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**RISK SCIENCE AND SUSTAINABILITY:**

**SCIENCE FOR REDUCTION OF RISK AND SUSTAINABLE DEVELOPMENT OF SOCIETY**

**Contributions from the EUROSCIENCE-IUGG-NATO Advanced Research Workshop  
“Science for Reduction of Risk and Sustainable Development of Society”, Budapest, Hungary,  
15-16 June 2002**

Edited by

**T. Beer**

*CSIRO Environmental Risk Network, CSIRO Atmospheric Research, Aspendale, Australia*

**A. Ismail-Zadeh**

*International Institute of Earthquake Prediction Theory & Mathematical Geophysics, Russian  
Academy of Sciences, Moscow, Russia; and  
Geophysical Institute, University of Karlsruhe, Germany*

This volume contains peer-reviewed papers and case studies derived from invited papers presented at the Workshop “*Science for Reduction of Risk and Sustainable Development of Society*”, which was held in Budapest on June 15-16, 2002. These contributions address two key problems: (i) natural, technological and environmental risks, risk prevention and sustainable development, and (ii) science, risk and society. The papers provide an invaluable insight, and archival record of the relationship between risk, science, and society in a world that has become more turbulent since the tragic events of 11 September 2001. This book presents papers from scientists, policy makers, and practitioners on the topics of risk, sustainability, science, and society and is of value for natural and social scientists, teachers, students, economists, and politicians. It is also useful for authorities responsible for public safety, risk management, and risk mitigation plans, and for insurance companies.

**Contents**

The Globalisation of Risk in the XXIst Century. Sustainable Development and Risk Evaluation. Aids to Decision-Making in Risk Management. Societal Dimensions of Risk Perception. Science and Risk: Scientific Authority at Risk. Science for Risk Reduction and Sustainable Development: the Role of Law. On Predictability of Homicide Surges in Megacities. Risk of Collective Youth Violence in French Suburbs. Risk of Vaccine Adjuvant-Related Syndrome. Basic Science for Prediction and Reduction of Geological Disasters. Environmental Risk and Sustainability. Risk and Sustainability in Water Resources Management. Flood Risk Management. Volcanoes and Cities. Earthquakes and Megacities. Earth Sciences Contribution to the Sustainable Development of Ground Transportation Systems. Geodynamic Modelling as a Basis for Seismic Risk Estimation. Earthquake Loss Estimation For India. Submarine Landslides, Seawater Intrusion and Contaminated Groundwater Discharge as Coastal Hazards.

The special pre-publication price is **EUR 38** for a paperback copy.

For more information please contact:

EUROSCIENCE Office

8, rue des Ecrivains, F - 67000 Strasbourg

Tel: +33-3-88 24 11 50; Fax: 33-3-88 24 75 56

E-mail: [office@euroscience.ws](mailto:office@euroscience.ws)

# **RISK SCIENCE AND SUSTAINABILITY: SCIENCE FOR REDUCTION OF RISK AND SUSTAINABLE DEVELOPMENT OF SOCIETY**

## **PREFACE**

The world faces major threats to the sustainability of our planet. These threats are accompanied by the immediate dangers of natural and man-made disasters. Our vulnerability to them is greatly magnified with each passing year undermining our ability to maintain a sustainable and productive world into the 21st Century and beyond. Both history and common sense teach us that science has a tremendous potential to find ways to cope with these threats.

The EUROSCIENCE<sup>1</sup> working group “Science and Urgent Problems of Society” and the IUGG<sup>2</sup> Commission on Geophysical Risk and Sustainability were initiators of the EUROSCIENCE – IUGG Advanced Research Workshop “Science for Reduction of Risk and Sustainable Development of Society” sponsored by the NATO Science Program. The Workshop was held on 15-16 June 2002 in Budapest, Hungary. More than 40 participants from 17 countries took part in the Workshop. Talks and discussions addressed mainly the question of how science can help in reduction of risk and sustainable development of society.

One of the Workshop organisers was EUROSCIENCE founded in 1997 in order to (i) provide an open forum for debate on science and technology, (ii) strengthen the links between science and society, (iii) to contribute to the creation of an integrated space for science and technology in Europe, and (iv) to influence science and technology policies. Euroscience is a pan-European association of individuals interested in constructing scientific Europe “from the bottom-up”. It represents European scientists of all disciplines (including social sciences and the humanities), in the public sector, universities, research institutes as well as business and industry. This grass-roots organisation is open to research professionals, science administrators, policy-makers, teachers, PhD students, post-docs, engineers, industrialists, and generally to any citizen interested in science and technology and its links with society.

This Workshop also provided the opportunity for the inaugural meeting of the IUGG Commission on Geophysical Risk and Sustainability. The Commission was established by the IUGG Bureau in August 2000 to study the interaction between hazards, their likelihood and their wider social consequences as a result of the vulnerability of societies. The Commission received the support of all the seven International Associations that comprise the IUGG.

The proclamation of the Budapest Manifesto, which will be found in this volume, is the joint achievement of the IUGG Commission and EUROSCIENCE working group “Science and Urgent Problems of Society” and is a tribute to the enthusiasm and energy of the members of the IUGG Commission and EUROSCIENCE.

This volume contains the most relevant peer-reviewed papers presented at the Budapest Workshop as invited by the editors. Also, we include in the volume several abstracts of the invited talks that were presented at the Workshop. The volume presents papers from scientists, policy makers, and practitioners on the topic of risk, sustainability, science and society.

The Workshop itself, as explained in the Synopsis that follows, was divided into two portions. The first portion dealt with natural and environmental risk prevention and sustainability. The second portion dealt with relationships between science, risk and society. Thus, the papers and abstracts that follow address two key problems:

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<sup>1</sup> EUROSCIENCE, the European Association for Promotion of Science and Technology ([www.euroscience.org](http://www.euroscience.org))

<sup>2</sup> IUGG, the International Union of Geodesy and Geophysics ([www.iugg.org](http://www.iugg.org))

- Natural, technological and environmental risks, risk prevention and sustainable development, and
- Science, risk and society.

This volume, however, follows a different arrangement. We arrange the papers into three portions: (1) talks (concise reports) and abstracts, (2) research papers, and (3) case studies. They are preceded by a synopsis of the volume, and the text of the Budapest Manifesto.

These contributions provide an invaluable insight, and archival record of the relationship between risk, science, and society in a world that has become more turbulent since the tragic events of 11 September 2001. The participants at the Workshop were conscious of the need to define a way forward and agreed to issue a declaration, to be called the Budapest Manifesto on Risk Science and Sustainability, to reinforce the social and vital link between the scientific community and the public so as to provide a general guide for scientists to deal with risk and sustainability.

Alik Ismail-Zadeh  
[AIsmail@mitp.ru](mailto:AIsmail@mitp.ru)

Karlsruhe, Germany

Tom Beer  
[Tom.Beer@csiro.au](mailto:Tom.Beer@csiro.au)

Melbourne, Australia

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