PREPARING FOR THE NEXT GENERATION OF WATERSHED MANAGEMENT PROGRAMMES AND PROJECTS

WATER RESOURCES FOR THE FUTURE

Proceedings of the International Conference
organized in collaboration with the
Italian Ministry for the Environment and Territory

Porto Cervo,
Sassari, Sardinia, Italy
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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 International Watershed Management Conference on Water Resources for the Future was held from 22 to 24 October 2003, in Sardinia (Italy) at Porto Cervo, Province of Sassari. This location offered a very appropriate venue for the conference, because water scarcity, soil erosion, low forest cover and opportunities for tourism development in Sardinia offer issues to discuss and share that are very relevant to approaches related to watershed management in

many other areas of the world. The international conference was the culmination of the series of regional workshops described above. The conference, which brought together about 67 participants representing 19 countries, provided a forum for inter-regional exchange on watershed management and water-related issues.

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CONTENTS

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The International Conference on Watershed Management: Water Resources for the Future, held in Porto Cervo, Sassari, Italy from 22 to 24 October 2003, was a milestone in global-level collaboration. A sincere thank you is extended to the people and institutions from various disciplines, countries and regions that participated in and contributed to the success of the conference.

Special thanks to Tage Michaelsen (FAO retiree), who inspired and emphasized the role of forests in watershed management. Appreciation is extended to: Sebastiano Sannitu, elected official in charge of the environment and Vice-President of the Province of Sassari, Italy; Maria Antonietta Accolli and Francesca Caria, Administrative Officers of the Province of Sassari, Italy; Larry Tennyson, FAO Consultant; Moujahed Achouri, FAO Officer; Aline Faucher, FAO Volunteer; and Pier Carlo Zingari, Director of the European Observatory of Mountain Forest (EOMF).

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ACRONYMS

APAT	Agenzia per l'Ambiente e il Territorio (Italy)
BMPs	Best Management Practices
BUWAL	Bundesamt für Umwelt, Wald und Landschaft (Switzerland)
CGIAR	Consultative Group on International Agricultural Research
CLUWRR	Centre for Land Use and Water Resources Research (United Kingdom)
DSS	Decision Support System
EAPI	Environment and Policy Institute (East-West Centre)
EFCWP	European Forestry Commission Working Party
EOMF	European Observatory of Mountain Forest
EPA	Environmental Protection Agency (United States)
FAO	Food and Agriculture Organization of the United Nations
FORC/FAO	Forest Conservation Service/FAO
GEF	Global Environment Facility
GIS	Geographic Information System
GPS	global positioning system
GTZ	German Agency for Technical Cooperation
HR	human resources
ICARDA	International Centre for Agricultural Research in the Dry Areas
ICIMOD	International Centre for Integrated Mountain Development
ICRAF	International Centre for Research in Agroforestry/World Agroforestry Centre
IIED	International Institute for Environment and Development
IMFN	International Model Forest Network
INRM	Integrated Natural Resources Management
IRBM	Integrated River Basin Management
IUFRO	International Union of Forest Resources Organizations
IWM	integrated water management
IWRM	integrated water resources management
IWSM	integrated watershed management
IYM	International Year of Mountains
M&E	monitoring and evaluation
MIS	Management Information System
MRI	Mountain Research Initiative
NGO	Non-Governmental Organization
OIEAU	Office International de l'Eau
PES	payment for environmental services
REDLACH	Latin American Network for Technical Cooperation in Watershed Management
UN	United Nations
UNCED	United Nations Conference on Environment and Development (the Earth Summit)
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
WM	watershed management

INTRODUCTION

The conservation, use and sustainable management of watershed resources to meet the demands of growing populations have been a high priority of many countries for 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 agriculture economy for upland inhabitants, as well as benefits for people living in downstream areas.

Integrated watershed management has been recognized as a suitable approach to addressing poverty and the need for food security of upland populations, as well as of people living downstream. The watershed management approach integrates various aspects of forestry, agriculture, hydrology, ecology, soils, physical climatology and other sciences, thus providing a comprehensive information base for choosing acceptable management alternatives within the social and economic context.

Chapter 13 of UNCED Agenda 21, for which FAO is the UN 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 been drawn 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 a 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 were taken:

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

The International Conference on Watershed Management: Water Resources for the Future, at Porto Cervo, Sassari, Sardinia, Italy from 22 to 24 October 2003, was the culmination of a series of regional workshops (in Africa, Asia, Europe and Latin America and the Caribbean), which were convened as part of the FAO review. During 2002, the Forest Conservation Service

of the Food and Agriculture Organization of the United Nations (FORC/FAO) initiated a global-level review and assessment of watershed management development strategies and approaches with a goal of providing state-of-the-art information to concerned stakeholders regarding lessons learned, existing gaps and guidelines for the next generation of watershed management programmes.

The objectives of the conference were twofold: 1) to provide a forum for inter-regional exchange of information and discussion of watershed management and water-related issues; and 2) to present results of the global FAO watershed management review initiative for discussion and direction regarding future watershed management programmes.

The conference was attended by 67 participants (Annex D) from a variety of disciplines, representing 19 countries. Several presentations were made during the course of the conference. Presentations made available for publication have been grouped in this volume under four main headings: FAO watershed management review; ongoing networking experiences, watershed and area studies, and water and land in Sardinia.

Minutes of group discussions held during the conference are presented in Annex B. Some of the key points identified by working groups are summarized in the following.

Watershed management

- *Appropriateness:* Need to consider carefully if and how watershed strategies from one area are appropriate to other areas: e.g. context, setting, culture, religion and other considerations will affect uptake and success.
- *Best and most modern technology,* although often demanded, is not always the most appropriate. Some criteria to consider when selecting interventions are scale, target stakeholders, local expertise and site conditions.
- *Awareness and engagement*: A major problem in some countries is that people are not interested in water *per se,* but rather in improving their own material well-being. It is necessary to find a way to interest them and involve them in the processes for change.

Mountain forest management

- Indigenous knowledge and culture are important. However, there is a lack of knowledge on how to use this information as a necessary complement to scientific and technical expertise and data.
- The lack of data (indicators providing assessment, valuation and monitoring) is a constraint to improving the knowledge base.
- Sorting myths and facts about water, soil and climate interactions and influences, i.e. to what extent forests and forest-related ecosystems can benefit water quality and quantity and risk control.
- Capacity building (human resources [HR] and institutional) is needed at all levels. Integrated watershed management is implemented and supported by everyday people, not solely by exclusive expertise.

Integrated water resources management: upland–lowland linkages and interactions

- Need to rethink scale issues within upstream–downstream issues: across temporal and spatial scales; biophysical and socio-economic linkages; consider transboundary issues.
- Embed economic valuation in multisectoral watershed management (WM): management and policies that take account of all multisectoral supply, demand and environmental costs and benefits; incorporate viable and appropriate downstream–upstream or upstream–downstream payment for environmental services (PES) schemes; consider return of investment in WM projects; appropriate time scales for investment; include equity issues and right of access to water – the "human and ecological reserve".
- More inclusive approach to WM required: technology alone does not provide the solution; need to live with uncertainty; move from coercive to non-coercive policies; develop multistakeholder process; move from management to adaptive management.

A committee consisting of participants from various disciplines and countries prepared a synthesis of the findings of the conference. The "Sassari Declaration", which was presented at the final plenary session and accepted by the participants, is presented below.

SASSARI DECLARATION

The province of Sassari, Sardinia, Italy hosted this conference co-organized by the Food and Agriculture Organization of the United Nations (FAO) and the European Observatory of Mountain Forest (EOMF) with the aim to exchange experiences on issues of vital importance for environmental conservation and sustainable development. Sardinia is representative of the Mediterranean environment and of island conditions. Water scarcity, erosion, low forest cover and tourism are major challenges shared by many areas worldwide. Sardinia can be considered a pilot area where studies, analyses, evaluations and methodologies are available to combat degradation and desertification processes.

The FAO initiative "Review and assessment of watershed management approaches – preparing the next generation of watershed management programmes" was launched in early 2002 within the framework of the International Year of Mountains, and continued into the International Year of Freshwater, 2003. These and other global events highlighted the magnitude and urgency of watershed management problems around the world. The FAO initiative was carried out in collaboration with several key actors in watershed management and with the contributions of several institutions and concerned parties and the financial support of several countries, such as the Government of the Netherlands, the Government of France and the Government of Italy.

Objectives

Within the context of the Millennium Development Goals and with the intent of preparing for the next generation of watershed management, the objectives of this conference were to: 1) provide an adequate opportunity/platform to all concerned parties to share information and contribute to a better understanding of the current status of watershed management; and

2) provide advocacy and support for the implementation of effective watershed management at different levels.

Recommendations

1. There is a need to focus increased global and regional attention on watershed management because watersheds integrate resources, environmental services, uses and users; watersheds connect people who may never meet and may vary greatly in terms of wealth, livelihoods and culture; good planning requires good understanding of linkages between upstream and downstream hydrologic and land-use systems; investments are long-term and generate benefits and costs across large distances; and interventions that are good for individuals or communities may be detrimental to wider societal interests.
2. Outputs from the Sassari conference and the associated regional workshops should be used to develop a set of guidelines for the next generation of watershed management programmes that can be applied to the design and screening of new projects.
3. Some of the key elements of the guidelines for the next generation of watershed management programmes include: a multisectoral approach; a combination of bottom-up and top-down planning, monitoring and evaluation; clear procedures for environmental impact assessment of interventions, including dams and reservoirs; networking among key stakeholders; consideration of socio-economic and cultural aspects and natural processes; gender balance in decision-making; embracing new approaches for sharing knowledge and learning; sustainable finance; compensation mechanisms; capacity building at all levels; reforming governance, linking surface, groundwater and coastal water sources; shift from looking at supply to looking at demand for water; efficiency of water use; coping with hydrologic extremes and natural hazards; and the integrated management of water, vegetation, soils and sediments.
4. Guidelines for the next generation of watershed management programmes should be tested and demonstrated in pilot cases, with planning and implementation from local, national and transnational scales. These pilot cases should include institutionalization of watershed approaches into national systems.
5. Considering the need for integrated approaches to watershed management, it is recommended that donor agencies, financial institutions, government departments, civil society organizations and the private sector commit to long-term intersectoral and innovative planning, finance and execution of watershed management.
6. Because watersheds often span political boundaries, watershed management should be seen as an integrative approach that has value in understanding and resolving conflicts between upstream and downstream communities and countries.
7. Because rural and urban poverty is a significant contributing factor to watershed development and degradation, it is recommended that the multiple linkages between poverty and watershed management be better understood and considered in the planning of both watershed management and poverty alleviation programmes.
8. It is recognized that there is an urgent need to build capacity of all stakeholders (including watershed inhabitants and professionals at the local and national levels) to understand and manage the multisectoral processes and approaches necessary for effective watershed management.

9. At present, land and water governance institutions and policies are often inadequate to support the integrative and multisectoral approach needed to implement watershed management. It is therefore recommended that: 1) institutions for integrated basin management be established and strengthened with appropriate legal status, resources and financing; 2) there be more effective and equitable communication among local communities, managers and policy-makers; and 3) policies be based on clear evidence and tested principles.
10. Access to a minimum amount of safe water should be recognized as a fundamental human right of all people.
11. Considering that the management over land and water resources is highly fragmented at all levels, it is recommended that consideration be given to establishing an international forum that focuses on integrated watershed management, including land-use and human activities that have an impact on water.