

## Book Review

### **Global Change: Impacts on Water and Food Security**

*Water Resources Development and Management (Series)*

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“Globalization is here to stay and it is no use spending resources to stop it, instead it must be examined and harnessed to improve water and food security”, the reader might be thinking after reading this book. Three institutions<sup>1</sup>, in collaboration with CGIAR Challenge Program on Water and Food, organized a workshop in 2005 on the issues related to globalization<sup>2</sup> and trade that resulted in the publication of this book. Recent food and financial crises have increased the need to understand the impacts of global change to ensure that measures can be taken for the poor to have access to water and food. In addition, other trends, such as climate change and biofuel policies, together with water sector financing, cause impacts that need to be considered.

The book concerns current and future trends in water and food security and provides an overview of different impacts on both. Four research questions are set: (1) what are the key drivers and emerging issues affecting water and food security for the poor; (2) what are the impacts of these key drivers on water and food security and on the livelihoods of the poor; (3) how to harness the forces of globalization to improve the situation; and (4) which policies and investments can improve water and food security for the poor, and how can they be financed? The 22 contributors from leading research institutions ensure that numerous aspects of water and food security are covered, such as water resources management and policy issues, water resources legislation, agricultural economics, financial and economic aspects of water, and climate change related to both water and agriculture. The book has a global and regional scale approach, with some national and river basin scale examples. The aim is to increase understanding of the impacts of policies and investments on water resources and food systems at both global and national scales. Further goals are better policy making and improved investment for water and food security to avoid long-term harm to the poor.

The twelve chapters are divided into four parts, with two parts especially addressing the situation of the poor. The first part sets the scene by describing the current status of water and food security. It identifies the trends, the emerging issues and the key drivers affecting both, or, as Rosegrant *et al.* have stated, the ABC of future megatrends (aquaculture, biotechnology, and climate change). Climate change is further discussed by Aggarwal & Singh, who sum up the current understanding of climate change impacts on the

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hydrological cycle and food production. More research is certainly needed in this field as the impacts are still rather unknown and projections change depending on the unit of analysis. The chapter brings together the latest information from three fields of research providing a very good starting point for discussing the climate–hydrology–agriculture interconnections. One general idea and condition for any current research or action is introduced in this chapter: the importance of multiscale approaches, suggesting that actions need to be made at different scales, focusing on the unit of analysis but simultaneously considering the vertical connection to larger and smaller scales. Scale goes from the individual to society, farm to village, watershed to nation, and river basin to regional and global scales. The last chapter of the first part by Msangi *et al.* discusses biofuel production (driven by climate change policies) and efforts towards energy independence. Results are based on scenario-driven quantitative analysis derived from modelled changes in food prices and production caused by biofuel production expansion.<sup>3</sup> The chapter is very inspiring, and the conclusions challenge the reader to find out more about current biofuel production and its pros and cons (e.g., deforestation, rural development projects, national policies for biofuel production, and usage quotas).

The second part of the book is titled to ask if trade helps or harms the poor. Three chapters try to answer this by first looking at water quality in transboundary river basins in connection with trade, then by suggesting explanations for the virtual water argument failure, and finally by examining fisheries and globalization. Both positive and negative impacts of trade on water and food security are considered. Sigman & Chang analyse the impacts of trade on the water quality of river basins shared by trading countries with statistical methods little applied before in this context. The focus is on bilateral trade and its impact on environmental policy coordination. The clear structure of the chapter enables the reader to understand the general way trade impacts local environments. The second chapter by Ramirez-Vallejo & Rogers attempts to provide explanations for the failure of the virtual water argument with a case study of Mexico and the North American Free Trade Agreement. Through a rather exhaustive chapter, the reader is left with a thirst to understand more about the virtual water argument, trade mechanisms and the ways irrigation water pricing, agricultural policies and rural development affect trade and water use. The third chapter by Briones *et al.* examines the threats often connected with the globalization of fisheries. On the demand side, there is fear that domestic food requirements are not met because of export-oriented production, and on the supply side, the threat of inequity exists, as large commercial producers might force small scale producers out of business. The impact on food security is examined with results from a disaggregate supply–demand model of the fish sector that links consumption and the price of fish. Trade and equity issues are viewed based on a literature review.

The third part of the book discusses how to finance water for the poor in a globalized world and examines the legal, institutional and financial implications of the global world on water. The four chapters in this section review global trends in water financing, private sector participation in water and sanitation services, mobilization of investment for municipal water supply services, and international investment agreements from a water services aspect. The first chapter of this section, authored by Winpenny, familiarizes the reader with the theme by describing global trends in water financing, from sources to sectors, and from history to future trends. The sectors of main interest are hydropower, water supply and sanitation, and irrigation schemes. The rest of the third part focuses on the financing of water supply and sanitation systems, and private sector participation in the

provision of water and sanitation services. Private sector participation relates closely to international investment agreements and the emergence of international tribunals to solve conflicts between companies and national governments, a theme discussed in the last chapter of the third part. Money does not make the world go round, but it seems to surely play a very important role. Global financing can have a positive and accelerating impact on achieving water security, or a negative and dampening impact on reducing the capacity of the poor and poor countries to invest in sustainable development. The chapter by Castro on private sector participation in water and sanitation services has an attitude and structure that shakes off the reader's possible prejudices, leaving the reader with a greater understanding of water and sanitation policies—and a clear opinion.

The fourth part includes the editors' concluding chapter. It tries to answer the research questions introduced in the beginning of the book, summarizes the articles, suggests policy reforms, and identifies research needs. Throughout the book, and especially in the concluding chapter, the poor are mentioned several times, although no clear definition is given what is meant by poverty. The poor cannot be a passive target. Instead, in order to improve their situation, the poor need to be identified. In this book, the poor include people with no access to drinking water and sanitation as well as people who are undernourished. It is also stated that rural populations primarily engaged in agriculture are the most vulnerable to global—especially environmental—changes. At the same time, the poor have the least opportunity to take advantage of globalization because they lack access to markets, financing, or skills and capacity to compete with international companies or producers from developed countries. In addressing the poor, ecosystem services, while acknowledging that the livelihoods of the poor greatly depend on these, are given lesser consideration.

Some older figures could have been updated with more recent data. This lack of updates—in addition to the five-year gap between the workshop and the publication of the book—reduces the freshness of the information. However, the book is very good at inspiring the reader to find out more, and serves as a starting point for students, researchers and decision makers. The chapters maintain a global scale but encourage the reader to continue to a smaller scale, thus putting the chapters into context. The book provides a very good overview of complex issues related to water and food security. It also minimizes borderlines between different sectors, and even offers a possibility to shake off prejudices, enabling the reader to examine the issues with open eyes. Repeating the same old mantras does not improve the state of the world. However, an open and innovative attitude can.

## Notes

1. The International Food Policy Research Institute, the Third World Centre for Water Management and the Tropical Agricultural Research and Higher Education Center.
2. Globalization defined in the book as the integration of world economy and opening of national markets.
3. IMPACT (International Model for Policy Analysis of Agricultural Commodities and Trade) partial equilibrium model by IFPRI combined with Water Simulation Model was used.

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