

■ Research Note

Experiences with Transdisciplinary Research

SUSTAINABLE LAND MANAGEMENT THIRD YEAR STATUS CONFERENCE

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Research for Sustainable Land Management appears to be a designated field for a transdisciplinary approach. Because of the number of involved scientific disciplines, stakeholders and target groups, sustainable land management is characterized by a high level of complexity. An integrative understanding is required that goes beyond disciplinary knowledge and sectoral viewpoints, including diverse societal needs, values as well as local knowledge. From April 17th to April 19th 2013, the ‘Sustainable Land Management’ funding measure launched by the German Federal Ministry of Education and Research sponsored a status conference in Berlin, Germany, to discuss findings from the first 3 years. This article reports on experiences with and discussion results about transdisciplinary research. Copyright © 2014 John Wiley & Sons, Ltd.

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CONFERENCE OVERVIEW

From April 17th to April 19th, the ‘Sustainable Land Management’ funding measure launched by the German Federal Ministry of Education and Research sponsored a status conference in Berlin, Germany, to discuss results from the first three years. More than 500 scientists and practice partners representing academic and professional fields gathered and discussed first results from

25 regional projects in Europe, Africa, Asia and Latin America.

The three-day event opened by keynote speakers Prof Dr Klaus Töpfer, director of the Institute for Advanced Sustainability Studies (Potsdam), and Prof Dr Joachim von Braun from the Center for Development Research (ZEF, Bonn). The keynote speeches were followed by a panel discussion in which the speakers were joined by Prof Dr Karin Holm-Müller from the German Advisory Council on the Environment and Prof Dr Angelika Zahrnt from the German Council for Sustainable Development.

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The keynotes and discussion presented different perspectives, demands, and challenges for focusing on Sustainable Land Management. Considering current global land issues (rising demands, utilization conflicts as well as possible physical conflicts), the importance of research and action was stated as obvious but underestimated by decision-makers, politicians, researchers and the public. As one of the major challenges linked to Sustainable Land Management, a deeper understanding of human-nature interrelations as well as spatial interdependencies of land-use decisions were mentioned by the penalists.

Developing and transferring applicable system solutions was discussed as another major challenge Sustainable Land Management must address. The speakers pledged to develop cross-boundary integrative research concepts that capture the complexity of Sustainable Land Management. Past approaches were constituted as too isolated.

During the subsequent days, the complexity and manifold aspects of Sustainable Land Management were reflected in the 40 sessions and approximately 150 contributions. The sessions were subdivided into 10 overarching themes, such as landscape change, water management, ecosystem functions and services, models and scenarios, soil functions, economy, governance and material flow analysis as well as transdisciplinary research (TDR) issues.

As transdisciplinarity plays a decisive role for Sustainable Land Management and was made obligatory by the Federal Ministry of Education and Research for funding of all 25 joint research projects, five sessions were particularly obligated to focus on frequently discussed issues in transdisciplinary research: (1) participatory processes, (2) actor constellation, (3) interdisciplinary integration, (4) methods and instruments of knowledge integration, and (5) general challenges for the implementation of TDR projects.

CONCEPT OF TRANSDISCIPLINARITY

Even though scholars currently promote various definitions and concepts of transdisciplinarity (TD) core characteristics can be drawn out to a

shared set of features (Pohl, 2010). Numerous authors define TD as a collaborative process of knowledge production that involves multiple disciplines and stakeholders aiming at solutions for highly complex real-world problems (e.g. Pohl, 2005; Wickson *et al.*, 2006; Wiek, 2007; Roux *et al.*, 2010; Toetzer *et al.*, 2011; Lang *et al.*, 2012). It has become a widespread approach within sustainability sciences (Hadorn *et al.*, 2006; Hodgson, 2012; Lang *et al.*, 2012).

As there is currently no consensus on the concept of Sustainable Land Management in scientific literature, we define it as a framework including different perspectives on land either combining disciplinary and interdisciplinary approaches on land use or (pre)normative resp. (pre)descriptive perspectives on land management (further details are presented in BOX 1). In accordance to that definition, research for Sustainable Land Management appears to be a designated field for a transdisciplinary approach. Because of the number of involved scientific disciplines, stakeholders and target groups, Sustainable Land Management is characterized by a high level of complexity. An integrative understanding is required that goes beyond disciplinary knowledge and sectoral viewpoints, including diverse societal needs, values as well as local knowledge.

Hence, the experiences with transdisciplinary research for Sustainable Land Management were of special note during the event. The aim of this conference report is to give a brief overview about experiences with transdisciplinary processes accounted and discussed by researchers as well as practice-partners.

SUMMARY OF PRESENTATIONS AND DISCUSSIONS

All contributions and discussions were documented and analyzed by the authors by means of the documentary method whereat restricted to the 'immanent meaning' (Bohnsack, 2010). The results were clustered and are summarized in the succeeding text as challenges, criticism and key success factors for TDR in Sustainable Land Management. In this context, 'challenges'

a) The concept of “Sustainable Land Management”

Sustainable land management can be viewed as an emerging framework that includes different perspectives on land as an increasingly valuable resource with regard to future global challenges (climate change, demographic change, changes of values and economic trends, loss of biodiversity, etc.). It transcends the conventional conception as a normative goal used by international development collaborations. Sustainable land management has to be viewed as a highly complex sphere of activity, including water, soil, biodiversity, housing, businesses, and infrastructure aspects. It also includes an urban-rural perspective that goes beyond the view of “land management” in the context of urban area management (conversion management, urban planning, etc.). The understanding and reconciliation of biotical and societal factors of current land-use processes, the derivation of future developmental options, and the implementation of strategies require integrated knowledge from different academic and professional domains. Therefore, sustainable land management is regional in scale, integrative, and transdisciplinary.

b) The “Sustainable Land Management” funding measure

In October 2008, the German Federal Ministry of Education and Research (BMBF) launched “Sustainable Land Management” as part of the BMBF framework “Research for Sustainable Development” (FONA).

The funding measure aims to produce new knowledge for effective decision making in the area of land and natural resource management. The program integrates science and practice to develop new strategies, technologies and system solutions based on examples from selected regional case studies. It is split into two modules that are focused on different core activities and research approaches. Module A focuses on the interactions between land management, climate change and ecosystem services. Projects in Module B particularly aim to integrate the development of urban, suburban and rural areas.

The research program generally focuses on regions that are severely affected by climate and structural-demographic changes. Using these representative regions as examples, applicable solutions that can be implemented as policies and transferred to comparable regions will be developed. All research projects work on an interdisciplinary and transdisciplinary basis to overcome barriers between disciplines, to include regional and local stakeholders, and to elaborate action-oriented concepts and strategies.

BOX 1 What is ‘Sustainable Land Management’?

refers to reported obstacles and problems researchers and practitioners had to tackle in the course of their respective TDR processes. 'Criticism' points to structural, cognitive and social aspects of TDR that are valued counterproductive for progress in their research activities. Finally, 'key factors' outline major fields of current and ongoing TDR processes that were outlined as crucial to overcome both challenges and criticism. A brief overview is presented in Table 1 followed by detailed information on the table's content.

Challenges

Balancing out and integrating multiple competing stakeholder interests and inherent conflicts appear to be specific challenges for TDR practice. In this context, some projects stressed the complexity of community structures and decision-making cultures for the management of natural resources, especially in so-called underdeveloped countries. As an example, different communities within one region can vary heavily in actor constellation and interaction, as well as in the practice of negotiation and rule of power. Participants emphasized this context dependency that had to be taken into account when the initiation of change processes is desired.

Another point discussed was unequal power balances within research projects, particularly the system-immanent leadership role of science

that puts scientific interests first, as it leads to hampered communication and cooperation between project partners. Moreover, integrating stakeholders with different power bases was considered a negative influencing factor for long-term sustained action because powerful actors tend to impose their individual interests into the research process.

In this respect, attendees pointed to the motivations and expectations of practice partners who often had been disappointed by research projects in the past. It was concluded that one important step in TDR projects is conducting open discussions about motivations and goals with stakeholders at the beginning of the participatory process (i.e., problem framing) to avoid unrealistic expectations that subsequently lead to frustration.

Participants reported that potential practice partners become increasingly aware of their value for researchers who are obliged to recruit stakeholders to ensure research funding. Therefore, researchers have to address the challenge of growing complacency and 'saturation' of stakeholders, especially when they have been part of unsuccessful projects in the past.

Criticism on Current Transdisciplinary Practice

In addition to these general challenges, critical comments on current transdisciplinary practice were made. From the authors' point of view, this

Table 1 Discussion results of five sessions focused on transdisciplinarity

Challenges	Criticism	Key factors
<ul style="list-style-type: none"> -Involvement of multiple competing stakeholder interests -Different decision-making cultures -Complexity of community structures -Unequal balances of power with leadership role of science -Motivation and expectations of involved stakeholders -Competition for and 'saturation' of stakeholders 	<ul style="list-style-type: none"> -Lack of financial resources for practice partners -'unemotional view' of scientists -Lack of 'common language' -Stress field 'transfer & implementation' -Lack of quality criteria 	<ul style="list-style-type: none"> - Communication -Elaborate stakeholder analysis -Trust -Realistic goals and boundaries -Sustained cooperation -Perseverance, persuasiveness, confidence

the lack of resources to involve stakeholders was universally viewed as a crucial point. As a result, relevant actors either could not participate during the whole process or were barely motivated to continue until the end.

Moreover, practice partners criticized the 'unemotional view of scientists,' meaning the lack of context sensitivity among researchers with respect to real-world problems. They accounted to have often felt themselves downgraded to objects of investigation, which was given as a reason for distrust. Highly technical scientific language and complex discourse style were named to have exclusionary effects on practice partners as well. At this point, the discussion revealed that finding a 'common language' between scientists and non-academic actors was still one of the main challenges.

Discussions arose around the question of transfer responsibilities, that is, the transformation and application of research results into context. Proponents of a new mode of science criticized ongoing neglect of transfer activities by scientists, who follow their own agenda and disseminate results via traditional distribution channels only. By contrast, participants questioned the trend of an entitled science that is asked to shoulder the load of research transfer into practice. They insisted that the self-conceived image of science as an objective knowledge provider is in serious doubt.

Overall, many scientists criticized seriously the lack of quality criteria for transdisciplinary research.

Key Factors for Success

The fact that no universal key factors for success (especially those based on empirical examination and evaluation) could be presented is probably because of the fact that the majority of projects are not yet finished.

However, attendees openly admitted to not knowing how to precisely define success in TDR, referring to a basic deficit in general. Still, the discussions revealed insights into the current practice of TDR by researchers and practitioners, pointing to key success factors in Sustainable Land Management as indicators. Engaging in a

collaborative process over time and keeping it alive is considered to be an inherent success. In this context, a well-planned communication strategy that focuses on target groups is crucial and was repeatedly mentioned by participants.

They particularly stressed the importance of elaborated stakeholder analyses and selection, thus referring in particular to actor participation as an integral part of TDR. To achieve long-term sustained action and implementation of research findings, the involvement of 'fitting' practice partners into a mutual research process was claimed to be essential. Participants sensed that stakeholder participation and responsibility eventually lead to a sense of ownership. In general, the needs of stakeholders had to be taken into account.

Trust was mentioned throughout as central. Long-term relationships between researchers and practitioners were considered a key factor and often identified as a prerequisite for successfully conducting TDR. Thus, relying on pre-existing networks (mostly among scientists) is a common pattern among projects that were considered successful at the current stage of the collaborative process. To avoid mistrust, setting realistic goals and boundaries is paramount.

In summary, attendees of the sessions agreed that a transdisciplinary approach must be strongly context-sensitive to be successful. Additionally, a framework for facilitating transparency among project partners would be desirable. Addressing conflicts and resistance within a project and with the project environment are inherent parts of TDR and should be viewed and communicated as an opportunity for change processes. Hence, TDR demands a variety of personal relationship skills from both parties like perseverance, persuasiveness and confidence.

CONCLUSIONS

With regard to the diversity of the conference attendees and the vital discussions in the sessions, the conference can be considered successful for the identification of challenges in TDR practices, as well as methods and strategies to address them.

The discussion results show that interdisciplinary integration (meaning the integration of different academic disciplines) is currently less the focus of the projects than is collaboration between scientists and practitioners. In addition, diverse presentations and contributions indicate a decisive difference in the understanding and application of TDR as a research approach among joint projects. TDR mainly appears to be considered and interpreted as a participative research process that either integrates practice partners to ease practice transfer of solutions or increases the context sensitivity of projects. Practitioners are therefore typically viewed as intermediaries (or boundary actors) that fill the gap between the project and its environment. However, from the authors' point of view, their role as providers of reasonable knowledge input remains mostly unclear.

Furthermore, overarching success factors and the concrete impact of TDR in the context of Sustainable Land Management remain to be identified, and further research is much needed. The scientific coordination project of the funding measure (Module B) at the Leibniz Centre for Agricultural Landscape Research in Müncheberg, Germany, is investigating these and further TDR-relevant issues.

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