

## Management of Mountain Watersheds

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Source: Mountain Research and Development, 34(4) : 416-417

Published By: International Mountain Society

URL: <https://doi.org/10.1659/mrd.mm144>

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## Management of Mountain Watersheds

Edited by Josef Krecek, Martin J. Haigh, Thomas Hofer, and Eero Kubin. Dordrecht, The Netherlands, and New Delhi, India: Springer and Capital Publishing Company, 2012. x + 269 pp. US\$ 129.00. ISBN 978-94-007-2475-4.

Mountain watersheds are valuable for life, water, and the ecosystem services they provide. Their management is important in order to prevent degradation and provide responses to climate change. This book aims to convey a broad range of expertise with reference to management strategies for mountain watersheds globally. It consists of 19 papers from the 2010 meeting of the European Forestry Commission Working Party on the Management of Mountain Watersheds, established through the Food and Agriculture Organization (FAO) of the United Nations in 1950. The authors have expertise in a diverse range of sectors, including hydrology, forestry, agriculture, environmental policy, education, engineering, geography, and environmental science.

The editors have organized the book into five major topics. First, emphasis is given to the universal importance of community participation and engagement in mountain watershed management, with a focus on policy and education. Second, adaptation strategies are being developed for integrated water resource management as a result of the uncertainty surrounding climate change. A focus is placed on various hydrological modeling techniques to help understand some of this uncertainty. Third, the threats of climatic change and anthropogenic pressures on the water chemistry and biota in mountain watersheds are recognized, while also highlighting some management objectives. Fourth, impacts of deforestation on the hydrological

cycle are researched. Interception loss from forests is reported in the “range from 8 to 60% of the gross rainfall” (p 180), emphasizing the importance of interception storage by forested mountain watersheds. Fifth, the important protective role of forests in mountainous regions is stressed: “forests give a very strong protection against erosion by slowing down or even stopping surface runoff and the transport of soil particles” (p 209). Different management practices in forested areas are also presented. The final chapters look at causes and controls of landslide disasters in mountain watersheds.

The management of mountain watersheds encompasses the entire mountain ecosystem, from the water supply itself to those who consume the water and those who work on adjacent land. An all-encompassing view of the management of a mountain watershed is provided, and the book recognizes that “conservation and demand management is becoming a critical aspect of water management” (p 25). In a case study from Canada, practical adaptation strategies are provided, with an emphasis on metering all domestic water use. These practical guidelines could be used in other locations. The diverse range of subject areas and expertise drawn upon to create the book is further exemplified by a paper by Claude Poudrier, director of the Program in Environmental Education and Citizenship in Quebec, on “Environmental education and catchment citizenship in mountain regions,” and another by Ladislav Holko, from the Institute of Hydrology in Slovakia, and colleagues on the “Hydrological effects of a large scale windfall degradation in the high Tatra Mountains, Slovakia.”

Overall, the book presents a wide variety of current and detailed work on mountain watersheds from across the world. Field projects, desk studies, and strategies from North America, Asia, Africa, and across Europe are presented by leading experts in their respective fields. All

have a wealth of experience in their subject, creating a strong and interesting multidisciplinary team to address the sustainable management of mountain watersheds. The book is written and presented in a manner that is academic and scientific but is accessible to readers from various backgrounds, thanks to the explanation of technical detail. A good balance of text and illustrations is found throughout, which helps to keep the reader engaged and aids in understanding.

Each paper can be read as a distinct entity without having to read the rest of the book, which means that it does not flow particularly well. While the book has been organized loosely into topically similar parts, which helps the reader navigate to areas of interest, an overall concluding chapter could have drawn together all topical areas to highlight the importance of sustainably managing mountain watersheds. Individual chapters explore in detail the problems that can threaten water supplies—such as soil erosion, sedimentation, and landslides—as well as the challenge of involving mountain communities, but the reader is left to connect all this knowledge in order to see the bigger picture. A page of acronyms and abbreviations would have been useful. The index is helpful but rather brief.

This book would suit a variety of audiences with an interest in mountain watersheds, for example, from environmental science, geography, engineering, policy, or education. It provides an abundance of information, particularly on forestry—given that forests are the dominant vegetation of mountain catchments and play an essential role in the regulation and filtration of water—as well as mountain development, climatic change, and watershed management. These topics are mentioned throughout the book and explored in a number of different studies from a variety of angles.

While this is not the first book of this kind, it provides topical,

interesting, and informative insights into how to pursue a diverse array of research and work in mountain areas around the globe. It provides guidance on the institutional aspects of mountain regions, stream flow processes, water chemistry, effects of

forestry, climate change, soil conservation, and control of landslides in mountain catchments. To readers interested in any of these topic areas the book is recommended as a diverse and interesting source of information and guidance.

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