

Springer Water

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Water Resources Management in Balkan Countries

 Springer

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Preface

Water resources management of a country is a national responsibility, and relevant activities should be proposed so that the specific needs of a country are met. Many of its component activities may be done at the local and regional levels. This national responsibility should be divided among neighboring countries in the case of cross-border water resources, and international programs and project may provide valuable help.

With respect to the importance of the assessed information on sustainable development and the maintaining the integrity of ecosystems, all countries are urgently called upon to achieve a level of assessment of water resources corresponding to needs as soon as possible.

The policy should be such that all national and international activities of assessing water resources are fully coordinated and financed over the long term. The approach to achieving this goal may differ in individual countries but will typically include the mandating of regulations and administrative decisions, especially in terms of allocating financial resources.

The assessment of water resources requires significant financial resources if the support of sustainable social-economic development is raised with this. These resources, however, represent only a small portion (e.g., 0.2–1.0%) of financial resources expended on investments and activities in the water sector as a whole. Governments are urgently called on to allocate national and international funds for priority assessment of activities in the area of water resources management.

This book presents an expert overview and knowledge on water resources management in Balkan countries—Slovenia, Macedonia, Serbia, Croatia, Greece, Bulgaria, and Romania. The book will be useful to experts, professionals, researchers, scientists, practitioners, academics working in the field of water resources management. Water is a vital component of the natural environment, but it is also a basic prerequisite for all human economic and social activities in general. Water is a form of wealth which requires protection; its usage needs to be regulated, and its supply needs to be regenerated. Water may be continuously renewed in nature, but only on the precondition that the fundamental principles of its protection are respected. Anybody who is carrying out any activity which may affect the state

and relations of surface and underground waters has the obligation to make all necessary efforts for their preservation and protection will be interested in this book. The book is devoted to a variety of water resources issues in Balkan countries. The book presents state-of-the-art knowledge that can be effectively used for solving a variety of problems in integrated water resources management.

The book has been treated as the product of teamwork of more than 40 distinguished researchers and scientists from different institutions, academic, and research centers with major concerns regarding water management from Balkan countries.

The *Water Resources Management in Balkan Countries* book consists of 17 chapters and is divided into nine parts. Part I, “Introducing the book,” was prepared by editors Abdelazim M. Negm from Water and Water Structures Engineering Department, Faculty of Engineering, Zagazig University, Zagazig, Egypt; Martina Zelenakova from Department of Environmental Engineering, Faculty of Civil Engineering, Technical University of Košice, Košice, Slovakia; and Ionut Minea from Department of Geography, Faculty of Geography and Geology, Alexandru Ioan Cuza University of Iasi, Iași, Romania.

It also contains the chapter which is devoted Danube River (DR) Delta. The DR is the biggest and the most significant river in the Balkan region, flowing through almost all Balkan countries. Chapter 2, “Danube Delta Biosphere Reserve—Long-Term Assessment of Water Quality,” offers an overview over almost 25 years of the anthropogenic pressures in Danube Delta Biosphere Reserve in the last half-century accompanied by long-term water quality assessment in this area using legislations, physical–chemical (such as salts, nutrients, heavy metals) and biological parameters. It was prepared by Cristina Despina, Liliana Teodorof, Adrian Burada, Daniela Seceleanu-Odor, Iuliana-Mihaela Tudor, Orhan Ibram, Cristian Trifanov, Marian Tudor from Danube Delta National Institute for Research and Development (DDNIRD), Tulcea, Romania.

Part II of the book focused on “Water Resources Management in Slovenia.” Chapter 3 of the book “Water Resources in Slovenia” outlines key facts about water resources of Slovenia, which is a country characterized by an abundance of water in a great variety of forms. The chapter was written by Mauro Hrvatin, Blaž Komac, and Matija Zorn from Research Centre of the Slovenian Academy of Sciences and Arts, Anton Melik Geographical Institute, Slovenia. Chapter 4 “Induced Riverbank Filtration (IRBF) for Managed Artificial Groundwater Recharge (MAR) in Slovenia” pays attention to the efficiency of managed artificial groundwater recharge system and consequently a water quality healthy aquifer in Slovenia. The chapter was prepared by Irena Kopač from Ecological Engineering Institute d.o.o., Maribor and Matevž Vremec from Faculty of Engineering, University of Maribor, Slovenia.

Part III of the book deals with “Water Resource Management in Croatia.” Chapter 5 “Groundwater Resources in Croatia” is devoted the quantity and distribution of groundwater resources in Croatia which are determined primarily by hydrogeology and climate. The authors of these chapters are Danijel Orešić and Ivan Čanjevac from Department of Geography, Faculty of Science, University of

Zagreb, Croatia. Chapter 6 “Water Quality Status of Croatian Surface Water Resources” describes the status of water quality of small rivers, large rivers, and lakes in Croatia. It was written by Lidija Tadić and Marija Šperac from Josip Juraj Strossmayer University of Osijek, Faculty of Civil Engineering Osijek, Croatia, and Barbara Karleuša and Josip Rubinić from University of Rijeka, Faculty of Civil Engineering, Rijeka, Croatia. Chapter 7 “Surface Water Resources and Their Management in Croatia” focuses on water balance components and surface water resources in Croatia and analyses main water use sectors, water resources management system, and flood protection in Croatia. The authors of these chapters are Ivan Čanjevac and Danijel Orešić from Department of Geography, Faculty of Science, University of Zagreb, Croatia.

Part IV focuses on “Water Resource Management in Bosna and Hercegovina.” Chapter 8 “Water Resources in Bosnia and Hercegovina” prepared by Emina Hadžić from Faculty of Civil Engineering, University of Sarajevo, Bosnia and Hercegovina, and Alma Imamović from Ministry of Agriculture, Water Management and Forestry of the Federation of Bosnia and Hercegovina deals with hydrological conditions and water resources management in Bosnia and Hercegovina.

Part V of this book is devoted to “Water Resource Management in Serbia.” Chapter 9 “Water Resources of Serbia and Its Utilization” describes legislation, regulatory, and institutional framework for water utilization and provides the detailed data and information about natural conditions, as well as the latest monitoring data on water resources quantity and quality significant for water utilization in Serbia. The authors of this chapter, Borislava Blagojević, Marko Langović, Ivan Novković, Slavoljub Dragičević, and Nenad Živković, are from Faculty of Geography, University of Belgrade, Belgrade, Serbia. Chapter 10, “Microbial Quality of Irrigation Water in Serbia: Risks to Food Safety,” deals with the detected water quality of sources used for irrigation in agricultural areas of Serbia and the potential risks if water of inadequate quality is used for irrigation. It was prepared by Željka Rudić, Igor Kljujev, Bojana Vujović, Mile Božić, and Vera Raičević from the Jaroslav Černi Institute for the Development of Water Resources, Serbia. The aim of Chap. 11 “Precipitation and Drought Analysis in Serbia for the Period 1946–2017” is to monitor and analyze precipitation and drought which cover various fields of influence in Serbia in some detailed and expedient manner. It was written by Milan Gocic, Slavisa Trajkovic, Mladen Milanovic Faculty of Civil Engineering and Architecture, University of Nis, Nis, Serbia.

Part VI is interested in “Water Resource Management in Bulgaria.” Chapter 12 “Water Resource Management in Bulgaria” includes the information about the water resources in Bulgaria: for rivers, lakes, and dams, also information for water management and law in Bulgaria. The chapter was prepared by Rositsa Velichkova, Tsvetelina Petrova, Iskra Simova, and Detelin Markov from Technical University of Sofia, Sofia, Bulgaria; Georgi Bardarov from Sofia University “St. Kliment Ohridski,” Sofia, Bulgaria; and Milka Uzunova from LR2A.Lab, ECAM-EPMI Cergy-Pontoise, France. Chapter 13 “River Systems Under the Anthropogenic and Climate Change Impacts: Bulgarian Case” is focused on the existing problems in

the area with regard to the Bulgarian river system quantification status, and it was prepared by Mila Chilikova-Lubomirova from Fluid Mechanics Department, Institute of Mechanics—Bulgarian Academy of Sciences, Bulgaria.

Part VII is devoted to “Water Resource Management in North Macedonia.” Chapter 14 “Water Resources Management in Republic of North Macedonia” introduces water resources in the country and points out demand for improvement of capacity, financials, and human resources for better water management. The chapter was written by Ivan Radevski, Svemir Gorin, Vladimir Zlatanovski from Institute of Geography, Faculty of Natural Sciences and Mathematics, Ss. Cyril and Methodius University, Skopje, Republic of North Macedonia. Chapter 15 “Water Quality and Pollution Status of the Main Rivers in the Republic of North Macedonia” prepared by Olgica Dimitrovska, Ivan Radevski, and Svemir Gorin from Institute of Geography, Faculty of Natural Sciences and Mathematics, Ss. Cyril and Methodius University, Skopje, Republic of North Macedonia emphasizes the main pressuring of the quality of the water resources in the Republic of North Macedonia, the pointing and diffusive sources of pollution as a result of the activities of the households, the industry and the agriculture through water quality indicators (BOD₅, total ammonium, nutrients).

Part VIII is focused on “Water Resource Management in Greece.” Chapter 16 “Agricultural Water Management in Greece” concerns on problems in irrigation water management in Greece. It was prepared by Nicholas Dercas from Water Resources Sector, Department of Natural Resources Management and Agricultural Engineering, Agricultural University of Athens, Athens, Greece.

Part IX is “Conclusion,” and Chap. 17 titled “Update, Conclusions, and Recommendations for Water Resources Management in Balkan” was prepared by editors of the book Abdelazim M. Negm, Martina Zelenakova, and Ionut Minea.

This book presents a real valuable source of knowledge in the field of water resources management of Balkan countries. We would like to express special thanks to all the authors for their contributions. Without their patience and effort in writing and revising the different versions to satisfy the high-quality standards of Springer, it would not have been possible to produce this volume and make it a reality. This high-quality volume sure will be a greatly appreciated source of information for the academics, researchers, practitioners, students, and scientists mainly from Balkan countries but not only for them. Much appreciation and great thanks are also owed to the editors of the Environmental Earth Science book series at Springer for the constructive comments, advice, and the critical reviews. Acknowledgments must be extended to include all members of the Springer team who have worked long and hard to produce this volume. The volume editors would be happy to receive any comments, feedback, suggestions for improvement, or new chapters for next editions are welcomed and should be sent directly to the volume editors. The emails of the editors can be found inside the books at the footnote of their chapters.

The book is especially devoted to University Professor Gheorghe Romanescu, Editor of this book, Eminent Teacher, and Researcher in the field of water geography, who unexpectedly has left us on October 3, 2018, during the processing of this volume. We appreciate his great effort in the invitation of the authors because without his contribution and hard work, the book would not arouse.

Košice, Slovakia
Iași, Romania
Zagazig, Egypt
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