BOOK REVIEW

Schmutz, S., Sendzimir, J.: RIVERINE ECOSYSTEM MANAGEMENT: SCIENCE FOR GOVERNING TOWARDS A SUSTAINABLE FUTURE (AQUATIC ECOLOGY SERIES). 1st ed. Springer International Publishing. 2018. 571 pages, ISBN 978-3-319-73250-3. https://doi.org/10.1007/978-3-319-73250-3.

ABSTRACT

The present work introduces the book entitled "Riverine Ecosystem Management: Science for Governing Towards a Sustainable Future (1st edition.)". This book is published by Springer international publishing in 2018. The book, due to its rich content, can be used as an interesting and valuable reference for improvement and development of river management plans in the future. It can provide crucial information regarding sustainable management of rivers and aquatic ecosystems for environmental experts, ecologists, biologists and other enthusiasts.

Keywords: riverine ecosystem, sustainable management, conservation, assessment

Freshwater ecosystems play a key role in various economic sectors, e.g., agriculture, industry, fisheries and tourism. Among them, riverine ecosystems are important and complex systems, including rich variety of living organisms (Revenga *et al*., 2005; Brachet *et al*., 2015). Rivers are affected by anthropological activities and their rehabilitation and management are crucial to counter multiple and extensive pressures (Dutta *et al*., 2017). Hence, due to the biodiversity value and their vulnerability to human activities, conservation of riverine systems is a crucial issue (Maki *et al*., 2016).

The introduction and review of studies on river ecosystems can provide important ideas to achieve management goals. The present work introduces the current published book entitled "Riverine Ecosystem Management: Science for Governing Towards a Sustainable Future (1st ed.)" by Stefan Schmutz and Jan Sendzimir (editors). This book is a valuable reference to improve and development of river management plans. The book contains 29 chapters published by Springer international publishing in 2018. Our review, summarizes the objectives and information presented in each chapter by highlighting the most important points.

The first chapter explains the challenges, requirements and main tools for management of river ecosystems. These tools can be used for health assessments of aquatic ecosystems and their biological integrity.

PART ONE: HUMAN IMPACT, MITIGATION AND RESTORATION

Chapter 2 focuses on the history of river ecosystems and the ecological effects of humans. Chapter 3 investigates the morphological, physical conditions, canals and habitat revitalization in river systems. In chapter 4, the hydrological characteristics of river and flow of water are discussed. Hydrological characteristics are recognized as one of the key factors in the riverine flow. Certainly, these characteristics can have different effects on the structure of biotic communities and their habitats in rivers. Chapter 5 focuses on the hydropeaking effects in river ecosystems. The authors of this chapter pointed out that

fluctuation of water flow can play an important role in the survival and reproductive potential of living organisms. In chapter 6, the ecological effects of dams have been discussed. In addition, the authors have proposed the management solutions to reduce the risks and ecological effects of dams. Chapter 7 explores the habitat modeling in rivers. Since habitat degradation has a negative impact on the structure of river communities, the study of its features can be very useful in the development of management plans. In chapter 8, the role of sediments in river environments has been investigated. The authors of this chapter have stated that sedimentological degradation is one of the major threats in riverine ecosystems. Chapter 9 studies the importance of river connectivity. This chapter focuses on the study of habitat fragmentation and its ecological effects in river systems. Chapter 10 is about the role and effects of chemicals substances such as nitrogen (N) and phosphorus (P) in riverine systems. This chapter provides basic information on nutrient cycling, especially nitrogen and phosphorus in rivers and streams. Chapter 11 investigates the effects of climate changes on the riverine ecosystems. This chapter studies the effects of climate changes on thermal regimes and climate interactions with other stressors. Chapter 12 explores the negative impacts of toxic substances on river ecosystems. This chapter provides important information to assessment and prediction of the effects of chemical pollutants on riverine systems. In chapter 13, land use has been proposed as human pressure and its impacts on river ecosystems have been discussed. In this chapter, methods and crucial information for analyzing of land use are provided. Chapter 14 refers to the concept of sustainable development in fisheries management. In this chapter, the authors stated that successful monitoring of fish stocks is one of the key points for achieving the sustainable development in the fisheries section.

PART TWO: MANAGEMENT, METHODOLOGY, GOVERNANCE

Chapter 15 explores the challenges of riverine ecosystem management. This chapter provides the basic principles and guidelines for restoration and management of riverine systems. In chapter 16, adaptive management of riverine socio-ecological systems is discussed. This chapter presents the management as a learning process that should be considered. Several issues have been highlighted in this chapter, including principles of adaptive management, challenges of adaptive management, advances in adaptive management, approaches in adaptive management, and role of laws and governance in adaptive management. In this chapter, in addition to providing the general principles of adaptive management, some case studies have also been provided. Chapter 17 and 18 present a framework for riverine systems management. These chapters focus on the role of international laws and mechanisms in the development of river management plans. Chapter 19 describes the biomonitoring and bioassessment of river systems. Many important issues have been discussed such as the assessment of river quality, biological indicators, integrative assessment systems, and indicator groups in riverine systems e.g. periphyton, macrophytes, aquatic macroinvertebrates and fishes. Chapter 20 provides information on freshwater systems and their biodiversity. The previous studies have shown that biodiversity data can be valuable resources for sustainable management and conservation of freshwater ecosystems. In chapter 21, Ecosystem Services (ES) has been discussed in the river landscape, focusing on ES assessment approaches, non-monetary assessment approaches, ES concept and its application, and the role of the ES in river landscape management. Chapter 22 describes the role of public participation (PP) and environmental education in sustainable riverine ecosystem management. In this chapter, various issues have been investigated, including participation levels, benefits of public participation, use

of public participation in riverine ecosystem management, challenges of public participation, and importance of environmental education for achieving sustainable management of aquatic ecosystems. Chapter 23 discusses the role of non-governmental organizations (NGOs) in freshwater ecosystems management. In this chapter, the experiences of NGOs for freshwater resources management in India, Austria and the Danube river basin have been studied.

PART THREE: CASE STUDIES

The third part (chapters 24 to 29) presents case studies that conducted in different countries about river ecosystems management. For example, in chapter 24 and 25, the Danube River has been introduced as a model ecosystem under severe pressures and its ecological challenges are investigated. Chapter 26 also provides important information on the status of sturgeon stocks (Acipenseriformes) in the Danube River, which reflects their response to ecological challenges. In chapter 27, the status of aquatic resources and sustainable fisheries management in the Burkina Faso have been studied. Chapter 28 describes the main river management problems in the Tisza River basin as a case study.

PART FOUR – SUMMARY

In chapter 29, i.e. the final chapter, advances and future challenges in riverine ecosystems management have been investigated.

The strengths of this book can be summarized as fallow:

- The universal importance of this research topic: The need for sustainable management in aquatic ecosystems is one of the most important environmental concerns in the world.
- Certified authors and specialists: Each chapter is written by certified authors in the field of riverine ecosystem management.
- Proper structure. The proper arrangement of chapters will draw the reader's attention to the significance of the research topics.
- Simple and expressive language
- The comprehensive study of all dimensions of sustainable management in river ecosystems
- Use of up-to-date and new references
- Use of appropriate and logical figures
- Use of case studies: Part three of this book reviews the case studies that conducted in different areas of the world.

As conclusion, the current book provides crucial information regarding sustainable management of rivers and aquatic ecosystems. Therefore, the present work suggests that this interesting and valuable book can be considered for teaching at research institutes and academic centers. This book also can be an excellent reference for environmental experts, ecologists, biologists and other enthusiasts.

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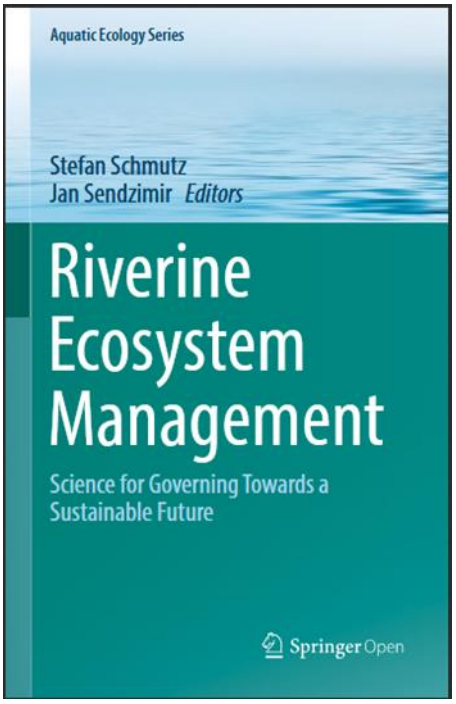
Fig. 1: Cover page of book



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