

PATHWAYS TO SUSTAINABILITY

WATER FOR FOOD SECURITY, NUTRITION AND SOCIAL JUSTICE



Lyla Mehta, Theib Oweis,
Claudia Ringler, Barbara Schreiner,
and Shiney Varghese

earthscan
from Routledge

“This book is a must read for those who want to explore why water for food and nutrition security should be a basic human right and what it takes to deal with water shortages for agriculture under climate change. This book successfully establishes the rationale of putting people at the center and addressing ecosystems health as entry points to achieve a paradigm change in the way we think of and use water for food security and nutrition.”

– Patrick Caron, Chair, High Level Panel of Experts (HLPE) on Food Security and Nutrition and CIRAD, France

“This interdisciplinary book boldly studies the connectivity of the crucial “cluster” issues of water for food security and nutrition. In making the quantum leap towards securing this as a human right, it demonstrates that our moral obligation to protect human dignity through basic needs can no longer be ignored.”

– HRH Prince El Hassan bin Talal of Jordan, Chairman of The Higher Council for Science and Technology

“This ground-breaking book analyses vital but hitherto ignored intersections between the human right to food and the right to water. Citing recent trends, the authors comprehensively disentangle the multiple linkages between the management and distribution of water resources for domestic and productive uses, malnutrition and food insecurity from local to global levels. These novel perspectives provide pertinent policy guidance to further advance human rights and social justice.”

– Barbara van Koppen, Principal Researcher, International Water Management Institute

“This highly readable book breaks new ground by framing food and nutrition security in terms of both the right to food and the right to water. It clearly highlights the importance of agroecological practices in renewing the availability and quality of water for food systems and the environment. The gendered analysis of water governance is generative of critical proposals for equitable policies and inclusive practices. In sum, this scholarly work fills a major gap in the literature. It is a “must read” for many academics, policy makers and development professionals.”

– Michel Pimbert, Director of the Centre for Agroecology, Water and Resilience, Coventry University, UK

“Farmers, indigenous peoples and fishers are well aware that land, water and food are interconnected and crucial for human wellbeing. However, policies, programmes and right-based approaches on water and food have developed often without their participation and thus with little understanding of the livelihoods and wellbeing of rural communities, including customary communities, and in isolation from each other. Local people’s rights to water and food are routinely violated. This book boldly highlights the faultlines in policy debates and practices and provides a very welcome and much needed social justice perspective to water, food security and nutrition.”

– Jennifer Franco, Transnational Institute



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WATER FOR FOOD SECURITY, NUTRITION AND SOCIAL JUSTICE

This book is the first comprehensive effort to bring together Water, Food Security and Nutrition (FSN) in a way that goes beyond the traditional focus on irrigated agriculture. Apart from looking at the role of water and sanitation for human well-being, it proposes alternative and more locally appropriate ways to address complex water management and governance challenges from the local to global levels against a backdrop of growing uncertainties.

The authors challenge mainstream supply-oriented and neo-Malthusian visions that argue for the need to increase the land area under irrigation in order to feed the world's growing population. Instead, they argue for a reframing of the debate concerning production processes, waste, food consumption and dietary patterns whilst proposing alternative strategies to improve water and land productivity, putting the interests of marginalized and disenfranchized groups upfront.

The book highlights how accessing water for FSN can be challenging for small-holders, vulnerable and marginalized women and men, and how water allocation systems and reform processes can negatively affect local people's informal rights. The book argues for the need to improve policy coherence across water, land and food and is original in making a case for strengthening the relationship between the human rights to water and food, especially for marginalized women and men. It will be of great interest to practitioners, students and researchers working on water and food issues.

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This book series addresses core challenges around linking science and technology and environmental sustainability with poverty reduction and social justice. It is based on the work of the Social, Technological and Environmental Pathways to Sustainability (STEPS) Centre, a major investment of the UK Economic and Social Research Council (ESRC). The STEPS Centre brings together researchers at the Institute of Development Studies (IDS) and Science Policy Research Unit (SPRU) at the University of Sussex with a set of partner institutions in Africa, Asia and Latin America.

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Lyla Mehta, Theib Oweis, Claudia Ringler, Barbara Schreiner and Shiney Varghese



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ACRONYMS

AAAS	American Association for the Advancement of Science
CA	CGIAR Comprehensive Assessment of Water Management in Agriculture
CAFOs	Concentrated Animal Feeding Operations
CBD	Convention on Biological Diversity
CEDAW	Convention on the Elimination of All Forms of Discrimination against Women
CETA	Comprehensive Economic and Trade Agreement
CFS	Committee on World Food Security
CGIAR	Consultative Group for International Agricultural Research
CMPs	Catchment Management Platforms
COHRE	Centre on Housing Rights and Evictions
CPR	Common Property Resources
DFID	UK Department for International Development
DWM	Developmental Water Management
EAC	Environment Audit Committee
EPA	USA Environmental Protection Agency
ESC-Rights	Economic, Social and Cultural Rights
ETO	States' Extraterritorial Obligations
EU	European Union
FAD	Food Availability Decline
FAO	United Nations Food and Agriculture Organization
FIES	Food Insecurity Experience Scale
FSN	Food Security and Nutrition
G-20	Group of Twenty
GCC	Gulf Cooperation Council
GIZ	Gesellschaft für Internationale Zusammenarbeit

GWP	Global Water Partnership
HIV/AIDS	Human Immunodeficiency Virus Infection/Acquired Immune Deficiency Syndrome
HLPE	United Nations High Level Panel of Experts on Food Security and Nutrition
HRSDWS	Human Right to Safe Drinking Water and Sanitation
IATP	Institute for Agriculture and Trade Policy
ICARDA	International Center for Agricultural Research in the Dry Areas
ICSID	The International Centre for Settlement of Investment Disputes
ICESCR	International Covenant Economic, Social, and Cultural Rights
ICESR	International Conference on Environmental Systems Research
ICWE	International Conference on Water and the Environment
IFAD	United Nations International Fund for Agricultural development
IFI	International Financial Institution
ILA	International Law Association
IPCC	Intergovernmental Panel on Climate Change
IUCN	International Union for the Conservation of Nature
IWA	International Water Association
IWMI	International Water Management Institute
IWRM	Integrated Water Resources Management
JMP	WHO/UNICEF Joint Monitoring Programme (for progress on drinking water and sanitation)
JWC	Israeli–Palestinian Joint Water Committee
LTi	Land Transparency Initiative
MDG	Millennium Development Goal
MENA	Middle East and North Africa
MUS	Multiple Use Water Services
NGO	Non–Governmental Organization
OECD	Organization for Economic Cooperation and Development
PHL	Post–Harvest Losses
RBOs	River Basin Organizations
RSA	Republic of South Africa
RTF	Right to Food
RTW	Right to Water
SDC	Swiss Agency for Development and Cooperation
SDG	Sustainable Development Goal
STEPS	Social, Technological and Environmental Pathways to Sustainability
TERI	The Energy and Resources Institute
TPP	Trans Pacific Partnership
TTIP	Transatlantic Trade and Investment Partnership
UDHR	Universal Declaration of Human Rights
UK	United Kingdom
UN	United Nations
UNCCD	United Nations Convention to Combat Desertification

UNCED	United Nations Conference on Environment and Development
UNCESCR	United Nations Committee on Economic Social and Cultural Rights
UNCPR	United Nations Committee of Permanent Representatives
UNCRPD	United Nations Convention on the Rights of Persons with a Disability
UNDESA	United Nations Department of Economic and Social Affairs
UNDP	United Nations Development Program
UNDRIP	United Nations Declarations 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
UNFCCC	United Nations Framework Convention on Climate Change
UNGA	United Nations General Assembly
UNHRC	United Nations Human Rights Council
UNICEF	United Nations International Children's Emergency Fund
US	United States
USAID	United States Agency for International Development
VGGT	Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests in the Context of National Food Security
WANA	West Asia and North Africa region
WASH	Water Supply, Sanitation and Hygiene
WCD	World Commission on Dams
WEF	World Economic Forum
WEF	Water-Energy-Food (Nexus)
WFF	World Forum of Fish Harvesters and Fish Workers
WFFP	World Forum of Fisher Peoples
WFP	United Nations World Food Programme
WHO	World Health Organization
WSSD	World Summit on Sustainable Development
WTO	World Trade Organization
WUA	Water Users Association
WWAP	World Water Assessment Programme

PREFACE AND ACKNOWLEDGEMENTS

The authors of this book were part of the project team for the High Level Panel of Experts on Food Security and Nutrition's (HLPE) 2015 report on water for food security and nutrition. The HLPE provides the United Nations' Committee on World Food Security (CFS) with evidence-based and policy-oriented analysis on several food security related topics as identified by the CFS.

For over a year, we worked intensely on several drafts and versions of the report, taking into account the comments from an open consultation as well as those of the HLPE Steering Committee, independent reviewers and various UN agencies. It was an intense, and at times difficult, but also rewarding process, and we thank HLPE Steering Committee members, in particular Michel Pimbert. We also thank the HLPE Secretariat for their support, especially Vincent Gitz and Fabio Ricci.

As is common in such UN processes, many issues that we raised did not make it into the final version. We thus decided to write this book to bring together a broader body of thought. We also felt that this publication would be accessible to a broader audience. While this book builds on material and drafts developed for the HLPE, it also presents entirely updated materials and data as well as new thinking on water, food security and nutrition. We thank the HLPE for enabling and supporting the earlier work and its broad dissemination. This book does not reflect the views of the HLPE.

This volume is part of the ESRC STEPS Centre series on Pathways to Sustainability. We thank the STEPS Centre, in particular Ian Scoones. At Routledge, we thank Leila Walker and Rebecca Brennan for being fantastic editors and for their patience despite the many slippages on our part. It was quite challenging to write this book with each of us juggling multiple commitments, often across different continents and time zones, and there have been many delays along the way. We are deeply grateful to Leila Walker, in particular, for motivating us to finish and also for her crucial support at every stage in this project.

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Water is crucial to sustain life, food, ecosystems, human health and well-being. Still, millions of poor and marginalized women and men around the world face challenges in accessing water due to a range of ecological, socio-political, institutional and economic reasons. These undermine their ability to lead healthy and productive lives. Millions of poor, powerless and vulnerable women and men also face daily violations to their basic rights to water and food. For far too long have the management, institutional and governance aspects of water and food been separated in both policy and practice. This makes little sense for local users who experience these issues as deeply connected in their daily lives. It is thus important to improve coherence between water and food security and nutrition related policies, strategies and plans, achieve equal access to water for all (especially for the most vulnerable and marginalized), improve water management and water governance for food security and nutrition as well as to join up action regarding protecting and realizing the human rights to water and food. We hope this volume will be an inspiration and encouragement for future work and struggles addressing the various challenges related to water's contribution to food security and nutrition for all, for now and in the future.

Lyla Mehta, Theib Oweis, Claudia Ringler,
Barbara Schreiner and Shiney Varghese

1

INTRODUCTION

In Tanzania's Uluguru mountains villagers operate complex networks of locally managed springs, canals and wells for productive irrigated horticulture, cropping and domestic use. Yes, most of these small-scale users remain invisible to the government which often vests permits to use land and water to male-dominated user groups that risk alienating the vast majority of informal users of land and water, especially women.¹

In many slums and informal settlements in the global South, the quality of water accessed by poor people is so bad that it adversely affects health and nutrition, especially of children and babies. Moreover, many of these settlements lack adequate sanitation, which contributes to disease, such as diarrhoea, which further contributes to poor nutritional outcomes. Nutrition, ill-health and cognitive and other important human development outcomes are mutually reinforcing. But these populations tend to be ignored by both the state and large-scale private operators.

The 2009 Bolivian constitution recognizes both the human rights to water and food; and potable water, sanitation, irrigation and small-scale agriculture are all deemed important. In reality, tensions between water for agriculture, urban use, mining and industry abound and often get in the way of ensuring the water and food security of indigenous and poorer populations.

Since rainfed farming is a risky business in sub-Saharan Africa, it is important to establish and scale up practices that can enhance the effective management and use of water for smallholder agriculture. This includes improving storage and capturing run off, using groundwater sustainably, applying supplementary irrigation and improving soil water retention.

As these vignettes show, there are compelling linkages between water, food security and nutrition.² As stated in the Koran 21: 3, 'By means of water, we give life to everything'. Indeed, water is a fundamental element on which human beings depend for their lives and livelihoods. Water is also an essential

2 Introduction

input to agricultural production and is required for the preparation and processing of food (CA, 2007; FAO, 2012; Rosegrant *et al.*, 2002). According to WWAP (2014), 70% of human water withdrawals are for agriculture, 20% for industrial uses and 10% for domestic uses. However, even this 70% of water only produces 40% of agricultural crops, the rest comes from rain or 'green' water (Ringler, 2017). As water applied for irrigation evaporates, it is largely removed from further direct human use, as compared to other sectors where most of the water tends to return to water bodies for reuse. The importance of the agriculture sector as the world's largest water user and the associated responsibilities to use water sustainably was affirmed during the 2017 Global Forum for Food and Agriculture³ and the G-20 meeting of ministers of agriculture.⁴ Despite rapid increases in non-irrigation uses of water, water for food production will remain the largest user of human freshwater withdrawals, making farmers in many ways the main stewards of the world's water resources.

Water is also the lifeblood of many ecosystems, such as forests, lakes or wetlands that are essential for people and the environment. These ecosystems are particularly important for poor people, providing them with nutrition and livelihoods. Water is also fundamental for all other productive sectors, including energy, manufacturing. Finally, water has important cultural and aesthetic values.

Safe drinking water and sanitation are fundamental to the nutrition, health and dignity of all (UNDP, 2006). Despite the progress made in achieving global targets around water and sanitation in the past decades, about 3 in 10 people, or 2.1 billion lack access to safe, readily available water at home, and 6 in 10, or 4.5 billion, lack safely managed sanitation (WHO and UNICEF, 2017). Accessing water can be particularly challenging for smallholders, vulnerable and marginalized populations and women. Even though the human right to drinking safe water and sanitation was globally endorsed by the UN in 2010, it is violated every day across the globe. This situation undermines health, nutrition, human well-being and dignity and is a global and moral outrage.

This book is probably the first comprehensive effort to bring together water, food security and nutrition (FSN) in a way that goes beyond the traditional focus on irrigated agriculture.⁵ Apart from looking at the role of water and sanitation in human well-being, it proposes alternative and locally appropriate ways to address complex water management and governance challenges from local to global against a backdrop of growing uncertainties. It argues for the need to improve policy coherence across the water and food domains and is original in making a case for strengthening the relationship between the rights to water and food, especially for marginalized women and men. The volume is thus in line with the Sustainable Development Goals (SDGs) which call for progress on all dimensions of human development while ensuring that our planet supports both humans and nature.

Our starting point is that global inequality in access to water and sanitation is unacceptable and one of the largest inequities of the 21st century. According to the 2006 Human Development Report (UNDP, 2006), no act of terrorism

generates devastation on a daily basis on the scale of the crisis in water and sanitation. However, this crisis occurs largely in silence. Unlike wars and natural disasters, it remains invisible and has been quasi naturalized – that is, accepted as part of life – by both those who enjoy access to safe water and the millions who do not. The water crisis is largely caused and legitimized by different forms of unequal gender and social relations, as well as structural violence vis-à-vis poor and marginalized people, that prevent universal access (Mehta, 2016). In the case of millions of women and girls who spend hours collecting water, this naturalized gendered nature of water collection has undermined their health, education and chances in life. Poor water quality affects human health and the functioning of ecosystems, with adverse impacts for poor and vulnerable groups that directly depend on this resource base for their livelihoods. Climate change, including growing climate variability, affects everyone on the globe and adds irregularity and uncertainty to the availability of and demand for water with known effects on the vulnerability of the poorest and their food security (see Bates *et al.*, 2008). Complex governance challenges shape the access to and allocation and distribution of water for FSN and the land, water and food domains are disconnected in policies and programmes. Poor people's rights to water, sanitation and food are not realized effectively and there are few efforts to interlink these rights effectively.

The complex challenges of water and FSN

There are at least five distinct dimensions of the challenge of water and FSN:

- Changing demographics, lifestyles and diets, and increasing demands from water-using sectors including agriculture, energy generation, mining, and manufacturing, are putting stress on limited freshwater resources.
- Increasing pollution in many parts of the world from both agriculture and industry is rendering water unfit for use and impacting on human and ecosystem health.
- Unsustainable resource management is reducing the ecosystem functions and services of land, fisheries, forests and wetlands, including their ability to provide food and nutrition to rural and urban poor communities in particular.
- Inadequate or lack of access to safe drinking water and adequate sanitation facilities and hygiene practices is reducing the nutritional status of people through water-borne diseases and chronic intestinal infections.
- Complex governance challenges shape the access to and allocation and distribution of water for FSN as well as increasing commodification of land, water and food resources. There is also a marked lack of policy coherence across land, water and food domains from national to global. This also includes a lack of political will to realize the human rights to water, sanitation and food of poor and marginalized people and to join them up effectively (see also HLPE, 2015).

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In general, these core problems, exacerbated by climate change, tend to disproportionately affect poor and marginalized women, men and small children across the globe due to existing power imbalances and unequal gender relations. How to solve these problems is not obvious, partly due to the nature of water itself. Water, more than most resources, is highly variable across time and space (Mehta, 2014). Its availability is characterized by the complex interactions of a number of elements which include rainfall, temperature, wind, runoff, evapo-transpiration, storage, distribution systems and water quality. Unlike energy, or food, freshwater is a limited resource, and creating additional water supplies through, for example, increased storage or desalination, has limited opportunities. It is thus necessary to manage within the natural limitations of available freshwater.

While accessible water resources are adequate at global levels to meet the water needs of the world, these resources are unevenly distributed across the globe with per capita resources particularly low in the Middle East, North African and Southern Asia regions (see Chapter 2). Within regions and countries there are significant variations in water availability. Availability also varies considerably over time, with significant intra- and inter-annual water variations, concentrated in poorer regions (Grey and Sadoff, 2007). Inequality within and between countries, communities and households means that many people continue to have inadequate access to water embedded in food, as reflected in unacceptably high under-nutrition rates (see, for example, FAO, 2013), as well as limited or no access to clean drinking water and sanitation, with significant adverse food and nutrition outcomes. In parts of the globe, historical rainfall patterns are changing, adding significant uncertainty to the reliable availability of water in many regions in the future.

The human population is expected to grow to 9.8 billion people by 2050 (UN DESA, 2017), with the result that per capita water availability will continue to decline over the next few decades, particularly in the global South where almost all the additional population will be added. Per capita water availability is also declining due to growing water pollution, which makes water unusable for many human purposes (Palaniappan *et al.*, 2010), and variability of supply is growing to different degrees as a result of climate change (Bates *et al.*, 2008). While future water demand estimates vary, there is agreement that domestic, municipal and industrial demands are growing faster than irrigation demands; that municipal and domestic demand increases are closely aligned with urbanization trends; that there is particularly high uncertainty regarding industrial water demand trends; and that irrigation demands will continue to account for the largest share of total water demands. Taken together, these various trends point to a serious dilemma of dramatically increasing, competing demands on what is after all a limited natural resource, and one that is crucial to all life and particularly the food security and nutrition of all humanity.

Growing water scarcity and variability will increase the competition for water resources across sectors, with water often being taken away from the agricultural sector to drive greater economic value per unit of water in other sectors.

Increasing competition also often results in smaller, and poorer, water users losing their access to water. Conflicts are likely to grow between urban and rural users, upstream and downstream users, between in-stream (aquatic resources) and off-stream (mostly human) users (CA, 2007) and between countries dependent on shared or transboundary water resources. All this makes questions of water governance and decision making with regard to water an urgent imperative. The underlying issue is: who should get what access to which waters when, for how long and for what purposes? Answering this question is complicated and often controversial enough within a single country. Yet this is clearly not enough. While it is often observed that ‘water flows uphill to money and power’, it is also clear that water is a resource that ‘ignores’ national boundaries, thus complicating the challenge of governing our limited water resources even further.

In general, water scarcity, flooding and pollution are most acutely experienced locally, and generally affect those with least resources and those depending on water as an input to their livelihoods the most. Still, the fluidity of the resource ensures linkages within hydrological basins, which are often different from national boundaries. Most countries in the world have at least some of their water resources coming from a transboundary basin where water must be shared between riparian states. In addition to the transboundary nature of much of the world’s water, several processes link water with global processes, through, for example, trade in agricultural (and other) commodities; global climate policy, as reflected in the United Nations Framework Convention on Climate Change (UNFCCC); national and global energy policies, which are, in part, driven by global climate policies as well as by financial policies; foreign direct investment levels and surrounding policies; global water reports such as the World Commission on Dams (WCD, 2000) and other international processes, such as the Millennium Development Goals and the 2030 Sustainable Development Goals, the Convention on Wetlands of International Importance (Ramsar), the United Nations Convention to Combat Desertification, and the Convention on Biological Diversity (Ringler *et al.*, 2010; WWAP, 2012).

Conflicting pathways and perspectives

There are competing pathways and discourses regarding water and food security. According to the European Commission (2012), pressures on water availability will continue to grow – not only through the need to feed and hydrate a growing global population, but also from changes in consumption patterns. In the context of the OECD’s 2050 projections, global water demand is projected to increase by 55%, due to increases in manufacturing, electricity and domestic use, leaving little scope for increasing water use for irrigation (OECD, 2012). A report by the Global Harvest Initiative (2014) argued that with growing population, the world may not be able to feed itself by 2050 unless food production increases drastically. This supply side vision is based in part on neo-Malthusian visions of scarcity and crises. We follow the UNDP (2006) in