

Water Resources Sector Strategy Strategic Directions For World Bank Engagement

In the face of growing freshwater scarcity, most countries of the world are taking steps to conserve their water and foster its sustainable use. Water crises range from concerns of drinking water availability and/or quality, the degradation or contamination of freshwater, and the allocation of water to different users. To meet the challenge, many countries are undergoing systemic changes to the use of freshwater and the provision of water services, thereby leading to greater commercialization of the resource as well as a restructuring of the legal, regulatory, technical and institutional frameworks for water. The contributions to this book critically analyse legal issues arising under international law, such as environment and human rights provisions, concerning the economic, environmental and social consequences of proposed water regulatory changes and their implementation at the national level. The book examines the situation in India which is currently in the midst of implementing several World Bank led water restructuring projects which will have significant impacts on the realisation of the right to water and all other aspects of water regulation for decades to come. In analysing the situation in India the volume is able to detail the interactions between international law and national law in the field of water, and to ask broader questions about the compliance with international law at the national level and the relevance of international law in national law and policy-making.

This Intergovernmental Panel on Climate Change Special Report (IPCC-SRREN) assesses the potential role of renewable energy in the mitigation of climate change. It covers the six most important renewable energy sources – bioenergy, solar, geothermal, hydropower, ocean and wind energy – as well as their integration into present and future energy systems. It considers the environmental and social consequences associated with the deployment of these technologies and presents strategies to overcome technical as well as non-technical obstacles to their application and diffusion. SRREN brings a broad spectrum of technology-specific experts together with scientists studying energy systems as a whole. Prepared following strict IPCC procedures, it presents an impartial assessment of the current state of knowledge: it is policy relevant but not policy prescriptive. SRREN is an invaluable assessment of the potential role of renewable energy for the mitigation of climate change for policymakers, the private sector and academic researchers.

Provides a review of regulatory reforms in developing countries, with a particular focus on the strengths and weaknesses of the 'best practice' model of reform, the significance of institutions of regulatory governance, and the impact of post-privatisation governance on development and poverty reduction agendas.

The purpose of this report is to produce a review on water resource valuation issues and techniques specifically for the appraisal and negotiation of raw (as opposed to bulk or retail) water resource allocation for agricultural development projects. The review considers raw water in naturally occurring watercourses, lakes, wetlands, soil and aquifers, taking an ecosystem function perspective at a catchment scale, and takes account of the demands from irrigated and rainfed agriculture. It is hoped that the review will have particular application to developing countries where agreed methods for reconciling competing uses are often absent, but nevertheless takes account of valuation approaches that have been made in post industrial economies.

This book asks under which conditions cooperation is in the interest of the riparian countries sharing international waters, and how institutions must be designed to realize potential gains of cooperation.

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This book critically examines a range of issues, including the transnational struggle over the human right to water, the "commons" as a water supply management strategy, and the environmental dimensions of water privatization.

Development patterns, increasing population pressure, and the demand for better livelihoods in many parts of the globe all contribute to a steadily deepening global water crisis. Development redirects, consumes, and pollutes water. It also causes changes in the state of natural water reservoirs, directly by draining aquifers and indirectly by melting glaciers and the polar ice caps. Maintaining a sustainable relationship between water and development requires that current needs be balanced against the needs of future generations. The development community has transformed and broadened its approach to water since the 1980s. As stresses on the quality and availability of water have increased, donors have begun to move toward more comprehensive approaches that seek to integrate water into development in other sectors. This evaluation examines the full scope of the World Bank's lending and grant support for water activities. More than 30 background papers prepared for the evaluation have analyzed Bank lending by thematic area and by activity type. IDA and IBRD (the Bank) have supported countries in many water-related sectors. The evaluation, by definition, is retrospective, but it identifies changes that will be necessary going forward, including those related to strengthening institutions and increasing financial sustainability. Lessons and results from nearly 2,000 loans and credits, and work with 142 countries are identified.

There is a clear overlap between securing socio-economic human rights for all persons and arranging adequate access to essential public services across society. Both are necessary to realise thriving, inclusive societies, with adequate living standards for all, based on human dignity. This edited volume brings together the two topics for the first time. In particular, it identifies the common challenges for essential public services provision and socio-economic human rights realisation, and it explores how socio-economic rights law can be harnessed to reinforce better access to services. An important aim of this book is to understand how international socio-economic human rights law and guideposts can be used and strengthened to improve access to services, and assess socio-economic legal and policy decisions. The volume includes contributions from different continents, on a range of different services, and engages with the realities of different regulatory settings. After an introduction that sets out the most important challenges for universal access to services – including sufficient resources mobilisation, private actor involvement and regulation, or the need for improved checks and balances – the book goes on to discuss current issues in services provision and socio-economic rights, as well as explores the place and role of private business actors in the provision of services. In particular, it assesses how the responsibility and accountability of such actors for human rights can be improved. The final part of the book narrows in on the under-explored human rights concepts of 'participation' and 'accountability', as essential prerequisites for better 'checks and balances'. Overall, this volume presents a unique and powerful illustration of how socio-economic human rights law supports improved access to essential public services for all.

This monograph comprehensively examines water law regulations and reform in the present decade, going beyond a simple analysis of existing water law and regulations to encompass

environmental, social, economic, and human rights aspects of water as a natural resource. Using the specific case of India and on the related international law and policy framework that directly influences water regulatory developments in India, this book offers what will be the first and only analysis of water law reforms taking place at the national level in many developing countries in their domestic and international context. On the one hand, international freshwater law remains under-developed and existing legal instruments such as the 1997 UN Convention only address a limited set of relevant issues. Yet, the international law and policy framework concerning freshwater is increasingly important in shaping up law reforms taking place at the national level, in particular in developing countries. Indeed, non-binding resolutions such as the Dublin Statement on Water and Sustainable Development (1992) have had an immense influence on water law reforms in most developing countries. This book seeks to conceive of and analyse freshwater regulation in a broader context, and go beyond a literature that either lauds or criticises ongoing water sector reforms to provide an analytical basis for the reforms which all countries will have to adopt in the near or medium-term future.

Natural Resources Grabbing: An International Law Perspective aims at filling a gap in legal literature by addressing the adverse effects that large-scale investments in natural resources may pose to fundamental human rights and the protection of the environment.

Agricultural water management is a vital practice in ensuring reduction, and environmental protection. After decades of successfully expanding irrigation and improving productivity, farmers and managers face an emerging crisis in the form of poorly performing irrigation schemes, slow modernization, declining investment, constrained water availability, and environmental degradation. More and better investments in agricultural water are needed. In response, the World Bank, in conjunction with many partner agencies, has compiled a selection of good experiences that can guide practitioners in the design of quality investments in agricultural water. The messages of 'Shaping the Future of Water for Agriculture: A Sourcebook for Investment in Agricultural Water Management' center around the key challenges to agricultural water management, specifically: • Building policies and incentives • Designing institutional reforms • Investing in irrigation systems improvement and modernization • Investing in groundwater irrigation • Investing in drainage and water quality management • Investing in water management in rainfed agriculture • Investing in agricultural water management in multipurpose operations • Coping with extreme climatic conditions • Assessing the social, economic, and environmental impacts of agricultural water investments 'Shaping the Future of Water for Agriculture' is an important resource for those interested and engaged in development with a focus on agricultural water.

Water systems are building blocks for poverty alleviation, shared growth, sustainable development, and green growth strategies. They require data from in-situ observation networks.

Budgetary and other constraints have taken a toll on their operation and there are many regions in the world where the data are scarce or unreliable. Increasingly, remote sensing satellite-based earth observation is becoming an alternative. This book briefly describes some key global water challenges, perspectives for remote sensing approaches, and their importance for water resources-related activities. It describes eight key types of water resources management variables, a list of sensors that can produce such information, and a description of existing data products with examples. Earth Observation for Water Resources Management provides a series of practical guidelines that can be used by project leaders to decide whether remote sensing may be useful for the problem at hand and suitable data sources to consider if so. The book concludes with a review of the literature on reliability statistics of remote-sensed estimations.

The Sardar Sarovar Project has been one of the most debated development projects of the past several decades at both an international level and within India itself. Cullet's volume brings together all the key documents relating to the project: including those pertaining to World Bank loans, the judicial pronouncements of the Supreme Court and documents relating to specific local level issues - in particular environment and rehabilitation. The work includes an introductory section focusing on the history of the project, the involvement of the different actors, the impacts on the local population, and a general analysis of the controversy surrounding it. In providing an easily accessible source for all the main documents relating to this landmark project, this compilation will be a valuable resource for researchers and policy-makers working in the areas of International Environmental Law and International Development Law.

This title examines how regulatory frameworks have addressed the various basic issues related to water resources management, and provides a comparative analysis of those issues. It elicits and discusses what it considers are the essential elements for a regulatory framework for water resources management, and identifies some emerging trends.

Water Services Disputes in International Arbitration Reconsidering the Nexus of Investment Protection, Environment, and Human Rights by Xu Qian The argument that universal access to water is a human right is based on the fact that life on Earth cannot exist without water. Yet the enormous cost of building and maintaining water service infrastructure, purifying, monitoring quality, and providing sanitation services is beyond the means of many of the States most in need. Foreign investment is thus mandated—hence the often acrimonious tension manifest in investor-State disputes over water rights. This book offers the first in-depth analysis of both international treaty norms and their interpretation by arbitral tribunals applicable to investment in water and sanitation services, complete with thoroughly researched recommendations for those arbitral practitioners in the eye of the storm. Like no previous study the book clearly reveals how to reconcile the economic and fundamental human interests arising from investment in water and sanitation services under the international investment regime. Among many vital issues, the author highlights the importance of the following: legitimacy of a State's alleged regulatory objectives, the suitability of the measures undertaken to achieve the objective, and whether there are less restrictive means available; legal framework and stability of the State; applicable law, changes in law, and emergency circumstances; economic issues such as water pricing; profit-driven private companies' reluctance to serve the poor; investment tribunals' generation of a "regulatory and jurisprudential regime" on water and sanitation services; and determination of liability in relation to expropriation, fair and equitable treatment, and necessity. Arguing that the current investment treaty and arbitral case law framework can regulate water and sanitation services if certain interpretations are favored by adjudicators, the author offers viable, sustainable, and reasonable legal solutions. A detailed annex presents cases decided before a variety of arbitral tribunals, as well as relevant WTO and ICJ cases, and reviews critical literature in the field. The increasing number of cases involved with States' regulatory measures shows that stakes around water services generate specific legal problems which are new in the world of international economic law. As an incisive investigation of what has been called the "incursion of investment tribunal decisions into the regulatory autonomy of host States," this profound and innovative analysis provides a coherent and consistent method of review that

provides greater certainty to both States and investors and deters abuse of power. It will be welcomed by policymakers and stakeholders interested in the implications of “globalization” of water services for the capacity to adapt to climate change and will suggest ways to enable States to better manage vital water services, even after privatization to foreign companies.

The majority of people in Limpopo river basin depend on rainfed agriculture. Unfortunately the Limpopo is water scarce, and parts of the basin, such as Zimbabwe's Mzingwane catchment, are under stress in terms of agro-ecological and socio-politicoeconomic conditions. Integrated Water Resources Management (IWRM) has been adopted in the river basin i

This book explores the conceptual and theoretical frameworks of Right to Water and analyzes its values in the context of water policy frameworks of the union governments in India. It uses a qualitative approach and combines critical hermeneutics with critical content analysis to introduce a new water policy framework. The volume maps the complex argumentative narrations which have emerged and evolved in the idea of Right to Water and traces the various contours and the nature of water policy texts in independent India. The book argues that the idea of Right to Water has emerged, evolved and is being argued through theoretical arguments and is shaped with the help of institutional arrangements developed at the international, regional, and national levels. Finally, the book underlines that India's national water policies drafted respectively in 1987, 2002 and 2012, are ideal but are not embracing the values and elements of Right to Water. The volume will be of critical importance to scholars and researchers of public policy, environment, especially water policy, law, and South Asian studies.

This paper focuses on how to improve the development and management of water resources while providing the principles that link resource management to the specific water-using sectors. In 1993 the Board of the World Bank endorsed a Water Resources Management Policy Paper. In that paper, and this Strategy, water resources management is seen to comprise the institutional framework; management instruments; and the development, maintenance and operation of infrastructure. The paper looks at the dynamics of water and development. It builds on the 1993 policy paper, evaluating current scenarios and looking at future options and their implications both for government policy and the World Bank.

"In order to face the challenge of disappointing returns on public investment in irrigation and drainage new solutions have emerged. These solutions are based on widely available technology and new management and governance options. The main message of Re-engaging in Agricultural Water Management is that the irrigation and drainage sector should not continue to be dealt with as a standalone sector, but should be integrated into a broader perspective, one that embraces the objectives of productivity growth, poverty reduction, natural resources management and environmental protection."

Contributed articles.

This volume presents a selection of the main contributions made to the international conference on Integrated Water Resources Management (IWRM) entitled ‘Management of Water in a Changing World: Lessons Learnt and Innovative Perspectives’ that was held from 12 to 13 October 2011 in Dresden, Germany. The book summarise the main messages issuing from the conference and contains selected papers which were presented during the conference, either as keynote lectures in plenary sessions or as submitted papers in one of the thematic sessions. The key themes of the book are: Water resources in changing environments Groundwater management Technologies and implementation Water management indicators at different scales Information and decision support systems Water governance: actors and institutions The book provides an overview on important issues concerning the conceptual framework of integrated water resources management (IWRM). All presentations and abstracts and the corresponding PowerPoint presentations as well as a video recording of the panel discussion are available at the conference website <http://www.bmbf.iwrm2011.de>; Readers are encouraged to complete their review of the conference and its messages by consulting this interesting on-line source of accompanying scientific material.

The need for an integrated management of water resources has derived from the emerging understanding that the water crisis cannot solely be regarded as a hydrological crisis. Instead, it is frequently defined as a crisis of governance, as institutional and management scarcity are hindering a sustainable, equitable and efficient use of water resources. Integrated Water Resources Management (IWRM) is internationally accepted as a toolbox to achieve these objectives. However, implementation of the IWRM-approach is still lacking, especially in developing countries and transitional economies. This study poses the central question of what kind of governance is necessary to achieve an integrated management of water resources. Evaluating the concept from a regional perspective, three case studies have been conducted in Yemen, Jordan and Syria to identify the main governance challenges during the IWRM-process and develop strategies on how to meet them, aiming to improve the practical applicability of the theoretical framework of IWRM in the Middle East.

Employing an international and comparative analysis of international law as well as the domestic legal regimes of selected jurisdictions, i.e., China, South Africa and South Australia, Water Rights - An International and Comparative Study identifies the essential elements a well-structured water rights system, which ensures that the multiple functions of water resources are reasonably balanced, and the competing water needs are properly taken into consideration, and under which the economic, social and environmental values of water resources co-exist equitably in harmony. This book is the first to discuss water rights holistically, i.e., putting the three aspects of water rights (the property right of water resources, the human right to water and the environmental right to water) into a single, well-organised water rights system under the principle of sustainable development. Following the Introduction, Water Rights has six chapters. Chapter Two develops an analytical approach to be applied in the following four chapters. After the problems concerning water rights in China are identified, the three aspects of water rights both in international law and domestic water laws of South Africa and South Australia are discussed. In Chapter Six, principles and structure that should be employed for designing an ideal water rights system or improving and perfecting an existing one are recommended. With these recommendations, the definitions of water resources and the three aspects of water rights are analysed. Specific amendments to the China Water Law 2002 are proposed. Finally, this work concludes with explanations of the basis for the recommendations presented. This book will be a valuable reference for all those concerned with water rights, including lawyers, hydrologists and water resources managers.

Water Resources Sector Strategy Strategic Directions for World Bank Engagement World Bank Publications

It is beyond doubt that the interconnectedness between food, energy, water security and environmental sustainability exists and is getting amplified with increased globalization. It has been recognized that efforts to address only one part of a systemic problem by neglecting other inherently interlinked aspects may not lead to desirable and sustainable outcomes. In this perspective, policy- and decision- making requires a nexus approach that reduces trade-offs and builds synergies across sectors, and helps to reduce costs and increase benefits for humans and nature compared to independent approaches to the management of water, energy, food and the environment. In the past, work related to the Nexus has looked at the interactions between water and food or water and energy, but there has been a reluctance to bring forward a broader systematic perspective that captures the multiple sectors and resource dependencies while understanding its cost to the environment if we neglect these linkages. This book is a compilation of thirteen papers published previously as a special issue of Water International, contains significant pieces of work on the W-E-F nexus focusing on relevant tools, solutions and governance at local and broader human scales.

The fifteen chapters of this book analyse the living community-based water laws in Africa, Latin America and Asia and critically examine the interface between community-based water laws, formal water laws and a variety of other key institutional ingredients of on-going water resources management reform.

This publication considers the key public policy challenges facing the international community in order to achieve balanced, equitable and sustainable development beyond the Millennium Development Goal targets for 2015. Issues considered include: agriculture and rural development, world trade policy reform, poverty reduction, sustainable energy policies, water resources, water supply and sanitation, biodiversity and global environmental challenges, forestry conservation and development, and strategic priorities for social development.

The world's water resources are being tapped at an ever increasing rate, to the extent that sustainability and water quality are being compromised. This book provides accounts of the technology used for managing water resources to reduce risks. Besides controlling floods, overcoming droughts and reducing pollution, the reader will learn to plan and maintain hydraulic structures, and to appreciate the diverse demands on water, including those of the environment. The topics considered include hydrology and assessment of water resources; drought management and flood management tools; and the interaction between land use and water resources, including surface runoff, groundwater and water quality. The second half of the book focuses on water use, demand management and the infrastructure required to manage water. Consideration is also given to the tools needed for planning, including economics and computer modelling. This book is aimed at a postgraduate level, suitable for students in water engineering and science. It will also serve as a reference for practitioners concerned with water resources and water supply.

Management of water resources in large rivers basins typically differs in important ways from management in smaller basins. While in smaller basins the focus of water resources management may be on project implementation, irrigation and drainage management, water use efficiency and flood operations; in larger basins, because of the greater complexity and competing interests, there is often a greater need for long-term strategic river basin planning across sectors and jurisdictions, and considering social, environmental, and economic outcomes. This puts a focus on sustainable development, including consumptive water use and non-consumptive water uses, such as inland navigation and hydropower. It also requires the consideration of hard or technical issues—data, modeling, infrastructure—as well as soft issues of governance, including legal frameworks, policies, institutions, and political economy. Rapidly evolving technologies could play a significant role in managing large basins. This Special Issue of Water traverses these hard and soft aspects of managing water resources in large river basins through a series of diverse case studies from across the globe that demonstrate recent advances in both technical and governance innovations in river basin management.

Natural capital constitutes a quarter of total wealth in low-income countries. This publication demonstrates that natural resources can contribute to growth, employment, exports and fiscal revenues and highlights the importance of policies encouraging the sustainable management of these resources.

The importance of watercourses to human life and development cannot be overemphasised. From communication, trade, agriculture and the location of human settlements, they have played an immeasurable role. Almost 60% of Africa lies within shared rivers and lake basins. The Nile is shared by more than seven nations, the Zambezi by six, and the Congo by nine. With populations on the rise, many countries have been labeled 'water scarce' nations, and in fifteen years it is predicted that many people on earth will be exposed to water shortage consequences such as famine and disease. Thirteen African nations already suffer 'water stress' and soon another twelve will join the list unless something is done to thwart the problem. On March 20, 2009 in Nairobi, Hekima College collaborated with Jesuit Hakimani Centre and the French Institute for Research in Africa (IFRA) to host the Hekima College Water Day Academic Seminar with the theme 'Shared Waters, Shared Opportunities'. This book is the result of critical research and presentations by internationally renowned scholars, researchers and experts, and students of the Institute of Peace Studies and International Relations, Hekima College. For most of 2009 Kenya suffered severe problems caused by flooding which took many lives and destroyed homes and important infrastructures. It highlighted the issues of water management and water conflicts, not only in Kenya but in other parts of East Africa, as it was made abundantly clear that not only scarcity of water, but excess water, incorrectly managed, can be disastrous. This timely, scholarly book presents discussions of the issues which underlie the major water crises in the region. They open the debate into the water problems of Kenya and East Africa in an effort to join the global campaign to find solutions to these difficulties.

This book deals with the evolution and context of the Bank policy for projects on international waterways. It starts with a brief description of how the Bank faced the challenges stemming from such projects, and the different approaches deliberated by the Bank that led to the issuance of the first policy in 1956. The Book then reviews the implementation experience and analyzes the principles and procedures, as well as the main features of each of the policies issued in 1956, 1965 and 1985. The principles of international water law prevailing at each stage of the policy updates are examined and.

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