

# Globalization of Water

*Globalization  
of Water*

*Sharing the Planet's  
Freshwater Resources*

By

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# Preface

It looks as if the same politicians, academics, and activists who from the late 1980s gathered around the topic of “sustainable development” have since the late 1990s started to organize themselves around the topic of “globalization.” Many of the concerns in the debate about sustainability remain valid in the current discourse about globalization. Major themes are still the balance between economic growth and preserving our environment, security of livelihoods, and equity among people and generations. The new element in the current discourse on globalization is the recognition that the ever-increasing material and cultural exchange between people in different parts of the world and the growing mobility of business make sustainable development a true global challenge. In the past few years thousands of papers and hundreds of books have been written about globalization (Lechner and Boli, 2004). The current book focuses on the effects of globalization on water resources management, a topic that has surprisingly not been much addressed before. This is the first book on the subject. It is true that many valuable books have been published about so-called “global water problems,” but the term “global” in these books essentially refers to the fact that the problems described occur all over the world. “Global” is used in these publications in the meaning of “widespread.” Problems of water scarcity, water pollution, and flooding are indeed common. However, previously available texts have described the problems in essence from a local, national, or river basin perspective. By contrast, the current volume shows that water problems are often caused by mechanisms that can be understood only at a level far beyond that of the river basin. We will show that local water depletion and pollution are often closely linked to the structure of the global economy. We are convinced that many of

today's water problems cannot be solved at river basin level, because they are inextricably bound up with the processes that determine where in the world agricultural and industrial production take place and with the written and unwritten rules of global trade. We hope that this book contributes to the reader's understanding of how wise use of water is linked up with how we organize our global society.

We started our research on the "globalization of water" in 2002 and along the way have received help from many of our students. We would like to thank Pham Quoc Hung from Vietnam for his explorative work on quantifying world trade in water in virtual form. We thank Anat Yegnes-Botzer from Israel for carrying out an interesting case study for Israel, and Zhang Dunquiang and Jing Ma, both from China, for doing two different case studies on virtual-water transfer between provinces within China. We would like to thank Xiuying Dong from China and Mesfin Mergia Mekonnen from Ethiopia for their work on developing a computer tool to assess one's individual water footprint. We also thank Abbas Badawi Ashmage Iglal from Sudan and Thewodros Mulugeta Gebre from Ethiopia who carried out joint research on current and future virtual-water flows in the Nile basin. Finally, we thank Rajani Gautam from Nepal for her valuable study on cotton.

We are grateful to all the experts present at the productive International Expert Meeting on Virtual Water Trade held at UNESCO-IHE in the Netherlands in December 2002 (Hoekstra, 2003). We would like to mention in particular Tony Allan, professor at the School of Oriental and African Studies in London, who invented the term "virtual water" and whose work inspired us to explore this field. We are also grateful to Huub Savenije, professor at UNESCO-IHE and the Delft University of Technology in the Netherlands, who has been one of the few who have seen from the beginning that "globalization of water" will become an important theme and has supported us throughout our work with his stimulating ideas.

We thank the National Institute for Public Health and the Environment in the Netherlands for providing financial support for part of our research for this book. We would like to thank in particular Ton Bresser, who has shown a continuing interest in our work. We are grateful to Oxfam Novib for sponsoring the case study on coffee and tea. Finally, we thank the UNESCO-IHE Institute for Water Education and University of Twente for facilitating the research.

When drafting this book we have made use of a number of our earlier publications. Part of the value of this book is that it brings together all the disparate publications into one coherent structure. When writing Chapters 2, 3, and 5 we have drawn most heavily on a report published by UNESCO-IHE (Chapagain and Hoekstra, 2004), Chapagain's PhD thesis (Chapagain, 2006), and two papers, published in *Water Resources Management* (Hoekstra and Chapagain, 2007a) and *Water International* (Chapagain and Hoekstra, 2007a). Chapter 4 builds on a paper that appeared in *Hydrology and Earth System Sciences* (Chapagain et al., 2006a). Chapter 6 is based on a paper presented at a water conference on the occasion of the 400th anniversary of relations between Morocco and the Netherlands, held in Marrakech in November 2005 (Hoekstra and Chapagain, 2007b). Chapter 7 on China builds on an article with Jing Ma (Ma et al., 2006) published in *Philosophical Transactions of the Royal Society of London*, which as we learned is the world's longest-running scientific journal, having appeared since March 1665. Chapter 8 on coffee and tea is based on a paper published in *Ecological Economics* (Chapagain and Hoekstra, 2007b). Chapter 9 on cotton draws upon another paper published in *Ecological Economics* (Chapagain et al., 2006b). Finally, Chapters 10 and 11 are based on a paper presented at a meeting of the Global Water System Project in Bonn in June 2006 (Hoekstra, 2006). Unless mentioned otherwise, the data presented in this book refer to averages for the period 1997–2001.

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