

Environment and Development Economics

Volume 20 Part 1 February 2015



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 20 in 2015 is £352 (\$571 in the USA, Canada and Mexico), for institutions and £60 (\$97 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 £275 (US\$459 in the USA, Canada and Mexico). Single parts are £60 (US\$97 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, Journals Fulfillment Department, UPH, Shaftesbury Road, Cambridge, CB2 8BS, 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/2015.

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

SUMEET GULATI and DEVESH ROY Free trade and the greening of domestic industry	1
STEPHEN A. WOOD and ROBERT O. MENDELSON The impact of climate change on agricultural net revenue: a case study in the Fouta Djallon, West Africa	20
JOAQUIM BENTO DE SOUZA FERREIRA FILHO and GUSTAVO INÁCIO DE MORAES Climate change, agriculture and economic effects on different regions of Brazil	37
DÊNIS ANTÔNIO DA CUNHA, ALEXANDRE BRAGANÇA COELHO and JOSÉ GUSTAVO FÉRES Irrigation as an adaptive strategy to climate change: an economic perspective on Brazilian agriculture	57
ELIAS KUNTASHULA and ERIC MUNGATANA Estimating the causal effect of improved fallows on environmental services provision under farmers' field conditions in Chongwe, Zambia	80
ELISA TICCI and JAVIER ESCOBAL Extractive industries and local development in the Peruvian Highlands	101
ALEXANDRE C. NICOLELLA and WALTER BELLUZZO The effect of reducing the pre-harvest burning of sugar cane on respiratory health in Brazil	127

ENVIRONMENT AND DEVELOPMENT ECONOMICS

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

EDITOR

Eswaran Somanathan, *Indian Statistical Institute, Delhi.*

ASSOCIATE EDITORS

Carlos Chávez, *Universidad de Concepción*

Margaret Chitiga, *University of Pretoria*

Salvatore Di Falco, *University of Geneva*

Susana Ferreira, *University of Georgia*

George Halkos, *University of Thessaly*

Louis Hotte, *University of Ottawa*

Katrin 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*

Elisabetta Strazzer, *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,* Maria 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 Sartzetakis, *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.*