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OUTGROWING THE EARTH

The Food Security Challenge in an Age of Falling Water Tables and Rising Temperatures

Lester R. Brown

EARTH POLICY INSTITUTE

W · W · NORTON & COMPANY

NEW YORK LONDON

Printed in the United States of America
First Edition

The text of this book is composed in Sabon. Composition by Elizabeth Doherty; manufacturing by the Maple-Vail Book Manufacturing Group.

ISBN 0-393-06070-5 (cloth) 0-393-32725-6 (pbk)

W. W. Norton & Company, Inc., 500 Fifth Avenue,
New York, N.Y. 10110
www.wwnorton.com

W. W. Norton & Company, Ltd., Castle House, 75/76 Wells Street,
London W1T 3QT

1 2 3 4 5 6 7 8 9 0

This book is printed on recycled paper.

ACKNOWLEDGMENTS

The time between the decision to do this book and its delivery to our publisher, W.W. Norton, was five months. Producing an unscheduled book quickly is possible only if you have an experienced support team like the one I have at the Earth Policy Institute.

This book, like every other book I have written, was dictated. Reah Janise Kauffman, our vice president and my special assistant, transcribed the tapes. She's responsible for producing the manuscript in the early stages and is my first line of feedback, eager to let me know when she thinks ideas and concepts are working.

During our research for *Outgrowing the Earth*, Janet Larsen, my research colleague, used her training in Earth Systems at Stanford to help me think through some of the complex issues involved in analyzing food security. She was also my most comprehensive critic, always steering me toward a stronger, clearer, more concise book.

Underpinning the production of this book is a database drawn from many fields by our graphic data organizer Viviana Jiménez. Viviana helped with research from the beginning and followed up with fact checking. Lila Buckley joined our staff as an intern just in time to provide welcome support and a fresh perspective as we

started the review process.

Once a book is finished, our thoughts turn to marketing. Millicent Johnson, who manages the sales database and thousands of book orders, takes pride in her one-day turnaround policy for incoming orders.

In addition to managing the Institute so I can concentrate on research, Reah Janise also manages our worldwide publishing network. She, more than anyone, is responsible for the publication of my various books in more than 40 languages. A list of foreign translations of our books is available at www.earth-policy.org/Books/intl.htm.

The researching, writing, editing, and publishing of a book is much easier when you have an experienced team at every step of the way. Our editor, Linda Starke, brings 30 years of experience in editing environmental books and reports. She has brought her sure hand to the editing of not only this book, but more than 40 other books we have done together, including some 18 *State of the World* reports and 10 annual editions of *Vital Signs* when I was at the Worldwatch Institute. Reah Janise has worked with me on over 35 books. For Janet, this is our fourth book together, including one she coauthored. And for Viviana, our second.

Production of the book in record time is only possible thanks to the efforts of Elizabeth Doherty, who gave up her evenings and weekends to prepare the page proofs. The index has again been ably prepared under deadline pressure by Ritch Pope.

My relationship with W.W. Norton & Company, a marriage made in heaven, now includes some 50 titles. My thanks to the team at Norton: Amy Cherry, our editor; Lucinda Bartley, her assistant; Andrew Marasia and Amanda Morrison, who put the book on a fast-track production schedule; Ingsu Liu, Art Director for the

book jacket; and Bill Rusin, Marketing Director. It is a delight to work with such a talented team.

As with any book, reviewers help shape the final product. Toby Clark, a consummate environmental professional, brought his keen insights and decades of experience in environmental policy at the Environmental Protection Agency and the Council on Environmental Quality to bear on the manuscript. Maureen Kuwano Hinkle reviewed the evolving manuscript twice, drawing on her 26 years of experience working on agricultural issues with Environmental Defense and the Audubon Society.

Kenneth Cassman at the University of Nebraska used his wealth of experience in assessing crop yield potential to help strengthen and fine-tune several agronomic points. Bill Mansfield, of our Board, also read the manuscript for us, providing general feedback. From the staff, Janet, Reah Janise, Viviana, and Lila each read it twice, providing helpful feedback as the book evolved.

We are indebted to an extraordinarily supportive Board of Directors, chaired by Judy Gradwohl. In addition to Judy and Bill, our other Board members are Scott McVay, Raisa Scriabine, and Hamid Taravati.

Earth Policy is supported by a network of dedicated publishers for our books and *Eco-Economy Updates* in 22 languages—Arabic, Catalan, Chinese, Czech, Danish, English, French, Indonesian, Italian, Japanese, Korean, Marathi (India), Persian, Polish, Portuguese (in Brazil), Romanian, Russian, Spanish, Swedish, Thai, Turkish, and Ukrainian. There are three editions in English (U.S.A./Canada, U.K./Commonwealth, and India/South Asia), and two in Spanish (Spain and Latin America). We have benefited from strong support from a number of individuals responsible for various publishing arrangements—going back, in some cases, 20 or more years—

including Gianfranco Bologna in Italy, Soki Oda in Japan, Lin Zixin in China, Hamid Taravati and Farzaneh Bahar in Iran, Jonathan Sinclair Wilson in the United Kingdom, President Ion Iliescu and Roman Chirila in Romania, and, more recently, Eduardo Athayde in Brazil and Nandini Rao in India.

And finally, but most important, this book would not have been possible were it not for the generous support of funders. Among these are the U.N. Population Fund and several foundations, including the Appleton, Fred Gellert Family, Richard and Rhoda Goldman, Farview, McBride Family, Shenandoah, Summit, Turner, and Wallace Genetic foundations. Their support is invaluable to our work of researching and disseminating the vision of an eco-economy. We would also like to thank Junko Edahiro, Susan Brown, Judy Hyde, Leonora Barnheisel, and Peter Seidel for their generous individual contributions to the Institute.

Lester R. Brown

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Preface

On hearing his political opponent described as a modest chap, Winston Churchill reputedly responded that "he has much to be modest about." Having just completed a book dealing with the increasingly complex issue of world food security, I too feel that I have a lot to be modest about.

Assessing the world food prospect was once rather straightforward, largely a matter of extrapolating, with minor adjustments, historically recent agricultural supply and demand trends. Now suddenly that is all changing. It is no longer just a matter of trends slowing or accelerating; in some cases they are reversing direction.

Grain harvests that were once rising everywhere are now falling in some countries. Fish catches that were once rising are now falling. Irrigated area, once expanding almost everywhere, is now shrinking in some key food-producing regions.

Beyond this, some of the measures that are used to expand food production today, such as overpumping aquifers, almost guarantee a decline in food production tomorrow when the aquifers are depleted and the wells go dry. The same can be said for overplowing and overgrazing. We have entered an era of discontinuity on the

food front, an era where making reliable projections is ever more difficult.

New research shows that a 1 degree Celsius rise in temperature leads to a decline in wheat, rice, and corn yields of 10 percent. In a century where temperatures could rise by several degrees Celsius, harvests could be devastated.

Although climate change is widely discussed, we are slow to grasp its full meaning. Everyone knows the earth's temperature is rising, but commodity analysts often condition their projections on weather returning to "normal," failing to realize that with climate now in flux, there is no normal to return to.

Falling water tables are also undermining food security. Water tables are now falling in countries that contain more than half the world's people. While there is a broad realization that we are facing a future of water shortages, not everyone has connected the dots to see that a future of water shortages will be a future of food shortages.

Perhaps the biggest agricultural reversal in recent times has been the precipitous decline in China's grain production since 1998. Ten years ago, in *Who Will Feed China?*, I projected that China's grain production would soon peak and begin to decline. But I did not anticipate that it would drop by 50 million tons between 1998 and 2004. Since 1998 China has covered this decline by drawing down its once massive stocks of grain. Now stocks are largely depleted and China is turning to the world market. Its purchase of 8 million tons of wheat to import in 2004 could signal the beginning of a shift from a world food economy dominated by surpluses to one dominated by scarcity.

Overnight, China has become the world's largest wheat importer. Yet it will almost certainly import even more wheat in the future, not to mention vast quantities

of rice and corn. It is this potential need to import 30, 40, or 50 million tons of grain a year within the next year or two and the associated emergence of a politics of food scarcity that is likely to put food security on the front page of newspapers.

At the other end of the spectrum is Brazil, the only country with the potential to expand world cropland area measurably. But what will the environmental consequences be of continuing to clear and plow Brazil's vast interior? Will the soils sustain cultivation over the longer term? Will the deforestation in the Amazon disrupt the recycling of rainfall from the Atlantic Ocean to the country's interior? And how many plant and animal species will Brazil sacrifice to expand its exports of soybeans?

Food security, which was once the near-exclusive province of ministries of agriculture, now directly involves several departments of government. In the past, ministries of transportation did not need to think about food security when formulating transport policies. But in densely populated developing countries today, the idea of having a car in every garage one day means paving over a large share of their cropland. Many countries simply do not have enough cropland to pave for cars and to grow food for their people.

Or consider energy. Energy ministers do not attend international conferences on food security. But they should. The decisions they make in deciding which energy sources to develop will directly affect atmospheric carbon dioxide levels and future changes in temperature. In fact, the decisions made in ministries of energy may have a greater effect on long-term food security than those made in ministries of agriculture.

Future food security now depends on the combined efforts of the ministries of agriculture, energy, transportation, health and family planning, and water

resources. It also depends on strong leadership—leadership that is far better informed on the complex set of interacting forces affecting food security than most political leaders are today.

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October 2004

Data for figures and additional information can be found at www.earth-policy.org/Books/Out/index.htm.

Outgrowing the Earth