

BOOK REVIEW

Sustainable Urban Water Environment: Climate, Pollution, and Adaptation

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Sustainable Urban Water Environment: Climate, Pollution, and Adaptation

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Water plays a vital role in human life. Like many other researchers, Clark S. Judge, Managing Director of the White House Writers Group, Inc. and Chairman of Pacific Research Institute, claimed that, “The next big wars will be fought over water.”

According to van Bueren, van Bohemen, Itard, and Visscher (2012), the urban environment represents one of the most important sources to global climate change, while at the same time holding the key to a more sustainable way of living. The transformation from current to sustainable systems requires interdisciplinary cooperation of the re-design, re-construction,

and constant maintenance of a brand new environment.

This book explains an extremely important topic, exposes the current challenges, and explores potential solutions. From a multi-disciplinary perspective, this book stipulates many thoughtful points of view for safeguarding the sustainability of the urban water environment. Some key issues impacting sustainability of urban water environment are the extent, quality and continuity of drinking water services; the extent and quality of wastewater collection and treatment; the control of urban stormwater; charging, tariffs and cost recovery; and the freedom of urban dwellers to use urban water services.

PART 1: RISKS AND CHALLENGES

In “Risks and Challenges,” first demonstrated are the significance of water environments to everything and everyone, and the chief prob-

lems that are burdens on urban water bodies' shoulders.

Chapter 1 targets how much urbanization has affected urban water systems. Some examples encompassed are population growth and sprawl, and what punishments human beings will encounter. This includes changes in lifestyle from rural to urban in deep detail.

Chapter 2 presents predictions on how global warming or cooling may affect water environments. Evidence and causes of the climate change are discussed in both regional and global scales (particularly in the Australian context.) Water quantity, quality, and ecosystems are elaborated on in this chapter.

Chapter 3 introduces water sensitive urban design strategies for mitigating water quantity and quality impacts on receiving waters and its sustainability in urban areas. The need for knowledge creation to overcome challenges for sustaining the urban water environment has been emphasized.

PART 2: IMPACTS AND PREDICTIONS

In this paper, authors explore the diversity and quantity of pollutants entering the water environment, especially via stormwater runoff, and suggest modelling methods factoring in the changing climate and future urban and transport scenarios.

Chapter 4 deals with sources of pollution, common and emerging. Highlighted are the algorithms of measuring these pollutants. The chapter demonstrates methods to assess the overall water quality index for a given water body.

Multivariate data analysis and receptor modelling techniques are applied in Chapter 5. We need to initiate and monitor the effectiveness of source control measures, as well as collect accurate information that can be used for identifying both water quality and the sources of pollutants.

Chapter 6 revolves around the idea of the quality of stormwater. The authors prefer includ-

ing climate change and future transport- and urban systems-related inputs into such models along with incorporating added capabilities to stormwater quality models to predict future scenarios.

PART 3: OPPORTUNITIES AND DIRECTIONS

The authors demonstrate the link among sustainable urban water concept and the sustainable urban and transport development and sustainable urban ecosystems concepts. Also, two urban sustainability assessment models in empirical studies are highlighted.

Chapter 7 focuses on ILTIM (Integrated Land Use and Transport Indexing Model), an urban sustainability assessment model. The authors incorporate the key factors impacting urban sustainability levels as indicators and discuss adaptation of the urban sustainability assessment models in the urban planning process. The operational details of the implementation of the model in a local government context are provided for the potential followers in the local sustainability endeavors.

In Chapter 8, six key dimensions, including hydrology, ecology, pollution, location, design and efficiency, are main components in MUSIX (Micro-Level Urban-Ecosystem sustainability Index), another urban sustainability assessment model. The authors showcase the methodology of the model and reveal the performance of the model in a local test-bed case.

Furthermore, the authors provide the insights generated from previous two models in Chapter 9. In order to achieve urban sustainability to protect the ecological health of urban water environments, some valuable recommendations for adaptation are put forward. The authors also emphasize the requirements for sustainable urban form and transportation infrastructure, and promote promising planning and decision support systems.

In conclusion, Chapter 10 searches and investigates the current and future potential directions in achieving water sustainability. A

practical roadmap for securing the sustainability of urban water environments is proposed. The authors suggest a comprehensive approach for the investigation of urban water environments should be used by focusing on the integration of critical issues of urban form, transport systems, climate change as well as human behavior alteration.

Taking a holistic approach and integrating different sources for modeling and predictions with practical applications and cases, this book is a must have for graduate students, government officers, policy makers, practitioners, and researchers in many related areas.

Users can continue to learn more specific controlling methods. For instance, Voskamp and Van de Ven (2015) proposed a framework for a planning support system and a tool to select adaptation measures to support urban planners in collaboratively finding site-specific sets of blue-green measures for a particular urban reconstruction project. We should increase urban resilience to extreme weather events and

decrease the risk of pluvial flooding, heat stress and drought is increasing due to climate change.

Let human beings unite to win the next big wars over water.

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