



**European Water Resources
Association**



Dokuz Eylul University
Water Resources Management
Research and Application Center

International Symposium

on

**WATER RESOURCES MANAGEMENT:
RISKS AND CHALLENGES FOR THE 21st
CENTURY**

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Proceedings

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PREFACE

Volume and Organization

This is the volume of Proceedings of the International Symposium of the European Water Resources Association on *Water Resources Management: Risks and Challenges for the 21st Century*. The Symposium took place in Izmir, Turkey between September 2-4, 2004 and was organized by Dokuz Eylul University Water Resources Management Research and Application Center (SUMER), Izmir. It was supported by

- The National Technical University of Athens / School of Rural and Surveying Engineering
- The Scientific and Technical Research Council of Turkey (TUBITAK)
- Water Foundation of Turkey, and
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During the Symposium, a total number of 115 papers were received and 88 fully submitted whereas scientists from various European countries and other parts of the world took place in the discussions of the Symposium.

This volume contains most of the keynote papers and the papers accepted for oral presentation. The presentation of the papers is organized according to the basic themes of the Symposium.

On behalf of the organizing committee, we have to thank all who assisted in organizing this symposium. The support of all participating organizations is acknowledged. In particular, many thanks are expressed to HISDAS HALKLA ILISKILER who supported SUMER in various aspects of the organization.

Scope and Objectives of the Symposium

Proper management and protection of the world's water resources are recognized as prerequisites for sustainable development. This recognition has evolved through a series of international conferences, starting with the Mar del Plata Conference of 1977, the International Conference on Water and the Environment in Dublin in 1992, and the UN Conference on the Environment and Development (UNCED) in Rio in 1992. UNCED has resulted in Agenda 21, which is described as "an action plan for the 1990s and 21st century, elaborating strategies and integrated programme measures to halt and reverse the effects of environmental degradation and to promote environmentally sound and sustainable development in all countries". It was recognized in Agenda 21 that, due to rapid population growth, urbanization, industrial and agricultural development, water scarcity has become a significant problem in most parts of the world. The quality of surface waters, aquifers and coastal zones is continuously degrading throughout the world. There is significant concern over the

slow rate of progress towards the sustainable use and development of water resources for health, food production, and income generation. Land resources reflect a similar situation; overuse or mis-use of these resources has resulted in land degradation, particularly in the form of deforestation and desertification. All these problems have gradually led to physical or ecological degradation of physical habitat for biodiversity. There are further environmental challenges due to ozone depletion and climate change, which affect various components in a number of interactive ways.

All the above problems have stemmed from unsustainable exploitation of living and nonliving resources, and the result is the alarming environmental crisis we live in today. Unfortunately, water resources lie at the core of this environmental crisis. At the beginning of the 21st century, water crisis still remains a major challenge the humankind has to face. International conferences such as the 2nd World water Forum in The Hague in 2000, the International Conference on Freshwater in Bonn in 2001 the Rio+10 Summit in Johannesburg in 2002, and finally, the 3rd World water Forum in 2003 have delineated that the basic factor which underlies water crisis is the improper management of this resource. In recognition of this fact, the UN World Water Development Report of 2003 has identified 11 different challenges related to water resources, ranging from Basic Needs and the Right to Health to Governing Water Wisely for Sustainable Development. The main themes of the Symposium cover the 11 major challenges identified in the UN World Water Development Report of 2003, namely:

- Basic Needs for Water and the Right to Health
- Protecting Ecosystems for People and the Earth
- Cities: Competing Needs in an Urban Environment
- Securing Food for a Growing World Population (related to agricultural uses of water)
- Promoting Cleaner Industry for Everyone's Benefit
- Developing Energy to Meet Development Needs
- Mitigating Risk and Coping with Uncertainty
- Sharing Water: Defining a Common Interest
- Recognizing and Valuing the Many Faces of water
- Ensuring the Knowledge Base
- Governing Water Wisely for Sustainable Development

The basic objective of the EWRA Symposium on "Water Resources Management: Risks and Challenges for the 21st Century" was to follow up on the assessment of water-related problems, provided by the UN World Water Development Report and to address the major challenges for the 21st century. These issues were analyzed through case studies from different parts of Europe. In particular, the Symposium focused on the preparations and arrangements for capacity building of the European countries to deal with the new challenges, risks and difficulties in water resources management.

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