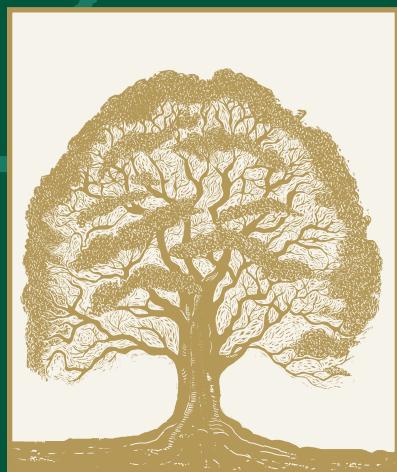


Environment and Development Economics

Volume 19 Part 3 June 2014



ENVIRONMENT AND DEVELOPMENT ECONOMICS

published in association with the Beijer Institute of Ecological Economics,
Royal Swedish Academy of Sciences

AIMS AND SCOPE *Environment and Development Economics* aims to publish papers on the environmental problems associated with the process of economic development. It encourages submission of two categories of paper. The first comprises scientific papers. The second comprises environmental policy discussion papers. The first is carried in a section on Theory and Applications. The second is carried in a regular section, Policy Options, and an occasional more focussed Policy Forum.

The journal publishes on a wide range of topics including:

- * the environmental impact of economy-wide policies
- * optimal environmental regulation and incentives in a development context
- * the valuation of environmental resources in developing countries and incentives in environmental policy
- * the environmental effects of institutional change
- * modelling interdependent economic and environmental processes

SUBSCRIPTIONS *Environment and Development Economics* (ISSN 1355-770X) is published bimonthly in February, April, June, August, October and December. Six parts form a volume. The subscription price (excluding VAT), which includes print and electronic access, and postage, of Volume 19 in 2014 is £320 (\$519 in the USA, Canada and Mexico), for institutions and £57 (\$92 in the USA, Canada and Mexico) for individuals ordering direct from the publisher and certifying that the journal is for their personal use. The electronic-only price available to institutional subscribers is £250 (US\$417 in the USA, Canada and Mexico). Single parts are £54.63 (US\$88.36 in the USA, Canada and Mexico). Prices include delivery by air where appropriate. Orders which must be accompanied by payment, may be sent to a bookseller, subscription agent or direct to the publisher: Cambridge University Press, The Edinburgh Building, Shaftesbury Road, Cambridge, CB2 8RU, UK; or in the USA, Canada and Mexico: Cambridge University Press, Journals Fulfillment Department, 100 Brook Hill Drive, West Nyack, New York 10994-2133. EU subscribers who are not registered for VAT should add VAT at their country's rate. VAT registered subscribers should provide their VAT registration number. Japanese prices for institutions are available from Kinokuniya Company Ltd, PO Box 55, Chitose, Tokyo 156, Japan. Special arrangements exist for subscribers in most low-income countries. Apply to: Journals Marketing Department, Cambridge University Press, University Printing House, Shaftesbury Road, Cambridge, CB2 8BS, UK.

Periodicals postage is paid at New York, NY, and at additional mailing offices. POSTMASTER: send address changes in the USA, Canada and Mexico to: *Environment and Development Economics*, Cambridge University Press, 100 Brook Hill Drive, West Nyack, New York 10994-2133.

Copying This journal is registered with the Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923, USA. Organizations in the USA who are also registered with C.C.C. may therefore copy material (beyond the limits permitted by sections 107 and 108 of U.S. Copyright law) subject to payment to C.C.C. of the per-copy fee of \$12.00. This consent does not extend to multiple copying for promotional or commercial purposes. Code 1355-770X/2014.

ISI Tear Sheet Service, 3501 Market Street, Philadelphia, PA 19104, USA, is authorised to supply single copies of separate articles for private use only.

Organizations authorised by the Copyright Licensing Agency may also copy material subject to the usual conditions.

For all other use, permission should be sought from Cambridge or from the American Branch of Cambridge University Press.

This journal is included in the Cambridge Journals Online service which can be found at <http://journals.cambridge.org>. For further information on other Press titles access <http://www.cambridge.org>

ISSN 1355-770X © Cambridge University Press

CONTENTS

SPECIAL ISSUE OF ENVIRONMENT AND DEVELOPMENT ECONOMICS: LOOKING BACK AND MOVING FORWARD

ANASTASIOS XEPAPADEAS and JOAN STEFAN Introduction: 20 years later	271
FORUM (CONTRIBUTORS: JOHN M. HARTWICK, EDWARD B. BARBIER, RASHID HASSAN, LUCAS BRETSCHGER, THOMAS STERNER, JINTAO XU, KIRK HAMILTON, AART DE ZEEUW, MARIA A. CUNHA-E-SÁ, PARTHA DASGUPTA, SJAK SMULDERS, DAVID ZILBERMAN, KATHELINE SCHUBERT, JEFFREY R. VINCENT, PRIYA SHYAMSUNDAR, FRANCISCO ALPÍZAR, CEES WITHAGEN, ANIL MARKANDYA and JOHN C. V. PEZZEY)	285
CHARLES PERRINGS Environment and development economics 20 years on	333
THOMAS STERNER, YONAS ALEM, FRANCISCO ALPÍZAR, CYNDI SPINDELL BERCK, CARLOS ALBERTO CHAVEZ REBOLLEDO, JOHANE DIKGANG, STEPHEN KIRAMA, GUNNAR KÖHLIN, JANE MARIARA-KABUBO, ALEMU MEKONNEN and JINTAO XU The Environment for Development Initiative: lessons learned in research, academic capacity building and policy intervention to manage resources for sustainable growth	367

ENVIRONMENT AND DEVELOPMENT ECONOMICS
published in association with the Beijer Institute, Royal Swedish Academy of Sciences

EDITOR

Anastasios Xepapadeas, *Athens University of Economics and Business*

ASSOCIATE EDITORS

Carlos Chávez, *Universidad de Concepción*
Margaret Chitiga, *Human Sciences Research Council, South Africa*
Salvatore Di Falco, *University of Geneva*
Susana Ferreira, *University of Georgia*
George Halkos, *University of Thessaly*
Louis Hotte, *University of Ottawa*
Katrín Millock, *CNRS, Paris School of Economics*
Subhrendu Pattanayak, *Duke University*

Karen Pittel, *Ifo Institute for Economic Research and University of Munich*
Martin Quaas, *Christian-Albrechts-University of Kiel*
Juan Robalino, *CATIE and Universidad de Costa Rica*
Elizabeth Robinson, *University of Reading*
E. Somanathan, *Indian Statistical Institute, Delhi*
Elisabetta Strazzera, *University of Cagliari*
Mahmud Yesuf, *American University*

ASSISTANT EDITOR

Joan Stefan, *Athens University of Economics and Business*

EDITORIAL BOARD

Francisco Alpízar, *Tropical Agricultural and Higher Education Center, Costa Rica*, Kenneth Arrow, *Stanford University*, Sangeeta Bansal, *Jawaharlal Nehru University, New Delhi*, Edward B. Barbier, *University of Wyoming*, Lucas Bretschger, *Center of Economic Research at ETH Zurich*, Juan-Camilo Cárdenas, *Universidad de los Andes, Bogotá*, María Cunha e Sá, *Universidade Nova de Lisboa*, Partha Dasgupta, *Cambridge University*, Hossein Farzin, *University of California, Davis*, Carl Folke, *Beijer Institute*, Gérard Gaudet, *Université de Montréal*, Rashid Hassan, *University of Pretoria*, Jikun Huang, *Chinese Academy of Sciences*, Matti Liski, *Helsinki School of Economics*, Razack Lokina, *University of Tanzania*, Karl-Göran Mäler, *Beijer Institute*, Jane W. Kabubo-Mariara, *University of Nairobi*, Bernardo Mueller, *University of Brasilia*, Charles Perrings, *Arizona State University*, Rüdiger Pethig, *University of Siegen*, Eftichis Sartzidakis, *University of Macedonia*, Mordechai Shechter, *University of Haifa*, Gerald Shively, *Purdue University*, V. Kerry Smith, *Arizona State University*, Jeff Vincent, *Duke University*, Jintao Xu, *Peking University*, Aart de Zeeuw, *Tilburg University and Beijer Institute*, David Zilberman, *University of California, Berkeley*.