

BOOK REVIEWS

Water: a reflection of land use. Options for counteracting land and water mismanagement.

By M. Falkenmark, L. Andersson, R. Costensson, and K. Sundblad, 1999.
Swedish Science Press, Box 118, S-751 04 Uppsala, Sweden
(fax 46-18-36-52-77).
128 pages, ISBN 91 546 03587.
Price: SEK170.

This book is a Swedish contribution to UNESCO's International Hydrological Programme, arising from an invitation to prepare a textbook that would treat water management from an 'eco-hydrological' perspective. Although the main authors are Swedish, the book draws on case studies from many countries, using the network of the IHP to assemble a wide range of examples of land/water interactions and the effects of human activity.

The book cannot be considered a textbook, but it contains a wealth of material of interest to a water professional, secondary teacher, or university lecturer. It aims to inform non-specialists about the need for integrated water resources management, and is 'broad-brush' in its approach. It includes chapters that sketch the biophysical principles of the hydrological cycle, the socio-economic issues relating to water management, the interlinkages between land use and water—'a land use decision is also a water decision'—and the issues relating to reversability and recovery. The two final chapters discuss steps to be taken to achieve integrated land and water management, and the political and other changes that are going to be necessary.

The book's prescription includes the adoption of a catchment-based approach to land and water management planning, and a general public and elected representatives who are well-informed and rational. The Murray-Darling is used as the principal case study of good practice —'Australia leads the way' is the title of one section of the final chapter. There is liberal use of the current jargon of resource management—holistic, sustainability, bottom-up, participation etc. One might, perhaps, regard the presentation as polemical, but the authors honestly state, at the beginning of chapter 1, that their purpose is 'helping politicians understand water'. They emphasise that it is not so much the technical matters that challenge water managers, but

the social and cultural issues that influence the process of reaching agreement on a particular course of action.

Water: a reflection of land use is a valuable introduction to current thinking on integrated water and catchment management. It brings together a lot of insights, seen through Scandinavian lenses, and shows the importance of a sound knowledge base as the starting point for decision making. It certainly does not provide a definitive 'how to' manual of integrated water management, but water professionals and educators should find many valuable ideas and examples on which to reflect.

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Impact of Urban Growth on Surface Water and Groundwater Quality

Edited by Brian Ellis, 1999.

IAHS Press, Institute of Hydrology, Wallingford,
Oxfordshire OX108BB, UK

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438 + x pp, ISBN 1-901502-06-6.

Price: £59.00.

This volume contains 52 papers collected from Symposium H55 held during IUGG 99, the XXII General Assembly of the International Union of Geodesy and Geophysics, at Birmingham, UK, in July 1999. The main theme of the symposium was management and control of water quality within large urban catchments. The authors made it clear that forecasting environmental risks, which result from impact of urban growth on surface water and groundwater quality, and the design of mitigating measures to reduce these are governed by a wide range of often not well-defined factors such as surface and groundwater transport processes, chemodynamics, variability of land use, or heterogeneity of soils and rock material.

The book comprises ten sections. Rather than give a run-through of each paper I provide a brief summary of each section.

The first section, *Groundwater: National perspectives*, is related to the impact of groundwater on urban development and groundwater quality management in the urban environment. The second section, *Groundwater: Modelling*, covers case studies of groundwater modelling in urban areas as tools for water management, with examples from cities in the temperate and tropical world. The third section, *Groundwater: Methodological approaches*, is introduced by investigations of non-agricultural nitrogen in urban water. The following papers cover topics such as groundwater protection and land use, sulfate and stable carbon isotope signatures, and monitoring solvents. The final groundwater section, *Groundwater: Processes and case studies*, contains a mixture of regional studies on groundwater contamination in urban aquifers and impacts of grout injection and septic tank leakages on urban groundwater quality.

The first surface water section, *Surface water: Hydrology and meteorology inputs*, explores rainfall runoff relationships and evapotranspiration in urban environments. This section is followed by *Surface water: Methodological and source tracing studies*, where studies on identification of trace organics and trace metals and development of water quality indices related to urban waters are presented. The seventh section, *Surface water: Identifying and*

measuring impacts, begins and ends with water management problems in tropical cities, and centres around impact of urban growth on water quality. The following section, *Surface water: Ecological and source controls*, explores the area of urban wetlands and sustainable management of urban waters. Finally, the following two sections, *Surface water: Integrated management* and *Case studies*, cover a variety of topics, including integrated stormwater-meltwater management, water-sensitive urban planning or water resources utilization in various tropical and subtropical regions.

New Zealand features relatively little in the book, the only New Zealand field site being Christchurch's waterways and wetlands, where Callander, Watts, and Oliver discuss stormwater soakage disposal.

One of the highlights of this book is the section on ecological and source control centring around constructed wetlands and the improvement of urban waters. However, the book cannot be recommended without reservation as a textbook or a manual, because a convener's state of the art in front of each section is missing. Further, although the papers provide an international interdisciplinary perspective, proceedings of a symposium naturally have an inbuilt imbalance of topics—and so has this book. For a few papers it is difficult to find the 'urban connection'. In summary, the book provides a good review in many fields of the state of knowledge in surface water and groundwater quality in urban environments, and introduces some new and interesting work

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