Handbook of Transdisciplinary Research
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2008, XX, 448 p., Softcover
ISBN: 978-1-4020-6700-6

About the book
Transdisciplinary research (TR) is an emerging field of research in the knowledge society. It relates science and policy in addressing issues such as:

> global and local environmental concerns
> migration
> new technologies
> public health
> socio-cultural change

This handbook provides, for the first time, a structured overview of the manifold experiences gained in these fields. Twenty-one projects from all over the world present their research approaches, structured along the three phases of a TR project:

> problem structuring
> problem investigation
> bringing results to fruition

Referring to these projects, cross-cutting challenges of TR are discussed, such as:

> integration
> participation
> values and uncertainties
> learning from case studies
> management
> education

A systematic positioning of transdisciplinary research in the development of sciences and humanities, and 15 propositions for enhancing transdisciplinary research situate the contributions in a larger, systematised context. The handbook gives researchers and students an overview of the state of the art in transdisciplinary research.

Chapter 3 From local projects in the Alps to global change programmes in the mountains of the world: Milestones in transdisciplinary research

By Bruno Messerli and Paul Messerli

In the 1970s and 1980s UNESCO's worldwide Man and Biosphere Programme (MaB) provided a great stimulus to overcome the large gap between natural and social sciences.

The global project number six, Man's Impact on Mountain Ecosystems, led to the Swiss National Research Programme 'Socio-Economic Development and Ecological Carrying Capacity in a Mountainous Region'. It had a profound effect on mountain research in general and on an interesting collaboration between different alpine countries in particular. Even though the expression transdisciplinarity was not yet known and defined, participating scientists from different disciplines were forced to develop methods and models for a true inter- and transdisciplinary cooperation, as discussed in Section 3.2.

In the 1980s and 1990s the discussion about transdisciplinarity began. In the developed world transdisciplinary research means striving for concrete problem solving in the social and political context through cooperation between science and society. In the developing world transdisciplinary research needs to concentrate on certain key processes and limiting factors in cooperation with the local population and political authorities. This concept was further developed as the so-called 'Syndrome Mitigation Research'. This approach proposes to compare clusters of problems linked to global change in mountain areas, in order to develop adequate mitigation strategies towards sustainability, as discussed in Section 3.3. In the 1990s and 2000s fragile mountain ecosystems became significant on a global level as sensitive indicators for 'Global Environmental and Climate Change', and as treasures of natural and cultural resources (water, mining, forestry and agriculture, biological and cultural diversity, recreation and tourism). Therefore, the 'Mountain Research Initiative' (MRI), a project of the 'Global Change Programmes', was founded. In mountain areas natural and human processes are especially closely connected and this means that inter- and transdisciplinarity have a very special significance for mountain research and development, as discussed in Section 3.4.

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