

Preface

Environmental impact assessment (EIA) is an important process that, prior to approval of the investment plan, can provide a detailed examination of the likely and foreseeable impacts of proposed construction activity on the environment. The objective of this book is to develop a specific methodology for the analysis and evaluation of the environmental impacts of selected constructions, namely flood protection structures, using risk analysis methods. Experience in applying this methodology designed for the process of environmental impact assessment also drives considerations for further improvements or more effective implementation and performance of this process. This book looks into the benefits of using risk analysis techniques to evaluate flood protection structures. In doing so, the results of the environmental impact assessment of selected planned flood protection projects are examined.

The book proposes a methodology for the assessment of environmental impact in water management, and it investigates flood mitigation measures with the aim of selecting the best option for the decision process. This methodology should streamline the environmental impact assessment process applied to constructions in the field of the water management. Moreover, the outcome should lead to the selection of future activities entailing minimum risk to the environment. Comparison of alternatives and designation of the optimal variant are implemented based on selected criteria that objectively describe the characteristic lines of the planned alternatives of activity and their impact on the environment.

Specifically, multiparametric risk analysis is used in the proposed method for environmental impact assessment of flood protection projects. This risk analysis method is intended not only to increase the clarity and precision of the evaluation process, but also to align it with the requirements of the environmental impact assessment system of the European Union. This modification should improve the reliability of the environmental impact assessment, and could moreover also be applied to other infrastructure projects. The designed project in Kružlov, Slovakia is used as a case study to clarify and exemplify the methodology and techniques.

This book reviews the literature of EIA and risk analysis and their interconnection (Chap. 1). A proposed methodology for EIA of selected proposed activities

based on risk analysis is described in Chap. 2. Chapter 3 reports the results of research based on the application of the proposed methodology of EIA of flood mitigation measures in Kružlov village (north Slovakia). The conclusions of the research, plus both the theoretical and practical benefits of the book as a tool for decision support and the promotion of sustainable development, are treated in Chap. 4. This final chapter also presents suggestions or recommendations for further research in the field of the methodology of the EIA process.

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Using Risk Analysis for Flood Protection Assessment

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2017, XII, 128 p. 34 illus., 18 illus. in color., Hardcover

ISBN: 978-3-319-52149-7