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# Groundwater Intensive Use

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# Groundwater Intensive Use

**Andrés Sahuquillo,J. Capilla,Luis  
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## **Groundwater Intensive Use:**

**Groundwater Intensive Use** Andrés Sahuquillo, J. Capilla, Luis Martinez Cortina, X. Sanchez Vila, 2005-06-30 Intensive use of groundwater has resolved the demand for drinking water and through irrigation has contributed to the eradication of malnourishment in many developing countries The spectacular worldwide increase in groundwater use in the last decades especially in arid and semi arid regions has been a silent revolution carried out by millions of small farmers In some instances groundwater abstraction has caused problems of quality degradation excessive drawdown of groundwater levels land subsidence reduction of spring and baseflows or degradation of groundwater dependent ecosystems Most of these problems could be anticipated mitigated or even avoided with more active water agencies adequate regulations and users participation in management Groundwater Intensive Use contains a selection of papers presented at a symposium held in December 2002 in Valencia Spain It constitutes a step forward in creating a greater worldwide awareness of the relevance of groundwater in water resources policy The book presents new ideas and accounts of recent advances in technical economic legal administrative and political issues It addresses groundwater development to ecosystems sustainability through different or complementary approaches A wide series of case studies from North and South America Europe South Asia and North and Sub Saharan Africa cover the various issues These case studies represent countries with a wide diversity of social circumstances from areas in which development is emerging to communities with a long history of successful groundwater use

Intensive Use of Groundwater: M. Ramon Llamas, E. Custodio, 2002-01-01 This text is written by a number of authors from different countries and disciplines affording the reader an invaluable and unbiased perspective on the subject of intensive groundwater development Based on information gathered from the experience of many countries over the last decades the text aims to present a clear discussion on the conventional hydrogeological aspects of intensive groundwater use along with the ecological legal institutional economic and social challenges Divided into two main sections the first group of authors put forward the positive and negative aspects of intensive groundwater use whilst a second group provide an overview of the situation specific countries face as a consequence of this phenomenon Fully revised and up to date Groundwater Intensive Use makes a significant number of discoveries in a subject area that is topical in today's climate

**Groundwater Management Practices** Angelos N. Findikakis, Kuniaki Sato, 2011-06-08 Groundwater is an indispensable resource in many parts of the world where it supports domestic water supply irrigated agriculture and industry Its increased and often intensive use during the last half century has created problems and raised concerns regarding the potential depletion of local aquifers water quality degradation and various geologic hazards such as land subsidence and sinkholes This volume includes contributions by experts from several countries who describe different groundwater management practices in their part of the world and discuss measures and actions in response to the challenges associated with the sustainability of groundwater use and the protection of the groundwater environment as well as the evolution of legal and

institutional framework needed for their implementation It discusses past and present practices and various aspects of the regulatory and legal framework of groundwater management in Japan China India Iran Australia the United States Spain Denmark Switzerland and the European Union and reviews recent efforts to improve the management of transboundary aquifer resources Water Ethics M.Ramon Llamas,L. Martinez Cortina,Aditi Mukherji,2009-03-12 In the context of the current financial crisis and at a time of deep global change growing attention is paid to the global norms and ethical values that could underpin future global policy Water is a key global resource At the 3rd Marcelino Botin Foundation Water Workshop held in Santander Spain June 12 14 2007 the role of ethics in the de **INTENSIVE USE OF GROUNDWATER.** M.R:CUSTODIO E. LLAMAS,2002 **Advances in Groundwater Governance** Karen G. Villholth,Elena Lopez-Gunn,Kirstin Conti,Alberto Garrido,Jac Van Der Gun,2017-12-14 This book addresses groundwater governance a subject internationally recognized as crucial and topical for enhancing and safeguarding the benefits of groundwater and groundwater dependent ecosystems to humanity while ensuring water and food security under global change The multiple and complex dimensions of groundwater governance are captured in 28 chapters written by a team of leading experts from different parts of the world and with a variety of relevant professional backgrounds The book aims to describe the state of the art and latest developments regarding each of the themes addressed paying attention to the wide variation of conditions observed around the globe The book consists of four parts The first part sets the stage by defining groundwater governance exploring its emergence and evolution framing it through a socio ecological lens and describing groundwater policy and planning approaches The second part discusses selected key aspects of groundwater governance The third part zooms in on the increasingly important linkages between groundwater and other resources or sectors and between local groundwater systems and phenomena or actions at the international or even global level The fourth part finally presents a number of interesting case studies that illustrate contemporary practice in groundwater governance In one volume this highly accessible text not only familiarizes water professionals decision makers and local stakeholders with groundwater governance but also provides them with ideas and inspiration for improving groundwater governance in their own environment Integrated Groundwater Management Anthony J Jakeman,Olivier Barreteau,Randall J Hunt,Jean-Daniel Rinaudo,Andrew Ross,2016-08-05 The aim of this book is to document for the first time the dimensions and requirements of effective integrated groundwater management IGM Groundwater management is a formidable challenge one that remains one of humanity s foremost priorities It has become a largely non renewable resource that is overexploited in many parts of the world In the 21st century the issue moves from how to simply obtain the water we need to how we manage it sustainably for future generations future economies and future ecosystems The focus then becomes one of understanding the drivers and current state of the groundwater resource and restoring equilibrium to at risk aquifers Many interrelated dimensions however come to bear when trying to manage groundwater effectively An integrated approach to groundwater necessarily

involves many factors beyond the aquifer itself such as surface water water use water quality and ecohydrology Moreover the science by itself can only define the fundamental bounds of what is possible effective IGM must also engage the wider community of stakeholders to develop and support policy and other socioeconomic tools needed to realize effective IGM In order to demonstrate IGM this book covers theory and principles embracing 1 an overview of the dimensions and requirements of groundwater management from an international perspective 2 the scale of groundwater issues internationally and its links with other sectors principally energy and climate change 3 groundwater governance with regard to principles instruments and institutions available for IGM 4 biophysical constraints and the capacity and role of hydroecological and hydrogeological science including water quality concerns and 5 necessary tools including models data infrastructures decision support systems and the management of uncertainty Examples of effective and failed IGM are given Throughout the importance of the socioeconomic context that connects all effective IGM is emphasized Taken as a whole this work relates the many facets of effective IGM from the catchment to global perspective

**Overexploitation and Contamination of Shared Groundwater Resources** Christophe J.G. Darnault, 2008-02-02 Forty percent of the world's population depends upon increasingly scarce and shared water resources This situation is critical at both international and national levels not only for socio economic development but also for the regional stability The intensive use of groundwater for irrigation and water supply is adding pressures to scarce water resources and the environment through overexploitation and contamination which result in situations that may lead to conflicts The book from the NATO ASI on Overexploitation and Contamination of Shared Groundwater Resources Management Bio technological and Political Approaches to Avoid Conflicts is written by authors from different disciplines and regions of the world The aim of the book is to contribute to the knowledge of shared groundwater resources management to avoid conflicts by considering multi disciplinary approaches based on effective and equitable water sharing for all water users through cooperation and within a compassionate ecological framework along with the need for sustainable resources development and the quest for environmental and human security The scope of the book covers the hydrogeological environmental bio technological and management aspects of shared groundwater resources integrating social economic and political dimensions as well as legal and educational perspectives

*The Agricultural Groundwater Revolution* Mark Giordano, Karen G. Villholth, 2007 While addressing the issues of using groundwater in agriculture for irrigation in the developing world this book discusses the problems associated with the degradation and overexploitation of using it It explores the practiced and potential methods for its management in the context of agricultural development

Groundwater Monitoring Anne Marie Fouillac, Johannes Grath, Rob Ward, 2009-08-25 Groundwater is sometimes called the hidden asset awareness of its existence and its importance is not well known and as a consequence the measures which are required to protect and manage it in an environmental sustainable way are either not taken or are taken too late Where pollution has occurred and measures are taken too late it may take decades or longer until

the necessary restoration of quality is achieved This comprehensive text presents in the following sections Groundwater monitoring in the regulatory and international context Conceptual modelling and network design Groundwater pollutants and other pressures Groundwater quality standards and trend assessment Case studies for groundwater assessment and monitoring in the light of EU legislation Groundwater measurements Associating external stakeholders The editors have collected state of the art information on groundwater quality assessment monitoring from the international community providing further stimulation to the work of all parties involved in the challenges this area creates to ensure sound quality assessment of groundwater

**Rural Water Systems for Multiple Uses and Livelihood Security** M. Dinesh Kumar, Yusuf Kabir, A. J. James, 2016-05-03 Rural Water Systems for Multiple Uses and Livelihood Security covers the technological institutional and policy choices for building rural water supply systems that are sustainable from physical economic and ecological points of view in developing countries While there is abundant theoretical discourse on designing village water supply schemes as multiple use systems there is too little understanding of the type of water needs in rural households how they vary across socio economic and climatic settings the extent to which these needs are met by the existing single use water supply schemes and what mechanisms exist to take care of unmet demands The case studies presented in the book from different agro ecological regions quantify these benefits under different agro ecological settings also examining the economic and environmental trade offs in maximizing benefits This book demonstrates how various physical and socio economic processes alter the hydrology of tanks in rural settings thereby affecting their performance also including quantitative criteria that can be used to select tanks suitable for rehabilitation Covers interdisciplinary topics deftly interwoven in the rural context of varying geo climatic and socioeconomic situations of people in developing areas Presents methodologies for quantifying the multiple water use benefits from wetlands and case studies from different agro ecologies using these methodologies to help frame appropriate policies Provides analysis of the climatic and socioeconomic factors responsible for changes in hydrology of multiple use wetlands in order to help target multiple use water bodies for rehabilitation Includes implementable models for converting single use water supply systems into multiple use systems

*Groundwater and Global Change in the Western Mediterranean Area* Maria Luisa Calvache, Carlos Duque, David Pulido-Velazquez, 2017-10-26 This book is a compilation of papers examining the impacts of global change GC on water resources systems Mainly focusing on groundwater resources in Western Mediterranean countries it shows that this topic is one of the most important challenges facing society The papers explore developments in both Southern Europe and North Africa where major impacts on the sustainability quantity quality and management of water resources are expected to emerge Although most global change publications focus on surface water the number of research papers addressing global change and groundwater has grown rapidly in recent years Continuing that welcome trend this book gathers the main findings presented at the Congress on Groundwater and Global Change in the Western Mediterranean Granada Spain

November 6 9 2017 which brought together researchers and technicians interested in groundwater issues affecting this geographic area

*Contesting Hidden Waters* W. Todd Jarvis, 2014-05-23 The world increasingly relies on groundwater resources for drinking water and the provision of food for a growing population The utilization of aquifer systems also extends beyond freshwater supply to include other resources such as heat extraction and the storage and disposal of substances Unlike other books about conflict resolution and negotiations over water resources this volume is unique in focusing exclusively on conflicts over groundwater and aquifers The author explores the specific challenges presented by these hidden resources which are shown to be very different from those posed by surface water resources Whereas surface watersheds are static groundwater boundaries are value laden and constantly changing during development The book describes the various issues surrounding the governance and management of these resources and the various parties involved in conflicts and negotiations over them Through first hand accounts from a practitioner skilled in both process and substance as a groundwater professional and professional mediator the book offers options for addressing the challenges and issues through a transdisciplinary approach

*Water Management, Food Security and Sustainable Agriculture in Developing Economies* M. Dinesh Kumar, M. V. K. Sivamohan, Nitin Bassi, 2013 This book addresses strategies for food security and sustainable agriculture in developing economies The book focuses primarily on India a fast developing economy whose natural resource base comprising land and water supporting agricultural production is not only under enormous stress but also complex and not amenable to a uniform strategy It critically reviews issues which continue to dominate the debate on water management for agricultural and food production The book examines the validity of the claim that large water resources projects cause serious social and environmental damages using global and national datasets The authors examine claims that the future of Indian agriculture is in rain fed farming supported by small water harvesting They question whether water abundant eastern India could become the granary of India through a groundwater revolution with the right policy inputs In the process they look at the less researched aspect of the food security challenge which is land scarcity in eastern India The book analyzes the physical economic and social impacts of large scale adoption of micro irrigation systems using a farming system approach for north Gujarat Through an economic valuation of the multiple use benefits from tank systems in western Orissa it shows how value of water from large public irrigation systems could be enhanced The book also looks at the reasons for the limited success in bringing about the much needed institutional reforms in canal irrigation for securing higher productivity and equity using case studies of Gujarat Madhya Pradesh and Maharashtra Finally it addresses how other countries in the developing world particularly Sub Saharan Africa could learn from Indian experience

*Water and Cities in Latin America* Ismael Aguilar-Barajas, Jürgen Mahlknecht, Jonathan Kaledin, Marianne Kjellén, Abel Mejía-Betancourt, 2015-05-08 Approximately 80 per cent of the population of Latin America is concentrated in urban centres Pressure on water resources and water management in cities therefore provide major challenges Despite the importance of

the issues there has been little systematic coverage of the topic in book form This work fills a gap in the literature by providing both thematic overviews and case study chapters It reviews key aspects of why water matters in cities and presents case studies on topics such as groundwater management green growth and water services inequalities in water supply the financing of water services and flood management Detailed examples are described from Argentina Brazil Colombia Ecuador Mexico and Peru and there is also a chapter comparing lessons which might be learnt from US cities Contributing authors are drawn from both within and outside the region including from the Inter American Development Bank OECD and World Bank to set the issues in a global context     The International Law of Transboundary Groundwater Resources Gabriel

Eckstein,2017-09-14 This book provides a comprehensive review of the state of international law as it applies to transboundary groundwater resources and aquifers The main focus is on recent developments and the emerging international law for transboundary aquifers as reflected in the practice of states and the work of the UN International Law Commission UN Economic Commission for Europe and International Law Association The author takes an interdisciplinary approach to the subject matter and provides the scientific hydro geological underpinning for the application of law and policy to transboundary groundwater resources He also addresses the growing global dependence on this hidden resource as well as both the historical and scientific context for development of the law The book provides case examples throughout to illustrate the various concepts and developments These include more detailed examinations of the few existing transboundary aquifer agreements in operation such as for aquifers between France and Switzerland and Jordan and Saudi Arabia as well as aquifers in North Africa and in South America     Treatise on Water Science ,2010-09-01 Water quality and

management are of great significance globally as the demand for clean potable water far exceeds the availability Water science research brings together the natural and applied sciences engineering chemistry law and policy and economics and the Treatise on Water Science seeks to unite these areas through contributions from a global team of author experts The 4 volume set examines topics in depth with an emphasis on innovative research and technologies for those working in applied areas Published in partnership with and endorsed by the International Water Association IWA demonstrating the authority of the content Editor in Chief Peter Wilderer a Stockholm Water Prize recipient has assembled a world class team of volume editors and contributing authors Topics related to water resource management water quality and supply and handling of wastewater are treated in depth     *Drought Management and Planning for Water Resources* Joaquin Andreu

Alvarez,Giuseppe Rossi,Federico Vagliasindi,Alicia Vela Mayorga,2005-11-01 Droughts and their management are a serious challenge to water resource professionals While droughts predominate in arid regions their frequency and severity in more temperate regions with more abundant rainfall have been on the rise Drought Management and Planning for Water Resources provides an essential collection of planning and manag     **Water for Food Water for Life** David

Molden,2013-07-23 Managing water resources is one of the most pressing challenges of our times fundamental to how we



feed 2 billion more people in coming decades eliminate poverty and reverse ecosystem degradation This Comprehensive Assessment of Water Management in Agriculture involving more than 700 leading specialists evaluates current thinking on water and its interplay with agriculture to help chart the way forward It offers actions for water management and water policy to ensure more equitable and effective use This assessment describes key water food environment trends that influence our lives today and uses scenarios to explore the consequences of a range of potential investments It aims to inform investors and policymakers about water and food choices in light of such crucial influences as poverty ecosystems governance and productivity It covers rainfed agriculture irrigation groundwater marginal quality water fisheries livestock rice land and river basins Ample tables graphs and references make this an invaluable work for practitioners academics researchers and policymakers in water management agriculture conservation and development Published with IWMI

*Integrated Water Resources Management* Miguel A. Mariño, Slobodan P. Simonović, 2001

## Reviewing **Groundwater Intensive Use**: Unlocking the Spellbinding Force of Linguistics

In a fast-paced world fueled by information and interconnectivity, the spellbinding force of linguistics has acquired newfound prominence. Its capacity to evoke emotions, stimulate contemplation, and stimulate metamorphosis is truly astonishing. Within the pages of "**Groundwater Intensive Use**," an enthralling opus penned by a very acclaimed wordsmith, readers set about an immersive expedition to unravel the intricate significance of language and its indelible imprint on our lives. Throughout this assessment, we shall delve in to the book is central motifs, appraise its distinctive narrative style, and gauge its overarching influence on the minds of its readers.

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