

Climate Change Adaptation Strategies – An Upstream-downstream Perspective

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Editors

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 Springer

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Cover illustration: View towards the village of Kara-Jygach and the plains surrounding the inflow of the Naryn river into Toktogul reservoir, Jalal-Abad Province, Kyrgyzstan (photograph by Horst Machguth, 13 August 2013).

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Foreword

Climate change and the related adverse impacts are among the greatest challenges facing humankind in the twenty-first century. As a result of the significant increase of greenhouse gases in the atmosphere largely caused by human activities, the global phenomenon of climate change affects many different sectors including agriculture and water supply. Emitted greenhouse gases distribute homogeneously across the Earth's atmosphere, irrespectively of their source of emission, leading to global climate trends that do not recognize nor respect our man-made boundaries. Still, the impacts of climate variability or change become manifest on a local or regional level, asking for tailor-made solutions on the very same level, guided by national responsibility and global solidarity.

In such a framework, questions of how to tackle the challenge of adapting to climate change in upstream-downstream areas become increasingly important. Mountains as typical upstream areas are highly sensitive to global changes, as evidenced for instance by glacier retreat among the most obvious signs of climate change. At the same time, mountains are key contexts for sustainable development because of the indispensable goods and services they provide locally and to their adjacent downstream areas. Mountains are the world's water towers, providing freshwater to more than the half of humankind. They are centres of biological diversity, key sources of raw materials and important tourist destinations. Still, mountains are among the most disadvantaged regions in the world, with some of the highest poverty rates and greatest ecological vulnerability to global climatic, environmental and socio-economic change.

The obvious mismatch between the vulnerability and disregard of mountains at the one hand and their importance for the provision of key mountain ecosystem services on the other hand calls for urgent changes, which basically include four components, namely, (1) the recognition of mountain areas as key development contexts in global and national policy frames, (2) a scientifically sound information base related to mountains, (3) innovative approaches for action on the ground and (4) sufficient funding for (2) and (3). Fortunately, we thereby do not need to start from scratch, as evidenced, e.g., by the inclusion of mountains in three targets of the

Agenda 2030. But more is needed as obvious from the global climate change policy framework, where mountains only figure as a marginalia in the original UN Framework Convention on Climate Change (Art. 4.8.g) but not in the new Paris Agreement concluded at UNFCCC's COP 22 in Paris 2015.

The present book, prepared under the umbrella of the Swiss initiated and facilitated mountain programme SMD4GC¹, aims at creating a better understanding of how to tackle the four components mentioned above. It thereby provides an insight on how to reduce or avoid the adverse impacts and risks from climate change and to move towards a sustainable future in mountain regions. After an introductory part, which sets the scene on the current state of adaptation in mountainous regions and its challenges, the book highlights a dedicated number of selected case studies that introduce good adaptation practices from all over the world. The book concludes with some global considerations related to aspects of resilience building and science-policy dialogue for climate change adaptation in mountain regions, showing that important and encouraging inroads have been made.

We hope that this book will raise the awareness of the challenges of climate change adaptation in mountainous areas. At the same time, we expect the book to foster a comprehensive understanding of the role and importance of mountain ecosystem goods and services for global sustainable development. This, in turn, will hopefully contribute to trigger practical action to tackle climate change in the often neglected yet so important mountain regions of this world.

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¹SMD4GC is the acronym for Sustainable Mountain Development for Global Change, a programme induced and supported by the Swiss Agency for Development and Cooperation, which aims at contributing to sustainable mountain development under uncertain changes in climatic, environmental and socio-economic conditions, focusing on poverty and risk reduction.

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