

PREPARING FOR THE NEXT GENERATION OF
WATERSHED MANAGEMENT
PROGRAMMES AND PROJECTS

EUROPE



Proceedings of the European Regional Workshop

Megève, France
4 September 2002

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Edited by
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PREFACE

On the occasion of the International Year of Mountains, and in response to the clear consensus reached by the international community regarding the need to ensure harmonious and sustainable development of mountainous areas and watersheds, the Food and Agriculture Organization of the United Nations (FAO) and its partners undertook a large-scale assessment and global review of the current status and future trends regarding knowledge about and techniques for integrated watershed management.

The objectives were to promote the exchange and dissemination of experiences of integrated watershed management techniques, identify constraints to the implementation and development of those techniques during the decade from 1990 to 2000 and capture relevant new paradigms and approaches. The lessons learned from diverse experiences are being used to define a new generation of integrated watershed management projects.

Experts from four continents contributed to the assessment, which yielded four main outputs: 1) a review of experiences in watershed management, based on questionnaires that were sent to active partners in the field; 2) substantive reports from four regional workshops held in Nairobi (Kenya), Kathmandu (Nepal), Arequipa (Peru) and Megève (France); 3) four case studies from the Mediterranean basin, Nepal, Bolivia and Burundi; and 4) an international conference in Porto Cervo, Sassari Province, Sardinia, Italy.

Watershed management concepts and approaches were reviewed, and different experiences assessed. The results of this exercise are presented in several documents, including the proceedings of workshops and reports on the four case studies.

The conservation, use and sustainable management of watershed resources in order to meet the demands of growing populations have been a high priority for many countries over the past several decades. In this respect, integrated watershed management through people's participation has become widely accepted as the approach that ensures sound sustainable natural resources management and a better economy for upland inhabitants, as well as people living in downstream areas.

The European Regional Workshop was hosted on 4 September 2002 by the Ville de Megève, France. Megève, meaning "the place of waters" in Celtic, is a renowned international tourist resort and is indeed at the centre of water and watershed management challenges, its concern being to sustain the balance between mountain ecological and economic interests.

The regional workshop was held in the framework of the first international conference on Water in Mountains: Integrated Management of High Watersheds (5 to 6 September 2002), which brought together some 400 individuals and institutions from 25 countries and 15 international organizations.

The regional workshop at Megève allowed the sharing of achievements, gaps and lessons learned in watershed management in Europe. It provided ideas and suggestions to improve and refocus watershed management in the region, while acknowledging Europe's highly valuable technical, scientific, legal and policy achievements in this field. It highlighted raising the awareness of all parties and authorities concerned as to the urgency and importance of applying integrated and participatory practices in watershed management, particularly in view of the recent dramatic flood events of Eastern Europe.

The workshop also drew attention to the European Union's processes and reforms, and the paramount importance of a Water Framework Directive to implement preventive, long-term and scale-adapted approaches to watershed management by the year 2015.



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On behalf of the Food and Agriculture Organization of the United Nations (FAO), we would like to extend our gratitude and sincere thanks to the organizers of the international conference on Water in Mountains: Integrated Management of High Watersheds for hosting and sponsoring the European regional workshop on watershed management Review and Assessment of Watershed Management Approaches and Strategies – Preparing the Next Generation of Watershed Management Programmes.

We would also like to extend our thanks and gratitude to the Megève local authorities and all parties involved in the preparation and organization of the workshop, and especially to the organizing secretariat for providing the support and kind assistance that make this workshop a reality. Particular thanks to Pierre Lachenal, Director of Société d'Economie Alpestre de Haute Savoie.

Special thanks are extended to the European Observatory of Mountain Forests (EOMF), with whom the workshop was co-organized, and particular thanks to Mr P.C. Zingari, Director of EOMF for his kind support and assistance.

Most important is to mention the participation in the workshop of 29 professionals from 19 countries and 11 international organizations to whom we would like to extend our thanks for their participation and contribution to the success of the workshop.

Finally, we also wish to thank the FAO officers who attended the workshop and contributed directly to the results it achieved: Larry Tennyson, FORC Consultant; Jean Bonnal, SDAR; and Luca Fe d'Ostiani, SDAR.

ACRONYMS

ASSM	Azienda Speciale Sistemazione Montagna (Trento, Italy)
CDB	Community Development Board
CDCC	Community Development Conservation Committee
BERG	Berlin Environmental Research Group (Germany)
EAPI	Environment and Policy Institute (East–West Centre)
EFC	European Forestry Commission
EOMF	European Observatory of Mountain Forest
EPA	Environmental Protection Agency (United States)
EU	European Union
EU JRC	European Union Joint Research Centre
FAO	Food and Agriculture Organization of the United Nations
FORC	Forest Conservation Service (FAO)
GDP	Gross Domestic Product
GIS	Geographic Information System
GPS	Global Positioning System
GTZ	German Agency for Technical Cooperation
ICIMOD	International Centre for Integrated Mountain Development
IHP	International Hydrological Programme (UNESCO)
INRM	Italian National Institute for Mountain Research
IUFRO	International Union of Forest Research Organizations
IYM	International Year of Mountains
MRI	Mountain Research Initiative
NGO	Non-Governmental Organization
NWR	Norwegian Water Resources
SEA	Société d’Economie Alpestre (France)
UNCED	United Nations Conference on Environment and Development
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
VDC	Village Development Committee
WCMC	World Conservation Monitoring Centre
WMO	World Meteorological Organization
WSM	Watershed Management
WWF	World Wide Fund for Nature

INTRODUCTION

The European Regional Workshop on Preparing the Next Generation of Watershed Management Programmes, held on 4 September 2002, was the first of a series of regional workshops that were convened as part of an FAO initiative to review watershed management strategies and approaches and produce subsequent guidelines for the future. The workshop was an integral part of the international conference *Water in Mountains: Integrated Management of High Watershed*, held from 4 to 6 September in Megève, France.

The proceedings of the Megève workshop are presented in this volume, which provides a summary of workshop objectives, the programme and list of workshop participants, results and conclusions of the working groups, the workshop introductory and closing presentations, and text of the technical papers presented.

The conservation, use and sustainable management of watershed resources to meet the demands of growing populations have been high priorities of many countries in the world for the past several decades.

In this respect, integrated watershed management through people's participation has become widely accepted as the approach that ensures sound sustainable management of water and other natural resources and a better agricultural economy for upland inhabitants, as well as benefits for people living in downstream areas.

In addition, integrated watershed management was recognized as a suitable approach to addressing poverty and the need for food security of upland populations, as well as people living downstream. Watershed management integrates various aspects of forestry, agriculture, hydrology, ecology, soils, physical climatology and other sciences to provide guidelines for choosing acceptable management alternatives within the social and economic context.

Chapter 13 of UNCED Agenda 21, for which FAO is the United Nations Task Manager, stresses that "Promoting integrated watershed development programmes through effective participation of local people is a key to preventing further ecological imbalance. An integrated approach is needed for conserving, upgrading and using the natural resource base of land, water, plant, animal and human resources".

Although much progress has been achieved in watershed management, no clear picture has emerged of what has been successful and what needs to be done to improve future watershed management programmes. Therefore, an in-depth analysis of watershed management achievements and existing gaps was identified by FAO as a prerequisite to further development of watershed management programmes.

In this respect, FAO initiated a review and assessment of watershed management development strategies and approaches with the goal of providing reliable information to concerned stakeholders regarding lessons learned, existing gaps, and guidelines for the next generation of watershed management programmes. The following major steps are being taken:

- stocktaking exercise;
- case studies analysis;
- regional workshops;
- dissemination of results.

Additional regional workshops were scheduled for 2002 and 2003. These workshops are seen as an important step of the review in providing an opportunity, on the global scale, for watershed management interest groups and stakeholders to exchange information, discuss achievements, identify existing gaps in watershed management, and formulate innovative approaches and strategies for future watershed management programmes.

OBJECTIVES

The objectives of the workshop were to:

- provide a forum for regional input from various stakeholders in upland watersheds;
- identify achievements and gaps in watershed management projects and programmes;
- identify lessons learned and major issues emerging from past watershed management experiences in the region;
- identify guidelines for the formulation and implementation of the next generation of watershed management projects and programmes, with special focus on the role of effective watershed management in the conservation and sustainable use of water resources.

WORKSHOP PROGRAMME

The workshop programme, including the major discussion topics and a list of authors and titles of papers, is presented in Annex B.

WORKSHOP PARTICIPANTS

A total of 29 participants, representing 19 countries and 11 international organizations attended the workshop. A list of the participants is presented in Annex C.

WELCOME ADDRESS AND OVERVIEW PRESENTATION

Mr Moujahed Achouri of FAO opened the session with a welcome address that included a vote of thanks to the organizers and participants of the workshop and an overview of the objectives and expected outcome of the workshop. The welcome address is presented in Annex A.

Mr Moujahed Achouri also presented an overview of the FAO initiative. His presentation is given in Chapter 2 of these proceedings.

GROUP DISCUSSIONS, CONCLUSIONS AND RECOMMENDATIONS

Chair: Jean François Donzier; *rapporteur:* Jeff Sayer

Three working groups were convened for discussion of major topics relevant to the next generation of watershed management programmes. The group themes are presented in the following. A list of participants by working group is provided in Annex D. During the plenary session the results of the working groups were presented.

Group 1

Theme: Innovative approaches and methodologies to effective watershed management, with special focus on the conservation and sustainable use of water resources. Topics to include use of new ideas and technologies (e.g. new electronic technology) for watershed management (WM) planning, monitoring and evaluation, project/programme implementation and other technical elements relevant to project design and implementation.

Facilitators: Einar Beheim and Moujahed Achouri; *rapporteur:* Pier Carlo Zingari

Working group 1, summary of findings

- Awareness raising was discussed with emphasis on the need for everyone to get involved (“learn about my watershed” Environmental Protection Agency [EPA] Office for Water approach), for non-governmental organizations (NGOs) and group responsibilities (sharing responsibilities, sharing benefits), and for policies (“think and talk prevention”).
- Information should be wider than the usual press agencies’ reporting on killer floods, i.e. additional data (e.g. the memory of people, historical evidence of the events, and all the other aspects that are generally neglected) should be included in the reporting. In addition, the data sets should not be purely technical and local, but global (e.g. forests cannot do miracles).
- Planning should be with local people before technicians (e.g. by the Swiss Risk Prevention Office: dialogue with and involvement of local people are cost-effective tools for risk evaluation and prevention).
- Policies and legislation should be consistent and supported by funds (a policy decision = a set of objectives + a juridical act + money to achieve the objectives). Policies should go beyond governments. There are innovative, replicable and diversified financing tools (especially in mountain areas worldwide).
- The impact of watershed management is greater than commonly viewed. The scale of measures must equal the scale of the impacts.
- The watershed management concept can be restricted to water or opened to people, food, rural development, rehabilitation and nature conservation.

- In order for watershed management programmes to be effective, the following major elements should be considered: 1) financing (payment for watershed services and government commitment); 2) water conservation and sustainable use as a major objective; 3) different levels of scale (local, national and regional); and, 4) identification and use of appropriate technologies that ensure sustainability and replication in accordance with the desired results (including prevention of resource degradation).
- There is a need for complete and relevant information, mainly on neglected aspects such as sedimentation, forest hydrology and extended information resources, including historical, traditional and new technologies.
- There is a need for better planning based on improved collaboration and cooperation among all stakeholders, the availability of required information, technical capacities and operational monitoring and evaluation.
- There is a need to develop appropriate policies and legislation arrangements, with adequate institutional settings and clear objectives and priorities with regard to water resources management (water quality, quantity and timing).

Discussion group 1

- Jean-Francois Donzier: Made a point about the importance of a basin-level approach in management of water resources.

Group 2

Theme: Appropriate strategies for meaningful research and linkages between research and implementers; and strategies and approaches for technology transfer and dissemination (e.g. global networking).

Facilitators: Lalji Mandalia and Larry Tennyson; *rapporteur:* Philip Bubb

Working group 2, summary of findings

- There is an imbalance of data on mountain environments in the EU, i.e. most of the data are for the Alps.
- Mountain environments are highly variable, but these areas have fewer hydrological and meteorological monitoring stations than lowland areas have.
- There is a lack of data across biophysical scales; often only lowland data exist. (Scales should be local, catchment, basin, national and regional.)
- There is a need for research decision-making with links among researchers, land managers and users.
- There is a need for process-based concepts and models across temporal and spatial scales.
- There is a need for methodology to determine the carrying capacity of mountain watersheds (e.g. the impacts of human activities such as tourism, rural development, road density, etc.).

- There is a need for a global network for watershed management with inter-active capability for sharing information and databases.
- There is a need for Internet discussion groups on watershed management in mountains.
- There is a need for research output that is designed to be interpreted, understood and used by trainers, watershed managers and others.
- The FAO/European Forestry Commission (EFC) Working Party on the Management of Mountain Watersheds is a forum that could be utilized for information and technology exchange.

Discussion group 2

- General discussion about watershed-scale problems with respect to extrapolation of data.
- Josef Krecek stressed the importance of experimental watersheds and the extrapolation of information.
- Michaela Leitgeb stated that the lack and incompatibility of mountain databases are major problems.
- Carmen de Jong: There is a need to develop the concept of the carrying capacity of mountain watersheds.
- Sten Folving: There is a need to build on existing forest information systems with metadata information system approaches. There is also a need to set up an EU catchments information system.

Group 3

Theme: Innovative approaches and methodologies for effective watershed management, with special focus on economic and social considerations: the participatory process, policy and legislation, environmental services, onsite and offsite benefits, and other elements relevant to the conservation and sustainable use of water resources.

Facilitators: Luca Fe d'Ostiani and Carmen de Jong; *rapporteur:* Jean Bonnal

Working group 3, summary of findings

- Because of socio-economic complexity, WM programmes should be designed with multi-functional criteria.
- Collaborative design and management involving all stakeholders are prerequisites for effective WM.
- A dynamic monitoring process is needed as a decision support tool.
- There is a need for more focus on upstream–downstream linkages and related impacts, including flows of resources and environmental services.
- There is a need to identify and promote flexible incentive schemes that can be adjusted according to changes in environmental, socio-economic and institutional components.
- There is a need for careful consideration of local expectations in combination with cost–benefit and risk analysis at different levels (e.g., the household, the community, etc.).

Discussion group 3

Phillip Bubb: Regarding environmental impact procedures, are there any gaps? Some discussion by several participants on this topic. General agreement that this subject needs further investigation.

Josef Krecek added that environmental assessment should be part of the process.

TECHNICAL PAPERS

During the workshop several papers were given on topics relevant to the workshop theme. The papers are presented in their original in the following chapters of these proceedings

CONCLUSIONS OF THE WORKSHOP

A summary of workshop findings was prepared by the working group leaders and presented at the conference by Mr Moujahed Achouri.

WORKSHOP PROPOSAL

During the plenary session, the following proposal was presented and unanimously approved:

The workshop brings forward a proposal made by the representative of Bosnia and Herzegovina and agreed upon by the participants. The tragic flood events of summer 2002 in central Europe have heightened the awareness of all concerned parties and high-level authorities of the urgent need to consider the importance of the integrated and participative movement in watershed management in a way that considers preventive, long-term and scale-adapted approaches in the perspective of the EU enlargement, subsidies and policies reform.