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Scarcity and Growth

**The Economics of Natural
Resource Availability**

Harold J. Barnett and Chandler Morse

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Washington, DC • London

First published in 1963 by The Johns Hopkins University Press for Resources for the Future

This edition first published in 2011 by RFF Press, an imprint of Earthscan

First edition © The Johns Hopkins University Press 1963

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Earthscan LLC, 1616 P Street, NW, Washington, DC 20036, USA

Earthscan Ltd, Dunstan House, 14a St Cross Street, London EC1N 8XA, UK

Earthscan publishes in association with the International Institute for Environment and Development

For more information on RFF Press and Earthscan publications, see www.rffpress.org and www.earthscan.co.uk or write to earthinfo@earthscan.co.uk

ISBN: 978-1-61726-031-5 (Volume 2)

ISBN: 978-1-61726-003-2 (Environmental and Resource Economics set)

ISBN: 978-1-61726-000-1 (Resources for the Future Library Collection)

A catalogue record for this book is available from the British Library

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SCARCITY AND GROWTH

The Economics of Natural Resource Availability

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*The Economics of
Natural Resource Availability*

BY HAROLD J. BARNETT AND CHANDLER MORSE

PUBLISHED FOR Resources for the Future, Inc.
BY The Johns Hopkins Press, BALTIMORE

RESOURCES FOR THE FUTURE, INC.

1755 Massachusetts Avenue, N.W., Washington, D.C. 20036

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DIRECTOR OF RFF PUBLICATIONS: Henry Jarrett; *editor*, Vera W. Dodds; *associate editor*, Nora E. Roots

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LIBRARY OF CONGRESS CATALOG CARD NUMBER 63-9742

MANUFACTURED IN THE UNITED STATES OF AMERICA

Distributed in Great Britain by Oxford University Press, London

Originally published, 1963

Johns Hopkins Paperbacks edition, 1965

Second printing, 1967

FOREWORD

No problem is of deeper concern to mankind than that of coming to terms with the natural environment so that it will support a reasonably satisfying way of life. With the spread of modern science and technology during the past century and a half the problem has changed somewhat, at least for the economically more advanced areas of the world where the pressure of population on the resource base has been reduced. In such countries, and pre-eminently in the United States, there is no present threat of general resource scarcity—indeed, for basic agricultural products there is glut—but the age-old goal of winning a higher level of living from the soil, the water, and the subsoil minerals continues to call forth the enterprise and labor of large numbers of people as well as to tax, at times, the ingenuity of policy-makers. Even though technological innovation and managerial skill appear to assure Americans of adequate quantities of raw materials, the prospect of qualitative deterioration of the environment—in its livability and its aesthetic appeal—must concern us as a problem of the first rank.

Harold J. Barnett and Chandler Morse have addressed the “man/land” or the “population/resource” problem afresh, in terms of the latest statistical information and modern analytical tools. They have re-examined the propositions propounded by Malthus, Ricardo, and John Stuart Mill; and they have thought deeply about the roots of the American Conservation Movement associated with Theodore Roosevelt and Gifford Pinchot as these roots may be traced back into Darwinism and the speculations of George Marsh. They have emerged with a clearer view of where the essence of the problem is now to be found and what it means for people today.

It is not inaccurate to say this book is a reformulation of the theories of Malthus and his immediate associates and successors in the nineteenth-century stream of English classical economics. But it is not what has come to be called a Neo-Malthusian adaptation; the great forces it deals with are the same, but the implications of the reformulation are quite different. And the speculations it offers about the future may well change profoundly the intellectual content and

the very objectives of conservation for the balance of this century. Their findings, though tested primarily in terms of the statistical record of American economic growth, will have relevance to the less developed countries as these countries succeed in harnessing more advanced technology to the task of economic development.

In this book the authors make telling use of the historical statistics presented in *Trends in Natural Resource Commodities: Statistics of Prices, Output, Consumption, Foreign Trade, and Employment in the United States, 1870-1957*, by Neal Potter and Francis T. Christy, Jr. (The Johns Hopkins Press for Resources for the Future, Inc., 1962), as the empirical support for their propositions. In fact, the two books were conceived at about the same time as the two parts of a theoretical-empirical combination. This book is also related to the forthcoming RFF study, *Resources in America's Future* (also Johns Hopkins Press), in which trends of resource demand and supply, projected to the year 2000, give further support to some of the main findings of the Barnett-Morse book.

This study was begun and largely carried out while Mr. Barnett was on the full-time staff of Resources for the Future. Mr. Barnett, subsequently professor of economics at Wayne State University, recently accepted the chairmanship of the department of economics at Washington University, St. Louis. Mr. Morse, professor of economics at Cornell University, has been associated with Resources for the Future on a part-time basis.

Joseph L. Fisher
President, Resources for the Future

December 1962

ACKNOWLEDGMENTS

The authors of this fully collaborative work are deeply indebted to colleagues who assisted during our exploration and study, and to reviewers who examined draft material and made criticisms and suggestions. All have left a mark but none need acknowledge responsibility for either the form or the content of the final product.

Our colleagues Neal Potter and Francis T. Christy, Jr., in their comparison study, *Trends in Natural Resource Commodities*, provided the bulk of basic data used in our statistical analysis. They also undertook special processing and supervision of chart work in order to up-date the numerous tables and charts in our Part III. Two other colleagues, working as research assistants, also rendered exceptional help. Katherine Dolfis Warden, assisting Barnett in Washington, did a large amount of statistical work and editorial checking during the period of the study. Wolfgang Schoellkopf (now at Princeton), assisting Morse in Ithaca, assisted in developing the theory chapters of Part II and the related charts.

Our other Resources for the Future colleagues also contributed to the study, directly in their suggestions or indirectly by their own research and in numerous discussions. At different times, Paul Cootner (now at MIT), Henry Jarrett, Herbert Mohring (now at the University of Minnesota), Richard Muth (now at the University of Chicago), and Harvey Perloff helped us over difficult places in the course of our analysis. Many other RFF colleagues were also generous in review and suggestions.

The complete manuscript was reviewed by Simon Kuznets of Harvard University and Anthony Scott of the University of British Columbia. Their trenchant criticisms and helpful suggestions enabled us to shorten an overlong manuscript and to improve it in many other respects. Our obligation (and the reader's) to Professors Kuznets and Scott for helping to make the book as a whole readable and useful is a substantial one.

We also imposed heavily on a large number of other persons, both within academic circles and outside, for review of particular chapters. We wish to express appreciation for comments to:

Hugh H. Bennett, formerly of the Soil Conservation Service of the U.S. Department of Agriculture (deceased); Yale Brozen, University of Chicago; C. H. Burgess, Kennecott Copper Corp.; Ansley J. Coale, Princeton University; Lyle E. Craine, University of Michigan; Sir Charles Galton Darwin, Cambridge, England; Ira T. Ellis, Dupont Company; J. K. Galbraith, Harvard University; Bela Gold, University of Pittsburgh; C. B. Goodhart, Cambridge University; Luther Gulick, Institute of Public Administration; D. Hamberg, University of Buffalo; Lawrence S. Hamilton, Cornell University; Arnold C. Harberger, University of Chicago; George H. Hildebrand, Cornell University; Jack Hirshleifer, University of California at Los Angeles; E. M. Hoover, University of Pittsburgh; Harold Hotelling, University of North Carolina; J. M. Hughes, U.S. Department of Agriculture; John Ise, University of Kansas; Alfred E. Kahn, Cornell University; Charles P. Kindleberger, Massachusetts Institute of Technology; Edward S. Mason, Harvard University; Richard R. Nelson, Council of Economic Advisers; Samuel H. Ordway, The Conservation Foundation; Fairfield Osborn, The Conservation Foundation; Frederick Osborn, Population Council; William N. Parker, University of North Carolina; T. W. Schultz, University of Chicago; Joseph J. Spengler, Duke University; George Stigler, University of Chicago; Arthur W. Stuart, Mine, Mill, and Smelter Workers; J. Vanek, Harvard University; William Vickrey, Columbia University; Henry H. Villard, The Ford Foundation; Jacob Viner, Princeton University; Peter Vukasin, Harpur College; R. C. Weigel, Dupont Company; Norman Wengert, Wayne State University; W. S. Woytinsky, Washington, D.C. (deceased); Erich W. Zimmerman, University of Texas.

We express sincere thanks to our editors, Henry Jarrett and Virginia Parker, whose interest was exceeded only by their contribution.

Finally, and particularly now that it is completed, we are grateful for the opportunity to have engaged in this intellectual adventure. To the two people who gave unfailing encouragement—Reuben G. Gustavson and Joseph L. Fisher—we tender a special thanks.

Harold J. Barnett
Chandler Morse

December 1962

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