

PREFACE

We live in a changing world. This thought expresses a historical fact entirely present in man's consciousness regardless of whether we consider him as an individual or a social human being. The awareness about the changing world always introduces an amount of anxiety into man's life that can be defined by the following question: *Can man preserve the existing world for the future of his children?*

To preserve this world for the future of our children, we must all strive for sustainable development — a development that meets the needs of the present generation without compromising options and resources the future generations will use to meet their own needs. It implies environmentally sound development in societies and regions free from threats to life and property. Human security is an essential ingredient of sustainability, which is increasingly threatened by extreme events, both natural and human-induced.

Regardless of the word *balance* being used either globally or locally in any given context, it is undoubtedly the keyword in the increasing number of environmental problems. The underlined sketch is a proper introduction to the question: *Why are the environmental problems in focus now?* One particular answer can be found in the hierarchy of the main scientific problems for the 21st century as seen by the scientific community. According to them, in the the 21st century the world of science will be occupied by the problems linked mainly to superconductivity, quantum teleology, extra-terrestrial contacts and environmental problems primarily expressed through the climate change problems. A unique characteristic of those problems is the question of different aspects of the existence of an individual human being. Those questions are: technological capability, origin of the consciousness and survival on the Earth. This is the first time in the history of science that the environmental problems take place at the frontline of science. The question of *why is this happening now and*

why it will go on happening in the future could be answered by the well known fact that in the scientific as well as other worlds the main “drama of the event” takes place at the interface between either two media or two states.

Damages in lives lost and destroyed property are increasing in frequency and magnitude. Increased pollution in the atmosphere is causing gradual increase of the temperature. The slowly rising sea level is threatening low lying countries with more severe storm surges and some scientists suspect that recent large floods, heat waves and drought in Central Europe and the lower Danubian region are indicators of more severe hazardous events in the future. Even more dramatic are human-induced environmental changes caused by population growth, uncontrolled urbanisation and development, and regional conflicts. They result in changes of social and cultural structures, public health, changes of land use and related phenomena, and generating environmental refugees. The environment becomes increasingly endangered, especially when man encroaches on and modifies fragile environments.

The 9th International Symposium on Interdisciplinary Regional Research — ISIRR 2007 took place on 21–22 June 2007 at the University of Novi Sad, Serbia. This Symposium is the result of tripartite regional cooperation between the University of Novi Sad, Regional Committee of the Hungarian Academy of Sciences — Szeged (Hungary) branch and Interdisciplinary Committee for Research and Development of the Romanian West Zone — Timisoara (Romania), a cooperation that has been ongoing since 1996. The results of joint research projects are presented at the international symposia “Interdisciplinary Regional Research — ISIRR”, which are being held cyclically in one of the three countries.

The University of Novi Sad hosted the 3rd and 6th ISIRR Symposiums in 1998 and 2002 respectively and accepted the organisation of the 9th Symposium by the decision of its Teaching and Research Council. Having in mind the interdisciplinary character of the Symposium, the Organising Committee was formed from the professors in charge of University Centres within the Association of Centres for Interdisciplinary and Multidisciplinary Studies and

Research (ACIMSI), University of Novi Sad, Serbia. Having in mind its interdisciplinary character, the Symposium was carried out through the six sections with presentations in the form of plenary lectures as well as oral and poster presentations.

This book comprises materials selected among all the submitted papers. It contains four chapters: The Medical Issues (Chapter One), The Agricultural and Food Technology Issues (Chapter Two), The Ecological Issues (Chapter Three) and Humanity Issues (Chapter Four).

Part One deals with the medical problems in the lower Danubian region. Keynote papers consider medical imaging in general and Positron Emission Tomography (PET). The following chapter papers are devoted to various problems related to the application of DICOM/JPEG2000 Client/Server Architecture, radionuclide application in therapy and diagnostics and densitometry measurements. Other papers consider problems related to traveller's thrombosis, acute limb ischemia and dentures technology.

Part Two considers the agricultural, technological and developmental open horizons in natural resources of the lower Danubian region. Through applied and fundamental disciplines ranging from biochemistry to physiology, microbiology, applied genetics and food technology, the authors searched for innovations that promote sustainable management of crops and other natural resources in this agriculturally developed region of Europe. The first paper is devoted to the plant antioxidant activity of wild and cultivated *Allium* species, while the second one deals with the antioxidant systems in some rare and endangered species from the southern part of the Pannonian plain. The group of biochemistry papers is closed with the studies of (i) distribution of different forms of cadmium in the intercellular space and cadmium content in roots, stems and leaves of young sugar beet plants and (ii) effect of nickel, cadmium and molybdenum on sugar beet nitrate and protein metabolisms. The first paper that comes from the physiological background deals with the effect of short-term water deficiency on vascular tissue of petiole and leaf lamina of sugar beet, while the other three treat the effect of nitrate concentrations on physiology of different leaf age groups of poplar. Following is the

paper in which the authors assess the effects of the application of Nitragin (microbiological fertilizer for soybean) and PGPR (Plant Growth Promoting Rhizobacteria) on soybean yield. The agricultural part of the chapter is ending with two papers from the field of the applied genetics studying cytological characteristics of regenerants obtained from another culture of wheat and tolerance to excess boron in wheat. The food technology part of Part Two comprises three papers. They consider problems related to the technology of plant and animal processing, i.e. (i) products from *Amaranthus* grain, (ii) application of medical plant extracts in biscuits and (iii) fatty acid composition of milk of the tsigai sheep, a variety specifically bred in the lower Danubian region.

Part Three includes papers dealing mostly with environmentally sound ecological modelling approaches, applied modelling examples and environmental experiments in the lower Danubian region. Four groups of topics can be identified among these papers. The first group contains topics of general theory of modelling for different applications, their challenges and problems. It comprises three papers giving several examples such as support to vector machines or nested ecological modelling and their applications. The second group of papers gives examples of applied modelling for climate change impact research on agriculture. These range from the application of spatial analogue techniques of climatically similar regions to impacts of climate change on selected crops as well as changed microclimatic conditions within crop stands and related stress levels. Finally, the last paper from this group is focused on the crop model calibration and validation as well as the application of a weather generator. The third group of papers highlights application of risk analysis and management methods applied to past and future climatic conditions as well as to certain crops and hazardous gases released in the pharmaceutical industry. Risk analysis, risk management and uncertainties under future climate scenarios are the most topical and increasingly important research topics in climate impact and adaptation research worldwide, because they play an important role in the transfer of this knowledge to decision makers. Two papers finalising this group of papers consider (i) microclimatic conditions and quantitative

processes within current or future climate, such as the impact of different methods on uncertainties in lake water budget and (ii) modelling efforts in the pharmacokinetics system with time delay. The last two papers of Part Three, without direct modelling efforts, give examples of investigations, e.g. dealing with characterisation of gas/particle partitioning polychlorinated biphenyls (PCBs) and polycyclic aromatic hydrocarbons (PAHs) in the area of Kragujevac during the NATO operation in Serbia, and the importance of possible corn production in Hungary in the future, seen through the lens of the climate change.

In Part Four, the papers deal with several aspects of interdisciplinary relation of humanity issues and society through ecology, economy, language and literature. The very first paper analyses statements of interviewed citizens of the city of Novi Sad (Serbia) on measures of local environmental policy and stakeholders who participate in environmental policy actions. Following are two papers based on economic issues. They consider (i) job satisfaction in the state-owned sector of Serbia and (ii) the first public private partnership in Serbia whose socio-economic environment is fruitful for the implementation of new university-industry-government partnership. The last group of papers concern gender relations, Balkan culture and literature. They are a kind of pioneering work which addresses the struggle of getting gender studies recognised as a degree programme in the lower Danubian countries over the past two decades. The first paper from this group focuses on the role of male/female addresses on the same and opposite sexes and investigates how these addresses reflect today's Balkan culture, where women are traditionally in the background and men are in the foreground. The next paper deals with metaphors of cannibalism and the role they play in the female protagonists' reconsideration of their identities in several novels, while in the last one the author discusses two novels from a double perspective: the feminine condition and the role that art plays in the life of the characters.

Not all papers represent a new and original contribution, but they are interesting and give a scientific review and correct approach to the considered problems in a comprehensive and critical way. We are

proud that young researchers took part with their first papers, giving valuable contribution to this Symposium.

This book is highly supported by the following people, who invested a large effort in its creation: Miss Maja Đogo, Miss Ana Pavlović and Miss Svetlana Vujović. Several state institutions financially supported the publication of this book. They are: Provincial Secretariat for Environmental Protection and Sustainable Development, Provincial Secretariat for Science and Technological Development, Provincial Secretariat for Education and Culture and Ministry of Science, Serbia. Dr. Dušan Sakulski from the United Nations University, Bonn (Germany) gave us his help, highly exceeding the level of common collegial support. Editors are deeply grateful to all of them.

Dragutin T. Mihailovic
Mirjana Miloradov