International Law and Freshwater
Environmental law – including the pressing considerations of energy law and climate change – is an increasingly important area of legal research and practice. Given the growing interdependence of global society and the significant steps being made towards environmental protection and energy efficiency, there are few people untouched by environmental and energy lawmaking processes.

At the same time, environmental and energy law is at a crossroads. The command and control methodology that evolved in the 1960s and 1970s for air, land and water protection may have reached the limit of its environmental protection achievements. New life needs to be injected into our environmental protection regimes – perhaps through the concept of sustainability in its environmental, economic and social forms. The same goes for energy policy and law, where liberalisation, environmental protection and security of supply are at the centre of attention. This important series seeks to press forward the boundaries of environmental and energy law through innovative research into environmental and energy law, doctrine and case law. Adopting a wide interpretation of environmental and energy law, it includes contributions from both leading and emerging international scholars.

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International Law and Freshwater
The Multiple Challenges
Edited by Laurence Boisson de Chazournes, Christina Leb and Mara Tignino
International Law and Freshwater
The Multiple Challenges

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NEW HORIZONS IN ENVIRONMENTAL AND ENERGY LAW

Edward Elgar
Cheltenham, UK • Northampton, MA, USA
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Foreword

The global water crisis is one of the most important challenges of this century, as demand for freshwater dramatically increases. With the world’s freshwater resources under mounting pressure, we have to respond to a challenge that presents a magnitude and pace that are unique in the history of our sector. Some of the issues to face are population growth, migration, urbanization, water pollution, climate change, land-use changes and economic alterations that impact directly on water resources, water services and ecosystems services. These issues increase the difficulty of water management within a watershed, particularly in transboundary river basins.

The global water crisis is multiform. Its expression is the dwindling of water availability per capita (on this aspect an enormous effort has to be made to tackle the inefficiency of water use in agriculture). The water crisis is also qualitative: in developing countries, 80 percent of waste water and solid waste go directly into the environment without treatment, and sanitation is now a fundamental part of water management. The 1 billion people without access to drinking water and the 2.6 billion without access to basic sanitation are also part of this global water crisis. On this particular aspect, the recognition by the UN General Assembly that water and access to sanitation is a human right is a historical step forward. It constitutes a fundamental change and progress compared with the Millennium Development Goals. The challenge now is to translate this into reality in the field. This human rights recognition gives a particular status and priority within water management to drinking water. At the same time, human rights address the questions of inequity, vulnerability, and marginality.

Freshwater demand continues to be on the rise, while overall water quality is deteriorating. There is enough water worldwide to respond to these challenges but we need to mobilize the whole water sector of our society (public, private, academia and, of course, civil society). This requires the mobilization of all the tools we have, particularly international law.

I am very grateful to the Faculty of Law of the University of Geneva and its Platform for International Water Law for the work the latter has
undertaken to stress the contribution of international law to the protection and sustainable management of freshwater resources. The present volume constitutes a milestone in this endeavor.

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Swiss Agency for Development and Cooperation (SDC)
Acknowledgements

In writing this book, the editors have benefitted from the support of many institutions and people. The volume is an outcome of activities carried out by the Platform of International Water Law of the University of Geneva. The initial impetus for the book came from two research projects on “Governing Water: The Contribution of International Law to Cooperation on Transboundary Freshwater Resources” and “Water Management and Protection: International Law Responses to the Challenges of Resource Scarcity,” funded by the Swiss National Science Foundation and the Fondation Boninchi, respectively. The two projects highlighted the importance of placing the analysis of international water law into a multidisciplinary context and led to the organization of an international conference on “Freshwater and International Law: The Multiple Challenges.” The conference, which took place from 7–9 July 2011 in Geneva, brought together leading academics and practitioners from Africa, Europe, India, the United States and South America.

The editors are grateful to the Agency for Development and Cooperation (SDC), Department of Foreign Affairs, Switzerland, the Swiss Federal Office for the Environment (FOEN), the Swiss National Science Foundation, the Société Académique de Genève, the Stiftung zur Förderung der Rechtlichen und Wirtschaftlichen Forschung an der Universität Basel, the Services Industriels de Genève (SIG) and the University of Geneva for their generous grants and in-kind support that made the organization of the conference possible. Thanks are also due to the over 140 participants of the conference for sharing their ideas and comments during the discussions, as well as to Antonella Angelini, Edouard Fromageau, Andrzej Gadkowski, and Komlan Sangbana for their assistance before and during the conference.

The editors express their deep appreciation to Brian McGarry for his great skills and dedication in carrying out his editorial work on the manuscript.
<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>ACRWC</td>
<td>African Charter on the Rights and Welfare of the Child</td>
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<tr>
<td>ACSAD</td>
<td>Arab Center for the Studies of Arid Zones and Dry Lands</td>
</tr>
<tr>
<td>AHPFM</td>
<td>Ad Hoc Project Facilitation Mechanism</td>
</tr>
<tr>
<td>AISD</td>
<td>Agriculture Investment Support Directorate</td>
</tr>
<tr>
<td>bcm/BCM</td>
<td>billion cubic meters</td>
</tr>
<tr>
<td>BGR</td>
<td>Institute for Geosciences and Natural Resources (Germany)</td>
</tr>
<tr>
<td>BIT</td>
<td>bilateral investment treaty</td>
</tr>
<tr>
<td>CAO</td>
<td>Office of Compliance Advisor/Ombudsman</td>
</tr>
<tr>
<td>CARU</td>
<td>Comisión Administradora del Río Uruguay</td>
</tr>
<tr>
<td>CESCR</td>
<td>Committee on Economic, Social and Cultural Rights</td>
</tr>
<tr>
<td>CESCR</td>
<td>Covenant on Economic, Social and Cultural Rights</td>
</tr>
<tr>
<td>CFA</td>
<td>Cooperative Framework Agreement</td>
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<tr>
<td>CIRT</td>
<td>International Transboundary Resources Center</td>
</tr>
<tr>
<td>CKGR</td>
<td>Central Kgalagadi Game Reserve</td>
</tr>
<tr>
<td>COMESA</td>
<td>Common Market for Eastern and Southern Africa</td>
</tr>
<tr>
<td>CRA</td>
<td>cooperative regional assessment</td>
</tr>
<tr>
<td>CRC</td>
<td>Convention on the Rights of the Child</td>
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<td>CSR</td>
<td>corporate social responsibility</td>
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<tr>
<td>DDA</td>
<td>Doha Development Agenda</td>
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<tr>
<td>DSB</td>
<td>Dispute Settlement Body</td>
</tr>
<tr>
<td>EBRD</td>
<td>European Bank for Reconstruction and Development</td>
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<tr>
<td>ECLAC</td>
<td>Economic Commission for Latin America and the Caribbean</td>
</tr>
<tr>
<td>EIA</td>
<td>environmental impact assessment</td>
</tr>
<tr>
<td>ELSAP</td>
<td>Equatorial Lakes Subsidiary Action Program</td>
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<tr>
<td>ENSAP</td>
<td>Eastern Nile Subsidiary Action Program</td>
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<tr>
<td>ENTRO</td>
<td>Eastern Nile Technical Regional Office</td>
</tr>
<tr>
<td>EPR</td>
<td>energy-intensive, highly-polluting, resource-based</td>
</tr>
<tr>
<td>ESCR</td>
<td>economic, social and cultural rights</td>
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<tr>
<td>ESCWA</td>
<td>Economic and Social Commission for Western Asia</td>
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<tr>
<td>ESIA</td>
<td>environmental and social impact assessment</td>
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<td>EU</td>
<td>European Union</td>
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Abbreviations

FAO Food and Agriculture Organization
FDI foreign direct investment
FDRE Federal Democratic Republic of Ethiopia
FRY Federal Republic of Yugoslavia
FVRP Fossil Valley Regeneration Programme
GAS Guaraní Aquifer System
GATS General Agreement on Trade in Services
GATT General Agreement on Tariffs and Trade
GC General Comment
GDP gross domestic product
GEF Global Environment Facility
GHG greenhouse gases
GTP Growth and Transformation Plan
GWP Global Water Partnership
HRC Human Rights Committee
IACHR Inter-American Commission on Human Rights
IAEA International Atomic Energy Agency
ICAs international commodity agreements
ICCPR International Covenant on Civil and Political Rights
ICESCR International Covenant on Economic, Social and Cultural Rights
ICIM Independent and Consultation Investigation Mechanism
ICJ International Court of Justice
ICPE International Commission for the Protection of the Elbe
ICPOAP International Commission for the Protection of the Oder Against Pollution
ICPR International Commission for the Protection of the Rhine
ICWC Interstate Commission for Water Coordination
IEBL Inter-Entity Boundary Line
IFC International Finance Corporation
IFIs international financial institutions
IFPRI International Food Policy Research Institute
IIL Institute of International Law
ILA International Law Association
ILC International Law Commission
ILO International Labour Organization
INBO International Network of Basin Organizations
IPCC Intergovernmental Panel on Climate Change
IRM Independent Review Mechanism of the African Development Bank
IRSA Indus River Systems Authority
<table>
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<tr>
<th>Acronym</th>
<th>Description</th>
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<tr>
<td>IWAC</td>
<td>International Water Assessment Centre</td>
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<tr>
<td>IWRM</td>
<td>integrated water resource management</td>
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<tr>
<td>J&amp;K</td>
<td>Jammu and Kashmir</td>
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<tr>
<td>LGTC</td>
<td>Local Grouping of Transboundary Cooperation</td>
</tr>
<tr>
<td>MARD</td>
<td>Ministry of Agriculture and Rural Development</td>
</tr>
<tr>
<td>MAS</td>
<td><em>Mission d’Aménagement du Bassin du Fleuve Sénégal</em></td>
</tr>
<tr>
<td>MCM</td>
<td>million cubic meters</td>
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<tr>
<td>MDB</td>
<td>multilateral development bank</td>
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<tr>
<td>MDG</td>
<td>Millennium Development Goal</td>
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<tr>
<td>MEAs</td>
<td>multilateral environmental agreements</td>
</tr>
<tr>
<td>MERCOSUR</td>
<td><em>Mercado Común del Sur</em></td>
</tr>
<tr>
<td>MFN</td>
<td>most-favored nation</td>
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<tr>
<td>MIGA</td>
<td>Multilateral Investment Guarantee Agency</td>
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<tr>
<td>MoWE</td>
<td>Ministry of Water &amp; Energy</td>
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<tr>
<td>MW</td>
<td>megawatt</td>
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<tr>
<td>NAFTA</td>
<td>North American Free Trade Agreement</td>
</tr>
<tr>
<td>NAMA</td>
<td>non-agricultural market access</td>
</tr>
<tr>
<td>NBA</td>
<td>Niger Basin Authority</td>
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<tr>
<td>NBI</td>
<td>Nile Basin Initiative</td>
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<tr>
<td>NEL-COM</td>
<td>Nile Equatorial Lakes Council of Ministers</td>
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<tr>
<td>NGO</td>
<td>non-governmental organization</td>
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<tr>
<td>Nile COM</td>
<td>Nile Council of Ministers</td>
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<tr>
<td>NJHP</td>
<td>Neelum-Jhelum Hydroelectric Project</td>
</tr>
<tr>
<td>OAS</td>
<td>Organization of American States</td>
</tr>
<tr>
<td>OAV</td>
<td>* Organisation Autonome de la Vallée*</td>
</tr>
<tr>
<td>OERS</td>
<td><em>Organisation des Etats Riverains du Sénégal</em></td>
</tr>
<tr>
<td>OHCHR</td>
<td>Office of the High Commissioner for Human Rights</td>
</tr>
<tr>
<td>OMVS</td>
<td><em>Organisation pour la mise en valeur du fleuve Sénégal</em></td>
</tr>
<tr>
<td>OPIC</td>
<td>Overseas Private Investment Corporation</td>
</tr>
<tr>
<td>PASDEP</td>
<td>Plan for Accelerated and Sustainable Development to End Poverty</td>
</tr>
<tr>
<td>PCA</td>
<td>Permanent Court of Arbitration</td>
</tr>
<tr>
<td>PCIJ</td>
<td>Permanent Court of International Justice</td>
</tr>
<tr>
<td>PIC</td>
<td>Permanent Indus Commission</td>
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<tr>
<td>ppm</td>
<td>parts per million</td>
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<tr>
<td>PTAs</td>
<td>preferential trade agreements</td>
</tr>
<tr>
<td>RADWQ</td>
<td>rapid assessment of drinking water quality</td>
</tr>
<tr>
<td>RBO</td>
<td>river basin organization</td>
</tr>
<tr>
<td>RCADI</td>
<td><em>Receuil des cours de l’Académie de droit international</em></td>
</tr>
<tr>
<td>REDD</td>
<td>Reduced Emissions from Deforestation and Forest Degradation in Developing Countries</td>
</tr>
<tr>
<td>RIO+20</td>
<td>UN Conference on Sustainable Development (2012)</td>
</tr>
</tbody>
</table>
RS            Republika Srpska
RTAs          regional trade agreements
SADC          Southern African Development Community
SAP           Strategic Action Program
SCM           subsidies and countervailing measures
SEA           strategic environmental assessment
SFRY          Socialist Federal Republic of Yugoslavia
SIG           *Services Industriels de Genève*
SIWI          Stockholm International Water Institute
SNNP          Southern Nations, Nationalities and Peoples
TCA           Technical Cooperation Agency
TECConile     Technical Cooperation Committee for the Promotion of the Development and Environmental Protection of the Nile Basin
TNC           transnational corporation
TRIMS         trade-related investment measures
TVA           Tennessee Valley Authority
TWOA          Transboundary Waters Opportunity Analysis
UAE           United Arab Emirates
UK            United Kingdom
UN            United Nations
UNDP          United Nations Development Programme
UNDRIP        United Nations Declaration on the Rights of Indigenous Peoples
UNECE         United Nations Economic Commission for Europe
UNEP          United Nations Environment Programme
UNESCO        United Nations Educational, Scientific and Cultural Organization
UNICEF        United Nations Children’s Fund
UNRWA         United Nations Relief and Works Agency for Palestine Refugees
US            United States
USD           United States dollars
USSR          Union of Soviet Socialist Republics
WCED          World Commission on Environment and Development
WHA           World Health Assembly
WHO           World Health Organization
WRDF          Water Resource Development Fund
WTO           World Trade Organization