in English. The regional variability in the programme's impact on visibility and recognition – the highest impact having been reported by Southeast Asian researchers and the lowest by researchers from Central America and the Caribbean – shows that some indicators may not be relevant for measuring success and therefore generalised indicators for assessment may not prove useful. Greater prestige in society from partnership with the NCCR North-South also depends on the nature of the various societies, and replies reflect personal perceptions of the respondents themselves. "More opportunities to present papers and give speeches", another indicator of visibility and recognition, depends upon the research topic and the type of partner (e.g. academic institution or non-governmental organisation). Similarly, more publications are not a useful means of gaining visibility and recognition in some regions (e.g. Central America and the Caribbean, followed by the Horn of Africa) although it is very useful in others (e.g. South Asia or West Africa). Plausible reasons for this variability include the varying priority attributed to publications in the different partnership regions and in their regional strategies, and the presence or absence of joint writing practices involving collaboration between senior and junior researchers.

Table 2

Respondents by region Statements	West Africa	East Africa	Horn of Africa	Central Asia	South Asia	South-east Asia	Central America and Caribbean	South America	Overall
Got a promotion	73.7	85.7	60.0	70.0	81.8	83.3	25.0	90.5	73.9
Earned more prestige	77.8	83.3	62.5	81.8	66.7	100.0	33.3	70.0	71.6
Gave more public speeches and produced more scientific papers	63.2	57.1	72.7	54.5	60.0	100.0	22.2	78.3	64.9
Got a salary increase	36.8	57.1	70.0	80.0	66.7	57.1	22.2	68.4	56.7
Published more	82.4	71.4	60.0	70.0	83.3	71.4	22.2	81.4	71.3

Comparison of responses in the different Southern partnership regions regarding increased visibility and recognition at the individual level after collaboration with the Swiss National Centre of Competence in Research (NCCR) North-South (percentages).

Source: Field survey conducted in 2008.

Table 3 shows that 68% of the academic partner institutions had not introduced new programmes, whereas 57.7% of the non-academic partners had introduced new research or research collaboration programmes with academic institutions. In the case of complementary effects of NCCR North-South collaboration on partner institutions in terms of attracting other academic collaborations, 50% gave a positive answer. However, 81.8% of academic and 65.4% of non-academic partners said that cooperation had raised their status, and academic partners were able to attract more Master's and PhD students, which helped in mobilising budgets and producing more publications. Overall, the data in Table 3 thus clearly show an increase in the visibility and the recognition of Southern partner institutions. The head of one of the departments of a cooperating university wrote in the questionnaire form, "[t]his North–South partnership has definitely helped raise the status of our institution by enhancing research capabilities of students and faculties". Twenty-two academic and 24 non-academic institutions responded to the question of how the partnership benefited institutions in the South and in the North. Ninety per cent of the academic and 88% of the non-academic partners stated that both the North and the South had benefited from the partnership. One of the respondents said that "[i]t has been providing a forum for knowledge sharing and interaction. It is also an obligation for both partners, the North and the South, to facilitate each other based on the strengths and weaknesses

Table 3

Perceived increase in visibility and recognition at the institutional level after collaboration with the Swiss National Centre of Competence in Research (NCCR) North-South.

Source: Field survey conducted in 2008.

Respondents	Academic institutions		Non-academic institutions		Overall	
Statements	**Agreed**	**%**	**Agreed**	**%**	**Agreed**	**%**
Introduced new degree and research programmes	8	32.0	15	57.7	23	45.1
Attracted other academic collaboration	12	50.0	13	52.0	25	51.0
Collaboration raised status	18	81.8	17	65.4	35	72.9
Attracted more Master's and PhD students	16	64.0	13	50.0	29	56.9
Mobilised more resources	14	60.9	14	60.9	28	60.9
Enhanced publications	20	80.0	11	42.3	31	60.8
Total values	89	64.0	282	68.0	371	67.0

of the partners". Another respondent said, "[t]he Northern researchers are able to broaden their horizon and get first-hand knowledge of Southern realities. For us it was an opportunity to link issues at micro level with meso-micro realities."

Similarly, a Tajik partner said,

> *[t]he interest of the Institute in GIS has grown recently due to collaboration with the programme. Now we make every effort to shift from manual soil mapping to GIS. Even the Institute has followed a new strategy – development of soil maps – with the help of GIS technology.*

Once visibility and recognition increase, it is easier for researchers to influence changes in policy, though not all respondents felt this way. In this regard, both academic and non-academic Southern partners stated that they had access to and influence on policy-making at local, regional, and national levels. One respondent from a non-academic partner organisation in Kyrgyzstan said:

> *Of course, it's now very early to say anything about our influence on policy changes, but we already have good feedback from farmers, governments, and the Ministry of Agriculture. In any case, we*

> *try to contribute to development of rural areas by making the concerns of rural people known to the government and to the people who take decisions. We have tried to create a platform for dialogue between different actors.*

Institutional capacity in partner institutions and organisations was strengthened by supporting e-learning and library resources, strengthening computing services and networks, developing an effective communication strategy, and collective efforts to generate financial resources.

Enhancement of managerial capacity was another indicator used in the assessment. However, none of the respondents reported having explicitly obtained management training as part of the collaboration with the NCCR North-South. Managerial capacity increased as a result of on-the-job learning.

3.4 Capacity development and social learning

In an enabling environment, learning occurs at individual, institutional, social, and societal levels. The transdisciplinary approach of the NCCR North-South provides an avenue to all four levels of learning. Transdisciplinary research is basically built on a constructivist perspective: it assumes that multiple realities (and epistemologies) exist and it addresses complex problems that require constant collective interaction and concerted actions, and negotiation of values as well as understandings of where the knowledge production process should lead those involved in it (Wiesmann et al 2008; Pohl et al 2010). Confronting multiple and conflicting social realities as the product of human intellect and adaptation requires that researchers take a social-constructivist perspective (Röling 1999).

Differences in interests, objectives, and world views encourage individual researchers to examine reality through the constructivist lens to address societal problems, tackle conflicting goals, and negotiate shared goals by using various platforms of negotiation (Röling and Wagemakers 1998; Röling 1999). The NCCR North-South partnership provided such a platform for researchers.

It was reported that by getting involved in NCCR North-South research, institutions and individuals expanded their knowledge networks, used available platforms, expanded options for collaboration in research and publica-

tions, and developed transdisciplinary perspectives to promote purposeful action for addressing the challenges of sustainable development arising from 'messy' and complex problem situations with fuzzy goals (Checkland and Scholes 1990).

Some of the respondents saw a need for more interaction and sharing between North and South. This is reflected, for example, in the statement of José Luis Coraggio, who implemented a partnership action within the framework of the NCCR North-South:

> *[A]t the beginning there was a group (NCCR North-South people) with whom we could discuss in depth all the issues, and it would have been good if we could have kept on working together, but all in all, they played a role in proposing ideas and presenting projects, and then we implemented them within the institution; we had no chance for mutual growth and enrichment.*

3.5 Enabling and limiting factors for research capacity development in the South

The study also addressed the question of which elements and conditions of the NCCR North-South partnership had enabling and which had limiting effects on research capacity development in the South. The following factors were found to have had an enabling influence:

- Making better coaching, backstopping, and supervision available to students and researchers
- Clear roles and responsibilities, coupled with autonomy
- Encouragement of publications, dissemination of results, and reflection
- Platforms for sharing and reflection
- Research combined with training and education
- Platforms for enhancing visibility and recognition
- Mutual trust among the collaborating partners in the North and the South
- Career opportunities after training in collaboration with Northern partners
- Innovative character of capacity development in the NCCR North-South partnership
- Development of a critical mass of young researchers through Master's, PhD, and post-doc programmes
- Transdisciplinary research approach

The transdisciplinary approach to research adopted by the NCCR North-South became a powerful means of capacity development, in that it required researchers to focus on designing an interface between society, policy, and research. The transdisciplinary perspective also induced a shift from dominant disciplinary research strategies to collective work and social learning about complex societal problems. By contrast, capacity development in the South was limited by the following factors:

- Significant lack of access to high-quality scientific information, research, and academic forums and platforms in the South
- Rigid rules and regulations as well as operational procedures in partner institutions restricting flexibility and innovation
- Poor connections between teaching and research, undermining research aspects in teaching
- Lack of resources and institutional backing
- Lack of human and financial resources in academic institutions
- Political interference

3.6 Conclusions

The NCCR North-South research programme has adopted innovative practices in negotiating, planning, implementing, and monitoring research partnerships and sharing benefits. This has challenged the conventional modality of research collaboration focused on 'technology transfer', where Northern partners extend technical assistance to researchers in the South and are seen as the reservoir of knowledge, while Southern partners are seen as mere users.

The development of capacities among Southern researchers with regard to research, publication of results, and engagement in theoretical and conceptual debates is crucially important for addressing societal challenges. Therefore, a long-term investment in these areas is strategically important. The NCCR North-South research partnership has helped Southern researchers to promote their potentials and link up with the global knowledge community, and, ultimately, has broadened knowledge and brought about changes in attitudes and behaviour among researchers. The NCCR North-South has provided researchers in the South with space as well as methodological and theoretical instruments to develop competence in conducting quality research and broaden their options. It has enhanced their visibility and recognition, and has

assisted them in charting a career path. One of the important lessons learnt from cooperation within the framework of the NCCR North-South is to build on existing capacity, carefully assessing potentials and making the impacts of research one of the important components in the research partnership.

Capacity development is a complex and dynamic process of learning, action and interaction, and reflection and adaptation within society. It requires time, investment of resources, and targeted efforts. Capacity development is relevant only if the acquired knowledge, skills, and experience of researchers are used to tackle societal problems.

The NCCR North-South research partnership seems successful in bringing Southern and Northern researchers together for collective learning, joint problem identification, joint research, and concerted action for publication and synthesis. The NCCR North-South has provided platforms for Southern collaborators to engage in an interactive process by exposing themselves to multiple perspectives and complex problems. These platforms offered space for different researchers to work together and develop common understandings of social dynamics and complex problems. The networks developed from such interactive processes are instrumental in developing the ability of researchers to explore different strategies, to negotiate between conflicting interests, and to accommodate differences. As societal challenges and problems of sustainable development are related to both 'hard' ecosystems (where outcomes are defined by laws of nature) and 'soft' systems (where outcomes are determined by social processes), dealing with these systems requires an interface (Long and Long 1992) between hard and soft systems, and suitable capacity.

Endnotes

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[2] Within the NCCR North-South programme, a few voices have expressed doubt as to whether the KFPE principles can really solve the fundamental issue of persistent disparities between the North and the South with regard to research set-ups: "The guidelines are not relevant for research practice. […] [They] are very functionalistic. They do not see the people in the research partnerships, which imply conflict and getting involved with each other. The partners need to develop a level to relate to each other and to establish mechanisms to continue relating to each other. The guidelines still have a paternalist undertone. […] Questions of competence and authority, power, and responsibility would need to be part of the guidelines." This echoes the critique expressed by Bradley (2007). But on the whole, the respondents of the study conducted by the Regional Coordinators' Forum (see section below and Endnote 3) felt that the 11 KFPE principles had been well followed by the NCCR North-South.

[3] The Regional Coordinators' Forum (RCF) is a body within the NCCR North-South research partnership arrangement consisting of all Regional Coordinators, that is, the leaders of the 9 NCCR North-South partnership regions. Eight of these 9 regions are situated in the South, and are coordinated by leaders from the South. The RCF launched an independent research project entitled "Exploring Partnership Dynamics", which was funded by the South-South Fund of the NCCR North-South and by SDC to promote South–South collaboration. The South-South Fund is an outcome of a learning process within the NCCR North-South programme, in the course of which the donors and the NCCR North-South Board of Directors realised that there was a need for allocating additional funds for collaboration among Southern partners with an agenda defined by them rather than by Northern partners.

[4] Integrated training courses (ITCs) are events in which PhD candidates and senior researchers from all 9 partnership regions participate; they are conceived in a modular way, as an opportunity for learning to work in a more inter- and transdisciplinary manner. Regional training courses (RTCs) are events organised by the Southern regions, based on demands from PhD candidates and senior researchers working in the regions. Some RTCs have been organised jointly by several Southern regions as continental RTCs, increasing the level of exposure of participants to international exchange.

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4 Collaborative Knowledge Production for Sustainable Development: Experiences from the NCCR North-South

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Abstract

Does collaborative knowledge production in intercultural teams of researchers from the global North and South offer ways to avoid 'Western' dominance in globalised science? This is the key question examined in the present article, which draws on experiences from the international development research network of the Swiss National Centre of Competence in Research (NCCR) North-South. The article illustrates what has been done to bring together 'Western' and 'non-Western' research traditions and rationalities in development research and provides insights into the opportunities and constraints of intercultural, collaborative knowledge production. It reveals a critical awareness of the potential, limitations, and consequences of methodological inclusiveness. Although collaborative knowledge production processes involve challenges and large investments, they offer an alternative to the dominant aspirations of individualistic leadership and scientific excellence. Collaboration plays a critical role in the development of scientific creativity in general, and in the context of sustainable development in particular.

Keywords: Knowledge production; research partnerships; globalised science; development studies; multiple social realities and epistemologies.

4.1 Introduction

The globalisation of science and research is already far advanced and follows an implicit desire to contribute to the betterment of human conditions and increased standards of living. Today, there is a high degree of interaction between universities, laboratories, and industries as well as enhanced collaboration and exchange in a growing number of international research networks (UNESCO 2005). Science has become a global social enterprise, aspiring to achieve innovation, convergence, and excellence, and disseminating the idea of modernity. It is precisely in this last point that the globalisation of science and research has provoked fundamental critique. Globalised science is accused of an aggressive hegemony based on the expansion of 'Western' culture (Alvares 1992; Olukoshi 2007). While it enhances the body of knowledge, modern science is thus said to contribute to a disqualification of diversity, alternative rationalities, and non-scientific forms of knowledge.

Despite a long history of international research collaborations and a wealth of experience with various modes of intercultural exchange and research partnerships (Bradley 2007; Molenaar et al 2009), the broad field of development studies has not remained unaffected by the hegemony of 'Western' thought. However, criticism has been voiced and debated within the field of development studies for quite some time (Schuurmann 2000; Humphrey 2007). One strand of criticism focuses on the lack of integration of, and exchange between, heterogeneous, diverse forms of knowledge, including voices, opinions, beliefs, and rationalities from all parts of the world. Olukoshi (2007, pp 24–25) identified a particular weakness of development studies in that they failed to engage more fully with the intellectual production of the countries whose experiences were being studied, and suggested to invest more in multidisciplinary approaches and to rediscover the capacity to study development in its pluralism and diversity, including tapping into the history and cultural contexts of different peoples. In a similar vein, Guttal (2007, p 35) called for an imperative turn of attention to the body of discontinuous and dispersed knowledge that is systematically suppressed and marginalised in the dominant development discourses. Does collaborative knowledge production in intercultural teams of researchers from the global North and South offer ways to avoid 'Western' dominance in globalised science? This is the key question examined in the present article.

Drawing on experiences from the international development research network of the Swiss National Centre of Competence in Research (NCCR)

North-South, this article illustrates what has been done to bring together 'Western' and 'non-Western' research traditions and rationalities in development research. It also provides insights into the opportunities and constraints of intercultural, collaborative knowledge production. The main purpose of this article is to contribute to a methodological reflection about collaborative knowledge production in the field of globalised development research, in which the NCCR North-South itself actively participates (see Kothari 2005; Sumner and Tribe 2008). It is assumed that collaboration plays a critical role in the development of scientific creativity in general, and in the context of sustainable development in particular.

4.2 Concepts, methodology, and sources of data

In its second of three four-year phases (2005–2009), the NCCR North-South created a programme component called "Transversal Packages", with the objective of developing theoretical, conceptual, and methodological foundations for consolidating and refining the syndrome mitigation approach in sustainability studies. One of the three studies carried out in the Transversal Package Project entitled "Knowledge, Power, Politics: Studying Social and Institutional Practices in Development Research and Policy" aimed at specifically contributing to achieving these goals by theorising patterns of knowledge and power and by providing empirical insights into the NCCR North-South's core research practices and concepts.

Knowledge, including scientific knowledge, is considered a political, cultural, social, historical, and economic phenomenon that reflects the conditions in which it is produced (Jasanoff 2004; Weiler 2006; Maasen 2009). Linking this conceptualisation of knowledge with the fundamental criticism of the hegemony of science (see Alvares 1992), it can be said that new scientific knowledge reflects primarily a 'Western' culture of science. A number of studies in the field of development research have responded to this fact, which some development researchers experience as a source of unease (Mehta 2001; Fairhead and Leach 2003; Forsyth 2003; Goldman 2005). They draw attention to the social and institutional frameworks in which scientific knowledge is produced, and they dig deep into the explanatory power of meta-level conditions of knowledge production, communication, transformation, and application. A growing concern is that although new knowledge is being generated in numerous research and development projects, many of which strive to make a contribution towards betterment in terms of

poverty alleviation or nature protection, the resulting scientific explanations and development interventions often do not work for the poor and most vulnerable people (e.g. Li 2007).

Against this background, the present article sheds light on the research practices and reflections of senior development researchers about their contributions to promoting sustainable development. The article combines different sources of data to unravel meanings and processes in collaborative knowledge production for sustainable development. The core body of empirical data used in this article was collected in 24 episodic interviews with senior researchers, conducted between March 2007 and August 2008.[2] Moreover, a side-study on collaborative knowledge production in intercultural research teams, carried out in June and July 2008 among the transdisciplinary research team of the North-South Exchange Project,[3] resulted in another 12 interviews. By complementing the primary empirical material, and in line with the purpose of the present volume to provide a synthesis of NCCR North-South work, the various sections of this article highlight selected additional sources and publications by NCCR North-South researchers. No details are provided on the sociology of team research and the power relations between team members, as this has been discussed elsewhere (Bradley 1982; Mountz et al 2003; Zingerli 2010).

4.3 Knowledge for sustainable development

The NCCR North-South research programme aims to contribute to mitigating syndromes of global change and to establish the foundations for advanced research in sustainable development (NCCR North-South 2008). The research programme combines and adapts the methods of traditional scientific disciplines in order to meet the needs and challenges of a changing and increasingly globalised and complex world. The senior researchers interviewed consider it a great success that establishment of the NCCR North-South resulted in an increase in funds made available for collaborating with researchers and institutions in partnership regions of the South (#S3; #N14; #N23).[4]

Many of the participating researchers, in fact, have been collaborating in North–South partnership arrangements for a long time, contributing to the advancement of thematic issues as well as capacity development in the various partnership regions. Recent publications and presentations document and analyse some of these partnerships for sustainable development (Bolay and Schmid 2004; Maselli et al 2006; Kiteme and Wiesmann 2008; Schell-

ing et al 2008; Béchir and Bonfoh 2009; KFPE 2009; Wiesmann and Kiteme 2009; Zingerli 2010). They demonstrate joint research efforts, mutual respect, and a deep understanding of each other's contexts and concepts by collaborators from the North and the South. This kind of development research involves a strong commitment to contributing something that is of relevance to the world (#N21; #N24) (Zingerli et al 2009). It addresses the key question of "how to transform the conditions of life and work of poor people" (#S6:16; #S5) to eventually "make a better world" (#N25:21). This resonates with the idea of an engaged scholarship (see Blomley 1994) and a notion expressed by Molteberg and Bergstrøm (2000, p 7), who say that "Development Studies is research committed to improvement [and its] knowledge generation is not an end in itself".

Although there are many different definitions of development research, not only in the literature but also among NCCR North-South researchers, some key lines can be identified in the empirical material. Development research should respond to problems and needs (#S1) and to specific target groups (#S3); it should produce knowledge and results which can be used in practice (#S2; #S4). It is research about change and this involves understanding not only change but also what this change implies and how it could be influenced (#N14). One interviewee put it as follows (#N18:33–34): "[…] one key lesson is that by looking from the outside, which is often what science does, you can have the best solution, but if it's not developed from inside with the people, it's useless. So there is a huge limitation of research that doesn't work very closely with the people who are affected." This implies integrating people's diverse views and knowledge claims, which, however, calls for awareness of different frames of reference (#S5) and "different levels of rationality" (#G1:5).

What emerges from these last few points is the logic of team research and collaboration. Research for sustainable development is certainly not an individualistic undertaking. The complexity of the issues under examination requires mixed methods, as well as individual collaborators with diverse skills and educational backgrounds. A combination of similarity and dissimilarity of these characteristics among team members is a productive asset for collaboration (Levine and Moreland 2004). To ensure creativity, however, the diversity of team members needs to be acknowledged, discussed, and valued (Mountz et al 2003). This means getting involved and exposing oneself to this process. The next section concentrates on experiences with collaborative knowledge production in intercultural teams. Implicitly, it thus deals with the question of whether collaborative knowledge production can contribute to sustainable development by drawing on multiple knowledges.

4.4 Insights from collaborative knowledge production processes

In the NCCR North-South research programme, collaborative knowledge production has been practised by researchers from the North/West and the South/East for a long time. There are a number of (self-)critical contributions regarding the level of participation of researchers from the North and the South in the set-up of the programme as well as the setting of the research agenda (Hurni et al 2004a; Hurni et al 2004b), and on the dynamics and power relations in North–South research partnerships (Zingerli 2010; Upreti et al, in press). At the individual level, a great number of NCCR North-South researchers have extensive experience with collaborative knowledge production processes. Usually, collaborating researchers raise more and different questions against several disciplinary and cultural backgrounds, which enhances both overview and in-depth understanding of the thematic issues investigated (#N27; #S11). One interviewee put it as follows: "I think one of the most positive things that I take from these collaborations is an understanding of a variety of approaches to the question of development; a variety of approaches in the sense of a variety of ways of looking at development" (#S6:19). The experiences made during joint fieldwork phases are considered to be particularly valuable (#N14; #N22; #G1).

It is not only the co-produced knowledge, reflecting different sources of knowledge and epistemological foundations, that is valued. The collaborating researchers particularly appreciate the process of collaborative knowledge production, which is often seen as involving mutual learning and understanding. Collaborative knowledge production "is a way of learning new things" (#S7:20), but there is "the necessity to really come out with different points of view, that each one really has something to share" (#S11:12). Indeed, the members of teams featuring a diversity of cultural and disciplinary backgrounds often complement each other in terms of knowledge and abilities. Nonetheless, for a collaborating group to be creative, it is necessary to break down existent hierarchies of both forms and cultures of knowledge. The researchers of the North–South Exchange Project explained it as follows: "[…] most of the time, even if we are aware of that, most of the time it looks like we [from the South] have more to learn than to share. Obviously we have also something to show, […], people from the South should be able to really contribute, to craft, or to create new concepts and to elaborate new concepts; […] there are different levels of rationality, and people from the South, first, should understand that; only then we will be able to really have a mutual learning process" (#G1:3–5).

Mutual learning and understanding are thus not only results of, but also preconditions for creativity in collaborative knowledge production processes. To facilitate contributions to sustainable development, it is deemed necessary to build mutual understanding together with multiple stakeholders – that is, research partners, informants, intermediaries, or local people – and to jointly seek innovative, context-specific pathways (#N15). The collaborating researchers interviewed feel both exposed and enriched by the diversity of discourses, languages, and scientific concepts (#N14). Although this diversity can increase the range of knowledge and skills available to the collaborating group and stimulate divergent, and potentially innovative, thinking, it can also elicit interpersonal conflicts and negative emotional reactions (Levine and Moreland 2004). Collaborative knowledge production thus requires extra investments of time and thought into ensuring the creation of shared understandings, continuous interaction, and effective communication. One of the informants confirmed that "the true articulation between social reality and theory – not only referring to theories and epistemologies of the global North – is constructed together and this takes usually several years" (#N19:101).

Globalised science with its dominant 'Western' culture of doing science not only lacks adequate recognition of diverse forms of knowledge and rationalities; it also favours product over process. For collaborating members of intercultural teams, located in different countries, this implies a constant trade-off between engaging in time- and resource-intensive collaborative knowledge production processes and focusing on relatively rapidly produced disciplinary knowledge by conducting studies with colleagues sharing a similar professional context or the same working place. There is a contradiction between the demands of the globalised research market to engage in networks and collaborate in heterogeneous teams, on the one hand, and the stiff competition for scientific excellence ascribed to outstanding and widely published individuals – and their teams of co-authors – on the other (#N24). As Mountz and colleagues (2003, p 31) have pointed out, researchers tend to divorce the product from the process of research, thereby glossing over other important aspects of the research process and decontextualising data from their various source bodies of knowledge.

4.5 Conclusions

This article set out to reflect on and position the collaborative practices of research for sustainable development evolving in the international development research network of the NCCR North-South. As it contributes to

The North-South Exchange Project (2008)

In summer 2008, the NCCR North-South launched the North-South Exchange Project as a pilot study to open up a new dimension of collaborative knowledge production for sustainable development. The typical set-up of development research was reversed. A team of researchers from Mali, Kyrgyzstan, and Switzerland jointly conducted research on Swiss alpine pasture management from June to July 2008. The idea was to compare the situations in three different partnership regions where pastoral production systems are in transition. The transdisciplinary and intercultural team of researchers carried out field research together, and each team member contributed to the project based on their own scientific, professional, and personal background. During the joint fieldwork, the team members worked "as equal scientific partners" (#S11:5). The knowledge production process was characterised by constant exchange, discussion, and negotiation, and the added value was described as follows: "[…] everyone comes with his/her own perception and this is also a reverse of what is currently going on. You see people from the North going to the South, but now, we have people from the South, going to the North and investigate. This can generate a lot of information because we are coming to the North with our own perceptions […]. It is a good opportunity to bring all this knowledge together, to combine it and to try and identify similarities and differences" (#S11:4). The first product of the North-South Exchange Project was a "social product" (#G1:31), in that a small team of researchers spent four weeks of intensive fieldwork together. The second product was the project report, completed in September 2008 (Fokou et al 2008). The researchers concluded that "we enjoyed our stay, we enjoyed the time we spent together, but we think we would have done more if we had had enough time" (#G1:52). Indeed, both the schedule and the financial budget were tight for this first North-South Exchange Project. The team of researchers had to tackle several questions at the same time, thematic as well as procedural questions. One of them concerned the originality of the knowledge production process in this North-South exchange. The researchers were confronted with the fact that "many things have been done in the Alps and the challenge was really to think originally […] the process itself was already somehow original but the originality does not come from the fact that someone comes from Mali or Kyrgyzstan to carry out research in the North" (#S11:14). Rather, the originality of the knowledge production process could have stemmed from the fact that researchers coming from Mali or Kyrgyzstan contributed their Malian or Kyrgyz experiences and reinterpreted the conception of pastoralism in Switzerland; or it could have lain in the particular kind of knowledge generated by a transdisciplinary, international team investigating alpine pasture management in Switzerland. Systematically pursuing this objective, however, would have required extra efforts and especially more time and more financial resources. Indeed, reactions to the report were supportive with respect to the research process but rather critical with respect to the findings. The outlines of an original view of Swiss alpine pasture management from the perspective of researchers from the South remained tentative only.

the international field of development research with its broad range of disciplines, the NCCR North-South programme cannot remain uninfluenced by the hegemony of 'Western' scientific thought. Nonetheless, based on the above analysis of collaborative research practices within the NCCR North-South, this article concludes with a plea for the continuation and enhanced recognition of the programme's team research approach and of the role played by collaborative knowledge production processes in achieving sustainable development.

NCCR North-South researchers are dedicated to the fundamental logic of intercultural team research and collaboration. By embarking together on shared journeys of research projects in the field of sustainable development, they encounter and draw on multiple sources and cultures of knowledge and beliefs. Collaborative knowledge production at the individual, group, and programme levels is generally highly appreciated for the scope it gives to mutual learning and creativity. However, although collaboratively produced knowledge bears the potential of resting on an integrative, equitable, and epistemologically broad base, there is no guarantee that it will be appreciated as substantive knowledge for sustainable development. The wider institutional frameworks of globalised science tend to apply different frames of reference and knowledge requirements, demonstrating a lack of scope and appreciation for alternative scientific knowledges.

Attention thus needs to be drawn to the creativity and innovation potential of collaborative knowledge production for sustainable development in North–South settings, by providing telling examples and by reflecting about and identifying good practices. In short: it is necessary to lobby for such knowledge production, to allocate time and resources to it, and to realistically factor in the capacities of the researchers involved in such undertakings.

The empirical evidence on collaborative knowledge production collected in the NCCR North-South reveals a critical awareness of the potential, limitations, and consequences of methodological inclusiveness. Although collaborative knowledge production processes involve challenges and large investments, especially because additional time is required for joint intellectual contemplation, these processes represent more sustainable research relations, as they suggest alternatives to the dominant aspirations of individualistic leadership and scientific excellence. Knowledge collaboratively produced by intercultural research teams reflects multiple social realities and rationalities, thus fulfilling a basic requirement towards meeting the needs and challenges of a changing and increasingly globalised and complex world.

Endnotes

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[1] Claudia Zingerli joined the Swiss National Centre of Competence in Research (NCCR) North-South as a post-doctoral fellow to lead a Transversal Package Project on "Knowledge, Power, Politics". After studies in political ecology, rural development, and environmental policy in Southeast Asia and Switzerland, this Transversal Package Project allowed her to focus on meta-level questions concerning scientific practice in general. Her particular interest is in the political nature of knowledge production and knowledge sharing at interfaces between science, policy, and practice for sustainable development. Claudia Zingerli is now a lecturer and scientific coordinator at the Swiss Federal Institute of Technology Zurich and Climate-KIC, and Executive Manager of the Swiss Academic Society for Environmental Research and Ecology (SAGUF).
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[2] The informants have different disciplinary backgrounds. They range between 37 and 60 years of age; 14 of the 24 respondents work in a Swiss research institution; 12 originate from the global South; and 6 are female. The narrative interviews had durations from forty minutes to two hours. The interviews were thematically structured into five parts: i) the researchers' professional biography, ii) their involvement in international research collaborations, iii) their specific experiences with research partnerships, iv) their activities to communicate research results, and v) their self-conception as development researchers. The decision to use a narrative type of interview (see Flick 2005) was based on the idea that this would give the researchers ample time to talk about their experiences with international research collaborations.

[3] The research team was made up of four researchers and practitioners from Mali, Kyrgyzstan, and Switzerland, who conducted field research together in the Swiss Alps on alpine pasture management (Fokou et al 2008).

[4] References to and direct quotes from interviews are marked with a code. Although the respondents remain anonymous, the code shows whether they are from the North (#N) or the South (#S) or members of the mixed focus group (#G) of the North-South Exchange Project. The numbers indicate the record number and the line in the interview transcript (e.g. #N15:69).

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5 The Transformation of Policy Ideas: A Challenge for Development Research

Laurent Goetschel[1]

Abstract

Similar policy shocks have different effects on different groups or societies: while certain experiences will lead to change in some societies or states, this may not be the case in others. The reason for this is that individuals turn to collective ideas when confronted with new information that might affect their thinking and their actions; they do not simply react to the objective external world. As a consequence, knowledge that impacts on collective ideas can provide an important contribution to sustainable development. The present article looks at the connection between development policy and research from this perspective. It describes challenges linked to this interface, explaining the concept of collective policy ideas used by Legro (2000) and exploring the conditions for the transformation of these collective policy ideas. Feeling pressure to improve and justify their policies, development actors tend to focus their expectations on transformation knowledge, from which they expect the greatest added value. While this is understandable from the point of view described, such expectations are not equally applicable to all types of research. A neglect of other types of knowledge, such as systems or target knowledge, might prevent appropriate valorisation of the transformation of policy ideas. This argument is illustrated with examples from research on governance and conflict carried out within the Swiss National Centre of Competence in Research (NCCR) North-South programme.

Keywords: Development policy; knowledge transfer; policy ideas; governance; conflict.

5.1 Introduction

The transformation of reality first takes place in our heads: we will only be able to change an existing situation once we have realised that we ought to change it. The situation itself may consist of physically tangible facts like polluted water or damaged roads; or it may consist of less tangible items like obsolete political concepts or contested ideas. By ideas we mean mental constructs held by individuals that provide orientation for behaviour and policy (Tannenwald 2005, p 15). Typically, the material and the ideational are interlinked: there is a tangible fact and an idea behind it. This means that if we want to transform a given situation, we have to work on both 'ideas' and 'facts'. And if we want to modify the way we transform a situation, we also have to work on our own ideas about it. This describes, in a nutshell, a crucial objective of, but also a challenge for, development research: it is about the transfer of knowledge into practice in the global North and South and about the type of knowledge produced.

Any presentation of the Swiss National Centre of Competence in Research (NCCR) North-South will include the objective of transferring research knowledge into development policy practice. Indeed, this is one of the programme's major objectives and one main reason why the Swiss Agency for Development and Cooperation (SDC) agreed to provide roughly half of the programme's funding. In the course of action, this knowledge transfer objective has also become one of the most contested objectives of the programme. The reason is not that researchers were incapable or unwilling to disseminate their results to development practitioners. Nor is it a lack of interest among practitioners in what researchers produced. The discussions and tensions arose based on disparate expectations, diverging interests, and, at least partially, different perceptions about the value and the types of contribution that research could make to the work of development practitioners. Perception of the knowledge produced by local stakeholders constitutes another challenge for development research and has major implications for the valorisation of research results.

The present article does not focus on specific research results but on knowledge transfer in general, concentrating on research results that take the form of policy ideas. It argues that although ideas may seem of little use to some practitioners at first glance, knowledge in the form of ideas can, under certain circumstances, provide an important contribution to sustainable development. The article first looks at the connection between development policy

and research. It then describes some of the challenges linked to this interface, introducing the concept of collective policy ideas and exploring the conditions for their transformation. The argument is illustrated with examples from research on governance and conflict carried out within the NCCR North-South programme.

5.2 Development and research

Interlinkages between development and research-based knowledge are not a new phenomenon. Development policy has always been knowledge-based policy *par excellence*. On the one hand, this is due to the need for information about objectives to be followed and about appropriate instruments to be implemented in order to achieve these objectives. On the other hand, development policy has been a rather costly branch of public policy that generates effects not easily perceptible to domestic politicians and the broader public. It has therefore required 'proof' of its effectiveness to enhance its legitimacy and ensure its ongoing support by decision-making bodies. More than directly mandated evaluations, independent research is expected to provide unbiased and credible information in this regard. The need for proof of success of development policies increased after the end of the Cold War and the disappearance of the political objectives that had ultimately determined various forms of support to Third World countries during the East–West global division. It is therefore no coincidence that the debate about the effectiveness of development policy re-emerged a couple of years ago with greater intensity (Nuscheler 2008).

The Paris Declaration on Aid Effectiveness, which was adopted by the Organisation for Economic Co-operation and Development (OECD 2005), and the Code of Conduct of the European Union (EU), which was proposed by the European Commission (2007) and adopted by the Council of Ministers, are both aimed at technocratic improvements in development policy, such as enhanced concentration, harmonisation, and ownership. However, the ongoing debate about development policy extends much further: it challenges the effects and ultimately the *raison d'être* of development policy. More concretely, for example, it calls attention to the encouraging effects of aid on corruption and its hindering effects on democracy (Easterly 2006), and poses questions about the lack of economic impact of aid in cases where recipient states pursue poor policies (Burnside and Dollar 2000), or about the adverse effects brought about by the establishment of a 'global knowledge architec-

ture' consisting of interchangeable development experts rotating around the globe (Kaiser 2003).

Under these circumstances, development actors' expectations of development research have grown. Even more than in earlier years, they are eager to obtain advice about how to improve their policies and programmes in order to meet measurable targets such as the Millennium Development Goals (MDGs). In a recent survey of major Western development agencies, seven out of nine respondents stated that there was pressure to demonstrate the impact of research, and six noted increased recognition of the importance of research as a tool for development. Among the most commonly noted trends were the greater emphasis on North–South partnerships, the pressure to demonstrate impact, and the growing emphasis on linking research to policy and practice (Barnard et al 2007, p 5).

These developments are generally positive from a research perspective, in terms of appreciation of research, the emphasis put on research partnerships, and especially expectations regarding the impact of research results on development practice. Other aspects are more problematic; they mainly concern the last item mentioned, that is, the impact on development practice, which can be understood in various ways. Research may under certain conditions indeed contribute to development effectiveness measured against agreed-upon development objectives. But it may also question more fundamental ideas of development practice and thereby render life more difficult for practitioners. Although in the long term this type of knowledge will also contribute to the effectiveness and legitimacy of development work, pressurised policy actors may not perceive it as doing so in the short run.

These partially diverging expectations have to be viewed against the background of the knowledge categorisation typical of transdisciplinary and development research, which separates the knowledge generated into three categories: systems knowledge, target knowledge, and transformation knowledge (ProClim 1997; Hirsch Hadorn et al 2008). Systems knowledge provides insights into general causalities and interactions. It is concerned with how and why processes occur and therefore looks at structures and underlying societal practices. Target knowledge concentrates on the roles, interests, options, and strategies of individual players. It incorporates best practices and stakeholder actions. Transformation knowledge, finally, focuses on the type of information that is useful for the implementation of policies with the objective of short-term change at the programme or project level.

It aims to provide insights into how best to achieve the transition from an observed to a desired situation. The first category represents the most general and least immediately applicable type of knowledge, while the third represents the most specific and policy-oriented type.

Feeling pressure to improve and justify their policies, development actors tend to focus their expectations on the third category, that is, transformation knowledge, from which they expect the greatest added value in view of the optimisation they intend. Such expectations have also been repeatedly voiced by SDC representatives with respect to the NCCR North-South. While this is understandable from the point of view described, such expectations are not equally applicable to all types of research, and – more important – a rigorous restriction of focus to this type of knowledge might ultimately prevent appropriate valorisation of research on the transformation of policy ideas, which per definition cannot be subsumed under this third category of knowledge.[2]

This hints at some more fundamental issues of knowledge translation and transfer from the sphere of research into the sphere of policy. These are addressed in the following section, giving special attention to the notion of policy ideas.

5.3 Striving for knowledge transfer

The NCCR North-South has committed itself to the core objective of generating knowledge for the mitigation of syndromes of global change (Hurni et al 2004). In an ideal world, the knowledge generated would be scientifically valid, accessible, and acceptable to decision-makers in the North and the South; they would design their policies according to this knowledge, which in turn would help to mitigate identified syndromes. However, the world we live in is not ideal.

The challenges posed by the interface between policy and research are not new. They have also been the subject of previous research. Patterns of interaction have been identified, and concepts and tools have been designed to help analyse this type of interaction. To mention just two examples relevant to the challenges encountered within the framework of development research: Coleman (1991) came to the conclusion that, except in highly consensual political cultures, the only decisions made primarily on the basis of research findings were politically unimportant ones. Hence for him, when

considering the role of policy research, it was essential to keep the primacy of politics firmly in mind. In a more recent publication, Court and Young (2003) evaluated fifty case studies of research transfers in the North and the South. One key insight was that the context in which ideas were circulated was the essential variable determining the quality of their transfer into policy. These authors found that the degree of receptiveness of the political system and the probability of policy change were a function of political demand and controversy, that is, prevailing narratives and discourses among policymakers and the extent of demand for new ideas were of key relevance.

Hence the main question in development research is how to assess the 'receptiveness' of a political system. Which kinds of prevailing demand and controversy are most conducive to a successful transfer of research ideas? Obviously, the objective of knowledge transfer cannot be merely to activate pre-existing similar ideas, as this would not lead to change but only to confirmation of established modes of thinking and acting.

This draws attention to the concept of policy ideas. In political science, research into the role of ideas, their power, and their categorisation has a long tradition; the same is true for the field of international relations (Goldstein and Keohane 1993). However, relatively little is known about how new ideas enter into policies. This pertains to the role of actors as well as to the content of policy ideas. In this respect, Legro (2000) developed an interesting approach to the conditions of change affecting policy ideas. Based on the sociological state of the art, he underlined the relevance of the respective societal or group context in which ideas are circulated. He assessed the fact that similar policy shocks seemed to have different effects on different groups or societies: while the same experiences led to change in some societies or states, this was not the case in others. His argument underlined the centrality of collective ideas when evaluating the propensity to change: individuals turn to collective ideas when confronted with new information that might affect their thinking and their actions; they do not simply react to the objective external world. Legro cites as one example a study by Sagan (1993) on nuclear safety in the US, according to which, during the Cold War, a series of military accidents occurred that contradicted the priorisation of operational safety, but because none resulted in an actual nuclear disaster, hardly any policy change took place. The same was true for a series of false warnings on nuclear attacks in the 1960s and 1970s in the US, where defenders of the existing orthodoxy were able to highlight the success rather than the failure of the concept of nuclear deterrence. According to Legro (2000, p 428), "[…] in the absence

of socially undesirable results, change in 'myths' is difficult." He came to the conclusion that change (in ideas) becomes more likely when (external) events generate consequences for societies that deviate from their collective expectations and when the consequences are starkly undesirable. In other words: when a collective, which functions according to an established set of collective ideas, is faced by unexpected developments that provoke strongly undesirable consequences, it will be more open to a change in policy ideas. What are the implications of this insight for the NCCR North-South?

5.4 Challenges and examples in the NCCR North-South

Development-oriented research implies the objective of knowledge transfer. The NCCR North-South addresses various collectives or publics. On one side is the 'donor' public in the North, which consists of development agencies, NGOs, and similar entities. On the other side is the 'recipient' public in the South, which is composed of national and local governments, additional stakeholders, NGOs, and others. While the general distinction between a 'Northern' and a 'Southern' public makes sense with regard to the different functions the respective publics have within development policy, in reality many more collectives and beliefs must be taken into account. This is especially relevant in the South, where not only different countries but also different political cultures and traditions and therefore different types of actor have to be addressed. Hence, when development research transcends the sphere of pure action-oriented transformation knowledge, it faces the challenge of providing compelling policy ideas to a variety of publics in the North and the South in order to achieve its objective of knowledge transfer. The following examples from the NCCR North-South illustrate this challenge. They are drawn from two research foci in the field of governance and conflict.

5.4.1 Drivers of resource-related conflict in the Horn of Africa

Research on environmental conflict started from the assumption that changes in the environment, be they of climatic origin or not, would significantly influence the likelihood of violent conflicts among the stakeholders affected (see also Goetschel and Péclard 2011, in this volume). However, research results proved this original assumption to be wrong. With regard to land resources in the Horn of Africa, the type of resource use and the practices and institutions linked to it – which affect the intensity of tensions and the propen-

sity for conflict among the parties concerned – were much more important than the environment. Hence, without down-playing the general gravity of global warming, research results suggest that in order to mitigate the consequences of resource-related conflicts, policy reforms in the recipient countries are needed first and foremost. These may affect policies concerned with regulation of resource use, land entitlement practices, and designation of property rights (Hagmann 2005; Hagmann and Alemmaya Mulugeta 2008). What are the implications of these insights for knowledge transfer? Development actors in the North should be familiarised with the idea that a direct link between environmental policy and peace-building does not exist, at least not in a way that can be influenced through programme activities. Instead, policy reforms and, more generally speaking, governance issues should be given the highest priority. In the South – in this concrete case, in Ethiopia – political actors need to be convinced that humanitarian and environmental issues cannot be approached without looking at policy and governance.

5.4.2 Perception of conflict in the Horn of Africa and Central Asia

Regarding the specific issue of cattle raiding, research showed that violence per se is perceived as less of a problem by the affected nomadic populations than it is by Northern development actors. Nomadic groups identified the roles of national and local governmental representatives and the cleavages promoted by them as the primary causes of tensions and insecurity within their populations (Alemmaya Mulugeta 2008). Looking at water conflicts in Central Asia, research results demonstrated how distant the visions shared by international donors and NGOs were from the perspectives of local stakeholders, concerning both general political and societal objectives as well as specific perspectives on water issues. International development agencies act according to their visions of peaceful development of the societies concerned. On this basis, they include local actors in participatory processes designed to promote societal developments that fit their own visions of peace and harmony, which, however, do not correspond to those of the local stakeholders concerned (Bichsel 2008). In both of these cases, the major challenge in knowledge transfer consists of transforming existing development conceptions among Northern development actors, both state and non-state, as their programmes and activities are based on misconceptions of the local contexts in which they operate. This concerns intra-societal relations and particularly issues of conflict and violence.

5.4.3 National identity and statehood in West Africa and the Horn of Africa

Another research focus covered the issue of so-called weak or fragile states. This item became increasingly important on the agenda of international development and peace-building policies after the 9/11 attacks on the New York Twin Towers. The common assumption is that states or regions where the official (central) state is contested or diffused are particularly prone to violent conflict, and that they might even turn into breeding grounds for international terrorism. Research on these issues is still ongoing, but has by now already revealed highly differentiated situations from case to case. One of the most interesting common features observed in diverse parts of West Africa and the Horn of Africa are ongoing negotiations among local actors to define national identity and statehood (Hagmann and Péclard 2010). Examples of this quest include deeply rooted discussions about the preparation of a popular census in South Sudan (Santschi 2008), the struggle among the various factions in the civil war that has characterised Côte d'Ivoire since the beginning of the 1990s (Yéré 2008), and persisting debates on the process of decentralisation in Ethiopia.[3] In all three cases, technical questions about how to best structure and organise a state are at stake, including administrative challenges linked to devolution or decentralisation processes. But the reform challenges do not stop at the administrative level, and the core issue is not necessarily strengthening the formal state. In this type of situation, it is essential to take better account of the variety of political actors, formal and informal, and the processes in which state power is articulated and negotiated de facto. From a knowledge transfer perspective, information about these elements is a key to understanding the sociopolitical topography in which development policies are implemented. However, this perspective presumes the readiness of development actors to take into consideration a large variety of statehoods and to adapt their objectives, policies, and instruments accordingly. With regard to local stakeholders, it primarily presumes the openness of state authorities to recognising ongoing political processes of identity negotiation, as well as these state authorities' own interest in improving the quality of such processes with a view to eventually strengthening the state's legitimacy.

5.5 Implications of the transformation of policy ideas in practice

According to Legro (2000), the conditions for the transformation of policy ideas are not the same everywhere: their collective adoption by groups of actors depends on the ideas in place, their perceived consequences, and available alternatives. This finding confirms the need for a context-sensitive research approach followed by the NCCR North-South. At the same time, it sets clear boundaries to the understandable temptation of development actors to approach apparently similar issues in different contexts with the same policies and instruments. Comparison is a very important heuristic way of approaching both science and political reality. But when it comes to implementation, application of the same instruments to contexts that are less similar than assumed can lead to disappointing results. While this is less relevant when valorising action-oriented transformation knowledge, it becomes crucial when dealing with target or systems knowledge. In such cases, the transformation of policy ideas in place may be at stake. An approach that ignores existing context-specific collective ideas on the issues concerned will greatly reduce the chances of success.

For donor countries, the examples of research results mentioned imply that they might have to allow for a revision of the ideas governing their respective policies on development and even peace-building. One result might be that entire thematic or country programmes have to be revised, dropped, or enhanced. Even more is at stake for recipient countries. Research has revealed that while in certain cases programmes implemented with external support strengthen the interests of certain groups in the country, they are far from tackling the root causes of the problems observed. This would require fundamental policy changes which the respective governments may not be able or willing to make; faced with donor pressure, they may prefer dropping external support to completely reformulating national policies and dealing with the possible consequences for their own power and influence. In the terms of Legro (2000), the feared effects of new ideas can by far exceed the perceived negative outcome of holding on to traditional ideas – even when external support is being lost. Alternatively to giving up external support, recipient countries might of course simply turn to another donor.

Certain research results may also be perceived differently in the North and the South: what ‘the North’ sees as action-oriented transformation knowledge may well be seen as fundamental target or even systems knowledge by

'the South'. Taking the case of decentralisation and federalism as an example, recommendations on how to 'improve' the decentralisation process may be seen as a technical issue by Northern development actors, while their Southern political partners may perceive them as fundamentally affecting state identity. Still, such situations and even tensions can promote new thinking and readjustment in both the North and the South. This is an additional function of development research: it should be recognised as having a comparative advantage in discovering and describing basic problems and also in pointing out possible pathways to, and means for, problem-solving without being accused of political bias.

At this point, it may be helpful to recall that the NCCR North-South itself was conceived around a policy idea: the concept of sustainable development. The report of the so-called Brundtland Commission coined the most famous definition of the term, characterising sustainable development as development that "meets the needs of the present without compromising the ability of future generations to meet their own needs" (WCED 1987, p 24). Apart from the three dimensions of environmental, economic, and sociopolitical sustainability, the content of the objectives and the means required for their achievement remained open to discussion – and research! The relative vagueness of the concept of sustainable development undoubtedly was one of the reasons for its success as an idea that found widespread acceptance. The NCCR North-South set itself the objective of generating new insights into how to improve programmes and projects aiming to achieve sustainable development.

Therefore, while parts of the research programme generate action-oriented transformation knowledge, there is also a need to produce systems and target knowledge that may lead to the transformation of policy ideas. Taking into consideration the ongoing debate about the *raison d'être* of development policy, this kind of critical self-reflection is greatly needed for the sake of the recipient countries, but also for the sustainability of development policies themselves. Combining elements of ownership, partnership, transdisciplinarity, and impact orientation, the NCCR North-South research programme has the potential to bridge the gap between what may be labelled the 'fundamentalistic critique' of development, on the one hand, and the policy reform agenda, which is of a rather technocratic nature, on the other hand. This potential makes it a very timely, but also a very challenging undertaking, particularly in view of the diverging and insufficiently clarified mutual expectations about the types of knowledge to be produced and about the best way to

achieve knowledge that is satisfying to both researchers and practitioners. Looking back, it seems a blessing that no attempt was made to harmonise the various and partially diverging expectations at the outset of the programme. This might have either prevented research activities from starting or restricted the potential for the new and challenging types of insight that have been produced.

Nonetheless, after eight years some conclusions and suggestions seem appropriate. Compared with other dimensions of foreign policy, development policy has seen the most systematic attempts to achieve satisfying knowledge transfer from research into practice. Yet it still struggles with types of knowledge concerned with more fundamental policy issues and politics in the North and the South. Development policy actors must recognise the relevance of such types of knowledge for achieving their objectives. The fact that this type of input may not fit directly into a toolbox does not mean it is irrelevant for development. Certain core issues, such as those described in the fields of governance and conflict, have to be dealt with at the level of policy ideas. This does not mean that nothing can be done about them. The concept of collective policy ideas and their conditions of change helps to understand how research results that touch on fundamental political issues can be valorised. The transformation of such ideas requires a context-specific approach and a comparative advantage of new thinking over pre-existing collective ideas within the respective public. It also depends on the consequences expected by the stakeholders affected, whether in the North or in the South. These contextual factors can be influenced, though hardly by individual development actors on their own. If researchers make their ideational results even more accessible to practitioners and if development actors become more interested in this type of knowledge, then new avenues to knowledge transfer and development policy might open up, focusing on core issues of political societies in the North and the South.

Endnotes

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[2] I am aware that systems knowledge may also be of a technical nature, and that transformation knowledge may include more fundamental, normative elements. The use of this 'trilogy' of knowledge here reflects an ideal-type categorisation frequently used in literature.

[3] In this context it is interesting to note that the Ethiopian government successfully applied to host the 5th International Conference on Federalism in Addis Abeba in December 2010: http://www.ethiopianfederalism.org/; accessed on 11 April 2011.

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6 Endogenous Knowledge: Implications for Sustainable Development

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Abstract

Endogenous knowledge has become an important component of bottom-up approaches to strengthening sustainable development processes. After reviewing the rise of the paradigm of endogenous development, we highlight how research within the framework of the Swiss National Centre of Competence in Research (NCCR) North-South has contributed to the advancement of this paradigm and its cognitive basis expressed in endogenous knowledge. We explore basic features of the ontological and epistemological foundations of endogenous knowledge and show how it differs from knowledge generated by the social and natural sciences. We reveal fundamental cognitive differences which make a dialogue between them seem almost impossible at first glance. However, considering that the philosophical positions underlying these ontological and epistemological differences are not necessarily definitive, there is potential ground for joint communicative inquiry by scientists and endogenous communities into these differences. The central question to be explored in such an inquiry concerns the possibilities and conditions under which mind can interact with matter. The resulting intra- and interontological dialogue is a starting point for co-creating elements for theories of cognition that reach beyond those presently formulated.

Keywords: Indigenous knowledge; endogenous development; epistemology; ontology; dialogues between knowledge systems.

6.1 Introduction

Endogenous knowledge, endogenous development, and endogenous rural development are concepts that have become part of the sustainability and rural development debates since the late 1990s (Ploeg 1994; Delgado and Ponce 2003). Endogenous development means giving priority to people's visions, values, and potentials of development, and thus implies a clear political choice: Instead of making people participate in externally defined development initiatives, outsiders are made to participate in people's projects (Posey 1999).

In conceptual terms, we acknowledge that *endogenous knowledge* is almost identical with *indigenous knowledge*. However, the difference we wish to make explicit by referring to *endogenous knowledge* is based on the following difficulties faced by the concept of indigenous knowledge in academic as well as in political terms:

1. A first complication of *indigenous knowledge* is related to its bonds with specific historical contexts, ethnic groups, and ethnic identities. The concept thus excludes the wide range of 'local' or 'traditional' forms of knowledge of non-indigenous people, for example mestizos (Rudel et al 2002), white farmers, or even European peasants living at the margins of heavily subsidised European rural areas (Iturra 1989), organic farmers in Europe (Aeberhard and Rist 2009), or conservationist farmers in Switzerland (Fry and Jurt 2000; Schneider et al 2010). These groups represent equally important areas of endogenous knowledge and significantly help to co-produce knowledge and institutions for more sustainable development (Pohl et al 2010).

2. A second complication is related to the controversial debates – conducted mainly in social anthropology – about whether indigenous people have stronger inclinations towards considering long-term ecological sustainability than other social groups (Agrawal 1995). We think that if the aim is to theoretically and practically link indigenous people and their knowledge to a negotiated form of sustainable development, it is not of fundamental importance to clarify in a conclusive way whether the 'ecologically noble' savage truly exists, or whether there is disciplinary evidence to support the idea that indigenous people – as many other groups of resource users – tend to destroy their natural resource base, for example due to political adaptation to power hierarchies. We rather

agree with the proposition made by Haller that it is much more important "instead to determine under what conditions people studied by social and cultural anthropologists are able to use resources in a sustainable manner, and under what conditions they do not" (Haller 2007, p 337).

3. A third difficulty is related to the fact that the notion of 'indigenous' people, values, and knowledge has become a rather powerful resource in the political arena, which indeed is an asset in the struggle for increasing the autonomy and level of self-determination of marginalised people. However, due to the specific ethnic and historical contexts from which this notion emerged, it implies a differentiation between indigenous people and other marginalised groups. This becomes especially important in African or Asian contexts where some native people regard themselves as 'indigenous', while others view themselves as being Hindi, Buddhists, or Moslems: The fact that the latter do not refer to themselves as 'indigenous' does not mean that their world view and the type of resource management they derive from it is less 'indigenous' than in the case of South or Central American 'real' indigenous groups (Balasubramanian and Nirmala Devi 2006; Millar et al 2006).

In order to avoid falling into these traps when linking sustainable development to the knowledge of groups of people who legitimise the existence of their knowledge and institutions governing land and resource use on the basis of other than Western world views, we prefer to refer to such knowledge in a different way. We follow Devisch and Crossman (2002), who propose to consider all forms of knowledge outside the dominant "Western techno-rational scientific tradition" (p 97) as *endogenous knowledge*, defining it as

> *being a community-, site- and role-specific epistemology governing the structures and development of the cognitive life, values and practices shared by a particular community (often demarcated by its language) and its members, in relation to a specific life-world.* (Devisch and Crossman 2002, p 108)

Endogenous knowledge is deeply interrelated with farming practices and is both cause and effect of specific farmer strategies that are based on the co-evolution (or co-production) of nature and society (Ploeg 1994; Gerritsen 2002). Accordingly, endogenous knowledge is generally considered to contain a potential for strengthening sustainable development processes as part of bottom-up approaches (Ploeg and Long 1994; Posey 1999). Besides

good coverage of local ecological conditions (Orlove et al 2000; Barrera-Bassols and Zinck 2003; Toledo and Barrera-Bassols 2008), it promises more sustainable approaches to resource use based on long-standing traditions in common-pool resource management (Ostrom and Nagendra 2006). Endogenous knowledge is generally understood as a process of social construction carried out by a community that interacts on the basis of a shared world view, that is, symbolic representations, epistemology, norms and values, and practices (Mathez-Stiefel et al 2007); this process holds interesting cognitive and institutional potentials for balancing use and conservation of natural resources (Ellen and Harris 1999).

In such a view, the relationship between endogenous knowledge and scientific knowledge can no longer be defined according to the classical ideal of Enlightenment and its modern expressions such as scientism or technocracy. Scientific knowledge, instead of representing a universal product of the highest cognitive development of humanity that allows humanity to get rid of 'indigenous beliefs' expressed in idolatry, superstition, and ill-understood relations between nature and society, becomes just one – albeit important – form of knowledge among others. Such a repositioning of science is sustained by a shift in how science is perceived by society: While in the past the 'Western techno-rational science' was believed to be the source of all solutions, people nowadays rely on a 'reflexive modernisation' (Beck 1999), which assumes that science can be a solution as well as a cause of a problem.

As a consequence, it was acknowledged that sustainable development requires a type of knowledge production that can bridge scientific and other forms of knowledge. A good example is *Agenda 21* (United Nations 1992): adopted at the 1992 United Nations Conference on Environment and Development in Rio de Janeiro, it called for "the best scientific and traditional knowledge available" (Chapter 35.5) to be used in knowledge production for sustainable development, and demanded the development of "methods to link the findings of the established sciences with the indigenous knowledge of different cultures" (Chapter 35.7).

The present article shows, in a *first step*, how research conducted within the framework of the Swiss National Centre of Competence in Research (NCCR) North-South programme has contributed to understanding the internal constitution of endogenous knowledge. In a *second step* we synthesise main insights into how to interrelate endogenous and scientific knowl-

edge in the context of sustainable development. In a *third step* we explore how the interrelation of endogenous and scientific knowledge is linked to the emerging issues of co-production of knowledge and transdisciplinarity. The *fourth step* highlights the importance of the role that institutions can play in translating cognitive diversity into socioecological change towards more systematic consideration of the principles of sustainability in the context of concrete initiatives to improve livelihood strategies and shape the conditions in which they are carried out. In a *final step* we discuss main conclusions and future challenges.

6.2 The constitution of endogenous knowledge

Research conducted within the NCCR North-South shares an understanding of endogenous knowledge that emphasises its production in a community that is bound together by a common set of social practices based on the production and reproduction of norms, regulations, incentive structures, and sanctions (social institutions). These social practices are understood as expressions of specific values, which for their part are understood by people as rooted in their basic assumptions about what the world is composed of (ontology) and what one can know about it (epistemology).

Berkes (1999) proposes to consider *four main levels of analysis* to address endogenous or traditional ecological knowledge. The first level is the local and empirical knowledge of the environment – the 'documented knowledge' usually assessed by sciences using superficial surveys and taking it out of context. The second level concerns the practical applications of knowledge, including resource management systems, practices, tools, and techniques. The third level, often deeply intertwined with the second one, consists of the institutions, rules, norms, and social organisation of the community. The fourth level is the world view which shapes environmental perception and gives meaning to observation of the environment, connecting it to the social and spiritual world.

Research in Quechua and Aymara indigenous communities of Bolivia (Rist 2001; Boillat 2007) demonstrated that religious and spiritual beliefs and experiences play a fundamental role in the social construction of a knowledge system that is as coherent as possible and aims at linking practices, institutions, values, and basic beliefs. The importance of the religious and spiritual dimension does not impede adaptation and innovation but was

shown to provide valuable orientation in times of uncertainty in which traditional risk-reducing land use strategies lose their relevance, for example, due to changes in the climate, in value orientation, or in land tenure rights (Rist et al 2003). This is in line with results from work carried out in Africa by Haller (2002, 2007). A major insight is that this kind of religious and spiritual orientation helps in monitoring culturally defined nature–society relationships and in sanctioning deviational behaviour (Haller 2010); accordingly, religion and spirituality contribute to the process of structuring new environmental information and action, based on a social learning process (Rist et al 2007b).

This aspect can be illustrated using research carried out by Rist (2001) in Aymara communities in the altiplano part of the Department of Cochabamba, Bolivia. Results show that the shift from traditional beliefs in *Pachamama* – which in Aymara refers to the mother of the two life-giving universal forces of the male and the female (Medina 2006) – first to Catholic and later to evangelical beliefs led to an initially welcomed increase in spiritually diversified experiences. However, because traditional rituals, festivities, and forms of cooperation were at the same time banned as 'diabolical', the communities' social coherence rapidly eroded, resulting in multiple fragmentations, tensions, and conflicts between competing groups within the communities. After a series of poor harvests caused by severe climatic conditions related to the El Niño phenomenon, people started to evaluate their new religious experiences against their former belief in *Pachamama*. The difficulties they were going through were interpreted as a sign of *Pachamama*, who was 'getting angry' with people because they were forgetting her. As a consequence, they started to engage in a collective process of reflection, which led to the conclusion that the problems they were faced with were to be understood as a consequence of their 'illusion of a religious-spiritual' experience that denied any synergies between *Pachamama* and Christian beliefs. Assuming that the Christian God had made everything on Earth, they said that he therefore must also have created *Pachamama*. In this way, the community recreated common ontological and epistemological ground, which allowed people to resume the tradition of performing rituals, festivities, and forms of cooperation rooted in the links between *Pachamama* and the human beings. This was not done in opposition to Christian beliefs, but by way of complementing them. Thus, these indigenous communities rebuilt the broken social networks and ties between the different religious groups, which in turn allowed collective action to be enhanced in such a manner that the communitarian institutions regulating the specific common-pool resource management regime started to work more satisfactorily. As a consequence, social

conflict or adverse climatic conditions, which had not ceased to exist, had much less impact on the well-being of the communities than before. How this recreation of common ontological and epistemological ground translated into a productive series of attempts to innovate and adapt traditional institutions of common-pool resource management regulating land use and land management has been described by Rist and colleagues (2003).

Research on the constitution of the life-worlds of Swiss farmers adopting or rejecting soil conservation measures showed that farmers' endogenous knowledge embraces abstract meanings in the everyday life-world, as well as symbolic meanings referring to other provinces of reality determined by different cognitive styles with their own inherent topical, motivational, and interpretational relevance. In the practical domain of everyday life, soil conservation measures are perceived in the context of daily farming routines. The resulting abstract meanings are complemented by symbolic meanings referring to the farmers' value systems, their personal and professional identities, and – a new insight – to their *aesthetic perception of agricultural plots and landscapes* (Schneider et al 2010). Similar results can be found in developing countries such as Mexico, as reported by Gerritsen and Martínez (2010) when describing blue agave production for the tequila industry.

6.3 Creating a relation between endogenous and scientific knowledge

Both scientific and endogenous forms of knowledge are considered to be the products of a social construction by communities that each share different epistemological, normative, eco-cognitive, and aesthetic foundations. In order to explore possibilities for a dialogue between these forms of knowledge, it is necessary to identify the main differences between them, as well as the conditions under which they relate to each other.

6.3.1 Endogenous and scientific ontologies and epistemologies: a comparison

Based on a synthesis of common elements of endogenous knowledge found in mainly rural communities of Africa, Central and South America, India, and Europe, the international CAPTURED[7] network concluded that endogenous knowledge can be understood as the culturally and historically contextualised interactions between three main realms of life, namely the

social, material, and spiritual spheres of the world (Haverkort et al 2003; Tapia 2008). This means that every aspect of everyday life is understood as the dynamic outcome of the interactions of the beings comprised in the three domains of life. A legend is therefore not perceived as a product of the human mind (or subjectivity), but represents an existential, lived experience of someone who lived in a past temporal or spatial context (Rist et al 2004). For that same reason, a disease in humans, animals, or plants is not only understood in its material expression but also in terms of manifesting distortions of the relationships between entities belonging to the spiritual and social domains of life (including human beings). The role of the three domains of life in the endogenous Aymara world view is expressed by the left arrow in Figure 1.

Due to this holistic nature of endogenous world views, endogenous knowledge has to offer more than just explanations of *how* a certain phenomenon arises. For example, people with endogenous world views are not satisfied with knowing that a hailstorm is generated by condensation of humidity elevated to high altitudes in the atmosphere where it is cold, or that a violent conflict between humans is caused by competing interests over natural resources. They want to also know *why* the phenomenon in question happened to those affected at that specific moment. To know *why* something happens is important since this provides the basis for determining how to confront the event in an adequate way. In the case of a hailstorm, Aymara communities immediately mobilise their authorities to find out who has violently shed blood on the ground, an act that is interpreted as disrespect for the 'skin' of *Pachamama*, from which all life sprouts. Once identified, the community members responsible for the bloodshed have to perform a series of rituals in order to appease *Pachamama* (Berg 1990).

The natural sciences are rooted in a completely different world view. It is based on the assumption that natural laws exist independently from what human beings do in the spiritual or social domains of life. For this reason, the question of *why* a hailstorm affects a certain group of people at a certain moment cannot be answered by creating a relation between the three domains of life. It can only be explained by referring to factors inherent to the 'natural world' to which a hailstorm is bound by its (socially and politically determined) ontological and epistemological definitions. This materialist theory of cognition renders dialogues between scientists and people with endogenous world views practically impossible.

The essentially dualistic theories of cognition in the social sciences assume that besides a natural world (studied by the natural sciences) there is a social world (studied by the social sciences). The social world is either perceived as potentially existing alongside the natural world (realist positions), or both worlds are understood as social constructions by human beings, assuming that it is not possible – and of no further importance – to know to what degree the social world is or is not part of a reality (constructivist positions). Independently from the philosophical position, this dualism offers more space for dialogues with people holding endogenous views of the world, as it allows to explain phenomena in terms of interactions between the social and the natural worlds. However, given that the religious and spiritual domains of life are perceived as part of the subjective social world created by human beings, this dualist view has to deny the possibility of spiritual processes influencing processes outside of the social world. This aspect is depicted by the lightning icon in the right arrow in Figure 1.

6.3.2 Opportunities for bridging the differences

In this sense, scientific points of view maintain an ontological and epistemological vacuum in comparison to endogenous world views: While people with an endogenous world view are interested in knowing more about and experiencing the degree of reality and the type of interaction between the three domains of life, the natural sciences can offer experiences related to just one aspect (natural domain); the social sciences can offer explanations based on the acceptance of one 'real' domain of life (natural world) and a second domain of which one cannot be sure to what extent it constitutes reality (social world). For this reason, anthropological explanations, for example, do not deal with the question of the reality of spiritual, religious, or cultural processes; this implies that these explanations are limited to showing how these categories work themselves through processes within the social world, or how they influence human activities that articulate them through processes in the natural world. This understanding of the nature of scientific knowledge provides an entry point for the social sciences for acknowledging that endogenous knowledge is essentially long-standing, cumulative, and adaptive. It is often stored and organised in rituals and thus becomes relevant in managing landscapes (Haller et al 2008), or in the management of common-pool resources by fishermen, peasants, agro-pastoralists, or hunters and gatherers (Haller 2010). Although this entry point is highly relevant to valuing how endogenous knowledge contributes to sustainable development, it is still insufficient if we want to address more than just the charac-

teristics and institutions of endogenous knowledge and the relevance they have to sustainable development: It still ignores the existential conditions in which endogenous cognitive resources are created.

Action research on this question conducted with and in endogenous communities has shown that dialogues with the natural and social sciences can become much more fruitful for both sides if, in a first step, they lead all participants to become aware of the theories of cognition in which their own knowledge is rooted. This allows for the configuration of a space for communicative inquiry in which different ontological and epistemological positions are not seen as a final product of cultural histories, but as different ways of looking at phenomena which are relevant to members of both the scientific and the endogenous communities. A result of this type of communicative interaction between scientists and people from endogenous communities is that ontological differences can be transformed into a joint project of inquiry in which the central question concerns the possibilities and conditions under which mind can interact with matter (Rist and Dahdouh-Guebas 2006). It has been shown that such joint projects of inquiry provide fertile ground for an intra- and interontological dialogue in which no participant is obliged to give up their position; the only concession that each participant must make is that their own ontological and epistemological position regarding the mind–matter relationship is not a definitive answer, but a starting point and a specific position in a dialogue that aims to explore possibilities for co-creating elements of theories of cognition that reach beyond those presently formulated (Rist 2010). This is illustrated by the two interrelated arrows in the upper central part of Figure 1.

6.3.3 Endogenous and scientific social construction of knowledge: an example from the Andes

The main differences and similarities between scientific knowledge and Andean endogenous knowledge, and their implications for the conservation of ecosystem diversity – an important dimension of biodiversity conservation – have been identified by Boillat (2007). He presents an analysis of the main features of the social construction of ecosystems, considering (1) the scientific procedure (ecology) and (2) the procedure as found in two indigenous communities of Quechua people in the department of Cochabamba, Bolivia.

1. Contemporary ecology now widely recognises that ecosystems are an arbitrary abstraction of the complexity of nature. To become operational

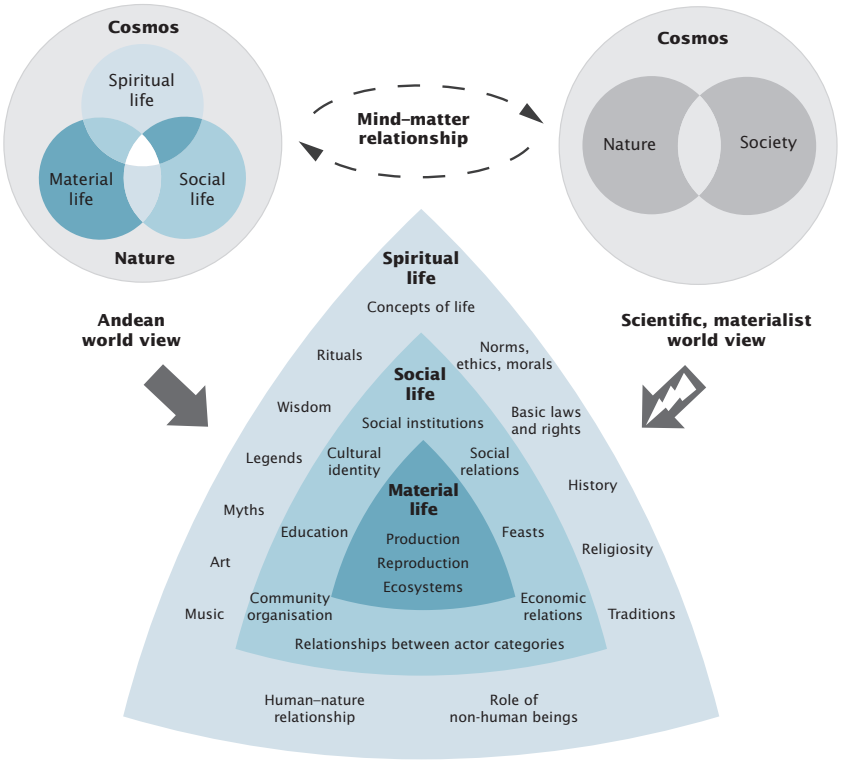

Fig. 1 Comparison of key features of Aymara and scientific ontologies. (Adapted from Rist and Dahdouh-Guebas 2006)

units for conservation purposes, ecosystems must, however, be linked to discrete, mappable entities (Noss 1996). 'Classical' terrestrial ecology usually defines ecosystems through the recognition of plant communities, which can be defined according to the statistical similarity of their floristic composition (Braun-Blanquet 1964; Mueller-Dombois and Ellenberg 1974; Begon et al 1996) – a method which is widely used by conservation scientists in Bolivia. Application of this method to the area of two Quechua communities resulted in the mapping of 40 plant communities. Further analysis demonstrated that traditional agriculture plays a key role in shaping the high diversity of local ecosystems. In this case, the process of scientific knowledge construction consisted of first characterising the parts of a system (the plant species), followed by defining the whole (the plant community) and generalising the findings to the wider area (abstraction). Since the methods of 'Western techno-rational science' demand that observations remain independent of the observer,

thereby ensuring the replicability of the inquiry, only material interactions are registered. In this sense, ecosystems – from the point of view of scientific ecology – are a bridge between reductionist and holistic materialism (Golley 1993). This approach is consistent both with a *critical rationalist epistemology*, which states that there is an objective reality, which is complex and can be approached only through a set of abstract theories, and with a *dualist ontology*, which postulates that mind and matter exist as distinct entities, with mind observing matter through sensorial perception.

2. Regarding the social construction of environmental knowledge by the two Quechua communities, defining the vegetation type is not a central criterion for differentiating spatial units in the landscape. Rather, the landscape is divided into concrete places whose names have direct meaning in the local language; this is done in considerable detail and with quite precise spatial boundaries (Martínez 1989). Boillat collected 308 mappable toponyms that local people defined using a wide range of aspects related to topography, the presence of plant and animal species, rocks, and water, the sacredness of places, soil types, climate, infrastructure, history, and traditional ritual activities (Boillat 2007). Community members conceive of toponyms not as arbitrary, but as *self-revealed* names that are based on the evidence of some outstanding feature and that result from observation and daily interaction with the environment, but also from dreams, meditation, or even spiritual possession (for other areas in the Andes, see also Platt 1992). Moreover, all these places are believed to form part of a wider *community of living beings* with which people can establish direct contact, for example by performing a ritual to 'ask the places for help' in agricultural production. This process shows that endogenous knowledge construction first defines a whole (the place) and only in a second step characterises its parts (e.g. natural resources available at a place). Moreover, since observation is not the only method used to determine place names, knowledge is accepted to be observer-dependent in the context of a consensus about place names among the community members, which emerges informally from the collective experience of interacting in a common environment. Thus not only material interactions are acknowledged, but also social and spiritual ones. In this sense, the epistemology of Quechua endogenous knowledge can be interpreted as a *dialogue with a community of living beings*, based on the ontological assumption that there is *no fundamental separation* between material, social, and spiritual phenomena or between nature and culture. The result of this endogenous process of knowledge production is a genuine *cultural landscape*, which from

a scientific-ecological point of view holds high potentials for strengthening biological as well as cultural diversity in the area.

6.3.4 Endogenous knowledge: open to other forms of knowledge

Regarding the basic features of a dialogue between these two ways of constructing knowledge about the environment, this analysis clearly shows that in both cases, the cultural landscape is valued positively. However, in order to better grasp the potentials and constraints of such a dialogue, it is important to note that the reasons for this positive valuation are very different. As illustrated in Figure 2, the natural sciences, the social sciences, and Quechua endogenous knowledge all consider material, social, and spiritual aspects of the cultural landscape of the communities. While the natural sciences deal with material, observable phenomena, empirical social science focuses on social phenomena, without excluding the possibility of taking account of interactions with material phenomena. Philosophy and theology may consider spiritual phenomena, but usually in reference to sacred texts and individuals' written experiences of spirituality. Quechua endogenous knowledge focuses on the interdependencies of phenomena, aiming to trace their way through the material, social, and spiritual domains of life, which are not understood as separate from one another. From the Quechua com-

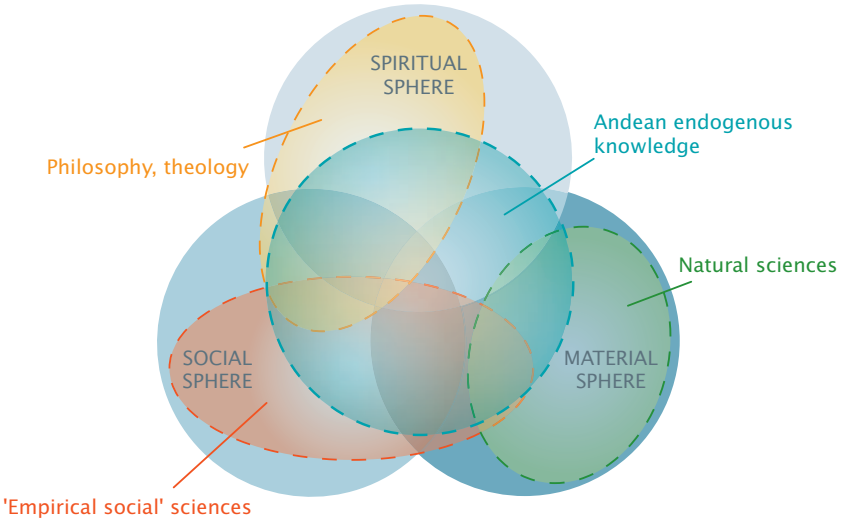

Fig. 2
Basic differences and similarities between the social construction of ecosystems from the Andean and the 'Western techno-rational science' points of view. (Adapted from Boillat 2007)

munities' point of view, it is thus clear that scientific knowledge about their environment can be seen as one *particular case* among the many possible ways of constructing knowledge. This leads to what Tax (1990, p 283) calls a paradox: Endogenous knowledge is "broader or more permissive" than scientific knowledge, and can more easily incorporate new knowledge into its system.

This may also account for the fact that people from endogenous communities often have little difficulty combining endogenous forms of knowledge with aspects or artefacts coming from a – supposedly – strongly contradictory world view. As long as scientific contributions can be seen as a particular case of reduction of the endogenous world view, a logical coherence between the two ontological systems and their epistemologies is maintained. This makes it possible to revert to the endogenous world view should the discontinuities with the exogenous elements become too severe (as was the case in the failed attempt to substitute traditional belief in *Pachamama* with Christian belief described above).

This particular relationship between endogenous and scientific world views is not just a 'cognitive game'. Indeed, it directly influences the decisions and actions of people in their daily lives. This can be illustrated using research carried out in rural contexts of Bolivia, Peru, and Switzerland (Mathez-Stiefel 2008, 2009; Aeberhard and Rist 2009). Mathez-Stiefel (2008, 2009) analysed the strategies that people in two Quechua regions of Bolivia and Peru adopt when they have to decide whether to use endogenous or biomedical (science-based) therapies to treat an illness. The research results show that the choices are not clear-cut in favour of one or the other system: Indigenous people integrate both systems within multiple therapeutic strategies, depending on the type of illness. This points to interontological reflection that considers different conceptions of health and illness. People will, for instance, first try to heal themselves based on endogenous knowledge, and only if this attempt is unsuccessful will they consult an external specialist. For serious, so-called cultural illnesses – caused, for example, by 'fright' (*susto*), 'bad air' (*mal viento*), or 'anger' (*colerina*) – they will typically go to a traditional healer; and only for serious injuries – caused, for example, by accidents – and to obtain vaccinations, contraceptives, and painkillers, will they go to the health care centre. Nevertheless, the research results show a clear preference for the endogenous medicinal system among Andean farmers, independently of their age, level of education, economic status, religion, or migration status. This preference cannot be explained by the financial

factor only; it rather highlights the incapacity of the biomedical system to incorporate endogenous knowledge and the underlying endogenous conceptions of health and illness in a way that is adequate to the complex life-world of indigenous people.

A similar situation helped to explain the ambiguous position of 'Western techno-rational science' within communities of organic farmers in Switzerland. The continuously growing and by now well-established societal recognition of an initially rather poorly received new trend is associated with the gradual loss of the priority of endogenous knowledge and the related philosophical background. The increasing tendency to value organic agriculture based on the epistemic principles of bio-ecological and generally quantitative socio-economic research has led to a gradual replacement of endogenous knowledge by scientific knowledge, reducing the potential for endogenous knowledge to spark further innovation based on cognitive diversity (Aeberhard and Rist 2009).

Analysis of social learning processes related to soil conservation in Switzerland demonstrated that considering the life-worlds of non-academic actors – in which the recombination of endogenous and scientific forms of knowledge generally occurs – is crucial for understanding why, for example, farmers, based on their endogenous knowledge, adopt or reject soil conservation measures. Schneider and colleagues (2010) showed that farmers interpret soil erosion and soil conservation measures against the background of their entire life-world. In doing so, farmers also consider abstract and symbolic meanings of soil conservation. Consequently, while soil conservation measures have to be feasible and practical in the everyday farming routine, they also have to match farmers' aesthetic perceptions, their value systems, and their personal and professional identities. As a consequence, when adopting soil conservation measures such as no-tillage, farmers have to adapt not only the routines of their daily farming life, but also their perception of the aesthetics of cultivated land, their basic values, and their images of themselves. A major factor determining whether farmers adopted or rejected no-tillage was found to be the degree of coherence they were able to create between the abstract and symbolic meanings of this soil conservation measure. Accordingly, implementation of soil protection measures faces the challenge of facilitating interactions between farmers, experts, and scientists at a 'deeper' level, with an awareness of all significant dimensions that characterise the life-world concerned.

6.4 The role of institutions in bridging cognitive diversity

Getting involved in transdisciplinary dialogue between endogenous and scientific communities is much more than a challenging 'intellectual journey'. As the research results outlined above have shown, a learning-oriented intra- and interontological and -epistemological dialogue helps to generate communicative action which first permits to clarify differences and envisage possible common ground for cooperation between the different epistemic communities. Following the action research approach, this process finally leads to the design and implementation of concrete actions aimed at changing present livelihood strategies and the conditions in which they are applied.

Insights gained from intra- and interontological and -epistemological dialogues frequently lead to a review of social institutions and are thus finally translated into a more sustainable development practice (Galvin 2004; Bottazzi 2008; Galvin and Haller 2008). As shown by the examples mentioned above, members of endogenous epistemic communities make considerable and time-consuming creative and social efforts to explore in an increasingly reflexive way the links between land use practices, institutions, and the cognitive foundations on which norms, regulations, and practices are based.

The results of such endogenous learning processes are translated into political claims for more room and consideration to be given to endogenous institutions in the context of common-pool resource governance, management of natural resources, shaping of economic relations, and design of strategies regarding health, education, and other public services. It is in this political struggle that scientific research into the potentials of endogenous institutions for more sustainable development plays an important supporting role. The results of such research provide a basis for creating alliances between academic and endogenous communities, thereby increasing their influence on both political decision-makers and policy processes. Such a focus on incorporating endogenous norms, rules, and the corresponding systems of incentives and sanctions into the governance of natural resources as part of cultural landscapes offers an opportunity for translating the long-standing and highly adapted knowledge of local people into collective action; this, in turn, provides a basis for reinforcing those parts of endogenous knowledge that appear promising with a view to further advancing people's aspirations, and for innovating or complementing those parts that are considered inadequate to present situations.

Many social scientists regard the term "sustainability" as alien to endogenous communities (see Haller 2007). A closer look reveals, however, that at least certain fundamental elements of sustainability are part and parcel of endogenous knowledge. Rist (2002, 2010) shows that the notion of developing in a way that takes account of the needs of future generations is part of the vision of development held by Aymara indigenous communities in Bolivia. And more than that: Their vision actually goes beyond this notion, extending it to include past generations as well, based on the belief that the ancestors remain present now and in the future and wish to keep on living with the present and future generations. Accordingly, current development must allow present, future, and past generations to live well.

Aside from this, however, we agree with Haller (2007) that the integration of endogenous knowledge in development initiatives is much more productive if the strengthening and maintenance of cultural landscapes, and of the institutions and ethno-ecological knowledge that are shaping them, is based on attaching fundamental property rights to the natural resources, territories, and knowledge of endogenous communities. This implies that the strengthening of endogenous institutions cannot take place at the margins of existing power relationships. Instead, scientific work has to be re-focused on the context of institutions, away from emphasising the tendency of endogenous institutions being weakened by modernisation. We have to start (again) analysing how in the same processes we find signs of resistance against unilateral and imposed modernisation, with the aim of helping to link the political arena with the forces of resistance and alternative political projects undertaken by endogenous communities (García Linera 2006).

However, the fairly common strategy to call for greater consideration of endogenous institutions might fall short in the medium and long terms if we do not take into account that the meaning and internal legitimacy of endogenous institutions increasingly tends to be the product of a reflexive and collective process of learning on the part of the people shaping them. This means that besides creating room for endogenous institutions, efforts must also be made to create room for intensifying the exploration of links between the cognitive foundations of people belonging to endogenous communities, their institutions, and their social practices. We argue that engaging in the intra- and interontological and -epistemological dialogue described above is a promising step for complementing support in the political arena in such a way that the sources of endogenous knowledge and creativity can flow more easily into collective action aimed at changing structures and hierarchies.

6.5 Endogenous knowledge and co-production of knowledge as a pathway to sustainable development

In the previous sections we have highlighted the constitutive elements of endogenous knowledge and its differences from scientific knowledge, and have shown that institutions can play a fundamental role in bringing endogenous knowledge into the practice of sustainable development. However, we have not yet answered the question of how to conceptualise the process of interrelating the different forms of knowledge in the context of devising more sustainable development initiatives. Research undertaken within the framework of the NCCR North-South and elsewhere suggests that this process should be understood as based on interactive ways of producing knowledge (Schulser et al 2003; Pahl-Wostl and Hare 2004; Rist et al 2006; Ison et al 2007; Rist et al 2007a; Rist et al 2007b; Pohl 2008; Schneider et al 2009; Reed et al 2010) and on transdisciplinarity (Hurni and Wiesmann 2004; Max-Neef 2005; Hirsch Hadorn et al 2006; Wiesmann et al 2008).

Recent debates have followed two different ways of conceptualising co-production of knowledge. In the first, emphasis is placed on 'boundary organisations'. These are understood as existing at the interface between the two fairly different social worlds of politics and science, having distinct lines of accountability to each of these two worlds and involving the participation of actors from both worlds, assisted by professional mediators (Guston 2001). Examples of boundary organisations include the United States Office of Technology Assessment (Cash et al 2006) or, to cite a more recent example, the Intergovernmental Panel on Climate Change (IPCC) (Forsyth 2004). The second type of conceptualisation of co-production of knowledge builds on 'mode 2 knowledge production' (Gibbons et al 1994; Nowotny et al 2001). This type of knowledge production is defined by the context in which it is applied, as well as by the heterogeneity of cognitive and social skills available in the problem-solving process as a result of the involvement of multiple actors.

A systematisation of experiences gained from action research projects aimed at knowledge co-production between scientists and key stakeholders for finding more sustainable ways of managing natural resources (Pohl et al 2010) has shown how the call for integrating scientific and endogenous forms of knowledge in sustainable development initiatives challenges the perception of a clear-cut boundary and division of labour between science and society, as well as the idea that science holds a monopoly over knowl-

edge production. Accordingly, we argue that the 'mode 2 knowledge production' pathway is better suited for conceptualising such integration of scientific and endogenous knowledge in sustainable development initiatives than the concept of 'boundary organisations'.

In view of the importance of integrating endogenous knowledge into the processes of co-production of knowledge for sustainable development, the NCCR North-South carried out research aimed at highlighting the main features of initiatives that promote processes of joint and interactive knowledge production by scientific and non-scientific actors. Two basic questions were addressed: first, what are the basic types of interaction that emerge when actors representing endogenous and scientific forms of knowledge meet in platforms for the co-production of knowledge? And second, which roles do scientists play when they engage in processes of transdisciplinary knowledge co-production in the context of action research projects for furthering sustainable development initiatives?

Regarding the first question, it was shown that the co-production of knowledge is generally related to the establishment of social learning processes between the members of the epistemic communities involved (Rist et al 2006). Research on the basic features of such social learning processes revealed that co-production of knowledge implies fundamental changes in patterns of interaction, for example between farmers, extensionists, and policymakers. As these interactions generally take place in the context of face-to-face communication, the following question becomes an important issue in the theory and practice of co-production of knowledge: how can insights gained within relatively small groups of actors be enhanced in such a way as to promote collective learning processes in wider societal spaces? A study by Schneider and colleagues (2009) revealed that in the case of soil conservation initiatives in Switzerland this was achieved not directly by formalising new lines of institutionalised cooperation, but by establishing links in a 'boundary space', trying out new forms of collaboration aimed at social learning and co-production of knowledge. Gerritsen and Morales (2007) describe a platform for co-production of knowledge in western Mexico, in which dialogues and interchange of concrete experiences helped in scaling up localised endogenous knowledge.

Regarding the second question of how researchers deal with situations in the knowledge co-production process, it was shown that sustainability researchers face three challenges in the co-production of knowledge: (a) addressing power relations; (b) interrelating different perspectives on the issues at

stake; and (c) promoting a previously negotiated orientation towards sustainable development. Their responses to these challenges consist in assuming the roles of reflective scientists, intermediaries, and facilitators of a joint learning process (Pohl et al 2010).

6.6 Conclusions and outlook

This article summarises how NCCR North-South research has contributed to the advancement of the emerging paradigm of endogenous development and its cognitive basis expressed in endogenous knowledge. Some basic features of the ontological and epistemological foundations of endogenous knowledge and its differences from knowledge generated by the social and natural sciences were set out. Becoming aware of these differences was identified as a precondition for organising a meaningful dialogue between the endogenous and scientific epistemic communities. Given the fundamental cognitive differences, a dialogue seems almost impossible at first glance. However, considering that the philosophical positions underlying these ontological and epistemological differences are not necessarily definitive, there is potential ground for joint communicative inquiry by scientists and people from endogenous communities into these differences. In this context, the central question concerns the possibilities and conditions under which mind can interact with matter. This question has been shown to provide fertile ground for an intra- and interontological dialogue in which no participant is obliged to give up their position; the only concession that each participant must make is to acknowledge that their own ontological and epistemological position regarding the mind–matter relationship is not a definitive answer, but rather a starting point and a specific position in a dialogue that aims to explore possibilities for co-creating elements for theories of cognition that reach beyond those presently formulated.

This explicitly includes, on the one hand, the recognition that the social and natural sciences can learn from the dialogue with endogenous communities how to overcome the ontological and epistemological limitations that constrain a more systematic approach to the practice of endogenous development. On the other hand, such a learning-oriented dialogue implies the recognition that actors basing their actions on endogenous knowledge can benefit from the high degree of reflexivity which is brought into the dialogue by the natural and social sciences. Experience and research have shown that this is a need felt by people holding endogenous knowledge, because they

increasingly rely on a reflexive, rather than authoritative, legitimacy of their knowledge, values, and institutions.

The research results also demonstrate that a fundamental aspect allowing endogenous and scientific knowledge to be linked relates to the validation of the potentials that endogenous institutions have for sustainable development. On this basis, scientific work can help to enhance consideration of endogenous institutions in the political arena and create conditions in which endogenous communities can express their endogenous knowledge in terms of concrete norms, regulations, incentives, and sanctions in the context of concrete issues of sustainable development, for example related to common-pool resource governance, the management of territories and natural resources, practices in the fields of health care, education, social and political organisation, and the shaping of economic relationships.

In our view, the main challenges for further research include:

1. To deepen understanding of the constitution of endogenous development in areas other than resource management and health, for example with regard to endogenous forms of social organisation, new and old 'moral economies', religious and spiritual practices, or political organisation.

2. To further explore epistemological and ontological differences between endogenous and other forms of knowledge, not by comparing them to the general cognitive foundations of science (as done in this article), but by taking into account the diversity of theories of cognition within established and emerging strands of scientific thinking, for example the new a-dual ontology as proposed by Hans Peter Dürr (2007).

3. To better understand how endogenous and scientific knowledge interact within people's life-worlds and how they relate to the generation of social and political movements calling for epistemological and ontological plurality, and to explore the potentials and risks this involves for societal organisation.

4. To deepen insights into how the enhancement of endogenous knowledge can be strengthened on the basis of learning-oriented and transdisciplinary approaches to sustainable development, and how these approaches relate to new and/or more comprehensive notions of development, as expressed in terms of 'net growth of happiness' in Bhutan or *vivir bien* (living right) in Bolivia, Ecuador, or Peru (Choquehuanca 2010).

Endnotes

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7 Social and Political Participation in Sustainable Development with a Focus on Governance

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Abstract

In the course of the past four decades, participation has been mainstreamed in development research and practice. However, despite very widespread use of the term, there is no consensus on its definition, and it has generated intense and controversial debate. Taking stock of some fifty publications developed within the framework of the Swiss National Centre of Competence in Research (NCCR) North-South on the topic, this paper opens up new avenues of research while offering a critical appraisal of social and political participation in sustainable development research and practice. The mainstreaming of participation has corresponded to an increasingly technical approach to the question. What the body of literature discussed here suggests is that more attention should be given to power relationships and governance processes in analysing the participatory dynamics of development. Participation is primarily a political problem relating to power relations and (im)balances in a given society. It is, therefore, not a 'simple' norm whose implementation would be a prerequisite for "good governance" and sustainable development. It is an arena, a physical or symbolic space where key social issues such as, for example, access to resources, gender inequalities, access to land, or land rights are debated and negotiated.

Keywords: Participation; sustainable development; governance; power; politics.

7.1 Introduction

Over the course of the last four decades, the term "participation" has been widely used in development discourse and has also been mainstreamed in development practice and research. Although it is nowadays generally advocated as a philosophy of development (see, for example, Cernea 1985; Chambers 1992, 1994a, 1994b), the concept of participation itself has generated and continues to generate intense and controversial debate about its meaning, implementation modes, and effects. Consequently, it is not easy to define what has gradually become a meta-concept of (sustainable) development, particularly as the polysemic nature of participation manifests itself in multiple, changing meanings in the development arena (Cornwall 2000).

In the present article, participation is considered as a process through which stakeholders (generally poor people or organisations that act as intermediaries for the poor or for specific relatively disadvantaged, marginalised, or voiceless groups of people) strive to influence and share control over development policies, initiatives, and the allocation of resources that affect them.

Based on this definition, the present article aims to contribute to current international debates on the issue of participation in (sustainable) development by reviewing approximately fifty relevant studies carried out within the framework of the Swiss National Centre of Competence in Research (NCCR) North-South research programme. A diversity of situations, as well as the controversial nature and ambiguity of the concept of participation in development – in terms of its effects and limitations – are confirmed here. But what the body of research discussed in this article suggests, directly and indirectly, is that more attention needs to be given to power relationships and governance processes in analysing the participatory dynamics of development. As governance, very broadly speaking, refers to the inclusion of new actors in political decision-making processes, it is directly related to both power and participation.

This review argues that the concept of participation has undergone a certain process of 'depoliticisation' (Cornwall 2000; McGee and Norton 2000; Bühler 2002; Brock and McGee 2004; Brown 2004; Gaventa 2004; Williams 2004) during the last two decades, both at a conceptual level and in the way it has been implemented in development strategies. Currently, however, the concept of participation appears to become repoliticised as a result of the impulse of certain civil-society actors and social movements. Power

relationships and governance issues are thus assuming importance in current debates about the new challenges and meanings of participation.

This article proceeds in three steps, first broadly sketching the evolution of the concept of participation in development literature and policies. It then moves on to synthesise briefly the main contributions of the NCCR North-South on the topic, with a particular focus on the effects of participation. The final section gives a critical outlook on the actual impact of decades of 'participatory development' before suggesting some avenues for further reflection.

7.2 The concept of participation in development (1960s–2000s)

The concept of participation in development policy has changed markedly in recent decades. During the 1990s, participatory processes were formalised and institutionalised on the international scene. This led to an inversion of logic. Bottom-up dynamics, which had been the hallmark of participatory principles in the 1970s, were widely replaced by top-down dynamics (initiated by states or international institutions) that nevertheless claimed to rest on bottom-up movements (Rabinovich, in press).

In the 1950s and 1960s, non-governmental organisations (NGOs) and grassroots activists began to promote greater popular involvement in the development process. Concepts of 'community participation' and 'popular participation' emerged in opposition to technocratic, homogeneous, and homogenising development practices inherited from the colonial period (Cornwall 2000; Karl 2002). Influenced by these initiatives, 'community participation' became a channel through which 'popular participation' began to be realised in mainstream development initiatives of the late 1970s and early 1980s (Cornwall 2000). In those years, indeed, donor governments and international agencies defined goals that put 'popular participation' on international agendas and made it the subject of national legislation. In several South American countries, for example, the option of 'popular participation', conceived by the United Nations as an instrument of politico-administrative change, was adopted in response to the 'modernisation' of states that had been declared necessary (Martínez Montaño 1996).

Within mainstream discourse, participation was seen largely as a means to involve people in activities initiated by development agencies or the state (Cornwall 2000). Contrasting alternatives emerged, such as 'people's self-development', 'pedagogy of the oppressed', and 'participatory action research', which considered participation as a process of creating collective reflection and action to recognise, and subsequently change, societal power structures that impeded more equal access to and participation in the shaping of public policies. In other words, this type of participation was meant to build the capacity to negotiate on new terms with those in power, including the state (Cornwall 2000; Fals Borda 2006).

In the mid-1980s and 1990s, the implementation of neo-liberal economic policies led to a convergence of different (even diametrically different) interests that can be considered "a meeting of the opposites" (Lacroix 2000, p 5) involving international institutions, states, social movements, engineers, specialists, local actors, etc., all of them sharing common objectives within the new global paradigm of development (e.g. Premchander and Müller 2006). On the one hand, this change was mainly characterised by the increasing and exponential influence of the role of NGOs in the new political agendas of development, and by a withdrawal of the state as an actor in development. On the other hand, there was a formalisation and institutionalisation of concepts such as 'capacity building', 'empowerment', 'community', and 'participation' (Cornwall 2000; McGee and Norton 2000; Eberlei 2001; Brown 2004; Premchander and Müller 2006; Rabinovich, in press). The participatory dimension ultimately became central and consensual in development policies and projects.

During this period, the concept of participation was 'domesticated' by the implementation of 'invited participation' spaces (Cornwall 2000), and it also became broadly depoliticised with the development of an extensive and powerful process of 'good governance' in line with the dominant global neoliberal paradigm (Bühler 2002). This evolution led some researchers and local actors to consider participation as the main tool in a new technocratic tyranny (Cook and Kothari 2001; Bühler 2002; Williams 2004). However, some alternative approaches, such as Participatory Rural Appraisal, have resisted the mainstream(ing) of participation controlled by international and transnational entities (Chambers 1992, 1994a, 1994b, 2007a).

Since 2000, growing interest in 'citizenship participation', defined as "direct ways in which citizens influence and exercise control in governance" (Gaventa and Valderrama 1999, quoted in Cornwall 2000, p 60), as well as in the generalisation of 'invited participation' spaces has been responsible for a return of the political dimension of participation in development. New forms of citizenship have emerged that consider participation as a right in the social, economic, ecological, and political realms. Moreover, the issue of (access to) decision-making and power relationships is again coming to the fore. It is in this context of renewed attention to the political dimension of participation that research was conceived and conducted within the NCCR North-South. By focusing on the complex relationships between (and within) formal and informal power structures and the related institutional dynamics, as well as the implications these have for the production and reproduction of individual and collective agency, this research has made a valuable contribution to debates about participation in development.

7.3 Main foci of research on participation in the NCCR North-South

Providing a detailed overview of the more than fifty studies conducted within the framework of the NCCR North-South on the issue of participation would go far beyond the scope of this article. In what follows, we therefore outline some of the major lines of argument presented in these studies.

Broadly speaking, the studies can be grouped into two categories: 1) works dealing with 'political participation' that emphasise analysis of processes in arenas in which collective decisions are taken; and 2) works on the 'effects' of 'social participation' that focus on the implementation of development projects. However, a common denominator of all the studies is their focus on the continuities and discontinuities between mostly marginalised (local) actors in development projects and related public spaces for decision-making. In the latter category, research on participation in decentralisation processes clearly dominates (see Geiser and Rist 2009). Although most studies recognise the interconnection between social and political participation, these are generally examined separately. Moreover, a distinction is to be made between processes and effects as a focus of research.

7.3.1 Focus on processes

Possible answers to the question of how certain forms of participation change power relations can be found in one group of studies dealing with conceptualisations of participatory processes in a broader societal context. Some of these studies analyse participation and its relationship to the transformation of basic understandings of citizenship, public space, deliberative democracy, emancipation, or resistance. Others emphasise a better understanding of the potentials and constraints of different forms of collective action as part of development (associations, social movements, etc.). The relation of the observed changes in power asymmetries to indicators of ecological sustainability is generally not addressed by these works. Instead, they focus on the constitution and evolution of social organisations and movements and show that it is worthwhile to differentiate between top-down (nevertheless usually well-intended) 'decreed participation' and 'uninvited participation' on the part of social groups making explicit claims to change political orders and societal structures. It seems that 'decreed' participation aims rather at maintaining dominant macro power relations – within a context of redistributing administrative functions – and, to a certain degree, related power relations. 'Uninvited' participation intends to change prevailing power relations directly.

Some PhD candidates carried out case studies showing how power relations are directly involved in the shaping of social relationships within different actor categories, and between these actor categories and their local natural environment. These studies often focus on marginalised groups such as women, indigenous people in rural and urban areas, migrants, landless and unemployed people, pastoralists, slum dwellers, etc. They are significant insofar as they provide basic knowledge about the factors and dynamics that result in certain actor categories remaining or – in some cases – becoming marginalised.

7.3.2 Focus on effects and impacts

A second group of studies analysed the implications and impacts of participation on different forms of governance of natural resources, protected areas, water, and waste. This group includes PhD-level studies dealing with the development or evaluation of participatory instruments for planning, monitoring, or assessing aspects related to sustainable development. The indicators used to assess the effects of participation mainly refer to the

ecological dimensions of sustainability, for example impacts on deforestation, soil erosion, loss of biodiversity, or availability and quality of water. Research taking into account that sustainable development is not only defined by a certain form of participation but also by a broad set of socio-economic indicators, such as values and institutions regulating access to and distribution of basic natural resources, has not been conducted. Two books present a total of 21 case studies showing that current forms of 'participatory' (Galvin and Haller 2008) and 'decentralised' (Geiser and Rist 2009) management of natural resources are generally associated with great problems when it comes to effectively changing existing power asymmetries. As a consequence, they often fail to achieve expected medium- and long-term ecological impacts.

7.4 Some effects of participation

Differentiating between processes, impacts, and effects makes it possible to identify two aspects of sustainable development that are interrelated but not integrated in research practice: the social-ecological and the political effects of participation. In the following sections, we summarise some typical cases in each category of effects, and point out some additional aspects mentioned in other studies.

7.4.1 Social and ecological effects

Participation has been shown to help improve people's living conditions and their access to natural and other development-relevant resources. In Bolivia, the (ad)option of 'popular participation' in the implementation of a (government-induced) decentralisation process since 1994 has generated considerable changes in terms of local development, by comparison with neighbouring countries. In the initial years, educational, social, and medical infrastructures were created in each municipality, making local support of the economic sector more efficient (Arrieta and De La Fuente 1998; Lacroix 2000; De La Fuente 2001; Bolay 2002; Lacroix 2005). In a few villages in Pakistan, the participatory forest management system introduced by the public Forestry Sector Project has increased natural assets (use of forest-associated pastures) as well as the social assets (networks, organisation, information exchange) of forest dwellers, although institutional changes in the forestry sector did not help to foster cash-oriented livelihood strategies (Shahbaz 2004; Ali et al 2007).

The increase in social, cognitive, and emotional competencies through participatory training and joint learning by local actors, researchers, and development workers is another fundamental outcome of participation (Rist et al 2007; Rabinovich, in press). For women, education is particularly decisive for their integration in decision-making and negotiating processes on values, norms, and entitlements (Müller 2006).

The group of works dealing with social effects includes a series of studies that aim to link social and ecological processes by evaluating participatory management schemes and emphasising ecological indicators of sustainability, for example with regard to impacts on deforestation (Ali et al 2006), soil erosion (Mitiku Haile et al 2006), loss of biodiversity (Gurung 2006), or availability and quality of water (Lüthi et al 2008). The main virtue of this kind of research consists in linking social and ecological processes. However, because these studies generally examine only a small number of social variables related to specific but important aspects of participation, they tend to fall short of capturing the full complexity of other social phenomena related to participation, for example power structures and relations, actor-specific understandings of development, human beings, or nature (Bottazzi 2008; Geiser and Rist 2009).

7.4.2 Political effects

As stated above, participation by local actors is directly related to the issues of agency and power (Long 2001; Bichsel 2009). This relation is clear and obvious in participatory processes, which often reveal the social and political situation or configuration, bringing to light power relations (domination/subordination, normalisation/marginalisation), underlying or latent conflicts, tensions, and interpersonal or intersectoral relations. Implementation of participation can lead to the emergence of claims that provide information about disparities and/or inequalities of access to decision-making.

In Mexico, as in other parts of Latin America, research on participation draws attention to social organisations and movements and their role in the construction of new societal structures (Morales 2004). Their activities often stem from the defence of local sociocultural, organisational, and economic structures in order to maintain or (re)gain control over constitutive elements of their life-worlds (Gerritsen and Morales Hernández 2009).

An example is the Red de Alternativas Sustentables Agropecuarias (RASA), a network for sustainable agricultural alternatives in western Mexico. This network currently comprises about 100 farmer families, six non-governmental organisations, and two local universities. Starting from the defence of local resources, organisations, food, and identities, it evolved into a new platform for debating and proposing alternative rural development policies. RASA thereby became a frame of reference for organic agriculture and fair trade, and turned into an important policy actor. For example, RASA is actively participating in a state governmental board on strengthening organic agriculture (Gerritsen and Morales Hernández 2009). Other cases confirm this pattern of policy influence exerted by locally rooted organisations and movements which, by means of federalisation, create powerful regional and national networks allowing them to compete with political parties and private companies in the arena of high-level policy-making (Freytes Frey et al 2006; Orozco Ramírez et al 2006; André de la Porte 2007).

7.5 The limited impacts of participation

When claims to change power structures are compared with the real-world effects of participatory development, it becomes apparent that the impact is very limited. Although participation in general promotes 'better' local development in the sense of responding more adequately to the needs and expectations of the local population, and contributes to (local-level) democratisation, participatory approaches fall short of achieving real change in the power relationships implied in (re)shaping social, political, and ecological structures. In other words, participation only constitutes a means to improve access to resources or decision-making and/or to more participatory management of resources. Although this is in accord with the principles of sustainable development, participatory approaches generally tend to improve sustainability within existing structures.

There are a number of reasons for this contradiction: a) exogenous, mainly top-down-oriented initiatives for participatory processes often involve imposition or privileging of the development visions of more powerful actors, rather than creating room for reconciling local and external perspectives (Gerritsen and Morales Hernández 2001); b) local inhabitants' knowledge is rarely integrated into projects, implying that the respective participatory process all too often ignores these people's capacities, resources, and visions, drawing a line between their own and outsiders' solutions (Rist and

Dahdouh-Guebas 2006; Rabinovich, in press); c) simplifying social complexity for the sake of participatory development as conceived from the top leads to overestimation of the effects and feasibility of institutional or technical packages (Galvin 2004; Rabinovich and Navez-Bouchanine 2005). National governments often conceive participation schemes without political and structural backing, as simple tools for overcoming a specific crisis, instead of considering participation as a real means and opportunity for finding, in a joint effort, solutions to the underlying social problems such as poverty, inequality of access, and marginalisation. This leads to a discrepancy between local expectations, public policies, and international mainstreaming, or to a lack of means that directly reflects a lack of political will on the part of national governments, which must respect modalities imposed by international institutions. As a result, in many cases participatory processes are artificial and remain superficial as they emerge from development projects rather than (sectors of) civil society.

Consequently, the question of which role the state should play becomes central. One of the absolute conditions for international organisations to support top-down-initiated participatory processes was – and often still is – that the participatory process in question must support withdrawal of the state from the economy and society. In many cases, however, this (neo-) liberal ideology represents in itself an obstacle to implementation of public and participatory policies. Without the power of the state to institutionalise and upscale, generalise, and thereby protect successful participatory initiatives for sustainable development, the sustainability of such initiatives will remain uncertain and weak.

These limits to participation can generate frustration on multiple levels for local stakeholders, and ultimately represent a danger to the participatory process itself. Indeed, the expectations and hopes of populations can rapidly turn into disappointment and rejection (Lacroix 2000; Müller and Kollmair 2004; Lacroix 2005; Gurung 2006; Shahbaz and Ali 2006; André de la Porte 2007). Beneficiaries or stakeholders can be exasperated by the time it takes for the effects of participatory processes to materialise, and many of them abandon the undertaking (Rabinovich, in press). This collective feeling comes from a misunderstanding between the people in charge of the participatory processes and some of the actors involved in them. Participation is often presented as a 'revolutionary process' that allows full consideration and automatic integration of all claims. On a practical level, however, this is impossible to achieve. Actors' roles and responsibilities are rarely clearly

defined, and this provokes confusion, frustration, and disillusion. Finally, participation is completely overestimated if it is considered as a panacea – as if it could generate solutions for its own inherent limits. Participation is not implemented to effect structural change, particularly in cases where it is not accompanied by structural measures. Participation cannot be considered as a global solution to mitigate syndromes that are attributable to political structures or social inequalities. Yet local actors rarely discredit participation as a way or method of development. The satisfaction of being consulted or included in development seems fundamentally more important than the results or consequences of the participatory process (Rabinovich, in press).

7.6 Preliminary conclusion and prospects

Any reflection on participation in development must face the difficulty of synthesis. As Brock and McGee (2004) mention, multiple levels and spaces lead to fragmentation of participation. Cornwall adds that "the spectrum of practices associated with participation in development is so vast that capturing their complexity would be impossible" (Cornwall 2000, p 58). Nevertheless, the diversity of case studies in terms of geographical distribution, methodologies, and approaches relates to the various disciplines that coexist within the NCCR North-South programme. Several complementary definitions of participation in development were produced. Participation is generally

> *understood not as an end in itself, but as a means to facilitate processes of deliberation between different stakeholders who – based on the principles of fairness and empathy – collectively use and broaden public spaces, aiming at structural and personal transformations in view of more sustainable forms of development.* (Webler and Tuler 2000, quoted in Wiesmann et al 2005, p 128)

In this respect, participation is generally seen as related to the broadening of existing or the opening of new deliberative spaces from a normative perspective. But in a more critical way, participation is also perceived as a

> *complex concept that encompasses social actors' interests; their purposeful selection of partners for participation; their strategic interaction – and active non-interaction – with others; and their capacities to make claims sound attractive and just. Participation*

> *can mean very different things to different social actors, though all use the same word within a specific context [...]. Participation appears in this analysis as an important means to struggle for one's vision of development within wider social arenas. Such participation alliances between (often unequal) partners are facilitated by converging interests and supported by related discourses, and split by changing interests and the emergence of new discourses. Finally, participation is not an a-historic phenomenon.* (Geiser 2001b, p 28)

These two positions span the political arena in which participation has appeared in the context of NCCR North-South research. A major difficulty in systematising the role of participation in development is its 'double nature': Participation appears to be understood by those promoting it from outside (e.g. development projects or governments) in a communicative way, oriented towards deliberation, while the beneficiaries of participation (e.g. marginalised societal actors such as women, peasants, etc.) use it as a strategic tool to improve their position in a process of negotiation with generally more powerful external actors, emphasising specific needs to be met, calling for solutions to conflicts, or expressing sociopolitical claims in development arenas.

We found that participation can be understood as a normative and purposive actor-specific process that adopts stances between strategic and communicative types of interaction. It thus becomes clear that participation generates 'nodal points', which can be defined as "physical or virtual spaces where various problems, actors, and processes converge, and where decisions are taken, agreements concluded, and social norms created". These nodal points constitute "an interesting starting point for the observation of governance processes" (Hufty 2011 in this volume, p 413).

Finally, regarding the role of participation in solving any emerging conflicts, we find that rather than asking whether a solution or the actors involved are 'good' or 'bad', it is much more important to focus on temporary acceptance of the existence of the claims of 'the others' and to implement a negotiation process and accept a re-negotiation of the rules of the game (Geiser 2001a, 2001b). This effort of allowing deconstruction and re-construction of fundamental notions such as 'community', 'civil society', or 'state' is an important aspect in jointly re-negotiating the meaning of participation (Geiser 2003; Geiser and Rist 2009).

Several types of contribution taking this approach to participation in development deserve to be fully considered. Some interesting and important efforts at synthesis have been made in recent years, including the works by Chambers (1994a, 1994b, 2007a), Cornwall (2000), McGee and Norton (2000), and Cook and Kothari (2001). New contributions have regenerated a consensual normative reflection by considering actors' dynamic networks as well as power relationships in a certain Foucaldian spirit, such as the works by Kaufman and Dilla Alfonso (1997), Cornwall (2000), Cook and Kothari (2001), Gaventa (2004), Mohan and Hickey (2004), Williams (2004), Kesby (2005), and Beetham and colleagues (2008), or by proposing measuring instruments in the continuity of already existing ladders of participation, such as the contributions by Chambers (2007a, 2007b), as well as the work done by the Participation, Power and Social Change team at the Institute of Development Studies of the University of Sussex[5] and the Participatory Geographies Research Group of the Royal Geographical Society[6]. Based on this research and these reflections, a new governance of participation with new forms of engagement between citizens and the state was proposed (Cornwall 2000; Eberlei 2001; Mohan and Hickey 2004), involving a re-conceptualisation of the meanings of participation and citizenship (Bühler 2002; Gaventa 2004) and opening up new spaces for political action (Williams 2004).

This is why the type of approach advocated here, which sees participation as primarily a political problem relating to power relations and (im)balances within a given context, seems particularly promising, from both an analytical and a policy-oriented perspective. Participation, therefore, is not a 'simple' norm whose implementation would be a pre-condition for 'good governance'. It is an arena, a physical or symbolic space where key social issues such as access to resources, gender inequalities, and land rights, to name but a few, are negotiated, thereby producing new norms and patterns of social regulation. Analysing and understanding these negotiation processes is crucial to identifying the potential benefits or the negative and counterproductive effects of decentralisation policies, as many of the NCCR North-South studies mentioned here have shown. This is also an important challenge to be taken up by future research.

Endnotes

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[5] See http://www.ids.ac.uk/go/research-teams/participation-team.

[6] See http://www.pygyrg.org.

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8 Governance: Exploring Four Approaches and Their Relevance to Research

Marc Hufty[1]

Abstract

Although governance is widely used in policy debates, it has remained a fuzzy concept, referring sometimes to theoretical approaches and sometimes to ideological stances. From the point of view of many developing countries it connotes a set of 'recipes' and constraints imposed by Western institutions. This article explores how, based on existing approaches, the concept of governance could be developed into an analytical tool for the social and development sciences that does not fall prey to ideological connotations. For this purpose, the article presents what I consider to be the four most popular approaches to the concept of governance: corporate governance, global governance, good governance, and modern governance. These approaches are compared and analysed in terms of both their gaps and their potential contributions to the analytical tool envisioned. The criteria developed for this tool are that it should be suitable for analysing social dynamics at various levels, in different societies, and at different times, and that there should be no limitation to the actors incorporated into the analysis. Accordingly, governance is delineated in the first instance as the decision-making processes that take place whenever collective stakes lead to competition and cooperation.

Keywords: Governance; corporate governance; global governance; good governance; modern governance.

8.1 Introduction

Governance has become one of the most widely used words in policy debates. It has been everywhere for some time already: in the publications of international and bilateral development aid organisations, in the discourse of decision-makers, and many other places. Yet it is also one of the most fuzzy concepts currently in use. It occurs in very general discourses as well as in specialised domains, referring sometimes to theoretical approaches and sometimes to ideological stances. For most people, this is confusing. The term may have a rather precise meaning in neo-institutional economics, but from the point of view of developing countries, especially in Africa, Asia, and South America, it clearly connotes a set of 'recipes' concerning structural adjustment and constraints imposed by Western institutions, and is thus heavily laden with values.

The main question to be answered here is whether or not the concept of governance has a place in the social sciences toolbox and, if so, how to avoid any ideological connotations. In the context of the Swiss National Centre of Competence in Research (NCCR) North-South, a group of researchers at the Graduate Institute of Development Studies (IUED)[2] came to agree that the answer was 'yes', that it was worth a try: the concept was still in a 'pre-theoretical stage' (Jessop 1998), but it could be elaborated and converted into a useful tool for the social and development sciences. Our main goal has therefore been to develop an approach to the concept and a method for using it that would be as rigorous, or non-normative, as possible, at least by specifying in what research conditions it can increase our understanding of some categories of social facts. Two phases logically followed: the first one was exploratory and reflexive, and the second one involved the development of a theoretical and methodological framework. This second phase was motivated by a concrete demand from partner institutions for a method to analyse specific cases where governance was considered a key factor for understanding problematic situations.[3]

The present paper is a result of the exploratory phase.[4] It reviews the most common modern approaches to governance with the objective of identifying their gaps as well as conceptual advancements and tools that can serve as a basis for further conceptual development. The backbone of this review is a set of criteria or questions used to compare the selected approaches: Is the object of the approach clearly defined so as to distinguish what governance is and what it is not? Does the approach propose a specific methodology,

suitable for empirical and operational research? Can it be used for a variety of cases, at different levels, and in different contexts? Is the methodology analytical or normative? Does it qualify as being appropriately rigorous?

8.2 The origin of the term "governance"

The concept of 'governance' has a long history. In ancient Greek, *kubernân* referred to the steering of a ship or cart, but Plato already used it in a metaphorical way to refer to the steering of human beings (De Oliveira Barata 2002). The Latin verb *gubernare* has the same meaning as the Greek word. In medieval French, it was used as a synonym of 'government', and later referred to a territorial subdivision. In the 17th century, a *gouverneur* was a legal representative of the French King, assigned, in the context of a general endeavour on the part of the central state to establish its control over feudal lords, to different *bailliages* or provinces of Northern France, formally named *gouvernances*: Arras, Lille, Douai, Artois, Flandre, and others (Guyot 1784).

The French word entered the Spanish and Portuguese languages in the 14th century. *Governança* was the equivalent of the modern term "government". As was the case in French, it became obsolete but lent its root to some closely related terms such as *gobierno*, *gobernación*, and others (Hufty 2010). When the concept re-emerged in the 1980s, there was no equivalent in Spanish. Different terms have been used, generating much confusion (Hufty et al 2006). In Spain, *gobernanza* is used in the context of the European Union (whereas in some Latin American countries this term designates a floor maid in a hotel). Although it sounds old-fashioned to certain ears (Solá 2000), it is slowly becoming the dominant equivalent for the English 'governance'. In Latin America, many influential organisations (e.g. the World Bank, the United Nations Development Programme or the Swiss Agency for Development and Cooperation) use the term *gobernabilidad*, causing major confusion with the concept of governability, which has a very different meaning (see section 8.6 below). The confusion is not resolved by the *Real Academia Española de la Lengua*, which recommends the use of *gobernanza*, but accepts *gobernabilidad* as a synonym. Moreover, the term *gobernancia* is also commonly found.

The French word *gouvernance* also entered the English language in the 14th century, with the general meaning of steering, or the 'art of governing'. But

while it slowly became obsolete in the Latin-based languages, it remained in use in English. A selection of titles gleaned from the Library of Congress catalogue (Washington, D.C.) illustrates the continuity of its use: in his *Governance of England* (undated), Sir John Fortescue (1394–1476) compared the absolutist and limited monarchies. In 1554, Sir Thomas Elyot published *The Image of Governance, compiled of the actes and sentences notable, of the moste noble Emperour Alexander Severus, late translated out of Greke into Englyshe.* In 1566, Thomas Becon published *The Governaunce of Vertue: teaching all faythful Christians, how they oughte daily to leade their life, & fruitfully to spend their tyme unto the glorye of God & the health of their owne soules.* According to the JSTOR database, an archive which covers mostly English-language scientific journals, there were over 2500 occurrences of the term "governance" between 1826 and 1969, with over 114 before 1900. The term was used in all domains, from history, constitutional law, and health care to politics. Around 1970, one of the domains in which the concept was used most frequently was the reform of educational systems and especially of universities. Thus, the concept evolved from being synonymous with government or the act of governing, into a broader, more complex, and more confused term – a confusion which persists to this day.

8.3 Corporate governance and the sociology of organisations

8.3.1 The rediscovery of institutions and organisations

Governance was given a new lease of life in the USA under the influence of the discipline of organisation studies, especially in the analysis of two types of organisation: private firms and universities. This renewal built on the works of institutional economics and the concept of transactions (Commons 1934), taken up by Coase (1937) in his analysis of firms, as an efficient means for reducing transaction costs, in contrast with price mechanisms (for example, long-term contracts stabilise rational expectations and reduce costs when compared with successive short-term contracts). The development of organisation studies facilitated the discovery of coordination mechanisms other than the vertical hierarchy favoured by the 'scientific management theory', especially horizontal coordination mechanisms within organisations and informal factors such as social norms, evidenced in the works of Elton Mayo (1933) and the 'human relations movement'. A major lesson was that "workers are not passive contractual agents" and

that "efforts by bosses to impose control on workers have both intended and unintended consequences" (Williamson 2002, p 6) – a line of research carried on by the sociology of organisations and theories of the 'strategic actor' (Crozier and Friedberg 1977).

8.3.2 Decision-making and power in an 'organised anarchy'

After the zenith of the behavioural movement, which considered that everything could be explained in terms of individual interest and competition, the rediscovery of institutions and organisations rebalanced the focus of management theories towards shared histories and cooperation (March and Olsen 1989). 'Organised anarchy', a view of decision-making situations as contextual, processual, and unpredictable, where goals, technology, and participation are ambiguous, and the famous 'garbage-can model' (Cohen et al 1972) offered a welcome alternative to the perspective of rational choice and utility-maximising individuals. In line with this model, complex organisations, such as firms or universities, are characterised by competing vertical, horizontal, and informal structures and institutions. Formal rules, hierarchies, and actors' preferences are, therefore, not enough to explain how decisions are made. In addition, as the complexity of an organisation increases, its units, actors, and bureaucracies show a growing tendency to develop their own priorities and gain a margin for manoeuvre. The units negotiate more or less informally, among themselves and within the formal hierarchy, instead of following orders, leading to a rise in transaction costs for the organisation, which has to dedicate a growing amount of resources to coordinating its units in order to perform its core activities. The case of universities with their faculties, departments, centres, institutes, and the infinite combinations of cross-bred sub-organisations speaks for itself. But some large private firms have experienced the same dynamics, to the point of having to reorganise themselves, as was the case with IBM in the 1990s (Duby and Berry 1995).

8.3.3 Corporate governance: between analytical and normative perspectives

Another crucial debate regarding management and the theory of firms has focused on corporate control, and especially on the balance between managerial, shareholder, and political decision-making power, conflicts of interest, and information asymmetry (Fama 1978, 1980). According to the general hypothesis, the loosening of shareholders' control that followed the ascent

of large firms provoked bureaucratisation (the 'iron law of oligarchy', see Michels 1915), a weakening of performance, and an unbalanced distribution of the firms' added value, as a result of which shareholders sought to reassert their control over managers (Charreaux 2003).

The concept of 'corporate governance' was coined by academics and practitioners to designate this growing field of research. In a broad sense, it can be defined as "all the influences affecting the processes for appointing those who decide how operational control is exercised to produce goods and services and all external influences affecting operations or the controllers" (Turnbull 2000, p 4). Different institutions, or 'rules of the game' (North 1990), made up of formal constraints (rules, laws, constitutions), informal constraints (norms of behaviour, conventions, and self-imposed codes of conduct), and their enforcement characteristics (North 1993), give rise to a variety of structures and mechanisms of governance that are precisely the focus of the study of governance (Williamson 1996). This approach aims, on the one hand, to conceptualise a realistic description of human behaviour within complex organisations and, on the other hand, to reconsider and improve the practice of steering organisations: coordination between units, arbitration of differences, maintenance of cohesion, and management of the transaction costs involved in complex systems.

The desire to rebalance power in favour of shareholders coincided with the development of the 'corporate social responsibility' movement, according to which firms are expected to behave as good citizens (and, as a corollary, academics have to leave their ivory towers and open up to their social environment). This movement gave birth to a normative approach formalised in the 'Organisation for Economic Co-operation and Development (OECD) Principles of Corporate Governance', a series of criteria closely associated with the 'good governance' movement. Its intention is to establish "a common basis that OECD member countries consider essential for the development of good governance practices" (OECD 2004, p 11).

8.3.4 Criticism: well-developed theory, but limited with regard to object, time, and space

On the one hand, 'corporate governance' has a relatively clearly defined object. It played a key role in the re-emergence of governance as a topical concept. It is backed by scientific and empirical research. It proposes some fundamental analytical tools (complexity in decision-making, vertical–hor-

izontal and formal–informal coordination mechanisms, transactions, control of controllers, and enforcement mechanisms). On the other hand, the concept's normative facet, in line with the current fashion in Western management schools, restricts its validity in time and space. Due to its limited object (the steering of large organisations), it does not represent (and does not pretend to be) a contender for a general framework of governance, but it has much to contribute to such a framework.

8.4 Global governance

8.4.1 Moving beyond states

In the field of international relations, the institutionalist approach gained in influence from the 1970s onwards, mainly in the USA. It represented a rupture with the dominant paradigm. According to the 'realist' approach to international relations, which reached its peak in the 1950s to the 1970s, the international system was 'anarchic'. Sovereign states, in competition with one another and each seeking to maximise power, were the major actors. No supra-national entity could impose a solution on states against their will. However, three factors gradually came to modify this vision. First, the actors present on the international scene diversified in nature and multiplied in number (multinational companies, unions, intergovernmental and non-governmental organisations, networks, etc.). The traditional frontiers between domestic and international politics thus became increasingly blurred. Second, the international sphere became increasingly institutionalised. Multilateral agreements and regional integration processes multiplied over the years and rendered international life more complex. For some 'issue areas' (domains of international life), this higher complexity was marked by 'international regimes' (Krasner 1982; Hasenclever et al 1997). Third, globalisation, increasing political homogenisation, trade liberalisation, and macroeconomic coordination multiplied the 'vertical and horizontal interplays' (Young 2002) between actors at all levels, in analogy with corporate governance.[5] The concept of governance became a fashionable means to grasp these changes, especially to describe processes of coordination beyond the centralising authority of a state (Rosenau 1987), the construction of global 'issue areas' (Young 1999), or multi-level processes in European affairs (Marks 1993).

8.4.2 Global governance as a normative framework

The concept of governance, aimed at analysing existing phenomena, soon received a normative counterpart. After the fall of the Berlin Wall and the end of the Cold War, the desire for more orderly international relations was strong. At the initiative of former German Chancellor Brandt, a Commission on Global Governance was set up in the early 1990s. Among other writings, it produced a definition of what it meant by governance, which warrants close examination:

> *Governance is the sum of the many ways individuals and institutions, public and private, manage their common affairs. It is a continuing process through which conflicting or diverse interests may be accommodated and co-operative action may be taken. It includes formal institutions and regimes empowered to enforce compliance, as well as informal arrangements that people and institutions either have agreed to or perceive to be in their interest.* (Carlsson et al 1995, p 2)

8.4.3 Criticism: inclusive and processual, but avoiding the problem of power relations

This definition is a landmark. All actors, whether official or not, are potentially considered – meaning a departure from the statist approach to international relations. And in contrast to formalist approaches such as international public law, both formal and informal agreements are included. The perspective is procedural, taking into consideration the continuous changes in the relationships between actors. It thus represents important analytical progress towards realism, even if it has weaknesses. For instance, it does not propose a specific methodology. And with its normative perspective, it is aimed above all at solving problems of cooperation. This induces the promoters of a 'better global governance' to emphasise the consensual aspects of international life and pay little attention to power questions in international relations (Smouts 1998a). Many see the existing international order as hierarchical instead of cooperative, with solutions frequently being imposed by the most powerful actors and characterised by structural inequalities (Cox and Jacobson 1974). Presenting international society as outside the realm of power would certainly be naïve. The body of work on global governance provides some fundamental elements that may be retained: the importance of non-state and informal actors, a processual approach, the existence of

formal and informal institutions and arrangements, regimes, vertical–horizontal interplays, and multi-level/polycentric decision-making processes.

8.5 Good governance

8.5.1 A political tool for transformation

Governance had also become widely used in the domain of development aid by the early 1990s. When trying to explain the failed implementation of the development agenda in sub-Saharan Africa, the World Bank identified the absence of recipient governments' commitment to reform and labelled it a problem of 'governance' (World Bank 1989). In search of a methodological tool to analyse power games and national politics, it adopted a dictionary definition of governance as "the manner in which power is exercised in the management of a country's economic and social resources for development" (World Bank 1992, p 3).[6] As the concept of governance was adopted by the World Bank, it soon lost its analytical function and instead became a tool for political transformation, with profound consequences. The World Bank developed a set of quality criteria aimed at evaluating the norms and practices of states and national institutions, mainly in developing countries, which were used to set objectives for the Bank's programmes or to evaluate the allocation of funding: 1) Voice and accountability; 2) Political stability and absence of violence; 3) Government effectiveness; 4) Regulatory quality; 5) Rule of law; 6) Control of corruption. Faced with the limited effectiveness of its structural adjustment programmes and with fundamental questioning regarding its role in development aid, the World Bank had come under pressure to intensify its interventions and extend them to political and institutional aspects in borrowing countries. The application of good governance criteria was actively promoted in the 1990s by the World Bank's main shareholders, the G-8, which were especially preoccupied with corruption, weak rule of law, low effectiveness of public institutions, and economic mismanagement in developing countries. The World Bank walked on thin ice when it addressed eminently political questions as if they were technical, clearly stretching the boundaries of its mandate (Santiso 2001).

8.5.2 Criticism: more a tool for political transformation than a scientific approach

The World Bank has transformed governance from an analytical approach into a political tool for changing societies. With its clearly normative connotations, it refers to what 'should be' rather than what 'is'. Without prejudging the political basis of the approach, the proposed criteria are not refutable *in fine*. They are inspired by political practices, philosophical principles, and ideologies inherent to Western modern societies. Each society has specific values, ideologies, and principles, which suggest different, but equally legitimate criteria (Poluha and Rosendahl 2002). Critics consider the nature of the specific criteria formulated by the World Bank, their inclusion into the panoply of conditionality imposed by bilateral and multilateral development cooperation agencies – leading to an indiscriminate promotion of the market economy – and the very fact of imposing these criteria to be the cause of much misunderstanding and resistance. Good governance is located firmly in the political realm rather than in the scientific domain. The problem is that there are no objective criteria for choosing between two normative options without making a philosophical (linked to reason) or political (linked to power relations) choice.

The divergence between actual practices and the criteria for good governance can certainly be studied using a rigorous scientific methodology. Indeed, significant resources have been dedicated to the development of such methodologies, which allow for a relatively precise description of the situation (see, e.g., Kaufmann et al 2005). But when the result obtained is judged 'good' or 'bad', in conformity or not with (idealised) liberal democratic features, it falls under another type of reasoning, which is both irrefutable and normative. Apart from the idea that power games can take place outside of the state and the formal political system, there is little in the concept of good governance to be integrated into a governance methodological framework.

8.6 'Modern governance'

8.6.1 Weakening role of the state and new actors

The last approach to be considered falls thematically within the fields of political science and public policy. In analogy with 'international relations', it is linked with the perception (and the corresponding discourse) that, over the

last twenty years, the state has lost or delegated an increasing proportion of its power and competences to various local, national, and international 'entities'. In consequence, the ways in which public affairs are conducted have changed very rapidly, especially due to the welfare state being called into question, as well as the end of the Fordist model of production (the tacit agreement linking increased productivity to increased wages and social peace that characterised the period from 1950 to the 1980s in the industrialised countries).

According to this current of thought, the state's hierarchical rationality has given way in many public spheres to networks of autonomous and interdependent actors (Castells 1996), such as the International Standards Organisation or the Forest Stewardship Council and other norm-setting organisations in which states are not the main actors. This phenomenon is associated with 'globalisation': the accelerated circulation of capital, the standardisation of consumption, regional integration processes, the internationalisation of civil society and firms (Beaud et al 1999; Scholte 2000; Edwards and Gaventa 2001; Held and McGrew 2007). It is also linked with the 'hollowing out of the state' hypothesis (Rhodes 1994): as a consequence of neoliberal policies, many mechanisms for the production or regulation of public assets (goods or services produced by the state or public communities) have been 'outsourced' or delegated, diminishing the state's range of functions. In addition, the methods of the private sector have been applied to the public sector, leading to a radical transformation of public administration under the label of 'new public management' (Hufty 1999).

8.6.2 A new analytical approach ...

This 'great transformation', to paraphrase Polanyi (1944), questions the relevance of an analytical perspective centred on the state, and leads logically to the search for a concept capable of describing this new type of regulation. The concept of governance arose in the 1990s as a political and intellectual response aimed at capturing these changes. The establishment of a typology of regulation mechanisms constituted an important step towards conceptual clarification. According to Jessop (1998), there are three ideal types of mechanism for the regulation of society: hierarchical (by the authorities), economic (by the market), and heterarchical (by self-organised networks). These three mechanisms coexist in any society in a variety of configurations, but what Jessop characterises as governance is the current expansion of the heterarchical model to the detriment of the other two, leading to what amounts to a 'political breakdown'.

8.6.3 … which is nonetheless normative and has a weak empirical and methodological basis

Governance was therefore used to describe a general reconfiguration of the polity in some OECD countries, but it was also a reflection about the perceived crisis of the state. What is sometimes called the "Anglo-governance school" (Marinetto 2003) brought together scholars and practitioners who saw in governance a new historical form taken by the relations between politics, institutions, and citizens (clients?), especially in Great Britain and Europe. The debate about 'modern governance' (Kooiman 1993; Rhodes 1997) accompanied the questioning of the role of the state and its management procedures (Pierre and Peters 2000).

This is where this school of thought became normative. This new conception of the political system and public policies was reformulated as a solution to the state's perceived current crisis of governability (understood as the capacity of a socio-political system to control itself, see Kooiman 1993), where the overload of social demands has decreased the state's room for manoeuvre and led to the failure of centralised hierarchical regulation (Merrien 1998). According to this 'solution', governance through networks would replace the hierarchical government, and the state would instead play the role of a 'facilitator'.

However, this analysis exhibits certain shortcomings. First of all, the hollowing out of the state still remains to be demonstrated. Various analysts have indicated that by concentrating on its main functions, the state, far from being weakened, has in fact been reinforced, including in its relation to stakeholders renowned for their autonomy (Holliday 2000). This has been achieved especially by shifting from vertical regulation towards 'procedural' policy instruments aimed at building support for state policies (Howlett 2000). Furthermore, it is difficult to distinguish between causes and effects, especially when looking at the policies adopted by the conservative governments of Thatcher, Reagan, and Kohl. The British and other governments deliberately renounced some areas of their sphere of competence. This argument is not meant to minimise the real problems affecting the Western states in the 1980s; but 'governance' had by then been converted into a political programme. Second, the modern governance approach is based almost exclusively on studies carried out in industrialised countries. Non-European countries seem to be excluded a priori from this analysis, as its scope is far from universal. Are these network-based hypotheses relevant to different contexts, such as 'tran-

sition' or 'fragile' states, where the main problem is precisely a lack of state? Third, the studies underlying the approach cover a relatively short period of time, whereas, as pointed out correctly by several researchers, the cycles of public policies extend over periods of between 20 and 40 years (Sabatier 1999). Consequently, if it is assumed that governance refers to a specific historical form, the governance concept is to have a limited time-span and will disappear when this specific historical cycle comes to an end, which might already be the case. And fourth, the modern governance approach does not offer a specific methodology. Most of the texts related to this school are based on classical theories of public policy and public administration, and many simply reproduce the dominant ideological discourse of the 1980s and 1990s ('less is better'). Scholars are particularly cautious in interpreting the real effects of the 'conservative revolution' (Adonis and Hames 1994).

8.6.4 Criticism: modern governance as an ahistorical and value-laden approach

For moderate critics, this normative proposal veers towards idealism based on the fact that it minimises the conflictive dimensions of human societies. It presents policy-making as a search for consensus among people of goodwill who are equally equipped with resources, in an ahistorical context. Inequalities are ignored in the study of decentralisation, new public administration, and new communication technologies. The validity of the modern governance approach may thus well be limited to the narrow spaces within which actors share a minimum common world view (Smouts 1998b), which makes it unrealistic in most cases.

For more radical critics (e.g. Hermet et al 2005), this proposal represents a second historical phase of putting limits on democracy. Political citizenship, universal voting rights, and the welfare state were major concessions made by dominant classes to European and American workers. The period after the Second World War was one of unprecedented growth based on the Fordist economic model. But at the end of the 1970s, when the rate of profit plunged and the welfare state began to burden public finances, an economic readjustment followed, accompanied by a new tendency in political control: governance. Citizens became clients; political parties were replaced by 'civil society'; deliberation in political bodies was replaced by horizontal mechanisms of bargaining and agreement between co-opted sectors; and political legitimacy was from then on obtained on the basis of economic results rather than the defence of common interests.

Despite this being the most widespread approach using the concept of governance, and with no intention of minimising the importance of this reflection, it must be stated that the modern governance approach offers few new elements with a view to a general methodology by comparison with the other approaches discussed above. The reflection on the state is too narrow and too loaded ideologically to constitute a building block. The most promising contribution might be the idea of networks, although – as it is often the case with familiar concepts used in the social sciences – the closer we examine it, the harder it is to define and observe.

8.7 Conclusion: Where do these approaches leave us?

To conclude this review of existing approaches to governance, what lessons and criticisms can be gleaned with a view to taking a non-normative approach to governance and further developing the concept of governance as an analytical tool that does not fall prey to an ideological connotation?

First of all, if governance is to be developed into a general analytical tool, it cannot be specific to a particular time and space, as in 'modern governance'. It should be possible to use the same tool to analyse social dynamics at various levels, in different societies and times. An obvious risk with that ambition is that the concept might become too general (e.g. that it might end up being equivalent to the term "political process") and might thus lack any real added value. This commonly raised objection implies the necessity of a relatively narrow definition and delimitation of the object. Of the approaches examined above, it is corporate governance and global governance that come closest to satisfying this criterion: governance is about decision-making processes involving collective stakes or both conflictive and cooperative interests.

Second, this implies an agency–structure interaction with regard to the rules of the game and institutions, which cannot be considered purely the result of actors' aggregate preferences. Institutions constrain, but also facilitate actors' actions, and are themselves modified by actors' interactions.

Third, there should be no limitation to the actors incorporated into the analysis. All those who interact in any observed situation have to be considered, whether individuals or collectives, formal or informal. Interactions in deci-

sion-making processes are not only vertical but also horizontal and informal (based on alliances or networks).

Fourth, outcomes are relatively unpredictable and cannot be inferred from the actors' preferences only: many more factors are at play. And, finally, the issues at stake in a governance process differ between firms, universities, large organisations, governments, and international relations. But nonetheless they also have something in common, inasmuch as institutions are involved. We therefore need a coherent theory of institutions.

These points represent some core elements for building and further elaborating a 'governance analytical framework'. For example, the question of power is hinted at in the four approaches examined above, yet it tends to be avoided. Power has to be dealt with and incorporated into the framework. Some choices or trade-offs need to be made as well. Should a governance analytical framework propose only descriptive tools, aiming at being value-free or neutral, but with the risk of being vulnerable to post-positivist criticism? Or should it propose certain theoretical orientations, with the risk of losing interest for those outside the social sciences who are seeking a neutral, descriptive tool, or for those within the social sciences who do not share the selected orientations? These questions are the subject of a second article in this volume (Hufty 2011), entitled "Investigating Policy Processes: The Governance Analytical Framework (GAF)".

Endnotes

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[2] From 2002 to 2008, the Graduate Institute of Development Studies (IUED) in Geneva, Switzerland, was one of the eight Swiss partner institutions involved in the NCCR North-South. It merged into the Graduate Institute of International and Development Studies (IHEID) in 2008.

[3] For example health policies; see Hufty et al (2006), or the special issue of the *Revista de salud pública*, Vol. 12, 2010 (open access at: http://www.scielosp.org).

[4] For a more detailed account of the process, see the other article by Hufty (2011) in the present volume.

[5] The multiplication of centres of decision-making had previously been captured in the concept of polycentrism (Ostrom 1972).

[6] As specified in a note, this definition was taken from *Webster's New Universal Unabridged Dictionary* (London: Dorset and Baber, 1979). It was later expanded by the World Bank Institute (WBI) to comprise
the traditions and institutions by which authority in a country is exercised for the common good. This includes (i) the process by which those in authority are selected, monitored and replaced, (ii) the capacity of the government to effectively manage its resources and implement sound policies, and (iii) the respect of citizens and the state for the institutions that govern economic and social interactions among them. (WBI 2005)

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9 A Tool for Thought and Transformation: Gender-Considerate Global Change Research in Practice

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Abstract

This contribution illustrates aspects of gender and development research in the Swiss National Centre of Competence in Research (NCCR) North-South programme, asking whether the often diagnosed 'gender ennui' has also affected this research network. Based on an overview of gender-considerate research in the programme, the article suggests how the innovative analytical potential of gender concepts in development research can best be explored. The authors follow a classic constructivist definition of gender, adopting it as a powerful corrective to naturalised explanations about social realities. They argue that the claim for gender equality, however, has to be grounded in a detailed understanding of a given society's social organisation so as to reflect on the cultural framing of gender and on its intersection with other, equally fragile categories such as class, age, or ethnicity. While many of the NCCR North-South contributions examined for this article employ gender as an analytical framework to elicit gender-specific data, only a few explore the potential of using gender as a tool for interrogating basic concepts, let alone joining in a normative or epistemological debate. This is partly due to an unpopular obligation, partly for career considerations. The authors argue that using a gender perspective can help to reinterpret social change – which is at the core of development – in particularly gainful ways. Often reduced to the term "modernisation", such transformations can be reflected on through gender-considerate scrutiny, providing the development community with a fine-tuned picture of how change is socially negotiated. The overall goal is to make sure that gender approaches support meaningful analyses that integrate complexity while not losing sight of implementation.

Keywords: Gender analysis; constructivism; intersectionality; social change; gender roles; gender and development.

9.1 Introduction

An estimated 220,000 people died in South Asia, Southeast Asia, and East Africa in the 2004 tsunami, and another 1.6 million lost their homes. Subsequent analysis of the effects of the catastrophe showed dramatically asymmetric impacts: The ratio of female to male victims was 3:1, and as high as 4:1 in Banda Aceh, Indonesia (Oxfam International 2005). The flood was not only devastating, but it also exposed fundamental structural differences in the places affected and a compelling, if not fundamentally new insight: There is little that is natural about natural disasters. Drawing on their analysis of 141 countries for the period of 1981 to 2002, Neumayer and Plümper (2007, p 561) conclude: "[…] the disaster impact is contingent on the vulnerability of affected people, which can and often does systematically differ across economic class, ethnicity, gender, and other factors." The gendered aspect of natural disasters is not specific to tidal waves but applies as well to a list of disasters including droughts, epidemics, famines, landslides, wildfires, and volcano eruptions (Neumayer and Plümper 2007). Catastrophic events are extreme disruptions of what is at the heart of geography and development research: the relation between human beings and nature. Thus, it seems appropriate to make use of this knowledge in our quest for pertinent gender approaches in development research. How can a natural disaster be discriminatory? What can we learn from this regarding development research and gender?

This article aims to document some aspects of what has been learned about gender in the context of the Swiss National Centre of Competence in Research (NCCR) North-South programme. The focus is on theoretical and methodological achievements, parts of which were elaborated based on fieldwork done in this programme. The article examines how gender was conceptualised in particular projects, and whether the often diagnosed 'gender ennui' in international cooperation has also affected the NCCR North-South. Results are presented in three steps. The first section on "Counting women and men" outlines different conceptual configurations of gender in development research and feminist theory. It examines the question of what it means for the NCCR North-South to go beyond the often criticised "add women and stir" practice (Harding 1995). Second, an overview of NCCR North-South gender-sensitive research projects is presented. A selection of papers is discussed in the third section, drawing on the gender concepts introduced in the first section. The article concludes with a number of suggestions, condensing the findings to highlight innovative uses of the gender

perspective in development research but also to identify various desiderata. Questions are also raised about future gender research in development studies in general and within the NCCR North-South specifically.[7]

9.2 Counting women and men, or: What is gender in development research?

The dramatic disproportion of male and female deaths in the 2004 tsunami catastrophe illustrates that counting men and women is efficient and illuminating. A gender perspective, however, encompasses more than the question of representation. Since the 1970s, 'gender' has been used to describe the social situation of individuals − in contrast to their 'sex'.[8] The concern was to theorise a social identity that was not predetermined by 'sex', and was free from the arbitrary naturalisations of a given gender order (Pearson and Jackson 1998, p 5). In this framework, gender is much more than a personal quality. It is inherent in our daily actions; it is something that we do. Beyond this, it is part of a logic that creates power relations according to which societies function. In other words, gender is also something that is done to us.

The classic and still highly relevant reference in this respect is Joan Scott's 1986 conceptual baseline on gender as a 'useful category' of analysis. Scott's seminal contribution was her plea to study how societies are organised according to *perceived* gender differences (Scott 1986). The usefulness of the analytical category of gender, according to Scott, lies in its focus on the production of gender differences as opposed to conceiving of them as pre- or extra-social facts. Her intention was to deconstruct the logic of the gendered organisation of society. She did so by questioning every attribution of identity, including gender identity, by investigating its premises and exclusions. This strategy directs our attention to the way gender and other identity categories are naturalised.

The major advantage of Scott's concept lies in the careful distinction between gender as an analytical category and gender as a social configuration. The latter, to complicate things, is often taken as a given, while in fact it is continually being socially constructed. The epistemological challenge, therefore, is to invoke an analytical category ('woman'/'man') while at the same time operationally destabilising it by means of a deconstructionist[9] methodology (Hark 2001, p 362). Gender-considerate research thus requires a clarification as to the end to which gender is introduced. What do

we mean by the categories 'man' and 'woman'? What social realities are encompassed by these words? How can differences within these categories be accounted for? Is an "empty social constructionism" (Pearson and Jackson 1998, p 6) all that remains if essentialist and universal notions of what it means to be a woman or a man are rejected?

Scott's call to choose between an analytical concept on the one hand and an empirical interest on the other refers to a precaution that Bourdieu addressed to social scientists in general (Bourdieu and Wacquant 2006). Bourdieu argued that it is a common trap to blur the distinction between analytical tools and research objectives. In other words, we should be careful not to mix gender as a methodological and epistemological research focus (gender as *the lens we look at* / *object of analysis*) and gender as a tool for analysing the social facts of, for instance, gender relations or gender roles (gender as *the lens we look through* / *tool of analysis*).

This distinction is a key principle for gender-considerate research and its neglect might be an essential reason why gender sensitivity has not been implemented comprehensively within the NCCR North-South. We argue that, while gender as a transversal theme, in the sense of an analytical tool, has been included in a wide range of NCCR North-South research projects, efforts to debate gender as an object of analysis have been less extensive.

Arguments about what the gender lens can and cannot offer in development research are rarely disputed and are often unconvincing. An example is provided by the 2006 volume on *Gender and Sustainable Development*, where the authors call for the inclusion of gender "as a distinct field of research, an element in a conceptual research framework, a methodological component, a focus of data collection, a perspective in analysing and interpreting knowledge production, and a way of generating new insights" (Premchander and Müller 2006, p 7). While the authors are careful not to conflate the politically motivated equality claim with gender analysis, thereby mirroring a widely shared understanding within the NCCR North-South, the question of why they chose this rather broad description remains. Was it to facilitate access to the subject matter or rather to be as inclusive as possible? Or does this statement reflect the editors' fear of being prescriptive? Of course, gender encompasses all of what is enumerated above, and the case studies in the aforementioned volume illustrate how these aspects play out in research. Nevertheless, such a broad view of gender avoids debate and also carries the risk of arbitrariness.

The definition is more restrictive in a 2003 NCCR North-South working paper (Walter 2003). According to the author, gender shapes an individual's perception and use of, as well as access to, natural resources. But regardless of definitions, how to put gender to work has remained largely unclear within the NCCR North-South programme and beyond. When it comes to research, gender is often seen as a political rather than a scientific necessity. What it means to adopt a gender perspective, other than accounting separately for women and men, is a problem that continues to surface in the everyday business of collecting and analysing empirical data as well as in the effort to interpret and synthesise results. In the words of geographer Sylvia Chant, "the term 'gender perspective' is crucially important in so far as it connotes a form of seeing, thinking about and doing development, thereby moving away from the frequently tokenistic or piecemeal efforts implied by epithets such as 'gender component' or 'gender dimension'" (Chant and McIlwaine 2009, p 227). Counting may be the first step towards a deconstruction of biased premises. But what about development interventions in which sexual difference is less evident? What is the gender dimension of malaria? How does gender inform governance processes or sanitation programmes? What is the value added of a gender perspective on land cover change and natural resource conservation?

The debate on access to and control of natural resources, for instance, connects analytical implementation of the gender perspective to the political question of equality. As pointed out above, adopting a gender perspective is an analytical strategy that clearly differs from the normative position of gender equality. Obviously, such boundaries are blurred in research: Gender in a political sense – as a normative concept to promote equality between women and men – can be negotiated in participatory and action-research settings. However, the claim for gender equality has to be grounded in a detailed understanding of how a given society is organised in terms of gender and, importantly, other social categories. The deconstruction of key institutions (such as the household, public space, or the state) is an integral part of such interrogation. The gender perspective is a powerful corrective to naturalised explanations about social realities, "seeing the relevance of gender as a lens through which to understand the dynamics of social and economic change in societies in transition" (Pearson and Jackson 1998, p 2). This implies that the researcher reflects on his or her own gendered role in the knowledge production system. The position of development scholars is additionally entangled in a colonial context. It is by looking *at* the gender lens that adequate instruments to systematically deconstruct these entanglements are provided. In

other words, in development research, gender is primarily conceived of as a tool for thought, but it is intrinsically also a tool for transformation (Cornwall 2007, p 76). We therefore suggest using a 'gender perspective' in line with its following four dimensions:

1. as a lens to look through;
2. as a lens to be looked at;
3. as a tool for thought; and eventually
4. as a tool for transformation.

The potential of a 'gender perspective' encompasses these four components. Since it is unlikely to be fully exploited in any single research project, we suggest clarifying the relevant aim in each case.

A further advantage of this approach is the intersection of the analytical and the transformative, which is where gender and development studies meet. Both fields share a political interest in terms of their research impact. Whereas it might be a political decision to adopt a gender perspective in a project – and the NCCR North-South has a record of commitment to enhancing gender research, a commitment that is notably often articulated bottom-up (see Ott and Bieri 2011, in this volume) – such a decision derives, above all, from a specific research interest and the corresponding epistemological position, both of which aim to generate more accurate understanding of a social reality.

9.3 Looking through the gender lens: gender in NCCR North-South research as a tool for thought

A considerable number of researchers in the NCCR North-South network have long-term experience in working with gender. It would exceed the scope of this article to acknowledge all gender contributions and their highly diverse research approaches, theoretical backgrounds, and methodologies. While only a small number of publications place women or gender centre stage (e.g. Kaspar 2005; Schärer 2005; Freytes Frey and Crivelli 2007; Masson 2008a, 2008b), gender constitutes a prominent variable, along with other social categories such as ethnicity, class, caste, or age, in a wide range of projects (e.g. Obrist 2004; Geiser 2006; Zingerli 2007; Thieme 2008). Where gender is included in an overall quantitative study on poverty and inequality, this is mostly done in the form of introducing the categories of women and girls, with

a view to highlighting differences between them and men, or the category of female-headed households (e.g. Schelling 2005; Epprecht et al 2008).

Table 1 refers to studies included in the documentation system of the NCCR North-South. A quick search for NCCR North-South publications using the keywords "gender", "woman/women", "femininity", "man/men", "masculinity", "social justice", "equity", and "equality" resulted in 43 hits out of the total of 762 items documented until 2009. All of these 43 writings were published after 2003, 12 of them in peer-reviewed journals. The rest consisted of book chapters, working papers, and unpublished Master's theses. The 43 hits do not include 14 contributions compiled in the NCCR North-South Perspectives volume on *Gender and Sustainable Development* (Premchander and Müller 2006). They were not considered for this overview, since the aim was to highlight demand-driven outputs from the field rather than supply-oriented structures provided by the NCCR North-South programme management. The electronic publication mapping system categorises publications based on self-declaration by the authors. In relation to the total of 762 items, 43 is a small, but still significant portion. Moreover, this search result does not imply that gender is ignored in the remaining publications.[10] A second search was conducted for key messages. The search term "great socio-economic and gender disparities" – one of the 30 core problems of global change defined by the NCCR North-South – yielded 90 results; 15 of them remained when "gender and sustainable development" was chosen as an additional search term. Table 1 gives an overview of the sub-themes covered for each of the two search categories (58 studies in total).

Projects that had adopted a gender perspective were found in almost every thematic node[11] and in many partnership regions of the NCCR North-South programme. Table 1 shows that a relatively high proportion of the gender contributions focused on health issues; this is not surprising given the obvious physiological differences between the sexes and the corresponding differences in therapies. With only 5 contributions, the thematic category of land use, representative of themes covering use of and access to natural resources, had a weaker record of gender references. Clearly missing were fields such as water management and sanitation; however, the latter has become much more concerned with gender since the beginning of Phase 3 of the NCCR North-South programme.[12]

Table 1 does not provide information about the conceptual use of gender or analytical foci. However, the discussion of several studies below sheds light

on how the NCCR North-South community works with the gender concept. The studies were chosen from the results of our search and according to their thematic focus, accessibility, and conceptual use of gender.

While gender is sometimes used as a substitute term for "woman/women" in NCCR North-South work, its use in the sense of "gender roles" is most prominent among the 58 studies listed in Table 1. This applies to Salzmann's (2008) study on Kyrgyz university migrants as well as Syfrig's (2005) analysis of smallholder livelihoods in the Hindu Kush. While Syfrig mainly discusses gender differences in access to resources, nutrition, and health, Salzmann assesses gender-differentiated relations within multi-local households. Both studies investigate the transformation of gender roles and power relations in the context of traditional systems coming under increasing pressure from modernisation. In the Hindu Kush, purdah[13] is gradually disappearing as male migration increases. In Kyrgyzstan, sons are expected to support their parents financially while at the same time investing in their own education and training. Female migrants experience conflicting expectations, as their primary goal in life is supposed to be marriage. When they return to their birthplaces, it is difficult for them to find a husband. The years spent far from home lead to a shift in their perceptions of female and male roles, and they begin to criticise the immutability of the traditional gender system.

Table 1

Sub-themes identified for publications and key messages according to NCCR North-South mapping system

	Publications search (total of 43)	**Key messages search (total of 15)**
Theme	Number of articles	Number of articles
Health	9	3
Migration	7	3
Livelihoods	5	–
Conflict, peace building	4	1
Land use	3	2
Land tenure	2	–
Poverty	2	–
Social movements	–	3
Other themes	11 (minorities / indigenous peoples, labour, education, methods, microfinance)	3 (environmental conflict, labour, education)

In a study with cultural gender norms in the foreground, Schärer (2005) examines the issue of girls' school enrolment in a rural district in Nepal. Although her approach is qualitative, Schärer's study strongly indicates that firstborn girls are most affected by intra-household inequalities in schooling opportunities. The increased dropout rate for girls as they reach puberty, however, cannot be explained solely by gender roles and division of labour. The cultural framing of femininity, which includes, for example, parents' fear of their daughters' loss of virginity or pre-marital pregnancy, is a crucial factor in the discontinuation of girls' education, usually before they reach secondary school. Schärer's study further underlines the importance of intersecting gender with other social categories, in particular caste and class. She exposes the disadvantages of lower-caste Hindu and Muslim boys with regard to attending secondary school, and confirms the great influence of the level of education of mothers and fathers on decisions relating to school enrolment of their sons and daughters.

Similarly, in his study of birth control, Doumbia (2006) examined gender roles, extending his analysis to the cultural framing of gender. In the urban study area in Côte d'Ivoire, the prevailing gender roles were for men to be breadwinners and for women to be housewives. However, it is only via an appreciation of gender ideology that negotiations and choices concerning contraceptive practices among Ivorian couples can be understood. The male position is particularly interesting, as questions of reproductive health can be interpreted as weapons to be used against male authority in the household (Doumbia 2006, p 210). Family-planning programmes that address women exclusively may thus fail to achieve their objectives. This confirms a finding in gender and development research which indicates that men are insufficiently included. Only a small number of studies so far have considered men and masculinity in the development context (Chant and Gutmann 2002; Cleaver 2002; Laurie 2005; Kabeer 2007).

Locher and Müller-Böker (2007) faced the challenge of addressing men in gender and development research by comparing women-only interventions with integrative, gender-mixed interventions in the Kangchenjunga Conservation Area Project in East Nepal. Drawing on Moser's concept of practical and strategic gender needs[14], the authors advocate an extended WID approach[15] which includes gender awareness training for the entire staff and gender-disaggregated surveys, while at the same time supporting women's empowerment. Their findings highlight not only an improvement in the status of women but also beneficial aspects of the gender strategy for the

overall project goals. They conclude that the integration of men is crucial in making efforts to empower women more successful and more sustainable.

9.4 Gender as a seismographic device for analysis of social change

All of the above studies examined current transformations in societies of the global South by scrutinising how changes are influenced by or affect gendered positions in a community. Gender roles are focused on as a kind of seismographic device that projects a high-resolution image of where and how change happens and which groups participate or are excluded. For development research, it is essential to illuminate the conditions under which change happens. It is equally important, however, to identify the social locations of and the reasons for absence of change, or persistence. While the studies cited investigated the gendered nature of social transformation at particular moments, the following example is illuminating with regard to the negotiation of change and persistence in a medium-term perspective. It documents not only the importance of extending the focus beyond women, but also the value added of continuous research. A programme component that is specific to the NCCR North-South is its Partnership Actions for Mitigating Syndromes (PAMS), which combine research and action, thus allowing for direct implementation of research results in development interventions. For example, a study on picketing movements in Argentina (see below) was extended over a number of years, resulting in an enhancement of the gender perspective in the collective organisation which had been the object of the study. This was driven from the bottom up, not least by members of the social movements which were the objects of research; some of these members subsequently engaged in a PAMS.[16]

The case study investigated picketing movements in Argentina. Picketing movements were the main form of collective organisation in the face of socio-economic crisis and increasing unemployment in Argentina at the end of the 1990s (Cross and Freytes Frey 2007). In their study of unemployed workers' movements and worker-recovered factories, the research team scrutinised women's roles and forms of participation. Most members of these movements were women, while the majority of their leaders were men. 'Gender blindness' obscured practices, voices, and conflicts in these social movements. Gender-considerate research revealed that women performed most of the work on-site, which was the basis of the organisations' growth

and collective mobilisation from 1997 to 2004. Their participation in public demonstrations led many women to assume leadership at a neighbourhood level. However, men were over-represented at the regional and national levels. This 'sexual division of labour', which reproduced gender inequalities, was questioned by the women's subdivisions that had been established in several picketing organisations (Cross and Partenio 2005). The exchanges in these spaces challenged gender stereotypes and encouraged women to assume local leadership. Nevertheless, women's demands often ended up contradicting the general political orientation, which focused on the problem of unemployment and poverty. This situation produced internal tensions (Cross and Freytes Frey 2007).

In this case study, the gender perspective provides a more precise view of the potential of picketing movements to question established power relations, referring not only to class but also to patriarchal domination. Furthermore, it reveals the limits of the transforming potential of these social movements. On the one hand, there was a diversification of the workers' daily tasks: New activities, such as management responsibilities, negotiations with governmental officials, and meetings with representatives from other worker-recovered factories, were added. Workers stayed in the factory for long hours in order to 'guard' and 'defend their jobs' against the threat of eviction. This situation implied a re-definition of the frontiers between the 'productive sphere' and the 'reproductive' or 'domestic sphere'. Indeed, one of the main limits mentioned by women regarding their participation concerned their responsibilities in their homes. Some met resistance from their spouses and children concerning their new roles in the committees (Freytes Frey et al 2006; Partenio and Fernández Álvarez 2006). Obviously, the adoption of new roles is costly for women in terms of time, effort, and emotional commitment. As feminist scholars have argued, the question of gendered time use is crucial in development. The consequences in terms of intra-household negotiations and workload can hardly be underestimated (see, for example, Elson 1995; John 2002; Pearson 2007; Budlender 2008). This is a subject of major importance for sustainable development policies that increasingly rely on women's work and leadership. The case study from Argentina further illustrates how transformations in gender roles do not automatically lead to a shift in gender norms.

Thieme's and Siegmann's (2007) critical appraisal of the social capital debate is an example of how gender norms effectively stabilise traditional power relations. The authors introduce mobility as a highly gendered pro-

cess where the crossing of boundaries implies not only different legal but also different cultural gender norms. Drawing on Bourdieu, they argue that investing in the symbolic capital of female honour is seen as crucial for strengthening social and economic capital – and at the same time underpinning male domination. Contrary to current social capital theory, the authors conclude that women become symbolic currency within social networks while remaining bereft of the benefits these networks provide. Their vulnerability increases at the same rate as masculine domination over these networks. In contrast to most studies, Thieme and Siegmann use the gender perspective to question established paradigms of migration research. This potential of the gender perspective has so far been underestimated within the NCCR North-South, as an interview statement suggests: "In my experience, people who try to deconstruct concepts are easily labelled troublemakers or considered as living in the clouds." In this sense, the interviewee is rather disappointed about the programme: "We often stopped asking questions at the very point where it would have become really exciting." Another interviewee advocated more "policy-irrelevant research" in order to create space for fundamental reflection. These statements indicate a tension between a desire to pursue sophisticated conceptual approaches to development research and the need to satisfy expectations for results in the form of ready-made recipes.

The common denominator of the studies discussed in sections 9.3 and 9.4 is their aim to assess social change through a gender lens. Adopting a gender perspective requires the researchers to translate highly complex theoretical accounts into practicable operative concepts. In the case of malaria, for instance, this includes assessing healthcare systems with regard to the inclusion and exclusion of particular groups – be it on grounds of gender, race, ethnicity, or class (Corradi 2009). Furthermore, these studies illustrate the importance of targeting the gender perspective at a specific research question and adopting an appropriate framework (Warren 2007). Decisions have to be made about whether the focus should be on gender roles, for example concerning the division of labour, or if gender identity or cultural negotiations of gender norms should be investigated. The above studies also illustrate that such analytical perspectives may shift as the research proceeds.

We conclude that within the NCCR North-South, a number of researchers regularly or occasionally use a gender lens to critically reflect their research approaches, to elicit data, and to interpret their results. Can we therefore assume that the NCCR North-South is immune to the general feeling of wea-

riness known as 'gender ennui' that has been diagnosed elsewhere (Molyneux 2007)? Regular screening of PhD proposals, project reporting, and articles indicates a rather limited engagement with the subject, often involving the same researchers. In interviews and informal conversations, informants drew an ambivalent picture, but they unanimously warned against featuring gender prominently. There seems to be a danger of 'being cornered': "It's crazy how certain words wear off − with the best of intentions!" states one interviewee, while one of his colleagues sees it as an unpopular obligation: "It is mocked, we do it because the SNSF [Swiss National Science Foundation] wants it; engineers, environmental scientists: they all do it because they have to do it but they are not convinced." Not all informants shared the impression of general gender fatigue in the NCCR North-South programme. Nevertheless, the last quote reflects some unease and suggests that the motives for using a gender lens are more often political than scientific. In the final section of this article, we suggest expanding on the scientific value that the gender perspective offers, while embracing its political dimension.

9.5 Gender as a tool for transformation

The studies discussed in this article share a process of starting with empirically accessible but unstable gender roles that can be advanced to include reflection on the cultural framing of gender or on the intersection of gender with other, equally fragile categories of social organisation, such as class, age, or ethnicity. As some of the above examples indicate, the critical deconstruction of key social institutions illuminates outputs and outcomes of development interventions and underscores the need for more purposeful interventions. According to one of the interviewees, a gender analysis is instructive as it dislodges personal assumptions about a research context.

While many of the contributions examined for this study employ gender as an analytical framework to elicit gender-specific data, only a few explore its potential in terms of interrogating basic concepts, let alone joining in the normative debate gender offers. However, as Maxine Molyneux (2007, p 236) argues: "[…] if gender analysis and mainstreaming are to be more than another policy tool, they need to be accompanied by some strategy for achieving gender justice as part of a broader commitment to greater social and economic equality." This commitment, as pointed out above, is one of the principles shared by development and gender studies. Most of the authors discuss their examples of gender-considerate research in a context of rapid

social transformation. Such changes go hand in hand with the emergence of new actors, alternative livelihood strategies, redefinition of rules and regulations, and the redistribution of assets, access, control, and choices. For development, which always induces change, these are important times with regard to enhancing or securing equity and empowerment. We argue that by way of a gender perspective, social processes and the concept of 'change' can be reinterpreted in particularly gainful ways. Often reduced to the term "modernisation", such transformations can be reflected on by gender-considerate scrutiny, providing us with a fine-tuned picture of how change and, as a matter of fact, persistence as well are socially negotiated.

We began this article by citing an example of extreme disruption in the human–nature relationship. Instead of asking how a natural disaster can be discriminatory, perhaps the question should be: What can development research contribute to prevent such asymmetries, not only after, but more importantly before dramatic events occur? In the case of the 2004 tsunami, a gender analysis – initiated by a simple body count – generated important questions about social structures and cultural values in the places affected. Women's and men's roles and their respective positions in society determined much of their resilience. Many women were not able to swim, nor could they climb trees. Some would not leave their house without a male member of the family. Others were selling their home-made produce alongside the coast roads, as they had always done on Sunday mornings. It is crucial for incoming humanitarian aid to build upon such knowledge in order not to reproduce power asymmetries. In Banda Aceh, the evaluation of the tsunami impacts revealed that women could best be empowered by giving them swimming lessons. The prerequisite, however, was that in a participatory approach these women were encouraged to design adequate swimsuits that met their standards of dignity and bodily integrity.[17] As aid often precedes medium- and long-term interventions, it is important to leverage such programmes.[18]

The challenge of interrogating social relations within transforming societies obviously applies to mitigating syndromes of global change. One of the critical points here is the discrepancy between the real and the felt proximity to the practice of international cooperation. Although gender research is called for by donors, in times of 'effective aid'[19], space for complex approaches and conceptual debates is becoming scant. The overall goal is to make sure that gender approaches support meaningful analyses that integrate complexity while not losing sight of implementation.[20] We conclude that the interro-

gation of development from a gender perspective is crucial in order to understand and eventually influence social and economic change in societies – be it in the long run or in the immediate event.

We hope that we have provided some insights into the multifaceted use of gender as a tool for thought within the NCCR North-South. So far, NCCR North-South members have been rather hesitant to explore gender as a tool for transformation. The common epistemological basis of gender and development studies, however, harbours a potential that is yet to be explored and tapped. It involves a re-evaluation of the 'political' within development research and a challenge regarding the nature of 'change' induced by these studies.

Endnotes

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[7] This article is based on a six-year mandate for gender and development research (Transversal Project Mandate "Gender and Development", 2007–2013) held by the Interdisciplinary Centre for Gender Studies in Bern, Switzerland. The mandate is not research-based; activities such as regular screenings of PhD proposals and specific consulting with respect to research implementation programmes, the so-called Partnership Actions for Mitigating Syndromes (PAMS), provide insights which this contribution draws upon. Furthermore, publications and literature based on research by members of the Swiss National Centre of Competence in Research (NCCR) North-South and accessible via the NCCR North-South website (www.north-south.unibe.ch) were consulted. Three senior members of the NCCR North-South who are in a position to have an overview of the programme offered to take part in informal conversations referred to throughout the article. While we do not claim scientific validity for the interviews, they appear to be illustrative in terms of an internal perspective reflecting different positions within the network.

[8] John Money and Anke Ehrhardt appear to have been the first scientists to make this distinction in their medical studies on transsexuals (Money and Ehrhardt 1972, in Fausto-Sterling 1988). In the same year, Ann Oakley (1972) introduced the differentiation between sex and gender in her anthropological work. Feminist scholars subsequently quoted primarily the anthropologist Gayle Rubin, who discussed the sex–gender system in her 1975 article on "the traffic in women" (1975).

[9] De/construction is a neologism created by the French philosopher Jacques Derrida (1930−2004). Referring to Heidegger, Derrida devised a methodology of critical analytical inquiry. Although deconstructionists engage with some of the most influential 20th-century philosophical movements, namely phenomenology, structuralism, and Freudian and Lacanian psychoanalysis, deconstruction is mainly a critique of these movements. Rejecting the idea of the intrinsic meaning of a text, deconstruction encompasses a particular mode of reading by which 'accidental' features of a text can be interpreted as subverting the supposedly main message.

[10] We assume that gender, being conceived of as a transversal theme, is included in many more publications that do not appear in the mapping system. Weak visibility, however, might also be explained by political or career-specific reasons. Foregrounding gender in one's work is not appreciated in the scientific community. Informal discussions within the NCCR North-South indicate that there is a risk of negative repercussions.

[11] NCCR North-South research activities are organised into three Thematic Nodes and an Integrative Node that bridges them all together. Each Thematic Node is supported by at least two Swiss partner institutions, together with their partners abroad, and comprises four to six Research Projects. The individual projects are co-led by post-doctoral researchers from the South and the North who jointly oversee an international team of post-doctoral and senior researchers, as well as PhD and master's students. The teams conduct their research in at least two out of nine established Partnership Regions spread across four continents.

[12] See the web page of Research Project 9 for the third four-year phase of the NCCR North-South, lasting from 2009 to 2013: http://www.north-south.unibe.ch/content.php/page/id/284 (accessed on 8 June 2011).

[13] Purdah is a code of conduct specific to Bangladeshi, Indian, and Pakistani Muslim and Hindu cultures. It concerns the seclusion of women from the public, that is, from the gaze of men, by means of veils or other kinds of concealing clothing. Within the home, purdah is put into effect by high walls, curtains, or screens which separate women's and men's domestic spheres.

[14] In her 1995 gender planning framework, Caroline Moser distinguished between practical gender needs and strategic gender interests. According to this framework, practical gender needs are identified by women within the socially defined roles attributed to them and as a response to immediate necessities (i.e. provision of water or fuel for cooking, improvement of health care infrastructure, etc.). Strategic gender interests, in contrast, challenge women's subordinate position in a society and the traditional division of labour. Interventions aiming at strategic gender needs address themes such as equal wages, the right for women to control their own bodies (i.e. abortion or female genital mutilation, etc.).

[15] WID, short for "Women in Development", stands for an early approach in gender-sensitive development theory and practice which focuses on women. WID was subsequently replaced by GAD, short for "Gender and Development".

[16] See the final report of this PAMS (CEIL–PIETTE–CONICET 2006).

[17] This statement was made by Lorena Aguilar, Gender Advisor at the International Union for the Conservation of Nature, in a presentation held at the Swiss Agency for Development and Cooperation (SDC) on 26 June 2008.

[18]Major players have become aware of this, as recent publications indicate (IASC 2006).

[19] By signing the 2005 Paris Declaration on Aid Effectiveness, more than 100 states committed themselves to better use of aid by agreeing on 56 partnership commitments to improve the quality of international aid. See http://www.oecd.org/document/18/0,3343,en_2649_3236398_35401554_1_1_1_1,00.html (accessed on 28 June 2011).

[20] Both complex and simple approaches are needed, as Dietz argues: "Complexity arises in understanding the linkages between the many causes of human deprivation and in understanding the reasons for the success or failure of approaches to the reduction of poverty. Simplification is necessary to catch the eyes and ears of a world community of decision-makers and of public opinion leaders […]" (Dietz 2001, p 19).

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10 Interdisciplinary Approaches in Research for Sustainable Development

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Abstract

The complexity of sustainable development cannot be adequately addressed by research approaches restricted to single scientific disciplines. Comprehensive assessments in the realms of natural resources, environmental sanitation, health, and social development must consider multiple internal and external perspectives on the object of inquiry, all of which relate to systems and institutional frameworks that are dealt with in different ways. We analyse three examples of integrated research approaches developed within the framework of the Swiss National Centre of Competence in Research (NCCR) North-South. Along with combining social and natural sciences, these approaches also involved the development and application of transdisciplinary methods, including participatory processes and the integration of local knowledge. The present analysis shows that extending research in this way requires a careful, stepwise approach. Epistemologies in the disciplines involved diverge greatly, requiring comprehensive analysis and debate in order to come up with joint research questions and methods. Moreover, participatory transdisciplinary processes follow their own epistemologies, requiring special attention. Without ignoring these issues, taking a 'utilitarian' stance, we demonstrate how integrated approaches enabled us to gain a better understanding of the issues under study, which would not have been possible had we restricted ourselves to disciplinary research. These findings contribute to a pragmatic integrated approach to development research, which can be flexibly adapted to different contexts and thematic foci.

Keywords: Interdisciplinary approach; natural sciences; social sciences; epistemology; local knowledge; added value; development research.

10.1 Introduction

The complexity of sustainable development cannot be adequately addressed by research approaches restricted to single scientific disciplines (Waltner-Toews and Wall 1997; Ostrom 2007). Comprehensive assessments in the realms of natural resources, environmental sanitation, health, and social development must address multiple external (professional) and internal (population concerned, stakeholders) perspectives (Zinsstag 2007). Both types of perspectives relate to systems and institutional frameworks that are dealt with in different ways by those involved in the knowledge production process, depending on their respective epistemologies. We analyse three examples of integrated research approaches developed within the Swiss National Centre of Competence in Research (NCCR) North-South that combined geography, sanitation, and health sciences with anthropology and sociology and, in addition, involved the development and application of transdisciplinary methods (Hirsch Hadorn et al 2008), including participatory processes. Some of these approaches also incorporated the use of local knowledge. The present article addresses the following questions:

1. What research questions are addressed using integrated approaches, often combining the social and natural sciences?
2. What practical approaches do multi- and interdisciplinary studies choose with respect to specific topics?
3. How are results from different disciplines compared?
4. What is the added value of different disciplines addressing the same theme?
5. Are there common denominators that could provide a basis for an integrated research approach to sustainable development encompassing social, economic, and environmental dimensions at the same time?
6. Are there any major epistemological divergences and conflicts of interpretation?

10.2 Promoting sustainable land management in the Ethiopian Highlands

10.2.1 Research questions

Land degradation in the Ethiopian Highlands is a longstanding problem of paramount importance. Over 80% of the population lives on small-scale farms in subsistence-oriented crop and livestock agricultural systems. However, with few exceptions, farmers have not perceived erosion process-

es as imminently threatening; traditionally they have taken no immediate soil and water conservation measures (Hurni 1993). Accentuated household vulnerability to hunger and famine may result in widespread destitution if no relief measures are taken. The need for sustainable land management (SLM) was recognised by the government and external agencies already some 35 years ago, after a devastating famine in the northeastern provinces in 1972/1973. Research into soil and water conservation was initiated at that point as well, mostly in support of actions taken by multiple actors such as researchers, farmers, technicians, and policymakers (Hurni 1975; Virgo and Munro 1977; SCRP 1984). Over the years, numerous research questions were developed and addressed, more or less in the following order:

1. What are the severity and extent of land and soil degradation, and how can their characteristics be explained?
2. What are the processes and dynamics of soil erosion and catchment sedimentation?
3. What measures have farmers taken against soil erosion and soil degradation?
4. Which soil and water conservation technologies and approaches are best suited for adaptation to farming conditions in the Ethiopian Highlands?
5. What actions are taken by institutions, and on what information and knowledge do they base their decision-making?
6. How can farmers and institutions be brought together to jointly develop best practices of SLM?

In the course of addressing these questions, research in support of SLM approaches became increasingly integrative and interdisciplinary, involving not only natural, but also social scientists, and gradually also inviting farmers to participate in formulating research questions and developing appropriate measures to combat soil erosion and land degradation. Research questions 1 and 2 were addressed primarily by natural scientists or agronomists (Hurni 1979; Krauer 1988; Hurni 1990; Belay Tegene 1992; Solomon Abate 1994; Gete Zeleke 2000). Research question 3 was addressed by natural scientists as well, who observed and described practices that had been carried out by farmers. However, the involvement of social scientists was felt to be important already in the early years of soil conservation research, that is, as of 1981, with a view to addressing issues such as farmers' attitudes towards soil erosion and soil conservation, their means and abilities to take action, and factors favouring or discouraging investment in the land (Galizia 1986; Tsehai Berhane Selassie 1994; Yohannes Gebre Michael and Herweg 2000).

Research question 4, regarding the development of adapted measures to combat soil erosion, called for an interdisciplinary approach, including participatory elements, to determine best practices that would be ecologically sustainable, economically viable, and socially acceptable. Attaining this goal proved to be much more difficult than anticipated at the beginning (Hurni 1982). It soon became obvious that technologies fulfilling the biophysical requirements of ecological sustainability were usually not economical from a farmer's point of view, and hence not socially acceptable to farmers, their families, and the community at large. Unfortunately, the government and external institutions nevertheless continued to apply these technologies, which in turn were often destroyed by farmers once the programmes were discontinued (Herweg 1993). These shortcomings led to a great number of social and economic studies being carried out in the 1990s. Many of them were critical of past experiences but fell short of proposing better approaches, not to mention more appropriate technologies.

10.2.2 Interdisciplinary approach

As a consequence of the above-mentioned discrepancies in research approaches in support of SLM, in 2001 the NCCR North-South initiated a number of interdisciplinary studies involving natural scientists, agronomists, economists, and political and social scientists in order to address research questions 5 and 6. Taking a transdisciplinary approach, these teams met with farmers and other stakeholders and negotiated appropriate research questions and methodologies for finding pathways towards SLM through integrated biophysical and social science research (Yacob Arsano et al 2004).

Birru Yitaferu (2007), in his assessment of land degradation and options for SLM in the Lake Tana Basin, applied primarily biophysical methods to study land resource changes. He later changed to theory-based approaches when identifying drivers of land resource changes, and applied participatory elements when appraising mitigation technologies and strategies for SLM. In the latter phase he interviewed farmers, development agents, and agricultural researchers, emphasising in his findings that there were major differences in technological preferences among these three actor categories. It is interesting to note that farmers and development agents, who work more closely together in daily activities, were closer in their appraisal of technologies, while the views of the third group – agricultural researchers – differed considerably from those of the other two groups.

A primarily social science based approach was taken by Amare Bantider (2007) in his study of landscape transformation and opportunities for SLM along the Eastern Escarpment of Wello. While he addressed land use and land cover change using remote sensing techniques, as Birru Yitaferu had done in his Lake Tana Basin study, Amare Bantider's assessment of the dynamics of change was supported by oral history, that is, farmers' narratives of landscape evolution, and his appraisal of SLM technologies included an assessment of farmers' willingness to apply them on their land. This study made the diverse conditions of a farmer's household the central focus, while Birru Yitaferu's study focused on technologies as the starting point for assessment by different stakeholders.

10.2.3 Added value

Both of the above studies attempted to determine the best options for SLM in their particular case study areas. Although they started from different scientific backgrounds – that is, agricultural engineering on the one hand and social geography on the other – their results are nevertheless consistent with each other. Both came to the conclusion that the best potential technologies are those acceptable to and preferred by farmers and extension workers (Amare Bantider 2007; Birru Yitaferu 2007). This example shows that different disciplinary approaches can converge to produce similar results by identifying the most acceptable technologies for farmers and extension workers. In this sense the two studies cross-validate each other's results. Both demonstrate the importance of a transdisciplinary approach, involving farmers and extension workers, for the development of integrated intervention towards SLM. If individual researchers keep this vision in mind, and if they are supported by adequate theoretical and methodological tools, they will not fall back into their scientific speciality but almost automatically be guided towards more comprehensive approaches to syndrome mitigation (Hurni et al 2004)

10.3 Moving from a strictly engineering perspective to an integrated approach in urban environmental sanitation

10.3.1 Research questions

The fact that 2.6 billion people still live without access to basic sanitation facilities is strong evidence that approaches used in the past to address envi-

ronmental sanitation problems fail to cover a large proportion of humanity. The consequences are dramatic: 2.2 million deaths annually (mostly children under the age of 5); 200 million people infected with schistosomiasis; and more than 1 billion people suffering from soil-transmitted helminth infections. A comparison of health and other benefits with the required costs has shown that an investment of USD 1 produces an economic return of USD 3 to USD 34, depending on the region (Hutton et al 2007).

The driver for drastic change in hygiene behaviour and improved sanitation facilities was the realisation that dramatic increase in population density is coupled with deterioration in public hygiene (Schertenleib and Gujer 2000) – a fact already known to the ancient Romans and cited in the Old Testament (Deuteronomy 23:12–14). Apart from creating aesthetic problems, increasing contamination of drinking water resources over the centuries ultimately resulted in widespread epidemics such as the London cholera epidemic of 1854. Discharge of wastewater into surface waters and an increase in pollution load due to the rapid growth of urban areas led to a situation where pollution exceeded the assimilation and self-purifying capacities of rivers and lakes. At this point, engineers began designing and constructing sewage treatment plants. Water-flush toilets connected to a water-borne sewer system and centralised wastewater treatment facilities became the norm in solving sanitation problems in the urban areas of the global North. Consequently, they were also seen as the recipe for solving sanitation problems in rapidly growing urban areas in the global South (Schertenleib 2005).

Due to the very different socio-economic and climatic conditions prevailing in developing countries, this engineering-driven, top-down approach has not been able to make a significant dent in the service backlog still existing throughout most of the developing world. Furthermore, centralised sewer-based sanitation systems usually treat nutrients such as phosphorus and nitrogen as waste rather than resources. These aspects obviously contradict the basic criteria of sustainability, and with changes in market prices for energy as well as nitrogen and phosphorus fertilisers, these issues are now also being addressed by specialists in other disciplines such as resource economics. For instance, it is estimated that global phosphorus reserves will last only some 50–100 years if they continue to be depleted at the present rate; at the same time, intensive agricultural production is severely depleting soil organic matter (Rosemarin et al 2008).

For these reasons, an increasing number of professionals and researchers specialising in different sectors have come to realise that there is an urgent

need not only to develop alternative technologies but also to establish more holistic and transdisciplinary approaches to planning, constructing, and operating sanitation systems. Experts today widely acknowledge that any sanitation approach should be based on the following principles: decision-making should involve participation of all stakeholders; waste should be considered a resource; and sanitation problems should be solved as closely as possible to where they arise (WSSCC and Eawag/Sandec 2000).

10.3.2 Interdisciplinary approach

For many years, research on new sanitation approaches focused mainly on the development of alternative technologies for the decentralised treatment of wastewater and faecal sludge (Sasse 1998; Strauss et al 2000; Foxon 2004). One outcome of this research, which was partly conducted within the NCCR North-South, was the establishment of technical design criteria for improved septic tanks and faecal sludge treatment in constructed wetlands. At the same time, the Household-Centred Environmental Sanitation (HCES) approach was developed, focusing on an integrated system framework and following principles of closed-loop resource management as well as multi-stakeholder planning steps (WSSCC and Eawag/Sandec 1999; Schertenleib et al 2004). The HCES planning approach is a radical departure from past centralised and engineering-driven planning approaches. It places the household and the neighbourhood at the core of the planning process and thereby responds directly to the needs and demands of users, rather than central planners' frequently ill-informed opinions about them. Decisions are reached through consultation with all stakeholders affected by them, and problems are solved as closely as possible to their source. Within the framework of the NCCR North-South, the HCES approach has been tested in different regions in close collaboration with social scientists (Lüthi et al 2009).

Crucial aspects of the multi-stakeholder process in the HCES approach are the joint establishment of the baseline situation (situation analysis and system description) and joint identification of the most suitable sanitation options based on the users' needs and preferences as well as the effects on health, the environment, and use of natural resources. The impacts of different possible scenarios on the environment and on natural resources can be assessed by means of a Material Flow Analysis (MFA). This method describes how resources are used and transformed as they flow through a system (Montangero et al 2007). However, MFA cannot be used to assess impacts on health and to identify the critical control points related to disease transmission. Therefore, the method is now being expanded in collaboration

with epidemiologists and health specialists, taking into account the flow and the reduction or growth of pathogens in a sanitation system, and applying the methodology of Quantitative Microbiological Risk Assessment (QMRA) to quantify the health risk under different sanitation scenarios based on stakeholder exposure (frequency and dose) (Nguyen Viet et al 2009).

10.3.3 Added value

A sanitation system is geared to protecting and promoting human health by providing a clean environment and breaking the cycle of disease. A future-oriented sustainable sanitation system must not only be economically viable, socially acceptable, and technically and institutionally appropriate; it should also protect the environment and natural resources. As such, it provides an excellent example of how experts from a wide range of disciplines (e.g. social sciences, natural sciences, and engineering) must work together in an integrated manner to attain these objectives. Awareness of this need for inter- and transdisciplinary cooperation, however, was gained through a slow process of trial and error, and, although it is recognised by all experts, many policymakers, researchers, and practitioners around the world still do not always act accordingly. Restriction to an engineering-only approach to sanitation clearly fails to respond to locally perceived needs and possibilities. Only a combined approach as described above can yield meaningful and feasible locally adapted solutions to environmental sanitation.

10.4 Health care for nomadic populations

10.4.1 Research questions

Nomadic pastoralists in the African Sahel, the high steppes of Central Asia (including the Tibetan Plateau and Mongolia), parts of the Near and Middle East, the Arabian Peninsula, and India use mobility to manage uncertainty and risk in arid and semi-arid ecosystems (Scoones 1994). In many countries, nomadic people lag behind sedentary people in education and access to public services. Hence, key research questions are: What is the health status of nomadic populations? What is their perception of health and health care priorities? How can effective public services be designed that are acceptable to the population concerned and adapted to their mobile way of life (Zinsstag et al 2006)?

10.4.2 Interdisciplinary approach

This case study is rooted in a decade of experience (1986–1996) with health care reform in two Chadian regions, during which it was observed that large nomadic pastoralist populations in this area had no access to health care. The general approach was not guided by an interdisciplinary concept but merely by a vision of the need for interdisciplinary knowledge. Initial pilot studies undertaken by the geographer Martin Wiese indicated the extent of hundreds of kilometres of seasonal migration and the close interactions between animals and humans. This inspired an approach based on the 'one medicine' concept of Calvin Schwabe (1984), which involved developing a team of veterinarians, medical doctors, and microbiologists to assess the health of humans and animals simultaneously (Schelling et al 2003; Schelling et al 2005; Diguimbaye-Djaibé et al 2006a, 2006b). This approach was extended at the outset by a geographical health study addressing determinants of the vulnerability of these populations (Wiese 2004) and a first anthropological study investigating illness perception, meaning, and behaviour, using the example of zoonotic diseases among Fulbe pastoralists (Krönke 2001).

In addition, health service concepts (Wyss and Zinsstag 2000) and health care utilisation (Donnat 2000) were investigated. Based on the first epidemiological results, novel integrated human and animal health services were developed and tested within the framework of the NCCR North-South (Béchir et al 2004; Schelling et al 2007a). Further studies addressed institutional aspects (Fokou et al 2004) and comparative perception and explanatory models of tuberculosis among Mauritanian Bedouins and Chadian camel breeders. Studies were further extended to investigate cultural aspects of illness among Kel Tamacheq women and children in Mali (Münch et al 2007). A comprehensive integrated approach focused on extensive pastoral systems (Bonfoh et al 2007) and added components of pasture management, zoonoses control, and institutional reform.

Currently participatory processes are being used to develop an adaptation of the WHO tuberculosis control strategy to the way of life of nomadic pastoralists (Zinsstag et al 2006). From a single research group this work expanded into North–South research partnerships in several Sahelian countries and Kyrgyzstan, involving training of numerous African, Central Asian, and European scientists. The research process was not restricted to academic planning alone but was connected to the population concerned and the relevant authorities from the outset. In a decade of research (1998–2008) five participatory stakeholder seminars took place in N'Djaména and on the shore

of Lake Chad (Gredaya), providing the setting for a transdisciplinary process (Schelling et al 2007b). During these meetings results were presented, local priorities defined, and approaches negotiated. Ultimately, the Chadian Ministry of Planning took up the research outcomes to develop a new policy for nomadic pastoralists, together with ten other ministries. Best-practice studies are currently being carried out on behalf of the World Initiative for Sustainable Pastoralism and the International Committee of the Red Cross.

Comparison of results was not planned in a comprehensive way. We can distinguish two types of comparison and connection between studies, as follows: 1) yielding new insight and new knowledge, of which a good part could not have been acquired without inter- and transdisciplinary work (see below), and 2) producing different insights that cannot be directly compared. Outcomes of the work were highly variable and revealed, for example, the extent of molecular genetic variability of human and animal tuberculosis strains, but also a highly diversified vocabulary for local names of tuberculosis and lung disease. Different epistemological roots of the involved disciplines require a careful and stepwise rapprochement.

On the other hand, the need for pragmatic solutions is evident and calls for a focus on connecting points and common interests. For example, childhood mortality among the Kel Tamacheq assessed by a standardised questionnaire administered by a male medical doctor yielded much lower values than analyses of participant observations by a cultural scientist over a period of several months. But interactions between communities and scientists were not straightforward either and revealed highly variable perceived priorities. Transdisciplinary processes democratise knowledge generation. Scientists lose power and the primacy of knowledge by recognising the value and importance of local knowledge of communities and authorities.

10.4.3 Added value

Although conceptual interdisciplinary connections are not simple, the added value of the different disciplines working together is highly evident. Connecting animal and human health revealed that livestock vaccination coverage was much higher compared to vaccination coverage among children, which was virtually zero. This finding was at the origin of new joint human and animal vaccination services for nomadic people (Schelling et al 2007a). Considering reports by pastoralists about the side effects of locally produced anthrax vaccine led to the discovery of contamination of these vaccines in

Chad and Mali, which in turn led to projects to rehabilitate vaccine quality. Molecular analysis of tuberculosis in cattle indicates a high level of clustering of *Mycobacterium bovis*; however, no *M. bovis* has been identified so far in humans (Diguimbaye-Djaibé et al 2006a, 2006b). Furthermore, specific vocabularies of tuberculosis-like syndromes in humans led to culturally adapted health education (Ould Taleb 2008). Studies in Chad (Krönke 2001) and Mali (Münch et al 2007) showed very high self-control among the Fulbe and Kel Tamacheq communities in terms of concealing pain and discomfort.

This finding has important consequences for the planning of health services, since people often report to health centres so late that it is no longer possible to help them, which in turn leads to the false perception that health centres are 'only places to die'. Discussions with nomadic women and men revealed the importance of institutional arrangements to manage water wells or pastures (Fokou et al 2004) as a basis for the development of social services, including health and education. In conclusion, we can state that inter- and transdisciplinary approaches are actually a sine qua non for identifying innovative avenues to improving the health and well-being of nomadic pastoralist communities and their animals.

10.5 Analysis and synthesis of case studies

10.5.1 Questions addressed

Primary questions addressed in the above examples were typically technical at the outset: How to address soil erosion and the degradation of agricultural land, how to tackle environmental sanitation in poor urban areas, how to provide health care to nomadic pastoralists virtually excluded from all social services? While over long periods research questions were restricted to an external natural-science perspective and intervention planning remained largely in the hands of central government authorities and academic research, huge gaps between development planning, development action, and actual adherence by communities became increasingly evident.

10.5.2 Practical approach

Recognition of these gaps between knowledge generated from an external perspective, on the one hand, and actual development processes, on the other, resulted in a new awareness and, eventually, in the incorporation

of other disciplines to provide broader social, behavioural, and economic perspectives on the various technical issues under study. In all three case studies, research projects moved towards interdisciplinary collaboration and participatory stakeholder involvement as a transdisciplinary process, but the temporal dynamics varied from case to case. In all three examples, the involved scientists, community members, and decision-makers today recognise the power of integrated approaches to development research and the better cohesion between knowledge generation and development action they help to achieve.

10.5.3 Comparison of results

At the outset of the three research projects described, distinct methods relating the natural and social sciences involved barely existed. In the land management example, qualitative comparisons proved results from agricultural engineering and social geography to be consistent with each other; although the two studies highlighted different aspects, their results did not fundamentally differ. In all three case studies a basic consensus emerged that all dimensions of a research question should be considered, rather than limiting considerations to one discipline. Similarly, it is recognised that not only academic knowledge but all available knowledge and wisdom, in particular indigenous knowledge, contributes to problem-solving in development research, often in unexpected ways. However, once results from different disciplines and from participatory processes are available, we most often lack formal ways to integrate, link, or merge them. This opens up a whole new field of method development, depending on the specific complex research questions. Together with partners in the health sciences, a conceptual framework combining health, ecological, socio-economic, and cultural assessments in environmental sanitation was developed (Nguyen Viet et al 2009). Further work on integrating the natural and social sciences and participatory knowledge generation is certainly warranted, and it can build on a growing body of methods such as those described, for example, for the ecohealth initiative (Forget and Lebel 2001), or embedded case study methods that link qualitative and quantitative methods in scenario analyses, and their extensions (Scholz and Tietje 2002; Binder 2007).

10.5.4 Added value

Fundamental critics of interdisciplinary research argue that combinations of distant disciplines result in mediocre methods yielding diffuse or even use-

less outputs. Yet the need for interdisciplinary research is evident from the above examples. We have assessed its outcomes using a 'utilitarian' criterion, simply asking: What do we know more, understand better, and apply that we would not if we had restricted ourselves to disciplinary research alone? Other criteria could emphasise methods connecting two disciplines to gain additional insights and explanations for findings that could not be interpreted otherwise (see section 10.5.3).

Applicable solutions in land management require knowledge of the physical erosion process connected with in-depth knowledge of farmer preferences and the views of all stakeholders involved. Locally planned sanitation systems are beginning to become effective and to replace environmental sanitation solutions based purely on central-authority planning and engineering. Intersectoral health service provision to nomadic pastoralists would not have become possible without comprehensively relating human and animal health and social sciences. In all three examples, the inter- and transdisciplinary extension of research has clearly cross-linked science and development research by relating scientific results to development problems and generating new scientific hypotheses from the outcomes of development research.

10.5.5 Common denominator

While the research questions, methods, and disciplines involved in the three case studies differed greatly, researchers in all three cases reached a remarkable consensus about the need for involving other disciplines in knowledge generation to address a given problem. Moreover, in all case studies researchers recognised the need for transdisciplinary participatory approaches and applied them successfully, albeit in more or less structured ways. This process made it possible to generate mutually agreed systems and transformation knowledge, linking science and development, and often resulted in useful shortcuts between policy and application (Zinsstag 2007). Scientists, development agents, communities, and decision-makers negotiated their objectives and priorities, resulting in a democratisation of the research and decision process, which is uncommon in many of the countries where the research took place. Mutually agreed interventions based on this participatory approach have a high potential to be implemented and accepted by the communities concerned. From a methodological perspective, the interfaces between scientific disciplines remain a weak point in the approach, but, as indicated above, perspectives on integrative method development are underway. Further work is needed to assess the strengths and

weaknesses of different transdisciplinary experiences by developing best practices. Summarising common experiences, we can state certain basic requirements for and steps towards successful inter- and transdisciplinary research (see Box). Ultimately, actors involved in development research connect research and development institutions at both the governmental and the non-governmental levels.

Box: Basic requirements for successful inter- and transdisciplinary development research

- Ensure that researchers remain firmly rooted in one discipline
- Develop social and intercultural competence in communication and motivation
- Identify interfaces with other disciplines and actors concerned at an early stage (timing)
- Address issues of divergent knowledge theory and develop methods of interaction
- Ensure that excellence is maintained at disciplinary level, continuously increase gender and ethical standards
- Recognise and use power of knowledge in transdisciplinary process, establish iterative cycle of research and application
- Convert systems and target knowledge into transformation knowledge
- Build a bridge between knowledge generation and development action

10.5.6 Epistemological divergences

As shown above, extending research beyond disciplinary boundaries requires a careful, step-by-step approach. On the one hand, theories of knowledge in different disciplines diverge to an extent that requires comprehensive analysis and epistemological debate in order to reach a mutually agreed consensus as a basis for developing common research questions and possibly interconnected methods. Ideally, interdisciplinary research planning should begin with a dialogue between the various scientific fields involved. At this point, we must acknowledge that within the NCCR North-South, this debate took place partially and in a fragmented way or not at all. All three case studies described here agree regarding the benefits of participatory transdisciplinary processes. These processes should be followed up with great care, as they entail their own epistemologies, whose social dimensions need to be studied in order to understand social and political processes of group deliberation and group decision-making (Hirsch Hadorn et al 2008). Further efforts to help harmonise diverging epistemological orientations and tackle the dynamics of transdisciplinary processes is warranted for future theoretical underpinning of this work (Ostrom 2007).

10.5.7 Outlook

Epistemological divergences should not slow down or prevent inter- and transdisciplinary development research; instead, we argue that these divergences should temporarily be bridged by adopting a pragmatic, 'utilitarian' approach. Summarising the whole study, we state that fragmentation of disciplines is not congruent with the needs of knowledge generation for solving complex development problems. Disciplinary excellence, which will continue to drive cutting-edge fundamental research, should be increasingly matched with cross-disciplinary connectivity. Interdisciplinary approaches have already become indispensable in development research. Facing the exponential growth of knowledge in all scientific fields, it is, however, clearly impossible to keep an up-to-date overview, even within one discipline or sub-discipline. The body of scientific knowledge resembles a tree branching into ever smaller sub-branches; the interdisciplinary process described here can be seen as a spider (the generalist) building a web of interdisciplinary methods anchored on the branches of individual disciplines. The interdisciplinary web is capable of catching insects or dew, representing insights into complex problems, which could not be caught otherwise. In the same way, development-oriented research should not only be connected to the disciplinary branches of the tree of academic knowledge but also to the branches of local and indigenous knowledge, decision-making, and development action.

Endnotes

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Part III
Actor Perspectives in Research for Sustainable Development

11 A Human Actor Model as a Conceptual Orientation in Interdisciplinary Research for Sustainable Development

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Abstract

Pursuing the normative goal of sustainable development is necessarily bound to the values held by the actors involved, and to these actors as agents of change. The outcomes of development efforts and interventions depend on actors' actions and reactions, which are largely determined by these actors' agency. The questions of how actors are conceptualised in development-oriented research and to what extent the resulting concept is shared beyond the social science community are thus of fundamental importance. Current livelihood models in development-oriented research fail to address agency; strategies of action and, consequently, change and innovation in action largely remain black boxes. In this article we propose a general human actor model that can serve as a tool for communication, reflection, and orientation in development-oriented research. It explicitly builds on existing theoretical foundations and ontologies and comprises four nested components: (1) *action* as the dynamic interplay between activity, means, and meaning, (2) *strategy of action* as a combination of actions, (3) *dynamic conditions of action*, to which activities and means are exposed, and (4) *institutions*, in which meanings of action are embedded. Application of the proposed model in interdisciplinary research for sustainable development has shown that the model can be concretised for specific actor categories, and therefore has a high heuristic potential regarding concrete inter- and transdisciplinary research questions. The model can trigger theoretical innovation and, most importantly, it can be used to promote reflexivity and unravel and share ethical positions in development-oriented research.

Keywords: Development-oriented research; livelihoods perspective; human actors; agents of change; agency; institutions; action theory; interdisciplinarity; transdisciplinarity; sustainable development.

11.1 A need and a challenge: understanding 'actors' in development-oriented research

Decades of development aid and cooperation have nurtured controversy over the question of where best to look for leverage points. Positions often clash in times of intensifying globalisation and social and ecological degradation processes. We perceive an ongoing crisis in development policy and practice that gives evidence of a crisis of understanding, with regard to both the aims and the dynamics of development (Wiesmann 1998, 2008a; Clarke and Carney 2008). In this situation, the normative concept of sustainable development provides orientation and guidance. Research for sustainable development requires inter- and transdisciplinary approaches that build on the foundations of a broad set of scientific disciplines (Wiesmann et al 2011, in this volume). These approaches acknowledge that pursuing the normative goal of sustainable development is necessarily bound to the values held by the actors involved in that development, and to these actors as agents of change. At the same time, the outcomes of development efforts and interventions depend on actors' actions and reactions, which are largely determined by these actors' agency. Human agency, according to McLaughlin and Dietz (2008, p 105), refers "to the capacity of individual and corporate actors, with the diverse cultural meanings that they espouse, to play an independent causal role in history". In light of these considerations, the questions of how actors are conceptualised in research for sustainable development and to what extent the resulting concept is shared beyond the participating specialists in social science are of fundamental importance.

This poses a dilemma. For development-oriented research, adopting a livelihoods perspective that integrates actors is a practical and ethical necessity, but developing a perspective that does this in a sensitive, respectful, and meaningful way still remains a great challenge. It is obvious that our understanding of human behaviour, rationales, and agency will remain limited, as cognitive systems, thinking, and acting are largely based on unconscious processes (Gigerenzer and Brighton 2009). To come as close as possible to an understanding, we must adopt an ethical attitude based on self-consciousness and respect – or as Göran Hermerén, President of the European Group on Ethics (EGE), puts it: "Ethics is the result of our pursuit to systematically reflect on, analyse, and question the norms and values that guide human action" (AGE 2008, p 3; for the original Swedish quote see Hermerén 1989, p 37). Consequently, for the researcher, analysis from an actor-oriented perspective always requires a double effort: (1) reflection on and integration

of underlying theories and epistemological assumptions, or the researchers' conceptual background, and (2) close and respectful observation and understanding of activities and options open to individual actors and categories of actors in their sociocultural contexts. This attitude is a precondition for a conceptualisation of actors as *agents of change* and for the formulation of *meaningful* livelihoods approaches.

Already from the 1980s, livelihoods approaches (Chambers and Conway 1991; Hoon et al 1997) called our attention to human beings as the real agents of change – with broad implications for development policy and practice and related research. Numerous livelihoods concepts have been developed that can be used as analytical frameworks and/or as project guidelines (see Ashley and Carney 1999; Carney et al 1999; Carney 2002; Hussein 2002). The Rural Livelihood System (RLS) (Baumgartner and Högger 2004) and Sustainable Regional Development (SRD) (Wiesmann 1998) are two Swiss examples of integrative livelihoods approaches. Over the last decade, however, discourses and research practices related to marginalised rural actors have been largely dominated by the Sustainable Livelihoods Approach (SLA) and Sustainable Livelihoods Framework (SLF) proposed by the British Department for International Development (DFID 1999–2001). Due to its potential for structuring empirical work, this framework is very attractive for applied research and to development agencies, and has triggered a wealth of contextualised studies worldwide (see Carney 2002; Hussein 2002; Ellis and Freeman 2004; Clarke and Carney 2008). At least in theory, a vivid debate has brought livelihoods approaches far beyond well-criticised input–output model thinking and use in local contexts. Core principles such as *people-centred; responsive and participatory; multi-level; conducted in partnership; sustainable; and dynamic* (Scoones 2009) have indeed prepared the ground for SLA and connected it to approaches framed under transdisciplinarity and sustainability science (Hirsch Hadorn et al 2006; Clark 2007; Wiesmann et al 2008; Jäger 2009).

Nevertheless, and although the design of the approach itself is far from reductionist, practice has shown that widespread mechanistic application of the SLF falls short of taking adequate account of the agency and rationales of local actors (see section 11.2). We argue that greater reflexivity regarding the conceptual foundations of livelihoods approaches is crucial in devising an adequate concept of actors (section 11.3). Building on theories and concepts of existing livelihoods approaches, we present an actor model that emphasises actors' agency and rationales of action, as well as their influ-

ence on the production and reproduction of social structures. This model is intended as a conceptual orientation for inter- and transdisciplinary research for development, as well as a tool for reflection and communication with a view to contributing to a problem-oriented understanding of development dynamics (section 11.4). Translated into practice, the structural model allows for better identification of leverage points for inter- and transdisciplinary development-oriented research (section 11.5).

11.2 The quest for agents of change in the Sustainable Livelihoods Approach and Framework

Advocates of livelihoods approaches aim to achieve a better understanding of needs and conditions at the local level and to address challenges posed by the 'real', 'complex' world more appropriately than this is normally possible in singular top-down interventions. This aim is pursued by adequately integrating actors into development research. In simple terms, a livelihood comprises the capabilities, assets, and activities required for gaining a living (Chambers 1995; DFID 1999–2001). Livelihoods approaches are usually goal-oriented, focusing on livelihood security (Chambers and Conway 1991) and/or livelihood sustainability (Hoon et al 1997; DFID 1999–2001). Their explicit – and even more so, implicit – aim is to operationalise underpinning social theories in the context of development-oriented research. Indeed, a tradition of cross-disciplinary approaches intended to be people-centred and systemic stretches back many decades, although many of them were not labelled livelihoods approaches. Comparative assessments of livelihoods approaches soon emerged (Hussein 2002; Clarke and Carney 2008).

Within this broad array of approaches, the Sustainable Livelihoods Approach (SLA) proposed by DFID (1999–2001) has by far received the most attention and been most frequently applied. The reason for this success lies in its graphic representation, the Sustainable Livelihoods Framework (SLF). As an easy-to-use instrument, it structures the components influencing livelihoods as well as their interactions. The first component, the *vulnerability context*, depicts the external environment within which actors have access to certain assets (Sen 1981, 1987; Chambers 1987). The second component, *livelihood assets*, comprises human, social, natural, physical, and financial capital; political and information capital have been proposed in addition (Baumann and Subir 2001). The third, crucial component, *transformation structures and processes*, is portrayed as the prevailing social, cul-

tural, institutional, and organisational environment, including policies and legislation. This component largely determines access to assets, the terms of exchange between different types of capital, and the returns on any given livelihood strategy (Shankland 2000; Keeley 2001; Keeley and Scoones 2003). This component also constitutes the main entry point for development interventions. Based on the three key components, people pursue *livelihood strategies* to achieve *livelihood outcomes*, which in turn have a feedback effect on the assets.

Notwithstanding the strength and popularity of the SLA and SLF (see section 11.3), advocates complain that it does not live up to its potential (Scoones 2009). This has been the subject of broad discussion, especially concerning the predominantly economic interpretation of the SLF (and other frameworks), which leads to linear or mechanistic application of the framework in development practice as a 'predictive' model based on supply–demand, input–output, or pressure–response relations (Ellis 2000; De Haan and Zoomers 2005; Scoones 2009; Geiser et al 2011, in this volume). The benefits and drawbacks of the SLA and SLF have been broadly debated and do not have to be repeated here. But reflection on how framework users perceive and conceive of actors is disillusioning. While livelihoods approaches favour co-production of knowledge (Knutsson 2006) with local actors as knowledgeable and capable partners, we have found that widespread linear application of the SLA usually falls short of ascribing rural actors an active role. We argue that the ready applicability of the SLF has partly hindered the discourse on underpinning theoretical and meta-theoretical concepts as well as related ontological and epistemological positions in livelihoods approaches. More specifically, the graphic representation of the SLF has encouraged a restricted form of implementation of livelihoods approaches, thus inadvertently counteracting the original intention to focus on actors, their rationales, and their agency.

In particular, it is the graphic representation of the "asset pentagon" and the use of the term "capital" to describe these assets that lure framework users into economic analysis. Not surprisingly, this component has attracted the most attention and has largely guided practice, a fact that Scoones (2009, p 178) deplores as "an unfortunate diversion". Despite much debate and further elaboration, the asset pentagon has remained in the territory of economic analysis. Yet, as economic theories aim to be universal, they neglect the specific cultural backgrounds of human agency (Etzrodt 2003). One-sided economic application of the SLF has thus restricted its use for in-depth anal-

ysis of actors' cultural backgrounds or life-worlds (Habermas 1987, 1994). First of all, the SLF provides few indications of how to address actors' freedom of choice or room for manoeuvre. In particular, it does not guide theoretical reflection on how, why, and when actors change their actions or how changes in action emerge. Nor is it explicit about the form of livelihood strategies. This implies that the SLF places more emphasis on structure than on agency or actors' rationales for action. Consequently, actors appear to be passive and incapable of influencing and changing the "transformation structures and processes" or the "vulnerability context". Secondly, this context remains vague and static, not allowing for consideration of the dynamics of change and development, such as globalisation processes, power structures and struggles, shifts in rural economies, and long-term social or ecological changes. And thirdly, the SLF keeps the conceptual backgrounds of framework users in the dark. Taken together, these shortcomings of the SLF have profoundly undermined the power of livelihoods approaches.

Treating actors' agency and rationales and the context as black boxes means blocking out what constitutes and perpetuates society: actors, power relations, meanings, and institutions. Social and ecological diversity is only partially captured, and a dynamic relationship between the context and the actor is not considered; the view remains static, neither offering a sophisticated model of change and development nor providing a basis for formulating adequate research hypotheses or development scenarios in the quest for sustainability. A major question thus remains unanswered: How can we put the actor back in the picture? This question puts us in search of a practical conceptual model that promotes a clear positioning in terms of its theoretical background.

11.3 Theoretical foundations of an actor-oriented perspective

Social theories provide support in focusing on the meanings and intentions underpinning human action, the social systems enabling and constraining agency, and the production and reproduction of social structures (rules, norms, traditions, and values) by actors. In addition, the SLA has triggered inter- and transdisciplinary discourse on supplementary concepts in livelihoods research (see Wiesmann 1998, 2008a; Baumgartner and Högger 2004; De Haan and Zoomers 2005; Eyhorn 2006; Rist et al 2007a; Rist et al 2007b; Thieme 2008). This concerns in particular the concepts of vulnerability,

adaptation, and resilience, where agency is more evident (Hussein 2002; Füssel 2007; Obrist et al 2007; Plummer and Armitage 2007; McLaughlin and Dietz 2008; Nguyen Viet et al 2009). Moreover, integrative approaches, critical and innovative interpretations of the SLF, and other livelihoods approaches continually evolved in parallel, even if they always remained at the margins of discussion and, even more so, of implementation (Scoones 2009). With a view to conceptualising actors as *agents of change*, we refer in particular to two complementary theoretical discourses that both discuss the relation between structure and the actor, that is, the questions of how structure influences actors and actors influence structure: one stemming from Bourdieu's *theory of practice* (Bourdieu 1977, 1984, 1997; Bourdieu and Wacquant 1992), and one triggered by Giddens's (1984) *structuration theory* and the subsequent discourse of the post-structuration schools.

Bourdieu's *theory of practice* provides key concepts – *habitus*, *practice*, *capital*, and *field* – that make it possible to interpret actions and strategies from the perspective of the actor and of social structure (Dörfler et al 2003). Bourdieu departs from the concept that actors are shaped by society and accounts for the patterned character of social practices by postulating that practice is shaped by *habitus* – a system of acquired, learned, and lasting dispositions to perceive, think, and act in certain ways (Parker 2000) – therefore leading to an *urgency of practice* (Bourdieu 1990, p 112). Closely related to *habitus* is the concept of *capital*. Four main types of capital – economic, cultural, symbolic, and social – are used by actors to meet their needs and improve their social position. While economic capital comprises the material basis, cultural capital refers to cultural possessions and identities and tends to legitimate social hierarchies (Bourdieu 1984), its study thus enabling insights into underlying factors of social injustices and inequalities and their reproduction. Symbolic capital refers to status and recognition based on which actors gain advantages, and is related to the concept of reciprocity (Nowak 2006). Social capital, finally, refers to social networks as patterns of relationships and is linked to the increasingly important concept of multi-locality (Thieme 2008). The distribution of the key forms of capital, their interrelations, and their interconvertibility shape power relations and lead to Bourdieu's concept of *field* as a set of social relations and a system of social positions in which actors strategise and compete over desirable resources. This offers an approach to analysing power relations between actors, their competition to achieve or improve their positions in their social field, how their internalised dispositions influence their actions, and how societal structures constrain or support them in achieving their goals.

Bourdieu's theory puts more emphasis on the influences of social structure on actors than on the actors' influence on social structure, thereby basically narrowing the framework for interpreting the rationale of actors to the pressure to adhere to rules, norms, and values. Giddens's structuration theory provides a complementary interpretative framework, starting from an actor who is knowledgeable and can significantly influence social structure. Structuration refers to the ways in which social systems are produced and reproduced in social interaction (Giddens 1984, pp 25–26). Actors are characterised as being "conscious of the limited possibilities of action and having to make choices commensurate to the constrained situation" (Giddens 1997, p 365). On this basis, an actor may also choose not to act. The basic assumption is that human beings are intentional actors who have reasons for their actions and are capable of discursively explaining their actions. Structuration theory thus provides an interpretative approach that focuses on the rationale of actors.

Despite their critics (Parker 2000; Dörfler et al 2003), Bourdieu and Giddens provide complementary interpretative theories of human social action and interaction, and many livelihoods approaches and concepts have at least partially adopted these theories. Referring to and building on this discussion, in what follows we develop a structural model that puts more emphasis on agency and contextuality by promoting critical reflection on livelihoods approaches against the background of these underlying social theories.

11.4 A human actor model as a conceptual orientation in inter- and transdisciplinary research for development

Based on the discussion above, the impetus to propose an actor model as a conceptual orientation in inter- and transdisciplinary research for development is informed by three arguments:

1. The outcomes of basically all development efforts and interventions depend on actors' actions and reactions. The way in which actors are conceptualised in research for development is therefore not only practically relevant, but also influences research findings and conclusions. This implies that the conceptualisation of actors should be shared beyond the participating specialists.

2. Livelihood models and tools that are currently widespread in development-oriented research have their merits; but they do not put enough emphasis on agency, implying that strategies of action and, consequently, change and innovation in action largely remain black boxes.

3. Underpinning theoretical foundations and ontologies should be referred to explicitly, as they form the basis for critical reflection and self-reflection in interdisciplinary research teams and, even more so, in transdisciplinary science–society interactions.

The model presented here does not claim to represent a comprehensive and consistent synthesis of the relevant theories and concepts mentioned in section 11.3. It is intended as a tool for communication, reflection, and orientation in concrete inter- and transdisciplinary research for development, which takes into account basic theoretical and practical considerations.

The model is formulated at a meta level. This offers the possibility of adapting and concretising it for any specific actor category and/or context discussed in interdisciplinary discourses, and enables integration of specialised theories and concepts – for example peasant theories (Wiesmann 2008a) – without losing sight of its basic theoretical foundations. The model builds around an understanding of 'action' that puts much emphasis on agency and actor strategies, thereby supporting the fundamental conception that actors creatively balance and evolve their strategies, actions, and practices. This actor-oriented perspective demands an attitude of due respect towards actors of those engaged in research for development.

We have chosen to provide a graphic representation of the model, as experience shows that such representations have a great potential for triggering interdisciplinary discourses and can prevent a division between specialists in the conceptualisation of actors and researchers from other disciplines. The graphic representation highlights *four nested and interlinked components*, each representing a core conceptual element (Figure 1). A detailed description of these components is given in the following sections.

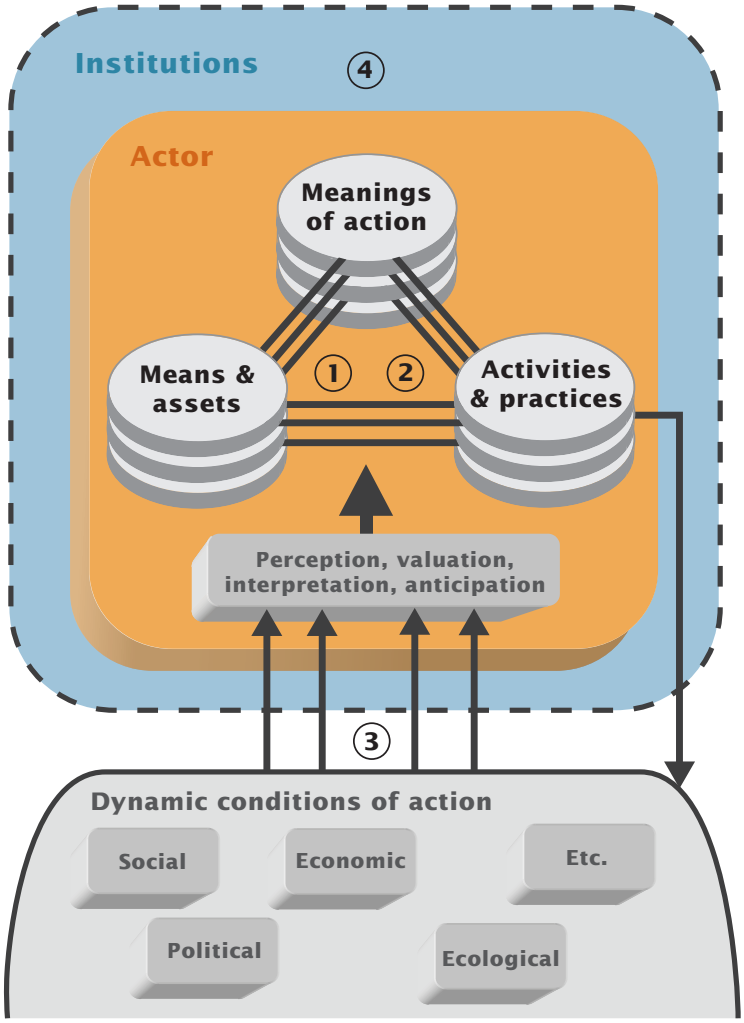

Fig. 1
A human actor model as a conceptual orientation in interdisciplinary and transdisciplinary research for sustainable development.

1. ***Action* as the dynamic interplay between activity, meaning, and means:** a continuous process of mutual adaptation as a result of differences and tensions between the aim and the – inherently delayed – outcome of action.

2. ***Strategy of action* as a combination of actions:** dynamic interplay between the allocation of means, the network of activities, and the structure of meanings. *Rationale of action:* underpinning principles of optimisation processes within strategies of action.

3. **Exposure of activities and means to *dynamic conditions of action*:** The multitude of social, political, economic, and ecological conditions become relevant in actions and strategies of action when perceived, valuated, interpreted, and anticipated by actors.

4. **Embeddedness of meanings of action in *institutions*:** Institutions determine social standards (values, norms, rules, etc.) for the evaluation of particular actions, strategies of action, and outcomes of actions by actors. However, individual actors are only bound to these standards to a certain, contextually varying degree.

11.4.1 Action as the dynamic interplay between activity, meaning, and means

The term *action* is at the core of the model and forms its smallest conceptual unit. It refers to the dynamic interplay between the *activity* of an actor, the *meaning* assigned to this activity, and the *means* used to perform the activity. The term "activity" is understood in a broad sense and also includes practices as well as passivity. The term "meaning" refers to a broad notion of 'making sense' from the actor's perspective and includes, but also goes beyond, rationalised intentionality – be it ex-ante or ex-post (Giddens 2009). The term "means", finally, refers to material and non-material assets, resources, and capitals in the sense of DFID (1999–2001) or, more so, Bourdieu (1990). This concept of action does not postulate monocausal relations between its three components, but rather a continuous process of mutual adaptation as a result of differences and tensions between the aim and the – inherently delayed – outcome of action. Action is therefore dynamic in all its three components.

In concrete interdisciplinary development-oriented research, this basic concept of action calls for discussion and operationalisation of the following issues, among others:

- Activity – and, to some extent, means – can be observed; but action encompasses more than that, and in order to understand its status and change we have to be able to interpret the rationale behind it.
- Non-activity or persisting activities in a certain field often make much sense when they are understood as an action including all three components of activity, meaning, and means.
- In light of this concept of action, development approaches that concentrate one-sidedly on means or assets – for example through information transfer – bear a high chance of failure.

11.4.2 *Strategy of action* as a combination of actions

Every actor continuously performs a range of actions. The activity components of these actions share the total material and non-material means or assets available to the actor and form a *network of activities* within which the actor subjectively optimises use of these means. At the same time, the combined aims or intentions driving the different actions constitute a *structure of meanings* within which the actor positions and balances different needs, wishes, and visions. The network of activities with its inbuilt process

of allocation of means results in a range of outcomes, which are inherently delayed. The actor measures these outcomes against the structure of meanings. Discrepancies between outcomes and the meanings assigned to the respective activities may be reflected in changed activity components – for example, to increase certain means – but may also provoke modifications in the structure of meanings itself. This dynamic interplay between the network of activities and the structure of meanings can be referred to as the actor's *strategy of action*. The fundamental rules or principles under which optimisation processes in these strategies take place can be termed *rationale of action*.

These considerations regarding strategies of action based on the theoretical foundations outlined in section 11.3 can stimulate and guide inter- and transdisciplinary research for development in several ways:

– The basic assumption of rationale in strategies of action promotes reflexivity, increases respect within interdisciplinary research teams for actors and stakeholders involved in the development issue under study, and prevents premature conclusions and prejudice.

– The recognition that not only activities and means, but also the structures of meanings in strategies of action may be subject to change opens interpretative perspectives and lays the foundation for mutual learning processes (Rist et al 2007a, 2007b) in transdisciplinary endeavours.

– The greatest practical relevance of this concept of strategy of action for development-oriented research and related development initiatives pertains, however, to the recognition that single actions or sectoral activities – for example in crop production – cannot be understood and influenced meaningfully without taking account of how they are embedded in the relevant actors' strategy of action. From this perspective, it is not surprising that so many sectoral approaches to development have failed and still continue to fail based on overly narrow actor concepts.

11.4.3 Exposure of activities and means to *dynamic conditions of action*

Ecological, economic, political, and social conditions in an actor's life-world are generally *dynamic* and influence the outcome of activities and the actor's stock of means. However, they only become dynamic *conditions of action* in the sense of being relevant to and influencing the actor's strategy of action when they are perceived and interpreted by the actor. In this respect, it is crucial to note that the dynamic conditions of action are perceived as structures, weighted in relation to each other, and interpreted as potentials or limitations for the realisation of activities. In combination with the structure of meanings (see above) they set the framework for decision-making by the actor. However, an actor can only anticipate the influence of the conditions of action on the outcome of activities to a limited degree when contemplating activities. Therefore, perception, valuation, interpretation, and methods of coping with the uncertainty of activity outcomes are at the core of the actor's strategy of action. In the strategy of action, the actor has to strike a balance between adaptation of activities to the dynamic conditions of action and modification of activities to stabilise or improve the conditions of action. This individual and social quest can be seen as a creative process of adaptation and innovation.

These considerations with regard to dynamic conditions of action have decisive implications for inter- and transdisciplinary research for development:

– The creative process of balancing adaptation to and modification of the dynamic conditions of action forms the basis of endogenous development potentials. Priority should be given to assessing these potentials before exploring external support options.

– The proposed concept of dynamic conditions of action prevents research from perceiving these conditions – for example ecological aspects – as unalterably given. Moreover, it entails the perspective that their relevance for action is a function of patterns of perception, valuation, and interpretation by actors. This adds a focus on the effects of dynamic conditions on action to the scientifically dominant focus on their causes.

– Further, it is of utmost practical relevance that the positive or negative impacts of one specific dynamic condition cannot be meaningfully assessed without gaining insights into the importance that actors attribute

to it compared to all other conditions they are exposed to, and without taking account of the strategies of action that determine how actors cope with changing limitations and opportunities.

11.4.4 Embeddedness of meanings of action in *institutions*

The meaning component of action is not a purely individual construct of the actor's. It is co-influenced by social values and norms that provide a frame of reference and rules for evaluating the meaningfulness of actions. This frame of reference is captured in the term *institutions*. The societal context in which the actor is embedded shapes not only the actor's patterns of perception, valuation, and interpretation of the dynamic conditions of action, but also the actions themselves. Institutions determine social standards for the evaluation of particular actions, strategies of action, and outcomes of actions; however, individual actors are only bound to these standards to a certain degree. The resulting interplay between individual and institutional notions of the meaning of action – combined with the analogous interplay involved in the valuation and interpretation of the dynamic conditions of action – lays the foundation for processes of innovation regarding both the activity component and the meaning component of action. The fundamental link between meanings of action and institutions raises the question of how values and norms are constituted, mediated, and enforced. Factors such as social networks, social control, and social hierarchies play a crucial role in shaping action, changes in action, and innovation processes. A focus on innovations is therefore essential for an actor-oriented research perspective.

These considerations regarding the embeddedness of meanings of action in institutions can influence discourses and empirical operationalisation in inter- and transdisciplinary research endeavours:

– Acknowledging that meanings of action are socially and societally contextualised and embedded in institutions promotes self-reflection in research teams regarding their own institutional embeddedness and paves the way for deconstructing prejudice and developing a respectful understanding of actors and societies concerned by the issues under study.

– Focusing on institutions is not only crucial to gaining a better understanding of action and, on this basis, of development; it is also fundamentally important in shaping the science–society interface in transdis-

ciplinary approaches and in understanding and giving appropriate weight to endogenous knowledge and values in this interface.

– Research for development strives for change, at least implicitly if not explicitly. The understanding of innovative action as a result of the tensions between the dynamic conditions of action, outcomes of action, individual meanings of action, and societal values and norms as represented in institutions, opens up avenues to better conceptualising innovation and change in research for development.

11.4.5 The human actor model in a nutshell

Overall, the proposed meta model of human actors stipulates that actions and strategies of action depend on dynamic conditions of action and on social values and norms as represented in institutions, but that the actors themselves do not only react to these influences. Rather, it is their embeddedness in social contexts and their exposure to dynamic conditions of action that defines the degree of freedom with which they continuously balance and try to optimise their specific strategies of action. This process of optimisation can be understood as a creative act which is concretised by the interplay between action and reaction, and concerns all three components – activity, means, and meaning – of action. This basic conceptualisation of actors and action opens up opportunities to promote discourse and operationalisation in inter- and transdisciplinary endeavours that are not confined to the social science representatives in the research teams. In the following section we illustrate this potential based on experiences gained within the framework of the Swiss National Centre of Competence in Research (NCCR) North-South, an inter- and transdisciplinary programme concerned with global change research for sustainable development.

11.5 Application of the human actor model within the NCCR North-South: review and outlook

The NCCR North-South international research programme aims to contribute to more sustainable development (Hurni et al 2011, in this volume). Based on conceptual considerations regarding sustainability, such a contribution necessarily has to be inter- and transdisciplinary, and must generate systems knowledge, target knowledge, and transformation knowledge. In view of the normative dimension of sustainability, emphasis must be placed

on the power of definition of the populations concerned by the issues under study (Wiesmann et al 2011, in this volume). Consequently, sociopolitically contextualised sustainability values, adequate science–society interfaces, and actor-driven transformation potentials are of paramount importance. All this implied from the beginning of the NCCR North-South that the actors and stakeholders involved in the development issues under study must take a central position in the programme's research approaches and selection of research topics. For this reason, the scientific and ontological conceptualisation of actors is highly relevant to this programme.

From the outset, the NCCR North-South deliberately strove for conceptual and methodological pluralism regarding actor-oriented approaches, with a view to promoting critical exchange and mutual learning among the programme's different research groups. In 2006 a major effort was made by representatives of these groups – in particular the authors of this article – to identify and conceptualise common grounds, finally resulting in the human actor model presented above. In addition, the process also increased cohesion within the programme and added value to the different conceptual strands of the participating research groups. The model itself has proven to be useful in guiding and informing inter- and transdisciplinary research for development. Its application has shown to be particularly valuable at the following three levels: 1) its concretisation for specific actor categories, 2) its use as a heuristic tool for formulating research questions and meaningful hypotheses, and 3) its use as an underpinning theoretical framework for more specialised and innovative theoretical and conceptual development. In the following paragraphs we briefly outline some past and planned applications at these three levels.

11.5.1 Concretisation for specific actor categories

Small-scale farmers – or peasants – are a key actor category when it comes to rural development in the global South. The actor model was therefore concretised for peasant actors by assessing specificities for each of the four model components based on the vast existing literature on this actor category. The resulting peasant actor model (Wiesmann 1998, 2008a) reveals that peasants perceive most dynamic conditions of action – ecological, economic, and sociopolitical – as uncertainties and risks rather than opportunities. Combined with limited assets, this leads to complex and multifaceted strategies of action that cover a broad range of spheres of action, including, among other things, multi-variety crop production, mixed livestock husbandry, a

range of off-farm activities, social networking within and beyond contexts, and sometimes also multi-locality. These multifaceted strategies are primarily developed to balance and reduce the risks associated with high uncertainty of dynamic conditions, and to selectively seize opportunities that are compatible with the basic multi-strategies. The rationale of balancing risks by diversifying and selectively building on opportunities aims at optimising utility in terms of sustainable livelihoods, social position, as well as intergenerational preservation of social and material resources. As a result, the fall into poverty or the achievement of greater wealth are primarily reflected in weight shifts within the multi-strategies and the corresponding rationales. The institutional embeddedness of peasants is typically twofold, within the context of a peasant society on the one hand and a globalising national society on the other. This produces tensions and conflicts within livelihood strategies and rationales, but at the same time acts as an important driver shaping action, change in action, and processes of innovation, given their compatibility with the basic multi-strategies. Among others, this peasant actor model, which builds on the actor model presented here, was successfully applied by Ifejika Speranza (2006) and Ifejika Speranza and co-authors (2009) in relation to vulnerability to climate risks, by Eyhorn (2006) in relation to organic farming and cotton production, and by Gallati and co-authors (2006) in system modelling of water allocation among smallholders. Its basic elements partly also found their way into the global assessment of agricultural knowledge, science, and technology (IAASTD 2009; Hurni et al 2009).

11.5.2 Heuristic potential in research for development

In concrete and contextualised inter- and transdisciplinary research, the actor model has proven to be an important heuristic tool to stimulate structuring of research questions and formulation of hypotheses in interdisciplinary discourse. This can be illustrated by the debate on climate change, as the questions of climate change mitigation and, even more so, adaptation to climate change, as well as the related questions of food security tend to dominate the development discourse at the global level.

Considering the question of adaptation to climate change by rural smallholders against the background of the actor model and its concretisation in the peasant model reveals that the assumption of a direct link between changing climate and changing agricultural practices does not hold. Climate change is just one of the many hardly predictable dynamic conditions of action faced

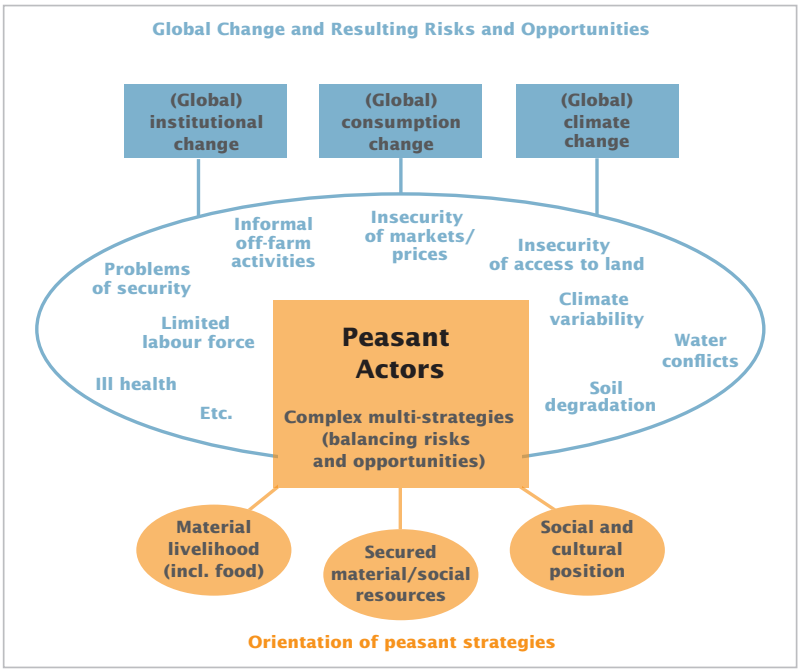

Fig. 2
Application of the human actor model to the question of smallholders' adaptation to climate change.

by smallholders (see Figure 2), and in their perception the amplitude of climate change tends to be overridden by that of climate variability, which they perceive as being high already. This is reflected and taken account of in smallholders' complex multi-strategies of action. We can therefore hypothesise that for the time being, climate change will not lead to major adaptation of smallholder practices. Adaptation processes will begin at the point where the perceived amplitude of climate change will exceed that of climate variability and will thus be seen as an additional risk; however, they will be reflected in weight shifts between the components of smallholders' multi-strategies rather than in modified agricultural practices. In addition, we can hypothesise that over the next decades, changes in global consumption patterns and related changes in global agricultural markets – including resulting international land investments – will change the dynamic conditions of action to a higher degree than climate change itself. As a consequence, promoting adaptation to climate change and rural innovation highly depend on whether and how uncertainties in the dynamic conditions of action faced by smallholders can be reduced. In addition, new forms of local multi-stakeholder organisations could be promoted to reduce tension arising from the

twofold institutional embeddedness of peasants at the local and national levels, which could open up avenues for innovation and adaptation processes, as Kiteme and Gikonyo (2002) have shown in their transdisciplinary work with water users' associations in the Mount Kenya region.

All these considerations have not yet been consolidated in scientific publications, but the questions and hypotheses were derived from applying the actor model to the concrete issue of smallholders' adaptation to climate change. They illustrate the considerable heuristic potential of the human actor model when applied in an interdisciplinary setting concerned with typical questions of development-oriented research.

11.5.3 Potential for theoretical innovation

The human actor model, together with its theoretical and ontological foundations, can form a basis for innovative and more specialised theoretical and conceptual contributions. Several such contributions have been made or are in progress within the NCCR North-South. One of the most innovative and widely recognised contributions by the NCCR North-South is the refinement of the concept of social resilience (see also Adger 2000) proposed by Obrist et al (2007). Although this conceptual framework does not directly build on the actor model presented here but was developed in parallel, the two are compatible and an expression of the stimulating discourse within the overall NCCR North-South. Efforts are being made to broaden the single-actor perspective of the present actor model to create a multi-actor model by systematically addressing the interplay between different actors in all four components of the model. It also appears important to further extend this multi-actor perspective and explore the ramifications of including gender issues explicitly in the model; this will be undertaken in the near future. Further, the actor model has triggered theoretical development regarding the spatial dimension of development, as its translation into space leads to complex overlaps of spaces of action, spaces of concrete manifestations of dynamic conditions of action, and institutional spaces, which have implications for the conceptualisation of regional development (Wiesmann 2008a, 2008b; Messerli and Wiesmann, submitted). Last but not least, the actor model has also informed conceptual considerations regarding sustainable development, as its normative dimension is closely linked to the model component of meanings of action being embedded in institutions (Wiesmann and Messerli 2007; Wiesmann et al 2011, in this volume).

11.5.4 The actor model as a trigger of inter- and transdisciplinary dialogues

The previous three sections refer to concrete and potential outputs from applying the human actor model. Experiences from the NCCR North-South show that in addition to the high practical utility of the model as such, discussing conceptions of actor-orientation in an attempt to find common ground strongly shapes inter- and transdisciplinary research collaboration. In particular, such processes promote reflexivity in intercultural research teams and settings, and help to unravel ethical positions in research for sustainable development. Debates on concepts of action as opposed to simple behaviouristic conceptions of activity, or discussions on concepts of multi-strategies as opposed to simplistic cause-and-effect models have proven to be important in this respect. At the same time, the acknowledgement of meaning in values, norms, and respective institutions, as well as of the plurality of dynamic conditions, which in most development contexts offer few opportunities and pose many risks, is crucial. In research for sustainable development such an acknowledgement promotes the necessary respect towards "knowledgeable and capable" local actors (Giddens 1984), humility in view of the complexity of development settings, as well as scepticism towards the many simplifying solutions offered in development practice. The human actor model presented here is intended to encourage this spirit and to inspire in-depth reflection on and interaction with agents of change, their agency, and their contextuality.

Endnotes

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12 Towards an Analytical Livelihoods Perspective in Critical Development Research

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Abstract

By the early 2000s, the Sustainable Livelihoods Approach/Framework (SLA or SLF) had emerged as a promising and challenging re-orientation of development research and practice. It also inspired our own research, launched around 2002, in the context of the Swiss National Centre of Competence in Research (NCCR) North-South, a research partnership network linking research organisations in the South and Switzerland. The present article reflects on roughly eight years of insights gained into this livelihoods focus. It shows that the framework was initially a crucial facilitator of research cooperation across various disciplines, and that it provided, for example, students at the PhD and Master's levels with a guided approach to analysing the 'real-life' problems and opportunities of rural people. Accordingly, the SLF was partly perceived as a new 'theory' of rural change and development. Gradually, however, we realised that its strength was limited to a kind of checklist for people-centred studies, with an inherent risk of leading to rather encyclopaedic listings of quantitative and/or qualitative data. Thorough debates among researchers involved were instrumental in revising the framework. The outcome was that the SLF indeed helped to focus research on core livelihood issues, but that (i) it is not an analytical framework which, on its own, makes it possible for researchers to grasp the complexity of interrelationships constituting livelihood realities; and that (ii) normatively, it tends to support a specific understanding of rural development along more neo-liberal lines. For a deeper understanding of the challenges faced by people, much more thorough theorising is required, as well as interlinkages with ongoing debates in the social sciences, parallel to – but separate from – the 'development-oriented livelihoods community'. This specifically concerns theories dealing with power, inequality, and everyday social practices. Such re-theorising leads to a challenging livelihoods perspective in critical development studies.

Keywords: Livelihoods; institutions; power relations; critical development studies; theory-led empirical research; South Asia; Central Asia.

12.1 The promises of the Sustainable Livelihoods Framework (SLF)

The 'lost decade' and the 'development impasse' were important development markers of the late 1980s and early 1990s – the first referring to the challenges faced by development practice in overcoming poverty, and the second referring to the problems encountered in research that seeks to explain underdevelopment. As Booth (1994, p 5) observed, both strands dominant in research at that time (modernisation theory and neo-Marxist analysis) were characterised by their search for globally valid explanations which, however, resulted in "grand simplifications […] that were either simply wrong […] or else pitched at a level of generality that made them irrelevant to the most important practical issues facing developing countries". While development practice continued to be dominated by the Washington Consensus, new research perspectives began to emerge in response to the 'impasse', focusing on the "actual workings, as distinct from the formal objectives of abstract representation, of key development processes" (Booth 1994, p 11). These frequently actor-oriented studies (e.g. Chambers and Conway 1992; Long and Long 1992) "revealed the important extent to which changes in the well-being of rural people are the result of complex interactions between individuals and groups endowed with different and changing amounts of knowledge and power" (Booth 1994, p 11). In a slightly different vein, Political Ecology studies shifted their structural neo-Marxist gaze to give more attention to local complexities (e.g. Peet and Watts 1996). New insights into diversity and agency were also gained in some areas of development practice, for example by way of Farming Systems Research (Byerlee et al 1982), Agro-Ecosystems Analysis (Conway 1985), or on a more methodological level using Participatory Rural Assessments (PRAs) (e.g. Chambers 1992).[6]

Though still marginal in the mid-1990s, these approaches gained enormous popularity in the context of growing dissatisfaction with neo-liberal development strategies. A core supportive event was the *White Paper on Development Cooperation* by Britain's new Labour Government in 1997 (DFID 1997), which explicitly announced a refocus on assistance to 'the poor': "We will do this through support for international sustainable development targets and policies which create *sustainable livelihoods* for poor people, promote human development and conserve the environment" (p 6, emphasis by authors of this article). This new policy approach was to be implemented by the British Department for International Development (DFID), leading around 2000 to the Sustainable Livelihoods Framework (SLF, or SLA, for

Sustainable Livelihoods Approach).[7] Introducing a well-designed graphic illustration, the framework emphasises the need to analyse interlinkages between assets (represented as an asset pentagon), livelihood strategies, and the respective outcomes – processes that are mediated through "transforming structures and processes" (renamed later as "policy, institutions, and processes", or PIP) and embedded in a "vulnerability context".[8] Indeed, this graphic illustration (and to a lesser degree the large amount of written explanations) was addressed to a development audience in practice and to researchers eager to learn more about people's real challenges and to design more appropriate strategies of aid and support.

12.2 Working with the SLF

Research within the context of the Swiss National Centre of Competence in Research (NCCR) North-South started precisely at this time in 2002. Having to tackle the challenges of an inter- and transdisciplinary research venture, being positioned at the interface between development research and practice, and having a focus on rural poverty, NCCR North-South researchers perceived the (brand-new) SLF as an exciting entry point. More or less on the basis of the DFID concept, they wrote a paper to inform researchers involved (Kollmair and Gamper 2002) and offered introductory training to prospective students at the PhD and Master's levels. In addition, the framework's links to New Institutional Economics were made explicit (Haller 2002). A series of Master's theses and PhD dissertations were initiated; many of them took up the challenge (called for by the SLF) of holistic in-depth field research to analyse people's assets, livelihood strategies, the outcomes of these strategies, and the influence of the wider context.[9]

In retrospect, and for the purpose of a rough overview of their results, these studies can be positioned on a continuous scale. At one end of this scale we find studies that took the SLF as an explicit entry point, meaning they 'worked through it'. At the other end of the scale are studies that focused on livelihoods but whose research was more influenced by, and centred around, specific theoretical concepts from the social sciences. Between these two extremes are studies that worked to varying degrees with the SLF. From a temporal perspective, we observed a gradual shift of emphasis from a focus on the framework at the beginning of the NCCR North-South programme to guidance taken from social science theories. This goes along with a methodological shift from more quantitative to more qualitative research approach-

es, from the quantification of assets in 'asset pentagons' towards more in-depth analyses of certain aspects of livelihoods, such as intra-household power relations, the social significance of certain assets, or the importance of institutions and policies.

A good number of Master's studies were carried out working explicitly with the Sustainable Livelihoods Framework. Some Nepalese Master's students (supervised by B. Subedi of Tribhuvan University, Kathmandu) dealt with the livelihood strategies of poor and marginal people in urban settings of Kathmandu Valley (street sweepers, cloth vendors, scavengers, street barbers, female tempo drivers, porters, etc.), while others focused on the livelihoods of migrants and the households they left behind, including internally displaced people, and on institutional arrangements of forest use. In northwest Pakistan, Master's students addressed participatory forest management and gendered access to livelihood assets. PhD dissertations with a more explicit application of the SLF included the studies by Shahbaz (2009) on participatory forest management in Pakistan and by Rajbanshi (2009) on livelihood patterns of marginal communities in peri-urban areas in Nepal. Taking livelihood strategies and the practices of internally displaced people in urban Kathmandu as an entry point, Ghimire (2010) adds the notions of "base", "space", and "orientation" from the Rural Livelihoods System framework (Baumgartner and Hoegger 2006), but also takes into consideration social theory (e.g. Bourdieu 1977; Giddens 1984).

In addition, a specific study was done to enhance understanding of rural livelihoods in northwest Pakistan (Steimann 2005), showing the important role of labour migration in household livelihood strategies. Nair and colleagues (2008) researched water insecurity in Plachimada in Kerala, South India, to arrive at a more differentiated understanding of the water use conflicts that emerged over a private bottling plant (owned by Coca-Cola). Similarly, a study by Nair and colleagues (2007) highlighted the livelihood challenges faced by people in a panchayat of Wayanad district, Kerala, due to increased globalisation. Upreti and Müller-Böker (2010) examine the conceptual links between livelihood insecurity and social conflict in Nepalese society from a wide range of thematic perspectives. The contributions of Nepalese academic and non-academic scholars aim to test and criticise the usefulness and explanatory power of the different livelihoods approaches in their field of research or practical experience.

Other researchers made only partial use of the framework's terminology and of its dimensions. Their theoretical and methodological underpinnings were more heavily influenced by debates that emerged explicitly from social science theorising. Such studies include the PhD dissertation by Thieme (2006) on the life of Nepalese migrants in New Delhi. While taking the SLF as a starting point, this study mainly focused on social processes, using Bourdieu's understanding of social capital and social fields (e.g. Bourdieu 1977, 1986), which also formed the basis of a Master's thesis analysing the interlinkages between labour migration and pastoral livelihoods in rural Kyrgyzstan. This approach was then further refined in a comparative study, including findings from Pakistan and Kyrgyzstan (Thieme and Siegmann 2010). Geiser and Steimann (2004) investigated debates on the 'local state' (e.g. Fuller and Harriss 2001) to understand the importance of state actors' own livelihood concerns in the process of implementing development projects. Others used the concepts of 'endowment' and 'entitlements' (Leach et al 1999) to shed light on unequal access to livelihood assets (e.g. Shahbaz et al 2010). Last but not least, Steimann's (2010) research on the changing institutional context in Kyrgyzstan and how it is experienced and handled by pastoralists draws on theoretical debates concerning the recursive relationship between actors and institutions in post-socialist transformation as well as on theories about property rights.

12.3 A critical assessment of work with the SLF

All studies mentioned above produced very important insights into the everyday struggles of people (with an emphasis on rural settings) and how they are influenced by 'the wider context' (e.g. processes of globalisation, politics, development interventions). In addition, they provided interesting methodological experiences with the application of the SLF in research. In what follows, we discuss these insights by first highlighting some very specific strengths and weaknesses of the SLF, as encountered by the authors mentioned. This is then followed by a broader assessment of experiences and concludes with the formulation of four 'traps'.

Most of the researchers reported that the SLF helped them to approach their research themes with an open mind, giving attention to ground realities and 'what people really do' and 'what people really have'. It also allowed people from different disciplines to enter the subject of development studies, and opened up related fields of research. Often, assets and livelihood strategies

provided such entry points. In general, the core attributes of the framework – as summarised by Scoones (2009) – were lauded by the NCCR North-South research team as well, that is, its people-centred, holistic, dynamic approach (to understanding change and complex cause-and-effect relationships), its focus on strengths and needs, its attempts to bridge the gap between macro and micro levels, and finally its endeavour to address several dimensions of sustainability (environmental, economic, social, and institutional).

The researchers involved, however, also mentioned the difficulties they faced while working with the SLF. Such difficulties included, among other things, the often unclear issue of whether certain assets belong to individuals or households (Wyss 2003); the general usefulness of the asset pentagon beyond some rather simple illustration (Wyss 2003); the difficulty of dealing with 'social capital' methodologically and the realisation that social assets do not always represent positive capital (Thieme 2006); the difficulty in attributing certain social dimensions to the PIP box or the framework's 'vulnerability context' (Wyss 2003); a certain risk of the framework being power-blind and not sufficiently highlighting the need to address intra-household and gender disparities[10] (Kaspar 2004); the framework's overall complexity and rather narrow assessment of short-term livelihood interests vis-à-vis long-term impacts (e.g. environmental sustainability vs. economic assets; see Shahbaz 2009); or the emphasis on access to assets and its potential improvement, rather than on explanation of the causes of unequal access (Shahbaz et al 2010). Also, the SLF does not provide ways to incorporate historical aspects; based on past experiences, for example, some social groups may distrust certain institutional arrangements (Shahbaz 2009). Methodological problems arose because of the need to triangulate quantitative and qualitative research methods, and especially to identify significant indicators, for example on social capital, and to categorise heterogeneous households (Steimann 2005).

To sum up, the NCCR North-South provided a very inspiring platform to test the promises of the Sustainable Livelihoods Framework, and, as shown above, many researchers in the programme took up the challenge. Their reports on the strengths and weaknesses of the SLF stimulated an intensive exchange of experience throughout the programme, and especially during a joint workshop held in Kathmandu in late 2006 (Upreti et al 2007). These discussions highlighted that the SLF indeed challenges the still dominant modernisation discourse (based on structural-functionalist assumptions), which perceives poverty in countries of the South as caused primarily by

structural conditions, such as the prevalence of traditional subsistence-oriented production systems, lack of knowledge in facing the challenges posed by globalisation, or the preponderance of restrictive customary and communal norms and values. The SLF attempts to go beyond this pre-conceived and normative ontology by researching 'what poor people actually do', focusing on their daily practices and life experience to understand the conditions that support or hinder them in securing their livelihoods. Following this approach, NCCR North-South research helped to highlight the 'active' role of poor people – rather than portraying them as 'underdeveloped' in the first place. They very often struggle to gain access to resources required for a living, and often skilfully design livelihood strategies under constraints (see also the PhD dissertation by Strasser [2008] on such strategies by rubber smallholders in Kerala). However, many 'traditional' institutional norms or state-imposed regulations hinder them from achieving livelihood security (see also Shahbaz et al 2010). Research identified traditional power relations and the need to critically reflect on the dominant notion of community (e.g. Geiser and Müller-Böker 2003), but also showed the excluding consequences of the laws and the 'development programmes' of modern nation-states (e.g. Shahbaz 2009). Research results also shed light on people's active efforts to overcome these constraints – specifically through civil society organisations – such as endeavours to access state services or to modify state rules (e.g. Geiser 2006).

However, the discussions mentioned above also provided information on the weaknesses of the DFID-based approach. Being mainly designed for straightforward problem mitigation, it emphasises (largely along systems research and thus functionalist lines) poor people's assets and how these assets could be improved by outside interventions. This leads to a tendency to inventory assets and activities without exploring the causes of unequal access. We summarise these main constraints in terms of four 'traps':

The pentagon trap: Indeed, in many of the (early) livelihoods studies carried out within the NCCR North-South the asset pentagon attracted most attention, as it invited researchers to collect data. This, however, often led to a rather encyclopaedic listing of issues by means of pre-structured questionnaires and quantitative analysis, with less attention given to more open-ended curiosity and qualitative analysis that would help to understand the causes underlying the distribution of assets.

The PIP trap: The framework's 'box' of policies, institutions, and processes (PIP) compresses and jams together almost all of what is otherwise labelled as core social science dimensions with respect to understanding of societal processes. It is here that the lack of a clear conceptual focus and stringent arguing becomes most obvious. As a matter of fact, discussions were all too often diverted from these concerns to arguments about whether this or that social phenomenon could be labelled an 'institution', whether it represented an 'organisation' or something else, whether it should be part of PIP or the 'vulnerability context', etc.

The trap of the too-widely-open research question: The SLF invites us to analyse livelihood realities holistically. This is helpful in understanding the complexity of livelihoods. However, and in conjunction with a strong focus on assets, it bears the risk of researchers' losing sight of specific research questions, or becoming overburdened with the need for expertise in many different fields – which may again persuade many to concentrate on 'counting assets'.

The normative trap: This refers specifically to the role of the term "sustainable", which figures so prominently in the SLF title. The debates within our research group clearly showed that we often take the meaning of "sustainable" for granted, and that we often unconsciously judge livelihoods as "sustainable" or as "unsustainable". This carries the risk of passing judgement without having profound, transparent, and theory-based arguments. A normative issue is also linked with the SLF's notion of 'livelihood outcomes': The depiction of people's own views of poverty and/or well-being is an important aspect in understanding rural realities; however, this can bear the risk of overlooking the bigger (structural) issues – the window from where 'local people' see things might be small. On top of this, the above focus on locally perceived causes of poverty together with the researchers' focus on assets can indeed result in a serious neglect of wider issues of power.

12.4 Towards an analytical livelihoods perspective – and normative implications

Based on the insights gained by working with the DFID-inspired livelihoods approach for a considerable period of time, and the many discussions held within our research group, a shift in research approaches became obvious. Although there was acknowledgement of the livelihoods framework as a

highly suitable starting point for the integrated analysis of complex and dynamic local contexts, more and explicit attention was gradually given to institutional dimensions, and thus to core challenges and questions in the social sphere. Although some of the researchers had already embarked on this earlier, the focus gradually shifted *from assets to access, power, and entitlements*. As a matter of fact, it was the rather vague conceptualisation, especially of the framework's categories of social capital and the famous 'PIP box', that urgently required in-depth clarification and theorising. Examples of such theory-led empirical research which maintains a focus on livelihood realities include the more recent studies cited in section 12.2.

In summary, we argue that these conceptual developments gradually find their expression in *an analytical livelihoods perspective in critical development research*. This shift from a more mechanical *livelihoods framework* to a theorised *livelihoods perspective* includes, among other things, three main dimensions:

Focused research questions: This refers to the understanding of specific issues that impinge on the livelihood realities of the poor, such as migration, the role of agribusiness and related policies, or the effects of land reforms – beyond a more general and too 'holistic' (in the sense of encyclopaedic) review.

Focused conceptualisation and theorising: This is the central point, calling for reflection on the very basic analytical notions used in analysing livelihood realities. Examples include livelihood arenas, governance, context, or the changing role of the state. All these notions require a clear and transparent understanding and awareness of their meanings and their roots in social science debates. As mentioned above, realising that the SLF as promoted by the DFID is tantamount to a rather under-theorised checklist, some researchers began to address the enabling or restricting social and institutional context within which people construct their livelihoods, for example by referring to various structuration theories such as Giddens' agency-based approach (Giddens 1984) or Bourdieu's Theory of Practice with its notions of habitus, social field, and capitals (Bourdieu 1977, 1986; Bourdieu and Wacquant 1992; Dörfler et al 2003). Others concerned themselves with more recent strands of Political Economy (e.g. Bernstein and Byres 2001), or linked up with debates on 'the local state' (e.g. Leach et al 1999; Corbridge et al 2005).

Focused research methodology: This refers to the research procedures applied, that is, the shift in balance between quantitative and qualitative approaches, as well as to gender sensitivity and ethical anchoring. By looking into how households interlink rural and urban livelihoods, the established rural–urban dichotomy is also challenged, and concepts that consider the multi-locality and transnational linkages of households are applied and further developed (e.g. Thieme 2008a, 2008b). As a matter of fact, striking an adequate balance between quantitative and qualitative methods remains a challenge.

Policy recommendations and implications: Important debates finally emerged about the role of researchers in developing policy recommendations, along with the need to take a normative stance in this respect. Here, we realised (again) that the research approach selected impinges on the conclusions drawn from research. When applying the DFID's Sustainable Livelihoods Framework with an emphasis on assets and people's livelihood strategies, policy suggestions tend to emerge that advocate a strengthening of people's capabilities to overcome poverty. The framework thus risks further depoliticising the development agenda, in the sense that it diminishes emphasis on structural inequalities in access to resources or to assets. However, when greater attention is given to a critique of power relations and prevailing institutional structures that enable or hinder access to resources, structural dimensions enter into consideration as well, for example leading to critical policy debates about the role of the state or, at the micro level, about the power of local elites to force their ideas of local development upon others. Finally, this impinges on the criteria that are used to define livelihoods as 'sustainable', 'resilient', or 'vulnerable'. Instead of relying on too unspecific or even predefined normative concepts, we need to scrutinise our criteria, making them transparent and informed by the respective theoretical debates.

Endnotes

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[6] Owing to limitations of space, we have mentioned only a few important authors.

[7] For a detailed treatment of the history of the Sustainable Livelihoods Framework, see Scoones (2009) and Solesbury (2003).

[8] See the graphic illustration in DFID (2000).

[9] The present article concentrates on studies undertaken by the NCCR North-South in South Asia and Central Asia; for other studies with a livelihoods focus, see the programme's website at http://www.north-south.ch.

[10] Though the SLF did not explicitly conceptualise the gender dimension, the work of Siegmann and Sadaf (2006) suggests that its flexibility can be utilised to fit gender norms explicitly into the framework as part of the informal institutions that influence access to livelihood assets.

[11] For other important points, see De Haan and Zoomers (2005).

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13 Multi-layered Social Resilience: A New Approach in Mitigation Research

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Abstract

Research on sustainable development tends to focus on risk and vulnerability. This article argues for a shift of emphasis from vulnerability to resilience. It develops a multi-layered social resilience framework emphasising the interactions between enabling factors and capacities operating at different levels of society. Enabling factors help to master threats by facilitating access to and transformation of capitals. Capacities lead social actors not only to cope with adverse conditions (reactive) but also to create responses (proactive) that increase competence and thus create pathways for mitigation. This approach redirects attention from managing risk to building resilience – an important prerequisite for sustainable development.

Keywords: Vulnerability; sustainable development; social resilience.

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13.1 Introduction

While much has been written about the resilience of socioecological systems (Holling 1973; Berkes et al 2002; Folke et al 2002; Schoon 2005; Walker and Salt 2006) and resilience in child development (Garmezy 1976; Werner and Smith 1982; Masten 2001; Luthar 2003; Ungar 2005), the conceptualisation of social resilience remains a neglected issue, especially from the perspective of an actor or practice theory. The present article contributes to filling this gap and suggests a framework for the study of multi-layered social resilience.

A few books on social vulnerability in cities mention resilience in their title (Pelling 2003; Obrist 2006). These and other texts agree that social institutions shaping the distribution of, access to, and use of resources at the household level are key for building resilience. Pelling (2003, p 67) introduces the concept of adaptive potential "to describe actions that utilise social and political assets to enhance local resilience" and emphasises that "with a supportive institutional framework social capital can be transformed into social organisation to build adaptive potential" (Pelling 2003, p 64). Although these ideas remain rather vague, they provide an interesting starting point for further exploration.

Other researchers, like Elinor Ostrom (Anderies et al 2004; Janssen and Ostrom 2006), have focused on agents in resilience research. But she and her colleagues are mainly interested in meta-analysis and have developed agent-based modelling, that is, the computational study of social agents as evolving systems of autonomous interacting agents to test hypotheses of small-scale empirical studies, for instance about the role of institutional configurations and especially trust in building robust socioecological systems.

The aim of the framework we develop in this article is to explore resilience from the point of view of social structuration. How does society structure the resilience of human actors, and how do actors structure resilience in social interaction? This abstract question is of high relevance for mitigation research because self-organisation (Folke et al 2002) is regarded as a constitutive component of resilience. The better we understand processes of social structuration, the better we can plan institutional arrangements that enhance or support self-organisation processes.

After a brief review of closely related approaches to risk and vulnerability, we shift the emphasis to resilience research in ecology and child psychology, highlight converging findings and suggest a set of concepts that are of

analytical and practical relevance for studies on sustainable development and mitigation research. We then trace resilience thinking in sustainable livelihoods research that is informed by the ecological approach and introduce the concepts of 'waves of adversity' and 'layers of resilience'. These discussions prepare the ground for an outline of what social and cultural theory can contribute to resilience thinking in sustainable development and mitigation research. We finally present a new framework for studying multi-layered social resilience and introduce a few case studies that have examined some but not all of the dimensions and dynamics suggested by the framework. First, however, we briefly discuss how we see the relationship between risk, vulnerability, and resilience.

13.2 Risk, hazard, vulnerability, and resilience

In disaster research, risk is commonly conceptualised as encompassing both a hazard (a potentially harming event or agent) and vulnerability (people's capacity to anticipate, cope with, resist, and recover from the impact of a natural hazard) (Blaikie et al 1994). Many studies have investigated risk in poor societies as the likelihood of the scale of damage caused by a given hazard, and found that damage increases with vulnerability. A well-known definition of risk is:

> *The probability of harmful consequences, or expected losses (deaths, injuries, property, livelihoods, economic activity disrupted or environment damaged) resulting from interactions between natural or human induced hazards and vulnerable conditions. Conventionally risk is expressed by the notation* Risk = Hazards × Vulnerability. (UNISDR 2004)

Another strand of research has conceptualised vulnerability as an alternative concept to 'poverty'. The main argument here is that the conventional definition of poverty does not capture the day-to-day reality of people living in developing countries (Chambers 1989). It is formulated in terms of low income or consumption in order to make it amenable to measurement. If people's lived experience is taken into account, additional dimensions have to be considered, such as vulnerability and livelihood. In an often quoted definition, Robert Chambers wrote:

> *Vulnerability is not the same as poverty. It means not lack or want, but defencelessness, insecurity, and exposure to risk, shocks, and*

> *stress. [...] Vulnerability here refers to exposure to contingencies and stress, and difficulty in coping with them. Vulnerability has thus two sides: an external side of risks, shocks, and stress to which an individual or household is subject; and an internal side which is defencelessness, meaning a lack of means to cope without damaging loss. Loss can take many forms – becoming or being physically weaker, economically impoverished, socially dependent, humiliated, or psychologically harmed.* (Chambers 1989, p 4)

Although the disaster research and the livelihoods research strands differ in many ways, what they both have in common is an understanding of vulnerability which includes the dimension of human capacity to anticipate, resist, cope, adapt, or recover from the impact of a hazard. As we shall see, this human capacity is also at the centre of an actor-focused conceptualisation of resilience. One could say, therefore, that studies on vulnerability that investigate the 'coping capacity' – or the related topic of 'survival strategies' – already cover the topic so that there is no need for a new analytical construct like 'resilience'. Or, as others argue, resilience can be seen as the opposite or positive equivalent of the incapacity component of vulnerability. We do not agree with this perspective, but suggest that resilience goes beyond the capacity component of vulnerability. In our view, combining vulnerability and resilience as equivalent concepts leads to a more comprehensive understanding of the underlying social phenomena.

As this discussion shows, it is difficult to draw semantic boundaries between concepts referring to these complex and interrelated social phenomena. Risk, vulnerability, and resilience are analytical constructs and, at the same time, normative concepts which represent values of those who define them. From an actor or practice theory perspective, we are primarily interested in the human capacity to act. If we take resilience rather than vulnerability as an analytical point of departure, we emphasise the positive and prospective connotations of the term "capacity". We think this orientation has potential for understanding social dimensions and dynamics of living with adversity and change. It can further contribute to mitigation research for sustainable development defined as "research that contributes to problem-solving by producing knowledge for decision support and by developing tools to enable stakeholders to initiate mitigation measures and processes and work towards sustainable development" (Hurni et al 2004, p 11). At the same time, we acknowledge conceptual and methodological limitations of the concepts that require continued scientific attention (see Luthar et al 2000).

13.3 Learning from ecology and child development psychology

In studies on global environmental change, resilience has been identified as a multi-dimensional and multi-scale key concept that can facilitate the understanding of various complex interactions among a broad range of social and natural dimensions (Vogel 2006). Definitions of this key concept vary across and even within scientific communities. The Resilience Alliance (www.resalliance.org) defines resilience as applied to integrated systems of people and nature as (a) the amount of disturbance a system can absorb and still remain with the same state or domain of attraction, (b) the degree to which the system is capable of self-organisation, and (c) the degree to which the system can build and increase the capacity for learning and adaptation (Carpenter et al 2001). In child development psychology, common definitions see resilience as referring to "a dynamic process encompassing positive adaptation within the context of significant adversity" (Luthar et al 2000, p 543) or "to a class of phenomena characterised by good outcomes in spite of serious threats to adaptation or development" (Masten 2001, p 228). Research on resilience is aimed at understanding the processes that account for this positive adaptation or these good outcomes in response to adversity.

In ecology, the main objective of resilience research is to gain a better understanding of the dynamics of social–ecological systems. Proponents draw on complex systems theory to investigate how human societies deal with change in linked social–ecological systems and build capacity to adapt to change (Folke et al 2002). They show that social–ecological systems with higher levels of resilience have the potential to sustain development by responding to and shaping change in a manner that does not lead to loss of future options. Moreover, such systems provide capacity for renewal and innovation in the face of rapid transformation.

In child development psychology, most research has been conducted in the United States and in Europe and has focused on resilience as individual capacities, behaviours, and protective processes associated with health outcomes despite exposure to significant risk. Path-breaking longitudinal studies examined children growing up in poverty and multiproblem families, and found that only small numbers developed psychological disorders or behavioural problems. Resilience was embedded not only in personal factors but also in protective-enabling factors, that is, influences like supportive parents, peers, caring non-family adults, or community organisations which fostered the development of attitudes and values to respond competently.

Although there are obvious and important differences between these two strands of research, a number of converging findings can be identified. Resilience is seen as a dynamic process, not as a state (ecology) or a trait (psychology), and may change over time. It is a scientific construct that has to be inferred and cannot be directly observed or measured. Resilience refers to an ability, capability, or capacity of individuals, social groups, and even social–ecological systems to live with disturbances, adversities, or disasters, and "the ability to persist and the ability to adapt" (Adger 2003, p 1). In the ecological strand, resilience is seen as a key to adaptive capacity which has to do with learning, not only on an individual level but also on the level of organisations and networks that store knowledge and experience, create flexibility in problem solving, and balance power among interest groups. From a child development psychology perspective, adaptation results from the interplay of risk factors and the capacities to deal with these risk factors. What is important to note here is that pure risk factors like car accidents do exist, but most factors are actually bipolar (for example, parenting may either be good or bad). Although risk factors are assessed, the emphasis of resilience studies is on protective-enabling factors.

Since resilience is based on judgements about threats, disturbances, or adversities, as well as outcomes, it is a normative concept. An important debate in child development psychology is about who should define what constitutes a threat or adversity, and what is a positive or negative outcome (Luthar et al 2000; Masten 2001). One suggestion is to consider 'positive adaptation' as that outcome which is substantially better than what would be expected given exposure to the risk circumstance being studied (Luthar 2003, p 515).

13.4 Sustainable livelihoods approaches

Resilience thinking is implicit in the sustainable livelihoods approaches. Rather than focusing on the barriers to sustainable development, the sustainable livelihoods approach of the United Kingdom Department for International Development (DFID), for instance, draws attention to people's capabilities, assets, and activities, as well as to transforming structures and processes leading to positive outcomes like more income, increased well-being, or improved food security. While recognising that poor people are always on the brink of extreme insecurity, sometimes falling below, sometimes rising above, the sustainable livelihoods approach "seeks to militate against such insecurity through building up resilience" (DFID 2000, p 1).

In the DFID sustainable livelihoods approach, five livelihood assets play a crucial role in the building of resilience: human capital (ability to work, health, and knowledge), social capital (networks, groups, and trust), natural capital (land, water, and wildlife), physical capital (transport, shelter, and energy) and financial capital (savings and credits). All five assets may be fostered or constrained by transforming structures and processes of society at large.

Drawing on the ecological approach outlined above, Glavovic and colleagues (2003) suggest seeing livelihood assets and transforming structures and processes as a 'livelihood system' that is subject to 'disturbances'. A sustainable livelihood system enables people to pursue robust livelihood strategies that provide 'layers of resilience' to overcome 'waves of adversity'. The aim, then, is to enable people to cope with and adapt to change, and even transform adversity into opportunity.

In every society, people are exposed to a variety of social, economic, political, ecological, and other 'disturbances', and these adversities vary in intensity, scale, location, and character. Living with change is an ordinary human experience, but if change becomes more rapid and wide-reaching, for instance in the process of globalisation and global environmental change, the adaptive capacity of livelihood systems can be overstrained. In such situations, changing circumstances resulting in increased insecurity can be experienced as 'waves of adversity' (Glavovic et al 2003).

Sustainable livelihood systems consist of 'layers of resilience' (Glavovic et al 2003). On the lowest level, individuals can build resilience, for instance, by learning technical skills to cope with or even prevent a 'disturbance'. For a better understanding of individual resilience, we suggest that much can be learnt from the resilience approaches developed in child psychology. Transferred to the sustainable livelihoods approach, this would mean to study individual capacities, behaviour, and protective-enabling processes associated with positive outcomes, like increased well-being or improved food security despite exposure to significant risks. On the next higher levels of livelihood systems, households, social groups, communities, and (public or private) organisations can strengthen their resilience, for example, through collaborative efforts. Resilience may be socially differentiated within and across groups and individuals. On national and even international levels, resilience building on the lower levels of livelihood systems may be fostered through institutions (that is, norms and regulations) that enable people to access private and public services. Resilience building on upper levels may influence

resilience building on lower levels, but measures on one level do not automatically translate to the next lower level. To think of 'layers of resilience' thus draws attention to the interconnectedness of different dimensions and scales in a livelihood system.

13.5 Contributions of social and cultural theory

As already mentioned several times, the concept of resilience and its components is a scientific construct and represents values and goals of those who define them. Social scientists agree and emphasise that researchers have to be sensitive not only to their own representations of resilience, but also to the representations of those they study, especially in milieux and societies the researcher is not familiar with (Douglas 1985; Caplan 2000; Macamo 2003; Macamo and Neubert 2004). This sensitivity is all the more relevant since resilience has to be inferred and cannot be directly observed and measured.

Meanings and practices related to resilience are always embedded in larger social, economic, and political contexts. Current psychological definitions of resilience represent late-twentieth-century Western if not US-American views of human agency (Ungar 2005). Social workers and researchers who follow a humanist or human rights agenda admonish that these definitions may be easily co-opted by proponents of a neoconservative agenda: Why do we need to intervene, if some can survive and thrive? Especially in mitigation research, meanings of resilience have to be negotiated, not only in interdisciplinary but also in transdisciplinary debates involving scientists, social actors representing different interest groups, politicians, and practitioners.

Several approaches developed in social and cultural theory can help to sharpen the analysis of social resilience. Of particular interest are theories of structuration which draw on and go beyond the idea of the social construction of reality (Berger and Luckmann 1966). Structuration theories focus on practice – rather than system or action – and examine the dialectic relationship between human capacity to act (agency, *Handlungsfähigkeit*) and opportunities as well as constraints (structure) shaped by broader economic, political, and social forces (Ortner 1984).

Pierre Bourdieu (1984, 1986), for instance, draws attention to material and non-material resources that determine human agency and distinguishes between three types of capital: economic capital (command over economic

resources, mainly cash and assets), social capital (various kinds of valued relations with significant others), and cultural capital (legitimate knowledge of one kind or another, that is, skills and education). Of special interest to resilience research is his notion of cultural capital. Bourdieu (1986) divides cultural capital into three forms: embodied (personal dispositions and habits), objectified (knowledge and tradition stored in material forms), and institutionalised (educational qualification). Cultural capital, in other words, to a large extent shapes human agency through social experience and practice as well as education. Bourdieu later added symbolic capital (honour, recognition, and prestige), which he sees as power-related resources that influence the ways in which actors can access capitals. Bourdieu underscores that these capitals are continuously transferred and transformed (for example, cultural capital in terms of higher education can turn into symbolic capital).

Although this account simplifies Bourdieu's practice theory, it helps to improve the conceptualisation of social resilience. At the centre of interest is the human capacity to act in view of a threat, but this capacity is structured by – and also structures – material and non-material resources (economic, social, and cultural capital). Power-related resources (symbolic capital) play a particularly important role because they influence not only the capacity to act but also the ways in which actors can access the other three types of capital.

Bourdieu developed his theory on the assumption of social inequality. He introduced the concept of 'social field' to refer to the configuration of social positions held by individuals or organisations. The notion of social field helps to capture the idea that actors have differential packages of capitals and power and that they are differently exposed to the same hazard, and thus face different constraints and opportunities in building resilience. In line with this thinking, the role of access to the capitals in specific social fields defines relationships of domination, subordination, or equivalence among actors. In a nutshell, the concept of social field draws attention to the fact that threats, and consequently also resilience building, occur in specific social fields where actors can access different forms of capital.

Practice or structuration theory seems particularly appropriate for studying resilience in heterogeneous and rapidly changing settings, where not only broader political and structural forces but also climate and environment changes have a direct impact on daily life, and fail to create material and spiritual security for sustaining life (Obrist 2006, p 62). Such circumstances force human beings to fall back on their capacity to structure and restructure social order with reference to the challenges and threats they face in daily life.

13.6 Towards a new framework for social resilience

Based on this brief review of various approaches and also inspired by empirical case studies, we suggest a new framework for the study of social resilience. We define social resilience as the capacity of actors to access capitals in order to not only cope with and adjust to adverse conditions (that is, reactive capacity), but also search for and create options (that is, proactive capacity), and thus develop increased competence (that is, positive outcomes) in dealing with a threat (see Figure 1). Access to economic, social, and cultural capitals is to a large extent structured by power-related symbolic capital. With Glavovic and colleagues (2003) we see social resilience as multi-layered. On each layer, but also across layers, actors are part of a social field that is defined with reference to the identified threat.

This framework sharpens our analytical approach by drawing attention to highly relevant dimensions and dynamics of resilience processes and manifestations. First, resilience depends on the *threat* we examine. An important entry point for an empirical study is thus the questions: Resilience to what? What is the threat or risk we examine? Risk may be environmental (for example, landslides), individual (for example, victim of violence), community-based (for example, threat of eviction), life event type (for example, serious illness or death of close person), or a long-term threat (for example, continuous shortage of food). Researchers have to be explicit about whether they study resilience to a single hazard or to multiple hazards, to recurring, chronic, or seasonal threats, to slow-onset or rapid-onset risks. We further have to assess whether the affected individuals, groups, or organisations are aware that a threat exists, can be tackled, and thus presents not just a danger but also a risk (Beck 1992). We also need to learn about the ways in which they prioritise the various risks they face: Is the threat we consider a priority risk also of relevance to them? The same applies to 'capacity': We have to investigate – not assume – which capacities are regarded as being important in order to develop competence in dealing with threats. It is important to bear in mind that understandings and judgements of risk and capacity may vary between contexts, groups, and actors.

Second, researchers should further specify the *outcome(s)* of interest. Are we looking for generalised well-being, livelihood security, physical or mental health? Who defines these outcomes, and what indicators can be defined to assess or measure them? Since resilience is a process, it may be unstable and not durable.

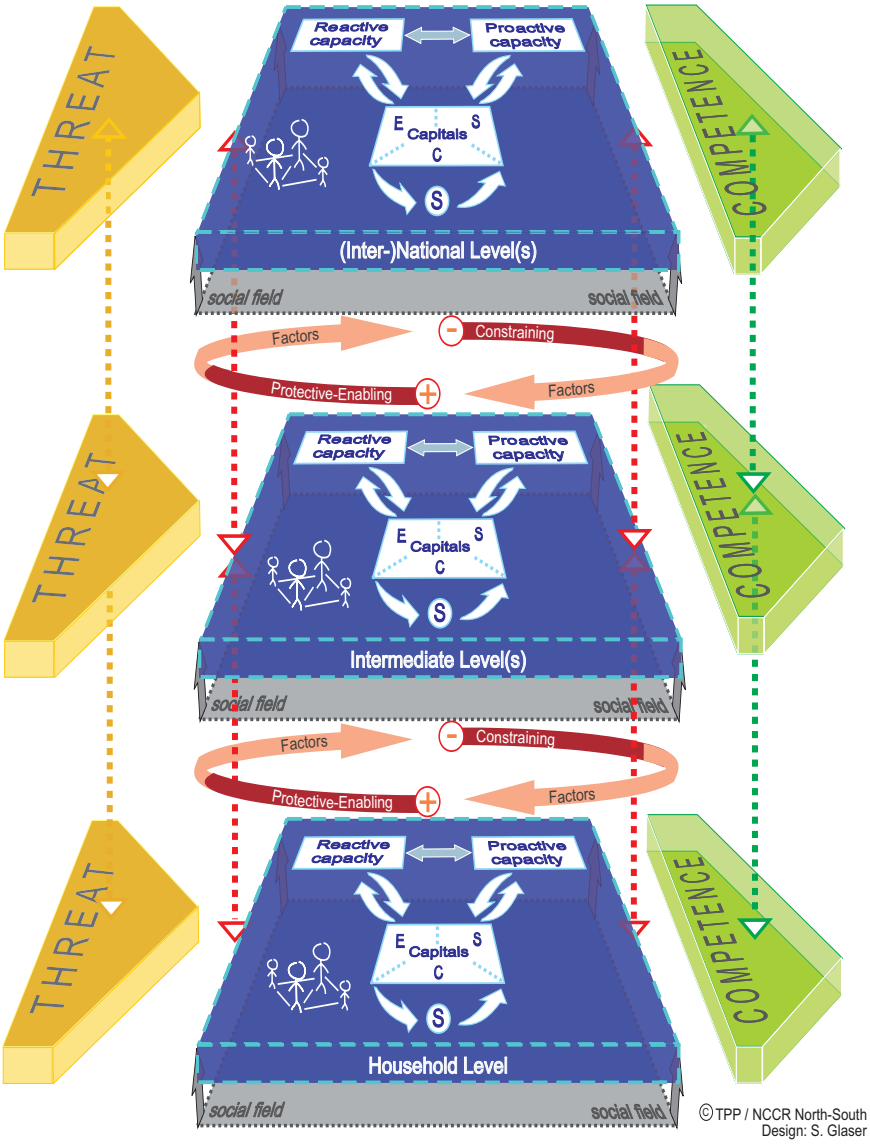

Fig. 1
Multi-layered social resilience framework.

According to this framework, resilience building must be examined with reference to a threat and to the competencies that should be developed to deal with this threat. Depending on the threat we examine, we see different social fields emerge, each of them consisting of a network of actors across various layers of society. These individual, social, and societal actors can build resilience by strengthening reactive and proactive capacities to deal more competently with a threat. To strengthen their capacities, they can draw on and transform economic, social, and cultural capitals and thus increase symbolic capital. The ability to mobilise capitals varies according to actors' position in the social field. (Diagram by Stephanie Glaser †)

Moreover, an individual, social group, or organisation may develop resilience to threats A and B but not to threat C. Following approaches in child psychology (Masten 2001), we suggest focusing on manifested competence in the context of a significant threat or livelihood challenge as an observable and measurable outcome of resilience. This, of course, involves assessing culturally appropriate definitions of competence from the perspectives of different actors in specific social fields.

Third, we suggest distinguishing between the process of resilience building (pre-impact) and the manifestation of resilience (post-impact). Resilience is more than coping in the sense of minimising the consequences of an adversity and managing vulnerability to ensure short-term survival. In fact, people may cope but erode their own resilience by consuming less (for example, food), or spending less (for example, on education), or harming the resilience of others (for example, by stealing). Resilience thus refers to learning from past experience, from one's own experience, and from the stock of experience available in a community or society, and thus encompasses acting before (ex-ante) and not just afterwards (ex-post). Resilience thus involves planning, preventing, evading, mitigating, and avoiding, as well as coping with and reacting to challenging livelihood conditions. It refers to proactive capacities like capabilities to anticipate, change, and search for new options.

It is crucial to note that actors do not act in a social vacuum. Agency is the capacity to affect things and is therefore linked to power (Giddens 1979). Some actors have more and others have less power to influence the ways in which events unfold (Ortner 2006). Drawing on Bourdieu (1984, 1986) we can say: Depending on their social, economic, and cultural capital which is linked to their position (symbolic capital) in a threat-related social field, actors can be exposed differently to the same hazard, and thus face different constraints and opportunities in building resilience. Of critical importance here is access to capitals that are at stake, which defines relationships of domination, subordination, or equivalence among the actors. A related question is how capitals are transferred and transformed, and how these processes can improve resilient trajectories and pathways.

We further have to identify the enabling factors that foster resilience building by facilitating access to social, cultural, and economic capital on the various layers of resilience. The key question here is what others do to support building resilience. Governance is of particular relevance because it shapes regulations, and structures political and social processes. Gender also mat-

ters since it influences values and norms in diverse social fields, and is an essential principle of social organisation. We need to investigate whether enabling factors, for instance public attention and government support, change when a hazard strikes. Another question is whether international, national, and local efforts privilege some individuals, groups, or organisations more, and lead to inclusion of some but exclusion of others. Outsiders often become catalysts of change, not only because of the financial resources they may command, but also when trust in the capability of mastering an adversity has to be restored.

Narrowing the focus on the heart of resilience, the key question is what enhances capacities of individuals, groups, and organisations to deal with threats more competently. In contexts of adversity, diverse capacities are of critical importance, for instance anticipating threats, changing rules and regulations, creating new options, planning ahead, recognising danger, mobilising assets, organising support, and developing new and flexible institutions and organisations. Drawing upon Giddens (1984), the capacity to reflect, discuss, and learn from past experience is an important dimension of human agency. In contexts of adversity, positive adjustment based on a learning process is an essential dimension of resilience that leads to increased competence in dealing with challenging livelihood conditions.

13.7 Conclusion

The framework for multi-layered social resilience developed in this article emphasises the interactions between enabling factors and capacities operating at different levels of the environment and society. Enabling factors protect against and help to master the threats of adversity by facilitating access to economic, social, and cultural capitals that, in turn, transform into and reinforce each other. Capacities enable social actors not only to cope with and adjust to adverse conditions (reactive), but also to create options and responses (proactive) that increase competence, and thus create pathways for mitigating or even overcoming adversity. Such an approach opens new and fascinating lines of inquiry and redirects attention of researchers, policy makers, and practitioners from managing risk to building resilience, an important prerequisite for sustainable development.

Endnotes

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14 From Rhetoric to Concept: Incremental Steps for Mainstreaming Gender in the NCCR North-South

Cordula Ott[1] and Sabin Bieri[2]

Abstract

Committed to sustainable development, the Swiss National Centre of Competence in Research (NCCR) North-South features gender mainstreaming as an essential element of its scientific foundations. Yet, no road maps are available charting predefined "gender routes" (Mukhopadhyay et al 2006), and despite nearly four decades of experience with gender equity on the development agenda, we are still struggling with gender policy and its implementation. Rhetoric often obscures the diversity in, as well as obstacles and resistance to, applying mainstreaming strategies. Gender mainstreaming must be understood as an ongoing process rather than as a goal. This is imperative for the NCCR North-South programme, whose transdisciplinary global-scale research partnership approach calls not only for embracing diverse (and diverging) cultural and scientific traditions, but also for reconciling power imbalances between North and South. This article argues that strategic leverage points for gender mainstreaming are always given insofar as reflection and learning are an integral part of organisational culture. Gender issues that have unfolded in the programme to date highlight that its open framework for mitigating syndromes of global change is suited to integrating and developing a gender approach. A strong bottom-up movement appears to align with the top-down decisions of the programme management. The process may not have led to a coherent gender concept, but it effected concrete institutional modifications, as well as a more sophisticated transdisciplinary research design and culture. Reflection on the NCCR North-South gender route provides insights that can be useful to design gender mainstreaming policies and strategies for the programme itself, as well as for other development institutions.

Keywords: Gender mainstreaming; sustainable development; reflexivity; research; transdisciplinarity; partnership; development discourse.

14.1 The challenges of mainstreaming gender in a multinational partnership approach

The analytical strengths of gender-sensitive research approaches have been demonstrated in countless case studies, while the subversive edge of the gender concept is wearing off (Cornwall 2007). In development policy, gender has been mainstreamed even more comprehensively. This is reflected in key international strategy documents, most notably the UN Millennium Development Goals. Yet, rhetoric often obscures the diversity in, as well as obstacles and resistance to, applying mainstreaming strategies. In the words of Mukhopadhyay and colleagues, "[p]olicies are established but not implemented" (Mukhopadhyay et al 2006, p 120). Development agencies struggle to support gender approaches with an adequate institutional setting while striving to deploy a concerted gender implementation and monitoring procedure (Brody 2009). We argue that these challenges are highly complex in a case such as the Swiss National Centre of Competence in Research (NCCR) North-South programme, which operates in the largely unknown field of transdisciplinarity in global-scale research partnerships. Institutional borders are fuzzy and multiple crossings of institutional, scientific, linguistic, and cultural borders call for participatory processes that embrace diversity in values and traditions, but also have to reconcile power imbalances between the global North and South – as well as within a gendered organisation.

In this article, we reflect upon gender mainstreaming in the NCCR North-South. Our discussion is based on a review of programme reports, publications, milestones, and internal documents[3], tracing institutional changes and conflictive issues related to gender that surfaced in the planning and steering of the programme.[4] We start out on the basis of an understanding that strategic leverage points for gender mainstreaming are always given insofar as reflection and learning are an integral part of organisational culture.[5] In order to give a sense of strategy to the process, we intend to:

1. carve out the elements in institutional planning and steering activities and in organisational changes in the NCCR North-South programme that support the conceptualisation and implementation of gender mainstreaming;

2. detect the underlying conceptual thinking, in order to

3. support the learning process on gender mainstreaming as driven by the NCCR North-South management on the one hand, and the partners' responses and research results on the other.

This implies recognising the international network "as an 'ethnographic object' and redressing gender bias in structures of decision-making and institutional culture" (Chant and McIlwaine 2009, p 229).

While it would be beyond the scope of this article to provide a thorough analysis as described in *Politics of the Possible* by Mukhopadhyay and colleagues (2006) – which is a long-term study detecting the 'gender routes' of a broad range of partners – we nonetheless repeatedly refer to approaches and results presented therein.[6] Focusing on organisational change for better gender mainstreaming in a research programme means, first of all, to demand accountability on gender issues within that programme. However, the present study goes beyond an indicator-based account. It explores the organisational development within the NCCR North-South programme which resulted from interaction between the management, on the one hand, and the researchers working on conceptual issues and exercising research activities in the field, on the other. Indeed, we argue that – intentionally or not – the open framework of the NCCR North-South programme offered space for mutual exchange on gender that influenced the entire programme. Gender mainstreaming is always a contextually sensitive procedure, as there are no road maps available charting predefined pathways. But we agree with Brody (2009, p 67) that "gender mainstreaming is an ongoing process rather than a goal, and that even the tiniest interim changes should be seen as achievements". Thus, we hold that reflection on the gender route taken by the NCCR North-South provides insights that can be useful with a view to designing future gender mainstreaming policies and strategies for the programme itself, as well as for other development institutions.

14.2 Gender entering through the back door

How did gender become an issue in the NCCR North-South? Originally, the programme proposal had to respond to an organisational condition formulated by the Swiss National Science Foundation for all NCCRs: it incorporated elements for the advancement of women in the description of management issues. In fact, the proposal formulated a dual strategy for gender mainstreaming – a nucleus to build upon later (NCCR North-South 2000, p 88). Nevertheless,

early programme papers written by the researchers (for example Hurni et al 2001) and the project proposal itself addressed negative global trends on a rather general level. A call for modesty in view of the complexity of global change shaped the framework for action and channelled ideas towards projects which were seen as creative, innovative, and fostering participatory processes. These priorities seem to have been set at the cost of a stringent theoretical framework for sustainable development, of which gender mainstreaming would have had to be an integral part (Razavi 1997; McIlwaine and Datta 2003; Radcliffe 2006). Yet, the normative character of the overarching concept of sustainability and the demand for contextuality implied a multi-dimensional approach which was enhanced by the plurality of actors in terms of their disciplinary, institutional, and cultural backgrounds. Participatory processes in a partnership framework were taken as a means to focus on mitigation rather than analysis of syndromes of global change (NCCR North-South 2002, p 77). This opened the back door to a research process suited to challenging power differences within and beyond the NCCR North-South, and, by analogy, to gender mainstreaming. Intended or not: A commitment to partnership, transparency, and accountability would necessarily affect the institutional fabric and process design of the programme itself in the long run.[7] This started right from the beginning.

The first indication of gender becoming an explicitly relevant issue in NCCR North-South research was the inclusion of "Great socio-economic and gender disparities" in the list of 30 core problems to be addressed with a view to mitigating syndromes of global change. A shorter list had been sent out for discussion and revision in eight regional workshops in 2001, prior to the launching of the programme, and this addition to the shorter list was maintained (Messerli and Wiesmann 2004). Thus, it comes as no surprise that it was participants from within the NCCR North-South network who pointed out leverage points for gender mainstreaming at the very beginning of the programme. Open discussion – in the partnership regions and at the programme's inaugural conference in Grindelwald, Switzerland, in 2001[8] – clearly showed that gender issues were implicitly present in most core problems, especially where inequalities, vulnerabilities, and hierarchies were at stake. Gender was thus acknowledged early on as an issue of transversal character. Accordingly, participants in Grindelwald advocated gender mainstreaming:

> *There was a strong demand for gender mainstreaming in the working group, and we felt that gender must be better acknowledged in the organisation. The issue of gender should be addressed both at*

> *the organisational level (gender balance) and in project design. Monitoring is necessary to determine whether gender is really a transversal topic everywhere and whether sex-disaggregated data are being collected.* (NCCR North-South 2002, p 86)

The relevant working group suggested linking gender issues to all three syndrome contexts[9] addressed by the NCCR North-South. At the end, it was decided to take up gender as one of four so-called Transversal Themes (TTs) – themes inherent in all contexts (NCCR North-South 2002, pp 92–93).

14.3 The institutional response

The NCCR North-South management centre followed suit by launching two research projects focusing on gender in 2003 and 2004, thus implementing the dual strategy formulated in the project proposal (NCCR North-South 2000, p 88) of (1) promoting the advancement of women within the NCCR North-South network, and (2) elaborating a rationale and ways to enhance research projects focusing on gender. Consequently, a first short-term research project was entitled "Promotion of Gender Equality in a Multidisciplinary and Multicultural Research Context: Development of a Policy Statement and Guidelines for the Advancement of Women in the NCCR North-South" (August 2003 to January 2004). The resulting research report also contained a policy statement and guidelines for the advancement of women in the NCCR North-South (Müller 2004). On this basis, strategies for the advancement of women were applied in the following years. As a kind of surplus outcome, the resulting research report supported the dual pathway envisioned by the management centre combining the advancement of women in the NCCR North-South network with the implementation of gender approaches in research. The NCCR North-South Review Panel[10] concluded as early as 2005 that the programme gave appropriate attention to the advancement of women (SNSF 2005), but that its gender focus needed to be sharpened. The advancement of women has been retained as a priority for the entire life cycle of the NCCR North-South and is internally assessed to be successful, in a technical sense.[11]

A second one-year project entitled "Gender and Sustainable Development" aimed at developing and implementing a gender-sensitive research framework. The objectives seem quite ambitious for a project with restricted assets and a limited time frame: (1) to analyse, compare, and consolidate concepts

and methodologies for gender-sensitive research and practice applied within the NCCR North-South and related to sustainable development; (2) to develop a joint research framework allowing for gender-sensitive research and transfer activities; (3) to implement such a framework by producing, comparing, and disseminating gender-relevant knowledge in different scientific realms and partnership regions; and (4) to contribute to the discussion on conceptual frameworks within the NCCR North-South and to the discourse on gender and sustainable development outside the NCCR North-South. While the internal project report notes that "all these objectives were achieved in the project" (NCCR North-South 2006a, p 12), it is more than doubtful that the project was able to reach the entire NCCR North-South community and establish a common understanding on gender. Nevertheless, the project leaders elaborated conceptual papers to sum up their findings (Premchander 2004; Premchander and Müller 2004).

In terms of research, gender was not pushed as hard as could have been expected from the initial propositions.[12] Gender aspects were mostly absent on the programme level or taken up as an isolated programme component only. In 2003, a first NCCR North-South *Dialogue* paper was dedicated to a review of literature on gender, governance, and environment (Walter 2003), in which the author promisingly conceptualised gender relations as integrated within social and economic organisations and posited gender as a key dimension of analysis. Yet the issue of gender remained 'outsourced' to a dedicated work package only. The fact that this review was written in French may be another reason why it was not broadly acknowledged and taken up as a reference within the NCCR North-South community. Nor was another working paper in the *Dialogue* series (Schubert 2005), which embedded gender in political ecology in the context of development research, taken into account.

More resonance for gender in research was generated within a new programme component, the Partnership Actions for Mitigating Syndromes (PAMS)[13]. PAMS are a crucial element for implementing and testing research results with local stakeholders. Although gender was not explicitly addressed in the PAMS guidelines for Phase 1 (2001−2005), the evaluation report (Haupt et al 2006, p 27) identified 11 of 40 PAMS as showing "some gender sensitivity of one sort or another". Indeed, the PAMS refer only vaguely to gender issues, but the report stated that "non-scientific actors lobbied for enhancing gender balance and age in the trainings" (Haupt et al 2006, p 28) and concluded that

> *[...] for scientific, but even more so, for reasons of social justice, the aspects of gender relations and gender bias deserve to be more seriously and professionally addressed within male-dominated NCCR structures and processes. [...] For the sake of both scientific professionalism and ethical commitment, more consideration needs to be given to gender issues.* (Haupt et al 2006, p 28)

Thus we can conclude that gender was issued as a strong political claim by many PAMS stakeholders. The authors of the PAMS evaluation report emphasised the existence of a bottom-up element but also mentioned the need to encompass gender as a scientific and thus more coherent concept. The management centre responded by supporting the development of guidelines for addressing gender in PAMS in Phase 2 (2005–2009) of the NCCR North-South prepared by Bieri (2007). Furthermore, a *gender core group* was established in order to link research projects. This group created a virtual workspace to facilitate exchange on gender issues. The group also discussed gender issues at Integrated Training Courses (ITCs) and Regional Training Courses (RTCs), which provided space for broader discussion with other programme members as well. Aside from the annual North-South Week in Switzerland and regional planning workshops, these training courses have turned out to be crucial platforms of exchange and debate within the NCCR North-South community, as they regularly bring together young researchers and staff from partner organisations. The strategy for the advancement of women was discussed at the ITC held in Kyrgyzstan in 2003, and the 2004 ITC in Switzerland (Schwarzsee) fostered further elaboration on gender in research and action, with a view to developing a joint conceptual and methodological basis.

To sum up, in Phase 1 of the NCCR North-South multiple strategies were applied and a discussion was launched. This helped scholars concerned with gender and reinforced the momentum of gender mainstreaming within the NCCR North-South. A bottom-up movement appeared to align with the top-down decisions of a programme management that helped to steer gender approaches towards a now more coherent overall research programme. Consequently, a book project was launched in order to take stock of experience with gender in development research. Published in 2006 in the *Perspectives* series, the reader *Gender and Sustainable Development* (Premchander and Müller 2006) was an important milestone in pointing out gender achievements in NCCR North-South research during Phase 1.

14.4 Reflections on a mid-term milestone

However, the achievements mentioned above do not say much about a commonly shared gender concept that evolved or was developed along the way within the NCCR North-South community. We therefore ask: What gender concept do the strategies applied reflect? The 2006 reader presented a range of gender-relevant approaches and corresponding results from research projects. Four conceptual contributions to this reader[14] offer an overview of a general debate on gender and development; but what do they reveal about the status and level of acknowledgement of gender mainstreaming within the NCCR North-South research community?

Opening the conceptual section, Gertrude Hirsch Hadorn advocates gender and transdisciplinarity in research for sustainable development on a general level of research collaboration and research design "without presenting simple general solutions for how to integrate gender in research for sustainable development" (Hirsch Hadorn 2006, p 32). Arguing that transdisciplinary research design and culture is suited to driving a social learning process for problem-solving, she emphasises the importance of integrating the attitudes of people, as well as the conditions shaping their positions – such as gender relations – in the necessary learning process. She states that

> *[...] researchers, practitioners and stakeholders must be willing and prepared for joint learning in transdisciplinary projects. Their challenge is how to focus and structure their project and how to shape mutual expectancies in order to come up with reliable suggestions for real improvements.* (Hirsch Hadorn 2006, p 40)

Hirsch Hadorn thus directs the focus on individuals, who must be prepared to change their practices and, as part of a learning cycle, to implement, monitor, and adapt them constantly. However, she does not present any strategy for how to proceed with gender mainstreaming beyond this individualistic measure of 'changing attitudes'. Most notably, she omits any indication on how a research culture supportive of gender mainstreaming is to be developed. How are attitudes to be changed? What role should or could a research institution assume in changing attitudes? What measures could enhance gender mainstreaming within the organisation, and how can a learning cycle be organised? Such questions are not tackled, creating the impression that researchers are left to their own devices.

Much in the same way, the second article in the reader supports gender mainstreaming in research projects but limits itself to addressing researchers – above all natural scientists – as individuals: "In order to foster its integration into a growing number of research projects, the concept of gender should therefore be communicated more effectively […]. It might be helpful to approach non-social scientists with concrete examples" (Pfister 2006, p 47). In Pfister's argumentation, gender boils down to accounting separately for men's and women's roles: "[…] several examples have shown that understanding the roles of men and women in a particular society *may be* of utmost relevance […]" and "[…] this example clearly shows the great relevance of gender-sensitive approaches *in certain contexts*" (Pfister 2006, pp 53 and 47; emphasis by authors of the present article). Pfister steers clear of more binding demands or a definite strategy. While acknowledging the need to integrate gender issues into the project cycle and emphasising the success of PAMS, she adopts a pragmatic but rather non-committal and, ultimately, mechanical approach.

The third contribution presents some of the major epistemic shifts in the discourse on gender and development, emphasising "that these shifts are not to be framed in chronological sequence but intertwined, shaping programmes mutually and in sometimes contradictory ways" (Bieri 2006, pp 75–76). This opens up some space for the NCCR North-South process of mainstreaming gender to be accepted as one of many strands of progress towards a coherent concept and practice. Pointing out existing tensions in the general discourse on gender and development, Bieri holds that despite some advancements, "the full engendering of the development process remains one of the fundamental requirements for sustainable development. […] This includes the critical inspection of gendered processes in which development agents and programme design and planning are implicated" (Bieri 2006, p 76). Bieri turns the focus on a process and its quality, but once again without considering the implications for the NCCR North-South programme.

The fourth conceptual contribution also concentrates on a general discussion of mainstreaming gender and mitigating gender discrimination and inequality. The authors conclude that "[i]ndeed, while a formal agenda encompassing gender equity is now commonplace in the stated goals of many donor agencies and governments, the translation of these policies into greater resource transfers and inclusion of women in planning and design processes, remains limited" (Premchander and Menon 2006, p 111). Emphasising that work must concentrate on the links from the micro- to the meso- and

macro-levels, all in all, their contribution neither takes stock of the NCCR North-South experience, nor does it chart out pathways for internal gender mainstreaming.

While we would not want to underestimate the overall value of the 2006 reader we conclude that the authors of the conceptual contributions by and large did not reflect on the implications and effects of gender-oriented research results and processes in terms of an institutional account of the NCCR North-South. The transformational power of mutual exchange between the institutional set-up, partnership processes, and research results is not valued. The authors did not take into account existing working papers such as the ones by Walter (2003) or Schubert (2005). Although all authors formulated a strong commitment to gender mainstreaming, none of them delineated a shared concept of gender, and the formulation of technical strategies dominates (see also Bieri et al 2011, in this volume). The focus is placed on why and how research itself should or can be enhanced with regard to gender issues. Not surprisingly, the synthesis and conclusion concentrates on research approaches and researchers as starting points for gender mainstreaming (Müller 2006b).

14.5 More of the same: gender outsourced again

Despite repeated efforts and a number of achievements in mainstreaming gender, we thus have to state that, at the end of the first four-year phase of the NCCR North-South, a coherent concept of gender for the programme's research framework and, more problematically, a debate on it were still missing. It comes as no surprise that the Review Panel, in its assessment of the full proposal for Phase 2 of the programme in 2005 (NCCR North-South 2005; SNSF 2005), criticised the lack of a coherent gender concept. In addition, the Panel proposed a re-conceptualisation of the research theme "Governance and Gender" by taking into account that (1) *gender is a transversal issue*, and that (2) *gender also refers to an issue area sui generis* and therefore should be taken up as such. Consequently, in the Phase 2 Plan (NCCR North-South 2006b), most research projects presented gender issues. However, the Review Panel in its 5th Review Report (SNSF 2006) still criticised a lacking engagement with gender: "Yet, based on the information given in the 5th progress report the panel concludes that gender mainstreaming and gender research as an analytical tool have not been fully exploited." Accordingly, one of the overall recommendations was: "Mainstream gender (again!)"

Efforts were, indeed, intensified, not least due to the Review Panel's continuous insistence. In 2006, a supportive Transversal Package Mandate (TPM) on "Gender and Development" was formulated.[15] Even though the TPM's terms of reference targeted (and continue to target) all programme levels in line with the strategies formulated earlier, emphasis continued to be on education and training of young researchers, mainly PhD students. Subsequently, the TPM issued guidelines for addressing gender in PAMS (Bieri 2007), a training course on gender in development research, and a training module on gender and development. In addition, the strategy for the advancement of women, which explicitly mentioned the need for gender-sensitive research from the very beginning of the programme, was implemented in this respect by offering researchers the possibility of accessing expert gender support.

All of this, however, left the NCCR North-South with insufficient resources to actively support the gender debate as a contribution to the programme's scientific foundations. Thus, it is not surprising that there are no indications of an overarching gender debate. It seems to be widely acknowledged that a gender perspective enhances project results – but gender is perceived to be either 'somehow included' or 'the task of others' (see Bieri et al 2011, in this volume). Only in one out of 46 PhD project summaries presented in the 2008 *PhD Reader* (NCCR North-South 2008b) does the term "gender" show up, it is very rare in the pre-proceedings for the International Conference on Research for Development held in 2008 (NCCR North-South 2008a), and it is completely absent from the vast majority of the regional synthesis themes.[16] This is astonishing, to say the least, as many of the projects deal with rapid transformation processes, social movements, and/or social change, where power and assets are redistributed and the status and roles of women are renegotiated. Gender is likewise missing from conceptual papers written within the social sciences, where one would expect it to feature rather prominently.[17]

In summary, we must state that in the course of the first eight years of the NCCR North-South programme, some progress has been made, but huge gaps remain in terms of a coherent gender concept, as well as a commonly shared understanding of and a joint debate on gender and development.[18] We argue that the NCCR North-South has fallen into the same trap as development agencies all over the world, who, by mainstreaming gender, made it the responsibility of all and thus of no one in particular – and without giving any clear indication of a concept and strategies. Hilary Charlesworth attributes the "lack of bite" of the concept to its fundamentally conservative nature: after all, the idea of mainstreaming is to go with what is considered normal,

to align something to dominant trends. Combined with "institutional inertia and resistance", this has confined the impact of mainstreaming strategies to a rhetorical one (Charlesworth 2005, pp 16–17). To use Andrea Cornwall's catchphrase (2007, p 70), gender underwent a transition from a "buzzword to a fuzzword".

14.6 Incremental steps: strengthening gender concept, policy, and practice

How to proceed based on these lessons learnt? A very basic understanding of gender mainstreaming would be that for an organisation committed to social action, gender equality and the promotion of power-sharing among women and men as a fundamental human right should be not just the concern and responsibility of a few, but rather an essential value held by all members of staff, as well as an integral part of all organisational systems and procedures. We also agree with Razavi (1997), who argues that discursive strategies are always highly context-specific, meaning that strategies adopted by internal advocates in one context are not necessarily the most appropriate ones for other institutional settings.[19] As there is no predefined route to follow, flexibility is needed to chart an independent path by means of an open and iterative process, using already existing components of an internal negotiation structure. Looking back on the first ten years of the NCCR North-South, in this respect the programme did well. We argue that, starting from an initial normative – but vague – commitment to gender mainstreaming, the issue of gender was driven by mutual exchange within the NCCR North-South research community. With a view to maintaining the momentum for organisational development – a further modification of the programme design, setting, and culture – as well as for a better conceptualisation and integration of the gender dimension, we conclude our analysis by reflecting on some strategic and conceptual elements that have a potential for enhancing gender mainstreaming within the NCCR North-South.

14.6.1 Strengthening gender advocates within the programme

While the institutionalisation of a group of advocates within the programme seems a valuable strategy, we found a general statement by Mukhopadhyay and colleagues (2006, p 120) confirmed in the case of the NCCR North-South:

> *[…] gender units […] remain at the margins of the organisations – with little access to power and decision-making, limited author-*

ity, insufficient human and financial resources and overall lack of capacity – whilst often being saddled with the explicit or implicit responsibility for mainstreaming gender in the entire organisation and its programmes.

The gender core group operated from an isolated position, its visibility was limited, and so were effective measures. Gender papers and a largely inactive electronic platform did not allow for consistent tracing of work or results on gender as a transversal theme. The impression prevails that the discussion was driven mainly by the political interest of like-minded internal advocates – a core group within the programme that concentrated on "exchanging, sharing and discussing, especially with actors or researchers willing to contribute" (Müller 2006a, p 27). After most core group members left the NCCR North-South, having completed their research projects (mainly PhDs), the TPM found itself alone without any institutional platform for exchange on gender issues between the programme management, on the one hand, and researchers and partners in the field, on the other. But gender mainstreaming as a task cannot be limited to those already converted. In addition to providing resources to internal advocates, the programme management should become more active in a continuous exchange and join gender-advocating forces within and beyond the organisation.

14.6.2 Broadening the space for an iterative process

The commitment to gender mainstreaming is an essential element of the NCCR North-South's scientific foundations. A transdisciplinary and partnership-based approach to research may entail and encourage openness and flexibility with respect to an iterative process conducive to gender mainstreaming. Yet, this is an underlying quality, and the support and sustained commitment of the steering and management bodies are necessary to keep the cycles of exchange and learning in motion. There must be increased recognition that "the combination of interlocking forms of oppression affects not only how women live their lives but also how they are affected by any given development research project or policy" (Beetham and Demetriades 2007, p 202). Otherwise, gender-sensitive research will hardly increase in quality or in quantity. At the programme level, the following 'technical' strategies are promising for supporting a broad and iterative process to enhance gender mainstreaming: increasing the visibility of gender issues; providing and institutionalising platforms of debate and using them strategically; taking up bottom-up initiatives and disseminating information; further joint development of monitoring and evaluation systems; and providing resources for

gender advocates and formulation of common strategic research projects on gender. Of importance here is the up-scaling of PAMS experiences, especially as in PAMS the external can interact fruitfully with the internal.[20] It is imperative that the importance of gender in transformation processes – notably a setting in which most of NCCR North-South research is done (see also Schubert 2005) – be fully acknowledged by capitalising on recent research activities and by launching joint gender research at the regional level, that is, in the eight regions in the South where research is conducted.

14.6.3 Formulating a programmatic preliminary gender concept and strategies

The fact that there are no road maps charting predefined gender routes does not mean that we can do without guidelines. Although it seems to be broadly acknowledged in the NCCR North-South that a gender perspective is a necessary means for capturing the diversity of stakeholders' knowledge systems, interests, and power positions in joint mitigation approaches, the strategies for *implementing* such a perspective have been less clear. Neither the promotional brochure *Research Partnerships for Mitigating Syndromes of Global Change* (NCCR North-South 2002/2003) nor Vol. 1 of the *Perspectives* series, on *Research for Mitigating Syndromes of Global Change* (Hurni et al 2004), nor the reader on *Gender and Sustainable Development* (Premchander and Müller 2006) – all of them presenting an overview of the NCCR North-South to a broader public – fleshed out how gender was meant to be addressed as a transversal theme. Both of the initial research projects on gender failed to establish a coherent and practicable concept; neither did they reach a wider public within the NCCR North-South community. Therefore, in congruence with programme papers focusing on sustainable development, it is imperative to encourage discussions on gender and further joint development of a more coherent concept for gender mainstreaming. Adopting a preliminary and open position towards it is crucial – even in the form of top-down directive elements.

14.6.4 Going beyond instrumental arguments and strategies

As discussed above, instrumental strategies for individual education and capacity building are at the core of the NCCR North-South. We join Razavi in rejecting indiscriminate criticism of instrumentalism, "since the internal advocate does exercise a degree of choice" (Razavi 1997, p 1112) in deciding what kind of bargaining and discursive strategies are most promising to

bring about change despite the constraints given in a specific organisation. Thus, instrumental elements used in gender training might have perhaps been more effective than a full-scope attempt to mainstream gender in a very composite programme. Nevertheless, the extent to which gender training is really conducive to promoting social change is much debated.[21] As Mukhopadhyay and Wong (2007, p 12) point out, gender education and training is in no way neutral, and they question the thinking behind it: "There has been little critical analysis of the thinking behind gender training, especially the epistemological assumptions underlying what is and is not being trained and how training is being thought about […]." Addressing the knowledge agenda, they continue:

> *So far from being a neutral activity, gender training, in fact all forms of training, reflects a certain understanding of the nature of knowledge, knowledge production and power. By understanding these natures within the context of training, we move towards a better understanding of power and knowledge within development efforts to promote gender equality such as gender mainstreaming.* (Mukhopadhyay and Wong 2007, pp 12–13)

As a consequence, although instrumental strategies 'make sense', we argue that their potential for inducing transformation remains low as long as researchers are not involved in a process of reflection on gender mainstreaming in the institutional context. Thus, opportunities to reflect on epistemological issues – including gender-related ones – within the NCCR North-South are just as important as training.

14.7 Conclusion: A call for gender debate and discourses

We conclude that the NCCR North-South programme started as a research endeavour with a normative, albeit weak, agenda-setting with regard to gender. A 'route' – 'a process to undertake' – was missing, including organisational analysis, the setting of objectives, and approaches to fostering changes (Mukhopadhyay et al 2006). But the participatory processes within the programme proved to be suited for further development of the open framework for mitigating syndromes of global change, and it was bottom-up claims that brought the issue of gender equality into organisational and research practice. This may not have led to a coherent gender concept, but it

effected concrete institutional modifications, as well as a more sophisticated transdisciplinary research design and culture.

What was missing first and foremost, however, was the debate on gender. It is misleading to tacitly assume that partners and staff share the same values from the beginning; neither will they develop a common understanding if epistemological groundings are not discussed, reflected on, and constantly adapted (see Wiesmann et al 2011, in this volume). This is crucial when it comes to gender issues. Furthermore, organisations are gendered, too, and are not immune to gender biases and discrimination; they are therefore in danger of reproducing within themselves what they intend to fight against in the societies they work in (Mukhopadhyay et al 2006). We argue that deepening the gender debate will accelerate the gender momentum within the NCCR North-South. It will create greater ownership of both the gender concept and gender practice among diverse partners and will also enable young researchers to find their own gender route. Gender concepts cannot be formulated and implemented top-down, neither by the programme leaders nor by gender experts. A critical mass of internal advocates and like-minded supporters is necessary to launch the debate and keep it going. As shown in this article, there is a need for high-level input and constant support as well as for a learning process that emerges from 'doing and reflecting on research', that is, the mutual exchange between theory, policy, and practice.

How to nurture the debate? First of all, we propose to take up the strategies outlined above. Having emerged from the NCCR North-South gender process, they will bear fruit if they are related to, and become the object of, a gender debate. Furthermore, we propose to link current debates in gender theory to the debate on scientific foundations within the NCCR North-South, linking up with current discourses on gender and development in the process. This could be achieved, for example, by re-thinking development paradigms and globalisation, by seeking to understand men and women as gendered beings in transformation processes, and by emphasising the inclusion of justice and power in the analysis. Such an analysis would reflect the "realisation that gender mainstreaming is necessary but insufficient for achieving gender equality" (Mukhopadhyay and Wong 2007, p 12). Indeed, we hold that an intensified debate on commonalities of and differences between gender studies and development studies will not only strengthen the NCCR North-South in terms of a critical advancement of its founding principles, but will also qualify its research community to contribute much more pertinently to gender and development discourses.

Endnotes

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[3] Some of the documents used in this study were meant for internal use only and as such are not accessible to the public. They have been listed in the list of references as internal documents.

[4] Partners and partner institutions of the NCCR North-South are diverse and work in diverse regions and cultural contexts. Thus, they apply policies and research practices that are hybrid with respect to gender mainstreaming. Overall, NCCR North-South research results are increasingly gender-sensitive. However, research results are not discussed in this analysis of organisational change; they are examined by Bieri and colleagues (2011, in this volume).

[5] For a discussion of this issue, see also the article by Wiesmann and colleagues (2011, in this volume) on the conceptual meta-framework of the Swiss National Centre of Competence in Research (NCCR) North-South.

[6] The book *Politics of the Possible* (Mukhopadhyay et al 2006) reports on the Gender Focus Programme (GFP) launched by Oxfam Novib in 1995. This programme was designed as a six-year process of organisational analysis, learning, and change with a view to promoting gender equality in the organisations and activities of some 35 partners from seven regions around the world as well as Novib itself. The GFP was premised on acknowledgement of the gendered nature of development organisations and the interrelations between them and the development programmes they design, implement, and monitor. It was also based on the belief that tackling gender issues within the organisation is not enough to promote gender equality in programmes: the organisation itself needs to be changed. The book describes the diverse 'gender routes' developed by the organisations involved.

[7] Mukhopadhyay and colleagues (2006, p 14) mention similar experiences. See also DAW 2005.

[8] The Grindelwald Conference in 2001 represented the official inauguration of the NCCR North-South research programme. Representatives from eight partnership regions – so-called Joint Areas of Case Studies (JACS) – worked together to elaborate the core problems to be addressed in NCCR North-South research with a view to mitigating syndromes of global change. Proceedings were published in 2002 (NCCR North-South 2002). For more information on the structure and bodies of the NCCR North-South, please refer to the programme's website at www.north-south.unibe.ch.

[9] In the NCCR North-South's early terminology (Phase 1), a syndrome context was defined as a region or a set of circumstances in which one or more syndromes (i.e. typical clusters of problems) of global change occur or may potentially emerge. The NCCR North-South explicitly focused on selected syndromes of global change, each of them occurring in one or several of the following three contexts: highland–lowland, semi-arid, and urban–periurban (Hurni et al 2004). Though the focus on contexts and themes was maintained right into the programme's third phase, explicit mention of the term "syndrome context" was gradually abandoned.

[10] The NCCR North-South Review Panel provides guidance and support to the programme in scientific, administrative, and financial matters. It reports to the Swiss National Science Foundation on an annual basis with an evaluation and recommendations for the future. For more information, see http://www.north-south.unibe.ch/content.php/page/id/130.

[11] This means that the programme has been successful in terms of its technical goals – such as taking women on board. More detailed information is included in the annual reporting of the NCCR North-South. The impact of the advancement of women on the programme is not further discussed here, as it has mostly run in parallel to conceptual development of gender aspects.

[12] This does not mean, however, that no gender-sensitive research is conducted within the NCCR North-South. All NCCR North-South partners and partner institutions, as well as the programme's institutional bodies over the three phases of the programme (JACS, WPs, TPs/TPPs/TPMs, etc., see www.north-south.unibe.ch for more information) have their own approaches and research projects; the inclusion of gender-sensitive research depends on the level of individual interest on the part of young researchers, the support provided by their mentors, or driving forces within partner organisations. Yet, the resonance of gender research is low among the whole NCCR North-South research community. The information upon which this statement is based has been extracted from the internally available Annual Reports.

[13] Partnership Actions for Mitigating Syndromes (PAMS): selected small-scale local development projects of limited duration and financial scope that constitute an innovative addition to the research activities of the NCCR North-South. Designed to address specific problems by applying research results to real-life situations, PAMS provide an empirical basis for evaluating the potential of transdisciplinary research in triggering social learning processes. See also Bieri et al 2011, in this volume.

[14] In addition to four conceptual contributions, the reader includes ten case studies presenting research results. These are not discussed here, since the present article focuses on conceptual aspects, whereas gender aspects in research results are discussed in the article by Bieri and colleagues (2011, in this volume).

[15] The Transversal Package Mandate is currently held by the Interdisciplinary Centre for Gender Studies (ICFG) based in Bern, Switzerland.

[16] See Hurni and Wiesmann 2010.

[17] Examples include Hufty's (2007) publication entitled *The Governance Analytical Framework* or Haller's (2007) work on institutions and their links to resource management from the perspective of new institutionalism.

[18] In the Phase 3 Plan (NCCR North-South 2010), gender seems to have gained ground in that it is also taken up in project titles. Various statements throughout the plan express acknowledgement of the fact that people-centred development is only possible when gender perspectives are identified and addressed as integral elements of all areas of work.

[19] Radcliffe (2006, p 525) cites True and Mintrom's (2001) analysis of 100 state bureaucracies across the South between 1975 and 1997, highlighting uneven and site-specific performance in implementing gender mainstreaming.

[20] For a discussion of women as driving forces in globalisation processes, see McIlwaine and Datta (2003), as well as the PAMS case study on picketing movements in Argentina (Cross and Partenio 2005; Freytes Frey et al 2006; Freytes Frey and Crivelli 2007), which is also discussed by Bieri and colleagues (2011, in this volume).

[21] Mukhopadhyay and Wong (2007, pp 11–12) ask questions that are also of relevance to the NCCR North-South training:

> *In particular, we are concerned with a number of questions that this publication can only begin to address: (1) How are the epistemological roots of gender and development related with the knowledge and learning contexts in which gender training takes place? (2) What are the implications of building feminist knowledge and approaches, which ultimately challenge traditional models of power and knowledge, in contexts that value acquisition of knowledge over processes of learning and that subscribe to hierarchical, positivist and didactic knowledge and learning models? (3) What are the assumptions of the links between knowledge, attitudes, behaviours and practice in gender studies and training and how do these mesh with the learning and knowledge contexts of the societies and organisations where such education and trainings occur?*

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15 Access to Livelihood Assets: Inclusion, Exclusion, and the Reality of Development Interventions

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Abstract

In development studies with a focus on livelihoods, assets (also referred to as resources, capital, or means) represent a crucial dimension that influences people's ability to secure a livelihood. Lack of access to land, water, or education often leads to poverty. The present paper summarises research findings from an international research network, the Swiss National Centre of Competence in Research (NCCR) North-South, regarding the crucial relation between such assets and access to them. It brings together insights obtained in studies around the globe as to why some people are excluded from access to assets. Beyond this, it raises the question of whether gaining access is sufficient – does access to resources in itself lead to benefits, or do we need to broaden the concept of access? In addressing these and other questions, this review of NCCR North-South research embeds the concepts of assets and access within a broader understanding of contested political processes, informed by contemporary social science debates. In the concluding section, this enhanced understanding of social realities is contrasted with social analyses underpinning (donor-supported) development interventions.

Keywords: Livelihoods; assets; access; development politics; power relations.

15.1 Introduction

Lack of access to assets (also referred to as resources, capital, or means)[10] that allow people to secure a livelihood is widely considered one of the key issues underlying poverty, preventing people from escaping poverty and leading to resource-related social tensions. Lack of access to agricultural land, to water for irrigating this land, and to schools and health facilities (to build up human capital), as well as lack of access to decision-making processes (due to a lack of social capital, for example) that determine the direction of developments at the local level, is a form of exclusion that hinders the abilities of individuals and households to secure a livelihood. Therefore, enhancing access to existing assets and providing access to new resources has become a crucial field of development intervention for states, civil-society organisations, and donors. Still, current social realities in many countries of the South indicate that while some people are in a position to secure a livelihood, many are not – despite development interventions over several decades. This raises specific questions about the factors that support or hinder people in gaining access to the means they require. Moreover, it is necessary to examine whether development interventions by states and donors are dealing with these issues.

These are core questions for development researchers, and questions with which members of an international development research network, the Swiss National Centre of Competence in Research (NCCR) North-South, are also engaged.[11] The present review brings together some of the insights gained by these researchers into these questions. Within the framework of the NCCR North-South, studies were undertaken in different contexts, with different epistemological approaches, and based on different ontological assumptions. Thus, we are not attempting to make statements that require general validation. Rather, the intention here is to stimulate thoughts and to present issues considered crucial or in need of further analysis.

Many assets are required for a livelihood, of course, and many factors are involved in accessing them. This paper focuses on assets broadly related to land-based income generation, that is, land proper, forests, irrigation water, production inputs, product markets, etc.[12] Moreover, the focus is on the 'grassroots', although issues of access are important at higher levels as well – for example, at the levels of regional or national administrations. Important issues at these levels include access to decision-making (e.g. by civil-society groups) and access to means that enable participation (e.g. the necessary funding to delegate staff to international conferences on agri-

cultural trade).[13] Here, however, we focus on people who are more directly involved in making use of land-based means for their livelihoods, especially (smallholder) farmers, but also rural labourers.

As a basis for this review, we chose the following studies from the vast body of NCCR North-South publications because they address rural land-based issues from social science perspectives (for bibliographical details, see the list of references on pp 328–330):

– South Asia: Research by Shahbaz (2007, 2009), Steimann (2005), and Geiser (2005, 2009) and colleagues in Northwest Pakistan, with an emphasis on forest resources. Research by Nair and Ramakumar (2007) and Strasser (2009) and colleagues addressing livelihoods in and along the Western Ghats.

– Southeast Asia: Research by Epprecht (2009) and colleagues on the spatial dimensions of rural change.

– Central Asia: Research by Steimann (2010) and colleagues on changes in rural livelihoods and specifically the use of pasture resources.

– West Africa: Research by Fokou (2008) and colleagues on resource conflicts in the Lake Chad region, encompassing parts of Nigeria, Chad, and Cameroon.

– Latin America: Research by Fritschi (2007) and colleagues on changes in rural livelihoods in western Mexico. Research by Bottazzi (2008, 2009) and colleagues on land disputes in lowland Bolivia.

Recent research-based insights have influenced the structure of this paper. As is shown in the following section, the initial focus on livelihoods research and related development practices regarding assets has given way to a more critical engagement with the social and political questions of gaining access to a means of livelihood. This, however, calls for addressing the link between (which) assets and (which) livelihoods, with reference to recent debates about the diversity and/or processes of diversification of livelihoods (section 15.3). We then present some insights as to why some people are excluded from accessing land-related means (section 15.4). However, other dimensions have to be given attention as well, such as the question of whether gaining access to assets means that livelihoods will automatically improve (section 15.5). This brings us to the core of the matter: processes of

social dispute and struggles over inclusion and exclusion. Finally, having embedded the concepts of assets and access within a broader social understanding of contested political processes, in section 15.6 we examine to what extent the challenges we identified are taken into consideration in (donor-supported) development interventions.

15.2 A brief reminder of the main debates over assets

Discussions of the role of assets in overcoming poverty are not new, but they have taken different directions over the course of time. In 1976, the International Labour Organisation (ILO) did not use the notion of assets, but defined basic needs as

> *"the minimum standard of living which a society should set for the poorest groups of its people", [including] meeting the minimum requirements for personal consumption of food, shelter and clothing; and access to essential services such as safe drinking water, sanitation, health, education and transport; and "the satisfaction of needs of a more qualitative nature: a healthy, humane and satisfying environment, and popular participation in the making of decisions that affect the lives and livelihood of the people and individual freedoms".* (Stewart 2006, p 15)[14]

Although criticised and subsequently replaced by more production- and income-oriented discourses, the asset-oriented ideas of the basic needs approach persisted, even forming an important pillar of the present Millennium Development Goals and the contemporary emphasis on 'livelihoods' (DFID 2001). Indeed, livelihood thinking combines basic needs issues and production and income concerns. Constructing livelihoods requires a range of resources, that is, social, physical, natural, human, and financial assets. In simple terms, it can be argued that having such assets, and having the skills and knowledge to use them, secures livelihoods and prevents people from falling into poverty. However, this focus on assets has recently been the subject of considerable criticism. Although dominant concepts such as the livelihoods approach of the United Kingdom Department for International Development (DFID) hint at the importance of social and political processes with their famous 'PIP box'[15], these processes are often bypassed. It is therefore important to make a clear distinction between access and property. The physical proximity to a resource is not necessarily sufficient to enhance livelihoods. In recent social science debates, "access" is rather used as "the

ability to derive benefits from things" (Ribot and Peluso 2003, p 153), which implies economic facilities, social capital, political influence, the ability to make decisions, and institutional security (e.g. Sen 1999; Larson and Ribot 2004). In other words, access is the process that brings stakeholders from endowment to entitlement (Leach et al 1999)[16]. It is in this respect that several of the NCCR North-South studies provide new insights.

15.3 The starting point: (smallholder) farmers or multiple income-earning rural households?

Before focusing on issues of access, we need to briefly clarify the concept of assets in rural contexts. As a matter of fact, poverty has long been associated with small and marginal farmers in rural areas, suggesting that agriculture is the mainstay for them and their families. Is there a need to re-visit the notion of the 'smallholder farmer'? Indeed, many NCCR North-South studies indicate that the income composition of rural households goes beyond land-based sources. Here are a few examples:

Steimann (2005) and Shahbaz (2007) showed that although most households in hilly Northwest Pakistan cultivate maize and wheat for subsistence needs, the low land/person ratio does not allow them to produce any surplus for sale. Besides, local markets are very small, while access to regional markets is often limited due to long distances and poor roads. Consequently, most farming households revert to non-farm labour, which is hardly available at the local level, leading to regional, national, or international labour migration, including to the Middle East. Specifically, Shahbaz (2007) revealed that out of 400 randomly selected households, 29% were earning the major part of their cash income from remittances, followed by non-farm daily wage labour (26%) and salaries (15%). Agricultural farming, livestock, and forests were a major source of cash income for only 13%, 2.3%, and 2%, respectively, of the households surveyed. In the northern uplands of Vietnam, household livelihood decisions are strongly influenced by labour endowments and the availability of family land (Minot et al 2006). Larger households with relatively small areas of land tend to have multiple sources of income, with a large share coming from off-farm activities. Such households typically have higher crop values per hectare, but tend to market a smaller share of their farm output compared to households with more land. Good access to markets tends to facilitate specialisation, whereas access to electricity appears to enable households to diversify into non-farm activities. Strasser's (2009) analysis of smallholdings in Kerala, India, shows that

only smallholdings with enough income from rubber trees can sustain their families on the basis of on-farm income alone. All others are forced to diversify their income either on other farms (as labourers) or in the service sector (including outmigration).

NCCR North-South researchers also studied whether the multiple incomes of rural households reflect a recent trend in income diversification, as proposed by Ellis and Biggs (2001) and de Haan and Zoomers (2003), or whether they represent a diversity that has characterised livelihoods for a longer period of time. The first position is confirmed by Fokou's (2008) research in the Lake Chad area in West Africa. Scarce pockets of resources are diminishing as a result of climatic vagaries, demographic pressure, change in relative prices, and institutional change. He observes that the ethno-professional specialisation that prevailed in the past is giving way to more 'opportunistic strategies' adopted by actors to cope with uncertainties. For example, prices for cattle nearly tripled between 1992 and 2001, and prices for fish also nearly tripled between 1980 and 2003. This change in prices led to a diversification of sources of income. More farmers are now investing in livestock, and a new category of absentee landowners made up of traders and city dwellers investing in land and cattle is emerging. Economic changes have also had far-reaching consequences in Mexico: Following the opening to foreign trade and reduced public-sector support, farmers have come to face major difficulties in sustaining their livelihoods when continuing to focus on the cultivation of staple foods such as maize. Market prices for maize decreased by 46% between 1994 – the year in which the North American Free Trade Agreement (NAFTA) came into force – and 2004 (Eakin and Appendini 2008), while the costs of agrochemicals rose steadily. Fritschi (2007) found that farmers increasingly combine maize production with participation in land-leasing arrangements and agribusinesses – mainly from the agave tequila sector – to diversify their sources of income. Furthermore, in view of the massive emigration of young people to urban areas and the United States, these land-leasing arrangements allow elderly farmers to keep their agricultural land productive even though their households face labour shortages. Studies in Vietnam reveal similar trends: Crops and livestock still represent more than half of the household income in the northern uplands. However, out of a total of eight income categories[17], the average number of different income sources per household increased from 4.43 in 1993 to 4.97 in 2002 (Minot et al 2006). In addition, the importance of crop income decreased markedly, while the share of income from wages and forestry increased.

In contrast to these studies, Strasser (2009) – focusing on smallholder rubber cultivators in Kerala – found that diversity of incomes is not a new phenomenon. Such diversity has long been an important strategy for many smallholders. Bottazzi (2009) pointed out that income diversification is not always an option. In lowland Bolivia, market drivers influence indigenous people to switch from a livelihood based on multiple forest products to a livelihood relying solely on unsustainable forest timber extraction. While this creates important short-term incomes, it also initiates an irreversible process of land degradation.

These glimpses of NCCR North-South research show, first, that the importance of land-based assets varies even in the category of 'smallholder farmers', a category for which this importance is often taken for granted. Second, they show that access to non-farm employment opportunities plays an important role in many places, be it as an option to improve livelihoods or as a requirement to survive hard times. Studies in Kerala (Nair and Ramakumar 2007) showed that people are often forced to diversify into lower-return activities due to variations in land ownership. For instance, crop diversification was an adequate livelihood strategy only for households that possessed larger areas of land. For small and marginal farmers and labourers who owned land, crop diversification necessarily had to be accompanied by other options such as accessing non-agricultural employment and migration. For landless labourers, migration was the only livelihood strategy available. Most of the migrants were employed as non-agricultural manual labourers. Migrants' working conditions were often gruelling, and migration was associated with major socioeconomic hardship and complications for family members left behind. Hence the NCCR North-South studies caution us, on the one hand, to take account of the often heterogeneous asset portfolios on which rural households depend, but, on the other hand, not to automatically interpret asset diversification as an expression of efforts to improve livelihoods.

15.4 Inclusion and exclusion: problems of access to assets

The empirical case studies mentioned so far bring us to the question of the dimensions influencing and qualifying access to the range of assets important for rural livelihoods. In neo-liberal terms, access to land, irrigation water, and production inputs depends on the respective markets and an enabling environment. However, a more differentiated analysis of social processes shows that 'access' is embedded in a much broader reality, mediated

through social categories such as class, caste, gender, 'ethnicity', or age – categories that are manifested in norms and value systems, in everyday practices, and in the forms of organisations.

In line with neo-liberal arguments, geographic remoteness from centres of socio-economic activity is often seen as a key factor limiting access. Research in Vietnam, however, shows that although physical proximity to local product markets does have a clearly positive effect on household welfare, access to production inputs and product markets in small urban centres is defined to a larger extent by sociocultural factors (Epprecht et al 2009). Households belonging to ethnic minority groups consistently benefit less from proximity to local markets than households belonging to the ethnic majority population. Similar social realities have also been confirmed by researchers in Kerala, based on village case studies. In the villages surveyed in the district of Wayanad, the relationship between land and social category was crucial. Eighty per cent of the poor households possessed less than half an acre (0.2 hectares) of land. Half of this 80% were almost landless, with less than 0.1 acres (0.04 hectares) of land owned. More than 70% of the poor in the villages belonged to the tribal community of Paniyan (Nair and Ramakumar 2007). In the Lake Chad area of West Africa, access to resources is often contested along lines of ethnicity. In the Logone floodplains, resources used to be held and managed by people from the Kotoko ethnic group, considered as the 'masters of the land' but representing less than 8% of the total population, while Musgum and Arab Choa agro-pastoralists had no property rights. This system remained in place as long as the local elite were able to maintain customary institutions. But with the collapse of traditional management regimes in the 1980s and 1990s as a result of the democratisation process,[18] power changed hands and majority groups (Arab Choa and Musgum) took advantage of this in order to exclude their former masters (the Kotoko) from key resource pockets (Fokou 2008). In the mountainous regions of Northwest Pakistan, access to forests is highly contested between the state and an array of stakeholders (Suleri et al 2008). The state strives to control the forests through its formal institutional arrangements, but customary practices of forest use governed by traditional institutions are also deeply embedded in rural culture. These institutions are dominated primarily by influential persons and/or major tribes. Research by Shahbaz (2007) has shown that people belonging to low-income groups or weaker tribes have restricted access to forest resources and the related formal and customary decision-making mechanisms. Exclusion based on ethnicity is also very common in Bolivia (Bottazzi 2009). During the 1990s the government, influenced by civil society, established a new category of 'collective

land' controlled by indigenous peoples (such as the Tsimane', Mosetene, and Mojeño), especially in the country's lowlands. Around 18 million hectares are now under indigenous governance *de jure*. Still, access remains a problem for indigenous people, as land scarcity in the upper Andean part of the country caused millions of people to migrate to the lowlands, thereby accelerating conflicts over land between whites, mestizos, indigenous people, and Andean farmers. Collective titles given to indigenous peoples become very vulnerable under such conditions.

Thus, NCCR North-South studies indicate that real opportunities to access assets depend on the close interplay between market forces, institutional change introduced by the state, and often enduring and routinised local power relations. Their everyday combinations, and the consequences their interplay entails for the rural poor, however, are very site-specific.

15.5 From endowments to entitlements and capabilities: benefiting from access?

The examples given above vividly document the social dynamics that go along with the notion of access. In recent debates, though, it has even been argued that, in itself, having gained access to assets does not ensure that the people concerned can improve their livelihoods. It is even more crucial that the accessed resources can be used in a productive way, ultimately generating the benefits required by people to secure a livelihood (see especially the entitlements approach in Leach et al 1999). For example, having gained access to land and thus the opportunity to cultivate it is important, but it does not necessarily signify that livelihoods will indeed improve. Though subsistence needs may be covered to some extent, being denied opportunities to access production inputs or product markets will prevent people from obtaining the full benefits of cultivating land.

Our review of NCCR North-South research indicates that this question has not yet received sufficient attention, and few insights are available. Research in post-socialist rural Kyrgyzstan has examined this access–benefit nexus to some extent (Eriksson 2006; Shigaeva et al 2007; Steimann 2010). In the course of a nation-wide campaign to privatise formerly collective agriculture, rural households were endowed with private land and livestock in the early 1990s. However, most small farmers in remote areas still struggle to use their land in a productive way, and many cannot even satisfy their subsistence needs. Why is this the case? On the one hand, land was often dis-

tributed in several small parcels spread over a large area, making cultivation cost-intensive. Due to high transport costs, many households can work a few parcels only, abandoning or renting out the remaining land. On the other hand, the decreasing availability of inputs has lowered agricultural productivity. Seeds, fertiliser, and pesticides have become rare and expensive, while irrigation schemes have not been maintained or operated in a proper way. Moreover, many small farmers lack experience in cultivating land, since most of them worked in completely different areas in the socialist economy. Bottazzi's research (2009) in Bolivia on the security of land rights should also be noted here. It shows the challenges faced by poor people in the context of the state's land regularisation process, which aims to secure access to land and thus give opportunities to users. Indigenous peoples like the Tsimane', Mosetene, and Mojeño from the Beni department to the north of La Paz have received access rights to land which can be described as rights of use. In contrast, migrants from Andean regions have been given private property rights. Such unequal entitlements make indigenous people vulnerable, as they are exposed to various strategies by outsiders who try to seize their rights of use.

The examples given illustrate that in many cases access is enabled or hindered by a range of social relations. Of specific importance is the role played by market forces, state regulations, and local social power relations, with the resulting constraints on the rural poor. The challenge in terms of development then is to seek possibilities for change, that is, ways and means by which factors that deny access can be overcome. As a matter of fact, recent social theory offers several concepts for use in investigating efforts to achieve change. Structuration theory, for example, reminds us of agency, that is, the capability of people to intervene (or to decide not to intervene) in the world (Giddens 1984), and Scott (1985) proposes to research the 'weapons of the weak', just to mention a few. Indeed, the conditions under which people are able to counter structures that exclude them constitute a core research field. While some researchers in the NCCR North-South discuss issues of participation, their approach is often influenced by dominant (and often apolitical) discourses of development practice, rather than more recent theorising in the social sciences that emphasises unequal social relations and the challenges faced by interventions that do not sufficiently take account of power relations. Thus, besides important insights into some fields, our review also shows that the issue of social contestation has not yet been adequately addressed within the NCCR North-South.

15.6 Development interventions

We now know more, though, about the role played by development interventions. Being closely linked to poverty, aspects such as providing assets, enabling access to assets, and the fostering of skills to use assets have been core mandates of developing states and donor-supported interventions since at least the mid-1970s. What light do NCCR North-South research insights throw on states' and donors' perceptions of 'problems' which, in turn, shape their planning? And what are the consequences of these interventions?

Again, we can provide but a few glimpses. Donor-supported interventions in forestry in Pakistan, for example, focused on bringing state forest officials and local people together for joint decision-making. Village-level committees were established, assuming that such committees of 'empowered local forest users' would work hand in hand with the state Forest Department in managing natural forests. Studies showed that, though this was well intentioned and practiced over a period of almost two decades, it did not improve forest management. These studies argued that this was due to core underlying social relations and tensions not being addressed, for example the lack of legitimacy of state interventions in the eyes of many local forest users, or the dominance of the timber mafia nexus between local elites and state officials (Geiser 2005). Well-established customary governance practices are also not taken into consideration by donor-led interventions (Geiser and Shahbaz 2009). Moreover, village committees are often controlled by local elites, and fully dependent on the authority of Forest Department staff (Shahbaz and Ali 2009). Discrepancies between intentions and reality also hinder farmers in accessing development schemes offered by the state in Kerala (Strasser 2009): Farmers with very little land, and thus only a few rubber trees, cannot access government schemes intended to support income diversification because the options offered are too expensive, or because the 'target groups' do not fulfil the requirements for scheme eligibility (e.g. they are unable to provide maps of the land). In West Africa, people in the Waza-Logone region (Lake Chad area) were deeply affected by the severe droughts of the 1970s. Accordingly, in 1979, development actors constructed a dam upstream as well as an embankment along the Logone River for irrigated agriculture. This project, however, led to changes in the flooding pattern, endangering not only pastoralists but also wildlife in the Waza-Logone Park. A subsequent re-flooding project financed by the Dutch government and implemented by the International Union for Conservation of Nature (IUCN) in the 1990s was enthusiastically announced as the return of water (Loth 2004). However, the

accompanying participatory resource management endeavours did not help to secure local people's livelihoods. A cost–benefit analysis for populations in the floodplain reveals that benefits cover only 13% of losses in terms of restricted access to pastures and fishing ponds or damage to crops and livestock by animals from the park (Fokou and Haller 2008). Our final example stems from Mexico: In 1992, a new agrarian law came into force, facilitating the privatisation of community-based land tenure (ejido land). A large-scale land regularisation initiative known as PROCEDE[19] was launched. As a result, farmers were provided with new land rights, such as the rights to rent or sell their plots of land. By 2006, PROCEDE had covered 93% of all Mexican ejidos (Barnes 2009). However, the reform has so far led neither to a more dynamic land market nor to an increase in agricultural productivity (Nuijten 2004). Fritschi's (2007) case study conducted in western Jalisco demonstrates that land rentals are frequent, but not primarily driven by the new land reform. Informal land rentals had already been commonplace before the land titling process started. For example, the landless population had access to the common lands via temporary land use agreements in order to cultivate maize for subsistence. Such arrangements were essential, since about 47% of households in the case study area lacked permanent access to land. With the new agrarian law of 1992, however, landless people came to worry that the ejido would no longer grant them access to the lands they were using. Several farmers also complained that measurement of the farming plots was not carried out with precision and that the maps were faulty, privileging some farmers while discriminating against others. There is even strong evidence that the land titling process initiated by PROCEDE is leading to the (re)emergence of land tenure conflicts.

15.7 Discussion

This paper has presented a review of research done within the framework of the NCCR North-South programme on assets and access to assets. The insights gained highlight a series of crucial issues. One is that although conventional wisdom about rural life based on agriculture is still valid and reflects realities in many parts of the world, rural lives are increasingly characterised by a variety of income sources. Whether this represents a trend or whether, in certain contexts, multiple livelihoods have long been the rule, is a question requiring closer attention. Still, complex rural livelihoods draw our attention to an array of assets that people require or aspire to.

Second, and more important, the findings reiterate and illustrate the social dimension and the importance of analysing it using analytical approaches that go beyond mainstream assumptions about 'the rural', doing justice to, and linking up with, recent debates in the social sciences (e.g. regarding issues of agency and structure, power, and actual everyday practices).

The insights illustrate, third, the heterogeneity of this social dimension. We identified the interplay of market forces, state regulations, and enduring local social relations as key factors determining access to assets or exclusion. The outcome, however, largely depends on local circumstances. These circumstances are also critical as to whether assets can be used beneficially and in such a way that livelihoods can indeed be secured and even improved.

A fourth point concerns local manifestations of the social and political dimensions of access. Examining the importance of ethnicity, income groups, or social caste, NCCR North-South studies clearly show the social construction of access. Less, though, is known about the everyday working of this social construction within specific settings: How do people try to overcome exclusion? What happens in these social arenas of contact between various agents? How is 'power' manifested and how does it 'work'? These are but a few questions that require closer attention.

As a fifth and last point, many crucial insights were gained into the mechanisms of 'development', that is, the interaction between development policies and practices (as designed by state agencies and/or donors) and the real livelihoods of their 'target groups'. Indeed, several researchers point to the discrepancy between policy intentions and livelihood realities – with the 'social dimension' being a crucial link between them. The insights gained raise questions about the extent to which the strategies for development interventions are based on a thorough understanding of everyday realities. The case studies indicate that insights into power structures, unequal social relations, and uneven endowments with bargaining power do not always inform project policies. To what extent do (well-intended) development projects merely scratch the surface?

Endnotes

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[10] In this paper, we use 'assets', 'resources', 'capital', and 'means' synonymously.

[11] For more details on research partnerships within the Swiss National Centre of Competence in Research (NCCR) North-South, see http://www.north-south.ch.

[12] Regarding access to non-farm employment opportunities through labour migration, see Thieme (2006); regarding access to decision-making, see Geiser and Rist (2009).

[13] For an NCCR North-South example involving irrigation, see Luzi (2007); regarding forests in Pakistan, see Rothen (2006).

[14] At the ILO's 1976 World Employment Conference, the objective was set of meeting basic needs throughout the world by the year 2000 (Stewart 2006, p 15).

[15] PIP: 'policies, institutions and processes' (DFID 2001).

[16] Leach and colleagues (1999, p 237) define endowment as the "initial ownership", for instance of land or labour power. Regarding entitlement, they refer to Sen's (1983, p 754) definition of the term as "the set of alternative commodity bundles that a person can command in a society using the totality of rights and opportunities that he or she faces".

[17] The analysis by Minot and colleagues (2006) divides household incomes into the categories "crop", "livestock", "forestry", "fisheries", "non-farm enterprise", "wages", "transfers", and "other income".

[18] For details on this complex process of change, see Fokou (2008).

[19] Programme for the certification of ejido land rights and the titling of urban house plots.

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16 Sustaining a Multi-local Life: Possible Theoretical Foundations for Livelihood and Transnational Migration Studies

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Abstract

An increasing number of people around the world are diversifying their sources of income through migration. In most cases only some members of the family migrate, making their livelihoods multi-local, be it within a country or across international borders. There are two major ways of approaching migration in research: from a livelihoods perspective, on the one hand, and from the perspective of transnational migration and transnational social spaces, on the other. Scholars rarely combine the two. One major criticism of both approaches is that they are not linked to other existing social theories. A theoretical foundation is necessary in order to gain a better understanding of people's access to and use of resources, of the relationship between subjects and society, and of socio-economic dependencies, as well as to be able to extrapolate the results of case studies. The present article addresses this criticism by proposing Bourdieu's theory of practice as a means of filling this theoretical gap.

Keywords: Multi-locality; livelihoods; transnational migration; Bourdieu's theory of practice; South Asia; Central Asia.

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16.1 Introduction

An increasing number of people worldwide are diversifying their sources of income through migration. This mobility in most cases involves only parts of the family migrating, with the result that people's livelihoods take on a multi-local dimension. Scholars have studied this increasing mobility by applying either a livelihoods approach or a transnational migration approach. The livelihoods approach is used to explain the diversity and complexity of the ways in which people make a living. Livelihood strategies are linked to people's social, human, financial, natural, and physical capital (Rakodi 2002). Scholars in transnational migration research (e.g. Glick-Schiller et al 1992; Pries 1999) point out that the intensity of cross-border activities has led to the emergence of transnational social spaces with multi-local geographical links often connecting more than two places. Work, housing, life trajectories, and time horizons span different localities in different states. Both approaches – livelihoods and transnational migration – have been criticised for their lack of social-theoretical contextualisation, as a result of which they do not permit any fundamental analysis of the relationship between subject and society, power relations within a society, and the changes that human mobility effects in power relations (e.g. Dörfler et al 2003; de Haan and Zoomers 2005; Kelly and Lusis 2006). In most studies, researchers consider migrants as one group, one entity, imposing an ideal image of community and celebrating the importance of social networks with reference to the very loosely defined term "social capital". By contrast, both approaches rarely include analysis of unequal power relations in the migration process and within the conflicting networks of migrants and other non-migrating people involved, such as those between or within communities or households, men and women, or different age groups.

Against this background, the present article aims to suggest a more open analysis of migration and its embeddedness in people's livelihoods in order to interlink it with existing social theory. Bourdieu's theory of practice is proposed as one possible means of locating people's livelihoods within wider societal structures and of considering specific migration dynamics, such as the resulting multi-locality of households. A brief explanation of Bourdieu's theory of practice is followed by its application to analyse various dimensions and impacts of migration using empirical examples of labour migration from Nepal to India and from Kyrgyzstan to Russia. The article concludes with suggestions for further research.

16.2 Bourdieu's theory of practice: habitus, capital, and social fields

Bourdieu's theory of practice is a response to the dualism of objectivism and subjectivism and postulates a dialectical relationship between social field and habitus. The social practice of an individual or a social group is analysed as the result of the interaction of habitus and social field (e.g. Dörfler et al 2003). The two main concepts of habitus and social field are supported by ideas such as strategy, struggle, and various kinds of capital, which determine social practices; they are briefly explained below.

Habitus operates at the subconscious level. It is a socially and culturally conditioned set of durable dispositions towards certain social actions, and thus a product of history (Bourdieu 1977, pp 78–87; Bourdieu 1990, p 53). Habitus is internalised and gives individuals a sense of how to act in specific situations, without continually having to make fully conscious decisions. It generates practice and limits people's possibilities at the same time. In Nepal and India, for example, caste affiliation determines social and economic practices. In this way, power relations, hierarchies, and dependencies are ritually justified and manifested in daily activities. Habitus is also reflected in the practices of patriarchal intra-household decision-making structures and gender-segregated labour markets, resulting in gender-selective migration patterns. Women bear the main responsibility for housekeeping and caretaking. The man is seen as the main cash-income earner and consequently it is he who migrates for work. Although these patterns are now changing, women end up with 'double duties' combining income generation and unpaid management of the household.

Capital is accumulated labour and includes all material and symbolic goods that present themselves as rare and worthy of being sought after in a particular social formation (Bourdieu 1986). Bourdieu distinguishes between economic, cultural, social, and symbolic capital. Economic capital comprises goods of monetary value that can be cashed in, such as a house or livestock that can be sold. Cultural capital is the product of intellectual ability or educational qualifications. Social capital consists of a network of lasting social relations. When Nepalis in Delhi use their social networks and mobilise social capital to form credit associations, it provides them with access to financial capital to repay their debts and to finance daily needs (Thieme 2006). Symbolic capital is the recognition and legitimisation of other forms of capital. When migrants in Kyrgyzstan finance costly feasts and gifts, this increases their own honour and reputation. This understanding of capital is quite different from the

notion of capital in the livelihoods approach, according to which not all forms of capital are fixed assets, nor do people simply own different kinds of capital. Ultimately, the form capital takes only receives a value if one enters a social field where it is valued. Capital and power amount to the same thing. Resources are transformed into capital "[...] when they function as a social relation of power – or, in other words, when resources are objects of social struggle" (Navarro 2006, p 17).

Practices, which are generated by habitus, exist in a structured framework and are conceived of as belonging to a social field. Each social field, such as education, politics, the sciences, etc. has its own respective rules and social structures. These structures and principles constitute what is allowed and not allowed within that social field. In order to occupy a particular position within the field, people apply strategies. Strategies are products of habitus and of practices adapted to a social field. They can be seen as constraints, but at the same time they make action possible. The availability of multiple forms of capital conditions the position of an actor in relation to other social actors within a social field (Bourdieu and Wacquant 1992, pp 94–114). The position of an actor in a society and in a social field is never absolute, but always relative. Inequality of and access to resources are the basis upon which each field operates. Power relations are contested and conflicts and compromises are negotiated. Moving from one context to another provides a different framework for interactions, just as, for the people who remain behind, power relations and interactions change within transnational or multi-local social fields.

16.3 Migrants' social practices as a result of the interplay of habitus and transnational social fields

In a receiving country, migrants have to act in different social fields to gain access to employment, shelter, and loans or to remit money. Their different forms of capital are valued differently when they enter new social fields, and power relations change. One example is the social field of the global labour market, which is segmented into sub-fields such as different sectors of work and the informal and formal labour markets. Labour markets in Delhi or Moscow, for instance, can be perceived as additional sub-fields. Employers and customers have their specific demands, and migrants (as jobseekers) become engaged in this social field hoping to use their power to their own advantage.

When migrants enter the labour market, they regularly face problems, such as the fact that cultural capital – education, general knowledge, and abilities – that was important in the rural context of Nepal or Kyrgyzstan, is not valued in the new social fields of the urban (and often foreign) labour market. For example, agricultural knowledge is not important for survival in the city. Migrants in Nepal instead need to know how to ensure security in an urban neighbourhood as watchmen; women have to run a middle-class household as domestic workers (Thieme 2006).

Such examples suggest that moving from one country to another is only one dimension of creating new social spaces. Due to the cultural similarities that exist between Nepal and India, on the one hand, and Kyrgyzstan, Kazakhstan, and Russia, on the other, it can even be argued that the change from a rural, geographically marginalised place to an urban place with access to physical and social infrastructure has the same influence as a change of country (or perhaps a greater one). Moreover, globalisation has contributed to greater restriction and informalisation of economic activities (Bürkner 2005). The majority of individual migrants feel stigmatised by society as 'rural and low-skilled immigrants' in their urban working places. Many internalise and get used to the stigma, which results in low self-esteem and a feeling of being incapable of achieving a higher social position. They are afraid of losing their jobs, feel insecure because of the mismatch between their current jobs and their professional experience and education, and do not know their rights and their options. Migrants tend to accept occupational and wage discrimination, and they hesitate to ask for external help or to organise themselves, which blocks their social mobility at their destination point. As a result, in both India and Russia, male migrants were found to occupy a distinct niche in the low-skilled, informal labour market. In India, many male migrants from Nepal, regardless of caste, work as watchmen and even hand down their jobs from generation to generation (Thieme 2006). In Moscow, Kyrgyz men are 'well-known' for working as street-sweepers. Social and financial capital is essential for migrants to ease their lack of other capital and to find a job. Jobs are arranged by friends or fellow villagers. However, the same social capital can also exclude certain people if they cannot satisfy other preconditions laid down by their fellow villagers in order for them to get a job. For example, among men in Delhi, jobs are often 'bought' from one's predecessor for up to three times the monthly salary. However, this social capital carries no value in other sub-fields of the labour market, for example, when migrants look for higher-skilled and better-paid jobs.

Another reason for migrants' limited social mobility is the fact that they oscillate between at least two worlds. The majority of migrants have part of their families at home. They dream of going back to their home country and never having to leave again, and this has an important influence on how they invest in or sustain their different forms of capital. If they think that they are only going to be working abroad for a limited time, they do not invest in their own cultural capital and choose instead to follow the easiest path, that is, obtain a job through their social networks. Furthermore, they do not build up more social capital but instead remain within their existing social network. They live for years with the psychological burden of being separated from their family members, although some do earn sufficient money and stay away long enough for their family members to join them, whereby the latter gain access to education, basic infrastructure, and chances to earn an income. The family members who remain behind and those who want to return to their village depend on the cooperation of the agricultural community, their caste, patron–client affiliations, and on their neighbours, as well as all other forms of social and symbolic capital, in order to survive in society. This gives us an insight into the heavy psychological burden migrants carry whenever they return to their villages. Most migrants need to go back from time to time so as to be able to cope with living away from their families for most of the year; at the same time they must endure the stress of knowing that if they do not fulfil reciprocal obligations, their support networks and social capital might erode.

The process of migration influences habitus and renders transformation and adaptation both possible and necessary over time and from one generation to the next. In cases where women come from Nepal to join their husbands in Delhi, the men are a source of both financial and social capital. Women respect the traditional patrilineal and patrilocal family networks through which normative expectations, such as kinship obligations, are reinforced. However, while keeping to these patterns, they can gain new economic independence by finding employment through their husbands' contacts, earning their own money, and being able to manage their own financial self-help groups, which can in the long run transform habitus (Thieme 2006).

Linkages between sending and receiving regions are intergenerational and reproduce power relations and habitus. But these can at the same time be transformed and merged with modern patterns. While in the villages traditional elders – men and, in Nepal, the respective castes they belong to – are the leaders, in the cities people who were previously excluded from power have a chance to participate. Examples of this in India are mixed-caste mem-

berships in financial self-help groups or the fact that people work in the same job regardless of their caste. Nevertheless it takes a long time to change social structures, and change does not affect everybody in the same way. Personality and a sense of responsibility, whether for one's own life or as a leader of a group, are important factors in initiating change. Moreover, change does not take place on the same timescale and has different dimensions in sending and receiving regions.

Additionally, other axes of social differentiation such as gender, class, age, or status of migration might influence people's habitus (e.g. Herzig 2006), just as migrants might change their habitus and attitudes, while people remaining behind might not. For example, some migrants who settled in Delhi with their families tried to return to the Far West region of Nepal. Those of lower caste who tried to return to this part of Nepal came back to Delhi again because they felt paralysed by the traditional structures that marginalised them socially and economically in their home villages (Thieme 2006). If migrants earn enough money to invest, they might be tempted to do so in other towns or villages in their home country in order to escape from the conservative environment, weak economy, limited labour market, and lack of adequate social infrastructure such as schools and health care in their home villages. However, migrants often lack the financial capital to invest in land immediately. Therefore, they do it step by step, which leads to an even more diverse pattern of internal and international migration, with one part of the family working and living in the foreign place, one part living on the newly bought land, and yet another part of the family continuing to reside in the original village. Thus, multi-locality becomes an integral part of people's lives.

16.4 Conclusion

There are two major ways of approaching migration in research: from a livelihoods perspective, on the one hand, and from the perspective of transnational migration and transnational social spaces, on the other. Both approaches face the major challenge of enhancing their theoretical foundations. A theoretical foundation is necessary in order to gain a better understanding of people's access to and use of resources, of the relationship between subject and society, and of socio-economic dependencies, as well as to be able to extrapolate the results of case studies. This article proposes using Bourdieu's theory of practice as a means to achieving this goal.

According to Bourdieu, social practice is a result of interrelations between habitus and social field. Habitus is a system of lasting dispositions and internalised behaviour. A social field is constituted by the positions of different actors and the relations between them, for example between employer and employee in a job market, or between persons of different sexes and different ages in the same household. The relations between actors' positions constitute a 'social topography' in which some actors are more powerful than others. No actor's position within a social field is absolute. It is based on whether and to what extent an actor possesses various kinds of capital, be it social, economic, cultural, or symbolic. The key characteristic of all kinds of capital is that they can be transformed into one another through transformation work. However, common to all kinds of capital is the fact that individuals only receive a value for it if they enter a social field where it is valued. Resource access and inequality are at the basis of each social field operation. Individuals will automatically be advantaged or disadvantaged, depending on their background. Therefore, the notion of social field is not only determined by strategies but also by the struggle for a position in the field. Moreover, using the theory of practice also enables us to consider changing power relations between migrating and non-migrating household members or between an individual and his or her community.

Migration affects not only those who migrate but also those who do not, with the latter including both the family members who remain behind and the people living in the receiving area. They all have to renegotiate their positions and needs; this can open up new opportunities but can also reinforce or create new power imbalances. This sheds more light on explanations of how and why migrants and their non-migrating family members may benefit from migration, as well as on what sometimes prevents them from doing so; at the same time, it reveals the interlinkages between sending and receiving regions. Therefore, the theory of practice does not only help to assess the valuation of various forms of capital, but also provides a theoretical background for exploring how such valuations are reached.

Based on the above conceptual thoughts, some suggestions can be made with regard to possible further research. The major argument of the present article is that power relations and dependencies are central to understanding social practice. On this basis, one challenge for further research is to think about and understand these power relations not as fixed resources but as socially constructed resources that require concepts such as habitus and social field to be further operationalised. In order to better understand the relation between

actors and their surrounding society, there is a need to research not only 'the' migrant and his or her household members, but also non-migrating people who are affected by migration through the fact that they live in the receiving place. Furthermore, it is important to consider migration as only one category of research amongst many – it is always combined with other categories such as gender, age, and ethnicity. All of them are fluid and only in-depth analysis of power relations can reveal which category or categories are important for certain social practices. Given the increasing incidence of multi-local households, empirical research has to be multi-local as well. A complete record of migration patterns could serve to reveal the possible linkages between internal and international migration as well as the linkages between different income sources in cases where, for example, remittances fund the purchase of land for agriculture and livestock breeding, small business creation, or education. It could also give us an insight into how power relations between people change.

Endnotes

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Part IV
Tools in Research for Sustainable Development

17 System Dynamics in Transdisciplinary Research for Sustainable Development

Justus Gallati[1] and Urs Wiesmann[2]

Abstract

Problems in research for sustainable development are often complex, ill-defined, dynamic, and intersectoral, calling for a transdisciplinary approach, that is, an approach that enables researchers to both cross disciplinary boundaries and interact with stakeholders from society. Transdisciplinary research for sustainable development, however, faces specific challenges or 'traps', in particular the 'ideographic trap' and the 'theory trap', which are rooted in the fact that this type of research is necessarily bound to a specific context. We argue that system dynamics complies with the majority of epistemic requirements of transdisciplinarity and, as a consequence, is a valuable instrument for transdisciplinary research. Moreover, the use of system dynamics may offer genuine contributions to overcoming the above-mentioned traps. Indeed, system dynamics has a potential for generalisation, making it possible to overcome the 'ideographic trap'; and a system dynamics model necessarily embodies a (causal) theory of the explored system. Using a case study aiming to improve understanding of collective irrigation management in Kyrgyzstan, we illustrate how the use of system dynamics helped to deal with the complexity of the problems under research, while also enabling participation by involved stakeholders on the one hand, and integration of their knowledge and vision of sustainable development on the other. We summarise the generalisable and theoretical findings that also emerge from the case study. Finally, we conclude that system dynamics could be used more frequently in transdisciplinary research, in particular for participatory analysis of dynamic, complex problems and the development of options to overcome these problems.

Keywords: Transdisciplinary research; system dynamics; research for sustainable development; modelling; collective irrigation management; Kyrgyzstan.

17.1 Introduction

Societally relevant problems dealt with in research for sustainable development are often complex, ill-defined, dynamic, and intersectoral, calling for a transdisciplinary approach (Kates 2001; Wiesmann et al 2008), that is, an approach that enables researchers both to cross disciplinary boundaries and work with involved stakeholders (Hirsch Hadorn et al 2008; Ngana et al 2010). In particular, methods and instruments are required to analyse and anticipate dynamic pathways that a complex system may follow, as well as to make explicit the different viewpoints of the stakeholders involved and integrate them (Agrawal 2001; Clark et al 2004; Elzinga 2008).

In the first part of the present article we argue that system dynamics as a modelling approach for the analysis of complex dynamic systems (Forrester 1961) meets a considerable number of epistemic requirements for transdisciplinary research (Wiesmann et al 2008), and that, as a consequence, system dynamics is a valuable instrument for transdisciplinary research. System dynamics is open to incorporating knowledge from different disciplines as well as various forms of knowledge held by different stakeholders (Cassel-Gintz 2004). As such, it enables integration, one of several conditions for transdisciplinary research (Pohl and Hirsch Hadorn 2007).

In the second part, we show that system dynamics may provide genuine contributions to transdisciplinary research for sustainable development. Indeed, by analysing the causal structure of a problem in a specific context, a system dynamics study may provide *generalisable* knowledge that can be used in other contexts. System dynamics therefore helps to overcome the 'ideographic trap' that researchers face in research for sustainable development, that is, the tendency to consider that each case is unique and generalisation is impossible (Wiesmann and Messerli 2007; Krohn 2008). Moreover, as a system dynamics model embodies a theory of the problem to be studied, it provides a means of *theory building and theory testing* related to an observed behaviour in a specific context, thus contributing to overcoming the 'theory trap' – that is, the tendency in research for sustainable development to miss opportunities offered by innovative disciplinary theories (Wiesmann and Messerli 2007).

We illustrate how system dynamics contributes to overcoming these traps by referring to a system dynamics study of collective irrigation management in Kyrgyzstan (Gallati 2008a, 2008b). The case study used system

dynamics to provide, among others, a dynamic feedback model that enabled researchers and stakeholders from society to analyse the conditions under which successful and unsuccessful cooperation may result. Potentials and limitations of this approach with regard to overcoming the above-mentioned traps are discussed.

17.2 Transdisciplinary research

Transdisciplinary research is understood here as research that "addresses the knowledge demands for societal problem solving regarding complex societal concerns" (Hirsch Hadorn et al 2006). This implies cooperation within the scientific community, referring to and integrating a variety of disciplines, and a participatory research design. The concepts of transdisciplinary research and research for sustainable development are closely related; the two terms are sometimes even used interchangeably. Thus transdisciplinary research can be considered a type of research needed to meet knowledge demands for sustainable development (Scholz et al 2006).

Transdisciplinary research takes into account the complexity of the problems at stake, the diversity of perspectives with regard to these problems, the tension between contextuality and generality, and the value dimension of research for sustainable development. Within a transdisciplinary research process, it is necessary to i) grasp (and reduce) the complexity of a problem, ii) take into account the diversity of real-world and scientific perceptions, iii) link abstract (general) and case-specific knowledge, and iv) take into account multiple social goals and conflicting values (Pohl and Hirsch Hadorn 2007). Methods applied in transdisciplinary research should follow these principles and, in particular, should provide a potential for integration. A comprehensive analysis of the epistemic requirements for transdisciplinary research has been undertaken by Wiesmann and colleagues (2008) and is summarised below in Table 1.

17.3 System dynamics as a potential instrument for transdisciplinary research

System dynamics as an approach to understanding and analysing complex dynamic systems originated in the late 1950s (Forrester 1961) and has been applied since to numerous problems in society, management, and ecology

(Ford 1999; Sterman 2000) in problem-oriented research. Later, participatory modelling (Vennix 1996) and modelling for learning organisations (Morecroft and Sterman 1994) came into the focus of the system dynamics method, leading to a comprehensive reflection on process design and valuation (Pidd 2004).

As a modelling approach, system dynamics relies on three constituents: the concept of feedback loops, computer simulation, and the notion of 'mental models' and participatory involvement of stakeholders. System dynamics claims that a system can be described by state variables and influencing actions, which, in turn, change the state of the system (Lane 2000). These feedback loops involve processes of accumulation and drainage, causing delays and non-linearities in the system.

Computer simulation, as the second element, is needed to assist humans in capturing the inherent dynamics of a feedback model. It has been shown that although humans can conceptualise feedback loops, they lack the cognitive capability to deduce the consequent dynamic behaviour without assistance (Sterman and Sweeney 2007). Computer simulation is essential in particular for uncovering unanticipated side-effects (Sterman 2000) and counter-intuitive behaviour.

The third element of system dynamics, finally, has to do with the involvement of the so-called 'problem owners' (i.e. stakeholders) in the modelling process. It has been recognised that most important information about social situations is held only as 'mental models' and not in written form (Forrester 1994). These mental models, which are the basis of organisational decision-making (Lane 2000), are complex and subtle, involving hard, quantitative information as well as more subjective or judgemental aspects of a given situation. To elicit these aspects and to stimulate learning experiences that may gradually change mental models, allowing to better manage the system, the modelling process has to be designed in a participatory way. Building on these traits, system dynamics has the potential to be used in participatory decision-making and decision support (Van den Belt 2004).

As a consequence, system dynamics studies are focused on understanding, not on prediction. The goal of a system dynamics policy study is to understand those interactions in a complex system that are leading to a problem, and understand the causal structure and dynamic implications of policy changes intended to improve the system's behaviour (Richardson 1991).

A model offering a plausible representation and hence explanation of an observed behaviour is considered to embody a theory of these phenomena (Lane 2000). A system dynamics model thus belongs to the category of causal, theory-like models, which – contrary to purely correlational models – are aimed at illustrating and explaining system behaviour by unravelling causal relations (Barlas 1996). In this process, explicitly addressing, illustrating, and discussing causal relations can form an important element of participatory negotiations in a concrete problem setting (Cassel-Gintz 2004).

Building on the characteristics of system dynamics outlined above, we show in Table 1 that system dynamics complies with most requirements of transdisciplinary research and, consequently, is a valuable candidate for the 'toolbox' of transdisciplinary research methods (Scholz and Tietje 2002; Bergmann et al 2010). The requirements are formulated according to the propositions on transdisciplinary research advanced by Wiesmann and colleagues (2008).

Having shown that system dynamics is a possible instrument for transdisciplinary research, we want to emphasise that there are also other integrated systems-modelling paradigms to investigate complex dynamic problems. Among them, complex adaptive systems or multi-agent systems, where a large number of individual components (or agents) interact and adapt (Holland 2006), have recently received growing attention and have been applied to numerous problems in research for sustainable development (Janssen 2002; Parker et al 2003; Bousquet and Le Page 2004). This is not the place for extensively comparing system dynamics with multi-agent systems. We consider these two paradigms as complementary: while system dynamics focuses on an aggregate system level, (possibly) embodying a high level of feedback complexity (Forrester 1994), the multi-agent systems approach focuses on a micro (agent) level, with macro (systems) properties emerging from agent interaction at the micro level.[3]

17.4 How system dynamics helps to deal with the 'ideographic' and 'theory' traps

Beyond this general compliance of system dynamics with the epistemic requirements of transdisciplinary research, system dynamics can make genuine contributions to sustainability research in at least two ways. We argue that these contributions relate, first, to the potential of system dynamics for

Table 1

Compliance of system dynamics (SD) with the epistemic requirements of transdisciplinary research (TR). Figures in brackets refer to the propositions on transdisciplinary research advanced in Wiesmann et al 2008.

	Transdisciplinary research (TR)	**System dynamics (SD)**
Scope and relevance	Complex problems in the life-world (2)	Complex, messy (ill-structured) problems
Knowledge forms	Systems knowledge providing evidence for empirical questions (4) Target knowledge (4) identifying practices and goals better suited for achieving sustainable development Transformation knowledge about how to change existing practices (4), learning, and experimental implementation	Causal explanation (theory) of the system consistent with observed reference modes of problematic behaviour Policy analysis stimulating learning processes regarding the system's behaviour Simulation-supported interactive learning environments enabling virtual implementation
Sources of knowledge	Relevant bodies of knowledge are determined during the research process (4), including knowledge produced in societal fields as well as scientific knowledge (1).	Modelling refers to different sources of knowledge identified in the course of the process: mental database (mental models), written database, and numerical database.
Contextuality and generality	Shaped by concrete problem contexts, results are basically valid for these contexts. Generality is aimed at by providing transferable insights, models, and approaches; transfer to other contextual settings requires careful validation and adaptation (5).	The modelling process seeks to solve a concrete problem and therefore has an operational (contextual) focus. Generalised ('generic') models can be transferred and adapted to other contexts if the causal mechanisms and the observed modes of behaviour are the same.
Process	Recursive processes (3)	Iterative modelling process

generalisation, and second, to the fact that a system dynamics model embodies a (causal) theory of the system. Due to these characteristics, system dynamics may help to overcome the so-called 'ideographic' and 'theory' traps in research for sustainable development (Hurni and Wiesmann 2004; Wiesmann and Messerli 2007).

As a normative process which, as such, involves the setting and prioritising of values, sustainable development is bound to concrete societal contexts. Each of these contexts provides a unique case, shaping not only the value focus but also the system definition. This characteristic of sustainability sets

Design and management of research process	Perspectives and knowledge of various disciplines and stakeholders are to be integrated from the beginning (8). The participatory process has to be carefully structured to enable mutual learning (7); a balance needs to be found between phases of collaboration (with defined output) and (multi)disciplinary contributions (10).	Perspectives and knowledge of the stakeholders (mental models, problem identification) are to be integrated from the beginning. The participatory process is to be carefully structured with regard to knowledge elicitation, phases, roles, and outputs.
Values and uncertainties	Dealing with values and uncertainties – a core problem of TR – requires a mutual learning attitude with sufficient time allocated, broad ownership, and reflexivity of the process (9).	SD claims to provide a method for a transparent discussion of the individuals' perspectives (including values); uncertainties (with regard to causal structure and data) are taken into account by analysing alternative formulations.
Evaluation, quality control, and validation	Quality control includes process design (integration and collaboration of disciplines and stakeholders, recursive process design) and output to scientific knowledge and societal problem handling (12).	Validation is a key issue in modelling; it is seen as a process of building confidence in the model together with the stakeholders.
Valorisation and implementation	Research is embedded in the life-world of the actors in order to increase the effectiveness of the transdisciplinary process.	Orientation towards implementation calls for involving participants in the modelling process as much as possible.
Competence profile of the research team	Combines specialisation in transdisciplinary methods with high-quality disciplinary contributions (6).	Combines special competence in modelling and process design with high-quality disciplinary contributions.

limits to generalisation in sustainability research and is referred to as the *ideographic trap* of sustainability.

The majority of productive theories in the natural and social sciences are disciplinary theories with a specified area of validity. Because it seeks to address complex real-world problems, sustainability research is often poorly linked to innovative discourses in the potentially involved disciplines. This limited capability of sustainability research to relate to innovative disciplinary theories is referred to as the *theory trap* of sustainability.

The potential of system dynamics for generalisation is rooted in the fact that a system dynamics model provides a transparent, consistent causal description of the underlying processes, and, as such, a theory of the system. In system dynamics literature, the aspiration to provide generalisable insights materialised in the concept of 'generic models' (Lane and Smart 1996).[4] Generic models can be understood as the distilled form of a system dynamics model focusing on the causality and interactions of the feedback loops and the nature of the dynamic behaviour generated, rather than on the details of an operational model. To be termed generic, a model has to be validated for a specific context, and it has to be reduced to a minimal structure (Forrester 1968; Lane and Smart 1996).

Such generalised (generic) system dynamics models offer a transparent means of transferring and adapting insights between different contexts, and can thus contribute to overcoming the 'ideographic trap'. Models can be transferred to other contexts, however, only if the causal mechanisms and the observed modes of behaviour are the same. Hence, the conditions under which a transfer to other contexts is appropriate need to be analysed very carefully. Although this may seem to be a limitation for practical purposes, it can also be considered a unique opportunity to test and further advance the understanding of a particular problem.

As we have pointed out, the potential of system dynamics to address the 'theory trap' is related to the fact that a system dynamics model embodies a theory of the system, and, as such, contributes to theory building and testing. However, to bring this potential of system dynamics to fruition, a proper modelling process needs to refer to and include existing (disciplinary) theories that are capable of describing parts of the problem. On the other hand, the modelling process may also challenge these theories and, potentially, stimulate further disciplinary research. This, however, is only possible if a system dynamics approach is appropriate, that is, if a problem can be properly described i) at an aggregate level and ii) by state variables and influencing actions acting on these state variables.

17.5 System dynamics modelling in a collective irrigation system in Kyrgyzstan

To illustrate the potential of system dynamics for overcoming these two traps, let us describe a case study of collective irrigation management in a rural community in Kyrgyzstan (for full details of the study, see Gallati

2008a). As in virtually all farming areas worldwide, irrigation is a vital condition for increasing agricultural productivity and for improving food security. A farmer-managed collective irrigation management system has been in operation for several decades (Gallati 2008a) but is facing a number of problems that are typical of these systems, in particular deterioration of irrigation infrastructure, insufficient contributions by the users, free-riding in water abstraction, and inequity between upstream and downstream users (Vermillion and Sagardoy 1999). In the study area, irrigation infrastructure has deteriorated seriously in the past 15 years, and farmers have been complaining about insufficient contributions by a large proportion of users (Gallati 2008a). The study we analyse here was, therefore, aimed at developing a systems approach in order to better understand the conditions and the dynamics of successful and unsuccessful cooperation (Gallati 2008b).

A dynamic model was created which incorporated theoretical evidence relating to collective action in general, and to management of common property resources in particular. It also included local farmers' perceptions in relation to important influencing factors affecting cooperation in collective irrigation management. Building on theories of collective action advanced in the social sciences (Granovetter 1978; Schelling 1978) as well as on scientific evidence on common property resources management and collective irrigation management (Wade 1988; Gardner et al 1990; Ostrom 1990; Tang 1992; Lam 1998), the model sought to contribute to overcoming the 'theory trap'. By integrating these findings into a (dynamic) feedback structure with the potential for generalisation to other contexts, the model intended to contribute to overcoming the 'ideographic trap'. The model was applied and validated for a specific context in Saz, Kyrgyzstan, providing insights for this particular situation.

The model describes the dynamics between cooperators and non-cooperators, taking into account the effect of their (joint) contribution on the performance of the irrigation system and, as a consequence, on water availability (Figure 1); the model was developed based on a general critical mass model of collective action (Granovetter 1978; Schelling 1978; Oliver and Marwell 2001) and insights on major influencing factors specific to irrigation and to common property resources management (Wade 1988; Gardner et al 1990; Ostrom 1990; Tang 1992; Lam 1998). In the proposed model, 'cooperators' contribute to (and pay for) irrigation management, while 'non-cooperators' refuse to comply with their obligations. The fundamental dynamics of the model arise from the observation that farmers cooperate i) if they feel sure that (sufficient) others will also cooperate, and ii) if the benefits reaped from

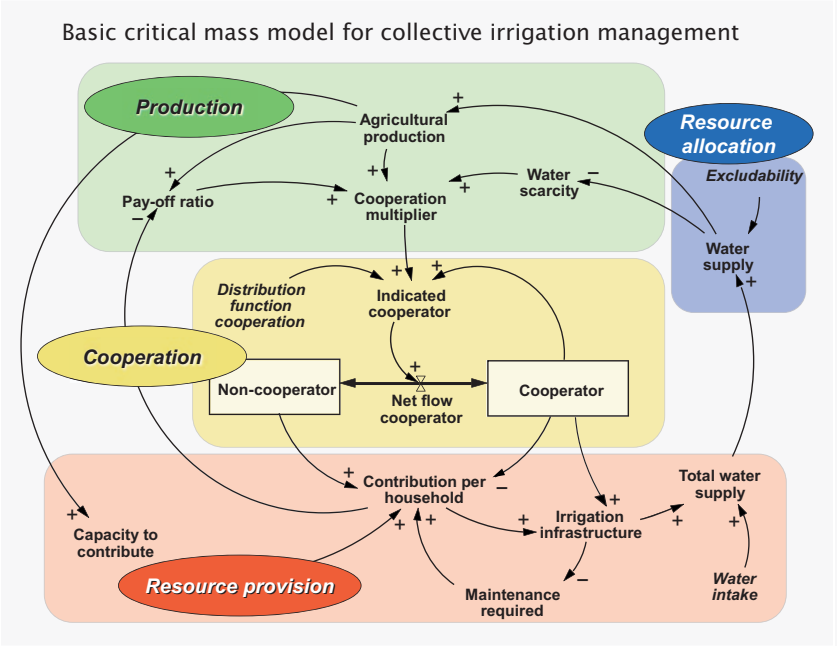

Fig. 1
Fundamental feedback structure of the proposed model for collective irrigation management, building on a general critical mass model of collective action. An arrow denotes a causal relation with a defined link polarity. A positive link polarity (+) indicates that an increase (decrease) of the cause has an increasing (decreasing) result on the effect, while a negative link polarity (–) denotes the opposite situation.

irrigation are large enough. The model also includes the situation of severe water scarcity, in which farmers' willingness to cooperate is increased (Wade 1988; Ostrom 1990).

The model consists of four components: resource provision, cooperation, resource allocation, and production (Figure 1). The current condition of irrigation infrastructure and, as a consequence, water provision depends on the number of cooperators and on the contribution per household, which in turn is determined by required maintenance, the number of cooperators and non-cooperators, as well as households' capacity to contribute. Water supply per household is derived from total water supply and from the influence of the excludability parameter, which denotes the degree to which free-riders can be prevented from receiving water. Hence, water supply per household differs between cooperating and non-cooperating users, and, consequently, so do water scarcity, agricultural production, pay-off, and capacity to contribute.[5] The effects of water scarcity, agricultural production, and pay-off ratio on farmers' choice to cooperate are provided by non-linear multiplier functions, which are combined into a variable termed "cooperation multiplier". This multiplier, together with the current number of cooperators,

determines whether the number of cooperating farmers in the next time step will increase or decrease. Agricultural production, finally, affects farmers' capacity to contribute.

The base run of the model corresponds to unsuccessful cooperation and declining irrigation infrastructure. As a consequence, the number of cooperators (total cooperator ratio) decreases (Figure 2, left). Model analysis reveals the conditions under which successful cooperation may arise, for example if initial cooperation is (slightly) higher than in the base run (Figure 2, right). This sensitivity analysis includes parameter variation as well as variation of functional relations, in particular of the (non-linear) multiplier functions conveying the effect of a change of the influencing factors on farmers' decisions to cooperate or not to cooperate.

Limitations of the proposed dynamic model relate to two different levels: they consist, first, in model-specific shortcomings, and second, in restricted transferability to other contexts. While the first limitation can be overcome by means of appropriate extensions to the suggested model, for example by distinguishing households with different income generation patterns (Gallati 2008a, 2008b), the second touches upon a more fundamental aspect. The proposed model can be transferred to other contexts *only* if the dynamics of cooperation can be appropriately described by means of a theory of collective action. Consequently, the proposed model can be used for comparative studies, and hence contribute to overcoming the 'ideographic trap', only if the dynamics of cooperation rely on similar mechanisms.[6] For situations in which these conditions are fulfilled, a system dynamics model can be considered a consistent, testable theory of the observed phenomena.

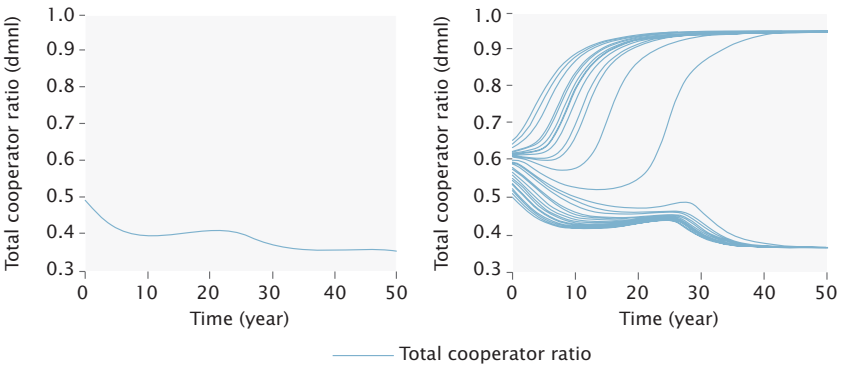

Fig. 2
Left: Decline of cooperation (total cooperator ratio) and reaching of the lower equilibrium of unsuccessful cooperation. Right: Slightly higher initial cooperation may result in successful cooperation.

We stated that system dynamics is an adequate method to deal with complex dynamic problems in a way that provides generalisable insights while including stakeholders' knowledge and perspectives. The case study presented above indicates that in order to comply with this double claim, the research project should combine participatory elements with (theory-based) modelling in an iterative process, with a view to testing underpinning causal relations and in order to enable participatory generation of confidence in the model. Moreover, interaction with stakeholders was indispensable to clarify the model focus and to establish the relative importance of different influencing factors, while grounding in theory provided a robust framework to capture the dynamic structure of the problem. These observations are corroborated by general findings with regard to computer-based models for policy-making advanced by Förster and colleagues (2003).

17.6 Conclusions

We have shown that system dynamics complies to a large extent with the requirements of transdisciplinary research, and that, consequently, system dynamics can provide a valuable research and integration method for sustainability research. Moreover, we hope to have demonstrated that this approach may provide genuine contributions to research for sustainable development, in particular with regard to overcoming the 'ideographic' and 'theory' traps. By means of a case study we have shown both the potentials and the limitations of a system dynamics approach as a method in research for sustainable development, emphasising the necessity of carefully investigating the conditions under which a specific model can be transferred from one context to another. We conclude that system dynamics could be involved more frequently in transdisciplinary research, especially for the analysis and solution of complex dynamic problems. Potentials and limitations of system dynamics with regard to transdisciplinary research for sustainable development should be systematically elucidated, particularly in comparison to, and in combination with, other (modelling) methods. Process design with regard to linking stakeholder participation with (theory-based) modelling deserves particular attention.

Endnotes

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[3] It is clear that the dynamics of a system can also be appropriately described and analysed using a logic different from causality, especially in contexts where indigenous knowledge contributes to the understanding of the system in a transdisciplinary research process (Rist and Dahdouh-Guebas 2006). Indeed, indigenous knowledge is often based on epistemological premises that differ radically from those upon which Western scientific thinking is usually based (ibid.). In such contexts, the use of system dynamics modelling as a tool for a transdisciplinary research approach is not precluded, on the contrary: like other tools which fulfil the epistemic requirements of transdisciplinary research for sustainable development, it can help both the researchers committed to Western scientific paradigms as well as the other stakeholders involved in the process of knowledge co-production to jointly develop valuable insights. Care must be given, however, to take into account the inherent tendency of researchers to subsume other epistemologies under Western causality, unwittingly leading to a form of epistemological hegemony (Pohl et al 2010).

[4] According to Lane and Smart (1996) three lines of thinking with regard to the concept of generic models can be identified in system dynamics: canonical situation models, abstracted microstructures, and counter-intuitive system archetypes. In the present article, 'generic model' refers to a canonical situation model, describing the generalisation and simplification of case study models with the aim of representing a wider class of situations.

[5] This differentiation, however, is not included in Figure 1, in order to keep the figure more transparent.

[6] Interviews with farmers in Saz, Kyrgyzstan, and in the Burguret river catchment in Laikipia District, Kenya, revealed significant differences with regard to water supply and influencing factors affecting farmers' behaviour. The results indicated that, in the Burguret case, social interactions among farmers played a minor role, while economic considerations and sanctions were predominant. As a result, the model developed for Kyrgyzstan was not applied to the situation in Burguret (Gallati 2008a).

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18 Towards a Differentiated Assessment of Geographic Information Sciences for Sustainable Development

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Abstract

Over the last three decades, geographic information sciences (GIS) have seen tremendous development and have been integrated into a wide range of professional and scientific fields. This development took place parallel to the rise of the sustainable development paradigm in research and practice, triggering a sometimes heated debate about the usefulness of GIS for informed decision-making. We analyse this debate, extracting five essential criticisms brought forth against GIS. Without disputing the relevance of the issues concerned, we underline the importance of adopting a more differentiated perspective on the role of GIS in terms of a) the spatial scales of decision-making contexts in which GIS are used, and b) the types of knowledge with which GIS interact. Based on these insights we propose a new approach to assessing the usefulness of GIS in sustainable development research and practice that will make it possible to identify strengths and weaknesses in ongoing projects as well as opportunities and limitations for the future role of GIS in sustainable development. This article is based on the authors' professional understanding of the role of GIS in research activities within the framework of the Swiss National Centre of Competence in Research (NCCR) North-South, and on their experience in sustainable development research and implementation of concrete sustainable development projects.

Keywords: GIS; knowledge creation; ICT; access to information; epistemology; sustainable development; participation.

18.1 GIS and sustainable development: the debate

Geographic information sciences (GIS) developed within the mathematical and geographical sciences between the 1960s and the early 1980s. The breakthrough of GIS into the world of desktop applications in the 1990s triggered a rapid spread to other academic disciplines and to a multitude of professional fields. Eventually GIS were also established as an important approach in sustainable development research. In the non-academic world, GIS are widely used to support planning, decision-making, evaluation, monitoring, and awareness creation. This rapid growth, both in research and in practice, did not take place without the emergence of critical discourse.

Schuurman (2000) provides a good overview of the controversy over GIS in research. In the early 1990s this controversy started off by mirroring the overall discord between natural and social scientists. GIS were often viewed by the latter as incapable of meaningful analyses and as a "return of the very worst sort of positivism, a most naïve empiricism" (Taylor 1990, p 212). Geo-information scientists responded that GIS had made their own limitations an integral part of their research for decades (Goodchild 1991) and that critics seemed to be motivated "not only by a quest for epistemological integrity but also by a desire to retain disciplinary authority" (Schuurman 2000, p 573). From the mid-1990s critics focused on the relationship between power and GIS, and were reinforced by the commercial and academic success of GIS. Maps and GIS were viewed as perpetrating power relations (Monmonier 1991; Law 1994). Criticisms still focused on allegations of epistemological flaws – that is, a lack of consistency in epistemology, ontology, and methods – and objectionable ethics based on positivist assumptions[8]. From the late 1990s onwards, critics became gentler as GIS were recognised as an integral part of geography. New disciplines such as Public Participation GIS (PPGIS) contributed to the democratisation of spatial analysis technology. This movement was supported by increasing accessibility and user-friendliness as well as declining costs of GIS technology and data.

In the context of sustainable development, controversy over the role of GIS arose in relation to the role of technology, as part of a wider criticism of technology-driven development (Kupfer 1997; Pereira and Quintana 2002; Chambers 2006), and in relation to the content disseminated by GIS, as part of an overall concern about the lack of local content – and relevance – in information-based development projects (Chambers 1997; Michiels and Crowder 2001). The increasing popularity of GIS in international coopera-

tion fuelled these concerns. Dangers were also identified in terms of widening power gaps triggered by unequal access to information, knowledge, and information and communication technology (ICT) between elites and marginalised stakeholders (CIDA 2003; Haque 2003). Furthermore, GIS were perceived as incompatible with participatory and bottom-up approaches. Finally, the unfavourable prospects of project durability seen as a result of the technical nature of GIS, their maintenance, and financial requirements have been put forward as an immanent weakness of this technology in the context of sustainable development initiatives (Heeks 2003).

The discourse described above can be summed up in five main critical points concerning the use of GIS for sustainable development:

1. Failure to create development-relevant knowledge
2. Positivist assumptions
3. Hindrance to participation
4. Exacerbation of power gaps
5. Lack of sustainability

These five main critical points are addressed in the present article from a perspective that is sensitive to the spatial scales of decision-making and to the different types of knowledge produced and utilised. The reasons why it is important to adopt such a perspective are outlined in the following paragraphs.

18.2 The importance of a differentiated perspective

The challenges and the opportunities for informed and evidence-based decision-making depend greatly on scale. Correspondingly, the role of GIS, and of any other mode of knowledge production for sustainable development, must be discussed in a scale-sensitive manner. The experiences gathered with GIS within the Swiss National Centre of Competence in Research (NCCR) North-South programme (Breu 2006; Ehrensperger 2006; Epprecht 2006; Heinimann 2006) have consistently shown that the quality of decision-making, planning, and implementation for sustainable development at various scales of intervention depends on decision- and negotiation-support systems that are adapted to these scales, and to the geographic as well as the sociocultural contexts for which the decisions are taken. Perception of reality is a crucial element to be taken into consideration. At the local scale,

stakeholders' tacit knowledge[9] is directly present in situation diagnosis and goal-setting. From the subnational to the national scales, the use of tacit knowledge and real-life experience diminishes, while formalised processes of knowledge creation become more important. At the continental and global scales, real-life experience is only perceivable indirectly, and formalisation increasingly depends on aggregation. For GIS this means that different functionalities are important, depending on scale and context. For example, securing land tenure for small-scale farmers requires a participatory process using tools that, on the one hand, integrate various perceptions and types of knowledge and, on the other hand, provide real-time measurement options (e.g. global positioning system, GPS); the management of urban water distribution depends more strongly on robust database structures with clear spatial attribution; and poverty alleviation at the national scale is most efficiently supported by models that provide relevant socio-economic indicators and trends with sufficient spatial resolution (Ehrensperger 2006; Epprecht et al 2007). Hence, critical arguments about the use of GIS in sustainable development must distinguish between different types of application at different scales. This rarely happens; therefore, the critical discourse outlined above appears to be largely blind to scale and context.

Furthermore, this discourse is often confined to either research or practice and to their respective concerns. Discussions on the alleged epistemological flaws of GIS are conducted from a science-oriented perspective, while arguments regarding empowerment, participation of stakeholders, and sustainability are rooted in case studies or stem from sometimes idealised development perspectives. We believe that such an approach does not provide a sufficient basis for assessment of GIS for sustainable development, as sustainable development depends on both research and practice. Additionally, the potentials and limitations of GIS vary greatly depending on the stages of the knowledge creation and utilisation cycle at which they are used (Ehrensperger 2006). This cycle typically includes five stages: concept development; data collection; data analysis; information and knowledge diffusion; and knowledge utilisation. In some cases the potentials of GIS can be high during the analytical stage but low during the knowledge dissemination stage, while in other cases the opposite is true. For these reasons, we propose to explore the potentials and limitations of GIS for sustainable development from a perspective that takes account of different types of knowledge within the knowledge production and utilisation cycles in which GIS are employed.

18.3 Integrating scales and knowledge types

The above implies that any serious critical review of GIS potentials and limitations needs to distinguish various types of knowledge production, dissemination, and utilisation. There are several ways in which such distinctions can be made. An appropriate common denominator, adapted to the context of sustainable development, is the simple semi-disaggregated model proposed by the Forum for Climate and Global Change (ProClim 1997), which divides knowledge into three interconnected types (see also Nölting et al 2004; Hirsch Hadorn et al 2006):

– **Systems knowledge**, defining or describing a current situation or problem (diagnosis)
– **Target knowledge**, consisting of objectives about the 'ought to be' situation (scenarios)
– **Transformation knowledge**, defining approaches leading to the 'ought to be' status (management and outreach activities)

Figure 1 shows a simplified graph of GIS potentials for sustainable development based on this distinction. In this graph, the x-axis represents scale ranges, the y-axis represents the potentials of GIS, and the three curves represent the

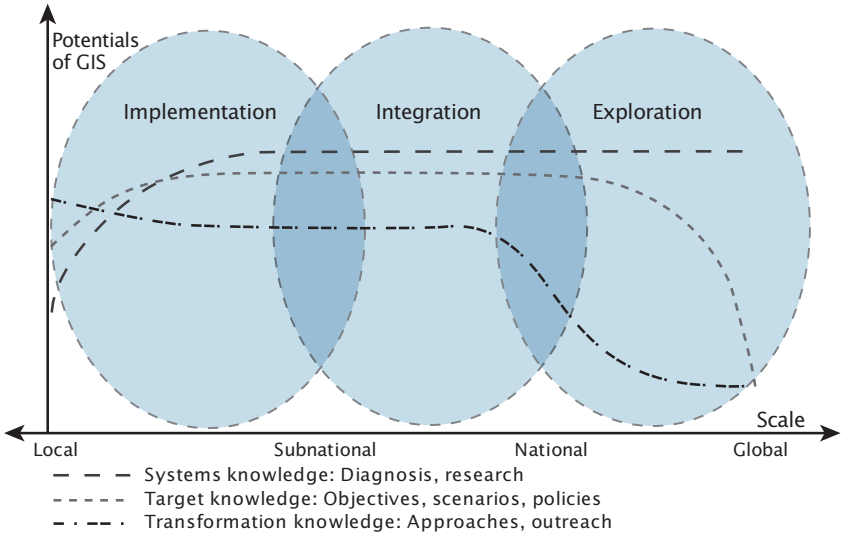

Fig. 1
GIS potentials to support the creation of systems, target, and transformation knowledge in relation to scale.

three types of knowledge. The following paragraphs provide a brief analysis of GIS potentials to support the creation of systems, target, and transformation knowledge in relation to scale, based on this graphic representation.

Systems knowledge: GIS have a strong potential for creating systems knowledge at all scales, apart from the local, where tacit knowledge and direct observation are more suitable. Information aggregation becomes necessary at the subnational to global scales. For example, very complex socio-economic patterns and processes in an urban setting can be analysed and visualised in detail with GIS, whereas at the global scale, corresponding spatial data are either inexistent or too heterogeneous for adequate analysis, making it necessary to aggregate indicators and simplify models. At such scales, GIS potentials reside in their ability to create overviews and conceptualise patterns and processes that are not perceivable through direct observation (Cassel-Gintz 2001). GIS are particularly useful for the generation of systems knowledge when combining spatial variables and the dimension of time. For example, the modelling of patterns of land cover change over time in the lower Mekong basin with the help of satellite imagery and the use of multivariate spatial algorithms has provided completely new insights into regional socio-economic dynamics and trends (Heinimann 2006; Heinimann et al 2007).

Target knowledge: The greatest potential of GIS in relation to target knowledge is at intermediate scales (subnational and national), where modelling and scenario calculations with GIS provide important bases for decision-making and policy formulation. By creating future scenarios and making the spatial consequences of future development interventions explicit, stakeholders concerned as well as potential winners and losers can be identified. GIS can be used to design target areas for development interventions by overlaying maps of different potentials. For example, the recent national irrigation master plan for Tanzania was derived from analyses of water resources, land resources, and socio-economic potentials (MAFS and JICA 2002). Conversely, GIS can be used to simulate the impact of land use changes on water availability using hydrological models. This can support the development of a land use policy that prevents the aggravation of water-related conflicts (e.g. Notter et al 2007). With regard to local phenomena, direct observation and stakeholder participation sometimes yield more precise and concrete definitions of objectives than GIS; at the continental and global scales the ability of GIS to contribute to policy formulation gradually decreases, as shown in Figure 1. Global sociopolitical processes and agree-

ments such as the Kyoto Protocol are based on consensus rooted in political negotiation. In such negotiation processes, GIS can have a great potential for creating systems knowledge (i.e. showing the negotiating parties what the situation looks like or how serious the problem is), but contribute less to the formulation of development objectives.

Transformation knowledge: The differentiation of GIS potentials according to scale follows a slightly different pattern in the case of transformation knowledge. At local scales, GIS have a high potential for planning and management of concrete development interventions. Because such interventions transform reality, tacit knowledge often cannot provide the necessary basis for project management. For example, systems knowledge can indicate that public transport in a particular town is an important problem. This knowledge can be acquired from experience and observation (tacit knowledge). The fact that a new bus terminal is needed (element of target knowledge) can also be observed and confirmed by means of a study. By contrast, the quality of the planning and construction of the new bus terminal (transformation knowledge) depends on adequate information-management and planning tools, among which GIS can play a significant role. This potential of GIS to provide logistical and engineering support is also relevant at intermediate scales for the planning and monitoring of larger interventions, such as infrastructure-development, health, or educational campaigns (Ehrensperger 2006). At continental and global scales, the use of GIS for planning becomes less important. At these scales, its role tends to focus more on monitoring impacts (e.g. of climate change mitigation measures, of AIDS prevention, etc.).

The above considerations of GIS relating to knowledge types and scale show that an aggregate assessment of GIS for sustainable development does not do justice to the complexity and the requirements of reality. Inversely, it also means that GIS practitioners should be aware of the limitations of GIS for sustainable development and attempt to apply them in a way that will maximise their usefulness. Either way, the above considerations allow for formulation of a rough scale-dependent typology, which is a first contribution towards a better understanding of the potentials of GIS for sustainable development. This typology, symbolised by overlapping ellipses in Figure 1, is briefly explained below.

Implementation: The larger[10] the scale (subnational to local), the more promisingly GIS applications focus on planning, management, or monitoring, and the more their functions tend to overlap with those of classic engi-

neering tools. However, at these scales, GIS also have a strong potential for data collection and stakeholder participation in terms of generating systems knowledge.

Integration: GIS have a strong integrative potential at the subnational, national, and transnational scales. They can contribute to the creation of all types of knowledge and provide analytical support for assessments, definition of objectives, and decision-making. They can also efficiently support downscaling and upscaling processes for further utilisation of knowledge at local and global scales. Therefore, the intermediate scales are the ones at which GIS have the widest array of potentials.

Exploration: At the transnational to global scales, GIS have an explorative or descriptive character. The main focus is on describing what is and what could be, on the basis of aggregated modelling and scenario-building. However, the importance of GIS for policy formulation and implementation support tends to diminish as other processes like scenario building, awareness creation, and discussion support gain in importance.

18.4 Towards a differentiated assessment of GIS in sustainable development

Delineations within the typology presented above are frequently blurred and overlapping, as symbolised by the three overlapping ellipses in Figure 1. However, this typology forms an adequate basis for an integrative assessment of GIS for sustainable development. In the following paragraphs, we propose an assessment in five dimensions that responds directly to the five main critical points found in the discourse on the usefulness of GIS in sustainable development initiatives.

Failure to create development-relevant knowledge: The close link between generating relevant information and deriving systems, target, or transformation knowledge must be taken into consideration when assessing GIS. While some early critics (Taylor 1990) argued that GIS are suitable for information management but inadequate for knowledge production, the position adopted in this article is that knowledge can be viewed as information that leads to action (Beesley 2003), or as conceptualised information. This is an idea that can also be seen from an empowerment perspective: "Knowledge – in whatever field – empowers its possessors with the capac-

ity for intellectual or physical action" (David and Foray 2003, p 25). Thus, 1) information and knowledge are mutually dependent and, 2) by generating and processing information, GIS contribute to knowledge production, dissemination, and utilisation at all scales and for all types of knowledge. In the same way that statistical data processed into statistical information can lead, for example, to consolidated knowledge about quantitative socio-economic facts and trends, spatial data processed into spatial information can lead to debates on spatial poverty patterns and trends and subsequently to consolidated transformation knowledge about strategies to mitigate poverty (Epprecht 2006; Epprecht et al 2008).

Epistemological flaws and positivist assumptions: Practitioners and scientists should be aware that there is an increased risk of choosing the wrong objectives, focusing on the wrong research questions, and reaching the wrong conclusions when using GIS in isolation. GIS should be applied as one contributing element within broader analytical processes involving the use of complementary approaches. However, integrating complementary approaches can prove to be difficult at very small scales (continental and global). Therefore, risks of epistemological flaws tend to increase as scale decreases. In order to avoid these risks, upscaling of knowledge gained at larger scales into reflections and models elaborated at smaller scales has to be part of the knowledge production process (e.g. regional overviews informed by case study knowledge). If GIS are applied under consideration of these issues, the allegation of a positivist attitude does not hold up under closer scrutiny. For example, in the Tajik Pamirs, knowledge about the status and dynamics of different dimensions of sustainability was generated using GIS, among other approaches (Breu 2006). At the same time, problems related to land resources, the causes of land degradation, and opportunities for sustainable land management were assessed from a stakeholder perspective. This process led to, and included, appraisal and negotiation of development objectives at different stakeholder levels to develop a strategy for the region. The knowledge gained through this process was eventually fed back into a knowledge-based GIS model, helping to set intervention priorities. In this process, GIS were one element contributing to a better understanding of development problems and opportunities and facilitating the setting of priorities for agreed-upon development objectives in the region. Their use in isolation would have led to biased recommendations, but their integration added value to the research process.

Hindrance to participation: Knowledge creation at local to intermediate scales is the typical situation in which GIS have a strong potential for fostering participation in sustainable development initiatives. For example, it was shown during a participatory mapping of urban development indicators in Nakuru, Kenya, that the graphic mode of information exchange provided by GIS encourages participation by semi-literate stakeholders, helps to integrate different epistemologies, and has a positive effect on the transparency of deliberations (Ehrensperger and Mbuguah 2004; Ehrensperger 2006). A graphic representation of the town under study triggers associations and helps to raise issues that might otherwise remain unexamined. It also enables the moderator of such a process to steer the discussion towards concrete facts and to collect binding statements and information of great value for planning and decision-making. Beyond the local to intermediate scales, increasing epistemological diversity, brought about by increasing diversity of stakeholders and contexts concerned, dictates that meaningful integration of knowledge into any kind of knowledge management tool – not only GIS – cannot be achieved without some degree of formalisation and epistemological reduction. This does not hinder participation per se, but requires a formalised framework for participation to take place (e.g. a referendum).

Exacerbation of power gaps: Two types of situation have to be distinguished in this regard: the integration of systems knowledge and the negotiation of target and transformation knowledge at the local scale, on the one hand, and the reduction of power gaps at subnational to national scales by providing a basis for more equitable allocation of public resources, on the other hand. In the first case, the integration of a traditional epistemology into a formalised information-management system can help to strengthen the community's identity and provides powerful support for informed negotiation and consensus-finding in advocacy processes. This was achieved, for example, in western Kenya, where the empowerment of marginalised ethnic groups was targeted by mapping these groups' ancestral territories using aerial photography, GPS, participatory 3D modelling and GIS (Ehrensperger 2006; Rambaldi et al 2007). GIS can also help to reduce marginalisation and enhance access to services. In Chad, participatory mapping of transhumant movement patterns contributes to better planning of health services for mobile pastoralists, who have so far been excluded from social services (Wiese et al 2004). In the second case, GIS can, for example, help to improve national poverty-mitigation strategies. In Vietnam, advanced spatial modelling revealed a relatively strong correlation between levels of poverty and ethnic identity at a national scale (Epprecht 2006). Such information can

contribute to the empowerment of underprivileged communities by availing them of a platform to assert their arguments and to back up claims relating to their needs.

Lack of sustainability: Issues of sustainability matter most in processes in which dependence on a given technology is created, for example in the case of government agencies introducing electronic data management tools. In such cases, the effort invested in the proper institutionalisation of the process is crucial. Also, the gaps between the design of an e-governance project and the existing realities in the recipient institution play a major role with respect to sustainability (Heeks 2003). Hence, e-governance and other ICT-based initiatives need to be designed to support existing workflows and processes within recipient institutions in the best possible way. By contrast, in one-time assessments conducted in a project implementation process, the sustainability of the technology itself is less a matter of concern than the question of how outputs are disseminated and subsequently used. In such situations, the selection of appropriate dissemination media is of crucial importance. A process of 'translation' might be necessary in order to adequately inform the stakeholders concerned, something that is commonly practised, for example, by agricultural extension services that translate knowledge about agricultural engineering into easily understandable terms for practical use by farming communities, or in health awareness creation campaigns, in which medical knowledge, for example on HIV/AIDS, is translated into broadly understandable recommendations.

18.5 Conclusion

The above reflections focus on geographic information sciences, the function of which is to contribute to the creation and dissemination of knowledge. Hence information and knowledge, and the importance of these resources for sustainable development, are the central parameters of the present article. In the words of Chapman and Slaymaker, "improved information can enable people to better defend their interests and articulate their needs; it increases their bargaining power and ability to influence decision-making processes that affect them" (Chapman and Slaymaker 2002, p 7). Therefore, our reflections ultimately lead us to the question of the impact of the information and knowledge produced and disseminated by means of GIS on decision-making, planning, or behaviour adaptation towards sustainable development. When trying to assess such an impact to gain a clear idea of the

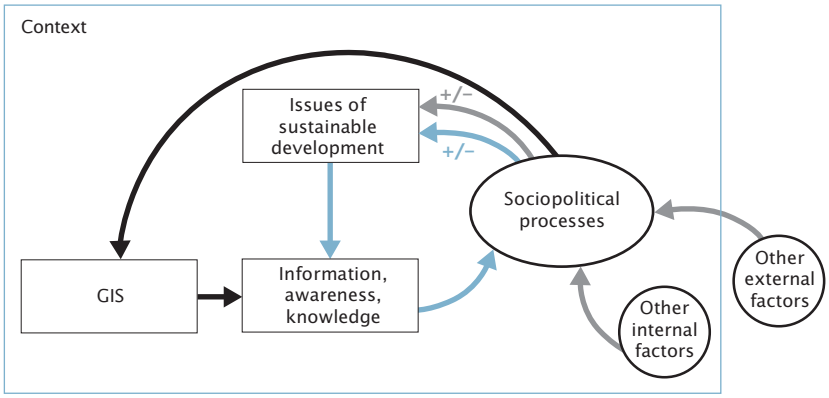

Fig. 2
The position of GIS in sociopolitical processes towards sustainable development, and the influence of other internal or external factors on such processes.

Black arrows represent the integration of GIS into the sociopolitical process; blue arrows represent the iterative process aiming to resolve issues of sustainable development; grey arrows represent the influence of internal and external factors on this iterative process. Decision-making and implementation can have both positive (+) and negative (–) impacts. (Source: Ehrensperger 2006)

potentials of GIS for sustainable development, one is inevitably faced with great difficulties, because "[…] information flows are notoriously difficult to follow and causal linkages between exposure to information, its application and evident impact are difficult to establish with certainty" (Lowe, personal communication[11], cited in Zielinski 2001).

In this respect, GIS are on an equal footing with other information- and knowledge-based contributions to sustainable development, including capacity development in a variety of fields. The ability of an individual, a social entity, or an institution to improve their livelihood or to perform evidence-based decision-making depends on a number of factors, the analysis of which is beyond the scope of this article. Factors that are not evidence-based can have their source within or outside an institutional or social context and can influence sociopolitical processes towards sustainable development in positive or negative ways (Figure 2). Such factors can include political alliances, personal benefits, beliefs, pressure, or conflicts. Our task as geo-information scientists is to try to integrate GIS in sociopolitical processes towards sustainable development in a manner that will foster evidence-based decision-making and reduce the impact of non-evidence-based factors.

Endnotes

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[8] Assumptions that the goal of science is to stick to what can be observed and measured in order to understand and control the world, and that metaphysics has no place in science.

[9] In this article we understand tacit knowledge as defined by Stephen Gourlay: "a form of knowledge that is highly personal and context-specific and deeply rooted in individual experiences, ideas, values and emotions" (Gourlay 2002).

[10] Scale is used here according to its use in GIS: the larger the scale of a GIS application, the smaller the geographic area it covers, and vice versa.

[11] Lucky Lowe, "Knowledge and Information Systems – Learning What We know?", message posted to FAO MediaReality mailing list, mediareality-L@mailserv.fao.org, on 5 December 2000.

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19 Finding Homogeneity in Heterogeneity: A New Approach to Quantifying Landscape Mosaics, Developed for the Lao PDR

Peter Messerli[1], Andreas Heinimann[2], and Michael Epprecht[3]

Abstract

Linking land cover information to human–environment interactions over large spatial areas is a key challenge for land change science in general, and research on swidden agriculture in particular. In the Lao People's Democratic Republic (Lao PDR), a country facing rapid and multi-level land change processes, this challenge hinders informed policy- and decision-making. Crucial information on land use types and people involved is still lacking. This article proposes an alternative approach to the description of landscape mosaics. Instead of analysing local land use combinations, we studied land cover mosaics at a meso-level spatial scale and interpreted them in terms of human–environment interactions. These landscape mosaics were then overlaid with population census data. Results showed that swidden agricultural landscapes, involving 17% of the population, dominate 29% of the country, while permanent agricultural landscapes involve 74% of the population and likewise cover 29% of the territory. Forests remain an important component of these landscape mosaics.

Keywords: Landscape mosaics; land use; land cover; meso level; Lao PDR; swidden agriculture.

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19.1 Introduction

One of the numerous challenges in the field of sustainability science relates to the call for a new mode of collaboration between scientists and decision-makers (Kates et al 2001; McMichael et al 2003). More concretely, any such new form of collaboration should comprise two key features. First, rather than being driven exclusively by academic interests and inquiry, research agendas should emerge from a close dialogue between decision-makers and researchers to identify knowledge needs and gaps. Second, research results should support informed and evidence-based decision-making. Hence, the levels and scales at which research results are aggregated and insights are produced must be defined taking account of the levels and scales at which most relevant decisions are being taken (Cash et al 2003).

Within land change science, which is an important component of sustainability research, the call for linking knowledge production with the needs of policy- and decision-making reinforces a fundamental challenge related to describing human–environment interactions beyond the local context. Land change science has drawn attention to the strong variation of human–environment interactions in time and space (e.g. Lambin et al 2003; Lambin and Geist 2004; Verburg et al 2008). Given that a growing number of factors at multiple spatial scales influence land use and land cover, and that these factors interact in chain-linked or nested ways (Hurni 1996), they produce dissimilar land cover and land use outcomes, thereby reinforcing the uniqueness of any local context (Ostrom 2007; Turner et al 2007). The resulting limited validity for out-scaling and generalisation has also been referred to as the "one place–one time syndrome" (Woodcock and Ozdogan 2004). Accordingly, a large body of land use literature consists of case studies dealing with human–environment interactions at the local scale. Only a limited number of studies and research initiatives have tackled the issue of linking land cover change to underlying processes at higher spatial scales; among these initiatives, the hotspot approach (Myers et al 2000; Achard et al 2002; Lepers et al 2005; Mittermeier et al 2005) and the meta-analysis approach (Rudel et al 2000; Geist and Lambin 2001, 2004) are particularly noteworthy. However, despite these interesting contributions, an operational solution for integrating land cover information with land use processes at a meso-level scale has not yet been found (Heinimann 2006; Verburg et al 2008).

In contrast with this knowledge gap, decision-making on land use at these levels is becoming increasingly relevant. Given that land resources in a glo-

balised world provide ecosystem goods and services for stakeholders at higher levels and more distant places (Foley et al 2005; GLP 2005), decisions and policies at the subnational to international levels are becoming increasingly important. At these levels, inventories of land cover are commonly available, whereas knowledge on social–environmental interactions is missing. The result is a growing disconnection between knowledge generation and decision-making.

These problems are very prominently illustrated in the Lao People's Democratic Republic (Lao PDR), a landlocked country in mainland Southeast Asia (see Figure 2 on p 384). This country, which is the geographical focus of this article, has a relatively small and unevenly distributed population, making its unused land resources a major development asset (Messerli et al 2008). With recent annual economic growth rates of around 8% and an economy based essentially on natural resources (World Bank 2008a), this asset is under considerable pressure (GoL 2000; Hirsch 2000, 2001; Rigg 2006). Crucial decisions will have to be taken in the near future on the unavoidable trade-offs between use and conservation of land and natural resources.

At a time when an increasing number of external actors are claiming access to land resources, more and more development interventions are being implemented across the country (Parnwell et al 1996; Woods 2003; Ducourtieux et al 2005; Fullbrook 2006). These influences lead to an ever-increasing fragmentation of spatial contexts in terms of development potentials and constraints (Badenoch 1999; Messerli and Heinimann 2007). The rural areas of the Lao PDR, which until recently could be spatially differentiated by few key factors, are currently facing a rapidly rising number of spatially relevant development drivers such as growing infrastructure networks, the extended reach of public policies, services and market opportunities, the availability of off-farm employment in commercial agriculture or mines, and others. As a result, spatial units with similar development potential and problems are becoming more and more fragmented and manifest ever smaller geometries. This, in turn, leads to a dilemma between the urgent need for knowledge to support evidence-based decision-making on the numerous land use interventions, on the one hand, and the growing difficulty of understanding the particularities of the differentiated and fragmented development spaces, on the other. The resulting growing uncertainty causes sustainable management of land resources to fade further out of sight. Meanwhile, the most basic questions remain unanswered: What is the current extent and availability of different basic land use types such as swidden, permanent, or commercial agri-

culture? What share of the Lao population is involved in each? What type of land use implies what trade-off between degradation and conservation of land resources?

The information needed to answer such questions can be gained through a considerable amount of case studies in different parts of the country. However, the validity and reach of case study results is often confined to very limited geographical areas. Aggregated information covering the entire country is scarce and of doubtful quality. Reasons for this include the often difficult and contested definitions of land use categories such as swidden cultivation (Mertz et al 2009b), the quality of data coming from agricultural reporting systems that have to correspond to government plans, and a high variety of land cover inventories with different data sets, methodologies, and classification systems. As a result, data on the extent of land use systems vary considerably (Padoch et al 2007; Schmidt-Vogt et al 2009) and the attribution of people involved in each of these systems is even more difficult (Messerli 2004; Mertz et al 2009a).

We hope to contribute to overcoming this knowledge gap by presenting an alternative approach that makes it possible to link land cover information with land use processes at a meso-level spatial scale, that is, at the district to national level. This can be achieved by describing and quantifying landscape mosaics, which shall comply with two distinct but complementary characteristics: (a) they refer to geographical areas that consist of spatial patterns of land cover and represent functional units in terms of human–environment interactions, and (b) they represent meaningful spatial geometries that can be related and overlaid with other spatial data layers, particularly socio-economic data derived from population censuses and household surveys.

19.2 An alternative approach to describing landscape mosaics

The concept of landscape mosaics owes much of its appeal to the promise that its spatial patterns reveal information about the underlying social and environmental processes and hence the human–environment interactions (Wu and Hobbs 2007). In other words, describing landscape mosaics should not only make it possible to integrate land cover inventories with land use processes over larger areas, but should also offer the potential to contribute to the generalisation of knowledge, in terms of gaining aggregated insights on human–

environment interactions at higher levels of spatial scale (Levin 1997).

An analysis of the limitations of current research initiatives described above reveals one underlying problem. It is epistemological in nature and becomes apparent when taking a social science perspective: we can only relate land cover changes to human action if we understand who the actors influencing the land are, and what the intention and meaning of their activities is. In other words, the researcher has the difficult task of having to interpret a social world which is already interpreted by the actors that inhabit it (Giddens 1991). Accordingly, such an interpretation can only be meaningful if it is performed in a contextual way, that is, within the relevant specific social, political, and economic spheres and related to a concrete space and time (Wiesmann 1998; Long 2001). Against this backdrop, the fundamental limitation of generalising land use processes through up- and out-scaling becomes clear. The interpretation is only valid in a specific context – often restricted to a very local setting – and becomes void as soon as we enter a new context.

As shown in Figure 1, the first step in frequently applied approaches to describing landscape mosaics often consists of interpreting human–environment interactions in a local context, allowing the translation of land cover into land use information (Step A1). The stumbling block often lies in Step A2. When analysing spatial patterns of land uses to describe landscape mosaics,

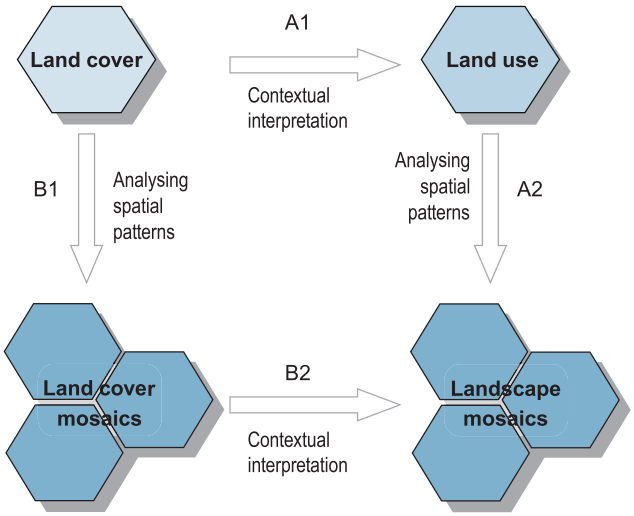

Fig. 1
From land cover information to landscape mosaics. While pathway A depicts the ordinary approach, pathway B shows the new approach proposed in the present article.

the contextual interpretations of few land cover patches are extrapolated to other places or to higher levels of aggregation. To these, however, the contextual interpretation is often no longer applicable; as a result, the process information contained in the landscape mosaic is flawed. While, for example, a secondary forest patch in a context of swidden cultivation may be used mainly as fallow land, a similar secondary forest in a different ethnic context may be of spiritual value or in a context of permanent agriculture might function as a source of timber and non-timber forest products.

In view of these difficulties, we propose an alternative approach to the description of landscape mosaics. This approach consists, first, of analysing patterns of spatial coexistence of different land cover types without trying to interpret their meaning in terms of land use (B1). This will result in land cover mosaics that are defined as specific combinations of land cover patches within a given geographical area. Only then are the resulting land cover mosaics interpreted within a sociopolitical context that corresponds, in terms of scale and spatial coverage, to the development issues at stake. In other words, we do not ask for the use of a single land cover patch and then try to extrapolate this information over larger areas; rather, we ask in what spatial compositions (i.e. land cover mosaics) land cover patches occur across the territory, and then interpret these compositions in terms of human–environment interactions. The resulting landscape mosaics no longer contain precise information on single land use patches but provide an interpretation of land cover mosaics as spatial manifestations of different land uses in the rural Lao PDR.

19.3 Methods

19.3.1 Study area and land cover data

In the Lao PDR, deficits in information and knowledge for decision- and policy-making with regard to land use are substantial from provincial to national levels. Therefore, this study attempts to provide information covering the entire territory of the Lao PDR. The Lao PDR is a landlocked, mountainous country, surrounded by Cambodia, China, Myanmar, Thailand, and Vietnam. It is a multi-ethnic and predominantly rural society in which most of the population depends on agriculture. In the mountainous regions swidden agriculture is widely practised, while in the alluvial plains of the Mekong and its tributaries irrigated paddy rice dominates the landscape. In 2002, forests still covered 41.5% of the country (GoL 2005), but they are disappearing at alarming rates of around 53,000 hectares per annum (World Bank 2008b). About

33% of the country's 5.6 million people live below the national poverty line (Epprecht et al 2008). With a per capita gross domestic product (GDP) of USD 485 in 2005, the Lao PDR is one of the poorest countries in the East Asia and Pacific region (UNDP 2007). In terms of human development it ranks 130th of 177 countries (ibid.). With this level of poverty, the country's natural resource base is of critical importance for poverty alleviation and growth.

Land cover maps were obtained from the Ministry of Agriculture and Forestry. The inventory captured the situation in 2002 and was based on visual interpretation of SPOT satellite images at scales of 1:50,000 and 1:100,000 for forest and land cover mapping and for field verification. The original land cover data comprised 22 categories, which we aggregated into 8 main land cover types: forest, open forest, bush and shrub, grassland, swidden fields, permanent agriculture, paddy rice, and other categories (rock, etc.). It should be noted that the category of swidden fields comprises only burnt plots, while any fallow swidden land appears under open forest, bush and shrub, or grassland. This makes a quantitative assessment of the actual extent of swidden agriculture impossible based on the original land cover data. Finally, we would like to point out that even though land cover data for different points in time exist in the Lao PDR, the differences in imagery, classification methods, and interpretation made it impossible to focus on dynamics of land cover change. This study is hence limited to an assessment of one point in time.

19.3.2 Describing land cover mosaics (Step B1)

Following the overall approach proposed in Figure 1, we first analysed spatial patterns of land cover to identify what we call land cover mosaics. For each pixel of 50x50 m of the land cover map we analysed the land cover categories of all neighbouring pixels within an area of 5x5 km. We thereby recorded the presence or absence of each land cover category within the window in a binary way (yes/no). Given the unequal share of land cover classes across the country (e.g. paddy vs. forests), an inverse weighting was applied to determine the threshold at which a patch was taken into account or not. This yielded information about the composition of land cover within this window, which was attributed to the central pixel. In this way, and using a moving window technique, we were able to attribute to every pixel a code denoting the land cover composition within its surrounding 5x5-km window. Adjacent pixels with the same code, that is, the same composition of neighbouring pixels, were then clustered into a land cover mosaic (Figure 2).

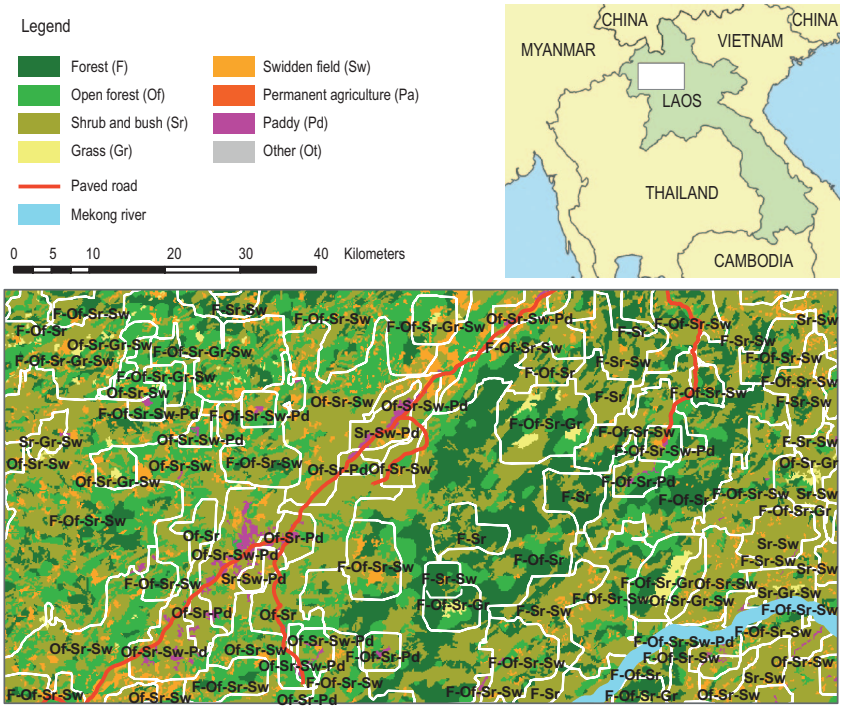

Fig. 2
Transformation of land cover patches into land cover mosaics (white borders). The codes correspond to the combination of land cover categories (see legend).

The window size is obviously a key factor determining the resulting land cover mosaics in terms of size, number, and combination of patches. The choice of 5 km was based on a study showing the impact of accessibility on land cover change in the Lao PDR (Heinimann 2006). Given the fact that the country's rural population lives in villages, Heinimann (2006) analysed the distance from the village at which the villagers' impact on land cover change fades out. This made it possible to approximate the average reach of rural actors and hence was useful in supporting the choice of a meaningful window size.

19.3.3 Contextual interpretation of landscape mosaics (Step B2)

The preceding step led to a description of land cover mosaics, which are defined as a specific combination of land cover patches within a given geographical area. We now proceeded to a contextual interpretation of these mosaics. In contrast to the preceding step, which can be performed on land cover data alone, this next step must take into account the social, economic, and political aspects of the development context in question, and is thus not transferable from one context to another. Moreover, it should be remembered

that in this step the focus of interest is no longer on the precise use of a single land cover patch but rather on the existence of certain land cover mosaics in the overall land use context at a meso level. Based on our previous knowledge and expertise regarding the development context in the Lao PDR, we focused on two key land use development issues that are of concern to national policy- and decision-makers: intensification of land use and degradation of forests and vegetative cover.

Intensification of land use: In its agricultural vision for the year 2020, the Government of the Lao PDR clearly foresees an increase in productivity based on sedentary and permanent systems (GoL 1999, 2006a). This is expected to support the improvement of food security at the national level and the alleviation of rural poverty, which is still related to swidden agricultural systems. Swidden systems are held responsible for the deforestation and degradation of natural resources as well as the low agricultural productivity per surface unit by parts of the Government of Laos (ibid.). By contrast, some scholars argue that there is sufficient land available to support the present population without any overall adverse effects on the environment or on the forest resource (Chamberlain and Phomsombath 2002; Raintree 2003). Moreover, it has also been suggested that rotational swidden systems remain sustainable and are the most productive means available for achieving food security and meeting livelihood needs (Fox 2000; Raintree 2003; Rigg 2005). For these scholars, the country's Malthusian squeeze is best interpreted as 'policy-induced', that is, as a result of current policies regarding land allocation, resettlement, and village merging. In summary, the reason for the incompatibility of such perspectives and the absence of a pragmatic dialogue partly lies in the lack of information and knowledge of which shares of the territory are currently under agricultural use at what intensity, and involving which part of the population in which places.

Degradation of forests and vegetative cover: Referring to the Lao PDR as the 'green jewel of the Mekong' (IUCN 2006), numerous stakeholders unanimously consider the tropical rainforest and the abundant natural vegetation of the country as a key development asset, even if the reasons for this are quite controversial. At the national level, forest and wood products represent an important source of revenue and still comprise a large share of total exports (Qiang and Broadhead 2002). Furthermore, the role of the forests in protecting watersheds for the growing number of hydropower dams is highly valued. At the international level, ecotourism and the potential future valuation of ecosystem services such as carbon sequestration or biodiversity con-

servation are becoming more and more important. At the local level, forests and especially secondary forests have also played – and continue to play – a central role in providing the livelihoods of rural families as they still represent an important source of food and provide a large array of other non-timber forest products (NTFPs) (ADB 2001; Rigg 2006; WFP 2007). The high pace of deforestation and forest degradation is thus an alarming phenomenon that curtails both short- and long-term development options.

It is not surprising that these two key issues related to land use policy and planning are closely intertwined and in many regards represent conflicting interests. Correspondingly, our contextual interpretation of landscape mosaics is based on the question of this trade-off. In other words: what does a given land cover mosaic, as derived from Step B1 above, represent in terms of agricultural intensification versus deforestation and degradation of the vegetative cover?

Figure 3 illustrates how the land cover mosaics derived from Step B1, which represent specific compositions of land covers, are attributed to one of the 16 types of landscape mosaics. Each landscape mosaic is characterised by the

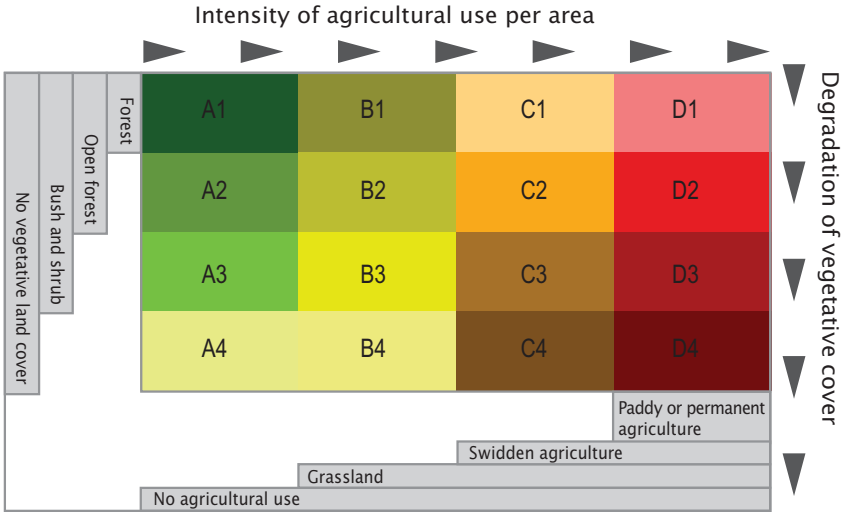

Fig. 3
Table chart illustrating the definition of landscape mosaics based on the trade-off between agricultural intensification and degradation of the vegetative cover.

Note that the presence of the most intensive agricultural land cover category in the composition of the land cover mosaic determines the choice of the column. Correspondingly, the least degraded form of vegetative land cover determines the row to which the mosaic will be attributed.

presence of its most intensive form of agricultural use and by its least degraded form of vegetative land cover. A swidden cultivation landscape mosaic, for example, is defined as a cluster of land cover mosaics that may be composed of any land cover except permanent agricultural fields or paddy (column C). A further differentiation is made using the specific conditions of forest and vegetation (using rows 1–4). The two corners A1 and D4 represent the most extreme poles of the trade-off between degradation and use of land resources, while D1 can be considered as a landscape mosaic where agricultural use has been intensified without a concomitant degradation of the vegetative cover. However, the limitations of the underlying land cover data should not be forgotten. On the one hand, it is a one-time data set and hence we cannot infer dynamics; on the other hand, the data do not allow for a complete differentiation between natural and plantation forests.

Following this classification, it will be possible to quantify different types of landscape mosaics, not only revealing the share of the territory under a certain type of land use, but also identifying all landscapes of which forests are still an important component. Moreover, this chart also functions as a map legend in Figure 4, which shows how this interpretation from land cover to landscape mosaics reveals interesting spatial patterns.

19.3.4 Overlaying landscape mosaics with other data layers

The definition of landscape mosaics as units representing trade-offs between agricultural use and degradation of forest resources also produced geometries that genuinely depict the different types of human–environment interactions. These geometries can be overlaid with other spatial data layers without it being necessary to revert to other a priori chosen geometries such as, for example, watersheds or administrative units.

A parallel research initiative in the Lao PDR had the aim of depicting socio-economic data at the highest possible resolution, that is, at the village level. Mainly based on the 2005 population and housing census (GoL 2006b), 70 indicators were calculated for each of the 10,547 villages and spatially illustrated in a *Socio-Economic Atlas of the Lao PDR* (Messerli et al 2008). This spatial disaggregation of socio-economic data which are normally available only in the form of province aggregates has added considerable value to the data of the population and housing census. Given the fact that in the Lao PDR no village boundaries are available for depicting the data, so-called village polygons were calculated based on equidistance in terms of travel

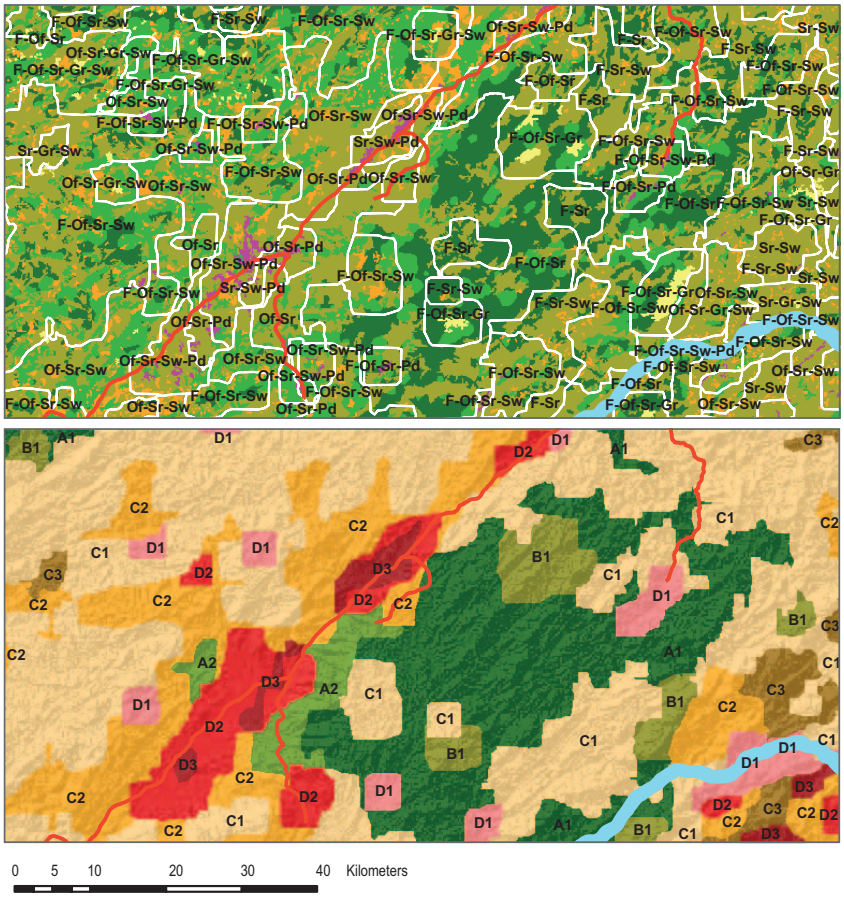

Fig. 4
Illustration of the interpretation of land cover mosaics (see above and Figure 2) as landscape mosaics (below). For the legend regarding the landscape mosaics please refer to Figure 3.

time from any two villages (Heinimann 2006; Epprecht et al 2008; Messerli et al 2008). These village polygons were then intersected with the landscape mosaics, making it possible to attribute demographic data from the population census to each landscape mosaic (Figure 5).

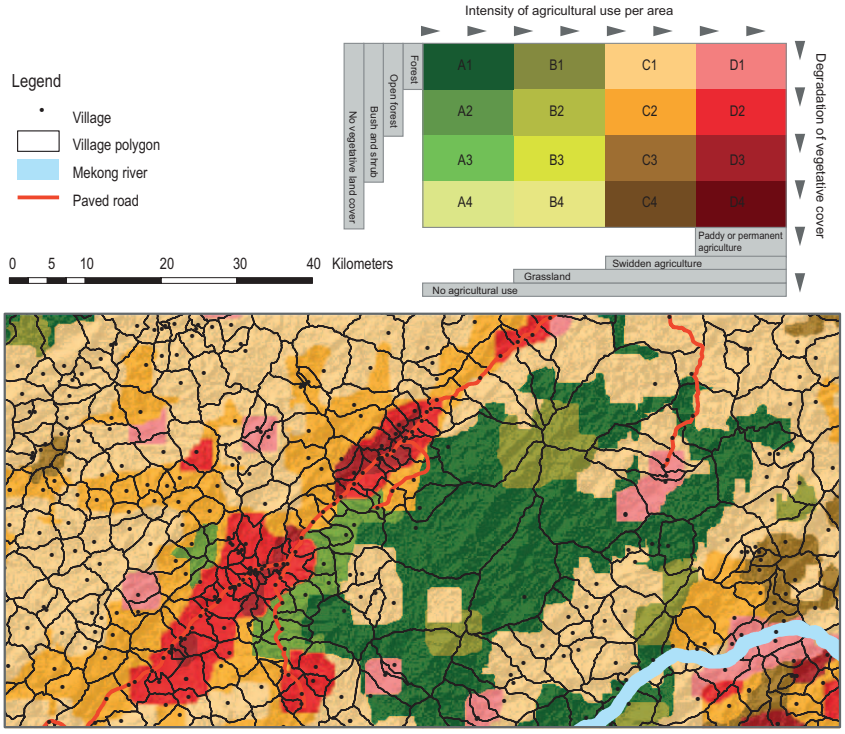

Fig. 5
Landscape mosaics overlaid with village polygons. The resulting intersects make it possible to attribute population census data to the different landscape mosaics.

19.4 Results

19.4.1 Describing land cover mosaics (Step B1)

Analysis of the approximately 92 million pixels containing land cover information on the territory of the Lao PDR using a moving window technique with a 5x5-km window resulted in the identification of 3,446 land cover mosaics. Each of these mosaics was composed of one to eight land cover classes and varied in size, with a median area of 34 km^2. On average, such a land cover mosaic was made up of three different land cover classes.

Even though the eight land cover classes could potentially be combined into 225 different compositions, only 120 actually occurred. A few of these compositions are clearly dominant and account for extensive shares of land (see Figure 6).

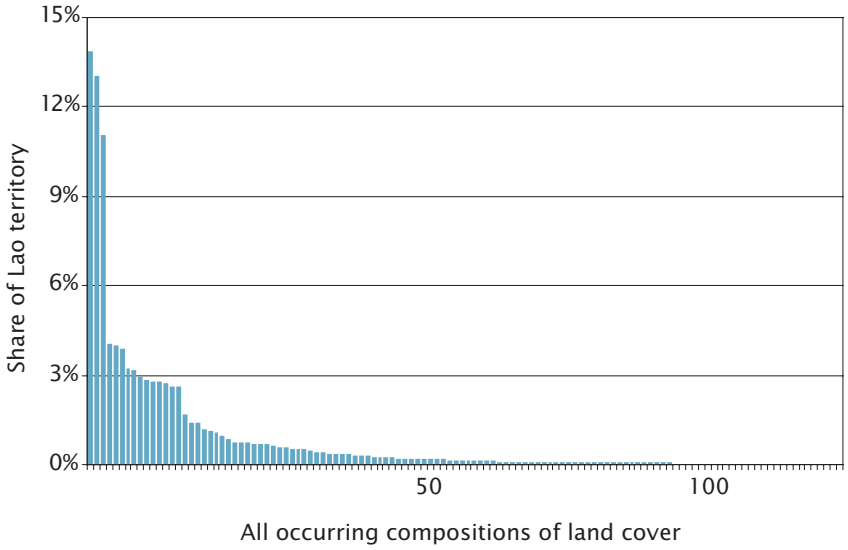

Fig. 6
Shares of land of the most important land cover mosaics in the Lao PDR. A small number of compositions make up a large share of the territory.

The six most widespread land cover mosaics together cover 50% of the territory of the Lao PDR (Table 1). It is striking that forest patches are part of all of these mosaics. This seems to substantiate the argument that despite the ongoing loss of coherent forest surfaces in Laos, forest patches still play a central role in supporting the livelihoods of rural families as sources of food and other timber and non-timber forest products (ADB 2001; Rigg 2006; WFP 2007).

19.4.2 Contextual interpretation of landscape mosaics (Step B2)

Against the backdrop of the most salient and controversial issue related to land use policy and decision-making at the national level – the intensification of agriculture versus deforestation and degradation of the vegetative cover – we interpreted the 120 different land cover mosaics as 16 different types of landscape mosaics. This resulted in a map of landscape mosaics of the Lao PDR and provided, for the first time, a quantification of the different shares of these landscapes throughout the country.

At a small scale, the map shows the general distribution of landscape mosaics across the country (Figure 7). Forested landscapes without significant agricultural use cover the central and eastern parts of the country, as well as the southern and northern tips. Landscapes composed of swidden agri-

Table 1

Composition of land cover mosaics	Share of land	Cumulative share of land
Forest – Open forest – Shrub	13.7 %	13.7 %
Forest – Open forest – Shrub – Swidden fields	12.9 %	26.6 %
Forest – Shrub	10.9 %	37.5 %
Open forest – Paddy	4.2 %	41.7 %
Forest – Shrub – Swidden fields	4.0 %	45.6 %
Forest – Open forest – Shrub – Grassland	3.9 %	49.6 %

Most dominant land cover mosaics in the Lao PDR and their respective shares of the territory.

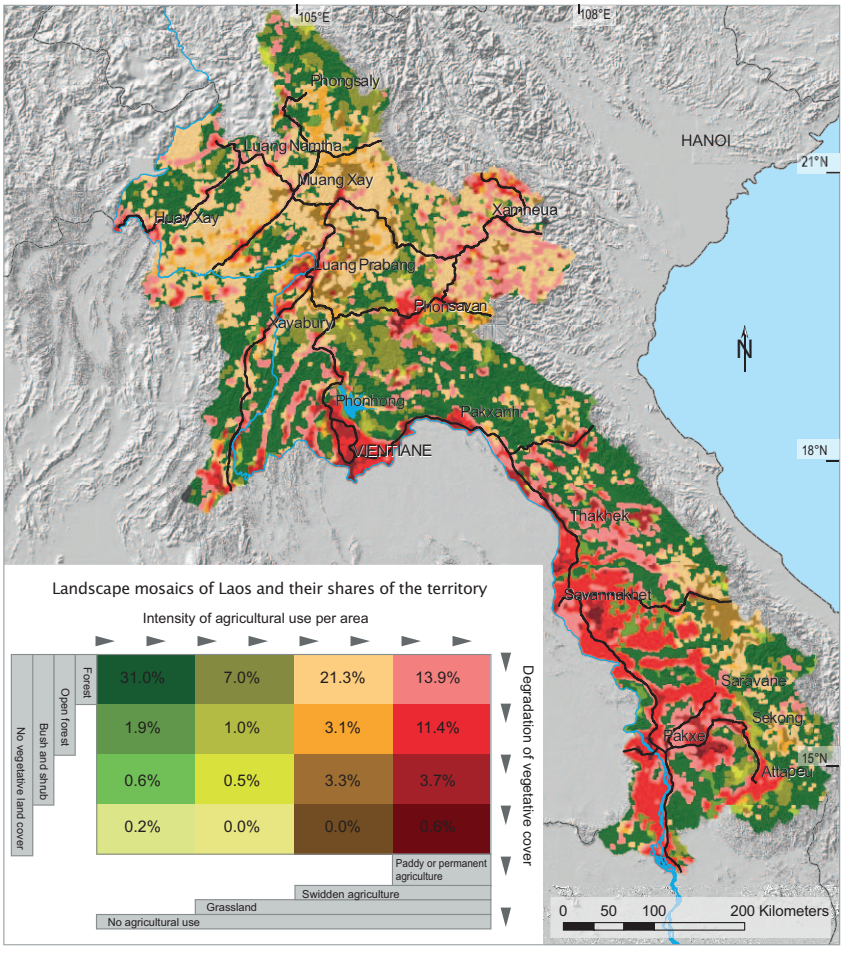

Fig. 7
Landscape mosaics of the Lao PDR and their respective shares of the territory. Each mosaic represents a trade-off between the status of the vegetative cover and the intensification of agricultural land use.

culture and different vegetative covers dominate the northern uplands, as well as parts of the Annamite Mountains on the eastern border with Vietnam. Permanent agriculture can be found in landscapes along the Mekong but is generally more widespread in the south, with the exception of the northeastern region around the provincial capital of Xamneua. At a larger scale, the map reveals that the landscape mosaics mimic the spatial gradients of land cover composition from peripheral to more central areas that extend around the urban centres and along the main roads.

In quantitative terms the chart reveals that in 2002 no agricultural use was detected on 33% of the Lao territory. Swidden agricultural landscapes, which show no sign of transition to permanent agriculture and manifest different conditions of the vegetative cover, accounted for a total of 28.2%, or approximately 6,500,000 ha. Finally, permanent agriculture and paddy farming were already dominating landscapes in 29% of the country. It is remarkable that in 2002 forests still played a very important role in all types of agricultural landscapes, being a component of 72% of all Lao landscapes. Furthermore, in 18.4% of all landscapes, there were at the very least patches of open forests. In other words, swidden and permanent agriculture was in most cases still practised in an environment coexisting with forests (this is true for 77% of total swidden agriculture and 47% of permanent agriculture, respectively).

19.4.3 Overlaying landscape mosaics with demographic census data

As mentioned above, this approach to landscape mosaics is intended to enable delineation of spatial units that are genuinely related to the types of human–environment interactions described above. This made it possible to overlay and intersect the map of landscape mosaics directly with the village data layers emerging from the 2005 population and housing census data (GoL 2006b) and depicted in the *Socio-Economic Atlas of the Lao PDR* (Messerli et al 2008). Figure 8 recapitulates the land shares of different landscape mosaics (left) and compares them with the shares of the population living in each landscape mosaic (right).

While landscape mosaics dominated by swidden and permanent agriculture occupy comparable shares of the Lao territory (28.2% and 29.0%, respectively), the population is distributed quite differently. A total of 16.9% of the population, corresponding to about 943,000 individuals or approximately

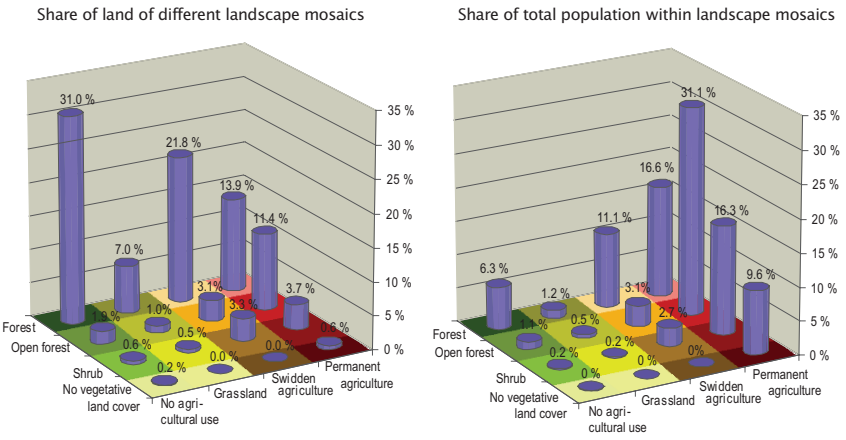

Fig. 8
Shares of total land and of total population within different types of landscape mosaics in the Lao PDR.

157,000 households, live in swidden landscape mosaics. A significantly larger portion of the population – 74% or 4.1 million people – are estimated to live within landscapes of permanent agriculture. It is therefore not surprising that these landscapes have quite a high population density, amounting to 152 persons/km^2 on average, while swidden landscapes are less densely populated at an average of 18.8 persons/km^2. It is noteworthy that population density is higher in landscapes where swidden agriculture is combined with open forest (24.2 persons/km^2) or shrub (19.9 persons/km^2) but lower where swidden agriculture is practised in dominantly forested landscapes (12.3 persons/km^2).

19.5 Discussion

In this article we have presented an alternative way of describing landscape mosaics. Instead of approaching landscapes as "land uses and their combinations in different patterns" (Tomich et al 2004, p 16) we have asked in what spatial compositions land cover patches occur across the territory (resulting in land cover mosaics), and then interpreted these compositions in terms of human–environment interactions. This approach and the results obtained are discussed below.

One of the key characteristics of this approach is that combinations and patterns of land cover patches are analysed before they are interpreted in terms of their use. In doing so, we have tried to find a solution for the difficulty of

extrapolating local contexts, to which interpretation is always bound. By delaying this interpretation and performing it at a higher level – in our case, in the context of subnational to national land use and development planning – we do, however, lose information at the local level – a level to which it is impossible to downscale our results in a meaningful way. In other words, having identified a landscape mosaic of swidden and shrub, we may accurately say that this region has lost its forest cover, and has not yet seen any transition to permanent agriculture. But we will not be able to define the precise use of the shrub in a certain place and time. Hence we have gained accuracy at the meso level at the expense of accuracy at the micro level. This insight underlines the importance of working with complementary approaches at different levels.

We believe that the proposed approach could be adapted to other situations in different regions. Yet, two important issues should be considered in this regard. First, even if the analysis of land cover mosaics (Step B1) using the moving window technique depends on neither a specific type of land cover data nor the human–environment context of the study region, the ideal size of the window of analysis cannot be derived empirically. It must be defined by the researchers. As mentioned earlier, the size of the window influences the composition and size of the resulting landscape mosaics. Therefore, it is important that the window size be chosen with care. We propose that the choice should be based on the expected spatial reach of the main actors inducing land cover change. Second, the contextual interpretation of land cover mosaics to define landscape mosaics (Step B2) is again highly dependent on the research questions and the development context of the study. The definition of the main features of the landscape mosaics can be adapted to the knowledge needs in the given context. We can imagine that agricultural intensification and deforestation could be replaced by other key issues of land change science such as urbanisation, commercialisation of land use, and others (Turner et al 2007), or that they could be adapted to support the analysis of ecosystem service provision and land functions (Verburg et al 2008). Furthermore, it should also be possible to work with tripolar charts to define landscape mosaics (Riiters et al 2009).

Finally we would like to stress the importance of the newly emerging geometries of the defined landscape mosaics. We believe that they are more accurate for capturing complex spatial manifestations of the multidimensional land use strategies of rural households (Wiesmann et al 2000) than are ordinary measures such as, for example, paddy land per community area or for-

ests per watershed. The persistent use of such spatial units in negotiations and planning of integrated development strategies reinforces the problem of the spatial mismatch between human and environmental systems, and eventually also between problems and adequate solutions.

This study was intended to contribute to filling some of the current knowledge gaps in policy- and decision-making in the Lao PDR. The description of the landscape mosaics provides a basis for making reasoned estimations about the spatial shares of different generalised land use types, the people living within these systems, and the trade-off in terms of loss of forest and vegetation cover. In the case of swidden agriculture, the combined information on landscape mosaics and people proves particularly important. While reasonable and recent estimations of swidden landscapes were lacking in the past (Schmidt-Vogt et al 2009), the assessment of the number of people engaged in swidden cultivation is even more difficult (Mertz et al 2009a). In the Lao PDR, our results will help to review and amend earlier estimations either focusing on the extent of swidden agriculture (Chazee 1994; Hansen 1998) or on the people involved (Fujisaka 1991; GoL 2002). Furthermore, the new insights gained through this study will be particularly important in reflecting on the mainstream of current development thinking by governmental agencies as well as international development partners. Among many of these agencies it is still widely believed that the most promising solution for lifting people out of rural poverty lies in moving away from allegedly environmentally destructive swidden agriculture to sedentary and permanent agricultural systems. Even if, in the long term, this belief may be justifiable, it threatens to cloud the view of more immediate problems. The results show not only that in 2002 swidden agriculture was still being practised in landscapes with a relatively intact vegetative cover and considerably low population densities, but also that some landscapes of permanent agriculture were already manifesting high population densities. It seems, therefore, that public policies which artificially increase pressure on permanent agricultural land by means of, for example, new land tenure schemes, village relocation and/or merging programmes, or ceding fallow land to investors for agricultural concessions (Chamberlain and Phomsombath 2002; Raintree 2003; Ducourtieux et al 2005; Rigg 2005, 2006) should be carefully re-considered. Finally, we were also able to draw attention to the 7.5% of the population still living in mostly forested regions with no obvious agricultural use. These people and their livelihoods should not be ignored when making decisions and policies on environmental issues and land development.

In summary, the depiction of landscape mosaics raises the issue of past and future pathways for land use in the Lao PDR. Spatial patterns strongly suggest that unpopulated and forested areas are transformed into swidden landscapes, which then gradually lose their vegetation cover. Depending on a series of agro-ecological, but also socio-economic factors, this is followed by a distinct rather than a gradual transformation into permanent systems. Against this backdrop, current interventions by multiple development stakeholders, many of which pursue the goals of food security, poverty alleviation, and sustainable natural resource management, could be reviewed. Despite the preference for simple solutions for complex problems, different strategies for different types of landscape mosaics should be developed to pursue these goals. As landscape mosaics vary across the territory, spatially differentiated strategies must be applied across the country. In other words, there are no universal solutions or panaceas for sustainable transitions of human–environment systems (Ostrom 2007). Conversely, the map of landscape mosaics could serve as a tool to assist development partners in targeting intervention sites and support the out-scaling of innovative solutions from one context to another. We can imagine that, for example, the successful establishment of a livestock breeding and marketing programme in a degraded swidden cultivation landscape could be difficult to transfer to a nearby village where permanent cash-cropping represents the main source of revenues. Using the landscape mosaics data, other – even distant – regions with similar limitations in terms of population density and scarce land resources could be identified as a more promising context for out-scaling.

19.6 Conclusions and outlook

In this article we have presented an alternative approach to relating land cover information to human–environment interactions over large areas – an issue which remains a key challenge for land change science in general and for research on swidden agriculture in particular. We propose to transfer the interpretation of land cover in terms of its use from the local to a meso-level spatial scale in order to avoid the need for frequently impossible extrapolation of the specificities of local contexts. Based on an initial dialogue with development partners we believe that this information helps to fill the growing gap in urgently needed knowledge for informed decision-making at this level. As development in the Lao PDR follows an ever-accelerating economic pace, and as the number of interventions impacting on the use of land rapidly grows, spatial patterns become more complex, and no one district or

village seems comparable to another. In this context, the description of landscape mosaics helps to balance the need for a highly contextual perspective with the need for generalisation at higher levels. We think that such a balanced picture is particularly necessary for designing policies and to inform decisions in the field of swidden systems, where spatial and thematic differentiation is a precondition for avoiding the trap of ideological, political, or technical bias and oversimplification.

We do not think of this knowledge at the meso level as an alternative to micro- or macro-level studies, but, rather, as a complement necessary to bridge and initiate a dialogue across different scales. Accordingly, we identify a threefold need for future research. First, the 16 landscape mosaics should be related to local-level case studies to obtain a better understanding of the underlying land change processes and enhance knowledge about related trajectories of land use. Transitions between swidden and permanent agriculture seem to be of particular importance in this respect. Second, research at the meso level should be continued as well. Landscape mosaics can be related to other available socio-economic data layers such as poverty and ethnicity. A more realistic picture of the poverty situation in different swidden landscape mosaics is expected to be particularly revealing. Finally, a spatially explicit analysis of the actors influencing and governing different landscape mosaics will be crucial for further support of policy- and decision-making.

Endnotes

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20 Investigating Policy Processes: The Governance Analytical Framework (GAF)

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Abstract

Societies develop ways of making decisions regarding collective problems, thereby creating norms, rules, and institutions; this is what governance is about. In policy research, governance has become an important focus of attention; but debates show a lack of clarity at the conceptual level and a confusion between the use of the concept for prescriptive and analytical purposes. The present article is based on the hypothesis that using a clarified, non-normative governance perspective in policy research can contribute to an improved understanding of political processes, including formal and unrecognised ones, those embedded in larger and smaller social systems, as well as both vertical and horizontal political arrangements. The paper is the result of a collaborative engagement with the concept of governance within several networks, leading to the development of the Governance Analytical Framework (GAF). The GAF is a practical methodology for investigating governance processes, based on five analytical tools: problems, actors, social norms, processes, and nodal points. Besides describing the conceptual sources and analytical purpose of these five tools, the paper presents examples of how the GAF can be operationalised.

Keywords: Governance; governance processes; social norms; institutions; nodal points.

20.1 Introduction

This paper presents the Governance Analytical Framework (GAF), a practical methodology for investigating governance processes. The GAF was developed in the context of the Swiss National Centre of Competence in Research (NCCR) North-South research programme. The point of departure for this project goes back to a growing unease with the way in which the concept of 'governance' was increasingly being used by both academics and practitioners as of the 1990s. A striking characteristic of this inflationary trend was the absence of conceptual consistency. By the time the GAF project began, 'governance' had become a *passe-partout* in managerial, political, and economic discourses, but there was no common definition and it was ideologically charged, having been used in the context of structural adjustment programmes and market-inspired reforms of public administrations. Using it in an academic and research context was therefore a challenge.

The basic question is: Does governance add something new in the scientific field, and if yes, what exactly? There is clearly a need for a definition. In order to be used in basic and action research, and to facilitate empirical observations, this definition has to be associated with a value-free methodology. To meet various research needs, this methodology has to be flexible and sophisticated enough to be applicable at different levels, from relatively simple 'technical' case studies to more complex theoretical investigations.

The decision to take the concept of governance seriously and to elaborate such a methodology was made in several steps. The first was a young researchers' seminar at the Graduate Institute of Development Studies (Hufty et al 2007). Then came decisive contributions from the NCCR North-South and from the Latin American Governance, Equity, and Health (GEH)[2] networks. The GAF project was presented on several occasions, especially at a symposium held in November 2007 in Geneva.[3] As the project went on, more case studies confirmed great interest in the methodology. This paper presents a revised version of the Governance Analytical Framework, taking into account many suggestions and comments. It builds on another article in the present volume, entitled "Governance: Exploring four approaches and their relevance to research" (Hufty 2011).

20.2 Conceptual background of the GAF project

20.2.1 Definition of governance

Governance refers to a category of social facts, namely the processes of interaction and decision-making among the actors involved in a collective problem that lead to the creation, reinforcement, or reproduction of social norms and institutions. Each society develops its own ways of making decisions and resolving conflicts. This is what governance is about. Therefore, as a social fact, governance is neither normative nor prescriptive: it refers to an observable phenomenon. Nor is it limited to any time or space, as it is observable in any human society. Decision-making processes, social norms, and institutions are inherent to social life, allowing members of any society to live together and cooperate, even without a state. It is now widely acknowledged that there are political processes at work in non-state societies as well (Evans-Pritchard 1940; Balandier 1967; Clastres 1974). Thus, governance does not presuppose vertical authority and regulatory power as the concept of 'political system' and the traditional idea of 'politics' do. It refers to formal and informal, vertical and horizontal processes, with no a priori preference. It is my contention that in policy research, using a governance perspective permits the inclusion of all political processes, including formal ones, those embedded in larger social systems, and unrecognised ones.

20.2.2 Criteria

Based on the above definition of the object of study, a methodology (a system of methods) for observing and analysing governance processes is proposed below: the Governance Analytical Framework (GAF). Building on earlier work (Hufty 2005, 2007), a set of six criteria which this methodology has to meet is presented below: the GAF should be realistic (non-normative), interdisciplinary, reflexive, comparative, generalisable, and operational.

Realistic: This criterion refers to the capacity of the methodology to describe the facts as they are, and not as they ought to be according to pre-defined stances. This is a major difference compared with normative approaches (e.g. the approaches examined in Hufty 2011, in this volume). The GAF should make it possible to describe/analyse a problem without implying a ready-made solution. It could be compared to a pair of binoculars: the instrument magnifies what we are looking at, sharpening our view and permitting us to see details we were unable to perceive before, but it does not prescribe

any normative orientations. Used in this way, by contrast with the normative approaches, governance is not seen as a model which should or should not be encouraged. There cannot be 'good' or 'better' governance without an external ideology giving an orientation to the way it is evaluated. It is, obviously, possible to evaluate a governance process and compare it with others based on predetermined postures (e.g., is it socially just or democratic?), but this is a distinct operation, with a purpose different from that of providing a realistic description and analysis.

This question reverberates in one of the major, and as yet unresolved, controversies in epistemology: positivism/empiricism versus relativism/constructivism. Without going into details, the position taken here is close to 'weak constructivism' (Searle 1995) or critical realism (Bhaskar 1975). There are crude facts or primary qualities (e.g., different groups are in disagreement on how to manage a protected area), but the concepts to describe and interpret them (to give them meaning), or secondary qualities, are subjective, constructed, and socially agreed or disputed (e.g., is centralised state management better than community-based management?). The implication is that the GAF must, as much as possible, allow hard facts to be described and analysed in a non-normative and non-prescriptive way, whereas their interpretation is based on subjective approaches.

Interdisciplinary: This criterion refers to the need for the GAF to (1) consider governance as a 'bridge concept' (Hufty and Muttenzer 2006) linking different disciplines, and (2) facilitate interdisciplinary and transdisciplinary research. This involves "a research approach constructed by methodically assembling knowledge, points of view, and work techniques from different scientific disciplines" (Jollivet and Legay 2005, p 184). The first step towards interdisciplinarity is the joint construction (or reconstruction) of an object of study, rather than simply dividing it according to disciplines (pluridisciplinarity). Interdisciplinarity allows the GAF to break away from narrow approaches limited to political science or economics, and turns governance into a concept bridging sociology, anthropology, law, economics, geography, and other disciplines.[4] A second step is the adoption of a transdisciplinary approach. The classical definition of transdisciplinarity, drawn up from a humanist perspective, would call for a purposeful elimination of borders between disciplines to overcome the sterilising effect of the artificial barriers and overspecialisation produced by the historical development of science and disciplines (Morin 1990). An alternative model (Pohl 2001; Thomson Klein et al 2001; Hirsch Hadorn et al 2006) builds on the same

transcendence, but also suggests that the persons whose practices are being observed (the 'stakeholders') should be involved in the research process from the start to enable co-production of knowledge (Pohl et al 2010). This model proposes to base research on four principles: "focus on life-world problems, transcending and integrating of disciplinary paradigms, participatory research, and the search for unity of knowledge beyond disciplines" (Aeberhard and Rist 2009, p 1173).

Reflexive: Interdisciplinarity and transdisciplinarity both imply the idea of reflexivity, defined as involving a systematic reflection on researchers' influence on the research process and the information produced.[5] This assumes the impossibility for researchers to be completely neutral. In consequence, researchers have to consider themselves as actors. Their definition of the problem, selection of tools for observation and interpretation, and interactions with the other actors participating in an observed governance process have to be integrated into the analysis.

Generalisable, comparative, and operational: As mentioned above, governance processes take place in any society at any time. In the present article, 'society' is used to refer to a group of people who are engaged in long-term relations and share a space and some cultural aspects. The GAF must make it possible to compare governance processes taking place in a given society with those going on in other spaces or times. Finally, the GAF needs to be operational, that is, suitable for analysing concrete empirical situations (this is developed further in section 20.4 below).

20.3 The Governance Analytical Framework

The GAF consists basically of five coherently linked analytical tools: problems, social norms, actors, nodal points, and processes. Problems are sets of interrelated issues at stake. Actors or stakeholders are individuals or groups whose collective action leads to the formulation of the social norms that guide, prescribe, and sanction collective and individual behaviour. Norms are themselves modified by collective interactions, which may be observed at nodal points, meaning the physical or virtual interfaces where problems, processes, actors, and norms converge. 'Processes' refers to these complex interactions over time. Actors, norms, and processes may be formal, that is, recognised by those actors who hold authority in the society under study (this recognition can be 'legal' in societies with positive law), or informal, that is, defined by the actors' practices.

20.3.1 Defining the problem

The first step in applying the GAF is to understand and clearly define the issues at stake, or to 'deconstruct' and 'reconstruct' the problem. This step is based on the assumption that problems are social constructions. There are unquestionable hard facts (e.g. land erosion on a mountain slope), but they represent 'problems' at a social level (e.g., marginalised peasant families are forced to cultivate sloping lands in unsustainable conditions due to unequal property structures, the issues being access to land, marginalisation, and diminishing productivity). Thus, in any given situation, what is at stake may be completely different for each actor. What is a problem for some can be an advantage for others (e.g. soil that is washed downhill and fertilises lowland fields) (Blaikie and Brookfield 1987). Actors, including the researchers, each have their own understanding of a given situation. This is explained by their positions in society and their habitus (Bourdieu 1980), and it is observed in their practices and discourses (Hajer 1995). Accepting this plurality of world views is a basic condition for a realistic perspective.

Each actor tries to impose their view on two aspects: the nature of the problem and the rules of the game for the negotiation process (how are decisions made? who is going to be part of the process and with what status? what system of rights applies? etc.). 'Setting the agenda' in this 'upstream governance' or 'meta-governance' process is already a power game. Actors mobilise their resources and try to impose their view by persuasion, by 'symbolic violence' (Bourdieu 1980), by force, or by a combination of these, which often leads to resistance (Scott 1985). The way in which problems are defined and the power relations that this process entails are a crucial aspect of a GAF analysis.

Researchers inevitably face the question of how to define the problem. Aware of this meta-governance process, should they accept the problem as it is presented to them by the actors? And whose version should they adopt? In case of an external mandate, the problem is usually defined by the principal and the researchers' room for manoeuvre is limited. But if the question is open, they can choose between adopting a predetermined research problem or deconstructing and reconstructing it. If they choose to reconstruct it, they can do so in two ways. One is to use the classical method of confronting documents and evidence obtained in interviews or direct observation and reconstruct the problem by themselves. The other option is to define the problem jointly with the stakeholders, as prescribed by the transdisciplinary approach to research, knowing that problems perceived by the actors are

often formulated in simple and concrete ways, or as 'social issues' (e.g., "my son is sick and I don't have the money to buy medication"), and that a reconstruction of the problem involves the conversion of these issues into generalised 'sociological problems' (e.g. inequitable access to health services). Both ways can provide much information for future intervention, allow an in-depth understanding of the issues at stake, and avoid the situation of imposing predefined solutions.

20.3.2 Understanding social norms

What is at stake, beyond the immediate problems, are social norms. These include, at a first level – the level of governance – the 'rules of the game', and at a second level – 'meta-governance' – the rules that determine how the rules of the game are established.

In any society, agreements between actors and joint decisions lead to the formulation of norms, which may be defined in general terms as shared beliefs about what is considered appropriate behaviour in a given society (what is 'normal'). Norms guide actors' behaviour and are modified by collective action, as classic institutional economics teaches us (Commons 1934); these dynamics are captured by the 'agency–structure' concept (Bourdieu 1977; Wendt 1987). Norms are ultimately based on values or beliefs: people have a sense of what is right or wrong. Norms include elements of prescription (what one should or should not do) and of sanction (positive, reinforcing the behaviour, or negative, constraining it). Norms are directly related to social institutions, defined as recurrent systems of social norms that guide and sanction the actions of individuals and groups.[6] When norms recur, they become institutionalised, meaning they are internalised by individuals and help to form an institution.

The concept of social norms includes all types of norm, whether legal, customary, or informal. In any society, different norms or systems of norms are in competition for a given question at any time; they co-exist and overlap. This situation of 'normative pluralism' may constitute a major source of conflict. It is a central objective of the actors involved in a governance process to assert their preferred norms regarding the issues at stake, about who will have the right or the legitimacy to formulate them, and about which norms will determine how the rules of the game are defined between the actors. Norms therefore constitute key stakes in themselves. They are a major source of competition between actors and in power games.

Building on Krasner (1982), Searle (1995), Katzenstein (1996), and Finnemore and Sikkink (1998), norms can be differentiated into three types, each of which involves a different level of analysis:

1. 'Meta-norms' refer to principles that guide values in societies, such as sustainable development, gender equality, participation, etc.

2. 'Constitutive norms' refer to the organisational or institutional mechanisms related to the operations of the issue under analysis, such as the statutes of the United Nations Environment Programme or the norms concerning chieftainship in a tribal society. They define the actor and give it its identity.

3. 'Regulatory norms', or rules, delimitate the conduct of individuals and groups: they specify what is appropriate or inappropriate in terms of behaviour, indicate what each person must / must not or can / cannot do, and state positive (approval or reward) or negative (disapproval or punishment) sanctions.

For analytical purposes, norms may be seen as having life cycles composed of different phases. They can be formulated at various levels ('norm emergence'; see Finnemore and Sikkink 1998) and transferred to others ('norm cascade'). At each level, there is a process of reaction: rejection, resistance, internalisation, or adaptation. As a way of developing this approach further, much work has been done on the interconnection of different analytical levels through scales, in geography (Bulkeley 2005), political science (Young 2002), and political ecology (Blaikie and Brookfield 1987).

The processes of change in social norms can be analysed using a very simple matrix (Figure 1), which employs a scalar (or 'multi-level') perspective to illustrate the division of phases and levels in norms, from their emergence to any reactions. According to research needs and contexts, further levels could be added (regions, villages, sub-continents, etc.). It should also be noted that there is no bias regarding the level where norms are formulated: this can be done at any level. The arrows express the idea that whenever a norm is transmitted, there is a reaction and a return of information to the transmission mechanism (feedback). A large part of governance processes takes place between actors at different levels, but they can also involve interactions within a level. This idea is captured by Young's (2002) concept of vertical and horizontal interplay.

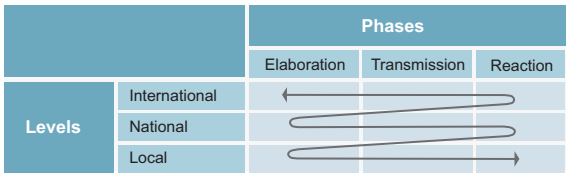


Fig. 1
Scalar analysis of norms.

20.3.3 Differentiating actors

The GAF is a methodology centred on actors[7]. Social norms are obviously carried by individual and collective actors, linked to their conduct and interactions, and conditioned by their nature, power, interests, ideas, and history. Different tools are available to analyse actors and their interactions, for example 'stakeholder analysis' (see, e.g., ODA 1995; World Bank 1996; Golder and Gawler 2005; Mayers 2005; Mayers and Vermeulen 2005). These tools usually include a system of description and analysis adapted to the needs of different types of investigation.

Identification and description of actors: The first step is to identify the stakeholders and decide on how to describe them. A major difference compared with some other methodologies is that all actors are to be included in a GAF analysis without prejudice, regardless of whether they have 'formal' or 'informal' status (i.e. are recognised by the authorities or not). Previous analyses frequently neglected poor people, indigenous peoples, and women (Chambers 1983). In a GAF analysis, by contrast, the most relevant actors have to be identified and described no matter what their status is.

Assessment of actors' influence: The second step is based on the idea that not all actors have the same influence in a governance process. Many tools thus propose to categorise them according to their influence. The difficult question is how to assess influence. It is proposed here to conduct a situational analysis of their relative power based on Bourdieu's theory of social fields (1980). In synthesis, 'symbolic capital' is the prestige an actor enjoys, 'economic capital' is revenue or properties (not necessarily expressed in monetary terms), 'social capital' is the social network an actor can mobilise, and 'cultural capital' is the knowledge to be drawn on. They are interlinked and form a first variable determining an individual's position in a social field. The second variable is the individual's will and capacity to mobilise

these resources; the third one is the effective mobilisation of these resources in the governance process; and the last one is strategic interaction with other actors. Two dimensions of these variables must be considered in an empirical evaluation: the objective dimension, which can be measured (e.g. the resources actors have at their disposal), and the subjective dimension, which depends on the perception of others.

Actors can then be classified according to their influence and power. To keep things simple, it is recommended to classify actors into three categories according to the above four variables: 'strategic', 'relevant', and 'secondary'. Prats (2001, p 120) defines *strategic actors* as "any individual, organisation or group with sufficient power resources to hinder or disturb the functioning of the rules or procedures for decision-making and resolution of collective conflicts". *Relevant actors* are those who form part of the institutional fabric and have the necessary resources to be considered as strategic, but who do not use these resources or are dominated by others in the process. *Secondary actors* do not have sufficient power to change the rules of the game, or remain passive. It makes sense to concentrate first and foremost on the strategic actors. If the necessary resources are available to the researcher, the relevant and secondary actors can be included as well.

Categorisation of interaction between actors: As a third step, the nature of the interactions between actors can be categorised, according to classic institutional economics (Commons 1934) and social anthropology (Mauss 1923–1924), into three types:

- 'Negotiation transactions', in which power is equally distributed. The transaction relationship created depends on the bargaining power of each of the actors present.
- 'Directive transactions', in which power is unequal, as in an employer–employee or patron–client relationship, whether or not guaranteed by a third party such as a political authority.
- 'Reciprocity transactions', which correspond to Mauss's (1923–1924) 'gifts and counter-gifts' and constitute a system of moral debt and reciprocity, but also of reinforcement of social relationships. Networks are a particular type of reciprocity interaction.

Various combinations of these three types of interaction correspond to different types of relationship, such as clientelism, commerce, family, etc. These interactions have to be specified in theoretical terms, based on observations in the field. There are different tools for the representation and analysis of actors' interactions, such as, for instance, actors mapping (Turnpenny et al 2005).

20.3.4 Investigating nodal points

In a governance process, actors interact repeatedly. These interactions take place physically or through different media (e.g. Internet, telephone). In the GAF, such places of interaction are called nodal points (NPs) and defined as physical or virtual spaces where various problems, actors, and processes converge, and where decisions are taken, agreements concluded, and social norms created (e.g. a negotiating table or a local community assembly). They are an interesting starting point for the observation of governance processes. This concept of nodal points (Figure 2) has much in common with, but is nevertheless quite different from, 'social interfaces' (Long 2001) or *arènes* (Olivier de Sardan 1995).

The GAF aims to distinguish the formal and informal nodal points that form part of the fabric of decision-making spaces. The identification and characterisation of different nodal points and their relationships as well as their effects on the problem observed (dependent variable) provides a basis for analysing the existing conditions, and whether they are favourable or unfavourable to a process of change. Nodal points are directly linked to actors and processes.

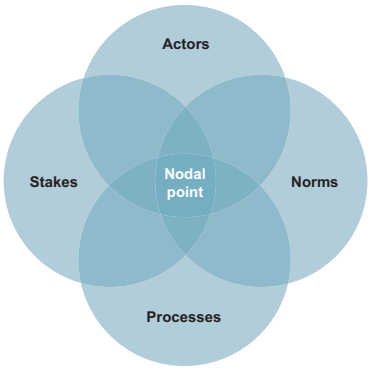


Fig. 2
A nodal point.

20.3.5 Analysing processes

Processes result from actors' interactions in nodal points (NPs) over time; they introduce a historical dimension to the methodology. For the purpose of analysis, processes can be sequenced into situations or moments which can be compared in time to understand the direction in which they evolve (the pattern of evolution), as well as to identify factors favourable or unfavourable to change. This idea is illustrated in Figure 3. Four actors (A, B, C, and D) interact repeatedly in time (T_0, T_1, T_2); for example, they have met at the negotiation table three times over a one-year period. The 'problem' is delimited by the line that circles the process. It has a starting point (first appearance of the problem under study) and an end (a decision is made that resolves it). This is, admittedly, an ideal situation, since processes of governance are rarely linear – they pass through phases of blocking, negotiation, and adjustment – and their beginning or conclusion may have to be artificially delimited, so their boundaries might not be as clear-cut as in this example.

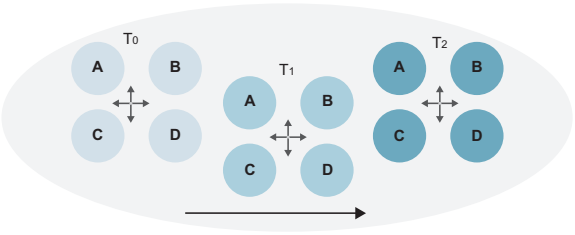


Fig. 3
A governance process.

A concrete example for the nodal point shown in Figure 3 would be a table of negotiation at which a trade union, an industry, the government, and a mediator come together over wages. It could also be developers, the state, a local community, and cattle herders exchanging their views concerning a development project, or parties negotiating to put an end to a civil war, etc. These processes obviously entail complex interactions within a given context and history, and also, as stated above, an encounter of different 'universes of meaning', world visions, cultures, discourses, and strategies. The identification of a nodal point is an ideal first step towards the observation of a governance process. A negotiation table is easy in this respect, but the process may also be informal and hidden, making direct observation difficult. The solution in this case would be an *ex post facto* reconstitution on the basis of interviews with participants and documentary observation.

A nodal point can itself be composed of several levels, which can each be analysed as a nodal point (a 'nodal chain'). In the example of negotiations concerning a wage increase in an industrial sector, representatives of unions (A), employers (B), and the government (C), along with a mediator (D) are present in a nodal point. But the unions' representative has been delegated by several unions (A_1, A_2, A_3) that had to define a common position in preparation for the negotiation process, and each union (e.g. A_1) is present in several factories which also had to define a common position (A_{11}, A_{12}… A_{15}). The situation would be similar with the employers or the different ministries. As illustrated in Figure 4, this constitutes a chain of nodal points (or a nodal chain).

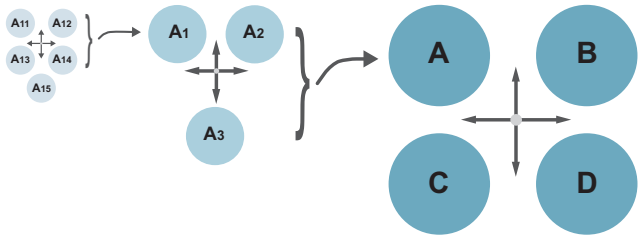


Fig. 4
Chain of nodal points.

Any set of interactions (formal or informal) between several actors that produces social norms (and institutions) can be considered as a NP. The starting point (the selected NP) for the research project can be at any level, depending on the purpose of the research. To understand how the unions managed to define a common position requires following the chain and studying several nodal points. At each level, there is confrontation between different viewpoints. This process of confrontation is partly constitutive of the actors' identities. When building a common position, actors have to make strategic moves and accept compromises, but over time they may increasingly identify with this common position, even if it was not their first choice in the beginning.

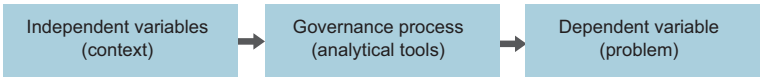
20.4 Examples of how the GAF can be operationalised

From the point of view of operationality, the GAF has been developed as a tool for analysing concrete problems, as defined in section 20.3.1 above, with a view to contributing to their solution. A basic requirement is that the problem and issues at stake can be studied using the GAF, typically to describe

and analyse a governance process, as defined above. However, the GAF is not suitable for guiding the choice between different systems of values or ethics, and it cannot answer questions such as "What is the best political system?".

As shown by concrete examples under study (Álvarez et al 2008; Báscolo 2010), the GAF can be used to understand issues of divergence between laws and the actual situation, such as inequity in access to health services despite equitable access being legally guaranteed, or deforestation in an indigenous territory despite the area being protected. In these examples, the problem to be understood is the dependent variable. It is assumed that there is a direct causal link between the dependent variable and the governance process under study (e.g. the governance of a regional health system or of the indigenous territory). The way in which the rules and norms are decided upon and implemented is causal. Understanding this process can, therefore, facilitate the resolution of the problem under study. At the same time, the governance process is itself determined by a context, such as, for example, a historical process of marginalisation of urban poor or indigenous people and a political system that reflects this history. Therefore, the governance process is itself part of a causal chain where it is being determined by a larger process while influencing a dependent variable (see Figure 5). In other words, it produces effects on a dependent variable (e.g. access to health services),[8] yet it is also affected by independent variables (e.g. the institutional organisation of the health system, social class structure, or religious beliefs).

Fig. 5
Causal chain.



Based on the five categories of analysis, the GAF methodology aims to identify the way in which governance influences the chosen dependent variable, thereby enhancing the understanding of a problem. In addition, it might also be helpful to identify features of the nodal points that are favourable or unfavourable towards effectively addressing the problem under study and achieving social change.

Figure 6 illustrates a simplified example in which governance is an intermediate variable. The governance process in this case involved different nodal points: decision-making bodies where decisions were being made that influ-

enced each other to create the problem under study, namely unequal access to abortion (i.e. health services) in different provinces of Argentina, which resulted in higher mortality rates caused by clandestine abortions in certain provinces.[9] Analysis of the governance process helped to identify a specific nodal point as central in the problem: the board responsible for elaborating the hospital abortion policy, represented as Node C in Figure 6. A key determinant (independent variable) was the fragmentation of the decision-making process between different levels (federal, provincial, municipal), allowing certain key actors (the physicians in municipal hospitals) to decide, according to their beliefs or ideology, on whether or not to adhere to the federal provisions on abortion. (According to these provisions, abortion is authorised in some cases – if the pregnancy is the result of rape or if the mother's life is in danger – but in other cases depends on a medical evaluation.) Basically, wealthy women who wanted to have an abortion chose to avoid the restrictive provincial medical systems and go to private clinics, while poor women were faced with the options of carrying an unwanted child or going underground for an abortion with high health risks. In this example, an analysis of the governance process using the GAF led to a better understanding of these dynamics.

Moving from analysis towards intervention, the interaction between fragmentation of the decision-making process (key independent variable) and Node C would be a good place to start a more in-depth analysis and subsequently launch an intervention with a view to improving maternal health. This intervention could be aimed, for example, at resolving the fragmentation issue and establishing and enforcing clear, generalised rules.

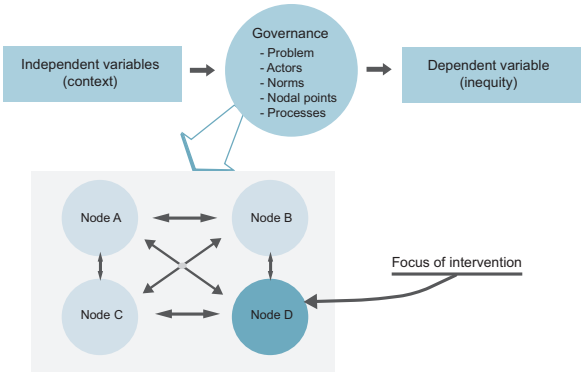


Fig. 6
Intervention methodology.

20.5 Assessment and conclusion

It is the fate of some concepts to remain semantically fuzzy, especially in the social sciences. Such concepts fulfil an essential function, because their polysemia allows a 'productive misunderstanding' (Bohannan 1958), a situation where a host of actors, each with their own interest and logic, are involved in a common social action (Sahlins 1985). Based precisely on their lack of precision, these concepts make it possible to reach a tactical consensus between people with opposite ideas: "using a neutralised language is essential whenever there is a need for establishing a practical consensus between agents or groups of agents with different interests" (Bourdieu 1982, p 64). Such politico-strategic uses are one reason why it is difficult to 'stabilise' and cumulate knowledge in the social sciences.

Among various frameworks developed for the study of non-hierarchical coordination systems (discussed in Hufty 2011, in this volume), the GAF stands alone in fulfilling several criteria that seem fundamental for the operationalisation of the concept of governance and the development of a relevant methodology: being realistic (non-normative), interdisciplinary, reflexive, comparative, generalisable, and operational. The proposed definition of governance facilitates the understanding of what is and what is not governance, and its empirical observation.

The Governance Analytical Framework contributes to giving governance its due place in scientific research. It is a realistic methodology for investigating governance processes, meaning the social interactions in which actors make decisions regarding collective problems and issues, thereby creating, reinforcing, or changing social norms and institutions. The five tools that are proposed here – problems, actors, social norms, processes, and nodal points – and that make the GAF a coherent methodology, have been used and further developed in studies on access to public health (Báscolo 2008), urban security (Velásquez 2007; López Cuartas 2008), product chains (Tobasura and Ospina 2010), post-conflict water supply (Humbel 2009), biodiversity conservation (Hufty 2008, 2009; Bottazzi 2009; Imesch 2009; Bukobero 2010; Diaz 2010), biopiracy (Gómez Lee 2008), AIDS in South Africa (Thélot 2007), discourse analysis (Scoville-Simonds 2009), and deforestation (Jean-Maurice 2009). The GAF has been applied by researchers from different disciplines, mainly to analyse – in the Cartesian sense of dividing each difficulty into as many parts as is feasible and necessary to resolve it (Descartes 1637) – governance processes which the researcher is seeking

to understand better rather than applying a predefined solution. It proved to be especially suitable for addressing complex situations, as it facilitates the delimitation of the case study in time and space by identifying nodal points and by systematically subdividing complexity into manageable parts. The GAF methodology obviously builds upon, and incorporates, previous works from several disciplines (political science, anthropology, law, geography, economics, etc.) and approaches (e.g. constructivism, post-structuralism, critical realism, etc.), which makes it sound familiar and quite easy to grasp. This is intended to be so. But it can also be used at higher levels of theoretical complexity. The methodology is still young, its possibilities and limits will be tested in the future, but its widening use confirms that there is a need and a space in the social sciences and in sustainable development research for such a methodology.

To conclude, this model is hoped to represent an improvement upon earlier versions. It is certainly an attempt to transform a rather vague and often contradictory concept into an empirical methodology with rigorous criteria. However, it should still be considered as a work in progress.

Endnotes

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[2] Promoted by Canada's International Development Research Centre (IDRC) and the Swiss Agency for Development and Cooperation (SDC).

[3] "Governance: Towards a Conceptual Framework", held on 22–24 November 2007. The symposium was funded by the Swiss National Centre of Competence in Research (NCCR) North-South, the Swiss National Science Foundation (SNSF), the Swiss Agency for Development and Cooperation (SDC), the Swiss Academy of Humanities and Social Sciences (SAHS), the Pan American Health Organization (PAHO), the International Development Research Centre (IDRC), and REGIMEN – a Research Network on International Governance, Globalisation, and the Transformations of the State.

[4] Technically, this amounts to a 'narrow interdisciplinarity' limited to social and human sciences, but it could easily be expanded to include life or natural sciences, as in political ecology, for example.

[5] A principle developed as early as 1927 by Heisenberg in physics (the uncertainty principle), in 1967 by Devereux in ethnology, and in 2001 by Bourdieu in sociology.

[6] Social institutions such as kinship or property should not be confused with organisations, which are certainly based on institutions but also have formal characteristics such as staff, a hierarchy, division of labour, resources, a recognised structure, and an overall purpose.

[7] There are some slight differences between the terms "stakeholders" (individuals or groups with an interest in the outcome of the governance process; the term is more common in the technical world), "actors" (active participants in the governance process; more common in the social sciences), and "agents" (those with agency, i.e. the capacity to act and make choices). I am using "stakeholders" and "actors" rather indiscriminately, as all actors are stakeholders. I do not use the more divisive term "agents" here to avoid confusion.

[8] As a caveat, it has to be said that the governance process probably represents only one of various factors (multi-causality), which contributes to explaining the problem being studied, but cannot explain all of it. The explanatory power of this model, or any model, should therefore not be overestimated.

[9] I wish to thank my colleagues E. Báscolo and N. Yavich at the Instituto de la Salud Juan Lazarte in Rosario, Argentina, for this example, which I have simplified for the purpose of the present article.

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Part V
Thematic Foci in Research for Sustainable Development

21 Sustainable Land Management and Global Development: Factors Affecting Land Users' Efforts to Adopt and Sustain the Productive Use of Natural Resources

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Abstract

With growing global awareness of the dangers of land degradation, the value of sustainable land management (SLM) has become increasingly obvious, particularly in developing and transition countries. A brief overview of the state of the world's land resources – especially soils, water, flora, and fauna – draws attention to the need for improved land management. This article outlines the preconditions for adoption and on-the-ground implementation of sustainable land management, based on a review of research conducted within the framework of a major international programme. Adoption of sustainable land management practices by land users can only be positively influenced if land users' agency is fully taken into account; this requires attention to five interrelated aspects: knowledge, aptitude, commitment, means of production, and legitimation. In addition, the article concludes, an urgent need remains for better data and information on the extent, dynamics, and impact of land degradation worldwide, and the effectiveness of technologies and approaches to address these problems. Moreover the article calls for research on the valuation of global environmental benefits achieved by sustainable land management measures.

Keywords: Natural resources; land degradation; sustainable land management (SLM); technology effectiveness; agency.

21.1 Evolution of the concept of sustainable land management

Sustainable land management (SLM) has regained prominence in current global debates. One major cause of this re-emergence is the increasing news coverage of land-related themes such as food security, climate change, and desertification. Other key causes include a growing awareness of progressing land degradation and of the importance of land-related resources, which constitute the basis for agricultural production and provision of ecosystem services as defined by the Millennium Ecosystem Assessment (MA 2005). It is increasingly accepted that sustainable land management is crucial to achieving the various goals of the three United Nations conventions on desertification, climate change, and biodiversity – UNCCD, UNFCC, and UNCBD. Indeed, SLM contributes substantially to limiting land degradation, rehabilitating degraded areas, and maintaining productivity and other functions of land for present and future generations (Thomas 2008; Hurni et al 2010).

The concept of sustainable land management grew out of a 1991 workshop in Chiang Rai, Thailand, organised by the International Board for Soil Research and Development (Dumanski 1997). In various post-workshop follow-up activities, the initial focus on soil conservation was extended into an integrated concept that accounts for the multiple dimensions of sustainability and includes other land resources in addition to soil (Hurni et al 1996). According to Herweg and colleagues (1999), sustainable land management may be defined as the use of land resources such as soils, water, animals, and plants for the production of goods – to meet changing human needs – in a way that assures the long-term productive potential of these resources and the maintenance of their environmental functions. Similarly, albeit displaying a stronger orientation towards the concept of sustainable development and a clearer focus on operational implications, Hurni and colleagues (1996, p 27) see sustainable land management "as a system of technologies and/or planning that aims at integrating ecological with socio-economic and political principles in the management of land for agricultural and other purposes to achieve intra- and intergenerational equity". Ideally, sustainable land management and its technologies should be oriented towards the five pillars of sustainability, striving to be: "(1) ecologically protective, (2) socially acceptable, (3) economically protective, (4) economically viable, and (5) risk reducing" (Hurni 1997, p 212). The opposite of sustainable land management – unsustainable land management – produces what

is commonly referred to as land degradation. Land degradation includes all processes that diminish or eliminate the capacity of land resources to provide ecosystem services (MA 2005; Bai et al 2008; Hurni et al 2010).

Despite numerous research reports on land degradation and various new interdisciplinary approaches to addressing it, achievements on the ground have been rather limited. Although land degradation is widely recognised as a global problem, it remains a contested topic in terms of its determinants, degree, distribution, and effects (Gisladottir and Stocking 2005). Even very recently there has been a tendency to address land degradation itself, rather than examine what causes and drives it. Moreover, the questionable reliability of certain figures on land degradation, coupled with hyperbolic projections of its seriousness on a global scale, have contributed little to the development of sound approaches. Nonetheless, many different local approaches and new models have recently been proposed, replacing earlier, somewhat simplistic technical solutions (e.g. Gisladottir and Stocking 2005); these new approaches and models view sustainable land management not merely as a technical concern, but as a means of contributing to poverty reduction and, eventually, sustainable development (Chamay et al 2007).

21.2 Global state of land resources

The agricultural price spikes that occurred in 2007 and 2008 were a stark reminder of the importance of food production and food security. Due to the corresponding food crisis, the number of the world's hungry rose to over one billion, or roughly 15% of the global population. By 2050, agricultural output will have to be increased by 70% in order to feed the projected global population of nine billion (FAO 2009). Today, almost half of the earth's land surface is used for agriculture, and estimates suggest that 40% of this is moderately degraded, while another 9% is strongly degraded, contributing to a global reduction in crop yield of 13% (Oldeman 1994; Wood et al 2000). These degradation trends are expected to be further aggravated by intensified land use and unadapted land management based on population growth, dietary changes – such as increasing consumption of livestock products – and the negative overall effects of climate change on agricultural lands. Meanwhile, agriculture, land cover change, and land degradation are major contributors of the greenhouse gases that are fuelling global climate change. It is estimated that agriculture accounts for 13.5% of the world's greenhouse gas emissions, with three quarters of this share originating from developing

countries. Another 18.2% of all greenhouse gas emissions stem from land cover changes, including deforestation and general land degradation processes (Baumert et al 2005).

This article offers an overview of the current state of various land resources – in particular soils, water, plants, and animals – and provides some insights towards overcoming the challenges inherent in sustainable land management. Based on a global land surface – excluding Antarctica – of 13,430 million hectares, 31% of that land surface consists of forest ecosystems (just over 4 billion hectares); about 26% (3,400 million hectares) is pastureland, of which about half was converted from natural grassland and the rest from forestland or woodland; and about 11.5% is cropland (1,500 million hectares), of which most was converted from forestland. Deserts, shrubland, and tundra make up approximately 25% of the global land surface; inland waters and wetlands account for about 4%; and built-up land, such as buildings or roads, comprises about 5% (FAO Statistics 2006; FAO 2010). Roughly 40% of the world's land surface is used for agricultural activities such as crop cultivation, livestock grazing, plantation forestry, and aquaculture. Today's land use patterns attest to the importance of agriculture as a major land management system transforming and making use of natural ecosystems (IAASTD 2009).

21.2.1 Soil

As a natural resource, soils are vitally important – whether for agricultural production, carbon sequestration, or biodiversity preservation (Hurni et al 2006). Estimates indicate that 10–15 million hectares of land are irreversibly lost each year due to erosion, salinisation, and a general lack of productivity (Pimentel et al 1993; Faeth and Crosson 1994; Pimentel 1997); this represents about 1% of global cropland. Without sustainable land management measures, there is a danger that the world's soils will be depleted in about 200 years (Hurni et al 2008). Soil erosion caused by wind and water is the largest driver of land degradation, accounting for about 84% of global soil losses (Oldeman et al 1991).

In and of itself a natural process, erosion becomes a problem when it is accelerated by inappropriate land management or other human activities, such as mining or infrastructure and urban development, that omit well-designed, well-maintained conservation measures (UNEP 2007). Estimates of the global extent of soil degradation and its impact on productivity are scarce and debated; nevertheless, the costs of soil degradation are undoubt-

edly high (World Bank 2008), and about one third of all agriculturally used land (cropland, pastureland, forestland) is affected (Oldeman et al 1991). A recent study by Cohen and colleagues (2006) suggests that the financial magnitude of soil erosion in Kenya equals that of its national electricity production or agricultural exports, or roughly 3.8% of the national GDP. Fortunately, there are examples of successful land management technologies that have been implemented on a large scale around the world and are well documented (Liniger and Critchley 2007).

21.2.2 Water

Soil and water degradation are intimately linked, as soil degradation reduces the productivity of water-related ecosystem services and affects water availability, quality, and storage (Bossio et al 2010). As the product of hydrological cycles on land, fresh water resources constitute only 2.5% of the earth's water. Fresh water is finite, and its global distribution was long dominated by natural cycles of freezing and thawing, precipitation, evapotranspiration, and runoff. Pressure on the global water system has grown due to increased human activities, such as land use, as well as changing climatic patterns (WWAP 2009). These developments may negatively impact surface water balance, evapotranspiration, runoff, and groundwater flow. Surface runoff and river discharge, in particular, increase when natural vegetation, such as a forest, is cleared (Foley et al 2005), or when more land is cultivated.

Access to adequate supplies of safe, reliable water is crucial to food production and poverty reduction (CA 2007). More than 2.8 billion people live in river basins where water is scarce, and about 1.6 billion people suffer from inadequate access to water. Agriculture is the biggest user of fresh water – accounting for 70% of freshwater withdrawals, most often for irrigation – while industry uses 20% and municipalities use 10% (CA 2007). Excessive use of agrochemicals and intensive livestock production are likely the most significant sources of water pollution (Steinfeld et al 2006; CA 2007) aside from industrial pollution and lack of environmental sanitation. Water conservation and water harvesting thus have important implications for agriculture (Liniger and Critchley 2007).

21.2.3 Forests and biodiversity

While deforestation has decreased globally over the past ten years, it continues at alarming rates in certain regions, in particular in South America and Africa. Forests store vast amounts of carbon and are therefore particularly

important for climate change mitigation. They are also crucial to the preservation of cultural heritage, the conservation of biological diversity, and the protection of soil and water resources. Approximately 3.3 billion hectares of forest – or 8% of global forests – have the primary function of conserving soil and water, for example by stabilising sand dunes or by controlling avalanches. This percentage has increased in the last 20 years mainly because of large-scale plantations in China that are specifically aimed at desertification control and soil and water conservation (FAO 2010). While the efficacy of measures introduced is generally high, widespread adoption by land users has been impeded by the associated high initial costs, which usually have to be borne by society.

Biodiversity, including agrobiodiversity, is rapidly declining due to climate change, the destruction and fragmentation of natural ecosystems, invasive species, pollution, expansion of agricultural frontiers, overexploitation, and changes in agricultural practices and land use (MA 2005; IAASTD 2009). Between 1970 and 2000, the global number of wildlife species declined by about 30%, and recent studies show a continuation of this trend (MA 2005; WWF International et al 2008; Butchart et al 2010). Moreover, more than half of all species exist primarily in agricultural landscapes (World Bank 2008), and although agriculture began with the domestication of wild animals and plants, the decline in genetic diversity is particularly pronounced among cultivated species: 75% of the genetic diversity of agricultural crops has been lost over the last century (FAO 1998).

21.3 Factors affecting land users' efforts towards sustainable land management

21.3.1 Individual and group agency

Today, discussions about how to implement sustainable land management focus on people's actions both as individuals and as social groups, institutions, countries, and groups of countries within the United Nations. In this context, the concept of agency – defined for example by McLaughlin and Dietz (2008, p 105) as "the capacity of individual and corporate actors, with the diverse cultural meanings that they espouse, to play an independent causal role in history" – is increasingly being used. Individual and group agency can be viewed as determined by the five dimensions of *knowledge*, *aptitude*, *commitment*, *means* of production, and *legitimation* (Hurni et al

1993). This concept can be visualised by means of a pentagram inscribed in a pentagon and linking these five components (Figure 1); it is designed to analyse a given situation and identify appropriate support activities (Hurni 2007).

Land users' motivation and willingness – that is, their *commitment* – to invest in sustainable land management depends on a wide array of factors rooted in the economic, sociopolitical, and ecological environments in which they live and work. People's *knowledge* and individual perceptions of the state of land resources, as well as their understanding of the basic processes involved in changing features of land resources are key to any effort towards sustainable land management. Generally, for most land users the existence of land degradation per se is unlikely to be a concern unless it adversely affects their productivity (Stocking and Murnaghan 2001; Hurni et al 2010). Closely related to knowledge-driven aspects of sustainable land management, *aptitude* – or skills and learning ability with regard to technical improvements – also plays an important role. Training and extension are effective means of translating knowledge into concrete approaches in order to adapt technical measures to changing contexts and enable people to implement them accordingly.

Land users' economic intentions and the frame conditions within which they can act accordingly are decisive when it comes to introducing sustainable land management practices. The following *means* are positively associated with adoption of sustainable land management practices among land users: anticipation of secured livelihoods, alternative income opportunities, pro-

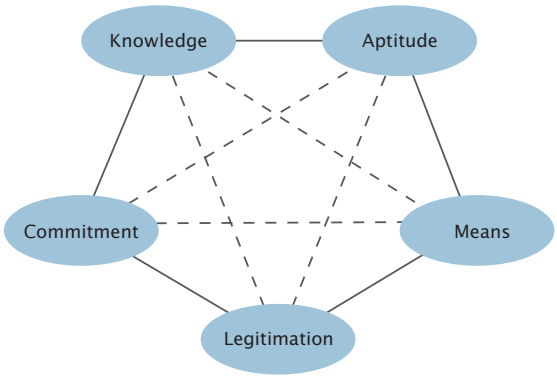

Fig. 1
The five dimensions determining agency, which constitute prerequisites for adoption of sustainable land management by land users. (Adapted from Hurni et al 1993)

ductivity gains, financial incentives, subsidies (including compensation for off-site benefits of sustainable land management measures), access to low-rate credit, and labour availability. A final key to adoption of sustainable land management is its *legitimation* through an enabling sociopolitical environment. On the one hand, an enabling environment encompasses governance issues such as legislative and regulatory provisions, land tenure, land access, compensation mechanisms, and mechanisms of resource conflict mediation. On the other hand, it includes the social and cultural acceptability of particular land management practices, in addition to aspects of people's participation, power, social status, and decision-making.

21.3.2 Knowledge and aptitude

Knowledge is generally considered a key factor for sustainable development and thus also for sustainable land management. According to the World Bank (2011, no page numbers), "a country's ability to build and mobilise knowledge capital is just as important for sustainable management as the availability of physical and financial capital. The basic component of any country's knowledge system is its indigenous knowledge. It encompasses the skills, experiences, and insights" that people apply to maintain or improve their livelihoods, thus improving their *aptitude* for sustainable land management. Experience shows that efforts to create better knowledge of sustainable land management cannot rely solely on scientific knowledge; the knowledge of local actors and other stakeholders must also be incorporated. The call for incorporating local knowledge is based, on the one hand, on the fact that actions and strategies relevant to land resources are influenced by numerous factors, including (local) perceptions, attitudes, and overall societal conditions such as economics, politics, and power structures (Chambers 1983; Hurni 1997). On the other hand, it is widely acknowledged nowadays that local populations possess complex and highly relevant information on land resources and their management. This information is more closely related to the concrete realities on the ground than scientific knowledge, which is more analytical and reflects rather abstract representations of the world (Agrawal 1995; Rist et al 2011).

Clearly, local and external knowledge are both important. Co-production of knowledge based on collaboration between academic and non-academic communities thus constitutes a very valuable asset in achieving sustainable management of land resources. According to the experience of the Swiss National Centre of Competence in Research (NCCR) North-South pro-

gramme, researchers face three challenges in the co-production of knowledge for sustainable development: (a) addressing power relations; (b) interrelating different perspectives on the issues at stake; and (c) promoting a previously negotiated orientation (Pohl et al 2010). The above observations underscore that science has no monopoly on knowledge. They also cast doubt on certain one-sided strategies of knowledge and know-how transfer that are frequently applied in development projects.

An in-depth study including more than 100 interviews with key informants – from local to international levels – showed that average knowledge of land management issues hardly differs between the various levels, that is, between land users, district and provincial-level officials, civil society organisations engaged in rural development, scientists from local academia, and members of international donor agencies. However, within each stakeholder category, substantial differences were observed in terms of people's knowledge, innovative ideas, and main expectations of land management, the latter ranging from conservation of land resources to optimisation or intensification of agricultural production. Against this background, conventional knowledge transfer activities – namely, from state agencies or development cooperation agencies to land users – are unlikely to have a significant impact. The results of the study suggest that communication between and, even more so, *within* stakeholder levels has been disrupted. Thus, initiating learning processes and knowledge generation within the respective stakeholder levels appears to bear the greatest potential for promotion of sustainable land management, at least in the short to medium term (Breu 2006).

Knowledge alone, however, will not lead to sustainable land management; it is only one prerequisite. Another crucial factor is the translation of knowledge into practical skills and techniques – that is, *aptitude* – particularly when adapting or introducing new forms of land resource use. Establishing a new land management technology, such as the use of fodder shrubs, requires multiple skills, in this case including the ability to raise seedlings in a nursery, prune trees, and feed the leaves. An absence of such skills constrains the rapid spread of the corresponding technology (Liniger and Critchley 2007). This highlights the importance of training and extension. Conventional transfer-of-technology approaches have sought to make clear distinctions between the categories of researchers, extension agents, and land users, relating them to one another in a rigid hierarchy in the process of technology development and dissemination. In these contexts, extension services and adoption of promising approaches to land management were fragmented,

leading to separate specialisation processes, each focusing only on a narrow aspect of the given situation and neglecting underlying causes of unsustainable practices as well as farmers' needs and constraints. As a result, even adapted and technically sound sustainable land management technologies proved unacceptable to farmers (Mitiku Haile et al 2006). Based on these experiences, however, the need for greater participation and devolution of power, as well as for sharing and incorporating indigenous technical knowledge is now well recognised.

The combination of indigenous technical knowledge – adapted to the local environment and accepted by local people (Stocking and Murnaghan 2001) – with sustainable land management technologies applied in other geographical contexts bears vast potential for innovative technology and skills development. This is particularly true when it comes to adapting technologies and approaches to specific local sociopolitical and environmental contexts, and ensuring their cost-effectiveness. Research shows that adaptations of local innovations often perform better and are more readily integrated into a land use system when compared to 'standard' soil and water conservation technologies introduced from the outside (Liniger and Critchley 2007).

Another key to continuously enhancing knowledge of and aptitude for sustainable land management is the development and application of impact assessment and monitoring systems. These can serve as learning instruments and go beyond traditional management tools (Herweg and Steiner 2002). This requires support for joint efforts between scientists and various stakeholder groups, working together to adapt and develop more cost-effective monitoring systems, including indicators, measures, and procedures adjusted to farmers' needs and means (Wolfgramm et al 2010). Aside from the practical value that such impact assessment and monitoring systems have as a means of knowledge generation and skill-oriented learning, they also yield data regarding the efficacy, effectiveness, and sustainability of adopted measures that are key to securing external support for sustainable land management activities.

21.3.3 Means and commitment

While farmers' decisions regarding sustainable land management are undoubtedly influenced by economic considerations and *means* – such as costs or financial returns based on productivity losses or gains influenced by the physical characteristics of available land resources – other types of con-

siderations are at least equally important. Among the further determinants also shaping land users' willingness and *commitment* to adopt sustainable land management practices are: associated risks, effectiveness, the time and effort it takes to implement sustainable land management measures, labour availability, prestige and social acceptability, availability of investment opportunities, and incentives. These additional *means* all need to be taken into account in research on sustainable land management. It is commonly assumed that land management practices which simultaneously meet economic, social, and ecological requirements will be assessed most favourably (Stocking and Murnaghan 2001; Mitiku Haile et al 2006; Woldeselassie Ogbazghi et al 2011). Various studies have shown that when it comes to analysing adoption of sustainable land management practices, farmers' attitudes cannot be reduced to an imaginary *homo oeconomicus* ideal: they do not decide for or against certain land use practices based solely on rational choices oriented towards economic optimisation of their farm. Internal processes of 'sense-making' and actor-specific perceptions have been shown to be just as important as favourable structural conditions for sustainable land management (Schneider et al 2010).

Poverty, or the absence of financial means, is often seen as a major obstacle to farmers' adoption of sustainable land management practices. Above all farmers involved in small-scale subsistence farming are often primarily concerned with the daily struggle for survival and securing a livelihood. Thus, they often do not perceive sustainable land management practices – such as soil and water conservation – as a high priority, concluding that they cannot afford to make the initial investment in sustainable land management and wait for conservation measures to pay off (Hurni et al 1996). As a result, lack of investment in sustainable land management leads to further land degradation and, eventually, to more poverty. The consequences of this downward spiral include low crop yields, lack of food security, and little surplus to sell on the open market, all of which combine to reinforce land users' poverty and decrease their social stability (Stocking and Murnaghan 2001; Mitiku Haile et al 2006). On the other hand, availability of opportunities for investment in sustainable land management technologies can make a change, with long-term positive effects on water, land, and agriculture (Hurni 2011).

In order to implement sustainable land management practices, be it land conservation measures (e.g. structural measures such as terracing) or rehabilitation measures, the availability of a labour force represents a crucial precondition – indeed, one that comes before even financial means, knowledge,

materials (e.g. machinery, seeds, fertilisers), and infrastructure for accessing markets. Labour availability is a major determinant of sustainable land management, and this has special relevance in areas affected by outmigration. Research in Central Asia by Shigaeva (2007) and Breu and co-authors (2005) highlights the importance of the labour situation in poor rural households, which are often headed by women or consist mainly of elderly persons. Among land users affected by labour shortages, sustainable land management practices requiring less labour and inputs – such as conservation agriculture – stand a better chance of being adopted (Liniger et al 2010).

Most observers agree that land users' primary interest lies in increasing their productivity and reducing their costs. Thus, the same type of outlook drives their motivation and willingness to adopt sustainable land management practices and sustainable agriculture. Many assume that soil and water conservation measures require high investments and relatively long waiting periods before initial investments pay off. Yet there are numerous examples of profitable, cost- and time-saving sustainable land management technologies that become effective within a short span of time. Liniger and Critchley (2007) and colleagues revealed that out of 70 sustainable land management technologies and approaches introduced, 62% produced short-term benefits that were noted by land users, even in light of the initial investment required. Such demonstrations of swift returns increase land users' motivation to continue implementing sustainable land management approaches.

In addition to the time it takes to experience returns on investments, land users' willingness to adopt sustainable land management measures is greatly influenced by incentives, subsidies, prices, and market structures. In order to increase the attractiveness of sustainable land management measures – particularly to small-scale farmers – soil and water conservation was and is regularly combined with subsidies (food for work, cash for work) and incentives (Mitiku Haile et al 2006; Liniger and Critchley 2007). Incentives for sustainable land management should not be interpreted exclusively as financial or material support, but should also be seen as including the intangible stimulus (or 'internal incentive') that land users experience through higher production, or by saving time and money (Liniger et al 2010). Although incentive and subsidy schemes are often criticised, implementation of many sustainable land management practices and adaptation of numerous technical innovations would never have been possible without them. However, use of such economic instruments often fails to produce lasting effects on the ground. Liniger and co-authors (2010) suggest that the lower the degree

of outside financial or material support, the greater the level of genuine initiative and participation on the part of land users and, consequently, the greater the likelihood that the corresponding interventions are sustainable. It is therefore crucial to increase land users' access to financial services and (micro) credit schemes with low interest rates, as this will support their own initiative. No less important are the ways in which markets and their price structures affect land users' decisions for or against farming practices that conserve or degrade land. Stocking and Murnaghan (2001) underline that price distortions often favour urban consumers, making it difficult or impossible for land users to recover the costs of sustainable production methods. Similarly, market volatility often impedes investment in sustainable natural resource management because it renders financial returns uncertain.

21.3.4 Legitimation

Unlike the factors described above – knowledge, aptitude, means, and commitment – that directly pertain to land users themselves, *legitimation* refers to the overall environment shaped by wider society. Legitimation determines the degree to which an environment enables something like sustainable land management to occur, essentially establishing the overall boundaries for land users' application of such practices. On the one hand, enabling environments for sustainable land management encompass decision-making at different levels that are beyond land users' direct sphere of influence, concerning policies, institutions, legal and regulatory provisions, and mechanisms for resolving conflicts over resources, among other things. Important issues that are dealt with at these levels and have a direct influence on land users' actions include land tenure, access to land, as well as compensation mechanisms for off-site effects of land management practices. On the other hand, land users' activities are determined by and subject to the social and cultural acceptability of land management practices, as well as aspects of social resilience (Obrist et al 2010), participation, power relations, social status, and decision-making.

National and international policies are crucial for creating an enabling environment in support of sustainable land management. Policy development should reflect the complexity of sustainable land use systems, while addressing the root causes and secondary effects of land degradation. Policies should also provide the bases and incentives necessary for investment in sustainable land management, beginning at the household level and extending on up to national or even regional levels (Liniger et al 2010). Key to successful implementation of natural resource policies and related legal provisions are negoti-

ated, socially accepted mechanisms, and regulatory provisions to encourage or enforce them. In this respect, greater community involvement in formulating policies and identifying implementation mechanisms increases the likelihood of success. Research in Laos has shown that increases in the influence of external actors and public policy on rural transformation – at the expense of local decision-making – have aggravated poverty and resource degradation (Messerli 2010). Although many countries, including those in the developing world, possess bodies of national-level legislation relevant to sustainable land management (e.g. laws for nature protection, water, soil, and forest management), at the regional (transboundary) and local levels, existing land management regulations are often inadequate, poorly enforced, and increase the suffering of marginalised people in particular (Upreti et al 2009). Further, national policies and legislation often fail to adequately address individual countries' regional and international obligations as signatories, for example, of the three global United Nations conventions.

Appropriate institutions are vital when it comes to translating policies and legislation into rules and regulations as well as managing natural resources in a manner that is economically viable. In contrast to neoclassical and neo-Marxist economic theorists, new institutional economists suggest that institutions are equally as important as – or possibly more important than – availability of classical production factors (land, labour, and capital) in terms of their effect on economic growth (Steimann 2011). There is evidence that sound institutional arrangements coupled with good general economics can lower pressure particularly on common-pool resources (Haller 2010). Institutions bear great importance for sustainable land management, as they often play pivotal roles in resource conflicts as well as decision-making regarding compensation for positive off-site effects (e.g. increased water availability) or penalties for negative off-site effects (e.g. sedimentation) of land management practices. In general, the costs incurred downstream of land users' plots are unlikely to be incorporated into the land use decisions of those same users (Stocking and Murnaghan 2001); these types of dynamics often result in growing competition and conflicts between various groups of land users from upstream and downstream areas (Kiteme et al 2008), gradually harming investment in sustainable resource management overall.

Land tenure and access to land are crucial determinants of land users' willingness to invest in improving or conserving land resources. Considering that land is a very strategic socio-economic asset in agrarian economies where wealth and survival are measured by control of, and access to, land (Shrestha 2009),

secure land ownership and land rights constitute a necessary prerequisite for sustainable land management (UNEP 2004). Uncertainties over land tenure – in particular concerning individual land use rights and the status of rural communities in relation to land ownership – mean that farmers, herders, and forest users feel legally insecure as to their long-term rights to use resources; this, in turn, gives them little personal incentive to assume responsibilities of stewardship and protect and conserve local natural resources, for example, those of mountain ecosystems (Hannam 2005). Yet even if formal, state-sanctioned property rights for common and private property are granted, property rights may remain locally contested and disputed. On the one hand, this is because such rights are not only constituted by state regulation, but are often – primarily – embedded in local social norms and power relations (Steimann and Geiser 2011); on the other, land is often subject to overlapping rights held by communities, individuals, and the state (Deininger et al 2010). Nevertheless, evidence from studies in Central Asia suggests that clearly assigned property rights alter people's relationships to natural resources in terms of who takes responsibility for protecting these resources (Bichsel et al 2010).

Also ranking with institutional feasibility, ecological suitability, and economic viability is social acceptability, in terms of its decisive influence on adoption of sustainable land management practices and technologies (Hurni et al 2006). Considered in relation to land management technologies and approaches, social acceptability refers to issues such as traditional norms and values, religious or social customs and taboos, local power structures, and aspects of social status. If it appears impossible to obtain social acceptance for a given sustainable land management practice, even one with proven effectiveness – for example, a measure to control soil erosion – it is probably better to forgo attempts to implement it in favour of more locally acceptable sustainable land management practices. Such locally adapted practices can be developed jointly with land users, by incorporating their knowledge and actively involving them in planning processes. In this respect, special emphasis must be given to broadly based negotiation, involving land users from all strata, and going beyond technological aspects to arrive at overall sustainable land management objectives and mechanisms that reflect local norms and values (Rist et al 2007). In the implementation phase, the likelihood of successful adoption of sustainable land management practices is greatly increased if new measures are integrated into pre-existing farming systems (Mitiku Haile et al 2006).

21.4 Conclusions and outlook

In general, despite a wealth of scientific knowledge on sustainable land management, including on the costs of land degradation and benefits of land management technologies, the magnitude of the issue and the high number of affected populations calls for enhanced dissemination of this knowledge among policymakers, experts in the socio-economic spheres, and land users themselves. Thus, the challenge at hand is not only – or primarily – one of generating more knowledge about sustainable land management, but also one of better channelling existing knowledge into the 50-plus advisory and policy processes related to the environment (Mackensen and Chevalier 2002). Nevertheless, from a global perspective, there remains an urgent need for better data and information on the extent, dynamics, and impact of land degradation worldwide, as well as on the effectiveness of technologies and approaches to address these problems.

The planned creation of sustainable land management observatories – as promoted by the UNCCD through its Policy and Investment Programme – appears to be a far-sighted and instrumental means of providing the required data and information. Besides the need to generate knowledge and channel it into policy processes at the national and international levels, there is a continued need to complement and further expand knowledge, approaches, and technologies that improve land management practices at the local level, and tap into local opportunities for alternative land use. One of the main tasks for scientists and non-scientists alike looking to support sustainable land management is to find evidence of its impacts on natural resources and to assess the societal, economic, and policy implications of these impacts (Hurni et al 2006). Along this line, the adoption of sustainable land management technologies and approaches must be further stimulated by emphasising their advantages in terms of increased production and reduced costs to land users. To enable evidence-based decision-making by land users, accurate assessments of costs and benefits (see Kappel 1996) through participatory processes will be of paramount importance (Liniger and Critchley 2007).

From a global perspective, the valuation of global environmental benefits from improved and sustained ecosystem services achieved by means of sustainable land management will be a major challenge (Gisladottir and Stocking 2005; Schwilch et al 2010). The design and implementation of quantification and compensation schemes for ecosystem services supported by sustainable land management – such as, for example, carbon sequestration in soils and biodiversity conservation – will require joint efforts by both the research community and policymakers at the international level in the years to come.

Endnotes

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22 The Missing Link: Environmental Change, Institutions, and Violent Conflicts

Laurent Goetschel[1] and Didier Péclard[2]

Abstract

In current debates about climate change, the environment is often seen as a potential cause of violent conflicts. According to this view, environmental degradation will significantly increase the stress put on various societies, particularly in so-called weak and fragile states, and thereby cause political destabilisation and violence while jeopardising national and international security. Drawing on research conducted within the Swiss National Centre of Competence in Research (NCCR) North-South programme, this article shows that establishing such direct causal links is simplistic and reductionist. While recognising that climate change, and especially resource scarcity, can lead to violent conflict, we argue that, when trying to understand the relationships between changes in the environment and violent conflict, it is crucial to put social and human dimensions at the centre of the analysis. Climate change may render human interaction and social regulation more difficult, but it will hardly ever directly affect the probability of violence. Climate policy will not bring about peace any more than peace policy will improve the climate. In other words, the missing link in current debates about environmental conflicts is the key role played by political, social, and cultural institutions in mediating between the two terms of the equation.

Keywords: Environmental change; resource scarcity; violent conflict; institutions; statehood.

22.1 Introduction

In 2007, the German Advisory Council on Global Change (WBGU) published a report entitled "World in Transition: Climate Change as a Security Risk" (WBGU 2007). Drawing on the alarming figures published by the Intergovernmental Panel on Climate Change (IPCC) in the same year, it argued that without resolute counteraction, climate change would significantly increase the stress put on various societies, particularly in so-called weak and fragile states. This, in turn, could provoke destabilisation and violence and thereby jeopardise national and international security. As a countermeasure, the report suggested an ambitious global climate policy. Otherwise, it continued, climate change could trigger distributional conflicts and intensify the erosion of social order and the rise of violence. Such clear-cut statements are of high political saliency. In spring 2008, for example, the EU High Representative for Foreign and Security Policy, Xavier Solana, and the European Commission published a joint paper on climate change and international security for the attention of the European Council, that is, the heads of state or government of EU member states (European Council 2008). The paper builds on the same logic as the WBGU report, according to which the evidence provided by the IPCC about the increased rapidity of climatic and environmental changes provides clear guidance not only for climate policy, but for peacebuilding as well.

As important as environmental awareness with respect to observed climate change may be, the conclusions drawn in such studies raise two major issues. First, the link that is established between environmental transformation (including resource scarcity) and violent conflicts needs to be questioned critically on the basis of empirical evidence. Even the direction of the correlation should be challenged: scarcity might well be more an effect than a cause of conflict. The second issue concerns the measures to be adopted in order to mitigate the diagnosed security risks. The solutions put forward by the WBGU harbour the danger of narrowing a whole set of societal problems down to environmental issues. A salient example which led to many controversies was provided by a contribution of United Nations Secretary General Ban Ki Moon to the *Washington Post* in June 2007, in which he established a direct link between ecological degradation and the Darfur crisis (Ban Ki Moon 2007). Does this mean that the perpetrators of massacres mainly react to environmental threats? And does it also mean that a successful global climate policy would ultimately contribute to mitigating conflicts such as the one in Darfur?

Drawing on research conducted within the Swiss National Centre of Competence in Research (NCCR) North-South programme,[3] the present article sheds new light on this debate. One of the main conclusions to be drawn from the body of academic work presented below is that seeing the environment as a direct cause of violent conflict is politically opportunistic, and that it can have potentially disastrous consequences for the efforts undertaken by politicians, peacebuilders, and peace researchers to reduce violent conflicts and their effects. The issue here is not to refute a priori the idea that climate change, and especially resource scarcity, *could* lead to violent conflict. What we maintain instead is that, when trying to understand the relationships between changes in the environment and violent conflict, it is crucial to put social and human dimensions at the centre of the analysis. Climate change may render human interaction and social regulation more difficult, but it will hardly ever directly affect the probability of violence. Climate policy will not bring about peace any more than peace policy will improve the climate. In other words, the missing link in current debates about environmental conflicts is the key role played by political, social, and cultural institutions in mediating between the two terms of the equation.

To support our argument, we proceed in three steps: we first briefly recapitulate debates on environmental conflicts and set out the approach taken in the NCCR North-South case studies. We then move on to present some key insights drawn from case studies on water and land issues. The article concludes by highlighting the importance of institutional regimes and the state, thus sketching new research perspectives around the issue of statehood.

22.2 From environmental security to natural resource use conflicts

The debate on the link between the environment and security dates from the final phase of the Cold War. In the wake of ecological disasters such as the 1986 Tchernobyl nuclear accident, drought and desertification in the Sahel belt, and debates in Western Europe about the possible death of forests, the environment began to be seen as a potential threat to international security. Reflection and research on how to ensure the security of states moved from an exclusive concern with protection against nuclear weapons to protection of the environment itself.

Since then, a number of research programmes have been launched in order to study and, if possible, 'measure' the links between environmental degradation and the occurrence of violent conflicts worldwide. This was the case, for instance, with Thomas Homer-Dixon and his Canada-based team (Homer-Dixon 1994, 1999) and the Environment and Conflict Project (ENCOP) team led by Günther Baechler and Kurt Spillmann (Baechler 1994, 1998). These two teams differed in their theoretical backgrounds and terminology. However, they both sought, on the basis of aggregated empirical evidence from a number of case studies, to establish causal links between environmental degradation, increased scarcity of renewable natural resources, and the occurrence of violent conflicts, with a particular focus on developing and transition countries.

Both groups came to similar conclusions, showing that resource scarcity and environmental degradation alone were rarely a direct cause of violent conflicts. But both also added that environmental degradation combined with other triggering factors such as socio-economic, ethnic, or social inequalities could, and in many cases did, contribute to such conflicts.[4] In other words, a consensus was gradually reached that conflicts linked to renewable natural resources such as land and water could not be traced back to a single explanatory factor such as environmental degradation, but that they depended on a plurality of social, political, economic, and environmental factors. More than a decade after these early studies were published, the link between environmental degradation and conflict remains elusive and difficult to ascertain on the basis of empirical evidence, despite widespread claims to the contrary asserted in popular discourse, in the media, and in scientifically based publications such as the latest report of the IPCC (Breitmeier 2009; Gleditsch and Nordås 2009; Take 2009).

22.3 An anthropocentric approach to environmental conflicts

It is on this basis that a research project on environmental conflict was elaborated as of 2001 at swisspeace, within the framework of the NCCR North-South. Rather than reopening the debate about the causality between natural resources and conflict, the project set out to analyse and understand how, in situations of environmental stress, potential conflicts over natural resources were managed by local and international actors (Goetschel and Péclard 2006). To do so, a shift in perspective "from environmentally induced con-

flicts to natural resource *use* conflicts" was suggested (Hagmann 2005, p 21, emphasis by authors of the present paper). This implied that issues such as resource scarcity and environmental degradation had to be analysed (1) in the context of social and political relations between the user groups concerned, (2) in relation to the role of institutions set up to manage resource use patterns, and (3) by taking into account the social and cultural rationale of groups involved in natural resource management and/or conflicts (ibid., pp 21–22).

This research agenda was implemented in a number of case studies in the Horn of Africa as well as in Central and Southeast Asia, with a focus on renewable natural resources such as water and land. Some of the key findings are briefly summarised below.

22.3.1 Water and politics

The Nile Basin stretches over ten countries and is home to approximately 160 million people. Water management is related to significant conflict potential. With an annual population growth rate of about 2 to 3% in the region, there is increasing demographic pressure on water and the risk of a growing imbalance between supply and demand is real. Moreover, the competing interests of riparian countries make things even more complicated. Relations between Ethiopia, where 86% of the Nile water comes from, and Egypt, which relies on the Nile for 95% of its water supplies, have thus at times been very tense (Mason 2004).

Two joint studies were conducted on this topic. One focused on the upper Nile in Ethiopia (Yacob Arsano 2007) while the second concentrated on Egypt (Mason 2004). The aim of both studies was to understand how to move "from conflict to cooperation" (Mason 2004, title) and thus solve "the dilemmas of hydropolitics" (Yacob Arsano 2007, title) which involve, on the one hand, inadequate management and unsustainable use of water at the national level and, on the other hand, a lack of security and cooperation that is characteristic of the region. Both authors underlined the importance of *linkage* strategies in water management and in the prevention of conflicts that could arise due to poor management. This concerns, firstly, links between the riparian countries, whose destinies are obviously interdependent due to their geographical location and which have great interests in collaborating. But, secondly, they also stressed the institutional, economic, and environmental links between all countries in the Basin. As Mason puts

it, "the problem of international water conflicts is not one of war, but rather unsustainable development resulting from the absence of cooperation" (Mason 2004, p xv). Yacob Arsano adds that cooperation needs to take place at all levels (local, national, regional) and "not only in the economic, academic and political fields, but also in the cultural and spiritual ones" (Yacob Arsano 2007, p 24).

Against a backdrop of mostly unilateral approaches to the management and use of the Nile Basin waters, and in order to deal in a constructive manner with conflicts linked to their use, Mason and Yacob Arsano suggest the establishment of a compensation mechanism. This mechanism would ensure compensation for the use of water by providing other resources or by including the affected populations in decision-making and management processes relating to water resources. Implementing such a compensation mechanism, as well as including the populations concerned, requires that an appropriate institutional set-up be put in place. This must reach beyond national borders and take into account existing power mechanisms at the local (traditional), national, and regional levels.[5] A comparative study on the management of water policies in Egypt and Ethiopia (Luzi 2007) provided a significant complement to this perspective. It adopted a 'two-level-game' perspective to conceptualise the interlinkages between domestic and foreign policy processes and to identify the range of domestically ratifiable water negotiation results. The study shows how the limited connectedness of sectoral agencies in both countries leads to fragmented policies. Insufficient planning and coordination capacities at the national level reduce the range of policy choices available to decision-makers.

Water is a key economic, political, and social issue in Central Asia as well. Here, too, there is a strong tendency in research and in development policies to establish a direct link between water resources and conflict.[6] Water scarcity is generally seen as the 'natural' cause of grievances which, once formulated and brought into the political fray by local communities, inevitably lead to violent conflicts. In this perspective, conflicts linked to water are considered 'endemic', that is resulting from struggles at the local level, or as the direct consequence of a degradation of inter-community relationships due to lack of water. The resolution of such conflicts is perceived primarily as a technical issue (improving irrigation networks) and a local question (creation of mechanisms of common water management at the level of local communities).

Research conducted in the Ferghana Valley, in the Syr Daria Basin between Uzbekistan, Tajikistan, and Kyrgyzstan, shows the limits of such an approach (Bichsel 2009). The very concept of water *scarcity* is critically questioned: Scarcity is not just an 'objective' issue, as it is generally considered, especially by development agencies active in the region. Scarcity is the result of power relations; the ways in which the stakeholders concerned perceive problems of access to and distribution of drinking or irrigation water, as well as the strategies they pursue (or do not pursue!) in order to solve those problems, must be contextualised. Besides, regarding these conflicts as 'endemic' is problematic. On the one hand, this generally leads to a primordialist vision in which the communities in question appear as homogeneous, whereas in reality they are, on the contrary, complex political societies with many lines of conflict. On the other hand, these conflicts are not only restricted to the local sphere.

Consequently, the responses of national and international actors to the problem of water distribution in the Ferghana Valley have often not been adequate. Firstly, the 'technicist' option, which consists in trying to prevent or solve water-related conflicts by simply improving distribution networks and the way they are managed by local communities, tends to 'depoliticise' problems that are, in fact, highly political by turning them into 'simple' issues of technical and community development.[7] Secondly, the role of power relationships at the local level, albeit crucial, tends to be ignored or underestimated. These power relationships are reflected in the importance given to the various judicial systems at the national, regional, and local levels. Very often, the national legal framework does not correspond to the daily life of local populations and does not make sense to them. Finally, the people and groups concerned do not necessarily adhere to the model of 'harmony' which external actors try to impose in order to solve conflicts that they believe they have discovered.

In other words, water in itself is rarely a cause of conflict. Rather, it is a terrain upon which other types of social and political conflicts or oppositions are played out. Understanding these conflicts and devising appropriate strategies to address them requires in-depth analyses of their historical, social, cultural, and political dynamics. This means looking far beyond the borders of the communities involved in the conflict. It also means that one has to understand the way in which the societies in question have been shaped by these very conflicts.

22.3.2 Land and conflict

Conflicts linked to the use and management of land have been studied from different angles and perspectives and in a wide variety of historical and geographical contexts. In this case as well, research results have shown quite clearly that, in order to understand the dynamics of these conflicts and devise strategies of intervention, it does not suffice simply to look for a link between the issue of access to and use of land on the one hand, and the occurrence of tensions potentially leading to violent conflicts on the other. Many other variables need to be taken into account as well.

Research on pastoral conflict and resource management in Ethiopia (Hagmann 2006) thus underlined the central but initially unexpected role of the state in shaping pastoral conflict and resource management in frontier areas such as Ethiopia's Somali region. Before the establishment of local government in pastoral lowlands, resource conflicts were primarily driven by competition over water wells and pastures. With the advent of decentralisation, numerous state or state-related resources have been brought into play. As evidenced by the NCCR North-South research, employment in the public sector, political nominations, state budgets, and basic government services such as education, food aid, security, and many others have become contested resources. They provide an incentive for political competition, fuel intergroup tensions, and transform existing conflict dynamics, which become intertwined with control of state office. In parallel with the 'trickling down' of state resources into remote rural areas, neo-patrimonial relations between resource users and state representatives are being established. These relations and networks tie rural constituencies to urban gatekeepers, determine the allocation of state resources, and assure politicians of electoral support on election day. By means of this process, state-building has politicised kinship relations and reconfigured the collective identities of pastoral groups (Hagmann and Alemmaya Mulugeta 2008).

Focusing on the potential of local institutions in conflict transformation in pastoral areas of Ethiopia, further research has shown that the often-stated argument according to which local institutions have deteriorated and strengthening their role will help to mitigate violent conflicts in pastoral areas, is often misleading (Alemmaya Mulugeta 2010). Indeed, Alemmaya Mulugeta shows that the dichotomy between local institutions and state institutions exists only in theory. Whether formally or non-formally established, local institutions remain alive at the level of social narrative and pub-

lic ideology, and thus play a very important role in shaping the history of the respective community. However, the state has recently claimed the role played by local institutions in terms of conflict mitigation on the ground, even though it lacks the capacity to do so for both structural and political reasons. On the structural level, state institutions usually lack the resources that would enable them to understand how and why violence occurs in specific places. On the political level, the main problem is that the state itself is often heavily involved in instigating violence, which of course makes it impossible for it to play the role of a neutral actor in conflict resolution processes (Alemmaya Mulugeta and Hagmann 2008). Moreover, Alemmaya Mulugeta argues that the roots of violence cannot be fully understood by looking solely at actors directly engaged in violence itself, but that other 'invisible' actors such as investors, businessmen, and non-governmental organisations (NGOs) that act as apparently neutral parties or play a developmental role should also be taken into account (Alemmaya Mulugeta 2010).

The issue of land distribution is of central relevance as well, as research in South Asia (India and Bangladesh) and Southeast Asia (Philippines, Indonesia) has shown. In this case, the focus was on the relationships between settlers and indigenous populations regarding access to land ownership, especially in border zones (in a social as well as geographical sense). The arrival of settlers in such areas, whether as part of a state scheme or on their own initiative, generally gives rise to tensions between settlers and indigenous communities, who feel threatened by the newcomers. Violent conflicts that arise from such situations usually crystallise around the issue of 'indigenousness', creating anti-immigrant discourses and practices based on the right of 'autochthons' to dispose of their land. In such cases it would be simplistic to reduce the dynamics of conflict to the question of access to land resources or to the lack of land due to the arrival of settlers. Here as well, conflicts are not just 'environmental' but are the result of constellations of conflicts with different origins and rationales (ethnic, political, social, economic, cultural, etc.). Any attempt at mediation in such conflicts must take this complexity into account (Geiger 2008).

The issue of land titling on the island of Mindanao, Philippines, shows just how complex and ambivalent intervention strategies are. In 1997, the government passed the Indigenous Peoples Rights Act (IPRA), a bill without comparison throughout Southeast Asia in terms of protecting indigenous people. By granting indigenous communities the right to claim – and obtain – ownership to their land, this law indeed introduced an apparently powerful

instrument for the protection of indigenous minorities. On closer examination, however, things are not as simple as they appear. IPRA is in fact part of a hegemonic strategy of the Filipino state, which tries to extend its control to 'frontier zones' – where its presence is very scant and its power heavily questioned – through the introduction of a bureaucratic logic of classifying peoples and groups, and through the titling of land. What appears at first sight as an efficient measure of protecting ethnic minorities is in fact also, or primarily, an instrument of state control (Wenk 2005).

The central contribution of these different studies has thus been to demonstrate the crucial importance of the human factor in so-called 'environmental conflicts'. The key to prevention and resolution of such conflicts, therefore, does not lie in technical interventions that only aim to address the environmental causes (e.g. combating drought) or to improve resource distribution and circulation (e.g. through better irrigation and water distribution networks or by improving access to land), but in the human, social, political, economic, and cultural management of the resources concerned. This anthropocentric approach to resource use conflicts, by putting individuals and social groups at the centre of analysis, also aims to understand the institutional dimensions of conflict and to assess the potential that institutions – be they customary, community-based, or part of the state apparatus – have in terms of conflict prevention and resolution.

22.4 Conclusion: Bringing institutions and states back in

With the publication of the WBGU report in 2007, the debate on environmental conflicts has come full circle, since the security implications of climate change are seen in much the same way as when the issue made its entrance on the international scene at the end of the Cold War. In this context, it is particularly important to move from a strictly 'environment-centred' to a 'human-centred' approach.

This move allows us, first of all, to pay due attention to the way in which existing institutional mechanisms of conflict prevention in the societies concerned can contribute to 'environmental peacebuilding' (Péclard 2009). It also helps to understand how, paradoxically, such institutions can have negative effects on efforts to solve conflicts, especially in contexts where, as in the Ethiopian lowlands, their role is being challenged by state institu-

tions that lack the practical means to intervene (Alemmaya Mulugeta and Hagmann 2008). Furthermore, natural resources such as water and land are embedded in a wider system of resources (symbolic and material), and institutions are, of course, central not only in regulating access to them, but also in mitigating potential conflicts related to them. This applies even more in cases of international tensions or conflicts, as has been shown in the research on the Nile Basin mentioned above (Mason 2004; Yacob Arsano 2007; Luzi 2008). Whether or not resource scarcity is likely to actually lead to conflict depends largely on the way the institutions concerned deal with the issue. They are much better equipped to solve or transform potential conflicts if they have a clear approach to resource allocation, if they can adapt to changing political and environmental conditions, and if they can promote positive-sum solutions to resource problems and incorporate structural conflict resolution mechanisms (Giordano et al 2005, p 61).

Focusing on the institutional dimension of environmental conflicts is therefore another way of taking full account of the inherently political nature of these conflicts (Hagmann 2005; Bichsel 2009). Indeed, they cannot be understood without taking into account wider processes of social and political change at the local as well as global levels. As the example of the Ethiopian lowlands mentioned above (Hagmann 2006; Alemmaya Mulugeta 2010) clearly demonstrates, conflicts over access to land, pastures, or water are often the result of struggles for power within a particular context rather than a consequence of the scarcity of the resource itself. In this sense, natural resources are as much instruments of political struggle as its ultimate objective or goal.

This is a further reason why institutions in general, and in particular state institutions, need to be brought back to the centre of analysis. Firstly, natural resources themselves, as well as the modes of social regulation that have developed around the use of such resources, are central to the political and economic basis of states. The dynamics of state formation are deeply intertwined with availability of and control over natural resources. Secondly, the definition and management of property rights, as well as the capacity to regulate access to natural resources, depend largely on the capacity of states to put in place a working judicial system and on the ways in which this system interacts with other judicial orders, especially at the local (community) level. Thirdly, and perhaps most importantly, the state itself is a material as well as symbolic resource that directly influences the way in which potential conflicts over the environment actually develop. This was already the case

in colonial Africa, where control over land, for instance, usually went hand in hand with the emergence of the social groups that eventually formed the backbone of the post-colonial state (Boone 2003). This is also very clearly illustrated by the consequences of the politics of ethnic federalism and decentralisation adopted in Ethiopia since 1991 (Hagmann 2006), or in post-Soviet Central Asia (Bichsel 2009).

And herein lies another risk of oversimplification in current debates about the effects of climate change. One of the underlying assumptions of catastrophist discourses on the risk of violent conflicts as a consequence of climate change is that the effects of increased scarcity of natural resources will hit so-called 'weak' or 'fragile' states much harder than others. As we have shown here, properly functioning institutions do have a critical role to play in the prevention, mitigation, and resolution of violent conflicts, and accordingly, institutionally stable states can be an asset in the context of environmental stress. However, the 'fragile state' discourse is a strongly normative one which does not allow for understanding of the dynamics of state formation and the ways in which power relations are institutionalised in particular settings. Indeed, states are identified as 'weak', 'fragile', or even 'failed' and 'collapsed' "not by what they are, but by what they are not, namely, successful in comparison to Western states" (Hill 2005, p 148). In the context of climate change, it is therefore crucial to analyse how issues such as the regulation of access to natural resources, the distribution of land and pastures, the availability of fresh water through distribution networks, or even the sharing of international waters are embedded in dynamics of power distribution and institutionalisation. In other words, the environment is but one resource among many others for which social actors strive and struggle, rather than the ultimate cause of violence in contexts of resource scarcity, as the reports of the IPCC and of the WBGU seem to imply. Finally, it should be investigated how the environment is embedded in processes of 'negotiating statehood' (Hagmann and Péclard 2010), that is, in social and political struggles for control over the regulation of social life, at the local and global levels.

Directing the focus, as we are suggesting, on issues of governance and institutional settings when dealing with so-called environmental conflicts has implications for research, of course, but also for the policies of international actors such as the United Nations. Indeed, in the United Nations system there is a strong tendency to separate environmental from political issues – or even worse, to reduce politics to ecology as mentioned above in the introduction.[8] Against this tendency, the research perspective we have synthe-

sised here underlines the primary importance of the modes of interaction and governance chosen by the parties concerned themselves. There is no empirical evidence that the need for multiple parties to accommodate their joint use of renewable natural resources such as land or water will more often lead to violent conflicts than to cooperation. If violence occurs, its causes have to be sought also in the human, social, and political dimensions of the conflict in question, and not solely in its ecological aspects. Similarly, peacebuilding strategies and modes of intervention devised with a view to mitigating such conflicts need to focus on what is so often the 'missing link' in the debate: on the institutional dimension.

Endnotes

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[3] Between 2001 and 2006, a total of 10 PhD dissertations focusing on 'environmental conflicts' were completed at the Swiss Peace Foundation (swisspeace) in Bern, Switzerland, and with partner institutions in Switzerland and in the South. The main results of these projects are briefly presented below. For a list of dissertations as well as information on current projects, see www.swisspeace.org.

[4] See Hagmann (2005) and Breitmeier (2009) for a critical appraisal of the two research programmes.

[5] For a practical note on NGO work and conflict prevention in the water sector in Ethiopia, see Bonzi (2006).

[6] Regarding this tendency in Central Asia, see for example Slim (2002) or Tabyshalieva (1999). For general perspectives on the link between water resources and conflict, see Spillmann (2000) and Haftendort (2000).

[7] In a very different context, see Ferguson (1990).

[8] See also Alluri et al (2008), Maurer (2009).

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23 Challenges for Participatory Conservation in Times of Global Change: Lessons from a Comparative Analysis and New Developments

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Abstract

Participatory approaches to conservation have been applied worldwide by governments and non-governmental organisations. However, results from a comparative analysis of the impacts of global change on management issues in 13 protected areas in Africa, Latin America, Asia, and Europe show that in many cases the involvement of local people has remained limited, and economic gains for local livelihoods have been limited or non-existent. Viewed from a 'new institutionalist' perspective and focusing on power relations and ideologies, the results of this study carried out within the framework of the Swiss National Centre of Competence in Research (NCCR) North-South show that in African cases local people do not feel part of the process and, therefore, become disengaged. In Asia, and even more so in Latin America, local indigenous peoples and their leaders support protected areas as a means to gain political rights over areas threatened by immigration. The European (Swiss) case is the only one where political rights and economic incentives present a context in which participation is of direct interest to local people. Meanwhile, recent debates on new global conservation developments in the context of climate change policy indicate a growing tendency to treat conservation as a commodity. We argue that this can have problematical effects on efforts to devolve power to the local level in the context of conservation.

Keywords: Participatory conservation; protected area management; new institutionalism; comparative analysis.

23.1 Introduction

Many recent publications have examined changes in protected area policies, discussing in particular the so-called paradigm shift from fortress conservation to participatory conservation approaches including community conservation, collaborative conservation, or co-management (Hulme and Murphree 2001; Borrini-Feyerabend et al 2004; Borgerhoff Mulder and Coppolillo 2005; Brockington et al 2008). These works emphasise the view that keeping protected areas alive and biodiversity conservation working requires a participatory approach. Reasons given range from issues of ethics and human rights of minority groups (indigenous peoples) to economic management for sustainable development based on the argument that local involvement in protected area management in the context of decentralisation reduces transaction costs to states (Stevens 1997; Gibson 1999; Hulme and Murphree 2001). If such local involvement is taken seriously, its establishment calls for an active political process of decentralisation and accountability (Ribot 2002, 2003; Geiser and Rist 2009), allowing local-level actors and groups to define what is to be conserved, and how it shall be conserved (Haller 2010b).

Galvin and Haller (2008) conducted a comparative study of cases researched by the Swiss National Centre of Competence in Research (NCCR) North-South in Africa, Latin America, Asia, and Europe in order to understand processes of participation in protected area management (Figure 1). This study is a unique case of qualitative comparison, addressing these issues in comparable settings of protected areas which are formally managed based on more or less participatory approaches. The present article partially draws on this previously published information (Haller and Galvin 2008a, 2008b), highlighting the most important findings; in a second part, these findings are discussed in the context of new literature on protected areas and on conservation in general. We argue that in the cases compared, participatory approaches failed to bring any economic gains for the local population and, for the most part, were less participatory than formally declared; at the same time, however, they offered political gains in Latin America, where the political notion of 'indigenous peoples' was employed strategically by the grassroots level and its elites. Similarly, one case studied in depth in Switzerland and a short outlook on new Swiss cases (in the context of a newly established "Regional Nature Park" label) indicate that formal constitutional democratic procedures empowering local-level actors are key to participatory processes, but nevertheless cannot guarantee full participa-

tion unless the heterogeneous expectations of the different groups involved – local groups as well as the government and national non-governmental organisations (NGOs) – are debated and negotiated in a transparent decision-making process. Moreover, new developments in conservation, such as climate change mitigation initiatives stressing forest protection and the commoditisation of conservation, pose major challenges to the development of truly participatory approaches based on democratic principles and downward accountability. The results from case studies in Latin America indicate that land rights and institutions based on principles of equity are key to mitigating these new problems of global change for local populations in and around protected areas.

23.2 Between development, the re-emerging fortress, and empowerment: different perceptions of participatory processes

In the scientific literature on participation processes in protected areas that involve some sort of co-management or community management elements, we can distinguish three types of policy propositions for local-level engagement advanced by researchers: 1) development, 2) re-emerging fortress and no local involvement, and 3) political empowerment.

The first position advocates projects that integrate conservation and development schemes in a fruitful manner, based on the vision that projects increasing local livelihood options will result in rising standards of living, which, in turn, will provide incentives for local participation in conservation efforts. Such projects can range from health and infrastructure schemes to building up businesses in order to decrease local pressure on conserved areas where it was previously increased by poverty (McShane and Wells 2004). Some community-based natural resource management schemes in Southern Africa could fall under this category, as they frequently promote gains from tourism and tourist game hunting rather than real local resource management initiatives per se (Hulme and Murphree 2001; DeMotts and Haller 2009; Saum 2010).

The second position is advanced by scholars and conservationists who warn that outreach projects will lead to a neglect of conservation goals, and argue in favour of a return to the fortress approach to save the last remnants of wilderness. The same criticisms are advanced with regard to local empower-

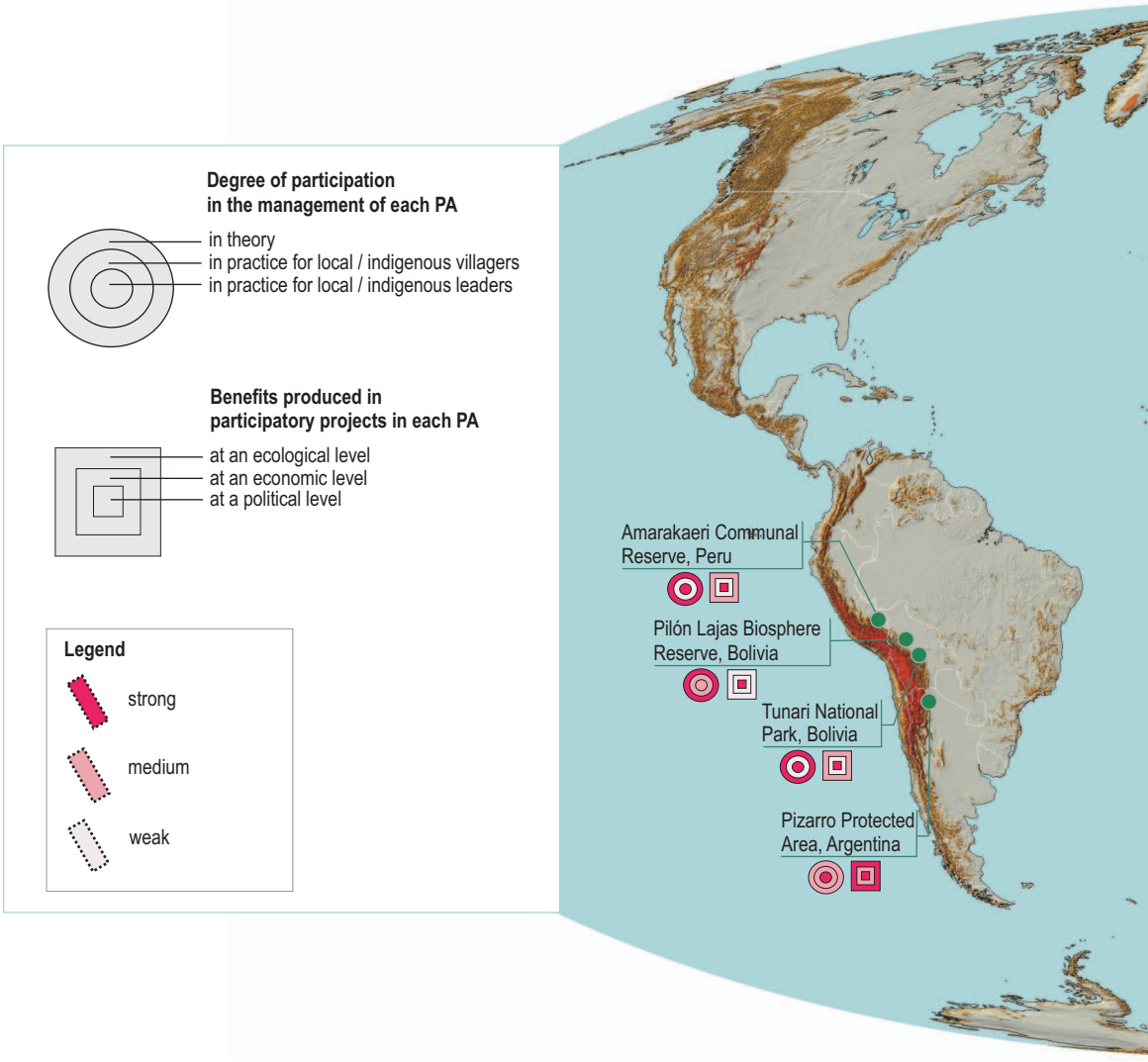
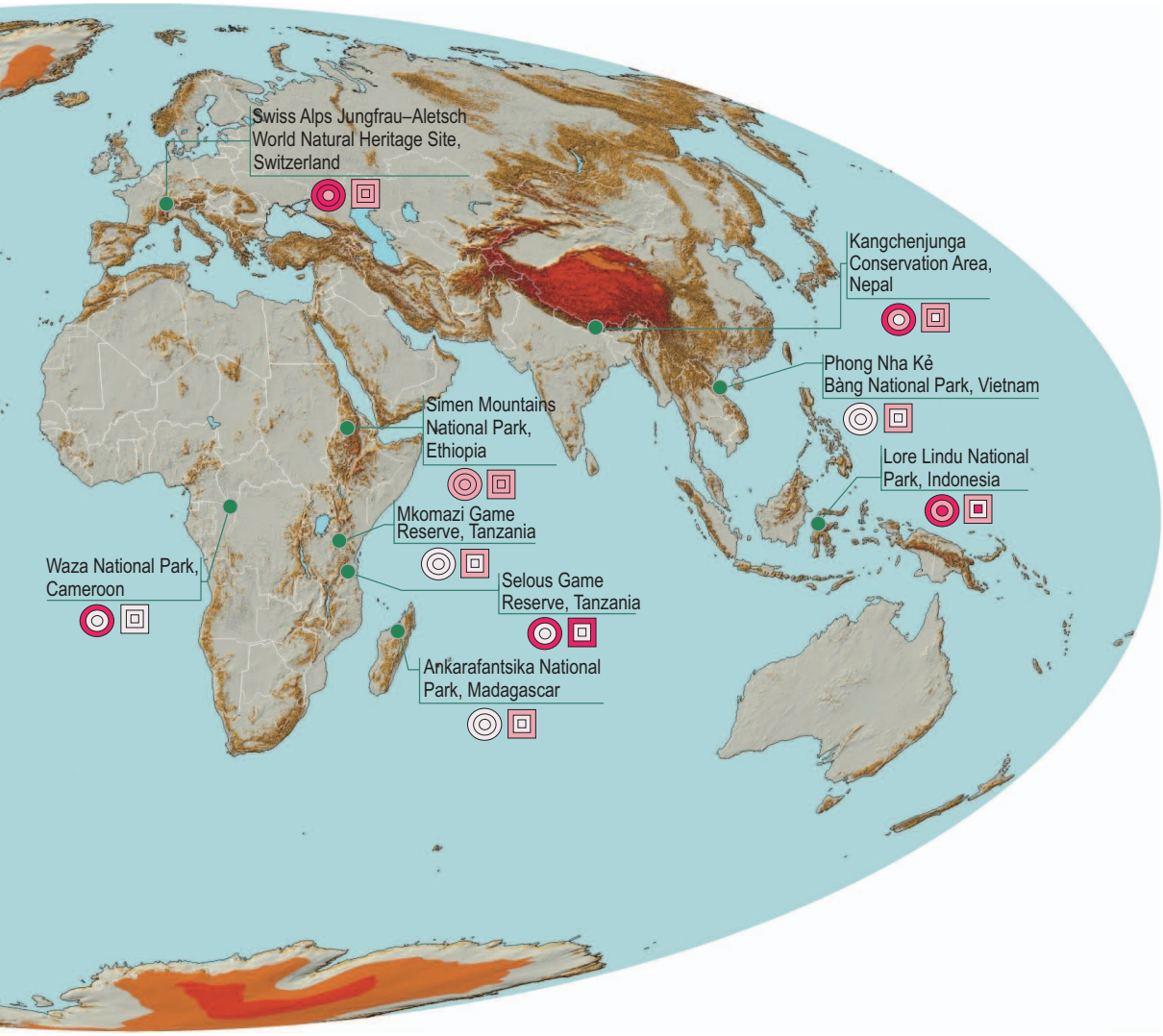


Fig. 1
Location of the 13 protected areas studied. (Map by Albrecht Ehrensperger and Ulla Gaemperli, Centre for Development and Environment (CDE); first published in Haller and Galvin 2008b, pp 524–525, slightly adapted)



Map sources: Terrain data: Resampled from the GTOPO30 Digital Terrain Model (DTM) produced by US Geological Survey (USGS) using a model by Kopas et al 2000. Elevation (metres): Derived directly from the DTM. Slope (degree): Derived directly from the DTM. Elevation range (metres): Maximum elevation difference in a 5km radius. Derived from DTM.

Hydrographic data: ESRI Data and Maps, World CD.
Administrative data: ESRI Data and Maps, World CD.
Map scale: approx. 1:100,000,000
Map projection: Mollweide
Authors: Research, GIS, cartography and layout: Albrecht Ehrensperger (CDE) and Ulla Gaemperli (CDE)

ment, which is seen as being too anthropocentric and disregarding the urgent need for rapid conservation of nature (for a hint on this point, see Brockington et al 2006; Brockington et al 2008).

The third position is based on a critique of the first and involves a political economy/ecology and discursive stance: It gives first priority to the questions of how a protected area has been set up, whether and how local people have been or are evicted from it, or whether or how they pay the greatest costs for conserved areas due to land, crops, and lives lost (animal damage and attacks). Therefore, issues of social justice arise simultaneously with debates about what kind of nature is really conserved (Neumann 1998; Brockington et al 2006; West et al 2006). Such issues, including questions of land rights and trustful empowerment of local actors by governments during decentralisation, are seen as key to creating an enabling environment for local participation. One of the critical issues in this approach is the question of how local people shall be empowered and how local as well as outside elite capture can be prevented while promoting a viable political process (Ribot 2003). This is important because, as Piers Blaikie (2006) has put it, community conservation approaches in the context of participatory projects (community-based natural resource management) are like Trojan horses for powerful actors: via participatory approaches they are able to pursue their own goals in local people's environments and generate income from donors (different government and NGO sectors) at the same time (Blaikie 2006; see also Haller et al 2008).

23.3 A new institutionalist analysis of the implementation of participatory approaches

In the above-mentioned comparative study by NCCR North-South research teams we addressed elements of the third approach and tried to explain why different cases of protected area management involving local participation performed differently. The comparative work was conceptualised by focusing on a livelihoods approach, on the one hand, and on a new institutionalist approach, on the other. In the latter, external factors such as changes in national and international economies, the environment, demography, and technology are seen as having an influence on relative prices for goods and services related to protected areas (donor money, tourism, etc.) and thereby having an impact on internal factors in protected areas, such as organisation, bargaining power, institutions (understood as the rules of the game), and ideologies (world views) (Ensminger 1992; Haller and Galvin 2008a, 2008b).

Under this approach, therefore, protected areas have a history and are to be understood as the result of the interaction of external historical developments and internal processes of organisation (protected area itself) and institutions (rules and procedures on how to manage the protected area). Taking this approach thus also means having a look at how the interest in protected areas and related goods and services develops in terms of price changes, and how this affects the bargaining powers of different actors and the different ideologies, discourses (Foucault 1981), and narratives to legitimise a protected area and the way it is managed. Linking these aspects is important because it gives key information on what strategies different actors historically involved in protected area management were and are pursuing.

The study thus compared the historical development, institutional settings under precolonial local management and governments, and different actors' strategies and ideologies in the protected areas studied. One of the major challenges was to obtain a rough cost–benefit analysis for each case in order to assess what kinds of incentives or disincentives local people perceived when being linked to a protected area (Haller and Galvin 2008a, 2008b). The analysis included not only economic but also political benefits. This was important in order to see for whom conservation works, and what kind of ideologies, discourses, and narratives are used by different actors to control and benefit from the conservation constellations. Likewise, it was important to consider the historical processes in which all protected areas in the case studies are embedded, and to understand by whom the protected areas were implemented and how they are perceived by local people. Indeed, this was of particular interest, as there is always a difference between a formally outlined concept of participation and how it is perceived at the local level, based on local people's realities. In the following section, the findings from the comparative study are presented in overview tables and briefly explained, before we turn to the major findings and discussions and how these relate to new developments in conservation issues.

23.4 Results from the NCCR North-South comparative study

An overview of the cases studied and compared is given in Table 1. The protected areas under study cover a great variety of ecosystems, ranging from tropical forests (4 of the protected areas under study) to dry forests, savannah grasslands and floodplains (6), and high-altitude forest grasslands with or without glaciers (3). Moreover, they cover all three syndrome contexts

defined for NCCR North-South research: the highland–lowland context (6), the semi-arid context, which includes floodplains (5), and, less typically, the urban and peri-urban context (1). The case study areas are rich in so-called common-pool resources[3] such as forests, water bodies with varieties of fisheries, wildlife, and more or less fertile agricultural land and grasslands with pastures. The different ethnic groups found in the study areas are often, but not always, defined by their form of resource use. In all 4 Latin American cases and in the Vietnamese case there are hunter-gatherers, as well as farmers practising swidden/shifting cultivation. By contrast, these categories were not found in the African cases, where agriculture, fishing, and pastoralism are the dominant forms of resource use. The same is true for the Swiss and the Nepalese case. All above-mentioned resources have been managed under common-property regimes in the past, suggesting that despite greater mobility in some cases in precolonial times, groups in those times conceived of specific territories or areas as linked to seasonally available resources, and associated with them a type and extent of resource use, as well as a sense of ownership by a specific group. The management schemes chosen were usually common-property regimes, regulating use by membership and invitation as well as by season, and involving locally developed institutions for monitoring and sanctioning resource use internally (see all articles in Galvin and Haller 2008).

Table 1

Environment, common-pool resource management, cultural landscapes, and historical background.

Protected area, country, year of implementation; references	Ecology and syndrome context	Resource users and use	Institutional setting	Issues of cultural landscape	Colonial background
Latin America					
Tunari National Park, Bolivia (1958) Boillat et al 2008	Tropical forests, watersheds (urban and peri-urban)	Different small ethnic groups, hunters-gatherers, swidden	Common-property regimes	Yes, but viewed as nature, urban setting after colonial times	Colonised by the Spanish
Pilón Lajas Biosphere Reserve and Communal Lands, Bolivia (1992) Bottazzi 2008	Tropical forests (highland–lowland)	Different small ethnic groups, hunters-gatherers, swidden	Common-property regimes	Yes, but not an issue	Colonised by the Spanish
Amarakaeri Communal Reserve, Peru (2002) Álvarez et al 2008	Tropical forests (highland–lowland)	Different small ethnic groups, hunters-gatherers, swidden	Common-property regimes	Yes, but not an issue, viewed as jungle and wild area by colonialists and settlers	Colonised by the Spanish, later by settlers
Pizarro Protected Area, Argentina (1969/2006) Hufty 2008	Forest (semi-arid)	Traditional agriculture	Common-property regimes	Yes, put on the agenda immediately	Colonised by the Spanish, later by settlers

Africa					
Selous Game Reserve, Tanzania (1922) Meroka and Haller 2008	Forest, grassland and floodplain (semi-arid)	Ethno-professional groups, agriculture, fishing, hunting, gathering	Common-property regime of ethno-professional groups, ritual for resource use coordination	Resource use created landscapes	Colonised by the Germans, later British
Mkomazi Game Reserve, Tanzania (1926) Mbeyale and Songorwa 2008	Grassland and floodplain (semi-arid)	Pare, agriculture, forests; Maasai, grazing	Common-property, coordination, unity of highland–lowland slope, floodplain as dry-season pasture	Landscapes in mountains and plains (irrigation and grass cover), not recognised by reserve authority	Colonised by the Germans, later British
Ankarafantsika National Park, Madagascar (1927/2005) Muttenzer 2008	Forest and floodplain with grasslands (semi-arid)	Sakalava, cattle economy, grazing; later immigrants, intensive rice cultivation on floodplain	Pastures and forests are common property, rice fields are private property	Yes, landscape influenced by pastoral and rice cultivation, not recognised by authorities	Colonised by the French
Simen Mountains National Park, Ethiopia (1941/1969) Hurni et al 2008	High-altitude grasslands and forests (highland–lowland)	Amhara and Agaw, highlands for grazing, lowlands for rainfed agriculture (barley, tef, maize, sorghum)	Pastures are common property, fields are common and private property	Cultural landscape formed by local use (high agro-biodiversity), problem of soil erosion in cleared forest areas	Not colonised, Ethiopian Christian Monarchy; occupied by Italy in 1935
Waza National Park, Cameroon (1934) Fokou and Haller 2008	Grasslands and floodplain (semi-arid)	Kotoko, Arab Choa, Mousgoum, Fulbe, ethno-professional groups, fishermen; agriculture and fisheries, grazing	Pastures and fisheries as common property under control of Kotoko sultan (coordinates use of fisheries and pasture)	Cultural landscape, grass cover, and depressions for fisheries are anthropogenic; not or insufficiently recognised by park authorities	Colonised by the French
Asia					
Kangchenjunga Conservation Area, Nepal (1997) Müller et al 2008	High-altitude forests, glaciers (highland–lowland)	Sherpa, Rai, Gurung, irrigated agriculture and transhumant pastoralism, hunting, labour migration	Pastures are common property, fields are private property of family units	Landscape formed by agriculture and pastoralism, no use in higher, glaciated areas	Colonised by the British, later kingdom
Lore Lindu National Park, Sulawesi/Indonesia (1993) Acciaioli 2008	Floodplain, forest (semi-arid)	To Lindu and immigrated other groups from island and other areas of Indonesia, agriculture and use of forest products	Fields in floodplain are common property of To Lindu, forests are common property, linked to ancestral spirits and sacred places	Landscape formed by agriculture and forestry, partly recognised as effort of indigenous To Lindu people	Colonised by the Dutch, later independent state of Indonesia; transmigration programme is bringing in new people
Phong Nha Kẻ Bàng, Vietnam (1986/1998/2003) Larsen 2008	Karst forest system and riverine landscape (highland–lowland)	Hunters and gatherers, swiddeners, small ethno-professional groups	Wildlife and forests for swiddening are common property, fields (swidden) are private property	Landscape formed by swidden and specific land use	Colonised by the French, later under US influence, Vietnam war

Europe					
Swiss Alps Jungfrau-Aletsch World Natural Heritage Site, Switzerland (2001) Wallner et al 2008	Glaciers, pastures, and forests (highland–lowland)	Peasant farmers and transhumant pastoralists, later tourism industry	Common-property regimes for forests and pastures, meadows and agricultural fields are private property	Yes, key issue; local stakeholders (peasants and others) underline cultural landscape, conservationists view landscape as pure nature	No colonisation

Source: Case studies presented in Galvin and Haller 2008.

This indicates another specificity of protected areas: use of common-pool resources under common-property regimes created changes in what we call 'nature': Pristine 'nature' no longer exists as it has long been transformed into cultural landscapes (see also Haller 2007; Haller and Galvin 2008a, 2008b). If we consider the largest protected area in Africa, the Selous Game Reserve in Tanzania, for example, which is well known for its abundance of wildlife, it must be emphasised that at the time of colonisation, the area did not consist simply of savannah with large habitats of wild animals. It also had settlements of the local Warufiji people. During the colonial period, more than 40,000 people were evicted from the area they had previously transformed into a cultural landscape by using it for agriculture, hunting and fishing, extensive grazing, and clearing of underwood. After people were evicted from the area, the combination of flora and fauna changed: bushy undergrowth developed, limiting grass populations and increasing invasion by tsetse flies. Interestingly, wildlife in search of food were likewise forced to move outside of the protected area to feed in areas cleared by humans (Meroka and Haller 2008).

Another set of information indicated in Table 1 and further detailed in Table 2 consists of historical facts regarding the implementation of the protected areas under study and the legitimisation of this implementation. With the exception of the Swiss case, all areas were colonised by different European powers in the past, leading to different patterns of protected area creation. In Latin America and Asia, the oldest protected areas date from the late 1950s and the 1960s, but the majority were established in the 1990s and after the turn of the millennium. In Latin America, this is due to the fact that conservation had never been an issue for the Spanish colonisers and after independence remained unimportant to governments for a long time. In British- and French-controlled Africa, by contrast, conservation and protection measures were taken as early as the 1920s and 1930s; these initiatives were

based on fear and misconception about local people overusing resources (Fairhead and Leach 1996; Neumann 1998). The Ethiopian case is an exception in this regard, even though first steps towards its implementation were likewise taken in the first half of the 20th century. The African cases thus have the longest protected area history and suffer more from the colonial legacy than other areas. In 4 out of 5 cases (2 Tanzanian, 1 Cameroonian, 1 Madagascan) the German, British, and French administrations were interested in conserving nature without people, since they viewed local groups as destructive to pure wilderness areas and sought to conserve resources for their own elites and their industries. Along with this there were several other reasons for implementation; in Ethiopia, the main focus eventually shifted from wildlife to soil erosion. In 4 cases, conservation was pushed by colonial administrators, and in one case (Ethiopia) by the emperor and a group of Swiss scientists.

Table 2

Protected area, country, year of implementation	Reason for implementation, external or local	Size increase/evictions
Latin America		
Tunari, Bolivia (1958)	Logging; external but accepted by local stakeholders	No/no
Pilón Lajas, Bolivia (1992)	Logging; local	No/no
Amarakaeri, Peru (2002)	Logging, mining, oil drilling; local	No/no
Pizarro, Argentina (1969/2006)	Logging, large-scale farming; local	No/no
Africa		
Selous, Tanzania (1922)	Poaching; external	Yes (over 50%)/yes
Mkomazi, Tanzania (1926)	Poaching, overgrazing; external	Yes (over 50%)/yes
Ankarafantsika, Madagascar (1927/2005)	Logging, agriculture; external	Yes/yes
Simen, Ethiopia (1941/1969)	Poaching; external	Yes/yes
Waza, Cameroon (1934)	Poaching; external	Yes (over 50%)/yes
Asia		
Kangchenjunga, Nepal (1997)	Poaching; external	Yes/yes
Lore Lindu, Sulawesi/Indonesia (1993)	Logging; external but accepted by local stakeholders	Yes/no
Phong Nha Kẻ Bàng, Vietnam (1986/1998/2003)	Poaching, landscape conservation; external	Yes/yes
Europe		
Swiss Alps Jungfrau-Aletsch, Switzerland (2001)	Landscape conservation (for tourism); external and local	No/no

Environment, common-pool resource management, cultural landscapes, and historical background.

Source: Case studies presented in Galvin and Haller 2008.

In the Asian and Swiss cases the reasons behind conservation efforts were more diverse. Protected areas in Nepal, Vietnam, Indonesia, and Switzerland were mainly motivated by a desire to protect glacial and mountain landscapes, forests, and wildlife. In the Latin American cases, the main reason for the establishment of protected areas was a desire to protect high-biodiversity forests from settler agriculture, pollution by oil companies and gold miners, and deforestation for large-scale agricultural plantations. This reason was shared by conservationists and local 'indigenous' peoples.

Finally, Table 2 contains information on a further important aspect: that of how the size of the protected areas developed over time, and whether these developments led to evictions of local people. Unlike in the Latin American cases, the protected areas studied in Africa and Asia were eventually enlarged, in some cases up to double their initial size. In addition, in all African and Asian cases (except for Sulawesi, Indonesia) evictions of local people took place – not only during colonial times but also in the recent past.

23.5 Governance, institutional pluralism, and core problems

In connection with the historical implications and enlargements of protected areas described above, the development of governance mechanisms and plural legal norms since colonial times is another important aspect in explaining the core problems that the protected areas under study face today. Table 3 summarises governance issues, issues of institutional pluralism, and core problems in the protected areas compared. Concerning governance issues, the comparison reveals that in most Latin American cases a community approach was taken from the outset, whereas all of the African protected areas studied began with a fortress approach, which was retained up to the 1980s. But even later, an official co-management or community approach was adopted in only two cases (Selous and Waza), while the other three had park outreach models or a participatory type of consulting (Mkomazi, Ankarafantsika, Simen). Different situations can be observed in the Asian cases, all of which started out with a fortress approach. This has been retained only in Vietnam, however, while in Nepal it was replaced by a development and park outreach model. The case of Sulawesi (Indonesia) follows the Latin American pattern based on indigenous groups trying to actively participate in order to ensure their rights. The Swiss case, finally, is the only case with fully formalised recognition of participation, which is based on Switzerland's political system of direct democracy.

Table 3

Protected area, country, year of implementation	Governance approach		Institutional pluralism	Core problems
	Up to 1980	1980–2006		
Latin America				
Tunari, Bolivia (1958)	Fortress	Participatory + +	Yes	Logging
Pilón Lajas, Bolivia (1992)	–	Participatory + +	Yes	Logging
Amarakaeri, Peru (2002)	–	Participatory + + +	Yes	Logging, pollution
Pizarro, Argentina (1969/2006)	Fortress	Participatory + + +	Yes	Agricultural schemes
Africa				
Selous, Tanzania (1922)	Fortress	Participatory +	Yes	Poaching, animal attacks, crop loss
Mkomazi, Tanzania (1926)	Fortress	Fortress	Yes	Poaching, crop loss
Ankarafantsika, Madagascar (1927/2005)	Fortress	Participatory	Yes	Unsustainable use
Simen, Ethiopia (1941/1969)	Fortress	Fortress	Yes	Unsustainable use
Waza, Cameroon (1934)	Fortress	Participatory +	Yes	Poaching, loss of resources
Asia				
Kangchenjunga, Nepal (1997)	Fortress	Participatory	Yes	Poaching, loss of resources
Lore Lindu, Sulawesi/Indonesia (1993)	Fortress	Participatory + + +	Yes	Logging, settlers
Phong Nha Kẻ Bàng, Vietnam (1986/1998/2003)	Fortress	Fortress	Yes	Poaching
Europe				
Swiss Alps Jungfrau-Aletsch, Switzerland (2001)	–	Participatory	Yes	Uncontrolled use for tourism

Governance approach, occurrence of institutional pluralism, and core problems.

Source: Case studies presented in Galvin and Haller 2008.

On a formal level, participation issues have been discussed and put on paper in 11 of the 13 protected areas under study. But what does participation mean in these areas and in their complex economic and political contexts? Guided by this question, we analysed the legal and institutional settings from a critical new institutionalist perspective, including the notions of power and ideology (Ensminger 1992). According to this perspective, legal and institutional clarity provides security for local actors with regard to how participatory protection is intended to work. In many cases, historical changes had weakened local common-property institutions, and new protected area

regulations in the context of state management of resources across various government departments (wildlife, fisheries, agriculture, veterinary services, tourism, etc.) have resulted in legal and institutional pluralism (see also Haller 2010a). This pluralism is further increased by the involvement of new actors such as NGOs and new international environmental treaties (see also Brockington et al 2008).

A look at the *African* cases one by one is revealing. In the Selous Reserve, decisions on how participatory involvement shall take place are made by the Tanzanian government's wildlife and tourism departments, foreign development agencies, and NGOs; differences between the Reserve itself and adjacent Wildlife Management Areas (WMAs) cause confusion about possible participation by local people (Ashley et al 2002; Goldman 2003; Meroka and Haller 2008). In the Ankarafantsika National Park in Madagascar, the Forestry Department installed a buffer zone, creating confusion about how it can be used and what rules shall apply (Muttenzer 2008). Similarly, in the Waza Logone case in Cameroon the adoption of a participatory approach in 1990 created confusion among different administrative stakeholders (forestry and water, wildlife, agriculture, and development departments) and local people (Fokou and Haller 2008; Fokou 2010). The most extreme case in the analysis was Ethiopia, which has seen many different governments and changing policy situations as well as a total absence of the state during times of civil war and rebellion. The impact of these extreme governance situations and the plurality of legal institutions throughout history still needs to be examined today (Hurni et al 2008).

The comparison also revealed that the *Latin American* cases shared a common pattern, which can be summarised as follows: Indigenous peoples and conservationists had successfully lobbied to create institutions which seemed to combine indigenous rights and conservation of what is said to be nature (see both Bolivian as well as the Peruvian and the Argentinean cases). It is therefore possible, with respect to these cases, to speak of a kind of social learning process (Rist et al 2003).

The *Asian* cases are highly diverse in terms of governance and legal pluralism. The Kangchenjunga Conservation Area was set up by the King of Nepal, together with the World Wide Fund for Nature (WWF) as the basic NGO partner. The park was to be managed partly with local people, but outreach projects were considered more important than participation. Local people as well as officials saw these projects as a kind of payment for not

interfering with the park. Institutional and legal pluralism (Meinzen-Dick and Pradhan 2002) in this protected area occurs in connection with community involvement in monitoring: this is a contradictory issue, given that local people do not have the right to control the area themselves (Müller et al 2008). In the other two Asian cases, the issue of indigenousness re-emerges, but in a somewhat different way than in the Latin American cases. In Indonesia, the government acts in a contradictory way by encouraging immigration and thus promoting settler movements on the Island of Sulawesi as well as in other places, while at the same time desiring to protect nature through different government agencies assisted by NGOs. To Lindu people tried to manoeuvre between these two policies to promote their own interests: while they have to accept immigrants, they stress environmental views as a strategy to control and limit the use of land by these immigrants. This is done by referring to the local, so-called 'traditional', *adat* law (Acciaioli 2008). In the case of Phong Nha Kẻ Bàng in Vietnam, legal and institutional pluralism involves government departments and different NGOs as well as the entire tourism sector, which is interested in generating income from the protected area, especially since it achieved the status of a United Nations Educational, Scientific and Cultural Organisation (UNESCO) World Heritage Site in 2003. It remains to be seen how this institutional change will strengthen local people's opportunities for participation (Larsen 2008).

The only *European* case, in Switzerland, is based on solid formal institutions rooted in the principles of decentralisation and subsidiarity in cantons, regions, and communes. In this setting, decision-making involves all stakeholders from all spheres of society, be it government, business, conservation, or the grassroots level, which makes it an inclusive process. At the same time, however, great diversity among and within different actor groups makes it difficult to establish binding institutional structures. Still, the possibility for such institutions to be nested (Ostrom 1990) makes them very resilient (Wallner et al 2008).

As mentioned above, legal pluralism – which turns into institutional pluralism unless institutions are nested (as in the Swiss case) – and legal insecurity add to the problems experienced at the local level with regard to resource management and protected area management. How are local people to help conserve resources if procedures for their involvement are unclear, or if the only thing that is obvious is the fact that not much can be decided at the local level? This adds to the core problems, which are mostly related to overuse of natural resources or the fear of natural resources being overused. In a nut-

shell, the comparison of case studies revealed the following pattern: In the Latin American cases, external as well as internal actors opting for conservation consider logging and the activities of new settlers, including mining and oil drilling, to be the core problems; in Africa, poaching and overgrazing are regarded as the core problems from an external perspective, while change in common-property institutions and exclusion from the use of resources coupled with high costs are seen as the main core problems from an internal perspective. In the Asian cases, core problems experienced in protected areas are a mixture of wildlife, landscape, and logging and settler problems.

23.6 Costs and benefits: trying to understand a complicated picture

Before we discuss how participation is structured and justified in different ideologies, discourses, and narratives, a close look has to be taken at the cost–benefit balance of proposed participatory management schemes in protected areas. An overview covering economic, political, and ecological benefits is provided in Table 4.

Table 4

Costs and benefits of protected areas.

Based on Table 2 in Haller and Galvin 2008b, pp 518–519.

Protected area, country, year of implementation	Economic benefits	Political benefits	Ecological benefits
Latin America			
Tunari, Bolivia (1958)	No	Yes	Yes
Pilón Lajas, Bolivia (1992)	No	Yes	Yes
Amarakaeri, Peru (2002)	No	Yes	Yes
Pizarro, Argentina (1969/2006)	No	Yes	Yes
Africa			
Selous, Tanzania (1922)	No	No	Yes (high costs)
Mkomazi, Tanzania (1926)	No	No	No
Ankarafantsika, Madagascar (1927/2005)	No	No	No
Simen, Ethiopia (1941/1969)	No	No	Yes
Waza, Cameroon (1934)	No	No	No
Asia			
Kangchenjunga, Nepal (1997)	No	No	Yes (high costs)
Lore Lindu, Sulawesi/Indonesia (1993)	No	Yes	Yes
Phong Nha Kẻ Bàng, Vietnam (1986/1998/2003)	No	No	Yes (high costs)
Europe			
Swiss Alps Jungfrau-Aletsch, Switzerland (2001)	No (but hopes for future)	Yes	Yes

Analysis based on an actor-oriented cost–benefit approach showed that there was not one case in which direct economic benefits justified local participation in the management of protected areas. Even worse, in 7 cases (all African, one Latin American, and one Asian case) economic losses by far exceeded the gains despite a participatory management approach. In the African cases where it was possible to calculate the costs incurred by local people, 70–80% of these costs remained uncovered. Such costs include, for example, crop damage caused by wild animals, but also loss of access to common-pool resources such as small wildlife, fish, forest products, and valuable land. However, calculations often fail to include lives lost in accidents with wild animals (crocodiles, elephants, hippos) as well as opportunity costs. Losses proved to be smaller in the remaining cases, or there was a temporary gain due to a highly development-oriented approach, including, in the Nepalese case, insurance schemes against damage resulting from the protected area and its animals. It must be emphasised that, interestingly, the Nepalese and the Swiss cases were the only ones in which there were economic gains that could be seen as subsidies or insurance schemes and that were part of the protected area management system (in Nepal) or the government system (in Switzerland; here, farmers receive subsidies for maintaining landscape functions in the ecosystem). However, these payments are often not enough to compensate for other uses. In these cases, an analysis of opportunity costs could provide more clarity.

Economic costs and benefits are, however, only one part of the story. One major feature described extensively elsewhere is that in most *Latin American* cases the concept of indigenousness in combination with the support received from conservation NGOs helped local communities to use protected areas as a form of land right protection against outside encroachers, be they settlers or large land owners. Despite the fact that indigenous groups had been marginalised in the past, an international movement, and increasingly also national movements in the respective countries, led to recognition of their rights (including land rights), frequently based on the ratification of Convention 169 of the International Labour Organization (ILO). Over the past thirty years, the political status of these groups has thus been enhanced – especially in alliance with conservationists, with whom they share the same enemies: oil companies are perceived as adversaries by both local groups and conservationist groups due to the damage they cause by drilling (Haller et al 2007). In addition, the search for 'noble savages', who incorporate nature in their way of life, was an attractive asset in boosting environmental and human rights issues. Such a concept of indigenousness linked to political rights cannot be found in the African cases. Economic losses in connec-

tion with protected areas thus cannot be compensated with the same political gains that indigenous groups in Latin America have when a protected area is established. Hence, in the *African* cases, local people perceive protected areas as imposed on them by external forces. They have no political benefits to outweigh their economic losses, whereas government agencies, conservationists, and tourist companies profit a great deal from the concept of participation, which gives them political leverage to enlarge protected areas and ensure low-cost monitoring and donor money.

The *Asian* cases as a whole are situated in the middle between the two extremes described above. The To Lindu in Sulawesi can profit as well from their identity as an indigenous people and were able to integrate their status in the management design based on local knowledge of the area. In Vietnam, by contrast, evicted groups have no similar political options. In Nepal, the issue of political control has only just begun to emerge, as the area was under the control of an NGO and the monarchy up to the latter's fall from power. After this major change in government, WWF has sought to place the project in local hands. It remains to be seen whether this will make a difference with regard to locality-based identities. In the *Swiss* case, all stakeholders were involved from the beginning, and it has been difficult, for example, to establish a clear alliance between government agencies and conservationists, on the one hand, and local people, on the other. Although the federal government and the cantonal (district) governments have an interest in conservation, they also have economic interests in the area. Facilitation of a platform for all stakeholders, including economic and political interest groups, to debate on common ground limited dominance by any one interest group and also empowered local people to take part in the debate.

Last but not least, the comparative study examined the question of ecological benefits of participatory approaches. This proved to be a complex issue. Some ecological benefits can be observed in *Latin America*, when deforestation is reduced by keeping settlers and large companies out of protected areas; in the *African* cases, however, with in reality less participatory approaches or even de facto fortress approaches, ecological gains can only be maintained by providing sufficient means for external conservation measures, such as scouts, fences, costly monitoring, and others. It is thus possible to achieve ecological gains, but this will not be sustainable once investment is stopped and local people are left without sufficient incentives to do the job. In the heterogeneous *Asian* cases, the findings from the other continents apply as well, depending on how participatory the conservation

model: Less sustainable ecological benefits will be likely in the fortress case in the long run compared to the cases in Nepal and in Sulawesi, Indonesia. The Swiss Alps Jungfrau-Aletsch World Natural Heritage Site in *Switzerland*, finally, gives an indication of the difficulties involved in assessing ecological benefits. Glaciers have not been under much direct human pressure, although they have suffered from great pressure due to climate change (high temperature). Extreme sports such as heli-skiing, however, disturb endemic wildlife, and a reduction of such activities based on the area's status as a World Heritage Site will bring benefits (for a more extensive discussion, see Haller and Galvin 2008b).

23.7 Ideologies, discourses, and narratives

Analysis of ideologies, discourses, and narratives was integrated into the research based on the adoption of a new institutionalist perspective. In this perspective ideologies, defined as the different actors' world views, are considered as an important aspect in justifying action; they can increase actors' bargaining power in the process of setting up institutions, and provide legitimacy for a structure from which these actors profit most (Ensminger 1992; Haller 2007; see Haller and Galvin 2008b for further discussion). Ideologies can be altered if there is substantial change in relative prices, but the transformations that institutions then undergo are not linear and may be delayed or produce a different outcome from what was expected.

In the present analysis, however, the term is used in its strategic sense and as a larger concept made up of different elements, including discourses and narratives (as outlined in Haller and Galvin 2008a and 2008b): Discourse is understood as a specific way of linking issues and rationalising topics in a logical way, often in spoken language or in writing; logic in this sense means that in a rather closed system of meaning, discourses contain fragments that refer to a larger framework (ideology). The ideology of modernity, for example, is linked to the discourse of development in the way that links positive values to any kind of development advocated in an area. Another ideology is the critique of modernity, which perceives the world as being in peril and argues that there is a pure, pristine nature 'out there'. The discourse corresponding to this ideological framework would be conservation and protection measures. A third ideology relevant in the present comparison is the notion of the positive value of the traditional way of life, which is often used locally. The main discourse related to this ideology would be that tradition

means conservation and that nature will be protected through application of ancient wisdom.

Narratives, finally, explain for different actors why the situation is as it is perceived. According to the ideology of modernity, underdevelopment is due to lack of modernity and development, meaning that 'traditional' people are backward. In the ideology of 'pure nature', 'pure nature' is in peril because of development or because of dynamic demographic forces (local developments or immigration). In the ideology of traditionalism, resources are being overused and poverty is increasing because of submission and disempowerment of traditional societies by outside forces, dismantling the traditional way of life.

Ideology and the discourse and narratives linked to it have to be analysed as part of the interaction among different stakeholders in the process of institutional change. It is these aspects that shed light on the question of why there are winners and losers in the process of institutional change from fortress to participatory approaches such as community or co-management conservation. Whether or not actors are capable of harnessing gains from the new approach to managing protected areas depends on how they are able to use ideological resources in line with discourses and narratives to justify and legitimate an institutional design favourable for them. In more abstract terms, changes in relative prices (e.g. money spent on participatory conservation schemes, tourism, forestry, and biodiversity protection, directly or via funds) and ideologies provide actors with differential bargaining power to strive for specific forms of organisation and craft specific institutions. Table 5 provides an overview of ideologies, discourses, and narratives used by external and local actors in the various case studies.

In the *Latin American* cases, local actors define themselves as indigenous peoples and ally themselves with the worldwide conservation movement. At the same time they are able to participate in crafting institutions from which they will benefit politically, even though there will be little direct economic gain. Local indigenous peoples argue via their representatives that they are part of nature and have lived 'in harmony with nature' over centuries. This is a powerful discourse and a powerful narrative that both can be used, especially by leaders, to pursue the political gain of securing their traditional territories against encroachment by immigrants and other extractive users.

Table 5

Protected area, country, year of implementation	Ideologies		Discourses		Narratives	
	External	Local	External	Local	External	Local
Latin America						
Tunari, Bolivia (1958)	Nature	Traditions	Nature protection	Indigenous conservation	City	Settlers
Pilón Lajas, Bolivia (1992)	Nature	Traditions	Indigenous conservation	Indigenous conservation	Settlers, miners	Settlers, miners
Amarakaeri, Peru (2002)	Nature	Traditions	Indigenous conservation	Indigenous conservation	Settlers, miners, logging companies	Settlers, miners, logging companies
Pizarro, Argentina (1969/2006)	Nature	Traditions	Nature protection	Indigenous conservation	Farmers, large agri-schemes	Farmers, large agri-schemes
Africa						
Selous, Tanzania (1922)	Pure nature	Traditional landscape	Community protection	Poverty alleviation	Halt poaching	Gains to government
Mkomazi, Tanzania (1926)	Pure nature	Traditional landscape	Nature protection	Poverty alleviation	Halt poaching	Gains to conservationists
Ankarafantsika, Madagascar (1927/2005)	Pure nature	Traditional landscape	Nature protection	Loss of land	Land use	Gains to government
Simen, Ethiopia (1941/1969)	Pure nature	Traditional landscape	Development, protection	Loss of land	Land use	No rights
Waza, Cameroon (1934)	Pure nature	Traditional landscape	Protection, development	Poverty alleviation	Land use	Gains to conservationists
Asia						
Kangchenjunga, Nepal (1997)	Pure nature	Traditional landscape	Protection, development	Development	Halt poaching	Gains from projects
Lore Lindu, Sulawesi/ Indonesia (1993)	Pure nature	Traditions	Nature protection	Indigenous conservation	Settlers	Control settlements
Phong Nha Kẻ Bàng, Vietnam (1986/1998/2003)	Pure nature	Traditional landscape	Nature protection	Loss of land	Local poaching and land use	Loss of rights
Europe						
Swiss Alps Jungfrau-Aletsch, Switzerland (2001)	Landscape	Landscape	Participatory conservation, negotiations	Participatory conservation, negotiations	Uncontrolled land use	Uncontrolled land use

Ideologies, discourses, and narratives with regard to the 13 protected areas under study.

Based on Table 2 in Haller and Galvin 2008b, pp 518–519.

In the *African* cases, the ideology of pure pristine nature (or pure wilderness in danger) and the colonial image of the poaching African are still very frequently used in simplistic terms. The development and participation discourse frequently used by governments and NGOs fails because cost–benefit analyses are not carried out locally and, despite the discourse of participation and development, most local people do not feel heard and hence do not feel

empowered. However, it would be naive to think that sharing power was the aim of such participatory projects. The discourse of participation has been used by local government agencies and NGOs to capture donor money in order to extend and at the same time externalise control over protected areas, as well as to enlarge them. With the exception of pastoralist peoples such as the Maasai, who are linked to the international indigenous movement, ethnic groups cannot and do not claim the status of indigenousness in the political sense. However, they try to advance the discourse of autochthony – with mixed success. Being linked to protected areas makes it very difficult for them to engage in independent action, because all superior levels in the political system have realised that there are gains to be made from the concept of participatory projects, especially if linked to tourism. Moreover, local people face a dilemma, because focusing on autochthony might lead to a colonial tribal discourse and generate high levels of conflict, which would be counterproductive. Their only hope thus lies in allying themselves with one of the political 'big men', who, if elected, will generate profits via this channel. Their hope of ever profiting from participatory approaches in the context of protected areas has been severely eroded in recent years – especially in the two Tanzanian, the Cameroonian, and the Madagascan cases. On the contrary, the basic narrative referring to this difficult situation from the local point of view is often that poverty exists because of conservation. One of the few reactions to this is that people refer to themselves as poachers. However, in many cases they are not in a position to challenge either foreign poachers or the state when interests in wildlife become economically relevant (see Haller et al 2008 and, for other countries such as Zambia, Haller and Chabwela 2009).

Asia is again by far the most heterogeneous of the continents. The protected areas studied have a wide range of approaches, from fortress to park outreach and integrated development to more participatory approaches in a political sense. Therefore, the states, related NGOs, and scientists act on different ideological levels. Fortress approaches prevail in the Nepalese case and even more so in the Vietnamese case, whereas in the Indonesian case, surprisingly, we observed by far the most open views about the ideology of 'pure nature' and its controlled management. In Vietnam, the state draws power from a 'pure nature' ideology in combination with a fortress conservation discourse, leading to evictions of local people. In the Nepalese case, attention was drawn to the need to protect both nature and livelihoods. Major financial inputs and sponsoring of projects that had much more to do with any kind of development approach (credit associations, mothers' groups, etc.) than with direct conservation per se (monitoring groups) have led to a situation where people do not see a need to access resources in the

protected area directly. The reason for this is that prohibition of resource use has been combined with development projects and that the protected area project itself has developed what most cases in Africa are lacking: an insurance system for damage caused by wildlife. Moreover, project officials try to sell conservation to local people by providing direct development benefits. This seems to work for the moment, but it is questionable whether it will be sustainable in the future: The quotation used in the title of the contribution by Müller and colleagues (2008) – "Because the project is helping us to improve our lives, we also help them with conservation" – could also be understood in the sense that "we will stop helping them (the conservationists) to protect nature if they stop helping us with development".

Comparing the cases in the three Southern continents, we thus observe that in the Latin American cases indigenous peoples use the same arguments as scientists and the governments do and succeed in organising themselves fairly easily. In the African and Asian examples, by contrast, being local and indigenous does not bring any political benefits. Ideologies in the Swiss Alps Jungfrau-Aletsch World Natural Heritage Site in *Switzerland*, finally, differ from all other cases studied. The political context is vital to the case. Swiss direct democracy means that government ideologies are always subject to local consensus. Instead of self-interested discourse by the state, there is evidence of a genuine dialogue. The basic ideology recognises that the area is a mixed cultural and natural landscape that depends on smallholder farming. The aim of development is conservation and tourism. In the view of local actors, the new label does little harm and at best brings economic gains for tourism. Nature protection and economic development can be linked via tourism if gains are distributed equally. This brings into play the discourse of community conservation based on fairness.

23.8 Analysis and conclusions: positioning protected areas with regard to participation and sustainable development

The final conclusions of the comparative study were visualised in a matrix showing the degree of participation and the extent of sustainable development activities for each of the cases examined (Figure 2). The matrix shows two aspects of the findings. The unshaded circles indicate the placement of the various cases in the matrix based on formal statements by governments and NGOs: With the exception of two cases – Mkomazi in Tanzania and Phong Nha Kẻ Bàng in Vietnam – which follow a clear fortress approach

and involve less participatory activities oriented towards sustainable development, all are formally (in official documents) declared as more or less participatory and involve more activities and incentives for sustainable development. The shaded circles indicate the placement of cases based on findings regarding the local perspectives as presented in the edited volume by Galvin and Haller (2008) and show quite a different picture. While the two cases with a relatively strict fortress approach – Mkomazi in Tanzania and Phong Nha Kẻ Bàng in Vietnam – remain situated where they are in the matrix also from a local perspective, the other cases move from a formally more participatory approach to more of a fortress approach in reality: two African cases (Waza in Cameroon and Ankarafantsika in Madagascar) as well as Kangchenjunga (Nepal) move from collaborative management with negotiation including individual incentives according to official statements towards a park outreach approach and partially collective incentives from a local perspective. In this situation, local people face the dilemma of enjoying involvement on paper but not in reality, since they lack real decision-making power with regard to protected area management. The divergences are even worse in cases that formally appear to be among the most participatory: Selous (Tanzania) shifts from power-sharing to a fortress approach with medium collective and individual incentives due to the fact that locals have no real decision-making power regarding management plans and hunting quotas. The only case from the African continent that becomes more participatory is Simen, which used to have a lower level of participation and appears to have become more participatory in recent years (Hurni et al 2008). The Latin American cases, in which formal statements indicated collective incentives and community conservation via power transfer, were also found to have a much lower level of participation in reality, with local people having a lesser say than anticipated with regard to concrete management of the protected areas. Among the formally more participatory cases, the Swiss Alps Jungfrau-Aletsch World Heritage Site in Switzerland and the Lore Lindu National Park in Sulawesi, Indonesia, are the only ones with relatively small differences between their positions as formally declared and as locally perceived. In Switzerland, this is due to the fact that local people have considerable institutional power to address problems based on the political system of direct democracy. In Indonesia, it is a result of the clever manoeuvring of To Lindu elders trying to control the area based on their own personal interests. In both cases, the small divergence between official statements and local realities is a result of a political system and an ideological setting in which local actors have increased bargaining power to influence the institutional design and try to gain political power from the protected area system.

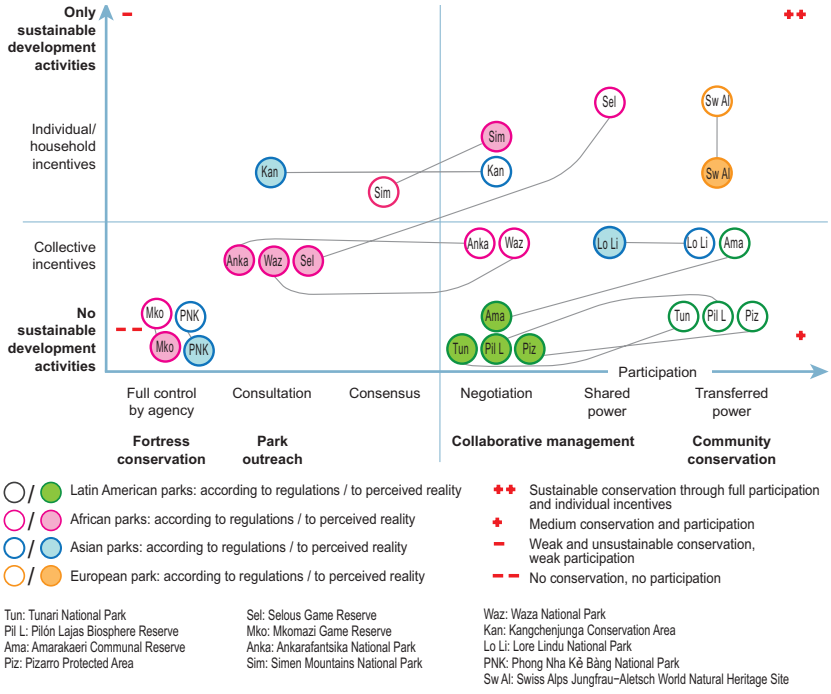


Fig. 2 Comparative matrix showing the extent of participation and sustainability in the 13 protected areas under study, as stated by the park authorities and as perceived by local people. (Source: Haller and Galvin 2008b, p 544, slightly adapted)

Our study indicates that a participatory approach to protected areas and conservation generally has some potentials on paper, but that at the local level people often lack the power to tap this potential and to challenge more powerful actors from outside the area. But the Latin American cases, the case of the To Lindu (Sulawesi, Indonesia), and the Swiss case indicate that even if economic gains from participatory conservation are low or non-existent, it can be helpful to prevent other users from entering the area or at least control their activities. Indeed, this already appears as a big achievement compared to the other case studies. What does this tell us in the context of new developments in protected area and conservation issues worldwide? The final section of this article offers a review of more recent literature that appeared in the three years since the study was first published. It outlines three new topics which have to be debated in connection with protected area management and conservation: projects related to climate change, commodification of protected areas and conservation, and the debate over local land rights.

23.9 New developments faced by protected areas and conservation initiatives: climate change, commodification, and land rights

23.9.1 Impacts of the climate change discourse on protected areas and conservation

Climate change has become one of the central discourses over the last three years, and this development provides both risks and opportunities for local actors confronted with protected areas. The rise of climate change as a discourse in protected area management stems from debates taking place at a global scale. However, global responses to climate change, such as trade in emissions permits, as well as emissions themselves affect protected areas at the local level. Gomera and colleagues (2010) discuss this phenomenon specifically for Africa, but similar lessons apply to Latin America and Asia as well. Climate is now seen as a global commons, and climate change in this discourse will affect everybody as it provides legitimacy for globalised action. The focus in this regard is on forests and protected areas with a link to forestry.

In the negotiations for a post-Kyoto protocol under the UN Framework Convention on Climate Change (UNFCCC), forestry issues are considered highly relevant to mitigating climate change and, accordingly, receive major attention. They are addressed by means of the so-called Reduced Emissions from Deforestation and Forest Degradation (REDD) programme. The aim of REDD is to find market solutions to the problem of deforestation, especially in nations and local communities affected by these changes. In the context of REDD, decisions are taken on how to regulate access and distribute costs and benefits. Payments for ecosystem services – in other words, a market for dealing in carbon emissions – is thought to give climate and climate change issues the right level of value in order for international actors to respond to the threat. This market is now generating a value higher than the financial aid Africa receives annually. It contains several mechanisms, such as 1) a so-called Compliance Market (in the Kyoto Protocol), 2) emission trading platforms, and 3) trade in emissions outside the Compliance Market. The latter includes, for example, REDD initiatives to increase forestry production (also referred to as "carbon farming").

This ongoing debate on climate change and its new economic value will have an effect on access to land in cases such as those studied in the NCCR North-South's comparative study. Climate change mitigation initiatives can be

used by government elites to make a profit while excluding local inhabitants (Gomera et al 2010). According to the international discourse, deforestation accounts for 17% of the global greenhouse gas emissions, the second largest share after that caused by energy supply (25.9%) (IPCC 2007). Consequently, forestry is a major focus when it comes to reducing emissions. Experts expect that governments will expand forest conservation areas, in this way possibly diminishing local people's access to land worldwide (IPCC 2007; see also Agrawal et al 2008; Sunderlin et al 2008).

23.9.2 Increase in NGO activity and commodification of conservation

Another recent tendency is the increase in size and spread of conservation NGOs, which, according to Brockington and colleagues (2008), are becoming less and less downward accountable. Research has shown that their spending has been insufficient, has not matched priorities, and, in some cases, has been too closely linked with large industries and corporations. Brockington and colleagues (2008) argue that conservation NGOs are frequently involved in 'greenwashing' activities as a new opportunity for capitalist engagement in conservation based on newly created commodities. One such commodity is coercive state power: conservation NGOs profit from it 'offstage' while using the discourse of participatory community conservation and highlighting community-friendliness onstage. This finding is in line with the results from our study and has much more to do with the structural problem of conservation becoming a donor commodity than with an intention to hamper local livelihoods. Nevertheless, in many cases local livelihoods are impaired, as an overview on conservation and evictions by Brockington and colleagues (2006) shows. Interestingly, some conservation organisations claim the opposite to be a problem. Conservation International (CI) was founded in 1987 by people who broke away from WWF because their preference for community approaches rather than 'purely scientific' approaches had become incompatible with WWF's official policy – which corresponded to the second position outlined in section 23.2 above (critically discussed in Brockington et al 2008). Thus, the little that is done for local communities is perceived as too much by some organisations. By contrast, our study demonstrates that 1) in most cases local costs of participatory conservation in protected areas are too high; 2) community involvement by large conservation NGOs is more a means for legitimising conservation activities than a new policy recognising local people's role in conservation; and 3) natural landscapes are insufficiently recognised as cultural landscapes (Fairhead and Leach 1996; Haller and Galvin 2008b).

A new form of extending the influence of external state and non-state actors in the context of conservation are transboundary protected areas (also called transfrontier conservation areas in the Southern African context). These protected areas are intended to provide an opportunity for biodiversity conservation at an increasingly large scale and across state boundaries. Critical voices argue that this masks the aim to control difficult areas and, ultimately, to grab land from local people in frontier zones. Again, the official discourse is about community participation while in fact this masks opportunities for further-reaching control by organisations and nation states. Critical authors see the extension of state control in the name of conservation as one of the major donor and state elite strategies in a new public–private partnership (Neumann 2003). However, the focus in this partnership is not restricted to transboundary areas: Indeed, entire nations come into focus, such as, for example, Madagascar, which as an island state is narrated to be one of the most important spots worldwide for biodiversity conservation. Such narratives trigger large sums of donor money which are spent in public–private enterprises that are often North–South driven. In the case of a Swiss zoological society (Zurich Zoo) and the area of Masoala in northeastern Madagascar, this led to the creation of a small artificial ecosystem in the Zurich Zoo with animals and plants from Madagascar. This raises the zoo's attractiveness and boosts conservation awareness in the North, while helping to implement a conservation policy at the local level that harms local livelihoods by excluding local people from their former area and prohibiting local small-scale slash-and-burn agriculture (Keller, in press).

We argue that such developments are in fact to be seen as the downside of Northern economic interest in the South, of which conservation is now a logical part: The worldwide use of natural and mineral resources for the world market creates pressure on nature – which cannot be changed – hence the even greater need to set aside some portions of 'pure nature'. As Brockington and colleagues (2008) convincingly argue, it would thus be wrong to consider the negative aspects of the commodification of conservation as separate from the market economy and the logic of capitalism. Indeed, these authors go even further by drawing on the work of Marx, Guy Debord, and Jean Baudrillard, arguing that gains are to be made from 'spectacle of nature' images, and that this is firmly in the capitalistic hands of transnational conservation organisations as well as celebrities, who increasingly invest in conservation and sell their image based on this engagement in conservation (Brockington et al 2008; Brockington 2009).

Brockington and colleagues point out a crucial fact that is also visible in our studies: Important initiatives such as decentralisation and devolution of power in protected areas have gone only halfway and have failed to empower local heterogeneous communities in a way that would have been profitable for them, instead creating 'docking stations' for capitalism. In line with scholars such as Ferguson, who describes the "development apparatus" in Lesotho as a "machine for reinforcing and expanding the exercise of bureaucratic state power" (1990, p 254), Swatuk, who sees participation as a "political cross-conditionality in current North–South inter-state relations" (2005, p 99), and Blaikie, who describes participation as a "Trojan horse" disguising powerful interests (2006, p 1952), Brockington and colleagues argue that co-management actually masks hidden interests – which are frequently external. From a new institutionalist perspective, based on the notion of changes in relative prices influencing the bargaining power of actors, this view of strategic action can be seen as an integral part of the new institutional theory adopted in this article. In the past, tourism and ecotourism, as well as initiatives such as community-based natural resource management projects, have developed into interesting markets, leading to an increase in their relative prices. As we have shown in the NCCR North-South study in the Tanzanian cases (Mbeyale and Songorwa 2008; Meroka and Haller 2008), but also in other cases, such initiatives do not really devolve power, but create costs at the local level while offering gains for more powerful actors (state or private). Now, new gains can be made from what is called "disaster capitalism" (Klein 2007): In a world of hyperreality (Baudrillard 1981) – meaning that reality is completely constructed but made to be real – conservation services, such as reducing the ecological footprint, saving animals and forests, or even creating small projects for local people, become a commodity to be sold internationally (Brockington et al 2008). We have argued that this is especially true in the African cases, while in Latin America indigenous peoples could profit from their internationally accepted political position. However, it is unclear what future effects the new developments in carbon markets and certification processes and the increase in private parks will have. Generally, it can be said that the corresponding increase in relative prices of conservation services, by fostering conservation – even if linked with a participatory approach – creates pressure on local communities and their land. It is doubtful that 'conserved pure nature' as a commodity to be sold will provide any opportunities for them.

23.9.3 Re-emergence of the land rights debate

The new commodification of conservation does not mean that the direct pressure on landscapes will be reduced. On the contrary: As argued above, the market economy and pressure on landscapes are two sides of the same coin. New direct pressure on landscapes stems from a new and growing interest in land for agricultural and raw material production. In particular China and other emerging markets such as India and Brazil contribute to an increasing worldwide demand for such resources, boosting relative prices for land, renewable, and mineral resources. This will cause severe pressure in the future, for example in areas where water is abundant, such as in wetlands (Haller 2010b). Against this background, we argue that from a local people's point of view the issue of land rights is (again) crucial to successful participatory conservation, and central to all concerns we have seen emerging on the agenda of the debate on participatory management of protected areas. Land rights and institutions must be developed in genuinely participatory processes; this is a key challenge, but at the same time a sine qua non for an equitable and sustainable development of cultural landscape management. In the context of ongoing land grabbing, the demand for land rights to be established in a participatory process is even more important.

However, the issue of land rights is complex, as clear land rights and land titles not only solve problems but also create new ones. Heterogeneity of interests within a community can be increased by establishing fixed land rights that complicate collective action. In addition, the questions of who is to legitimise access and exclusion and who will deal with the related power issues (elite capture by local, business, or government elites) need to be resolved in cases where there is no democratic system in place and downward accountability is not provided (Ribot 2002, 2003). Indeed, these highly important questions with respect to alternative protected area management have yet to be answered. Nevertheless, there are some results on which further research can build. One discourse presented by Nelson (2010) highlights worldwide studies in forestry which have indicated that if collective land rights and land tenure institutions are clear and recognised – and, as a hypothesis, also locally developed (Haller and Galvin 2008b; Chabwela and Haller 2010) – community-based management of forestry, wildlife, and fisheries proves to provide better results in terms of local benefits, ecosystems, and common-pool resources than state management. This position is also supported by Wily (2000).

The problem outlined by Ribot (2003) as well as Geiser and Rist (2009), however, concerns the paradox that, on the one hand, secure land rights and a notion of territoriality are prerequisites to well and sustainably functioning institutions – see also Ostrom's design principle of "clear boundaries" (Ostrom 1990, pp 90–91) – while, on the other hand, fixed land rights, territoriality, and boundaries (all having different implications but being linked with one another) also bear the risk of hindering commoners' access to resources. Studies of traditional common-property institutions in African floodplains have indicated that boundaries exist, but are adapted to flooding patterns and frequently permeable, allowing for reciprocal access by different local groups to their respective territories, and thus to resources, including not only land, but also related resources such as water, pasture, fisheries, wildlife, veldt products, etc. (Haller 2010b). Another critical argument could be that fixing boundaries will lead to maladaptations and to the exclusion of commoners and invited users whose use in the past was not open but locally managed and monitored. This again calls for detailed studies and a locally rooted participatory approach to land rights, territoriality, and boundaries (see also Wily 2000). Such processes require ample attention, and we see two ways in which they should be approached: First, it is necessary to make a sound assessment of the given local legal and power settings, taking account of the past and of different scales of governance; and second, local awareness of this process must be created and existing opportunities harnessed in order to establish a platform for negotiations towards an institutionalised and constitutionalised local consensus (Chabwela and Haller 2010; Haller 2010b). A prerequisite for such a decentralisation and democratisation process is what Ribot has called a five-level programme: 1) democratic local government, 2) multiple accountability, 3) transfer of power before transferring burdens, 4) transfer of power before building capacity, and 5) local autonomy nested in national objectives (Ribot 2003). This can lead to village land rights or group resource rights, to locally adapted by-laws to existing laws, etc. (Haller and Chabwela 2009; Haller and Merten 2010). In other publications we have referred to this process as "constitutionality", where institutions are locally crafted and embody local ownership of this process and of the outcome, which then has to be backed up by state recognition.

It remains to be seen whether a new Swiss initiative of the Federal Office for the Environment to establish so-called Regional Nature Parks – a label for sustainable landscape management that communes and groups of communes in areas of weak industrial development (frequently mountain areas) can apply for in order to boost conservation and at the same time benefit

from it for local tourist development – will have the desired effects. To date, 20 areas have applied for the Regional Nature Park label or have already been awarded the label.[4] Like in the Swiss case presented above as part of the NCCR North-South's comparative study, recognition of parks is contingent upon a participatory process at the local level. Preliminary anthropological research[5] in four areas indicates that although this procedure is promising, the heterogeneous interests of the different actors involved also pose a considerable challenge: Some pursue direct personal material gains, others (in particular conservation NGOs) emphasise the need to protect 'nature', and yet others are motivated by the hope for general economic and development gains from boosting the economy of these marginal Swiss mountain areas. Nevertheless, the procedure is embedded in a decentralised national legislation that respects local land rights and participation to a much higher degree than in any other case in the world. Further studies are needed to determine whether this Swiss initiative can provide elements for design principles to guide the crafting of sustainable institutions for the protection of diverse culturally modified landscapes and their biodiversity.

Endnotes

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[3] Common-pool resources are resources which are difficult to defend by individuals because they are widely scattered; which can be managed better collectively; and which are subtractable, meaning that once a resource unit is used, it is no longer available for the ongoing seasonal period (Ostrom 1990; Haller 2007).

[4] For the most recent developments, see press releases of the Swiss Federal Office for the Environment at http://www.bafu.admin.ch/dokumentation/medieninformation/index.html?lang=en (accessed on 8 September 2011).

[5] Five studies were conducted by students from the Institute of Social Anthropology, University of Bern, Switzerland, in a research training course led by Tobias Haller (4) and in a Master research project (1). Results have not yet been published.

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24 Sustainable Livelihoods for Coffee Producers in East Africa: Is Producing Speciality Coffee a Way Out of Poverty?

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Abstract

Commodity dependence is especially high in many least developed countries, with a corresponding increase in their vulnerability. For agricultural commodity-dependent developing countries, where a large portion of rural producers depend on commodities for their livelihoods, commodities and development are intertwined and inseparable concepts. Volatility and decline in the price of coffee have resulted in diminishing export revenues, undermining the ability of the state to invest in rural development. There have also been negative impacts at the micro level, leading to greater poverty among producers, deteriorating labour standards, and unsustainable land use practices. While the market for undifferentiated coffee has stagnated, the growth of the speciality market has created new opportunities for producers. A key characteristic of speciality markets is that they pay higher and more stable prices and provide additional benefits. For producers, the overall income impact depends on the balance between the costs of meeting the requirements of production standards and the income earned from the premium, plus additional non-monetary benefits. Findings from case studies conducted in Kenya, Tanzania, and Ethiopia show that benefits from producing for speciality markets do not always reach farmers in the form of higher prices paid and, ultimately, higher income, as hoped. To date, non-monetary benefits in the form of social development, including enhanced social capital, are not very widespread either. This can partly be explained with speciality production having been introduced very recently in these countries. A number of ways to address commodity dependence and its negative social and environmental impacts are discussed in this article.

Keywords: Coffee; speciality coffee; Ethiopia; Kenya; Tanzania; poverty.

24.1 Introduction

Commodity dependence is especially high in many of the least developed countries (LDCs). For agricultural commodity-dependent developing countries (ACDDCs), commodities and development are intertwined and inseparable concepts. Non-competing tropical agro-commodities form specific spatial patterns of production and consumption, usually defined on the basis of agro-ecological characteristics and historical, economic, institutional, and socio-political developments. While production is concentrated in favourable agro-ecological areas in developing countries in the South, trade, consumption, and value addition are mainly concentrated in and controlled by the North.

There is a considerable body of literature dealing with problems faced by countries that depend on commodities, such as declining terms of trade and price volatility, or developmental outcomes such as poverty or conflict (e.g. UNCTAD 1999; Morrissey and Filatotchev 2000; Page and Hewitt 2001; Collier 2002; Daviron and Gibbon 2002). The present paper deals with one specific commodity – coffee – and focuses on options that might enable small-scale producers to improve their livelihoods.

Coffee plays a crucial role in the livelihoods of millions of households in developing countries. Small-scale farmers produce over 75% of the world's coffee. The number of people who depend directly or indirectly on coffee has been estimated to be as high as 500 million worldwide. In 25 African countries, about 33 million people earn a livelihood from growing coffee (ICO

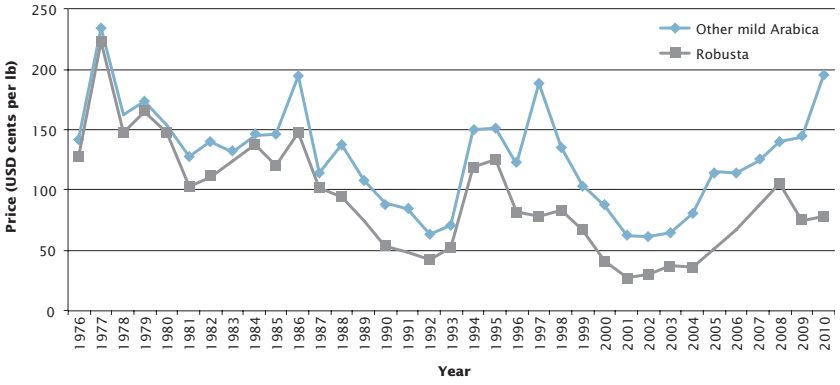

Fig. 1 International coffee prices since 1976.

Source: International Coffee Organization (ICO), www.ico.org, accessed on 18 April 2011.

2001). Yet market volatility and declining terms of trade, along with inadequate access to infrastructure, financial resources, and market information, greatly limit sustainable livelihood options for coffee producers. Changing patterns in the global coffee chain that also affect small-scale producers include the disintegration of the International Coffee Agreement in 1989, market liberalisation, corporate consolidation, and a worldwide oversupply, which has resulted in coffee prices falling to their lowest levels in over a century at the beginning of the 21st century (Figure 1) (Gresser and Tickell 2002; Rice 2003).

24.2 The 'commodity problem'

24.2.1 Long-term price declines and volatility

Theoretical analysis suggests that commodity prices drop in relation to other prices because of relatively inelastic demand and lack of differentiation among producers. Furthermore, commodity prices are more volatile than those for manufactured goods (Page and Hewitt 2001). Besides the observed long-term decline in prices for agro-commodities[7], price volatility is another issue, caused by the time lag between production decision and delivery to the market, delayed and inappropriate responses by producers to price signals, inelastic supply, and natural shocks. There are two types of commodity price fluctuations: short-term and long-term. Short-term shocks can be dealt with through savings, borrowing, or market-based mechanisms (e.g. insurance), while dealing with long-term shocks requires permanent changes in the economy (DFID 2004).

24.2.2 Impacts of coffee price decline and volatility

Macroeconomic impacts: Countries that are most dependent on coffee in terms of aggregate export revenue are characterised by smallholder-based production systems. In the late 1990s coffee represented 20% or more of export earnings in nine developing countries (Gibbon 2005). For these countries, low coffee prices led to an overall decline in export revenues. In Ethiopia, for example, coffee revenues declined by USD 118 million from 1998/1999 to 2001/2002, dropping from USD 281 million to USD 163 million (IMF 2005).

The immediate impacts of declining export earnings are decreasing state budgets and limited spending on rural and agricultural development or on education and health, thus endangering achievement of the Millennium Development Goals (MDGs). Service organisations such as certification/ regulatory agencies or coffee research institutes will also experience a reduction in income, with the result that services will no longer be provided. Consequently, investment in research, innovation, and extension in many African countries has declined, resulting in substantially lower quality and yields than in other coffee-growing countries.

Poverty: Commodity producers are often among the poorest of the population. In addition, they are hardest hit by reduced government spending in pro-poor sectors (Junta Nacional del Café et al 2006). Vakis and colleagues (2004) estimate that in Nicaragua the poverty headcount rate for households not involved in coffee production declined between 1998 and 2001 from 64.7 to 54.6, while for those producing coffee it increased from 73.6 to 75.4. They further found that coffee farmers suffered more than labourers on estates; that child malnutrition increased slightly in coffee-growing regions; and that primary school enrolment for coffee-producing households dropped. They conclude that most socio-economic indicators worsened for coffee-producing households between 1998 and 2001, a period that saw coffee prices in Nicaragua decline by more than half.

Coffee prices have been so low at times that they did not cover production costs. Estimates indicate that even in countries with the lowest production costs, such as Vietnam, farm-gate prices covered as little as 60% of production costs (Gresser and Tickell 2002). Similar findings from Ethiopia show that in 2000/2001 farmers produced at a loss – market prices covered only between one third and two thirds of production costs (Oxfam International 2002).

As incomes for coffee-producing households decrease, households have to switch to other livelihood strategies, some of which have negative social and environmental impacts. Migration of male workers from Central America to the US is reported to have increased, leaving women and children behind and increasing their workload; spending on education and health has been reduced; malnutrition is increasing; seasonal workers and wage labourers do not find work; more expensive adults are replaced by child labourers (Figure 2); general working conditions on plantations have worsened; and smallholder producers with their own holdings are increasingly cutting down coffee plantations, including shade trees, and planting timber, staple crops,

Fig. 2
Girls sorting coffee beans of different grades. Child labour is still a common feature and can be seen as an indication of increasing poverty among coffee-producing households due to declining coffee prices. (Photo by Eva Ludi, February 2008)

or other remunerative and sometimes illegal cash crops (Gresser and Tickell 2002; Nchahaga 2002; Gatzweiler 2005; Green 2005).

Environment: Negative environmental impacts from coffee price declines are determined largely by whether adaptation occurs via intensification or extensification. If access to inputs is constrained, declining prices may result in extensions of farming on marginal land to compensate revenue losses, leading to increased soil erosion, further deforestation, and loss of biodiversity. If access to land is constrained, farmers may be forced to increase production by increasing their use of fertilisers and pesticides, resulting in soil and water pollution (Green and Morrison 2004). More than 80% of the 11.8 million hectares of coffee plantations worldwide are located in areas previously or currently covered by rainforest. Furthermore, coffee is grown in 13 of the world's 25 biodiversity hot spots. In Latin America, increasing productivity is partly a result of the conversion of 40% of previous 'shade-grown' coffee production (Figure 3) to 'sun-grown', and there is evidence that expansion of coffee production has been a substantial cause of deforestation in Africa (Halweil 2002; Gooding 2003). Deforestation and changing planting patterns could have serious implications specifically for the preservation of genetic diversity in Ethiopia, which is the sole centre of origin of Arabica coffee (Tadesse Woldemariam Gole 2003).

Fig. 3
Shade-grown coffee with a field of tef in the foreground. In most parts of Ethiopia, coffee is grown under shade trees; households usually combine staple food production and coffee production. (Photo by Eva Ludi, February 2008)

24.3 Is sustainable coffee the answer to the crisis?

24.3.1 Speciality coffee

The current social, economic, and environmental challenges facing the coffee sector and ultimately coffee producers are the result of a long history of market liberalisation, dismantling of vital support structures for coffee producers, privatisation of parastatal enterprises (e.g. marketing boards), insufficient infrastructure development, supply chain inefficiencies, market imperfections, corporate consolidation, and a concentration of market operations downstream, leading to high and growing levels of oligopoly (e.g. in the late 1990s, 6 companies controlled 50% of the international coffee trade) and a global oversupply of undifferentiated commodity coffee (Giovannucci and Koekoek 2003; Daviron and Ponte 2005). All these developments have had adverse impacts on the livelihoods of coffee producers, both directly, through lower producer prices and declining incomes, and indirectly, through reduced government spending on technical and marketing support or social development. As a reaction to these problems, there is a growing trend towards more sustainable coffee production characterised by specific production practices, more transparent supply chain and market relations, market differentiation,

and international adoption of 'best practices' in sustainability, including aspects like economic viability for producers, environmental sustainability, biodiversity conservation, and social responsibility (Daviron and Ponte 2005; Murray et al 2006).

While the market for (undifferentiated) commodity coffee has stagnated, growth in the speciality market has created important new opportunities for small-scale producers. Coffee was the first labelled commodity and remains the backbone of the Fair Trade (FT) system (Raynolds 2002; Murray et al 2006). Over the past two decades the market for speciality coffee[8] has grown significantly. Certified FT coffee, for example, increased from 12,000 tonnes in 2000 to 62,000 tonnes in 2007 (FLO 2008). Despite the remarkable growth in certified FT coffee, the total volume of certified and non-certified coffee sold as sustainable was only around 1.2% of the global coffee market in 2000 (Daviron and Ponte 2005), and total coffee sold as speciality coffee (including, for example, the Starbucks preferred supplier programme) still accounts for less than 10% of global coffee purchases (Blowfield 2004). Key characteristics of speciality markets are (Junta Nacional del Café et al 2006; Murray et al 2006):

- Guaranteed minimum price, usually agreed in advance with producers;
- In the case of Fair Trade, an additional premium that can be invested in projects to enhance social, economic, and environmental capital;
- Market information and communication along the supply chain;
- Capacity building and improvement of technical knowledge through training for producers;
- Infrastructure development for producers and local communities;
- Improved environmental conditions related to production;
- Improved working conditions for labourers;
- Reduced risks for producers through longer-term contracts;
- Emphasis on more equitable supply chain participation and partnerships between trade partners;
- New organisations that are seen by indigenous producers as vehicles for cultural revival.

24.3.2 Impacts of certification systems on coffee producers

The direct measure of the impact of sustainability standards on farmers in the coffee sector is the level of the premium they are offered. Of all the speciality systems, FT pays the highest price, amounting to 125 USD cents per lb (USD

2.76 per kg). When the price of coffee at the New York Coffee Exchange is 125 USD cents per lb or above, the Fair Trade price is the New York price plus 10 USD cents per lb (i.e. plus USD 0.22 per kg) (FLO 2008). For producers, the overall income impact of sustainability standards depends on the balance between the extra costs of meeting the requirements of the standards, including additional labour costs and costs for certification, on the one hand, and the extra income earned from the premium and from the impact of changed farming practices on yields and quality, on the other hand. For FT coffee, the balance is generally reported to be positive, since farmers' organisations have not had to pay for certification and inspection so far. Moreover, the premium is substantial and the necessary changes in the farming system are limited. In addition to a binding commitment to pay a price that covers the costs of production and livelihoods for individual producers, Fair Trade standards include contracts that encourage long-term planning and partnerships and provide a premium to be invested at community level to enhance social capital (Bacon 2005). The main question that remains, however, is whether this situation can be maintained in future, given that there is an oversupply of FT coffee that is exerting a downward pressure on prices (Daviron and Ponte 2005). Additional pressure on prices for speciality coffee comes from large producers/estates who claim that their coffee is produced according to specified standards but who do without expensive third-party verification (Gresser and Tickell 2002). The FT market and consumer demand for more expensive speciality coffee in the North are the fundamental forces in determining the success or failure of all these initiatives (Murray et al 2006) – representing a new form of dependence of Southern producers on Northern consumers.

FT certification has so far been available only to small, family-based growers organised in politically independent and democratic farmer groups, organisations, or cooperatives, who must assure that they also pursue ecological goals (Murray et al 2006). Certification requires setting up formal organisations, auditing, and mechanisms to assure transparency and accountability. These requirements are not easily met, as the case study from Kenya demonstrates (see section 24.4). Producer organisations are often dominated by better-off farmers, and the premiums provided to the organisations do not necessarily reach those most in need. There is also evidence indicating that men significantly outnumber women in formal organisations, and that young producers and marginalised groups (e.g. ethnic minorities) are underrepresented as well (Utting-Chamorro 2005).

In summary, speciality schemes are meant to provide benefits – financial and otherwise – to commodity producers. Among the different speciality schemes, Fair Trade is the furthest developed; it includes prices meant to cover the costs of production and of living, as well as a premium for social development and organisational and managerial support which is intended to help build up social capital in producing communities. Other schemes focus more closely on environmental dimensions or labour standards. Common to all is the aim of improving the livelihoods of coffee farmers who have suffered in recent decades from declining prices, reduced government support, and the growing dominance of downstream actors.

24.4 Evidence from the field

Research in three coffee-producing countries – Ethiopia, Kenya, and Tanzania – was carried out under the Swiss National Centre of Competence in Research (NCCR) North-South programme. Two villages were selected in each country: one linked to a speciality market, and one producing for the mainstream coffee market. Research objectives were (a) to examine the effects of coffee price changes on the livelihoods of producers; (b) to explore coffee value chains and the stakeholders involved at various levels in the chain; (c) to identify household responses and coping strategies for dealing with changes in the price of coffee and changing marketing arrangements (e.g. speciality markets, Fair Trade arrangements); and (d) to assess, as far as possible, the impacts of changing production patterns on natural resources and the environment.

Findings presented here concern information regarding the importance of coffee production at household level and some indications of whether or not selling to a speciality market makes a difference to household income and community development.

24.4.1 Kenya (Chiuri 2009)

In both of the selected villages, Rumukia and Mathira, coffee is considered the most important source of income, followed by income from livestock and subsistence crop production. Although farmers reported that income from coffee sales had doubled over the last 10 years, they were worried about increases in the cost of living, which had tripled, and increases in the costs of farm inputs and implements, which had risen by an even greater factor. Farmers

concluded that overall, their net income from coffee production had declined as the production cost increases outweighed the returns.

Rumukia is one of the few Kenyan farmers' cooperative societies certified by Fairtrade Labelling Organizations International (FLO), although it reportedly has some unresolved issues – such as, for example, treating seasonal workers differently from permanent employees and failing to prepare annual plans for distribution and use of the FT premium and share them with farmers – which led to temporary suspension of certification.

In 2007/2008, on average, farmers from Rumukia received 66 USD cents per lb (USD 1.46 per kg) of red coffee cherry sold to the pulping factory (Figure 4). Farmers from Mathira, whose coffee went through the auction market, received an average of only 42 USD cents per lb (USD 0.93 per kg) of red cherry. The premium for coffee sold through the Rumukia Cooperative Society was 10 USD cents per lb (USD 0.22 per kg) of green bean.

Despite these generally positive findings with regard to payment for coffee, the sustainability coffee sector is not considered to have created sufficient wealth for smallholder producers. Although cooperative societies linked to the FT market are able to realise higher returns, the premium price for Fair

Fig. 4
Red coffee cherries. (Photo by Eva Ludi, February 2008)

Trade certified coffee is still not high enough to lift smallholders above the poverty threshold or to sufficiently empower women, who provide the bulk of labour in coffee production. In addition, organisational and managerial requirements seem to pose significant difficulties, as demonstrated by the temporary suspension of the FT certificate in the case of Rumukia.

24.4.2 Tanzania (Mbeyale and Mhando 2010)

Again, two villages were selected: Mshiri, belonging to the Marangu East Primary Society, which is linked to the speciality market through the Kilimanjaro Native Cooperative Union (KNCU), and Mruwia, of the Mruwia Primary Society, which sells its coffee via the auction in Moshi and is no longer a member of the KNCU. Mruwia, together with 32 other primary societies, pulled out of the KNCU in 2001, as they believed that incentives and support, both financial and otherwise, were insufficient. This is changing, however, since the KNCU has recently established links to FT organisations and has begun to provide additional services to its members.

In Mshiri, 60% of the households reported that coffee was their most important source of income, whereas in Mruwia, coffee was the most important source of income for only 25% of the households. Interestingly, farmers in Mruwia had larger areas under coffee plantations than farmers in Mshiri (0.62 ha and 0.46 ha, respectively). Average coffee production, however, at 23.93 kg/ha, was significantly higher in Mshiri than in Mruwia, where it was 16.88 kg/ha. The availability of extension services provided by the KNCU, to which Mshiri belongs, might explain the better productivity achieved by comparison with Mruwia.

Despite substantial price declines and less government support than in the period prior to liberalisation, most farmers in both villages reported that they do not intend to abandon coffee farming altogether, although they plan to increasingly diversify their sources of income (Figure 5). Recent rises in the price of coffee have led to increased investment in coffee plantations (e.g. maintenance, planting of seedlings).

A large majority of farmers in both villages (Mruwia: 78.9% and Mshiri: 98.2%) reported that they do not use inputs (artificial fertilisers, pesticides, or herbicides) on their coffee plantations. Negative experiences and a number of health episodes had resulted from the use of toxic inputs in the past. Farmers also reported that pests and diseases had become resistant to the inputs pro-

Fig. 5
A coffee farmer in the Mt Kilimanjaro area, Tanzania. The intensive intercropping of coffee, banana, beans, vegetables, yam, and other plants on a single plot, integrating food crops and cash crops, is characteristic of the area. (Photo by Eva Ludi, June 2008)

vided, and that inputs, especially fertilisers, had become extremely expensive. Finally, in the case of Mshiri, use of artificial inputs is highly discouraged by the KNCU. KNCU extension agents promote the use of manure and other organic fertilisers instead.

Coffee farmers reacted in a number of ways to falling prices and market liberalisation. In 1993, the market was opened and farmers were allowed to sell to cooperatives, private coffee buyers, or directly to the auction via their own primary societies. Mruwia established its own primary society and began to sell coffee via an agent directly at the auction in Moshi in order to avoid bureaucracy and payments to the Union. Farmers belonging to the KNCU paid approximately TZS 500 (USD 0.33) per kg of coffee for various fees, taxes, and levies, whereas these expenses were only TZS 300 (USD 0.20) for farmers from Mruwia.

Despite higher costs, membership in the KNCU has recently once again brought a number of advantages. Whereas the Mruwia Primary Society does not assist farmers in any way other than collecting and selling coffee, the KNCU provides its own extension agents, supporting farmers in moving to organic coffee production, providing technical support for coffee plantation management, and, in 2007, providing hybrid coffee tree seedlings that are

resistant to two major diseases and produce higher-quality coffee than local varieties. In 2006, in addition, the KNCU raised the price of coffee paid to members by 10% and began to pay yet a higher price to farmers who produce organically.

Although the KNCU has marketing links to FT coffee buyers abroad (USA, South Africa), farmers themselves are not aware that their coffee is being sold as FT. Only the secretary of the Primary Society was aware of the KNCU's FT links, but even he was not able to indicate whether coffee from Mshiri was sold as FT or not. Data from the KNCU indicate that only 20% of the coffee collected from its member societies is actually sold as FT coffee at a premium price. No premium is paid to individual farmers; the KNCU justified this with the inability to establish the origin of coffee sold as FT. Instead, after consultations with its members, the KNCU decided to use the FT premium for community infrastructure, such as the establishment of shops or the upgrading and renovation of buildings, or to support children whose parents were unable to pay their school fees. The amount of coffee sold by the KNCU as FT is currently small. This limits the additional income, the premium that can be invested in social development for the benefit of the entire community, and additional support provided by the Union. Consequently, producers do not consider these to be a major incentive.

24.4.3 Ethiopia (Aklilu Amsalu 2010)

In the Ethiopian case study, three villages were selected in two districts of Jimma Zone: Chidero-Suse, Genji-Ilbu, and Haro. In all three villages, coffee accounts for the largest share of household income, although there are considerable differences in the portion of total farmland under coffee: in Chidero-Suse this is 55%, in Genji-Ilbu 68%, and in Haro 75%. On average, coffee accounts for 54% of total annual household income, with Genji-Ilbu being most dependent on coffee (62% of income) and Chidero-Suse least (49%). Across wealth categories, coffee contributes most to the income of rich households (63%), followed by poor households (54%), and the least to average households (51%). Looking at total income from coffee and other sources, including remittances, more than 50% of households earn less than USD 350 per year and more than 75% less than USD 700; this means that more than 50% and 75% of households live below the USD 1 and USD 2 per day poverty threshold, respectively. These findings are similar to results from another study conducted in Jimma Zone by Samuel Gebre Selassie and Ludi (2008), who found that coffee accounted for 70% of the total value of

agricultural output sold. This study also found that those 25% of all households that were highly commercialised – as defined by the degree of market participation – generated over 95% of their cash income from coffee sales and had the highest share of their landholdings allocated to coffee plantations, while the least commercialised 25% of all households earned 63% of their income from selling food crops and had the lowest share of their land devoted to coffee.

Farmers in the three villages use different market outlets to sell their coffee. Farmers in Chidero-Suse sell to private coffee traders, mainly because their cooperative is mismanaged, and they receive payments only long after the coffee has been delivered. Farmers in Genji-Ilbu sell mainly to their cooperative, which is a member of the Oromyia Coffee Farmers' Cooperative Union (OCFCU). OCFCU is the largest cooperative union in the country, and provides a number of services to its member cooperatives. Genji-Ilbu benefits from better coffee prices, dividends, and credit facilities at times of coffee purchase, and from market information and technical assistance. The Union either sells the coffee at the central auction market in Addis Abeba or exports it directly without having to pay a tax. Finally, Haro supplies coffee to the speciality market via an individual exporter. Only about 12% of coffee producers in this community, however, participate in the speciality scheme. This low rate of participation is mainly due to limited knowledge about the scheme and its potential benefits. Farmers reported that they do not receive sufficient benefits and that there is limited trust in the business practices of the exporter in charge of the speciality scheme in the area.

Farmers in Genji-Ilbu sell their coffee via the cooperative to OCFCU. They seem to trust such an organised approach more than individual initiatives, which might be driven by personal profit motives rather than a genuine interest in the welfare of coffee producers. Given that the FT movement has been introduced to Ethiopia only very recently, no conclusive statements can be made with regard to financial and non-financial benefits of farmers participating in alternative marketing channels.

24.5 Conclusions

The current situation of coffee production and consumption was labelled by Daviron and Ponte (2005) as the 'Coffee Paradox' – a coffee crisis in producing countries, with international prices at their lowest levels in decades,

and a coffee renaissance with ever more expensive coffees in consuming countries. They further conclude that the coffee crisis is related not only to oversupply on international markets, but also to changes in the governance structure of the global value chain for coffee.

Changes in the global coffee economy have various impacts on small producers' options for sustainable livelihoods. On the positive side, increasing consumer awareness of the plight of coffee producers has led to a shift in consumer demand towards higher-quality coffees produced under certified social and environmental standards, for which consumers are willing to pay higher prices. However, Daviron and Ponte (2005) have shown that speciality coffee does not necessarily lead to higher farm-gate prices.

Preliminary findings from the three case studies indicate that there have been major changes in the marketing structure since the abandonment of compulsory auctions and the dissolution of parastatal marketing boards. Private actors and organisations linked to speciality markets are increasingly gaining influence. In all three case study areas producers have suffered direct losses in income as a result of declining global coffee prices and as a result of the termination of technical, managerial, and marketing support provided by public agencies. Initial results, however, also seem to indicate that there are considerable challenges related to the establishment of alternative production systems and marketing channels which are meant to benefit smallholder coffee producers. Although in Kenya a cooperative was certified by FLO, there were serious organisational and management issues, so that certification temporarily had to be revoked. In Tanzania, although the KNCU as a whole holds an FT certification, farmers belonging to member cooperatives receive premiums not individually but in the form of limited community investments, as the KNCU is unable to sell all its coffee to speciality markets at a premium price. In Ethiopia, FT has been introduced only recently, and not all primary societies can buy coffee from producers at premium prices, in part because they are burdened with debts, which they have to service first.

Despite these mixed findings regarding the benefits of producing for speciality markets in the three case study areas in Ethiopia, Kenya, and Tanzania, efforts to improve sustainability certification systems should nevertheless be further promoted, with a view to enhancing these systems' appeal to consumers and bringing about improvements in producers' livelihoods. Moreover, this process should be enhanced through more inclusive debate

on sustainability criteria and on institutional settings and their related costs – financial and otherwise – as well as on cost-sharing mechanisms; by giving producers more power in negotiations relating to standards; and by improving technical assistance in the coffee production sector but also in alternative enterprises, as a means of supporting diversification. This should not lead to consumers paying more for their coffee, but to fairer final price distribution within the overall value chain.

At the national level, investments and policy changes that help to reduce production costs should be given further support. This can include, for example, provision of better extension services, credits, and access to certification bodies; support in forming farmers' organisations to make use of economies of scale; improvement of the regulatory system; and provision of basic social and economic infrastructure.

The dependence of coffee producers on the whims of consumers, primarily in developed countries, is one problem that cannot be solved by increasing sustainable coffee production and the share of income that coffee producers receive. With stagnating populations and low economic growth rates, further demand for high-quality coffee can be expected to reach its limits. In recent years, global demand has remained almost constant, reducing options for smallholder producers to enter potentially rewarding value chains. Increased overall demand can only be expected from emerging economies and from the growing urban middle class within producing countries.

Endnotes

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[7] This paper does not discuss recent price spikes for a number of agro-commodities such as rice, maize, or wheat. For a discussion, see Wiggins and Levy 2008.

[8] Speciality coffee is an umbrella term that includes certified Fair Trade, organic, shade-grown Rainforest Alliance, Utz Kapeh / Utz Good inside, and other coffees, but also coffees that distinguish themselves by specific quality standards or geographical origin.

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25 Economic Growth and Poverty Reduction in India: A (Neo-) Kaldorian Analysis

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Abstract

Building on our previous work in the Swiss National Centre of Competence in Research (NCCR) North-South programme, we analyse the determinants of India's historically exceptional economic growth and poverty reduction since the early 1980s. In a first step, we confirm and augment the Kaldorian hypothesis that the manufacturing sector is the 'engine of growth'. Regression analyses and causality tests for the 16 largest states of India strongly indicate that both the manufacturing sector and the modern, IT-related service sector act as India's engines of growth. In a second step, we run causality tests on income growth and poverty reduction. The results clearly support the hypothesis that the direction of causality is from income growth to poverty reduction, rather than the other way round. The results illustrate how important it is for the Indian government to continue to follow policies and institutional reforms that promote economic growth in order to reduce poverty.

Keywords: Economic growth; poverty reduction; Kaldor's laws; growth of manufacturing and IT services.

25.1 Introduction

It is generally agreed that India set off on a new path of economic growth in the 1980s. The average annual growth rate of the gross domestic product (GDP) from independence to the end of the 1970s was around 3.5%. This rose to more than 5% in the 1980s and has been more than 6% since the early 1990s (Panagariya 2004). While the exact timing and policy causes of this marked acceleration are highly contested (Wallack 2003; Panagariya 2004; Rodrik and Subramanian 2004), there is little dispute about which sector acted as the main engine of growth (Dasgupta and Singh 2005). This is the first question on which the article at hand focuses. We use regression analyses and, as regressions are limited in their capacity to determine the direction of causality, we also use causality tests to check the hypothesis that the growth rates of manufacturing and modern services related to information and communication technologies (ICT) are the main determinants of overall economic growth. In previous research within the framework of the Swiss National Centre of Competence in Research (NCCR) North-South programme, Agrawal and Dash (in preparation) found some indirect evidence for this hypothesis. They demonstrated that since the early 1990s Indian exports, with high growth rates for manufacturing products and services, had Granger-caused overall economic growth. The same results were obtained for export-promoting or liberalisation phases in 10 other developing countries (Agrawal and Parida, in preparation).

The second question addresses the link between economic growth and poverty reduction. The evidence from a broad body of literature leaves no doubt that the overall GDP growth has an important impact on (income) poverty reduction. At the same time, poverty reduction contributes by definition to overall economic growth. Therefore, we carry out causality tests in order to answer the question of which effect dominates. Again, there are results from previous work within the NCCR North-South which support the hypothesis that causality moves mainly from income growth to poverty reduction. Schmid (2007) shows, among other things, that in 10 of the 15 largest Indian states the impact of income growth on poverty exceeds that of development expenditures – as an effect of either the size or the poverty elasticity of these expenditures (or both). Moreover, he demonstrates that, combined with education, employment in the manufacturing and modern service sectors is an important route to escape poverty. In our study, we attempt to analyse the direction of causality between income growth and poverty reduction more directly.

We use two data sets for the econometric work. The first contains the state domestic product (SDP) and all sector production data (value added) for the 16 largest Indian states. The data are taken from the Indian Central Statistical Office (CSO), and the period covers the years from 1980 to 2005.[3] The second data set contains the headcount ratios of poverty, which are derived from the National Sample Surveys (NSS). The data, taken from Ravallion and Datt (1995), cover the 14 largest states of India and the period between 1986 and 1994.

The article is organised as follows: Section 25.2 summarises Kaldor's theoretical framework and empirical results. Section 25.3 gives a brief overview of sector development and overall economic growth in the 16 largest states of India since 1980. Section 25.4 presents the regression results for the link between the growth of different sectors and the overall growth of SDP. Section 25.5 presents the results of testing Granger causality for the hypothesis that manufacturing and modern services have a strong effect on overall economic growth. Section 25.6 applies three different methods to test causality between income growth and poverty reduction. Section 25.7 offers conclusions.

25.2 Kaldor's laws

In a seminal contribution to our understanding of the growth process, Nicholas Kaldor (1957, 1966, 1968, 1975) contended that the manufacturing sector is the engine of growth for the economy as a whole. Kaldor argued that this is above all due to increasing returns to scale in manufacturing. Referring to the works of Adam Smith (1904), Alfred Marshall (1920), and Allyn Young (1928), Kaldor saw the interaction of static and dynamic economies of scale at the enterprise and industry levels as the main driving force of the growth of production and productivity. Larger plants and machines, increasing specialisation and division of labour, 'Marshallian' labour pooling, cost-reducing agglomeration effects, learning by doing, high demand elasticity for manufacturing products, market growth through exports, and innovation and other spill-over effects were elements of his understanding of increasing returns to scale.

Kaldor presented and tested his ideas in the form of three closely related hypotheses, which were later called 'Kaldor's laws'. The first law states that manufacturing growth has a dominant impact on overall GDP growth. The second law, also called the 'Verdoorn law' (Verdoorn 1949), postulates a

close link between production growth and productivity growth in manufacturing: the higher the growth of production in manufacturing, the higher the growth of productivity in this sector. The third law combines the first two and deals with the impact of manufacturing growth on overall productivity growth. Once the process of industrialisation is underway, Kaldor argued, employment is shifted from agriculture and low-productivity services to industry. This sector transformation leads to increasing industrial shares of GDP without jeopardising growth and levels of production in agriculture and services. In other words: industry-driven transformation towards a 'mature' economy induces productivity growth in the other sectors.

Kaldor tested his hypotheses using growth data for 12 industrialised countries for the period of 1953/54–1963/64. The regressions supported his hypotheses, which – in his opinion – explained the then low growth performance of Britain compared to that of other member countries of the Organisation for Economic Co-operation and Development (OECD). In Kaldor's view, Britain suffered from 'premature maturity' in that sector transformation was more advanced there than in other industrialised countries: the engine of growth had run out of steam. In the meantime, of course, we have learned that this conclusion is not tenable. 'Mature' economies can grow at high rates, and modern (endogenous) growth theory explains why (Romer 1986; Lucas 1988). Nonetheless, the story of manufacturing growth and sector transformation is still relevant to all countries that are in the process of industrialisation. Apart from a lively discussion of the general validity of these laws (e.g. Rowthorn 1975; Parikh 1978; McCombie 1981; Leon-Ledesma 2000), Kaldor's work has inspired a number of studies that found empirical evidence supporting the hypotheses when applied to developing countries (Kappel 1990; Bairam 1991; Hansen and Zhang 1996; Necmi 1999; Dasgupta and Singh 2005; Libanio 2006).

25.3 Income and sector growth in Indian states

In the search for India's engine of growth since the 1980s, it is impossible to ignore the fact that the growth of service production is as high as, or even higher than, that of manufacturing production. Table 1 presents compound sector growth rates for the 16 largest states of India since 1980. To a considerable extent, this growth pattern is attributable to India's spectacular growth performance in 'modern' services related to ICT. It is interesting to note not only the growth of the ICT sector in a narrow sense, but also that of

the large array of modern services based on these technologies: services in finance, insurance, transport, and communication, as well as a plethora of other business and engineering services are growing at exceptional speed. From a Kaldorian point of view, this raises an important question: does the modern service sector exhibit similar characteristics regarding economies of scale to those observed in the manufacturing sector? At first sight, it would appear plausible to answer this question in the affirmative. Average costs of ICT-based services arguably decline with increasing size of the operation, and these services hold a tremendous potential for increasing specialisation and division of labour. Moreover, labour pooling, cost-saving learning by doing, and agglomeration effects can be noticed in many Indian urban service centres. At the same time, we observe that the demand elasticity for ICT-based services is high, that permanent product and process innovation is a characteristic feature of the trade, and that ICT-based services are internationally tradable at low and still declining transaction costs. Hence, instead of testing only the effect of manufacturing growth on overall economic growth, we extended the scope of our research to include testing a sort of 'neo'-Kaldorian hypothesis that both manufacturing and modern services act as engines of growth in India.

Table 1 shows that the growth performance of Indian states has varied widely since the early 1980s. The four most dynamic states, with annual SDP growth rates above 6% (Gujarat, Karnataka, Maharashtra, Rajastan), present a stark contrast with the four least dynamic states, where annual SDP growth rates were around 4% or less (Assam, Bihar, Orissa, Uttar Pradesh). The data on per capita state domestic product in Table 1 (columns to the far right) illustrate that these variations in growth rates indeed led to a divergence of per capita income in the 16 states under examination. Regression Equation (1) corroborates that average income grew faster in the richer states than in the poorer ones:

$$(1) \quad \underset{}{\text{sdppc80–05}} = \underset{(3.520)}{1.907^{***}} + \underset{(3.354)}{0.119^{***}}\ \text{qsdppc80}\ (R^2\text{: } 0.45),$$

where sdppc80–05 = annual growth rate of per capita SDP, and qsdppc80 = level of per capita SDP in 1980 (in 1000 Indian Rupees). Note that t-values are given in parentheses, and *** indicates a p-value < 1%, that is, both parameters are significant on the 1% level.

Table 1

Compound growth rates for state domestic product and sector output (1980–2005), with average incomes for 1980 and 2005. The compound growth rates are calculated as least-squares growth rates: $\ln x_t = a + b_t$, with x being the variable and t being time. If b* is the least squares estimator of b, then growth rate $r = (e^{b*} - 1)\ 100$.

	sdp	man	ser	agr	sdppc80	sdppc05
Andhra Pradesh	5.84	7.89	7.16	2.69	5.321	15.259
Assam	3.45	3.37	4.42	1.70	5.076	8.593
Bihar	3.49	3.12	5.38	–0.37	2.149	4.369
Gujarat	6.26	8.44	9.88	2.09	7.289	21.844
Haryana	5.79	7.83	6.45	3.31	8.551	20.478
Himachal Pradesh	5.85	13.48	6.23	2.22	6.246	16.862
Karnataka	6.41	7.59	7.91	2.98	5.419	16.061
Kerala	5.41	4.60	6.40	3.00	6.069	16.369
Madhya Pradesh	4.78	6.25	5.78	2.65	3.981	9.626
Maharashtra	6.57	5.99	7.87	3.62	7.897	21.700
Orissa	4.04	4.52	6.06	0.30	4.365	8.970
Punjab	4.70	7.02	7.54	1.23	9.360	19.377
Rajasthan	6.26	6.70	7.79	3.60	4.126	11.701
Tamil Nadu	5.83	4.62	7.52	2.78	5.833	16.346
Uttar Pradesh	4.38	6.16	5.01	2.50	4.195	7.293
West Bengal	6.08	4.94	7.26	4.68	5.360	14.473
Average	5.32	6.41	6.79	2.44	5.702	14.332
Standard deviation	1.01	2.41	1.31	1.22	1.810	5.200
Coefficient of variation	0.19	0.38	0.19	0.50	0.320	0.360

Key: sdp = state domestic product; man = manufacturing; ser = services; agr = agriculture; sdppc80 = per capita state domestic product in 1980; sdppc05 = per capita state domestic product in 2005. Per capita state domestic products are indicated in 1000 Indian Rupees, based on constant prices.

As a consequence, the maximum income differential between states rose from a ratio of 4.3:1 to 5:1, and the coefficient of variation increased by about 20%. In other words, the last quarter-century was a period of income divergence among Indian states.

25.4 Regression analyses for Kaldor's first law

In its simplest form, Kaldor's first law can be tested with the following equation:

$$(2) \qquad sdp = a_0 + a_1\ man,$$

where sdp = growth rate of state domestic product (SDP), and man = growth rate of manufacturing production (value added).

Growth rates are annualised (compound) rates for a given period of time. However, as Kaldor himself and many other authors have noted, such a regression may lead to spurious results, because manufacturing output is part of GDP. Therefore, Equation (2) is often substituted by:

$$(3) \qquad n\text{-}man = a_0 + a_1\ man,$$

where n-man = growth rate of non-manufacturing SDP, and man = growth rate of manufacturing production.

Various authors have argued that this linear function may not be adequate, because the effect of manufacturing growth on growth of the rest of the economy may vary, depending on the size of the manufacturing sector (e.g. Kappel 1990; Hansen and Zhang 1996). Above all, this is to be expected in developing countries in which the process of industrialisation is in full swing. Equation (3) can be modified to incorporate the size of the manufacturing sector as a proportion of SDP in the initial year:

$$(4) \qquad n\text{-}man = a_0 + a_1\ (qman_0 / qsdp_0)\ man = a_0 + a_1\ manw,$$

where n-man = growth rate of non-manufacturing SDP, $qman_0$ = level of manufacturing production in the initial year, $qsdp_0$ = SDP in the initial year, man = growth rate of manufacturing production, and manw = growth rate of manufacturing production, weighted.

We use Equations (3) and (4) for cross-section ordinary least-square estimates for the 16 Indian states listed in Table 1. In addition to testing the effect of manufacturing growth, we estimate these two equations for services, agriculture, traditional services, modern services, manufacturing plus traditional services, and manufacturing plus modern services. Table 2 shows

Table 2

Sector shares of SDPs in 1980.

	man	ser	agr	sert	serm	mansert	manserm
Andhra Pradesh	0.095	0.405	0.390	0.244	0.161	5.321	0.257
Assam	0.097	0.407	0.423	0.338	0.069	5.076	0.166
Bihar	0.051	0.358	0.583	0.257	0.101	2.149	0.145
Gujarat	0.199	0.249	0.375	0.090	0.159	7.289	0.358
Haryana	0.137	0.339	0.511	0.233	0.106	8.551	0.244
Himachal Pradesh	0.032	0.509	0.337	0.385	0.125	6.246	0.157
Karnataka	0.153	0.378	0.398	0.231	0.148	5.419	0.301
Kerala	0.109	0.495	0.286	0.356	0.139	6.069	0.248
Madhya Pradesh	0.108	0.396	0.386	0.264	0.132	3.981	0.239
Maharashtra	0.258	0.446	0.232	0.242	0.204	7.897	0.462
Orissa	0.104	0.326	0.484	0.219	0.107	4.365	0.211
Punjab	0.096	0.232	0.575	0.114	0.118	9.360	0.275
Rajasthan	0.140	0.442	0.363	0.267	0.175	4.126	0.316
Tamil Nadu	0.311	0.423	0.241	0.275	0.148	5.833	0.458
Uttar Pradesh	0.091	0.399	0.458	0.267	0.132	4.195	0.223
West Bengal	0.207	0.440	0.272	0.271	0.169	5.360	0.376
Average	0.137	0.390	0.420	0.253	0.137	5.702	0.277

Key: man = manufacturing; ser = services; agr = agriculture; sert = traditional services; serm = modern services; mansert = manufacturing plus traditional services; manserm = manufacturing plus modern services.

the relative size of these sectors for the initial year (1980). At that time, India's SDPs had the typical sector composition of a low-income country: on average, agriculture and traditional services were the largest sources of income, with about 40% and 25%, respectively, while manufacturing and modern services contributed no more than 14% (each) to SDP.

In the subsequent discussion, we present regression results for two time periods: the entire study period, 1980–2005, and a sub-period, 1987–2005. As mentioned in section 25.2, the year in which the shift in Indian GDP growth occurred has not yet been determined beyond any doubt. Wallack (2003) shows in her analysis of national growth rates that with a 90% probability the shift occurred between 1980 and 1987. Based on GDP data, her point estimate with the highest F-value is 1980; using GNP (gross national product) data, it is 1987. In both data series, however, the F-values peak in

1980 and 1987 and are numerically very close. Therefore, Wallack's results are ambiguous. Rodrik and Subramanian (2004) maintain that the shift originated in the early 1980s. However, they also state that the "key change that unleashed the animal spirits of the Indian private sector" (Rodrik and Subramanian 2004, p 2) was the national government's new attitude towards business after Rajiv Ghandi had come to power in 1984; that would make 1987 the more likely candidate for the shift in growth rates. Panagariya (2004) also tends to see 1987 as the decisive year, because the average annual growth rate of 5.6% between 1987 and 1991, when the balance of payments crisis hit and initiated India's 'new economic policy', was significantly higher than in the previous decade (4.4%). In light of these considerations, it makes sense to analyse the data for the two periods mentioned above.

Table 3 shows the results for regressions of sector growth on growth of the rest of the economy. We present results for manufacturing, services, and agriculture. The regressions with agricultural growth indicate that the performance of this sector has no discernible effect on non-agricultural growth. While simple manufacturing growth rates do not explain non-manufacturing growth, weighted sector growth rates are highly significant and explain slightly more than 60% of the variance in non-manufacturing growth. Hence, these results support Kaldor's first law. However, regressions with service

Table 3

Regressions of sector growth on overall growth, manufacturing, services, and agriculture, 1980–2005 and 1987–2005.

Equation	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
Variable	n-man 1980–2005	n-man 1980–2005	n-ser 1980–2005	n-ser 1980–2005	n-agr 1980–2005	n-agr 1980–2005
Intercept	4.453*** (5.96)	4.122*** (5.28)	0.766 (0.67)	1.063 (1.21)	7.187*** (10.98)	6.885*** (10.54)
man	0.111 (1.02)					
manw		1.824*** (4.67)				
ser			0.509*** (3.09)			
serw				1.206*** (3.72)		
agr					–0.109 (–0.45)	
agrw						0.041 (0.06)
N	16	16	16	16	16	16
R^2	0.07	0.61	0.41	0.49	0.01	0.00

Equation	(1)	(2)	(3)	(4)	(5)	(6)
Variable	n-man 1987–2005	n-man 1987–2005	n-ser 1987–2005	n-ser 1987–2005	n-agr 1987–2005	n-agr 1987–2005
Intercept	4.122*** (5.928)	3.745*** (7.92)	1.015 (0.81)	0.322 (0.36)	6.574*** (9.34)	6.802*** (10.51)
man	0.202 (1.65)					
manw		1.744*** (3.79)				
ser			0.441** (2.52)			
serw				1.245*** (4.39)		
agr					0.009 (0.03)	
agrw						–0.319 (–0.376)
N	16	16	16	16	16	16
R^2	0.16	0.51	0.31	0.58	0.00	0.01

Key: n-man = non-manufacturing SDP; n-ser = non-service SDP; n-agr = non-agriculture SDP; man = manufacturing; manw = manufacturing, weighted (multiplied with manufacturing share of SDP in 1980); ser = services; serw = services, weighted; agr = agriculture; agrw = agriculture, weighted. Note that t-values are given in parentheses, and p-values are indicated as follows: *** p-value < 1%; ** p-value < 5%; * p-value < 10%.

growth indicate similar effects. Simple growth rates in service production explain about 40%, and weighted growth rates about 50% of non-service growth. The second part of Table 3, for the years 1987–2005, illustrates that the explanatory power of service growth even exceeds that of manufacturing growth in this sub-period.

It is interesting to remember that Kaldor also obtained high correlations and significant parameters when regressing service growth on GDP growth. However, as the parameter of service growth was practically 1, and the intercept of the regression was not significant, he concluded that causality does not run from service growth to GDP growth, but the other way round (Kaldor 1966, p 13). In the present context, where ICT-based services may act as an engine of growth similar to manufacturing, we must address a different question: does the relationship between growth of modern services and growth of the rest of the economy differ from the relationship of growth of traditional services to growth of the rest of the economy? Regression results in Table 4 suggest that the impact of modern services on growth of the rest of the economy is indeed stronger than that of traditional services. Even

Table 4

Regressions of sector growth on overall growth, traditional services, and modern services, 1980–2005 and 1987–2005.

Equation	(1)	(2)	(3)	(4)
Variable	n-sert 1980–2005	n-sert 1980–2005	n-serm 1980–2005	n-serm 1980–2005
Intercept	3.828*** (4.46)	2.194*** (2.59)	1.476 (0.78)	2.494*** (4.16)
sert	0.156 (1.28)			
sertw		1.683*** (3.26)		
serm			0.480* (1.85)	
sermw				2.443*** (4.27)
N	16	16	16	16
R^2	0.10	0.43	0.139	0.56
Variable	n-sert 1987–2005	n-sert 1987–2005	n-serm 1987–2005	n-serm 1987–2005
Intercept	3.946*** (4.57)	1.543*** (1.58)	1.371 (0.769)	2.234*** (3.35)
sert	0.155 (1.30)			
sertw		2.018 (3.64)		
serm			0.459 (2.01)	
sermw				2.168 (4.24)
N	16	16	16	16
R^2	0.10	0.49	0.22	0.56

Key: n-sert = non-service (traditional) SDP; n-serm = non-service (modern) SDP; sert = traditional services; sertw = traditional services, weighted; serm = modern services; sermw = modern services, weighted. Note that t-values are given in parentheses, and p-values are indicated as follows: *** p-value < 1%; ** p-value < 5%; * p-value < 10%.

parameters of non-weighted growth rates of modern services are significant at conventional levels, and the explanatory power of weighted growth rates of modern services is about 10 percentage points higher than that of traditional services.

Which impact results from the aggregation of manufacturing and modern services? Table 5 shows that these two sectors taken together are really dominant drivers of overall growth. The weighted growth rate of manufactur-

Table 5

Regressions of sector growth on overall growth, manufacturing plus traditional services, manufacturing plus modern services, 1980–2005 and 1987–2005.

Equation	**(1)**	**(2)**	**(3)**	**(4)**
Variable	n-mansert 1980–2005	n-mansert 1980–2005	n-manserm 1980–2005	n-manserm 1980–2005
Intercept	3.687*** (3.32)	1.164** (2.28)	1.244 (0.94)	2.611*** (6.60)
mansert	0.092 (0.99)			
mansertw		1.202*** (4.23)		
manserm			0.515* (2.64)	
mansermw				1.113*** (5.65)
N	16	16	16	16
R^2	0.02	0.56	0.33	0.69
Variable	n-mansert 1987–2005	n-mansert 1987–2005	n-manserm 1987–2005	n-manserm 1987–2005
Intercept	3.463*** (2.64)	2.318*** (2.34)	–0.091 (0.09)	2.213*** (5.96)
mansert	0.212 (1.05)			
mansertw		0.904 (2.52)		
manserm			0.706 (4.69)	
mansermw				1.156 (7.28)
N	16	16	16	16
R^2	0.07	0.32	0.61	0.79

Key: n-mansert = non-manufacturing plus non-service (traditional) SDP; n-manserm = non-manufacturing plus non-service (modern) SDP; mansert = manufacturing plus traditional services; mansertw = manufacturing plus traditional services, weighted; manserm = manufacturing plus modern services; mansermw = manufacturing plus modern services, weighted. Note that t-values are given in parentheses, and p-values are indicated as follows: *** p-value < 1%; ** p-value < 5%; * p-value < 10%.

ing cum modern services explains about 70% of the growth of the rest of the economy (almost 80% for the sub-period 1987–2005). The effect of the growth of manufacturing together with traditional services on the growth of the rest of the economy is significantly lower. All in all, the regression results support not only Kaldor's hypothesis, but also the hypothesis that the modern, ICT-based service sector acts as an engine of growth.

25.5 Tests of the direction of Granger causality

As explained in the introduction, 'traditional' regression analyses have their limits in determining the direction of causality. Therefore, we extend our empirical work to submit Kaldor's first law to Granger causality tests. Using the same panel data as before, we examine whether the growth of the manufacturing and other (sub-)sectors Granger-causes the growth of the rest of the economy.

Following Granger (1969), a time series Y_t is said to be Granger-caused by another series X_t if past and present values of X_t help to improve the forecasts of the Y_t variable. This is the case if Equation (5) holds true:

(5) $MSE(Y_t \mid \Omega_t) < MSE(Y_t \mid \Omega_t')$,

where MSE = conditional mean square error of the forecast of Y_t, Ω_t = set of all relevant information up to time t, and Ω_t' = set of information excluding past and present X_t.

The conventional Granger causality test involves specifying a bi-variate p^{th}-order vector auto regression (VAR) as follows:

(6a) $$Y_t = \mu + \sum_{i=1}^{p} a_i Y_{t-i} + \sum_{j=1}^{p} b_j X_{t-j} + U_t$$

and

(6b) $$X_t = \mu' + \sum_{i=1}^{p-1} c_i Y_{t-i} + \sum_{j=1}^{p-1} d_i X_{t-j} + U_t',$$

where X and Y are variables as explained above, μ and μ' are constant drifts, and U_t and U_t' are error terms. More generally, Equation (6a) may include any number of additional relevant variables to explain Y_t. Furthermore, when using panel data as in the present case, state-specific fixed effects (constants that vary from state to state) are also allowed in order to take account of state-specific variations. The null hypothesis that X_t does *not* Granger-cause Y_t amounts to testing the following equation:

(7) $b_1 = b_2 = \ldots = b_n = 0.$

Table 6

Equation	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Variable	n-man	n-man	n-ser	n-serm	n-serm	n-manserm	n-manserm
cons	0.333*** (18.84)	0.0363*** (13.77)	0.041*** (3.36)	0.069*** (8.53)	0.038*** (3.67)	0.029*** (13.77)	0.036*** (16.84)
n-man1	−0.347*** (−7.33)	−0.100 (−1.17)					
n-man2	−0.226*** (−3.33)	−0.009 (−0.08)					
n-man3	−0.899* (−1.79)	0.192** (0.086)					
man1	0.084*** (3.12)	−0.104** (−2.21)					
man2	0.0498 (1.52)	−0.102* (−1.74)					
man3	0.0755*** (2.81)	−1.317*** (−2.73)					
n-ser1			−0.530*** (−10.00)				
n-ser2			−0.139** (−2.29)				
n-ser3			−0.124** (−0.228)				
ser1			0.001 (0.02)				
ser2			0.126 (1.37)				
ser3			0.221** (2.41)				
n-sert1				−0.539*** (−9.91)			
n-sert2				−0.109* (−1.80)			
n-sert3				−0.099* (−1.85)			
sert1				−0.015 (−0.34)			
sert2				0.075* (1.72)			
sert3				0.042 (0.94)			
n-serm1					−0.511*** (−9.8)		
n-serm2					−0.093* (−1.66)		
n-serm3					−0.066 (−1.29)		

serm1					0.193*** (2.87)		
serm2					0.049 (0.73)		
serm3					0.173*** (2.47)		
n-manserm1						–0.518*** (–11.97)	–0.030 (–0.71)
manserm1						0.255*** (4.71)	–0.100* (–1.86)
N	327	327	342	341	341	375	375
F^2	5.93***	3.88***	2.39*	1.26	5.28***	7.43***	0.17
R^2 within	0.34	0.15	0.33	0.35	0.41	0.35	0.10
R^2 between	0.06	0.03	0.61	0.85	0.45	0.66	0.88
R^2 overall	0.33	0.14	0.31	0.31	0.38	0.32	0.09

Key: n-man = non-manufacturing SDP; n-ser = non-service SDP; n-serm = non-service (modern) SDP; n-manserm = non-manufacturing plus non-service (modern) SDP; man = manufacturing; ser = services; n-sert = non-service (traditional) SDP; sert = traditional services; serm = modern services; manserm = manufacturing plus modern services. 1, 2, and 3 denotes time lags of 1, 2, and 3 years. Note that t-values are given in parentheses, and p-values are indicated as follows: *** p-value < 1%; ** p-value < 5%; * p-value < 10%.

Causality tests, sector growth and growth of rest of SDP, 1980–2005.

This can be tested by standard methods, such as an F-test. Similarly, the null hypothesis that Y_t does *not* Granger-cause X_t (reverse causation) amounts to testing Equation (8):

(8) $c_1 = c_2 = \ldots = c_n = 0.$

The results of testing Granger causality are presented in Table 6. The estimates are for the period of 1980–2005; they use non-weighted variables[4], and they incorporate fixed effects for the 16 states. In all cases we present results with optimal time lags, which turned out to be 3 years in Equations (1) to (5) and 1 year in Equations (6) and (7). Year dummies were included in all equations but are not reported in Table 6. The F-values in the lower part of Table 6 refer to the probability that parameters b_i of Equation (7) are not zero.

Equation (1) in Table 6 shows that growth of manufacturing Granger-causes growth of the rest of the economy. At the same time, Equation (2) indicates that there is a much weaker feedback from the rest of the economy to manufacturing. Equation (3) illustrates that there is weak causality going from growth of services to growth of the rest of the economy. Equations (4) and (5) indicate that growth of traditional services has no effect on growth of

the rest of the economy, while growth of modern services strongly Granger-causes non-service growth. Equation (6) illustrates that growth of manufacturing plus modern services has a strong impact on growth of the rest of the economy, but that there is no discernible reverse causality (Equation 7). All in all, these results corroborate the conclusions from the regression results previously discussed. The estimates indicate that modern, ICT-based services allow for static and dynamic economies of scale similar to those in the manufacturing sector. Hence, the traditional version of Kaldor's first law can be extended to modern services: both manufacturing and ICT-based services act as engines of growth. India is a good example of a developing country in which a two-pronged process of modernisation and sector transformation is in full swing.

25.6 The effect of economic growth on poverty reduction

It is broadly agreed that higher economic growth is associated with more rapid poverty reduction (see, for example, Dollar and Kraay 2002). However, the direction of causality between these variables remains to be established clearly as it has important policy implications, as noted in section 25.1. In the present section, we attempt to determine the relationship between changes in real per capita SDP (sdppc) and changes in the headcount ratio (hcr), the percentage of people living below the national poverty line. We analyse the direction of causality between economic growth and poverty reduction by using co-integration, Granger causality, and error variance decomposition (EVD) techniques. At this point we must emphasise that the data we use for the headcount ratios are not available for every year. We interpolated the missing data by assuming a constant growth rate in poverty reduction over the missing years. Although the SDP figures were available for every year, they were interpolated for the corresponding years for which headcount ratios were missing, using the same calculations as for the poverty data. We are fully aware that this procedure limits the quality and validity of our results. We tried to make the best of the limited data, and are confident that the method applied minimises the inevitable bias of the results.

As a general procedure of causality and co-integration analysis, we first examine the stationarity of the GDP and poverty series. The two variables used are the log of the per capita real SDP (lsdppc) and the log of the headcount ratio of poverty (lhcr). The results of an Augmented Dickey-Fuller

(ADF) test for unit roots (not reported here) show that the variables sdppc and hcr are non-stationary in their log form, but stationary in the first differences of the logs, that is, in their growth rates. Using the Johansen and Juselius maximum likelihood method, we can reject the null hypothesis of no co-integrating vector at the 5% significance level (results not reported here). The presence of a single co-integrating vector proves the existence of a long-run equilibrium relationship between per capita SDP and headcount ratio.

Since it is difficult to determine the direction of causality in the case of a single co-integrating vector, we apply the vector error correction method (VECM), which includes the error term derived from the co-integration equation. Table 7 illustrates that the error terms in both equations of the VECM are statistically significant at the levels of 10% and 5%, respectively. This indicates a bi-directional causality between per capita SDP and headcount ratio. Regarding adjustments in the short run, we find that the lagged values of income growth (dlsdppc) have a significant effect on poverty reduction (dlhcr). However, there is no reverse causality, that is, the lagged dlhcr-terms have no significant effect on income growth. These results indicate, in other words, that causality goes from per capita income growth (dlsdppc) to poverty reduction, where the lagged values of dlsdppc are significant and have the correct (negative) sign. Overall, this evidence suggests that the direction of causality is mainly from income growth to poverty reduction, although there is also some evidence of possible bi-directional causality.

Table 7

Results of vector error correction estimates.

Error correction	dlhcr	dlsdppc
Residual	–0.112690* (–1.61493)	–0.047239** (–1.78654)
Constant	0.023392 (1.47259)	0.018905 (3.14077)
dlhcr1	–0.213896* (–1.63714)	0.028612 (0.57793)
dlhcr2	–0.097508 (–0.77405)	0.065322 (1.36844)
dlsdppc1	–1.017078** (–2.39302)	0.015371 (0.09544)
dlsdppc2	–0.714778* (–1.63675)	0.134276 (0.81143)

Key: dlhcr = change rate of headcount ratio; dlsdppc = change rate of state domestic product (income) per capita. Note that t-values are given in parentheses, and p-values are indicated as follows: *** p-value < 1%; ** p-value < 5%; * p-value < 10%.

Given the importance of the issue involved, we tried to analyse the direction of causality in two additional ways. As both series, dlsdppc and dlhcr, are stationary, we can also apply a Granger causality test. The result, in the form of an F-test for parameters b_i being zero, strongly indicates that causality goes from income growth (dlsdppc) to poverty reduction (dlhcr). The null hypothesis that income growth does *not* reduce poverty has a probability of 0.015 (F-test 3.98) and must be rejected, while the null hypothesis that poverty reduction does *not* Granger-cause income growth has a probability of 0.626 (F-test 0.63) and cannot be rejected.

In addition, we also use the vector auto regression (VAR) technique to test the direction of causality. The VAR model resembles a set of simultaneous equations in which all variables – in our case per capita income growth (dlsdppc) and poverty reduction (dlhcr) – are treated as endogenous. The variance decomposition of the estimated equations (not reported here) then shows the extent to which the variables are explained by their own shocks and by

Table 8

Results of variance decomposition.

Period	Variance decomposition of impact on dlsdppc (%)		Variance decomposition of impact on dlhcr (%)	
	dlsdppc	dlhcr	dlsdppc	dlhcr
1	100.0	0.0	0.1	99.9
2	99.8	0.2	19.0	81.0
3	99.3	0.7	19.4	80.6
4	97.9	2.1	21.8	78.2
5	97.9	2.1	22.2	77.8
6	97.8	2.2	22.5	77.5
7	97.8	2.2	22.5	77.5
8	97.8	2.2	22.5	77.5
9	97.8	2.2	22.5	77.5
10	97.8	2.2	22.5	77.5
11	97.8	2.2	22.5	77.5
12	97.8	2.2	22.5	77.5
13	97.8	2.2	22.5	77.5
14	97.8	2.2	22.5	77.5
15	97.8	2.2	22.5	77.5

Key: dlhcr = change rate of headcount ratio; dlsdppc = change rate of state domestic product (income) per capita.

shocks from the other variables in the system. It is evident from the results of the error variance decomposition shown in Table 8 that the percentage change of per capita income growth (dlsdppc) is almost entirely explained by its own shock in the first period; the results illustrate that even after 15 periods, the income growth rate (dlsdppc) is explained largely (97.8%) by its own shock, and only to the tune of 2.2% by the change in the poverty ratio. However, if we look at the results of variance decomposition of dlhcr, we see that the change in the headcount ratio of poverty after period 6 is explained partly by its own shock (about 77.5%), and partly by the shock of the growth rate of per capita income (about 22.5%). These results complement the finding of the previous tests that causation goes above all from economic growth to poverty reduction.

25.7 Summary and conclusions

India's historically unprecedented economic growth rates since the 1980s are mainly driven by the growth of manufacturing production and of modern, ICT-based service production. Both the results of traditional regression analyses and causality tests for the 16 largest states of India support and extend Kaldor's first law that manufacturing is the main engine of growth. It seems that the production of modern services exhibits opportunities for economies of scale similar to those in manufacturing production. Moreover, several types of causality tests strongly indicate that economic growth is the major determinant of poverty reduction. Indian states with high growth rates of per capita SDP also had high reduction rates in their headcount ratios. Taken together, we have substantial evidence that India's accelerated growth of manufacturing and modern service production has contributed considerably to the reduction of poverty.

Although the exact year of the marked change in India's growth performance is not (yet) clear, the shift certainly occurred in the 1980s. There can be no doubt that the improved performance was caused by changes in the mindsets of politicians in the early 1980s and subsequent reforms of microeconomic and macroeconomic policies. The deregulation of the industrial sector, the liberalisation of domestic markets, the opening of the economy, and a firmer commitment to internal and external stability were and still are the fundamental ingredients of India's recipe for economic success (e.g. Kappel 2004; Panagariya 2004). By all means, the central government and the governments of the states of India must continue on this route. To prevent further

discrepancies in economic welfare on the state level, the governments of the least developed states should try to accelerate policy reforms in the direction outlined above.

These conclusions do not imply that governments should not continue to tackle poverty through direct measures of poverty reduction. It goes without saying that economic and social interventions directly targeting the poor are indispensable elements of a successful poverty reduction strategy. However, we have solid evidence that an environment of sound institutions and policies that promotes overall income growth enforces and complements the effects of direct interventions to a considerable extent. As mentioned in section 25.1, the poverty-reducing effect of overall income growth surpassed the effect of development expenditures in 10 out of 15 Indian states during the 1980s and 1990s. Moreover, combined with improved education, the employment of workers in manufacturing and service production is an important route to escape poverty (Schmid 2007). Hence, India should try to keep its rates of accelerated modernisation and sector transformation as high as possible for as long as possible. The poor will benefit substantially, particularly if these efforts are complemented by efficient, direct measures of poverty reduction.

Endnotes

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[3] All data used in this article are for Indian fiscal years, which run from 1 April to 31 March.

[4] Estimates with weighted variables yield very similar results and are not reported here.

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26 Pastoralism at the Crossroads: New Avenues for Sustainable Livelihoods in Semi-arid Regions

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Abstract

Semi-arid areas are characterised by a high variability of climatic conditions, particularly spatio-temporal variation in rainfall. Many communities living in these areas depend on livestock and/or agriculture as their main sources of income. As natural resources are becoming scarcer, users are forced to adopt coping strategies. However, pastoralism is also increasingly under pressure from legal, economic, and social constraints. The main difficulty is access to resources, giving rise to issues such as securing mobility, regulating transhumance, providing social services (health, education, and market), and dealing with conflicts. Mobile pastoral communities have become increasingly vulnerable. More and more livestock-dependent households and entire pastoral communities are losing their traditional basic assets – livestock and/or their rights to grazing lands – and are frequently forced to migrate to urban centres or even abroad. This article analyses transformations and adaptations in the livelihoods of livestock-based populations in different settings in West Africa, the Horn of Africa, and Central Asia. It explores new avenues for securing the pastoralist way of life, based on the hypothesis that although the living conditions of pastoralists are degrading, there is a potential for economic gain through improved marketing of livestock products. This is possible when various social categories (nomadic and sedentary populations, women, youth, and herdsmen) have equitable and effective access to pastoral resources. This access could be facilitated by ensuring a rational and fair institutional framework as well as delivery of equity-effective basic social services, particularly in health, education, and information, ultimately benefiting management of the environment as well.

Keywords: Institutions; pastoralism; pasture monitoring; social services; Central Asia; Horn of Africa; West Africa.

26.1 Introduction

The term "pastoral production systems" as used in this article refers to grassland- or grazing-based livestock production systems based solely on animal production, where animals are fed with more than 90% dry matter and where less than 10% of the total value of production comes from non-livestock farming activities (Steinfeld and Mäki-Hokkonen 1995). Pastoral production systems are based on grazing of animals on seasonal, shifting, or upland pastures, primarily found in marginal areas unfit for cropping due to high or low temperatures, low rainfall, or steep topography, and predominantly in semi-arid and highland–lowland contexts. Such grazing areas cover 26% of the earth's ice-free land surface (Steinfeld et al 2006). Within pastoral production systems, mobile pastoralism is defined as a way of life and a production system. In semi-arid regions, it has been identified as the most viable form of livestock production and land use (Scoones 1995). Pastoralism is also understood as the use of extensive grazing on rangelands for livestock production (Blench 2001). Animal husbandry contributes substantially to the national economy of many countries, but still lacks support from government and development agencies (Fratkin 1997) compared to other production sectors. Transformation of production systems in semi-arid and highland–lowland contexts integrates diversification options, with crop production, the labour market, remittances, and tourism constituting an integrative part of pastoralism nowadays and contributing to the transformation of capital into livestock.

Rapid changes occur in contexts where pastoralism prevails and vulnerable communities adopt different strategies that integrate resilience patterns (Obrist et al 2007). These strategies combine different degrees of mobility (in space and time), social flexibility, and income and resource diversification mechanisms during periods of hardship (drought, conflict, and flood) with intensification of the production system (increased income in suburban areas). While ecological factors determine resource availability, institutional and social factors, from both the users' and the providers' perspectives, determine access to these resources as well as to social services. However, socio-economic factors such as the market, the health of pastoralists and livestock, and livelihood conditions in general have a great influence on the quantity and quality of production and thus on the well-being of pastoralists. An increase or decrease in the mobility of pastoralists therefore depends on environmental conditions and institutions, but also on market opportunities and health facilities. Recent transformations of pastoralism testify that this production system is at a crossroads and in need of strategic adaptation.

The research question confronted by the studies synthesised in the present article[10] was how to support pastoralists and provide mobile populations with social services, while also preserving production strategies and the pastoral lifestyle, as well as encouraging more sustainable management of decreasing resources. Based on the results of multi- and transdisciplinary studies carried out in sub-Saharan Africa and Central Asia involving social, natural, and veterinary sciences, the present article postulates that securing mobility, supporting the population's resilience by enhancing their flexibility, and facilitating their access to pastures, combined with provision of social services, is likely to improve the socio-economic status of pastoralists and could sustain production systems (livelihoods) at the same time. It proposes future options and new approaches to sustainable pastoralism in the mentioned regions.

26.2 Understanding pastoral production systems

In an attempt to understand the dynamics of pastoral production systems, a transdisciplinary scientific research method developed by Schelling and colleagues (2008) was applied which combined different approaches and strategies supported by interventions within the framework of the Swiss National Centre of Competence in Research (NCCR) North-South. This article is built on systems knowledge generated from case studies in Sahelian West Africa (Chad, Mauritania, Mali), the Horn of Africa (Ethiopian Rift Valley), and Central Asia (Kyrgyzstan). These case studies were centred on analysis of the following foci: 1) legal security and institutional framework; 2) access to pastures and basic social services; and 3) capacity building and networking to generate positive experiences. Pastoralist knowledge, as well as pastoralists' adapted strategies and approaches were validated with various stakeholders during a multi-level dialogue that brought together different sectors. The full cycle of current transdisciplinary research was completed with provision of social services to nomads in the Sahel, as well as the establishment of pasture monitoring and information systems in Kyrgyzstan. Table 1 gives a brief description of interventions in the three areas.

Analysis focused on legal and institutional change, pasture management strategies in Kyrgyzstan, and options for pastoral conflict mitigation in Ethiopia. This article is also based on empirical results generated by studies in geography, veterinary and medical sciences, epidemiology, sociology, and anthropology that were discussed at multi-level stakeholder workshops, as well as on conceptual analyses. Finally, it develops the determinants of

Table 1

Intervention	Objectives	Methodology	Output	References
Advocacy supporting mobility	Improve efficiency of pastoral products market and reduce transaction costs	Validation of marketing analysis, risk analysis, and commodity strategies	Evidence and strategy to mitigate zoonoses and economic distortion (Mali, Mauritania); dairy market (Mali, Chad)	Bonfoh et al 2006; Sery 2006; Bonfoh et al 2007a
	Improve legal and institutional support for access to and sustainable use of pastures	Validation of institutional mechanisms and legal frameworks, stakeholder analysis	Pastoral law and regulatory mechanisms supportive of pastoral livelihoods without compromising ecological sustainability (Kyrgyzstan, Ethiopia, Togo)	Chinara and Bonfoh 2007; Seyum 2007; Tezike and Dewa-Kassa 2008; Grolimund 2009
Access to social services and market	Improve livestock breeds to support diversification and biodiversity	Breeding system and genetic improvement potential	Participatory breed management and breeding plan (Kyrgyzstan)	Inam-ur-Rahim et al, in preparation a
	Improve access to livestock and human health services	Joint human and animal health assessment and health systems	Model of joint health system (Chad); health care and health perception of Tamasheq women (Mali)	Schelling 2002; Münch 2007; Bonfoh et al 2007b; Bonfoh et al 2007c; Schelling et al 2007; Näscher 2008
	Develop pastoral credit scheme, market and livestock insurance	Appraisal combining savings, credit, and insurance	Establishment of microfinance and model insurance schemes (Mali, Mauritania)	Schneider et al 2007; Ould Cheikh Ahmed 2008; Inam-ur-Rahim et al, in preparation a
	Develop market and pastoral information system support	Pastoral information system	Self-sustaining information system (Kyrgyzstan, Mali)	Bonfoh et al 2006; Inam-ur-Rahim et al, in preparation b
Capacity building	Promote livestock breeders and pasture users' associations	Foster existing traditional associations and explore potential for new multi-level livestock breeders and pasture users' associations	Model for livestock breeders and pasture users' associations (Kyrgyzstan, Mali)	Bonfoh and Fokou 2007; Bonfoh et al 2007a; Schneider et al 2007; Inam-ur-Rahim et al, in preparation b
	Improve sustainable pasture use	Develop tools and methods for sustainable pasture use at model level	Training modules for herders (Kyrgyzstan)	Inam-ur-Rahim et al, in preparation b
	Improve production efficiency of herds	Mobility analysis and temporal herd feeding	Improved seasonal feed budget (Kyrgyzstan, Mali)	Inam-ur-Rahim et al, in preparation b; Wombou Toukam 2009

Intervention research to support sustainable pastoralism.

changes in the production system, the consequences for people and their environment, and responses aimed at sustaining livelihoods.

26.3 Current pastoral system transformation

Pastoralism is the best form of land and natural resource management in semi-arid and highland–lowland contexts and contributes to the livelihoods of some 20 million pastoral households (Blench 2001). In the three regions considered here, we observed that rapid ecological, political, and socio-economic changes and institutional reforms are responsible for social disparities (Shigaeva et al 2007), health stress (Zinsstag et al 2008), and unsustainable use of natural resources (Fokou 2008). Pastoralists are adapting to or showing resilience in the face of the many ongoing transformations.

26.3.1 Legal and institutional transformation

Diverse legal and property rights and management regimes for land and natural resources were observed in all three regions under study. This legal pluralism is characterised by many institutional levels coexisting, overlapping, and collaborating with a focus on the same resources (Fokou 2008). In Chad, the exclusion of pastoralists from highly productive pastures (with higher agronomic potential) by farmers and the blocking of traditional transhumance routes with 'trap fields' have led to significant disruption of the annual transhumance cycle, increasing tension and conflicts and heightening the economic vulnerability of pastoral systems (Fokou et al 2004). In Central Asia, socio-economic changes coupled with inappropriate political decisions and inadequate legislation have transformed the land use system (Chinara and Bonfoh 2007). The impacts of profound legal reforms and land privatisation processes have caused economic and social disruptions in the livestock sector, reducing transhumance, widening the gap in wealth distribution, and reducing state expenditures for pasture and social services (see also Robinson et al 2010). In the Sahel, the collapse of a common property regime leading to open access to pastureland constitutes a serious threat to pastoral development (Fokou 2008). This is due to legal and institutional pluralism characterised by many property rights and management regimes that coexist, overlap, collaborate, and oppose each other for the purpose of resource management (Figure 1).

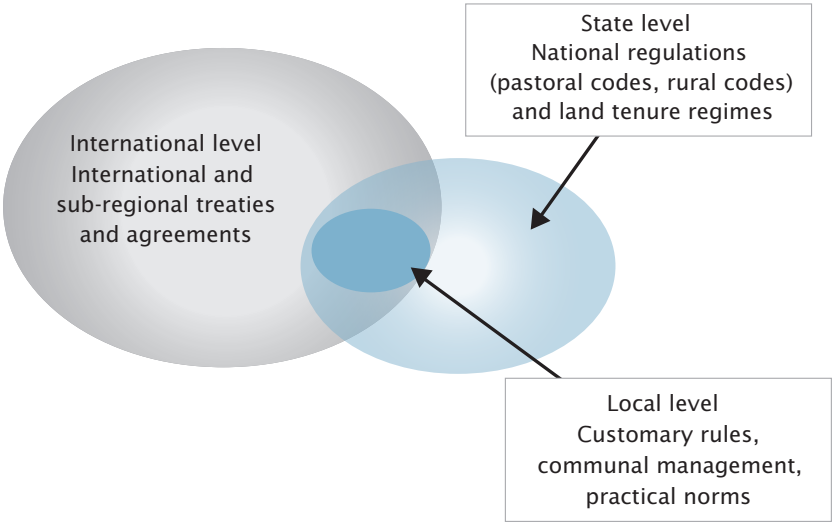

Fig. 1
Multi-level institutional frameworks for the management of natural resources and access to basic services (overlapping institutions).

In semi-arid regions in West Africa, cohabitation between pastoralists and farmers or fishermen is increasingly disrupted (Majok and Schwabe 1996; Thébaud and Batterbury 2001). Therefore, pastoralists have two options: they either settle down or change their mobility patterns and seek better living conditions, often in urban areas or beyond national boundaries, resulting in migration. Cross-border transhumance is likely to help sustain the livelihoods of pastoral populations in the Sahel, but, given the legal barriers involved, it also exposes them to many risks (insecurity, conflicts, and health). The vulnerability of transhumant pastoralists was assessed in Togo after the adoption in 2008 of a new inter-ministerial order regulating international transhumance in the country (Grolimund 2009). This order introduced two new categories of grazing taxes (national and district levels) that are considered expensive and unfair by transhumant pastoralists. If the raison d'être of this order – to better regulate transboundary transhumance, protect the environment, mitigate conflicts, and raise funds to supply populations with basic social services – is understandable, its impact on pastures is questionable. The order overlaps with the regional treaty of the Economic Community of West African States (ECOWAS), which advocates "the removal of obstacles to the free movement of persons, goods, services and capital" and "the right of residence and establishment" (ECOWAS 1993, Article 3). Even though member states are given the opportunity to adopt "policies, strategies and programmes at national and regional levels" and to "estab-

lish appropriate institutions to protect, preserve and enhance the environment, control erosion, deforestation, desertification, locusts and other pests" (ECOWAS 1993, Article 29), decisions are not taken in a participatory way. This duality, coupled with customary laws, contributes to an overlapping institutional framework (Figure 1).

The behaviour and discourses of transhumant pastoralists suggest that decisions such as the inter-ministerial order in Togo could be counterproductive. The new legal framework has resulted in a change in their transhumance routes: they either move to areas where taxes are lower (neighbouring countries) or illegally enter territories where they can graze their animals without being caught by the authorities. Ecologically, this produces the side effect of pastoralists concentrating in specific pockets of resources where they can afford to pay taxes; these areas are thus overused while others are underused. Socially, networks of relationships between various users are disrupted as pastoralists distrust administrative authorities and local populations. In economic terms, state revenues are likely to increase considerably with the new tax regulations in place; however, the new taxes will also cause a rise in the prices of meat, which will hardly be affordable for poor local consumers.

This example from Togo concerning the 2008 transhumance regulation illustrates how transformations affecting pastoral production systems can lead to situations where pastoralists are increasingly losing control of access to natural resources and engaging in severe competition for resources due to new regulations for access to key resources (pastures, water). Pastoral communities respond to such situations by initiating strategies to keep, revitalise, or transform traditional institutions and production systems. An interesting development is the emergence of associations of pastoralists that lobby for their rights (Bonfoh and Fokou 2007). In the context of overlapping and contradictory institutional frameworks (statutory and customary), open access to resources and privatisation of land predominate. The consequence is an increase in conflicts between different resource users, such as between sedentary farmers and mobile livestock producers. These conflicts, labelled by some authors as green wars (Bennett 1991), are escalating. A case study carried out in the Horn of Africa, in the Ethiopian Rift Valley, demonstrates that conflicts over land and resources do not concern temporary access, as previously, but are claims of ownership and permanent control (Seyum 2007). In West Africa (Lake Chad area and coastal countries) conflicts between various groups of resource users often result from dichotomies such as locals versus non-locals or indigenous people versus foreigners (Fokou et al 2004;

Fokou 2008; Grolimund 2009; Fokou et al 2010). Resource use conflicts are usually triggered by the desire of local sedentary people to safeguard their patrimony from newcomers or by migrants who justify their presence by the huge amounts of money they have been asked to pay for access to resources. In some cases, the presence-absence of the state (Fokou et al 2010) and legal pluralism combined with difficult ecological conditions have fuelled conflicts and contributed to the transformation of entire pastoral production systems. Supporting pastoral production systems with incentives such as a comprehensive pasture law is likely to secure pastoralists' access to and use of resources.

26.3.2 Transformation of pastoral production systems

In most of the semi-arid regions, internal dynamics and external interventions have forced the pastoralists to transform their livestock production systems. Political and institutional shocks at the macro level, environmental degradation, the declining role of traditional institutions, rapid urbanisation, and population growth have also contributed to this transformation. In the meantime, the pastoral economy is being subjected to several processes. Sedentarisation, land privatisation, intensified production, and income diversification have become pervasive phenomena. The main shift from resource-driven (access to resources) to product-based demand-driven production (access to market) has meant a change in strategies, characterised by actors' responses such as economic adaptation and resilience (Figure 2) (Bonfoh et al 2003).

26.3.3 Risks, social disparities, and unsustainable resource management

Pastoralists' mobility, their proximity to livestock, and their dependence on livestock and livestock products, such as milk, combined with semi-arid to arid conditions, leave pastoral societies exposed to a variety of health risks (zoonoses, e.g. tuberculosis, brucellosis, anthrax). Their marginalisation is reflected in one of the highest infant mortality rates in the world (e.g. up to 28% of children in the Azawad region of northern Mali die before their fifth birthday) (Bonfoh et al 2007c).

In semi-arid regions, pastoralists rarely have access to social services (e.g. health services and education) and are not represented in policy- and decision-making processes. They are vulnerable and susceptible to disease

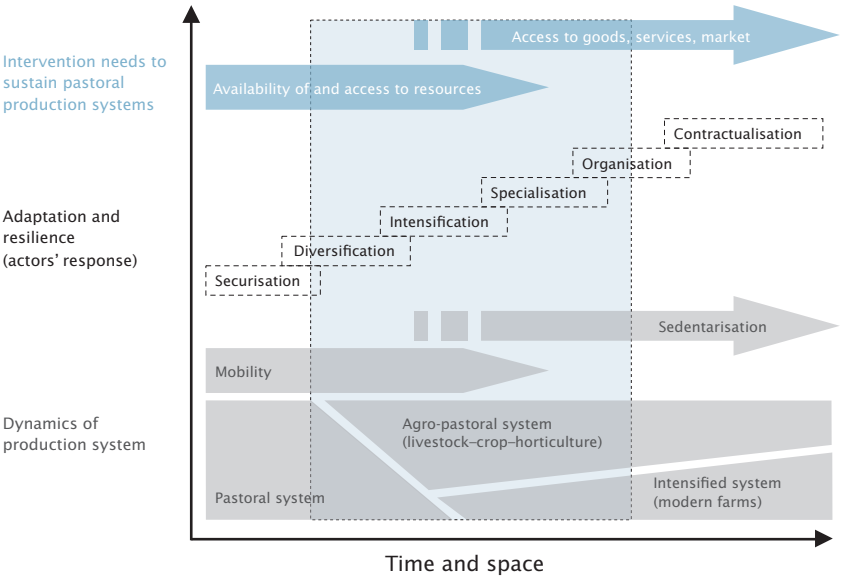

Fig. 2
Transformation of pastoral production systems due to various internal and external changes.

(Morton 2006). Households affected by debilitating diseases such as malaria and TB (in West Africa) as well as brucellosis and echinococcosis have difficulties coping with the maintenance of herds (e.g. looking after and watering animals) as every hand is needed (Schelling et al 2007; Näscher 2008). People's health status thus influences pastoral outputs (livelihoods), and poor health reduces work performance, reducing income and productivity (Hawkes and Ruel 2006). Access to health services and their use by pastoralists is hindered by pastoralists' health perceptions, as well as their mobility, dispersion, and remoteness (Näscher 2008). In addition, in areas like Lake Chad or northern Mali, there has been little attempt to address gender bias; maternal mortality rates continue to be high, and child health care has a low priority (Zinsstag et al 2007).

In Central Asia, when the Soviet Union disbanded in 1991, the once highly developed Kyrgyz sheep-breeding industry collapsed. As a result, livestock numbers decreased drastically, creating social disparities. The remaining livestock is concentrated all year round on former winter pastures close to settlements, leading to the occurrence of brucellosis (Bonfoh 2008) as well as over-utilisation of pastures near villages, while remote summer pastures are often under-utilised (Shigaeva et al 2007; Liechti 2008).

26.3.4 Adaptation to change

Pastoralists use pastures continually and produce high-quality livestock commodities. Among actors' responses (Figure 2), diversification is a powerful tool for sustaining livelihoods as it incorporates risk-sharing and helps in coping with uncertainties in unpredictable semi-arid and highland–lowland contexts. This strategy is also important with a view to valorising the comparative advantages of each livestock species in relation to risk (Bonfoh et al 2003; Tezike and Dewa-Kassa 2008; Grolimund 2009). Specialisation and intensification make it possible to respond to high demand, especially from urban zones. These two strategies are often based on the demands of the market, leading some producers to focus on the production of high-quality products in a more professional way.

Under good ecological and political conditions, pastoralists can help to maintain biodiversity on the land through their mobility. Under less favourable conditions they are forced to migrate to cities (Kerven 2003) or hostile zones where they are threatened by wildlife, endemic diseases, and conflict. It is thus important to consider complex and highly adapted production and management strategies based on traditional ecological knowledge as a key component of environmental sustainability, and the mobile livestock production system as an important contribution to well-being and to environmental services.

Livelihood strategies in pastoral zones are in most instances flexible in managing a high degree of uncertainty. The cycles of drought in the Sahel in the 1970s and 1980s pushed pastoralists to split their herds among family members, move towards coastal countries (Benin, Togo, Ghana, Côte d'Ivoire), diversify their livestock species (increased numbers of goats and camels), embark on agriculture (in humid zones), settle in order to intensify milk production in suburban areas, and increase trade activities (Tezike and Dewa-Kassa 2008; Grolimund 2009). Income generated from these practices is saved or reinvested to build up assets such as livestock (e.g. income from the Tiviski dairy in Mauritania was used to increase the number of dairy animals) (Fokou 2008; Ould Cheikh Ahmed 2008). Diversification of livestock species within the land use system is a form of adaptation to risk in pastoral economies. Keeping different livestock species yields different products for subsistence and for external markets. It can also help to overcome seasonal shortages of dairy milk and thus make households less vulnerable to food insecurity and health risks (Bonfoh et al 2003; Ould Cheikh Ahmed 2008). To mitigate these

risks, local communities – in addition to state subsidies in terms of human resources – are increasingly organising themselves and mobilising or raising financial resources to sustain health interventions (e.g. Tamasheq leaders of northern Mali) (Münch 2007). All these adaptations require support or incentives in order to maintain and sustain the production system.

The existence of overlapping laws has one positive side effect: it opens room for negotiation. However, failure to establish a framework for negotiations in each country restricts access to resources for some categories of users. The Niger rural code is considered the tool most protective of pastoral production systems, as private property is excluded and priority, non-exclusive rights to pastures are promoted (Niger rural code, Articles 2 and 28 on land property) (RN 1993). Decisions on pastoral production systems pose problems of social equity that should be considered in strategic planning. As no society is truly equitable (Behnke and Scoones 1993), social equity must take account of the degree to which a strategy assigns costs among groups in relation to the benefits each group receives or provides. It is important to avoid putting costs on one group and providing benefits to another (e.g. imbalanced health services in the Sahel) (Schelling et al 2007). Due to ecological non-equilibrium and social inequity, pastoralists need strong support in terms of social and policy transformation.

26.4 Supporting adaptations with new approaches

26.4.1 Pastoral production systems: proposing new approaches and tools

Where pastoral development strategies are concerned, new approaches, methods, and concepts (Figure 3) are needed to secure pastoral production systems and to improve the livelihoods of pastoralists (Bonfoh et al 2007c). A comprehensive new pasture law could secure mobility and access to resources (pastures and water). The 'one health' approach considers human, livestock, and environmental health in an integrated way. The case studies in Togo and Chad show the potential to provide health services to mobile populations and demonstrate how legal instruments can protect (Niger) or disrupt (Togo) the pastoral system. Although recent pasture laws bring innovations to the management of pastoral resources, in some cases they contain a number of conceptual and practical problems that ultimately increase the marginalisation of pastoralists, depriving them of their land and resourc-

es and exacerbating conflict between different groups of users (Hesse and Thébaud 2006). Interventions to provide legal and social services need to be assessed and monitored for equity effectiveness. However, the range of demography and health surveillance methods, tools, and approaches, for example, is often limited to settled households and hardly applicable to mobile populations. Therefore innovative, combined environmental and health impact assessments designed specifically for pastoralists are needed to assess the impact of socio-economic intervention on pastoral production systems (Weibel et al 2008).

26.4.2 Access to pasture and legal security: participatory pasture law

Pastoral communities critically depend on access to and the quality of their natural resource base. Their mobility depends on the availability of human resources, capacities for livestock herding, land tenure security, knowledge of ecosystem productivity potentials, and capacity to negotiate with hosts or enforce access to key range resources, primarily pasture, water sources, and transhumance corridors.

Today, one of the solutions to pastoralist problems is participatory pastoral institutional design; potentials for this process already exist (e.g. decentralisation processes in West African countries and pastoral codes). Decentralisation can be useful in regulating access of pastoral communities to resources. However, they will be able to benefit more fully from this process if they are given more rights to resources and if they succeed in developing their capacities to influence local government decision-making processes, particularly over land and other natural resources (Hesse and Thébaud 2006). In terms of institutional support, this will require a comprehensive pasture law that complies with statehood and livelihood norms and that could help to sustain proper management of common grazing lands. Such trends are observed in West Africa in the Economic Community of West African States (ECOWAS) regulation governing transhumance between member states at the regional level (ECOWAS 1998). The idea was to explore a basis for cooperation and collaboration in connection with transhumance between different states. The decision seeks to harmonise the regulation of transhumance between states and, thereby, to alleviate problems concerning the movement of people and their herds. Access to pastoral resources and risk mitigation at the regional level is facilitated by the International Certificate of Transhumance (ICT) (ECOWAS 1998; see also chapter on “Livestock

development: support for activities to combat animal diseases in the sub-region" in ECOWAS 2000). The integration of customary law and national legal reforms with the ECOWAS regulation could help to secure mobility and sustain transhumance.

26.4.3 Access to social services through 'one health'

According to the 'one medicine' concept, there is no difference of paradigm between human and veterinary medicine. Both sciences share a common body of knowledge in anatomy, physiology, pathology, and the origins of diseases in all species (Schwabe 1984).

In West Africa, intervention research on 'one medicine' and 'one health' has strengthened health systems and health services for mobile pastoralists in Chad (Schelling 2002; Béchir et al 2004; Schelling et al 2007; Schelling et al 2008; Weibel et al 2008) and improved the dairy commodity chain in Mali (Bonfoh et al 2003; Bonfoh et al 2006; Bonfoh et al 2007a; Schneider et al 2007). Nomadic children and women in the Sahel and especially in Chad are barely covered by the national immunisation programme, while livestock are routinely vaccinated; joint human and animal vaccinations have increased the national immunisation rate by 1% and have improved access to health care for pastoralists and their livestock. The transaction costs of both the veterinary and the public health sectors have been reduced by 15% (intersectoral cost-sharing) (Béchir et al 2004). Multi-disease research, multi- and transdisciplinary research, and multi-setting studies combining programmes and sectors contribute to the effectiveness and appropriateness of diagnostic tools, vaccines, and drugs as well as improved health interventions. In terms of combined social and environmental impacts, these interventions have proven cost-effective and ethically justified and show a potential for strengthening health systems and health services for hard-to-reach populations (Bonfoh et al 2007c; Zinsstag et al 2007). The challenge is to convince decision-makers at the national level to support the demand for integrated intervention by transforming the social services policy for marginalised populations.

In Central Asia, a synoptic view of the costs and benefits of animal brucellosis mass vaccination in Mongolia was established. Looking at the overall societal benefits, brucellosis control interventions in the animal sector with cost contributions from multiple sectors have helped to save costs, thereby providing economic arguments and thus opening up new options for zoonotic disease control in developing countries (Roth et al 2003). Based

on these experiences, simultaneous assessments of brucellosis in humans and animals provided evidence for public health and veterinary authorities to start cooperating in Kyrgyzstan (Zinsstag et al 2008). In the 'one health' approach, development strategies are becoming intersectoral, combining security and natural resource management, education, and livestock and human health interventions in order to strengthen the entire production system and thus people's livelihoods.

26.4.4 From intersectoral dialogue to integrated approaches and interventions

The conceptual framework shown in Figure 3 provides guidance for sustaining natural resource management as well as the livelihoods of millions of pastoralists in semi-arid regions. It implies security in access to resources (new pastoral codes), new institutions (representation in decision-making processes), socio-economic services (health, education, information, market, and microfinance), and incentives or support through participatory and demand-driven actions. Table 2 describes related demands of two pastoral communities in West Africa (Chad and Mali) and highlights the need for integrated, rather than isolated, responses to pastoralists' problems. Identification of the social demands of pastoralists is best achieved by developing transformation knowledge, in a process of knowledge co-production involving various actors (Schelling et al 2008).

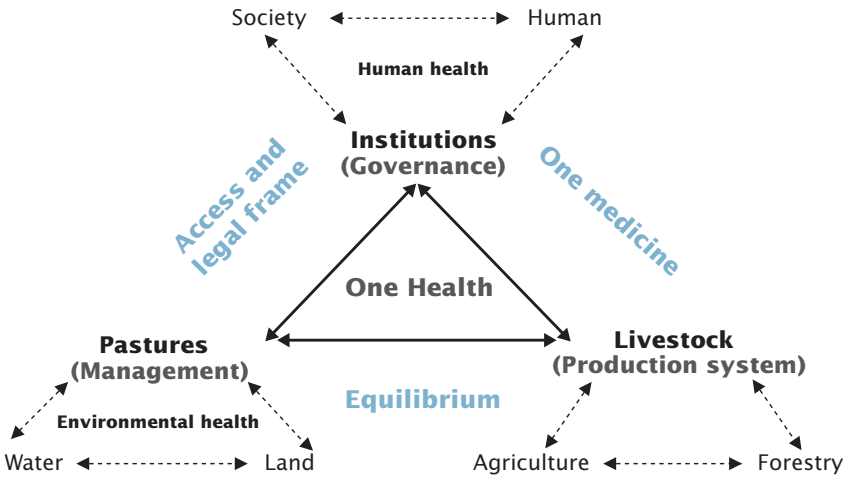

Fig. 3
Different approaches to pastoralism (resource, system, and livelihoods approaches) (Bonfoh et al 2007c).

Table 2

Rank	Demand in Tin Timaghayen (Mali)	Demand in Grédaya (Chad)	Integrated intersectoral approach
1st	Peaceful environment with regard to authorities and neighbours	Access to pastures	***Pastoral code***, security, transformation of tension and conflict, as well as dialogue among the community
2nd		Good relations with agriculturalists on the transit zones crossed and on pastureland during dry season	***Legal and institutional framework*** for transhumance, dialogue
3rd	Access to pumped water for family consumption and for gardening	Access to water	***Infrastructure*** (water, market) for humans and livestock
4th	Education for children and access to information important for fighting poverty	Access to education for children and literacy for adults	***Nomadic school*** with adapted education and training programme
5th	Human and animal care	Health care for their livestock and for themselves	Joint intervention through ***'one health'***

Source: Data compiled by Bonfoh from conclusions of two multi-stakeholder workshops held in Chad (2005) and Mali (2006).

During implementation research, the conceptual framework shown in Figure 3 provided an opportunity for the communities to validate strategies and for the researchers to facilitate provision of support from authorities. The following examples illustrate this evolution towards integrated approaches. In the dairy sector, integrated approaches based on private interventions (by individuals or through a cooperative) involving technical innovation, microfinance, and training in milk hygiene have helped to improve access to markets for dairy products and increase farmers' revenues. At the same time, the new dairy commodity chain has enhanced the livelihoods of producers, facilitated their access to basic social services (health, information), and is a powerful tool for mitigating zoonoses in the milk consumed (Ould Cheikh Ahmed 2008). From this experience one could draw the conclusion that social (diversification of incomes) and environmental adjustments (pasture monitoring) prior to an intervention are preconditions to achieving sustainability of dairy production systems within pastoral production systems.

In Mali, during validation of research on health care and the health perceptions of Tamasheq women in northern Mali, nomads suggested an integrated intervention linking the municipality to regional health services. A combined service was demanded, coupling water pumps with the establishment of gardens, a pastoral product market, and periodic mobile clinical examina-

tions as well as an immunisation programme in their vicinity. In order to analyse these integrative dynamics not only at a small scale (community level) but also at a larger scale (national level), intersectoral social services for nomadic people were developed in Chad from local to national level. After a national workshop involving twelve ministries, a national programme was drafted and adopted in 2008 as a strategic plan for pastoral development. These interdisciplinary and intersectoral approaches were adapted to the study in Kyrgyzstan on "Comprehensive Brucellosis in Kyrgyzstan". There, the public health and the veterinary public health sectors, together with livestock owners and researchers, assessed the prevalence of brucellosis and analysed patterns of transmission between animals and humans in the country. Findings were validated during a national workshop with a view to participatory development of control strategies based on a comprehensive economic evaluation (Roth et al 2003).

If mobility is supported by appropriate public health services taking the 'one health' approach, development strategies become intersectoral in terms of sustainable livestock production. At the same time, following the 'one health' approach, interventions should not only be evaluated in terms of performance and direct social-health impact indicators (e.g. reduction in mortality), but also from a broader systemic point of view that includes their impact on production and ecosystems. Therefore, evaluation designs must consider a combination of performance, health, social, and environmental (natural resources) impact assessments (Weibel et al 2008).

26.5 Outlook and new approaches

Analysis of the social and environmental interface confirms that incentives that secure mobility and diversification are a key element in supporting livelihood strategies and sustainable pastoralism. Mobility, while helping to balance or regulate interactions of needed inputs (resources) and required outputs (livelihoods), also has the effect of marginalising pastoral communities vis-à-vis decision centres and with regard to social services and markets. Political and socio-economic reforms also directly impact the mobility of livestock keepers and their animals. We postulate that supporting resilience and promoting equitable and effective social interventions in pastoral production systems will foster socioecological equilibrium. There are good indications that the proposed approaches and tools (see also Bonfoh et al 2007c) are effective in providing adapted, integrated, and sustainable social

services and provide evidence for the equity effectiveness of interventions to promote sustainability. By using the 'one health' approach, 'participatory pasture monitoring', and the 'human and livestock demography surveillance system', social interventions are not only evaluated with regard to their performance in terms of direct social-health impact indicators (e.g. reduction in mortality), but also from a more holistic point of view that includes their effective impact on production and ecosystems. The shift from 'one medicine' to 'one health' (Zinsstag et al 2007) with the development of systems knowledge to support future pastoral livelihoods is one of the outcomes of this research that will be used to build the capacity of stakeholders in the years to come.

Endnotes

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[10] These studies were all part of a so-called Transversal Package Project (TPP) on "Pastoral Production Systems". TPPs were a Phase 2 component of the NCCR North-South that helped to cross disciplinary boundaries, with a view to achieving better integration of complex issues within the framework of the overall theme of sustainable development and syndrome mitigation. TPPs were interdisciplinary projects entrusted to research teams under the leadership of promising post-doctoral researchers from the North and the South.

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27 Innovation in 'Urbanism' Thinking: Spectrum and Limits

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Abstract

Over the past 20 years, changes in urban planning and its translation into new instruments for urban projects and management have been observed in numerous cities throughout the world. The approaches resulting from this transformation process are often labelled 'innovative'. It could be assumed that the character of this innovation derives from a critical stance on previous, more traditional approaches to urban problems. However, over and above the dilemma of differentiating between traditional and new, which has played a constant role in the transformation in urban planning, since the late 20th century innovation has appeared to be adjusting to a need to link heterogeneous players, diverse scales, and multiple dimensions. This contribution examines the main perspectives associated with these issues, reviewing some of the topics that have arisen as problems in urban planning over the past decade. It should be noted that these reflections do not constitute a presentation of the state of the art, but instead represent operative reflections that emerged within the framework of an international comparative research project, in which self-proclaimed 'innovative and sustainable' urban interventions were analysed in different countries. This international comparison has made it possible to identify major similarities and differences between the various interventions and their contexts and prompted many of the questions on which this paper is based.

Keywords: Innovative urban projects; sustainable urban development; decision-making; history of urbanism; urban planning; habitat.

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27.1 Introduction

Over the past 20 years, changes in urban planning and its translation into new instruments for urban projects and management have been observed in numerous cities throughout the world. The approaches resulting from this transformation process are often labelled 'innovative', 'strategic planning', or 'advocacy planning' and feature prominently in Europe and Latin America, along with 'communicative planning', the 'urban project' approach, and 'problem-centred planning' or the Local Agenda 21 strategies that have been drawn up throughout the world since the 1992 United Nations Conference on Environment and Development in Rio de Janeiro, also known as the Earth Summit.

It could be assumed that the character of this innovation derives from a critical stance on previous, more traditional approaches to urban problems. However, over and above the dilemma of differentiating between traditional and new, which has played a constant role in the transformation in urban planning, since the late 20th century innovation has appeared to be adjusting to a need to link heterogeneous players, diverse scales, and multiple dimensions. More broadly, while reworking ways in which to imagine the city and act accordingly, innovation sets us on a meandering path of ideas and off in shifting directions.

Although various writers have analysed changes in urban planning in terms of paradigm shifts, Taylor (2005) warns of the risks of applying this concept of Kuhn's (1962) to urban planning. On the one hand, it is not possible to identify scientific changes in a field which has difficulty gaining recognition as scientific in the strict sense and, on the other hand, the notion of 'paradigm shifts' lends credence to development in which "a whole way of perceiving and explaining some aspect of the world is overthrown and replaced by a new theoretical perspective" (p 157). Furthermore, although relevant changes can be identified in urban planning theories, it is not possible to assert that new theories have definitively and unanimously replaced previous ones; rather, the different approaches coexist in time (Taylor 2005). In more practical terms, Portas (2003) puts forward the view that, even though the planning crisis has been diagnosed for two or three decades, throughout this period, the formal or legal system based on the hegemony of structuring plans has not undergone major change in most European cities. These partial or global territorial plans have retained both their technical or conceptual characteristics and their implementation methods and processes. Peter Hall

has a similar opinion but adopts an explanatory perspective, stating that ideas as "products of human intelligence derive from others, branch out, fuse, lie dormant or awakened in exceedingly complex ways, which seldom permit of any neat linear description" (Hall 2002, p 5). Indeed, this complex web of continuity and rupture is woven from accumulated experience and epistemological transformations and is relative to changing contexts behind the different ways of thinking and acting. Within this framework, when questions are asked about who does and/or should change cities, on what scales interventions should be made, and how the capacities, tools, and values of experts and non-experts are defined, the answers begin to display multiple nuances.

Despite these warnings, a distinction can be made between the knowledge and experimentation of the interwar period, the experience gained in the aftermath of reconstruction after the Second World War, when what was initially urbanism became urban planning in the strict sense, and the profound crisis of the 1970s that opened up new directions. And although it appeared that, during a historic moment of great crisis in planning, the plan–project, technician–resident, and global–local oppositions could prevail, these polarities gradually diminished towards the close of the 20th century as a result of increasing complexity.

This contribution examines the main perspectives associated with these issues, reviewing some of the topics that have arisen as problems in urban planning over the past decade. It should be noted that these reflections do not constitute a presentation of the state of the art, but instead represent operative reflections that emerged within the framework of an international comparative research project[2], in which self-proclaimed 'innovative and sustainable' urban interventions are analysed in different countries. This international comparison has made it possible to identify major similarities and differences between the various interventions and their contexts and prompted many of the questions on which this paper is based. The two main questions that arise here concern the themes that emerged as problems in the programmes and projects analysed, and the ways in which ideas regarding the city and urbanism were created and disseminated at the different latitudes.

Responding to these questions presented considerable difficulties. First, although speaking of global development in any field raises complex issues, it is possible to identify broad international trends in urbanism. Referring to the capitalist world, for example, Ward (2002) shows that there has been a common international discourse in urban planning, but with significant vari-

ations in emphasis.[3] Therefore, the reconstruction and understanding of both the original concepts and the nature of the translations in different and particular contexts would appear to be a fundamental requirement.[4] The second difficulty, which is typical of any historical review, is that of periodicity. As mentioned above, the examination of the transformations in urbanism does not produce a precise linear chronology: each context reveals specific temporalities.

These dilemmas generate two clusters of issues. On the one hand, there is a need to revisit the theories, key authors, and experiences to demonstrate what was at stake in the various historical scenarios. At the same time, it is important to understand how ways of thinking and acting in urbanism were 'translated' in different geographical areas. As Pierre Bourdieu (2002) says, ideas travel without their context, which is why they can be read and interpreted in the light of the different realities in which they are received. On the other hand, consideration should also be given to the hazy temporalities of emerging, appearing, and disappearing ideas, which are reformulated with explicit or subjacent logics that are not always easy to grasp.

From this point of view, the present text makes no claim to exhaustiveness and presents a rough interpretative panorama of the urban planning debate while also offering a tool for positioning the above-mentioned research project in this area. It should be mentioned that many of the interpretations put forth here are owed to Taylor (2005), who succeeded in presenting a thought-provoking overview of the dilemmas in the field of urban planning theory.

To illustrate the concerns addressed in the present article, a differentiation shall be made between three problem-related moments in time. The next section on urbanism as a modern project offers a review of some of the dilemmas that were dealt with in the first decades of the 20th century and also after the Second World War, when attempts were made to establish urban planning as a field capable of interrelating technical, political, and social dimensions. These principles were challenged in the climate of 'loss of certitude' characteristic of the post-1960s period. In this context, reference will be made to changes related to the procedures of an urbanism conceived both in terms of modern policy and in terms of new actors, tools, and themes.

27.2 Urbanism as a modern project

27.2.1 Urbanism and urban planning

The conditions for the emergence of a new field of knowledge and practices concerning the city have been amply treated by various authors. On the one hand, at the level of words and their scope, the term "urbanism", coined by Cerdá in 1867, was examined and taken up by the *Société française des urbanistes* founded in 1911, and recovered by the English-speaking world with its traditional connotation of urbanity. This association of urbanism with urbanity, in the sense of 'lifestyles', appeared for the first time in the 1930s (Wirth 1938). And while town planning, city planning, and urban planning were the commonly used terms in English, it is not by chance that at the end of the 1980s, 'new urbanism' was adopted, thanks to North American thinking, as a concept evolving towards a theoretical and political critique of the city and urban planning (Ward 2002). This term was established by those who suggested a return to the norms and forms of urban art, of the 'made in USA' civic art of the early 20th century, in the sense of the tradition of urban design or even urban landscape. Therefore, new urbanism describes an architectural practice linked to the 'communitarian' urban composition (Katz 1994), through more liveable towns and neighbourhoods, but also through a search for quality in design, which had been watered down by the abstraction of the tools of urban planning after the Second World War.

Above and beyond recovering terminology and the recent attempts to rethink the form of the city, urbanism was a field of knowledge with practices based on various assumptions. First of all, a concept of the Enlightenment – the relationship between space and society – had enabled the city to become an increasingly prominent object of study and action during the 19th century.[5] Insofar as it was supposed that the city could be the object of scientific diagnosis and technical procedures carried out by specialists, one also imagined urbanism as a field of operation restricted to those familiar with and able to act on such bases. The profile of the specialist, the urban planner – in the metaphoric sense of the 'doctor of the agglomeration' or the 'orchestra conductor' – was that of a person who provided rational assessments and advice to politicians and acted as an educator for society. The scale of intervention of these 'plans' based on a diagnosis that took into account the 'laws' governing growth, intervention 'projects' that qualified space, and 'regulations' that ordered private activity and growth varied, even though the establishment of town councils provided a significant step towards their implementation. The pro-urbanism movement

in the interwar period initiated a series of outreach activities that helped to legitimise a field with weak epistemological foundations.

How then was the modern city conceived, starting from this disciplinary project? Centrally, as pointed out by Bernardo Secchi (1989), urbanism attempted to use new tools in order to deal with the problems stemming from the threefold metropolitan expansion of traditional cities growing outward (*extra-muros* growth), inward (densification that should dovetail with integration), and towards the future (through the formulation of projects). Within this framework, the mission of the plan document was to balance the space and function of a city that had been profoundly altered by the industrial revolution. Based on the enormous trust bestowed on scientific positivism, the multiple dimensions of the modern plan were examined as an 'urban file', in analogy to a patient file. 'Urbanistic evolution' studies were seen as components of the diagnosis whose aim it was to identify the laws governing the growth of cities; these laws were viewed as inputs for the formulation of renovation proposals.

As Novick (2006) explains, the concept of urban planning, along with the field of knowledge and practices it attempted to delimit, was not exempt from reinterpretation and ambiguity.[6] Giving an explanation of the word 'urbanism' itself, especially in a series of texts and pamphlets entitled 'What is Urbanism?' published in the 1920s and 1930s, was one of the strategies used to standardise terminology, concepts, methods, and tools, and it legitimised the new field of knowledge. Indeed, the arguments and iconography form part of outreach and communication strategies in line with the programmed objectives of a movement that hoped to achieve widespread consensus regarding the methodologies of a discipline established on a weak conceptual basis and the vague concerns of the urban planner's brief.

Neither the natural sciences nor the social sciences that were being developed in the 1920s and 1930s were able to provide sufficiently solid epistemological references to link the dimensions of science, art, and technique that are present in the definition of urbanism, into a relationship. In a desire to define the urban planner's field of action, an attempt was made to ground diagnosis in an articulation of the advances in statistics, human geography, and scientific methodology. However, it can be perceived that urbanism appeared not only as a solution to the social and spatial problems of the modern city but also as an outlook that redefined and created problems in order to address them, starting from the available solutions. In the first few decades of the 20th

century, alongside the implementation of a new written and graphic language, a new agenda (a problematic territory) was created that mediated between the 'imbalances of the city' (new demographic, social, economic, and technical considerations), the diagnoses that made it possible to identify them, and the 'formulation of answers' (tools and manners of management and intervention) (Novick 2006).

To understand the urban planning movement, it is important to note that in most urbanised nations, since the 1920s, and especially since the 1950s, planning has become a craft acquired through formal education at universities and polytechnics, and a substantial theoretical corpus has been built up over time. While some proponents of this theory strive to understand the practical techniques and methodologies that planners will always need, a number of planners seek to understand the very nature of the activity they practise (Hall 2002; Taylor 2005). While the former engaged in theories of planning, the latter will pursue theories in planning (Faludi 1973).

With regard to this debate, one must consider that as a form of social action directed at shaping the physical environment, urban planning is impelled by certain moral, political, and aesthetic values. This implies that the purposes or aims that drive urban planning entail studying the values that underpin urbanism, that is, a normative theory of what constitutes the ideal urban environment that urban planning should try to achieve. Normative theories should therefore refer to both the kinds of environment that town planning is seeking to create – substantive theories – and to those theories that deal with how to approach urban planning as a practical activity, that is, procedural theories. At the same time, one must also consider that procedural theories cannot be dissociated from more substance-based theories, as behind urban practices there are players representing values of what is considered urban. Hence, any decision-making process in urbanism, any choice of what is seen as the most appropriate alternative action, is above all a value-based consideration (Taylor 2005). In addition to this affirmation, the history of urbanism reveals a growing gap between theory and practice in most countries around the world.

In some ways, and returning to Novick's analysis, it is possible to see the advances of urbanism as constellations where technical ideas interlink with professional methods of action and forms of state regulation and intervention. In turn, these influence technical, political, and social agendas, as they are not categories but rather historically developed concepts that have been redefined over time and in relation to different realities. However, these crafts

of urbanism have been based on the articulation of knowledge – much broader than theories as it also refers to systematised experience – and practices (Claude 2006). The term was therefore initially put forward to refer to problems inherent in industrial cities evolving along an imaginary line stretching from tradition to modernity. After the 1960s, which marked the end of centralised planning, urban planning was rejected, as it was identified with a technocratic product that failed to factor in the processes of 'urbanisation'.

27.2.2 Modernisation, industrialisation, urbanisation

Historically, the field of urbanism is marked by two great moments in the period following the Second World War. The first is qualified by the equation between 'modernisation', 'industrialisation', and 'urbanisation', characterised by faith in the rationality of plans. The second is defined by the belief that, in the form of trend models, a scientific reference had been found for the discipline.

Some theorists examine different prevailing concepts of the nature of urban planning as a discipline, or, in other words, the different views of what kind of activity urban planning is or should be. A historical overview shows that for almost 20 years following the Second World War – a period described as the Golden Age – urban planning theory and practice in most Western European countries was dominated by the view that urban planning was an exercise in the physical design of an entire town or at least part of it.[7]

This approach was underpinned by physical determinism – the idea that the physical form of buildings and the environment could affect or determine social and economic life. Consequently, urban planning at the city or regional levels was frequently described as physical planning as opposed to social and economic planning. It was therefore assumed that the activity was carried out primarily by architects. Indeed, town planning was deemed an extension of architecture, on a larger scale of the physical design, and generally known as comprehensive planning. Based on this assumption, urban designers' primary task was the production of master plans for urban forms, which had to be as detailed as possible in order to guide and control the future development of an ideal city.

In the early 1960s, this perspective was replaced by system planning – a vision of towns as systems of interrelated activities and places in a constant state of flux. On the one hand, systems theory originated in the highly techni-

cal fields of cybernetics, where the modelling of systemic relationships using statistical and mathematical techniques was considered necessary to control systems, and also had a strong impact on other disciplines, such as geography. On the other hand, systems theory was inspired by ecological thinking, describing natural phenomena as an 'ecosystem' (McLoughlin 1969). Despite Taylor's reservations mentioned above, a paradigm shift can thus clearly be observed between the 1950s and 1960s.

While town planning was seen primarily as a craft and a technical practice until the 1950s, by the end of the 1960s most theorists considered that it should be seen as a science in its own right (Hall 2002; Taylor 2005). This approach led to the criticism that urban planners, focused on the design of ideal utopian settlements, lacked an adequate understanding of urban phenomena, particularly as far as social and economic dynamics were concerned. At the same time, urban systems theory was driven by wider technological and sociological factors, which were applied to analyse interrelated urban phenomena.[8]

Urban planning became a matter not only for engineers and geographers but also for social scientists and economists. In practice, systems planners were involved in two different kinds of activities: as social scientists, they observed and analysed reality, and as designers, they acted on reality in order to bring about change and deal with other professionals, politicians, and the general public.

However, both were trained to analyse and understand not only how cities functioned spatially but also how they were linked to their regions in economic and social terms, a factor which introduced the idea of regional planning. In this approach, cities remain subordinate to regions.[9] At the same time, it was felt that urban planners had to be capable of evaluating the probable effects of any development proposal. Therefore, master plans as an end-state of an ideal urban development were questioned. Urban systems theories, emphasising activities, dynamics, and change, called for more flexible and evolving plans, envisaged as 'trajectories' (McLoughlin 1969) and enabling an ongoing process of monitoring, analysis, and intervention in fluid situations. These plans were intended to be strategic documents from the economic, social, and physical perspectives.

Planning schemes were formulated based on the assumption that scientific methods and forecast models were capable of providing reliable references for the political decisions that drove operations on the territory. Their input

consisted of explanatory laws on urban development, as well as the study of structural factors, functional relationships, and the ways of organising activities in space. Within this context, centralised state decisions concerning territory and the need for expert technicians who were capable of establishing diagnoses and taking action helped to promote the establishment of national planning bodies.

Nevertheless, the concept of town planning as physical design has not been entirely discredited. Although it has been marginalised for over 20 years, in practice the physical form and aesthetic has remained significant at the level of local planning that has been applied in more immediate interventions, while at the more strategic and long-term level urban planning has been driven by a systems view.

As a synthesis, starting from the aspects presented above, which are rooted in the 19th century, urbanism developed as a field of knowledge and set of practices that viewed the city as an object of study, intervention, and control. This was under the responsibility of specialists capable of streamlining intervention as well as that of state oversight bodies that possessed the competencies to transform not only space but also society, through policies, plans, and projects. After the 1960s, however, these views came up against their limits. From different vantage points, the following limitations became clear: first, those of a field not considered strictly scientific and which claimed validity on the basis of a multitude of sometimes contradictory disciplines and arguments; second, those of technicians claiming to take on a neutral role in their actions; third, those of a society whose knowledge about its habitat was not factored into decision-making processes; and finally, those of a state that had to reconcile its actions with the logic of the market. The critical climate of the 1960s developed in opposition to these limitations.

27.2.3 Loss of certainty

Towards the late 1960s, the changing trends that characterised the new era of the post-industrial city fundamentally challenged the planning ideas characteristic of the post-war boom years. Little by little, new visions of solutions for the city developed, while its problems and views on them were changing. Both urbanism and the scientific view of the environment as a system, coupled with a rational process view of planning,[10] were part of the European 'modernist' optimism of the 1960s regarding the use of science and reason (Hall 2002; Rabinovich 2002; Taylor 2005). Nevertheless, based on a series

of theoretical and empirical studies, strong criticism arose at the end of the decade against the comprehensive planning and systems planning approaches of the Golden Age, both of which ignored political reality.[11]

An analysis of American cities revealed that comprehensive planning and systems planning had done nothing to improve the condition of cities, especially the living conditions of poor inner-city communities. At the same time, planners in Europe[12] acknowledged that the ring of new towns built around London, for example, and also the inner areas of many cities had transformed the urban fabric.

The demographic decline, production transformations, and new issues in inner cities created a very different vision for the discipline. The Club of Rome acknowledged this new set of circumstances in its report entitled *The Limits to Growth* (Meadows et al 1972). The limits to growth that were assumed to be a continuous process, the actions of the state that was gradually changing in size, and an urban system whose configuration was changing also revealed the impossibility of resolving issues using traditional tools. The new reality, together with the new perspectives for analysis that attempted to explain it, modified the objects and the objectives of study. Thus, the basis for centralised planning relying on scientific methods and provisional development models was disputed from various points of view. As far as Marxism was concerned, planners, their proposals, and state action were seen as the result of capitalism or as the emergence of unrelated utopian illusions disconnected from social and spatial reality (Hall 2002). In the academic field, the focus shifted from physical planning to the consideration of social and economic factors. Faced with the limited ability of state action to provide solutions, research was undertaken with the aim of analysing social players, structural factors intervening in the modalities of urbanisation, social movements, and local power.

Hall caricatured this paradigm shift:

> *In 1955, the typical newly graduated planner was at the drawing-board, producing a diagram of desired land uses; in 1965, she or he was analysing computer output of traffic patterns; in 1975, the same person was talking late into the night with community groups, in an attempt to organise against hostile forces in the world outside.* (Hall 2002, p 366)

The Stockholm Conference of 1973 endorsed the environmental dimension, and the Vancouver Conference of 1976 on "Human Settlements" introduced new terms, such as the all-inclusive concept of 'habitat'. In a semiotic reading presented in 1965, which questioned the holism of specialised solutions, Françoise Choay considered urbanism as one of the utopias of the industrial city (Choay 1965). In the same vein, Jane Jacobs (1961) reinstated the value of the street and the urban community which had been destroyed by modernity; Henri Lefebvre claimed "the right to the city" (Lefebvre 1968); and anthropologists stressed residents' perceptions as a kind of collective knowledge. The field of architecture, for its part, in line with the initial questions posed by Team X[13], redefined itself on a new basis with the aim of recovering the leading role that urban planning had stolen from it. In the same context, but in a different way involving the juxtaposition of a mixed bag of French authors from the field of human geography and urban planning historians, in *L'architettura della città* Aldo Rossi (1966) endorsed the traditional forms by linking them to urban memory and converting the morphology of cities into a project input. These various writings led to the emergence of heritage rehabilitation operations and the transformation of the constructed context of cities into data for the formulation of projects.

In other words, the historical urbanism debate illustrates how urban planning theory evolved over nearly half a century. Wide-ranging and extensive criticism was directed at traditional planning, intervention modes, and, in particular, the management of urban space. This criticism was based on different theoretical, epistemological, ideological, and contextual arguments, and was primarily driven by the quest to integrate the social, economic, and political realities of intervention contexts and to include more actors in decision-making processes (Healey 1997; Bolay et al 2000). The principles that had previously served as a basis for urbanism were questioned from different perspectives.

The contributions from cultural studies, sociology and political science, the environmental sciences, and architecture left their mark. Along with the consideration of social actors and their capacities, increasing emphasis was placed on the importance of participation in the planning process. Decentralisation strategies found their place in a new political science that challenged centralised modes of decision-making. On a broader scale, environmental issues and the status of natural resources became priority issues. These shifts reflect the transition from planning to management and the dilemmas that resulted from the problematic relation of the whole and the parts and between the global and the local, which initially emerged as opposites but would later become connected.

27.3 Oppositions and interconnections

Urbanism became established as one of the dimensions of modern policy development in the interwar period. In conjunction with tools of intervention and control such as the plan, the new policies signposted the role of municipal authorities and the state as actors in the expansion of cities. In this context, urbanism appeared as one of the vectors behind the major shift in the relationship between public and private, state and society, technical rationalisations and political decision-making. In the post-war period, spatial planning provisions were mainly devoted to centralised spaces where technical competence assumed a substantive leading role. The planning offices that were attached to the central administration and the gradual adoption of trend models requiring specific methodologies and capacities both helped to establish the figure of the specialist. However, the notion of a process of rational planning, ideas about the appropriate role of the state, and the controversial relations between political rationales and technical neutrality underwent structural revision.

27.3.1 Planning versus implementation: criticism of the method

Within this context, many of the theories that supported urbanism as a science and field of practical intervention were challenged. First, there was a need to rethink the alternatives to the rational process view of planning that emerged during the 1960s and were analysed by Taylor.[14] To begin with, the plans considered as rational decision-making processes appeared to display significant differences compared with earlier plans.[15] Nonetheless, throughout the 1970s the debates also revealed their limits. Given the extremely complex character of the issues to be resolved, together with the fact that decisions are generally taken on the basis of persuasive arguments driven by the values of diverse groups of actors, decisions in urbanism are rarely based on rational choices. Therefore, the numerous facets of these debates gave rise to a series of key questions linked to decision-making processes, be they rational or not: Who decides what constitutes an issue and, above all, how should issues that are actually addressed be prioritised? The same logic applies to the quest for solutions: Who decides on the appropriate solutions, and based on which criteria?

In the light of these new dilemmas, it was generally considered that the emphasis placed on procedural theories had prompted urban planners to neglect reflection on the real problems to be solved. Yet at the same time no one questioned the purpose of urbanism, and references to the impact of interventions were avoided. The real nature of the theory and procedures was

challenged, and it was deemed essential to conceive of urbanism as a practice and to base it on empirical research, including an analysis of how plans and policies were or were not implemented. From the standpoint of implementation theorists, planners had to be concerned with the real world of action planners and policymakers, who might themselves become more effective actors and implementers by gaining an understanding of the implementation process in itself: the theory of planning should be the theory of planning in practice. Accordingly, questions were raised about whether planning should be seen as a problem-solving exercise or whether its role was to satisfy objectives, as well as about the nature of the relationship between planning and implementation.[16] At the same time, attention was paid to plans and policy-making and to policy and plan evaluation. Moreover, questions were raised about whether or not planning was an independent activity, whether it should be analysed in relation to the socio-economic and political system within which it developed and in which many players operated outside the public sector, and how its foundations could be established.

Some of the answers emerged in implementation theories – action-centred theories – in the 1980s, with alternative perspectives on the relationship between policy and action. While some authors believed that policy and action were two separate but interdependent phases, although not sequential as in a rational view of planning, others continued to stress the need to combine planning and action. Accordingly, the latter regarded policy-making as part of the action or implementation rather than something that precedes action. If development projects depended upon the acceptance of proposals and the will to invest (generally by the private sector in capitalist societies), they could not be considered in the final phase of planning, leading to a risk that they might never be implemented. The establishment of plans and policies as well as implementation alternatives should thus all be analysed simultaneously (Friedmann 1969).[17]

Implementation theories soon brought up a second issue, as theorists posited that effective implementation required interpersonal skills such as communication and negotiation. Planners had to learn how to cooperate with the market system and the developers of the private sector and how to negotiate with different players and groups. Towards the 1990s, this view of planning as a communication and negotiation process led to the development of 'communicative action planning' (Sager 1994; Healey 1997).[18] Pragmatically speaking, working with different players and particularly with the market meant compromising public planning ideals to achieve something that would not

otherwise be achieved. This pragmatism drew harsh criticism from the advocates of urbanism which continues to this day. It was felt that taking care of the problems of action with the aim of ensuring its implementation could compromise the critical questioning of which proposals should be implemented, how priorities are set and by whom, and, finally, who the beneficiaries are, as well as how to ensure that interventions do not exacerbate social inequality.

27.3.2 Technical neutrality versus political stance

In this context, some planning theorists warned that plans and planning decisions should be based on value judgements concerning the kind of environment it is desirable to create; they argued that urban protests reflected the fact that these judgements were political rather than technical or scientific. This approach broke with the assumption that planning was a matter for professional planners, be they architects, engineers, geographers, or economists. In fact, criticism was based on the assumption that until then, urban planners had acted as technical experts who developed their own, supposedly apolitical values.

At this point, some urban experts felt that planners needed to inform the public of alternatives, compel consideration of underlying values, and force public planning agencies to compete for support, that is, to become advocacy planners (Davidoff 1965).[19] Planners were, therefore, responsible for opening up the decision-making processes to the general public (Goodman 1972), including an ever greater variety of stakeholders – residents, local NGOs, associations, and others – at many different levels, including the local, regional, national, and international. This constituted a major shift in the view of the planner's role, from that of a technical expert to that of a facilitator who draws on other people's views and skills in the business of making planning judgements.

As an immediate reaction, planners themselves decided that top-down approaches, where technicians, experts, and governments (national and/or local) defined priorities of intervention, had to be replaced by bottom-up approaches. These were often described as neighbourhood action, grassroots, and self-help, approaches that include urban dwellers in the determination of their needs, thus becoming participatory and people-centred (Figure 1) (Hall 2002; Rabinovich 2002, 2007). Concerning public policies, the shift from top-down to bottom-up approaches constituted an inflection point in urban policy, a change in strategy, moving from what was labelled as 'assistance' policies to 'support' policies.

Fig. 1
Bottom-up approach for the revitalisation of the Tha Tian historic community in Bangkok, Thailand, in 1998. (Photo by Y. Pimonsathean, 1998)

Recognising urbanism as a political activity would open up the debate on such issues as citizen participation, acknowledgement of the 'informal city' (Hardoy and Satterthwaite 1987), and the relationship between the public and private sectors.

27.3.3 Public versus private

Another key topic of debate in urban planning that emerged in the context of this paradigm shift was the role of the state, which had hitherto been acknowledged as a planning agent, and, in particular, the types of relations between the public and private sectors. The debate varied considerably depending on the development of political economy theory, both liberal and Marxist. While the former advocated cooperation with the market system in order to ensure greater effectiveness in implementing plans and policies, the latter defended a strong public sector in urban planning.

The most extreme liberal positions managed to discredit urbanism as a practice, along with all of its intervention tools, espousing the concept of capitalist societies where the market was given the role of setting the priorities of urban intervention while the state was relegated to an essentially normative and administrative role. In England, for example, during periods of economic recession and loss of public spending capacity, land value and ownership

were driven by market interests and pressures, as the state had lost its role of promoting development.

Socialism, on the contrary, emphasised the need for the state to exercise public and social control over the means of production through land ownership and all urban investments. Planning would therefore be done by the state, based on the priorities defined by the public sector and protecting society in general and the underprivileged sectors in particular. Whereas in the beginning an opposition was established between state backers and market proponents, intermediate approaches based on social democratic systems later tended to combine the two positions, stressing the need to maintain private land ownership while boosting the state's regulatory capacity. In this sense, the role of public authorities became more regulatory than normative and administrative.

During the 1970s, the search for reality-based urbanism led to a study of urbanism's undesired or unplanned mechanisms[20] and the initiation of discussions on the true role of planning – and of the state in particular – in the evolution of cities, as well as on the players in this evolution. On the one hand, Marxist theoreticians (Althusser, Castells, Harvey, Paris)[21] developed a social scientific theory of planning, arguing that in capitalist societies governments and the state usually take on the role of maintaining and managing the economic system (Castells 1973; Miliband 1973). However, the opposition between planning, as the sphere of public authorities, and the private interests of the market did not explain the negative effects of urbanism of the last 20 years. Rather, it could be said that urban planning helped to support and reinforce the capitalist system, that is, it was an integral part of that system. On the other hand, urban management theories argued that in liberal capitalist economies, market forces generally face very few restrictions and are therefore decisive factors in urban development and its impact, whereas the development of the public sector is clearly limited by public finances.[22]

The 1980s marked the resurgence of classical liberalism in Western democracies, which was strengthened by the collapse of the socialist system, and finally launched the debate on the need for a public urban planning system. 'Notional land use zoning' was advocated as a basic planning system in order to support the market-driven development of land, while other stands defended the dismantling of urban and land use planning, leaving the role of legal oversight to ensure the protection of private interests to the state (e.g. the development of residential areas). Towards the end of the decade, those planning theorists who did not necessarily adhere to this neo-liberal point of view

nonetheless accepted the need to adopt a positive attitude towards market-driven development. The debate, based on theories of 'regime and regulation', took place at the local government level, within the decentralisation processes framework.[23] This was characterised by spending cuts at the central state level and, accordingly, by a search for alternative forms of financing, including the provision of public services such as water, electricity, transport, housing, and other goods, as well as by efforts to convince the private sector to guarantee investments.[24]

At the same time, critical comments were heard regarding the efficiency of national companies, based on the lack of competition in this sector. This prompted their need to work with the private sector in order to benefit from its competence and enhance their ability to compete.[25]

This evolution translated into a change of style in urban governance, moving, according to Harvey (1989), from a managerial approach in the 1960s to an entrepreneurial approach in the 1980s, the decade when different urban planning regimes emerged. These reflected not only a wide range of economic circumstances that have conditioned local government actions but also numerous different political positions vis-à-vis market processes.

Another fundamental element that influenced urban planning theories in the late 1980s was the change in capitalism itself, marked by the globalisation process and characterised by the creation of transnational power based on economic and technological domination by transnational corporations.[26] The creation of this transnational economy, together with the process of outsourcing production to more competitive countries, had a major impact on countries of the North and South alike, creating new regulatory modes that profoundly affected urban plans and policies. Urban decision-makers and planners had to ensure that their cities could attract or at least retain investment business activity and cultural consumption. New investment priorities had a strong impact on the development of different city areas, with interventions such as waterfront renewal schemes (Figure 2), inner-city rehabilitation projects, shopping malls, and international tax-free zones. Although each country tackled global pressures in a different way, it was extremely difficult for any nation, and even more so for any individual city, to withstand or moderate globalisation processes (Ward 2002). It is not the aim here to delve into a debate on governance or on globalisation, which is a process that is not only felt in economy and finance but that also touches many elements of contemporary societies, including culture. The intention was to point out the contribution of the

Fig. 2
London's waterfront renewal. (Photo by A. Rabinovich, 2007)

regime and regulatory theories, as well as the achievements of governance, insofar as they shed light on the various scales of the relationship between the public and private spheres.

Thus, starting from initial counterpositions, step-by-step attempts have been made to interrelate the two spheres. In fact, the modes of relationship between the public and private sectors have been a central focus of debate within the field of urbanism since the 1960s. In the background, however, the question persists as to who actually benefits from urban interventions.

27.4 New actors, tools, and topics

27.4.1 Technicians versus social actors

We have seen that citizen participation emerges from a critical analysis of industrial society and of the inherent principles of urbanism. Urban rehabilitation plans and projects and collective housing models developed by advocates of rationalism were subjected to critical analysis, as their standardised and strictly functional characteristics did not meet people's needs and aspirations, especially those of underprivileged social classes.[27] Participation, it was argued, would enable a better harmonisation of habitat with people's

aspirations, habits, and lifestyles while reducing habitat production costs by cutting out real-estate promoters, who were considered unnecessary intermediaries (Rabinovich 2002). In addition, reuniting intellectual work with crafts and trades would make it possible to rejoin what industrialisation had put asunder, to once again combine art with production.

Ever since the beginning of the 20th century, however, professionals realised that involving people, particularly the underprivileged sectors of the population, in industrialised countries such as the European nations was difficult and therefore remained only a remote possibility. Some planners had opportunities to go to developing countries in Asia, Africa, and Latin America. The reality in the countries of the South was a key source of inspiration for planners who, working hand in hand with local social movements, became European planning pioneers in defending self-building and self-help and in recognising what was defined as 'the illegal city' (Hardoy and Satterthwaite 1987). For these pioneers, the planner's role should be to organise the self-builders' process (Turner 1976).[28] Viewed as an alternative to the operations of urban renewal and centralised models, bottom-up initiatives in the North and in the South, such as self-organised communities, self-building, and even spontaneously organised slums, began to constitute a kind of urban counterculture, which little by little won the admiration of different intellectual groups that saw in these approaches a reflection of the population's expressions of its culture, creativity, and its own organisation (Davidoff 1965).

An analysis of concrete experiences revealed that participation in urbanism did not always facilitate attainment of the desired results (Rabinovich 2002, 2007).[29] Various authors have shown that while participation does result in greater resident satisfaction, this effect is not related to a difference in the quality of housing but rather to the satisfaction of being involved in the processes (Conan 1988). Regarding habitat operations, for example, follow-up research conducted some years later revealed unacceptable living conditions in terms of hygiene, health, and security. In other cases, although often successful in improving the individual or neighbourhood environment, many individual or collective actions were initiated and carried out without being coordinated with local authorities and with little thought given to the well-being of society as a whole.[30] Thus, the euphoria of two decades of participation in urbanism (1960–1980) gave way to a certain disenchantment, at least among professionals and researchers in urbanism.

Since the 1990s, participation has once again become a buzzword in policies and development projects, reflecting a reappropriation by international,

national, and local institutions of issues which had formerly been monopolised by social movements (Bacqué 2005). This rebirth is linked to the distinctive leading role of sustainable development and the emergence of the concept of 'governance', in the sense of the modes of coordination between the various players who make up society, modes which enable public action (Le Galès 1995).[31] This extension of public action to a wider group of players implies not only opening up the process to new players but also momentarily integrating some previous major divisions, such as 'experts and laymen' (Callon et al 2001), and recognising the interests, needs, contributions, and reciprocal potential of different groups. At the same time, changes in decision-making processes are expressed in new urban consensuses and conflicts that call into question the public values of the city and concern much more than just urban agglomerations or towns. In reality, they refer to an inter-territoriality which conditions all scales of public action and puts them into a network within local, national, and international space. The way each level is connected with the other(s) varies according to the different development rationales involved. Consequently, the public's participation of the 1990s is no longer linked to bottom-up reasoning but rather to top-down, multi-player, and multi-scale approaches which also entail movements defined as bottom-up (Navez-Bouchanine 2007).

Within this new framework, the debate between the expert knowledge of technicians and that of the social players remains valid. Using the analysis of concrete experiences as a basis, the social sciences make a distinction between a 'ritual vacuum of participation' and the 'real power' of residents to orient project-related processes and decisions (Arnstein 1969; Lafaye 2001; Healey 2004).[32] Citizens generally express their disappointment, particularly about urbanism experiences in line with plans, while technicians fall back on what they call their expertise and question the residents' ability to appreciate the general interest or urban order of the plans and projects involved.

Overall, more than 30 years of participatory experiences, driven either by professionals and/or politicians or directly by grassroots social movements, make it possible to evaluate the potentials and limitations of participation by focusing on three main factors:

– The tools aimed at implementing participation;
– The aims, spaces, and moments (or time) for effective participation, linked to degrees of intensity and concrete ways to involve players, especially citizens; and
– The institutionalisation of participation and how it spreads, from a perspective of empowerment, as well as changes to procedures in hierarchical organisations.

27.4.2 Plans versus projects

Critics of the grand plans of the era following the Second World War worked in terms of a concept of the 'urban project', which was a key concept in the intense debate that developed in the ensuing decade. Contrary to the planning of the post-war years, the relationship between the urban building context, society, and its history was examined from numerous angles. Advocating the urban project meant supporting a 'project' rather than a 'plan', as the latter was deemed insufficient to define space and urban form in general. However, criticism targeted not only the limits of urban planning but also modern architecture, which was deemed incapable of coming up with an urban architecture. Perhaps this questioning of urbanism and modern architecture did not give sufficient weight to the fact that its failure was not limited to the resulting material forms. The stigmatisation of Le Corbusier and the large complexes in French working-class suburbs often glossed over the fact that the undesirable outcomes were also the product of the limits to growth viewed as ongoing. Nonetheless, the new concept gained ground.

Looking at the issue from this angle, we will now consider the arguments put forward by Alicia Novick (2003), which provide an explanation of recent developments with regard to the concept of urban projects and its reformulations.[33] According to Novick, many authors found the roots of this new mode in the large restructuring and renovation interventions of the 19th and 20th centuries; indeed, large-scale restructuring projects certainly began very early in the history of the city. The urban project thus seemed to be linked to the concept of urbanism based on urban design. In this sense, the hypothesis to place the origin of the innovations in Italy seems to be correct. The seminal concept was that of *progettazione*, which condenses the input of the plan and the architecture project into a single operation. This concept represented a new tool and was a key element in the intense debate that emerged in the 20th century, resulting in a real project culture that was interpreted in a different way in every country.

When seen from this perspective, the urban project appeared as a middle ground between an 'architecture project' and an 'urban plan' (Lacaze 1993). Contrary to global visions, the urban project offered an alternative to the plan: faced with the impossibility of anticipation, it presented the alternatives of open programmes and concrete actions. The urban area, when seen as a group of streets, squares, and the fabric of the city, gradually shifted attention that was formerly devoted to habitat themes and social equipment.

The new concept dovetailed with management changes in the agglomerations, where metropolitan and centralised entities were losing ground. In England, state reforms eliminated planning bodies, while decentralisation was introduced in France. President Mitterrand's monumental works in Paris were built within this framework, as were many experimental projects in Spain in the post-Franco era. In Madrid, the Immediate Action Programme was proposed in 1985, with the aim of handling functional issues, the lack of equipment, and the environmental requalification of the city. It was a case of an overall alteration to the urban territory via structural actions with multiple effects. Similar organisational objectives drove the actions of Oriol Bohigas in Barcelona, which had been preceded by the Estación Saints and the Parque de la España Industrial projects a decade earlier, in addition to a myriad of interventions to rehabilitatate historic centres and towns. At the same time the urban project offered a platform for the preparation of the Olympic Games. Such an approach offered an alternative urbanism to the outdated model of the grand urban-regional plans, and to the abstraction of quantitative zoning that relegated the consideration of the real building of the city to huge unrealisable ideas. Giving shape to public spaces went hand in hand with the renewed leading role of architects, who were capable of transforming public space through a set of ideas that could really be applied. A body of reasoning that governs the re-evaluation of the aesthetic dimension of urbanism also served as a basis for defending its cultural value and, therefore, the need to develop synergies between the quality of the design and cultural factors.[34]

The scope of the urban project was redefined from different analytical perspectives. Thus, in France a substantial effort was made to systemise concepts (Devilliers 1994). The urban project in both conceptual and operative terms was combined with sociological and urban management logics. In Spain, a major debate was held within the context of the Madrid/Barcelona interventions on the issue of plan versus project. Contributions from researchers from the South were also key to these discussions. It is interesting to note that in her overview of concepts and practices, Alicia Novick develops the similarities and differences between European and American experiences, something that goes beyond the limits of the present contribution.[35]

Within this broad context, François Ascher (1993) refers to the threefold scope of the urban project, which can take the form of the political urban project (the intention of a city resulting from strategic reflection); the operative urban project (strategic intervention operations); and the urbanistic and architectural urban project (limited to urban design). This approach reveals

borders between the 'urban project' and 'public policies' that are not sufficiently defined, a shortcoming that had already been pointed out by some specialists at the beginning of the 1990s (Mangin and Panerai 1999).

Nevertheless, in the past few decades the scope of projects has been redefined. In fact, project activity has abandoned its problem-solving status in order to create projects as such. When seen from this angle, and linked with 'second-generation' urban and architectural design methods, project activities resulting in approaches such as the 'programming conception' method were based on the acknowledgement that urban issues are in fact 'bad problems' (Prost 1992; Rabinovich 2002). In other words, they cannot be precisely defined at the beginning of the process and, therefore, planning is an iterative process of conjectures and rejection, whereby the definition of the problem becomes clearer through a search for the solution.

However, in addition to their potential and multiple dimensions and their ability to contribute to constructing the problems, a broad consensus has formed since the late 1990s regarding these interventions. Their antinomy was no longer emphasised, but rather the need to integrate them into a plan or a public programme with a broader reach. Strategies veered towards analysing negative effects while at the same time promoting effective tools to counteract them. On the one hand, the format of procedures able to include everyone's voice was examined, despite the fact that political will as a driver appeared to be a sine qua non for their implementation. On the other hand, the impact on land values due to improved regulatory tools was examined. From a localisation rationale, efforts were made to group new locations for interventions that were not limited to prestige and visibility, thereby adumbrating the potential of the edges and peripheries.

In other words, the urbanism of fragmented projects gradually stopped limiting the plan's scope. However, it was not a case of looking at plan and project as analogous concepts or of opposing them to or differentiating them from restructuring or embellishments. Rather, acquired experience consolidated them as a potential operational tool. The contest of ideas served to highlight the suggested innovative proposals and programme definitions that could be included in an integral view of the city and its problems. Urban projects that are capable of facilitating coordinated management of the numerous players taking part in production of the city and of taking form based on alternative and open scenarios characterised by their flexibility, could constitute a vital dimension of plans and programmes with greater scope.

27.4.3 Environment and inequality

Among other things, acknowledgement of urbanism as a political activity brought with it a repositioning of more substantive issues and problems that urban planning as a public policy should seek to address. Issues such as ever-increasing social inequality, the precarious living conditions of the underprivileged, and the degradation of both the natural and the man-made environment were priorities that had to be addressed again in a consistent manner on the public agenda. A problem-centred defence of urbanism no doubt gained strength from its counterposition to neo-liberal trends that emerged as a response to recession in different parts of the world, advocating a strong free market strategy as a vehicle for addressing urban issues. Indeed, the topics viewed as problems on technical and political agendas were studied in a broad range of discussions.

On the one hand, some urban planners focused on theories specifically related to the issue of social inequality, building it up as a complex problem for which there is no obvious solution. The theme of the 'habitat' of the popular (working-class) sector, for example, constructed from criticism of policies focusing on providing housing, shed light on the need to consider the relationship with more complex systems defining habitat not only as a group of material conditions of housing, infrastructure, and services, but also as a safe metaphysical space. On another scale, there is the promotion of visions of 'inclusive cities' (Westendorff 2004), with conditions for 'access' to multiple resources and to the labour markets, recognising the need to reinforce social and integration networks with practices of the so-called 'informal' sectors (Hardoy and Satterthwaite 1987), taking into account their different conditions, not only in socio-economic terms but also in relation to race and gender, for example. On the other hand, in the North, a wide range of topics have resulted in the so-called 'post-materialist movements'. Environmental themes and grassroots mobilisation have also appeared in the countries of the South. Their importance forms part of concerns about the quality of life. For example, the issue of 'risks' associated with environmental topics and technological development has added more and more items to the agenda.

Since the 1990s, the renewed priority given to the environment and its corollary 'sustainable development' has undoubtedly been a key factor in the debate on the problems of urban development. Concerns about ecological damage began to be addressed in the late 1960s, in the context of a growing countercultural environmental radicalism that mapped out alternative

paths to large-scale capitalism and government. During the 1980s and 1990s, however, these ideas began to underpin more moderate opinions, leading to the development of the concept of sustainable development (Ward 2002). Within urbanism itself, the promotion of development models that favoured a balance between social, ecological, and economic dimensions began to take shape, in association with the creation of ecological political parties. In this context, it is more than illustrative to review the role given to international agreements, as was the case at the Earth Summit in Rio de Janeiro in 1992, after which member states adhered to the action plan presented under the name of Local Agenda 21 (LA21). Its principles are also partly 'political compromises', a factor that explains the still somewhat vague character of the notion of sustainable development and the difficulties encountered in its practical application. The operational dimension of the 'sustainable development' concept raises the question of the criteria and indicators for assessing or estimating degrees of sustainability (Wiesmann 1998) as quantitative and qualitative measures of the economic, environmental, and social dimensions in a particular context. Nevertheless, while this operational dimension is fundamental for some authors, others wonder whether the criteria and indicators used for evaluating sustainable development will not, once again, classify those always excluded (Querrien and Lassave 2000). Moreover, 20th-century planning theory shows to what extent sustainable development has been an implicit leitmotif, or an unknown concept (Campbell and Fainstein 2003).[36]

Finally, together with the emergence of new territorialities, the inner areas and particularly the old historic centres affected by deterioration due to the economic depression of the past decades were the object of study and actions. The need to turn them into areas of development for the market through legislative measures and investments in infrastructure and services, and the re-evaluation of the heritage value of existing buildings, oscillated between policies which, linked to the mechanisms of economic and cultural globalisation, promoted tourism as a source of revenue while striving to avoid gentrification. In different parts of the world, promotion of heritage values gradually became a relevant issue for urban planning, and discourses about heritage are evolving from building preservation to a broader approach encompassing sociocultural values as well. Therefore, it is also important to consider the impact of specific rehabilitation policies at the international level, such as the internationalised UNESCO [United Nations Educational, Scientific and Cultural Organisation] World Heritage Centre policies.[37]

Fig. 3
Rehabilitation of the Old Square in Havana, Cuba, since 1979. (Photo by A. Rabinovich, 2008)

Our research project is situated in this precise framework. It is not by chance that the identification process of self-proclaimed sustainable innovative interventions has led to the selection of projects that were undertaken in the historic centres of various cities around the world: Buenos Aires, Havana (Figure 3), and Bangkok.[38] These were concrete interventions related to habitat, in the framework of plans and public policies that take different approaches to heritage values. Looking at similar projects at different latitudes serves to illustrate what persists and what changes over time, what is similar and what is different in each context. Viewed from this vantage point, the ultimate objective is to understand the alternatives in the fields of knowledge and practices of urbanism. Although the examples do not give an account of all the reasoning applied in the production of the city, they do make it possible to touch on some of the arguments. Indeed, the cases chosen make it possible to analyse the connections between planning and implementation; illustrate the different types of relationships between public and private, technicians and residents, local and global; and show that the perception of sustainable development is strongly context-specific. Its study is therefore paradigmatic in the framework of innovations in urbanism.

27.5 Concluding remarks

As a first step, it seems important to specify once again the scope of this contribution. It is an approach to the history of urbanism based on some topics for debate that have caused the discipline to develop as a field for thought and action for over a century. The background is that of innovation, in an attempt to define a broad problem context that makes it possible to analyse – in an operative manner in our research – concrete experiences in different regions of the world. Accordingly, we asked several questions in the introduction, such as: Who does and/or should change cities? On what scale should intervention take place? How are the capacities, tools, and values of experts and non-experts differentiated?

Throughout the article, we have shown how the answers to these questions have changed over the past century, although the nuances and overlaps are numerous. At the beginning, the emphasis was on the logics and the deceptive certainties of a militant movement that suggested transforming politics through science and technology, via the figure of the technician, the image of the plan, and an arsenal of tools. The same movement also wanted to give a key role to the state and to technicians capable of transforming city and society. Owing to the profound crisis of cities and interpretive points of view, the issues aligned themselves in terms of opposition.

In fact, in conjunction with questioning the method and the specialist's political neutrality, the knowledge of society counterbalanced the figure of the demigod technician; the role of the market offset the hegemony of the state; and the notion of the project opposed that of the plan. Notwithstanding, the need to create intermediate space, connecting space, slowly became very clear. Avoiding simplification means not only seeking adequate answers to complexity but also accepting its multiplicity and differentiated appropriateness for issues that can be analysed from different angles and that can have different answers. Reflecting in terms of multi-player, multi-scale, and multi-dimensional processes reveals decisions that are not very linear. In other words, diverse social, economic, political, spatial, and environmental realities were progressively taken into account. Consequently, the move from a sole intervention model to relative pluralism in urban actions characterises contemporary urban planning.

A second series of questions were raised in the introduction: What were the topics that came up as problems in the projects and programmes analysed?

How were ideas concerning the city and urban planning conceived and disseminated at different latitudes? Perhaps the topics and issues broached are, in a broad sense, similar in Western countries, as a series of networks and communications between experts facilitate intense dissemination of ideas and experiences. However, in each context defined by different socio-economic political and cultural realities, theories and experiences were interpreted in very different ways. In this sense, more so than in terms of deformation, which assumes that there are truths and copies, it is necessary to review country-specific knowledge and experience in the light of the controversial journeys of ideas from one country or continent to another, which has always been a part of the field of urbanism. From this perspective, it is plain to see that the scope of innovation differs according to geographies. Although innovative solutions respond to objectives, procedures, and implementation methods that are all bound by a common point of reference, one can single out the impact of local contexts in the wide range of achievements observed on the ground. Moreover, we must consider that the answers provided by innovative approaches that were developed to tackle the complexity of urban problems will vary depending on the territorial scales at stake. We should therefore refrain from simply reproducing identical solutions at the local, regional, national, and global levels.

It is precisely on this problem horizon that innovative decision processes should, in the end, lie. However, even though the most recent suggestions extol the virtues of diversity and pluralism, which can be considered as a lesson for urban planning, it is safe to say that there might still be some overarching universal ideals to which urban planning should aspire. The question is, once again, that of understanding who will define those ideals and which institutional contexts and political dynamics are capable of ensuring that the voices of less organised, under-represented actors will be heard.

In the framework of our research we will identify and analyse the way in which the objectives, values, and interests of different groups of actors are concretely negotiated in the decision-making process of innovative urban projects. To conclude, however, we believe that from a disciplinary perspective it is important not to lose sight of the fact that in the 21st century, the dilemmas and solutions will not be found exclusively in the sphere of the knowledge and tools of urbanism.

Endnotes

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[2] At the time of writing, this research project, entitled "Innovative decision-making processes in sustainable urban projects", was ongoing under the direction of Dr. Adriana Rabinovich (Laboratory of Urban Sociology, Ecole Polytechnique Fédérale de Lausanne, and NS Tools Sàrl, Lausanne, Switzerland) and Professor Andrea Catenazzi (Universidad de General Sarmiento, Buenos Aires, Argentina) as part of the Swiss National Centre of Competence in Research (NCCR) North-South. Case studies were carried out at the local level under the direction of Dr. Alicia Novick (Universidad de General Sarmiento) in Argentina; Patricia Rodriguez Alomá and Dr. Carlos García Pleyán (Master Plan of the Office of the Historian of Old Havana and Cooperation Office of the Swiss Agency for Development and Cooperation) in Cuba; and Professor Yongtanit Pimonsathean (Regional Centre for Archaeology and Fine Arts, Southeast Asian Ministers of Education Organisation, and Thammasat University) in Thailand. For more information, see http://www.north-south.unibe.ch/content.php/page/id/77 or http://urbanisme.nstools.com.

[3] In some cases, although international trends have arisen in response to local concerns (generally those of Western countries), many or even the majority of them have been transplanted – not always successfully – to other countries in the North and in the South (Hall 2002).

[4] This is particularly important as our research project ultimately aims to formulate recommendations on how to extend and replicate innovative strategies developed in particular contexts.

[5] Urban planning experts argue that as an intellectual and professional movement, 20th-century city planning essentially represents a reaction to the problems of the 19th-century city. Pioneers' concerns were based on the plight of the millions of poor people trapped in the Victorian slums (Hall 2002; Ward 2002; Taylor 2005).

[6] Her arguments are taken up here as they give an account of the alternative names, the concept, and the construction of the field of urbanism.

[7] In fact, the urbanism approach, strongly influenced by modernist utopias, was characterised until the late 1950s by attempts to build ideal new towns based on different models (such as Howard's Garden Cities or the Radiant City of Le Corbusier). Whereas the Radiant City represented the ideal modernistic town, the model for the city of the future, the Garden City reflected the wish to return to nature and hence contained a certain anti-urban aestheticism and resistance to modernisation.

[8] For example, the idea that a good city should be based on functional ordering principles (different functions organised and contained in specific geographical areas linked by motorway arteries) gave way to the recognition of a mixture of uses, of an "intricate and finely grained diversity of uses that give each other constant mutual support, both economically and socially", as a precondition for a good city (Jacobs 1961, p 14).

[9] In 1915, the pioneer planner Geddes wrote of cities and their regions as functioning entities (Geddes 1915). However, apart from his writings on the need to do surveys prior to planning (precursors of the rational process view of planning), Geddes's ideas remained marginal throughout the first half of the 20th century, which continued to be dominated by architectural ideas (Taylor 2005, p 62).

[10] The rational process approach strove for an understanding of the planning process itself. Town planning was considered as an ongoing process involving several stages; during the whole process it is possible to return to any stage to review actions or the view of problems, or to consider new alternatives not previously defined, as the planning process involves continuous action and never ends.

[11] The studies expressing this criticism were based on philosophical right- or left-wing urban political scientists' works, linked to the process of democratisation of public decisions and residents' participation in the 1960s.

[12] Particularly in England, France, Belgium, Spain, and Switzerland, among others.

[13] Team X was a group of 10 architects who challenged the modernist discourse on architecture and urban planning. Team X emerged in 1959 following the dissolution of the Congrès internationaux d'architecture moderne (C.I.A.M., in English: International Congresses of Modern Architecture), an organisation founded in 1928 by the most prominent architects around the world to promote the principles of the Modern Movement.

[14] Although some scholars describe systems and rational planning together – given that both share the concept of the environment as an interrelated system of activities and places – Taylor feels that these two theories are conceptually distinct (Taylor 2005, pp 59–73).

[15] The idea of a rational process as a continuous process represents a significant break with the traditional design-based view of urban planning. In particular, it implies the rejection of blueprint planning.

[16] For more information on this aspect, please consult the research done by Faludi (1973, 1985) and Needham and Faludi (1973).

[17] A first step in rational planning was made by the development of disjointed incremental planning, which was put forward as a more realistic account of what the process of planning was like and could be in practice. Nevertheless, this approach did not specifically address the issue of implementation.

[18] In fact, urban planning theories have tended to focus on communication theory, based in particular on Jürgen Habermas (1984), whose dream was to make the planning process as democratic as possible by opening the communicative process of decision-making up to all interested parties. John Forester was one of the pioneers of communicative action planning, which is based on communication theory (Taylor 2005, p 123). However, the need for urbanists to develop communication competencies is not exclusively covered by implementation theories but is also approached within the context of the debate on participation.

[19] This trend was inspired by Marxist theories that were becoming accepted by intellectuals, gaining ground over positivist logic. Davidoff was one of the first to urge planners to practise bottom-up planning by becoming advocate planners. This would make the debate about the setting of goals and objectives explicit – a debate that had been bypassed by blueprints and systems planning based on the assumption that this was the professional planners' concern (Hall 2002; Taylor 2005). Shortly thereafter, urban architects such as Christopher Alexander at Berkeley, N. John Habraken in Holland, and Yona Friedman in France went on to introduce participatory planning methods in universities, particularly at faculties of architecture and urbanism.

[20] Densification processes in inner cities, conurbanisation and suburbanisation processes (associated with models of containing cities via green area rings), as well as the inflationary impact on land and property prices were identified as characteristic results of urban planning over the past 20 years. These territorial and economic effects were associated with social segregation, as they affect different social groups in different ways. It is interesting to note that the concept of 'the market' did not previously include the actions of private individuals independently producing their own habitat, but rather referred to companies looking for profit in urban planning.

[21] On Marxist theories, see Hall (2002) or Taylor (2005).

[22] Lack of financial and human resources in public administration is characteristic of cities in the South, particularly at the local level. Another factor is the difficulty of undertaking coordinated strategic action, given the diversity of capital invested in urban operations (i.e. the investment of migrants' remittances in housing, services, and infrastructures).

[23] The coalitions and partnerships with other agents, including non-governmental actors, can be analysed like regimes, which are defined as the informal arrangements by which public bodies and private interests function together in order to be able to make and carry out governing decisions (Stone 1989, 1993, 2005). Stone distinguishes four kinds of regime: maintenance regimes, development regimes, middle-class progressive regimes, and regimes devoted to lower-class opportunity expansion.

[24] On the privatisation of public services such as water, see Catenazzi and Da Representaçao (2004).

[25] This discussion took place within the context of structural change in Western societies at times of great economic depression, marked by the retreat of the central state and by a need for local governments to play an active role in order to revive their own economies.

[26] These new transnational corporations are characterised by their search for an exponential increase in profits linked with a drastic decrease in costs.

[27] As early as 1950, England's Association of Architects invited Giancarlo de Carlo, an Italian architect who supported self-building by explaining that housing problems of poor people would not be solved by municipal housing but by the concrete will and action of the people themselves. Planning could help, but only as the manifestation of community collaboration (Hall 2002). Decades later, this approach would also be criticised, as it justified the state's withdrawal from seeking solutions to low-cost housing issues, especially in developing countries.

[28] In fact, in English-speaking countries in particular, the tradition of integrating community intervention into the process of promoting individuals and collectives dates back to the early 20th century. In countries with a more state-interventionist tradition, this would emerge only much later in urban policies as the result of appeals by social movements. In the countries of the South, the issue of participation is contemporary with their initial forays into development policy, which go hand in hand with self-help policies concerning habitat.

[29] Other ways to take into account social knowledge have developed, but there is no denying that participation has been one of the most hotly debated issues throughout history.

[30] In Latin America, for example, where a relatively large proportion of the population has access to individual water facilities, it is nevertheless estimated that only about 10% of the collected sewage is treated and the quality of treatment is generally low.

[31] Governance issues can be approached in two ways: one more directly managerial and the other more theoretical and critical.

[32] As early as the 1960s, Arnstein set up an 8-level participation scale, ranging from 'manipulation' to 'citizen control'. She asserts that without redistribution of power, participation is a frustrating process, especially for the more underprivileged sectors of the population.

[33] Her analysis refers to several authors, including, for example, Portoghesi (1969), Merlin and Choay (1988), Lacaze (1993).

[34] This debate was based on the different approaches to the concept of culture. Understood on the one hand as related to 'art', it resulted in the creation and development of 'cultural districts' in cities (museums, art galleries, concert halls, etc.). On the other hand, policies were developed in relation to a broader and more democratic vision of the concept of culture, including different kinds of expression that contribute to the life of the city, such as sports, public spaces, and meeting and recreational areas. In the countries of the South, the demand for informal cities by some urban planners, in particular social science specialists, was linked with the revaluation of self-building as an expression of the culture of the less privileged sectors of the population.

[35] See, for example, Solá Morales (1987), Tsiomis (1996), Toussaint and Zimmermann (1998), Pérez Escolano (1999), in Novick (2003, 2004).

[36] As, for example, in Geddes's Beautiful City, in the Garden City of Howard and Mumford, in the conservationist and bioregionalist approaches to comprehensive planning, and within the vision of the world as an ecological system developed by representatives of urban systems planning of the interwar period.

[37] Several meetings and charts proposed measures to tackle the degradation of historic centres: for example, the UN Convention in 1972, the Macchu Pichu Charter of 1977, the 1983 Heritage Symposium in Mexico City, and the Washington Charter of 1987.

[38] The main objective is to explore the strengths and limitations of emerging innovative approaches to urban planning that aim at integrating the three relevant EES aspects of sustainable development (economic, environmental, and social aspects). The analysis is based on a comparative approach, focused on the study of local urban projects: a) The 'San Francisco Block' within the Programme of Residential Consolidation of the Management Plan for the Historic Centre of Buenos Aires, Argentina; b) The Old Square in the framework of The Master Plan for the Rehabilitation of the Historic Centre of Havana, Cuba; c) The Revitalisation of the Tha Tian Historic Community in the framework of the Conservation Master Plan for Bangkok, Thailand.

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28 Operationalising Human Security in an Urban Setting: The Experience of Caracas

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Abstract

Research into the human security conditions that characterise the urban context of Caracas challenges common perceptions among policymakers and the general public about the main threats to the city's population. A safe and secure city is often considered to be one where the primary goal is not safety, but stability. While public authorities are unable to assure even a minimum level of public security for all inhabitants, particularly in cities divided into precarious and wealthy quarters, they reassure the population of the existence of easily identifiable threats and villains. These villains are blamed for all troubles, dangers, and threats affecting urban life. Analysing threats from a human security perspective, however, unearths other 'villains' responsible for urban insecurity: sometimes, unexpectedly, former accusers turn out to be among the main perpetrators as they do not live up to their responsibility vis-à-vis the population. This approach is not only a pragmatic response to the challenge of providing security as a shared public and private responsibility, but also a moral and philosophical evolution that is driven by, and envisions, the pursuit of positive and sustainable peace in a fair and safe society. Issues such as social inequality, hunger, lack of education or accommodation, road accidents, deficiencies in virtually all areas of public service including public transport, health care, waste removal, and protection from recurring natural disasters threaten society just as much as violence and crime – or even to a far greater extent. This insight fundamentally changes our understanding of what security – and security provision – can and should mean in a modern society.

Keywords: Security; human security; urban security; urban studies; development; human development; Caracas; conflict analysis.

28.1 Introduction

The concept of human security focuses on the needs of individuals and communities. They are the primary objects of security – not the state or the government and its institutions. The latter exist in order to serve the population's needs and to protect people from external and internal threats to their existence and well-being. If the state assures human security, then political, social, and economic development and stability can be significantly enhanced. At the same time, sustained progress on political, social, and economic development and stability increases opportunities for the provision of human security.

A serious focus on the provision of human security generates considerable potential for the improvement of livelihood conditions, particularly for populations living in precarious conditions. In order to tap this potential, the concept needs to be operationalised and applied meaningfully in the governance of states and society. Within the framework of the Swiss National Centre of Competence in Research (NCCR) North-South, a project entitled "Operationalising Human Security: Analysis, Monitoring, and Mitigation of Existential Threats by and for Local Communities" (OPHUSEC) set out to explore how the innovations offered by the human security approach can be helpful in achieving this goal.[5]

The project explored the urban dimension of the analysis and provision of human security in the context of Caracas. It furthermore examined, as full country case studies, Ethiopia, Kyrgyzstan, Laos, and Nepal – the latter three primarily as exploratory desk studies. The findings of our research into the human security conditions prevalent in Caracas – the main focus of this article – challenge the common perceptions of policymakers and the general public regarding the key threats experienced by this city's inhabitants.

This article offers a snapshot of the project findings generated so far with respect to human security conditions in Caracas and the project methodology's utility in examining human security in an urban context. A brief project review and discussion of the concept of human security is followed by the lessons learned so far from the application of the project's methodology, as well as preliminary project findings on threat analysis in Caracas and their significance for applying the human security concept in urban contexts. The article concludes with comments on current and future research priorities.

28.2 The project and its conceptual approach

28.2.1 Methodology

In a nutshell, OPHUSEC focuses on the scientific conceptualisation and practical implementation of the concept of human security – and thus individual and population-centred security – in order to define, detect, and mitigate vulnerability to local threats. In the long run, taking this approach is expected to facilitate the development and stabilisation of sustainable livelihood strategies.

The 2003 report of the Commission on Human Security, *Human Security Now*, equates human security with the protection of "[…] the vital core of all human lives in ways that enhance human freedoms and human fulfilment" (Commission on Human Security 2003, p 4). The Commission further argues that

> *[h]uman security means protecting fundamental freedoms – freedoms that are the essence of life. It means protecting people from critical (severe) and pervasive (widespread) threats and situations. It means using processes that build on people's strengths and aspirations. It means creating political, social, environmental, economic, military, and cultural systems that together give people the building blocks of survival, livelihood, and dignity.* (ibid., p 4)

As the Commission further elaborates, "[w]hat people consider to be 'vital' – what they consider to be 'of the essence of life' and 'crucially important' – varies across individuals and societies" (ibid., p 4). OPHUSEC proposes and tests mechanisms through which local communities can undertake efforts to define what should be – in *their* context, experience, and reality – identified as 'the vital core' of human life, what qualifies as 'critical and pervasive threats', and how processes and structures can be strengthened and/or built within the community and governing institutions to permit effective and sustained mitigation of these threats.

The project results are expected to offer useful suggestions about how to strengthen the protection of affected populations' livelihoods and bring community and civil-society actors as well as official institutions at local, national, and international levels closer together in understanding and responding to salient human security threats. In addition to external and

local research, the project emphasises sustained multi-stakeholder participation in identifying, monitoring, and alleviating threats to human security. OPHUSEC covers case studies in three of the NCCR North-South's partnership regions: the Caribbean and Central America (Caracas), Central Asia (Kyrgyzstan), and the Horn of Africa (Ethiopia). In addition, brief case studies are being conducted in South Asia (Nepal) and Southeast Asia (Laos).

The case studies in Caracas and Ethiopia both follow the same methodology. In a first step, a local research team conducted context-relevant research into the causes and effects of the population's vulnerability and human insecurity (human in/security mapping). The team also explored past and existing mitigation measures applied at state and non-state levels to address the threats affecting the populations' ability to be safe from life-threatening dangers. The team then assembled a wider group of representatives of major stakeholders within the society and the state. This wider circle of 15–20 participants included representatives of the academic and research community, of nongovernmental and intergovernmental organisations working on security and development, of community organisations (in the case of Caracas, organisations from the barrios), and of government agencies (such as the police or the mayor's office). These representatives repeated the human in/security mapping in a three-day participatory multi-stakeholder workshop. The research team then integrated its own findings with those from the multi-stakeholder consultation. Based on the consolidated results, the team identified key threats – existential threats – based on criteria that combined the severity of the threat, the potential for feasible mitigation options, and the implicit and explicit impacts of mitigation on the reduction of other threats not directly included in the selected key threats.

In a second step, a *human insecurity cluster* was identified in consultation and negotiation with the multi-stakeholder group. These jointly agreed core threats were then further analysed; response measures were developed, to be taken by local, national, and international actors to reduce threats and strengthen the coping capacities of the affected populations. Suggested responses were analysed for their feasibility and their likeliness to have a positive impact on the recurrence and severity of core threats experienced by the population. Moreover, this step also included analyses of the actors most able and likely to contribute to mitigation measures, as well as the development of indicators for assessing variations in threat levels and the performance and impact of response measures. In a third step, finally, the research team and the stakeholders developed strategies to transfer the knowledge

generated in the previous step to those actors responsible for, and capable of, local, national, and international policy and programme implementation.

The described project activities pursue three aims. First, they are designed to contribute to academic debates on human and livelihood security through publications and presentations. Second, they attempt to operationalise the concept of human security as a tool for understanding and responding to key threats to the survival and livelihoods of populations by employing context-driven analyses and policy responses. And third, they are intended to trigger the development of improved human security policies and programmes by governmental and nongovernmental actors.

28.2.2 Human security and the urban context

What is unique about human security? The human security debate has been characterised by ongoing quarrels about the definition and meaning of the very term "human security" (Burgess and Owen 2004). Among a bewildering array of definitions (Tadjbakhsh and Chenoy 2007, pp 39–71), the one provided by the Commission on Human Security and cited above comes closest to the way the concept of human security is applied in this project. The concept offers some innovations, such as an explicit focus on the individual and the population as the 'referent objects' of security, building on many trademarks of the new security debate of the 1990s. While this debate focused on widening and deepening our understanding of 'security', the concept of human security constitutes a specific attempt within this debate to shape the way people and their governments think about the roles and responsibilities of the individual, society, the state, and international actors in preventing both structural and direct violence experienced at the level of the population (Tadjbakhsh and Chenoy 2007; Schnabel 2008).

The concept reflects a new way of thinking about politics (and policies!), focusing on the population as the nation's sovereign, with the state as the servant of people's security and development needs. More comprehensive definitions of human security share this vision and position human security within wider debates about justice and legitimacy, structural violence, and positive peace (Ogata and Cels 2003). On the other hand, narrower definitions of human security, which concentrate primarily on the impact of direct violence on individuals, focus more heavily on issues of public order and political stability (Human Security Centre 2005).

As tends to be the case with concepts that are employed simultaneously in social science research and actual public policy, the concept of human security is rarely used for critical examination; mostly, it is used as a normative means of, and justification for, the political, social, or economic transformation of reality. It calls on the moral, ethical, and legal foundations of a state's responsibility to protect the interests of the population. On this basis, it has so far received greater recognition as a political agenda than as an analytical or programmatic concept. This is problematic and unsatisfactory for those concerned with political and social change, because it does not allow for a priori consideration of the urban – or any other – context as a specific environment in which it is necessary to understand the particular nature of insecurity and security. Yet, insecurity is usually the consequence of a state of human relations: power relations, social relationships, and inequality specifically expressed in a specific context – in the case of Caracas in the context of a city (Sánchez and Pedrazzini 1993; García Sánchez 2002). Thus, human security in Caracas depends on the dynamic state of these relations as they, and their transformation, are conditioned by the urban context.

The usefulness of the concept of human security for scientific analysis of the urban context depends heavily on the methodology used in the analysis. Our approach of working together with those directly affected by the human security condition of their surroundings aims to generate greater value in terms of analytical and policy relevance.

28.3 Lessons of analysis and application

So far the project results have generated some initial lessons about the usefulness of conducting threat and response analyses through a human security lens. One of our hopes was to understand whether unprejudiced, context-driven threat analyses point to different, perhaps more relevant threats than traditional risk and conflict analyses undertaken by very specific actors with their particular interests, priorities, and capacities. Our findings suggest that this is indeed the case: population-centred threat analyses were conducted without a prior disciplinary, geographic, or actor-specific focus, preference, or specialisation; and indeed, they point to more relevant, appropriate, and realistic reflections of threat conditions, profiles, and scenarios.

For example, our analyses included, but were not restricted to, the core problems and threats that contribute to the escalation and outbreak of violent

conflict – which tend to be the main focus of political conflict analysis. Violent conflict frequently materialises as a symptom of underlying threats that first need to be addressed in their own right, given the magnitude of damage they cause to people's livelihoods and survival. The record on investments in political conflict prevention has tended to be poor; waiting until a threat becomes 'securitised' – in other words, until it becomes an important conflict 'ingredient' – will rarely help to resolve violent conflict. Threats do not necessarily have to cause or trigger violent conflict in order to be detrimental to people's survival and well-being. While street or gang violence, for instance, is a real threat and has a destabilising effect on urban security perceptions (Pedrazzini 2005), many more urban dwellers suffer from other threats, such as inadequate public service provision or traffic accidents, which are equally lethal and detrimental to those directly affected. Nevertheless, such threats are often not given the necessary attention. Insights from research conducted so far suggest that shifts in the policies of governments, nongovernmental organisations, and international institutions are required to address these problems, which, although not necessarily highly visible, are most pressing and relevant.

This does not, however, mean that for pragmatic reasons only the most serious threats are addressed at the expense of all others. Far from it: According to a main hypothesis of the OPHUSEC project, close linkages through similar or the same root causes among seemingly diverse threats can trigger positive spin-offs for a wide range of related threats when the root cause of one specific threat is addressed. Is it, therefore, possible to identify a limited number of core human security threats that share root causes with other threats? This would allow strategically and politically adept decision-makers to address politically delicate threats indirectly by alleviating other, less sensitive threats. So far, our results confirm this expectation. The multiplier effect resulting from the alleviation of shared causes of threats allows human security providers to approach the mitigation of politically or socio-culturally sensitive threats by addressing threats that are less 'touchy', or for which political and financial momentum as well as public support can be more readily secured. Such thinking takes into account the often highly political nature of threat identification, politicisation, and mitigation, while respecting the fact that, for practical purposes, human security providers can address only a limited number of threats directly and in a meaningful and effective manner.

Here we return to our project's methodology – and its focus on context-driven threat and response analyses. As our results show, the usefulness of the human security concept is greater when we base our analyses on the visions of threats expressed by urban actors themselves, although – or perhaps because – these visions are based to a large degree on perception. Urban dwellers feel the real and comparative significance of threats and therefore also the impact of these threats on the city as a 'real' and very specific environment (Figure 1). In this way, the various urban elements of security and insecurity can be identified, defining 'urban human security' as it is desired and required in the first instance by the inhabitants rather than local and national government agencies and international actors. As a result, security is not simply defined by classical characteristics of urban security, focusing primarily on direct, criminal violence as a threat, nor is the main task in security provision to 'free' the city from crime by locking it up in fear and creating further insecurity.

28.4 Exploring the usefulness of the human security concept in the urban context of Caracas

The human security threat assessments conducted by both the research team and the local multi-stakeholder group in Caracas identified the following main threats: precarious labour and living conditions; delinquency and crime; problems of mobility, accessibility, and traffic accidents; and poor access to food supplies (Antillano et al 2009). Three further issues were identified at the threshold of being causes of threats and being actual threats. These included urban lifestyles, deterioration of medical assistance services, and exposure to solid waste. The first of these refers to a broad combination of factors driven by social and cultural peculiarities associated with life in a large city. It thus reflects urban contexts elsewhere, both in and outside the region. The second and third threats largely refer to the inability of the Municipality of Caracas to provide the level of public services necessary to assure a safe and sustainable life for all inhabitants. As the research team points out, numerous other threats are closely linked to the core threats identified. For instance, improving labour and living conditions would offer many poor and threatened families in Caracas new livelihood options. Positive spin-off effects can be expected not only on other core threats such as delinquency and crime, but also on threats that are not considered core threats according to the assessment, such as forced evictions from the city or widespread health problems among the elderly, women, and children.

Fig. 1
People playing bingo in a corner of the barrio Santa Cruz of Caricua, South Caracas: How do they perceive security and insecurity in their city? (Photo by Nicolas Savary)

The concept of human security proved to be extremely helpful in reconceptualising the prevailing and dominant perception and understanding of what makes for a safe – and of course an unsafe – city in Caracas. A 'safe city', for political scientists, criminologists, and sociologists, is one where, in order to attain an acceptable quality of life, security is assured by means of prevention and suppression of direct violence by the main actors of a traditionally defined security sector: the military and the police (Pedrazzini 2005). From this perspective, security is achieved when crime, violence, and corruption are fought and significantly reduced through deterrence and counter-violence. However, such thinking in the urban context has also led to the phenomenon that political scientists call 'security dilemma' – the spiral of violence, counter-violence, and reciprocal violence. State-driven use of force to oppress violence results in more societal violence, a sense of state oppression, and, most importantly, overall neglect of many other sources of (structural) violence and threats to the population's basic existence and well-being.

According to this type of thinking, the security of urban territories, streets, places, parks, and malls, where economic – and social – (business) interactions are conducted within a context of public order facilitated by the presence of police officers, is provided through strict application of a very traditional concept of security. Such a vision of security is based on panicky fears of dormant instability (which in itself is a manifestation of other, more significant but neglected threats that are often overlooked in traditional security thinking) and regards the city as an urban battlefield, instead of a 'habitat' (Pedrazzini and Boisteau 2006). As a consequence, a safe and secure city is considered to be a city where the primary goal is not safety but stability. The same can be said about traditional and 'national' security thinking vis-à-vis human security approaches if applied at the national level. As public authorities are unable to assure even a minimum level of public security for all inhabitants, particularly in cities divided into precarious and wealthy territories (Figure 2), authorities reassure inhabitants of the existence of easily identifiable threats and easily identifiable villains – the *malandros* – who are blamed for all of the troubles, dangers, and threats affecting urban life (Cariola and Lacabana 2004).

Analysing threats from a human security perspective might reveal other 'villains' or 'criminals' responsible for urban insecurity: as a result, previous accusers may suddenly turn out to be among the main perpetrators and, if willing to live up to their responsibility vis-à-vis the population, can be given a chance to identify and address this situation by returning to their role as caretakers of the population. For responsible human security providers, understanding their own inadequacies and responsibilities is an important first step towards effective and lasting improvement.

This approach is not only a pragmatic response to urban insecurity and the challenge of providing security as a shared public and private responsibility, but also a moral and philosophical evolution, as it is driven by, and envisions, the pursuit of positive and sustainable peace in a fair and safe society. Threats such as social inequality, hunger, lack of education or accommodation, road accidents, as well as deficiencies in virtually all areas of public service provision including transport, health care, waste removal, and protection from recurring natural disasters, affect society equally or to a greater extent than violence and crime. Such an approach based on the concept of human security thus fundamentally changes our understanding of what security – and security provision – could and should be in a modern society, and, more specifically, what an inclusive and safe city should look and feel like.

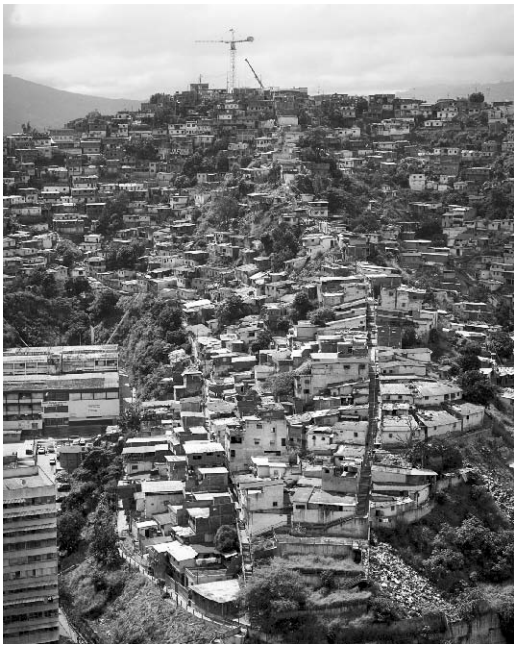

Fig. 2
The barrios and inner city of San Agustin del Sur, Caracas, where people live in precarious conditions and public security is insufficient. (Photo by Nicolas Savary)

If these 'new' threats are accepted for what they are – that is, the main reasons for urban insecurity – security providers will be able to consider and confront all threats affecting the city, rather than only a 'short list' of threats preselected by authorities with certain political and ideological convictions, under a certain political system, based on traditional conceptions of safety and security and the existence of equally traditional and readily available recipes for 'hard' security provision.

As with every case study, the experience from Caracas may be significant but not representative. Nevertheless, the analyses of threats and mitigation strategies have so far identified challenges and solutions that promise to be valid not only for Caracas and its particular historic, political, economic, and social characteristics, but also for urban contexts in general. Numerous lessons learned in Caracas can be applied to other urban contexts as well. This relates both to the usefulness of the OPHUSEC methodology and the type of threats and mitigation strategies relevant to a particular city. Of course, this also means that lessons from other urban analyses would likely prove useful in Caracas – particularly experiences with the method for selecting and applying specific mitigation strategies in response to specific threat dynamics.

28.5 Conclusion: The way forward

Developing a proper understanding of the key threats that plague the urban population of Caracas is certainly invaluable. It is equally invaluable to determine which mitigation measures work, which do not work, which need to be initiated afresh, and by whom. Yet the most revealing threat and mitigation analyses and the most astute recommendations are of little value if no pathways are found to transfer this newly acquired knowledge to those actors who are in a position to implement the recommendations. How can relevant actors (identified as the best placed, most responsive and potentially effective human security providers) be 'enticed' to embrace these recommendations and find it in their own interest to follow up on them?

Continuing research in Caracas has to focus on the identification of concrete, practical recommendations on how to mitigate key threats to the urban population of Caracas, as well as opportunities for – and obstacles to – transferring this knowledge to relevant actors among the city's government authorities and community organisations. Joint input and analysis by representatives of various stakeholder groups and the expertise of the local research team will again be required to identify the most promising and feasible mitigation measures and to determine the right place, time, and approach to 'reach' the most significant human security providers. Just as threat analysis is a transdisciplinary, multi-stakeholder exercise, so is the definition of mitigation measures and the identification of entry points for the transfer of knowledge and advice (Schnabel and Krummenacher 2009).

In the concluding stage of OPHUSEC, the project is engaged in fine-tuning its methodology and developing practitioner guidelines and a tool-kit to facilitate easy replication in other urban and non-urban contexts. The objective is to accomplish the project's transformation from a time-intensive and – in the eyes of practitioners who are eager to achieve rapid results – drawn-out research project into a practical tool that can be meaningfully applied in different situations. Moreover, this tool needs to be flexible enough to accommodate different levels of financial and human resources and capacities available for conducting assessments. In addition, recommendations will be made to further strengthen the applicability of this approach by using the initial OPHUSEC analysis as a baseline report on which subsequent follow-up analyses could be conducted. These follow-up analyses would focus on the roles of specific groups of mitigation actors (such as the security sector, the development community, or humanitarian actors), individual actors

(such as the government, local civil society organisations, a specific regional organisation, or the United Nations) and their individual or joint contributions to the mitigation of particular threats identified by the OPHUSEC baseline report.

Local communities, as well as state and non-state human security providers who consider the approach taken in this project to be innovative and useful, will be invited to make use of this people-centred and context-driven threat identification and mitigation mechanism in their own efforts to identify and improve their population's human security conditions. The methodology developed in this project is intended as a valuable and complementary addition to existing instruments used by political, humanitarian, and development actors in assessing and mitigating vulnerability, risk, and insecurity.

Endnotes

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[5] OPHUSEC was a so-called "Transversal Package Project" (TPP). TPPs were a Phase 2 component of the NCCR North-South that helped to cross disciplinary boundaries, with a view to achieving better integration of complex issues within the framework of the overall theme of sustainable development and syndrome mitigation. TPPs were interdisciplinary projects entrusted to research teams under the leadership of promising post-doctoral researchers from the North and the South.

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29 Towards Equity Effectiveness in Health Interventions

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Abstract

Health interventions are a significant challenge for health systems, in terms of both feasibility and costs. Public health specialists are interested in the efficacy of interventions, as well as in learning how, in a given health and social systems context, the given efficacy of an intervention will translate into community effectiveness. This means establishing the actual cure rate of a given disease under real-life conditions. Focusing on the average effects of interventions in health may miss important differences within populations, for example between different social groups. Consequently, measuring the effectiveness of interventions and policies in terms of social equity means assessing their equity effectiveness. From 2001 to 2008, a group of researchers addressed the issue of equity effectiveness in the contexts of HIV/AIDS and the provision of drinking water in Côte d'Ivoire, environmental sanitation in Vietnam, and health and demographic surveillance of mobile pastoralists in Chad. The key result was that health equity and equity in provision of basic services such as drinking water and environmental sanitation are essential elements of development and environmental sustainability. Current studies are helping to identify determinants of inequity in health and basic services provision. Based on this knowledge, locally adequate and acceptable interventions with high leverage can be tailored and optimised through an iterative process. This is expected to improve interventions and make them contribute effectively to achieving the Millennium Development Goals for health, while supporting environmental sustainability and social justice.

Keywords: Public health; interventions; equity effectiveness; HIV/AIDS; environmental sanitation; drinking water; mobile pastoralists; Côte d'Ivoire; Chad.

29.1 Introduction

Health interventions represent a significant challenge for any health system, in terms of both public health feasibility and costs to budgets for private and public health providers in rich and poor countries. Where resources are limited, priority in public budgetary allocation tends to be given to those interventions considered the most cost-effective, that is, reducing the greatest share of burden and thus often yielding the best outcome in health and saved lives for a given amount of money.

Cost-effectiveness is commonly measured by determining the cost per averted disability-adjusted life years (DALY) (Murray 1994). Most cost-effective interventions, such as, for example, childhood vaccination under the Expanded Programme on Immunisation (EPI), or Directly Observed Treatment, Short-course (DOTS) for tuberculosis control – both programmes of the World Health Organisation – range around USD 15–25 per averted DALY. Compared to hospitalisation or surgical treatments, these interventions are extremely cost-effective. They are designed for widest possible coverage, and should allow for reaching populations equitably. Cost-effectiveness assessments provide a basis for comparing different interventions across the whole range of health-sector interventions and serve as a planning tool, particularly in connection with the Sector-Wide Approach (SWAp). Yet, this focus on average effects of interventions on health may result in important differences within populations being overlooked (Tugwell et al 2006a). Measuring the severity and extent of inequities has become more common (Tugwell et al 2006b), but the effectiveness of interventions and policies should also be assessed in terms of equity, establishing their equity effectiveness (Gwatkin 2001). Consequently, besides knowing the efficacy – for example, the cure rate of a drug as established through randomised controlled trials – public health specialists are interested in learning how, in a given health and social systems context, the given efficacy of an intervention will translate into community effectiveness – for example, the cure rate of a drug provided through the different layers of the health system (Tanner 1990; Vlassoff and Tanner 1992). Finally, it is of primary interest to know the extent to which social, ethnic, and gender strata have equal access and are equally covered by an intervention; this extent is captured in the term "equity effectiveness" of an intervention, recently introduced by Tanner (2005a, p 101). It is therefore important to understand, in both qualitative and quantitative terms, as many elements as possible of the complex pathways of health interventions in a given health and social systems context, in order to identify where and why these elements lose traction (see Table 1, as well as section 29.3 below).

Table 1

Conceptual development from community effectiveness towards equity effectiveness.

Community effectiveness	**Equity effectiveness**		
Tanner 1990	Tanner 2005b	Tugwell 2006a	Obrist et al 2007
Key determinants of effectiveness: health system factors			
Efficacy	Efficacy	Efficacy	Efficacy
Coverage	Access	Access	Availability
Diagnostic accuracy	Targeting accuracy	Diagnostic accuracy	Accessibility
Provider compliance	Provider compliance	Provider compliance	Affordability
User compliance	Consumer adherence	Consumer adherence	Adequacy
			Acceptability
			Diagnostic accuracy
			Provider compliance
			Consumer adherence

Health system factors as key determinants of effectiveness have been defined in increasing detail, for example – in Obrist et al (2007) – by subdividing 'access' into 'availability', 'accessibility', 'affordability', 'adequacy', and 'acceptability'. This conceptual refinement provides a basis for better understanding the complex pathways of health interventions in a given health and social systems context.

Coverage of health interventions, for example for parasite control, remains very heterogeneous (Raso et al 2005), and application of health equity principles comes up against a number of institutional, managerial, and financial obstacles, which are all part of health systems (Hutton and Tanner 2004). Involving communities and peripheral health care providers is a driver to increase EPI coverage (Semali et al 2005) and tuberculosis control (Lwilla et al 2003), and investments in district health systems have a direct impact on increasing coverage of interventions in general (Tanner 2005b). Significant increases in coverage have been achieved by numerous global initiatives such as the Global Fund to Fight AIDS, Tuberculosis and Malaria (GFATM) in the last decade (Tanner and de Savigny 2008). Huge disparities of coverage remain, however, and point out the importance of investing in underprivileged regions (Stoeckle et al 2006) and of addressing social determinants of health (Valero-Bernal and Tanner 2008). Moreover, coverage addresses essentially the perspective of health care providers, while major barriers to accessing health care remain on the side of health care users (Obrist et al 2007). In-depth analyses of social drivers of health inequity, such as exclusion of communities owing to inadequate planning, are an important contribution to understanding equity effectiveness of health inter-

ventions and to cracking down on inequitable policies (Birch 2009). However, health equity also depends on deep-seated power issues, economic and ideological constructs, cultural traditions, and values, which are beyond the direct reach of health planners (Tugwell et al 2006b). Equity effectiveness is an issue in addressing social and gender differentials in the provision of health and social services. Inequity in both health and access to basic services, such as drinking water and environmental sanitation, is determined by weak institutions and policies, governance failures, insufficient empowerment and decentralisation, unequal distribution of power and resources, and corruption, which are all core problems of development (Messerli and Wiesmann 2004). A review of the literature points to a broad range of individual determinants of equity effectiveness, but so far we lack more comprehensive assessments that address the whole sequence of determinants as outlined in Table 1 and in section 29.3 below.

29.2 NCCR North-South focus on equity effectiveness

Within the Swiss National Centre of Competence in Research (NCCR) North-South programme, Work Package 3 comprehensively addressed the determinants of equity effectiveness. Several case studies where conducted, along with investigations on vulnerability and resilience.[11] In the present article, we summarise and analyse the findings from this work and give a theoretical and methodological outlook on equity effectiveness assessment, which is also partly based on the interrelated studies and syntheses on vulnerability and resilience (Obrist et al 2007). As outlined in the introduction, addressing equity effectiveness requires a simultaneous understanding of socio-economic and cultural as well as biological and environmental determinants of health and well-being to gain insights into how interventions risk losing traction when implemented in different settings and conditions. Consequently, case studies were set up in different rural and urban contexts. The aim was to identify the populations most vulnerable to environmental and major health threats and to understand their resilience patterns as a basis for devising and scaling up effective and adapted control strategies. The following examples cover a broad range of topics and geographical areas and indicate that the methodological framework is not setting-dependent.

29.2.1 Southeast Asia: health, environmental sanitation, and social systems

Recycling of human and animal excrements in agriculture is widespread but linked to health risks for farmers and consumers. Reaching the goal of optimal natural resource recycling while minimising associated health risks requires a comprehensive understanding of linkages between health and environmental sanitation. A conceptual framework was developed using an approach combining health, ecological, social, economic, and cultural assessments to identify the most efficient and equity-effective interventions for reducing the disease burden (Nguyen Viet et al 2009). The framework consists of an integrated and interconnected research method with three main components: 1) assessment of the health status, 2) assessment of the physical environment based on an analysis of material flows, and 3) analysis of the socio-economic and cultural environment. The main objective is to define the extended health, ecological, and social risks along critical control points (CCPs) in the network of material flows, established by means of a material flow analysis (MFA). One way of identifying CCPs is by means of a quantitative microbial risk assessment (QMRA), a method that describes, for example, exposure to wastewater or contaminated food in relation to biomedical, epidemiological, ecological, socio-economic, and cultural factors. Sociocultural aspects, such as actors' perceptions of risk or the identification of particular risk groups, are essential for the development of successful interventions. The proposed concept complements the conventional CCP approach by including an actor perspective, considering actors' vulnerability to risk and patterns of resilience. Interventions deriving from such comprehensive analysis take account of biomedical, ecological, engineering, and social science perspectives. Thus, the proposed framework allows issues of health and of environmental sanitation as well as recovery and reuse of natural resources to be jointly addressed. Interventions are assessed with regard to their potential to reduce or eliminate specific risk factors, to reduce vulnerability, enhance health status or resilience, and assure equity. The framework is designed for application in a context of urban and peri-urban settings in developing countries, focusing on waste, such as excreta, wastewater, and solid waste, their influence on food quality, and their related pathogens, nutrients, and chemical pollutants.

Following up on this work, several studies were launched with the aim of testing and validating the conceptual framework developed. Main routes of domestic waste flows and transmission of pathogens in peri-urban agri-

Fig. 1
House with fish-pond at the site of a case study in northern Vietnam. (Photo by Hung Nguyen Viet)

culture in Pathumthani Province, Thailand, were identified for different scenarios (Surinkul and Koottatep 2009). Risk assessment focused on different groups of people, such as farmers working in the fields, highly exposed to wastewater. It showed that the proposed intervention scenarios could significantly reduce health risks and improve the environment. High health risks for consumers of vegetables irrigated with wastewater were investigated using QMRA, in the course of which two key protozoa causing diarrhoea – *Entamoeba histolytica* and *Giardia lamblia* – were recorded (Ferrer 2009). Other studies assessed the infection risk of faecal sludge and organic solid waste management in the same area and concluded that estimated mean values of yearly infection risks from accidental ingestion of canal water in various scenarios, such as handling organic food and market waste, were higher than acceptable risk levels as defined by the World Health Organisation (Yajima 2005). Epidemiological studies show that 47% of a community in northern Vietnam were infected with helminth and 6% with *Entamoeba*, and these infections were strongly correlated with use of excreta and wastewater for agriculture, as well as with poor sanitation (Figure 1). Understanding the flows of materials and the associated health risks and pathogens forms the basis for interventions geared towards the particular group at risk. In another study, MFA was used to analyse environmental sanitation and agricultural

systems, with an emphasis on the flow of nutrients such as nitrogen (N) and phosphorus (P). Primary results show that on-site sanitation and crop production discharge the largest flows of N and P into water bodies through drainage systems (CCPs). Thus, there is a need for mitigating the environmental impact while making good use of waste materials, for instance as fertilisers (Do Thu Nga 2009). One study is now examining the perception of health risks and people's ability to minimise risk caused by wastewater and excreta reuse. A first survey, focusing on threat appraisal, revealed that people recognise the discolouration and bad smell of wastewater, the bad smell of excreta, inappropriate practices of excreta management, and suspected diseases from contact with excreta and wastewater as threats. Ongoing studies assess the sociocultural aspects, which will be crucial for identifying acceptable and affordable intervention strategies, while maintaining recycling of natural resources. Following up the health status of the communities concerned during locally adapted interventions will make it possible to measure the effectiveness of these interventions, so that they can be optimised in an iterative process known as the equity effectiveness loop (Tugwell et al 2006a).

29.2.2 West and Central Africa: water supply, access to HIV/AIDS treatment, and health of nomadic pastoralists

In Côte d'Ivoire, studies focused on the provision of safe drinking water as an example of municipal services and – at a different scale of governance – on health services provision in the context of HIV/AIDS, which is organised by the central health authorities. While the two studies deal with different scales on the provider side, actor-dependent determinants of equity effectiveness are likely to be similar.

Multi-scale studies of equity effectiveness in water supply and sanitation are being carried out in poor urban areas of Abidjan and Bouaké (Figure 2). Taking a transdisciplinary approach, actual disparities of access to water and sanitation are viewed through five complementary lenses: socio-economic, socio-anthropological, cartography and GIS, laboratory analyses, and multi-criteria analyses to assist decision-making. Field work in Côte d'Ivoire has been severely affected by the military and political unrest since September 2002. First results show that the institutional framework of water management, hydrogeological conditions, and technical aspects influence equity effectiveness in ensuring access to water supply. A detailed analysis of the other determinants is ongoing and will result in an assessment of how the government, public and private

Fig. 2
Water sale in Bouaké, Côte d'Ivoire. (Photo by Bétio Silué)

bodies, and communities can join efforts to provide sufficient safe water and improved sanitation to all inhabitants and particularly to those most in need.

Côte d'Ivoire is the country most affected by HIV/AIDS in West Africa, with a prevalence rate of 4.7% among the general adult population. The epidemic has tended to regress since the advent of antiretroviral therapy. However, access to health care in general and to antiretroviral drugs in particular is one of the greatest challenges for the international community and developing countries. Accessibility of health care to people living with HIV/AIDS in Côte d'Ivoire is considered a central issue for achieving equity in antiretroviral therapy coverage and has become the central research question in one of the NCCR North-South case studies. Access to care as part of the livelihoods framework provides the conceptual basis for connecting access to its social determinants (Obrist et al 2007; Figure 3). Quantitative and qualitative approaches were combined to assess equity effectiveness in health care provision and treatment of HIV/AIDS in Abidjan and Bouaké. Preliminary results of the study show that inequalities in access are linked to lack of care and the poor drug distribution network of existing centres. In addition, patients lack financial means to cope with concomitant infections and to maintain an appropriate nutritional status. The government's institutional commitment is weak. In such a context, support for people living with HIV/AIDS requires coordinating actions among actors in the public care sector and the community.

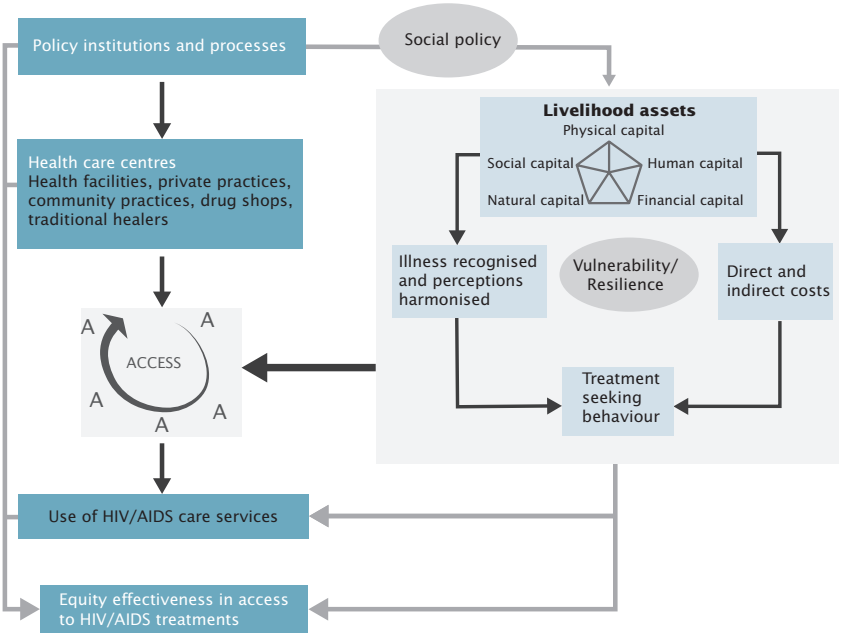

Fig. 3
Conceptual framework for equity effectiveness in access to HIV/AIDS treatment.

Source:
Adapted from Obrist et al (2007).

Nomadic pastoralists in Chad represent a particular case of inequity of access to and provision of health services. Among different nomadic pastoralist groups, for example, we did not find a single child that had full vaccination coverage as recommended by the World Health Organisation's Expanded Programme of Immunisation (EPI) – against a national average of only 35% of children that are properly vaccinated. In contrast, a high proportion of cattle were vaccinated against anthrax or contagious bovine pleuro-pneumonia (Béchir et al 2004). Subsequent joint vaccination by mixed teams of veterinary and public health personnel is an example of closer, effective cooperation between animal and human health care providers in an approach known as 'one health', and provided nomadic children and women, who had not been included in the national EPI policy, with access to vaccination (Schelling et al 2005; Schelling et al 2007; Figure 4). Participatory stakeholder processes involving nomadic communities, local and central authorities, and scientists yielded a new policy for nomadic communities (Schelling et al 2008). This represents significant progress towards understanding and promoting equity in preventive health services in Chad. A major research question in this study was how to assess vaccination coverage and impact on health status under conditions of mobile livestock production systems,

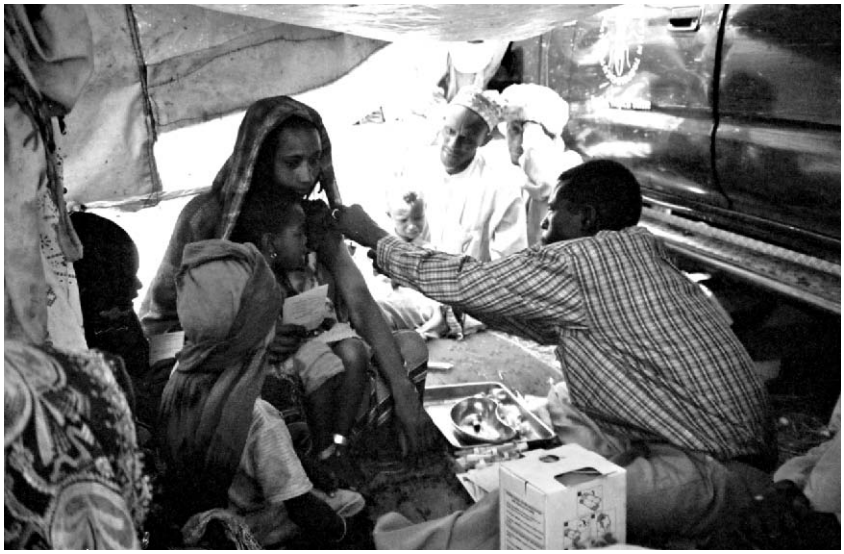

Fig. 4
Nomadic pastoralist children receiving their first vaccinations. (Photo by Jakob Zinsstag)

as a parameter of equity effectiveness. For this purpose, new methods to estimate human population size and to repeatedly identify the same person were developed and tested. Under very difficult security conditions, a proof of principle regarding mobile demographic surveillance could be established using electronic fingerprint technology with capture–mark–recapture methods (Weibel et al 2008). Mark–recapture techniques, however, did not allow for collecting sufficient repeated identifications of persons within a reasonable time frame; the approach will, therefore, be further refined by using social network information to rapidly identify previously registered members of the community. The ultimate aim of this research is to establish vaccination coverage and health status among nomadic pastoralists by means of demographic surveillance, which will make it possible 1) to compare equity in health care provision to mobile and sedentary populations and 2) to subsequently adapt primary health care provision to reduce inequities within the national population. The results are encouraging and provide a basis for working out differentials in equity for the benefit of excluded and neglected urban and rural populations. They also comprise tools to develop demographic surveillance of populations that are not yet covered. Future demographic surveillance of mobile populations and their animals will form the basis for social planning and more careful use of natural resources.

29.3 Synopsis and outlook

The different case studies presented illustrate why a simultaneous understanding of social, economic and cultural, as well as biological and environmental determinants of health and well-being is required when addressing equity effectiveness of health interventions and social services provision. Frequently there are no appropriate methods for such assessments, in particular when crossing disciplinary boundaries (see also Zinsstag et al 2011 in this volume). Therefore, investigating equity effectiveness has also led to the development of novel methods in integrated environmental sanitation, access research, and demographic surveillance of mobile populations by combining technical and social approaches. More work is under way to validate these new methods and to identify equity-sensitive population groups as well as their vulnerability, access to care, and specific risks. The equity effectiveness chain as originally proposed by Tanner (1990) and Vlassoff and Tanner (1992) and later expanded into the equity effectiveness loop by Tugwell and colleagues (2006a) provides a useful and open – in that it allows for specific extensions – framework for ongoing case studies assessing community and equity effectiveness in qualitative and quantitative terms.

Achieving equity effectiveness requires competence and action at the national, intermediate, and household levels. As shown in the example of childhood vaccination for nomadic pastoralists, interventions must be adapted to the particular way of life of population groups affected by inequitable health care provision. In this case, childhood vaccination was adapted to become part of joint human and animal vaccination campaigns in order to increase coverage among this population group. The underlying planning process requires that the authorities first perceive existing inequity as a problem and then consequently adapt the national policy; in this example, this led to intersectoral collaboration between the human and the animal health sectors at the political, managerial, and operational levels. As foreseen in the original concepts by Tanner (1990) and Tugwell and colleagues (2006a), the framework can be extended. In the context of childhood vaccination, this resulted in extra steps being added between ‘efficacy’ and ‘diagnostic accuracy’, by subdividing ‘access’ into ‘availability’, ‘accessibility’, ‘affordability’, ‘adequacy’, and ‘acceptability’ (see also Obrist et al 2007 and Figure 5). These components involve actors across all institutional strata, from the central government to individual households, also incorporating the concept of social resilience as adapted by Obrist and colleagues (2010; 2011, in this volume).

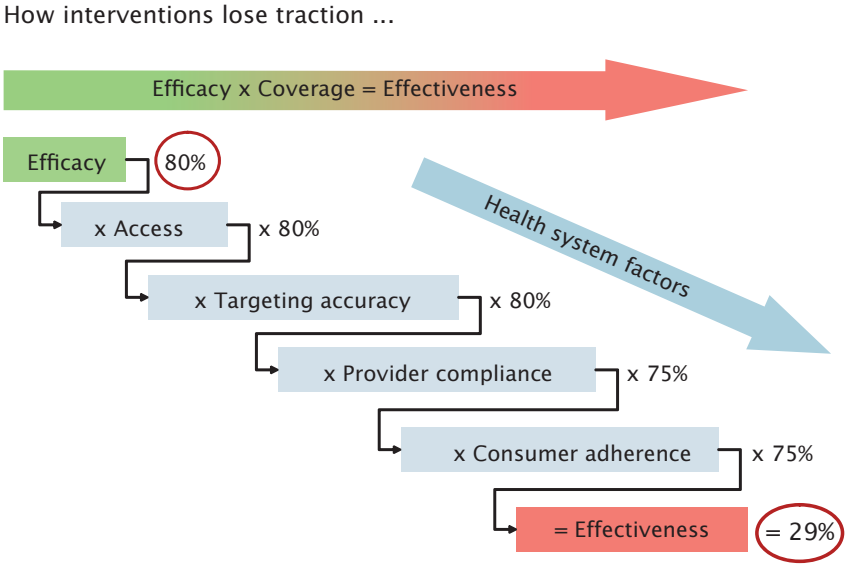

Fig. 5
From efficacy to effectiveness, or how interventions lose traction: a quantitative example based on the concepts listed in Table 1. Despite a relatively high performance of individual factors determining coverage of an intervention, their multiplicative effect results in low final effectiveness: efficacy drops from an initial 80% to 29% at the community level.

The important social issue of equity cannot be addressed without linking research and policy very closely. It also requires a consensus between social groups as well as between decision-makers and communities on how equity-effective interventions can be adapted to more vulnerable groups. As a form of social monitoring of the performance of a health system (Tugwell et al 2006b), a participatory stakeholder platform for communities, decision-makers, and scientists should be maintained to identify commonly accepted assessment agendas and harmonise perceptions between actor groups (Schelling et al 2008). In this respect, the NCCR North-South's integrated approach has not yet fully exploited its synergistic potential with regard to equity effectiveness, especially in the interaction with governance and conflict transformation. Finally, the case studies all imply a coherent systems approach to health (Leischow et al 2008), and the combined framework of environmental sanitation and health largely matches the features of social-ecological systems (Ostrom 2007).

Equity effectiveness as a measure of social performance complements economic performance measures of cost-effectiveness on the way to achieving universal coverage of primary health care as claimed more than thirty years ago at the 1978 International Conference on Primary Health Care in Alma Ata. Huge equity differentials remain and are even growing between devel-

oped and developing countries, but also within individual countries (Esse et al 2008; Hetzel et al 2008). Research on equity effectiveness has an essential role to play. Working out equity differentials in health care provision and access to care remains a task of primary importance and is key to meaningful setting of priorities and allocation of resources at times of budgetary constraints in health and social planning. This, in turn, will lead to a systemic planning approach that considers where and how interventions will have the biggest impact in reducing poverty. An example of visualising equity concerns in health and social systems has been developed within the NCCR North-South and led to advocacy for equity-effective planning approaches in Southeast Asia and Africa (Epprecht and Heinimann 2004).

While our current synthesis focuses on equity effectiveness in health and environmental measures, it will be necessary to extend the concept to cover the entire social systems context, making it possible to achieve sustainable community development in different settings. Social effectiveness criteria are politically sensitive and can only be defined within a broad transdisciplinary partnership between communities and authorities governed by mutual trust and security. Global alliances and initiatives, as mentioned above, are part of achieving high levels of equity in services provision. At national and sub-national levels, however, equity can only be substantially increased once the relevant investments are made to strengthen health and social systems (Tanner and de Savigny 2008). Long-standing partnerships in research and development between the global North and South are part of such investments and require further strengthening. Addressing equity effectiveness ultimately not only challenges governments and health systems but also the research community. Health equity is clearly part of sustainable development and hence directly linked to environmental sustainability and social justice – key issues which will determine whether the Millennium Development Goals are achieved (Shankar and Kumar 2009).

Endnotes

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[11] Work Packages were a component of the NCCR North-South programme in its second phase. Each Work Package dealt with specific aspects of syndromes of global change and focused on a particular (inter-)disciplinary field, conducting research in several regions of the world. Work Package 3 focused on health and environmental sanitation in West Africa and South East Asia.

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Sustainable development remains an important global vision in a rapidly changing and globalising world. Realising this vision requires knowledge-based and value-conscious social, political, and economic decisions and actions at multiple levels. Research aiming to support sustainable development faces challenges that go beyond the traditional roles of discipline-oriented science. This means that knowledge must be co-produced at the interfaces between a broad range of disciplines, between science and society, between knowledge cultures in the global North, South, and East, and between global visions and local realities – while remaining rooted in solid disciplinary foundations.

Research for Sustainable Development presents 29 articles mostly authored by interdisciplinary teams. Based on the experiences of a decade of inter- and transdisciplinary research in partnership conducted in nine regions of the world, some authors reflect on the foundations of sustainability-oriented research; others propose and illustrate concrete concepts, tools, and approaches to overcome the challenges of such research; and further authors focus on specific issues of sustainable development – ranging from land management to environmental conflicts, nature conservation, commodities, growth and poverty, pastoralism and urbanism, human security, and equity effectiveness in health interventions – and show how research practice has led to new thematic and methodological insights. This book thus seeks to stimulate the advancement of research towards more relevant, scientifically sound, and concrete contributions to realising the vision of sustainable development.

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