

# *Losing Ground*

ENVIRONMENTAL STRESS  
AND WORLD FOOD PROSPECTS

*Erik P. Eckholm*

Foreword by Maurice F. Strong



# LOSING GROUND

*Environmental Stress and  
World Food Prospects*



ERIK P. ECKHOLM

WORLDWATCH INSTITUTE, WITH THE SUPPORT AND  
COOPERATION OF THE UNITED NATIONS ENVIRONMENT PROGRAM

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✧ *To my father, Wendell Eckholm* ✧



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# *Foreword*

BY MAURICE F. STRONG

*Executive Director, United Nations Environment Program*

DURING THE COURSE of preparations for the United Nations Conference on the Human Environment held in Stockholm in June, 1972, national governments and the scientific community were asked to help identify and evaluate possible environmental issues requiring attention and action by the international community. Assessment of the national reports and scientific studies prepared for the conference made it clear that the loss of productive soil through erosion, salination, desertification, and other consequences of ecologically unsound land use were seen as one of the principal environmental problems confronting a significant number of countries, particularly in the developing world.

In many of these areas the problem was not a new one. And it was generally seen as primarily a local or national concern. What was new about the evidence assembled for the Stockholm Conference was the very scale and magnitude of the problem and the degree to which the pressures on productive soil are being intensified in the areas in which the need for increased food production is growing most rapidly.

This new publication surveys and analyzes on a systematic basis the various ways in which our delicately balanced food systems are being ecologically undermined. It provides concrete examples of the serious ecological deterioration that is taking place through deforestation, overgrazing, soil erosion and abandonment, desertification, the silting of irrigation systems and reservoirs, and the changes in the

frequency and severity of flooding. In all of these, the increasing intensity of humanity's pressure on the land and the continuation of careless and short-sighted land use practices compound the effects of such natural phenomena as droughts and floods, often turning the temporary problem they create to large-scale disaster.

"Losing ground" on the scale pointed up by this book poses a serious threat to the world's capacity to feed itself in the future. Thus I welcome this as a timely and valuable contribution to public awareness and understanding of what we must now regard as one of the principal ecological problems facing mankind. The book documents convincingly the need for priority attention to this issue and points up the kinds of actions required if we are to win the battle against world hunger.

The problem of hunger manifests itself not only in terms of starvation and death but also in the mental deprivation that results from protein and vitamin deficiency. The world community, through a series of UN conferences and programs, is seriously and genuinely attempting to respond to the world food crisis.

While the views presented in the book are those of the author, many of the issues dealt with in it figure prominently in the program of the United Nations Environment Program, for which the task of developing and supporting international measures to deal with these issues is amongst the highest priorities. UNEP's support of the preparation and publishing of this book by the Worldwatch Institute is one of these measures.

Mr. Eckholm's cogent and well-reasoned analysis of the nature and dimensions of this threat to future world food supplies makes a compelling case for the urgency of international cooperation to deal with it. And it dramatizes the direct and intimate relevance of sound environmental management to one of the central concerns confronting the human community—the need to manage the precious resources of our "Only One Earth" so as to assure provision of the basic needs of all its inhabitants.

*Losing Ground* then goes to the heart of the issue of human survival and it makes it clear that the issue will be decided by what people and their governments do—or fail to do—at this point in our history.

## *An Introductory Note*

LOSING GROUND is an effort to draw attention to a set of negative ecological trends whose consequences demand far more attention than they have received to date. Ideally, a book on the ecological undermining of food-production systems would include detailed national statistics on various facets of the problem, such as overgrazing, desert encroachment, deforestation, soil erosion, flood trends, and the silting of irrigation reservoirs. Unfortunately, if understandably, such comprehensive data are not available. Governments seldom gather systematic data on negative ecological developments; the problems achieve prominence only when large-scale disaster strikes, as it recently has in some areas of sub-Saharan Africa.

Writing this book thus required a far-flung, ambitious research effort to glean relevant information from individuals and writings in a broad spectrum of disciplines. Drawing conclusions from the available data might be compared to interpreting a puzzle of which enough pieces have been assembled to provide a general impression of the overall picture. And the picture that emerges is an unsettling one that calls for a strong response by governments everywhere.

Worldwatch Institute co-sponsored *Losing Ground* in keeping with its goal of anticipating and drawing attention to global threats to human well-being. Governed by an international board of directors, the non-profit institute is located in Washington, D.C. Its program of research and public education is sponsored by founda-

tions, United Nations and governmental agencies, and private individuals. Worldwatch Institute is grateful to the United Nations Environment Program for jointly sponsoring the research and writing of *Losing Ground*.

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## *Acknowledgments*

WHILE effusive appreciations preface many books, I feel safe in claiming that few authors have enjoyed such extensive and valuable support as I have in the conceptualization, writing, and publication of *Losing Ground*. Worldwatch Institute President Lester Brown helped originally to formulate the issues, and his constant encouragement and ready store of fresh ideas strongly influenced the book's final scope and flavor. Kathleen Newland participated from the project's inception in planning our investigation and in analyzing many of the topics covered; her wide-ranging research effort is reflected in every chapter. Kathleen Courrier's graceful editing made my prose clearer and more economical.

Blondeen Duhaney's indispensable administrative and secretarial help greatly improved the efficiency of both our research efforts and the rapid writing and rewriting of the manuscript. Other Worldwatch colleagues, Marion Frayman, Trudy Todd, and Joan Zwierchowski, also provided much-appreciated secretarial assistance.

John Tidd helped with portions of the research, particularly those concerning Soviet agriculture. Along with Anne Harrington and Rosemarie Philips, he also assisted with translations of foreign language sources. Boyd Compton's investigations in Southeast Asia were vital to making sense out of the contradictory published accounts of ecological trends in that region. I am indebted to the many individuals in Asia and West Africa whose hospitality and advice made my weeks of travel such a worthwhile addition to the research effort.

Some of the basic ecological challenges noted in this book have not been discussed extensively in either the academic literature or

available government documents. Accordingly, we contacted more than a hundred ecologists, foresters, agricultural economists, academics, and national and international civil servants throughout the world, seeking their advice and assistance. The response was both invaluable and encouraging: scores generously shared their personal observations, published and unpublished papers, and suggestions about other information sources. I hope that readers of this book with pertinent ideas and experiences will perpetuate this process of informal intellectual interaction.

The United Nations Environment Program, under the leadership of Maurice Strong, joined Worldwatch in sponsoring this book and the substantial research effort it embodies. Since its establishment by the 1972 Stockholm Conference on the Human Environment, UNEP has increasingly helped alert the world to the urgency of environmentally sound development, and I am grateful for its support and cooperation.

Mr. Strong, Mostafa Tolba, and other members of the UNEP staff provided a useful review of the book's first draft. Others I want to thank for preliminary readings of the manuscript include Bruce Stokes, Mary Elmhendorf, Peter Freeman, Lincoln Gordon, Dexter Hinckley, Frances Irwin, Vladimir Kollantai, Charles Pearson, David Pimentel, Andrew Rice, and B. B. Vohra. Selected chapters were reviewed by Charles Bailey, Barry Bishop, Reid Bryson, Paul Ehrlich, D. J. Greenland, Denis Hayes, M. Kassas, Patricia McGrath, Robert Potter, John Sanders, Robert Stein, Ralph Townley, and Robert Winters. Each of the reviewers contributed to the manuscript's improvement; any remaining errors are, of course, my responsibility alone.

ERIK P. ECKHOLM

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