Reasserting the Rural Development Agenda

The Southeast Asian Regional Center for Graduate Study and Research in Agriculture (SEARCA) is one of the regional research and training centres of the Southeast Asian Ministers of Education Organization (SEAMEO), an intergovernmental body founded in 1965 to promote cooperation among Southeast Asian nations through activities in education, science, and culture. SEARCA's programmes are designed to strengten institutional capacities in agricultural and rural development in Southeast Asia through graduate education, short-term training, research, and knowledge exchange. It is hosted by the Philippine Government on the campus of the University of the Philippines Los Baños, which is based in Los Baños, Laguna, Philippines. It is supported by donations from SEAMEO member and associate member states, other governments, and various international donor agencies.

The Institute of Southeast Asian Studies (ISEAS) was established as an autonomous organisation in 1968. It is a regional centre dedicated to the study of socio-political, security and economic trends and developments in Southeast Asia and its wider geostrategic and economic environment.

The Institute's research programmes are the Regional Economic Studies (RES, including ASEAN and APEC), Regional Strategic and Political Studies (RSPS), and Regional Social and Cultural Studies (RSCS).

ISEAS Publishing, an established academic press, has issued almost 2,000 books and journals. It is the largest scholarly publisher of research about Southeast Asia from within the region. ISEAS Publishing works with many other academic and trade publishers and distributors to disseminate important research and analyses from and about Southeast Asia to the rest of the world.

Reasserting the Rural Development Agenda

Lessons Learned and **Emerging Challenges in Asia**

> Arsenio M. Balisacan Nobuhiko Fuwa

> > **Editors**



GRADUATE STUDY AND RESEARCH IN AGRICULTURE



INSTITUTE OF SOUTHEAST ASIAN STUDIES

First published in Singapore in 2007 by ISEAS Publishing
Institute of Southeast Asian Studies
30 Heng Mui Keng Terrace
Pasir Panjang, Singapore 119614
E-mail: publish@iseas.edu.sg
Website: http://bookshop.iseas.edu.sg

and

Southeast Asian Regional Center for Graduate Study and Research in Agriculture (SEARCA) College, Los Baños, Laguna, Philippines 4031

E-mail: post@agri.searca.org

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without the prior permission of the Institute of Southeast Asian Studies.

© 2007 Institute of Southeast Asian Studies, Singapore

The responsibility for facts and opinions in this publication rests exclusively with the authors, and their interpretations do not necessarily reflect the views or the policy of the publishers or their supporters.

ISEAS Library Cataloguing-in-Publication Data

Reasserting the rural development agenda: Lessons learned and emerging challenges in Asia/ edited by Arsenio M. Balisacan and Nobuhiko Fuwa

- 1. Rural development—Asia.
- 2. Agriculture—Economic aspects—Asia.
- 3. Rural poor—Asia.
- 4. Asia—Rural conditions.
- I. Balisacan, A.M.
- II. Fuwa, Nobuhiko

HN655.2 C6R28

2007

ISBN 978-981-230-403-2 (soft cover) ISBN 978-981-230-412-4 (hard cover)

Printed in Singapore by Utopia Press Pte Ltd

CONTENTS

Tab	les	vii
Figi	ures	$i \times$
Pref		Xi
	stributors	xi
1	Challenges and Policy Options for Agricultural Development	
	- Overview and Synthesis	1
	Arsenio M. Balisacan and Nobuhiko Fuwa	
2	The Economics of Agricultural Development: What Have We	
	Learned?	33
	James Roumasset	
3	The Role of Social Structures and Norms in Agricultural	
	Development: Africa and East Asian Communities Compared	63
	Yujiro Hayami	
4	Food Security in a Globalised Setting	81
	Jock R. Anderson	
5	Poverty and Vulnerability	121
	Arsenio M. Balisacan and Nobuhiko Fuwa	
6	Asian Agricultural Development: From the Green Revolution to	
	the Gene Revolution	159
	Prabhu Pingali and Terri Raney	
7	Dryland Agriculture in Asia: Ideas, Paradigms, and Policies	191
	William D. Dar, M.C.S. Bantilan, P. Anand Babu, G.V. Anupama,	
	H. Deepthi, and R. Padmaja	
8	Establishing Efficient Use of Water Resources in Asia	227
	Randolph Barker and Mark Rosegrant	

9	Improving the Delivery of Extension Services to Rural People:	
	New Perspectives	267
	Dina Umali-Deininger	
10	Land Tenure and Forest Resource Management in Asia	303
	Keijiro Otsuka	
11	Globalisation and the Poverty-Environment Link in Asian	
	Agriculture	335
	Ian Coxhead	
12	The Supermarket Revolution with Asian Characteristics	369
	Thomas Reardon and C. Peter Timmer	
т 1		395
ina	Index	

TABLES

1.1	Income Growth	3
1.2	Agricultural Performance	
1.3	Population Living Below \$1 (PPP) a Day	7
3.1	World Food Production by Region, 1963-2000	66
4.1	Overview of Hunger and Poverty in Developing	
	Countries in 2005	85
6.1	Performance Advantage of Bt Over Conventional	
	Cotton, Percentage	179
6.2	Performance Advantage of Bt over Non-Bt Cotton	
	in India, by State, 2002-03, Per cent	181
7.1	Total Cereal Area, Yield, and Production in	
	Rainfed Areas: 1995 Baseline Data Compared to	
	2025 Projections	194
7.2	Descriptive Statistics of Crop Yield in Rainfed and	
	Irrigated India, 1966-97	199
7.3	Number of Rural Poor (in millions) in Developing	
	Countries Categorized by Agro-ecological	
	Zone, 1996	203
8.1	Growth in Irrigated Area of Asian Countries,	
	1962-2002	230
8.2A	Increase in Rough Rice Production ('000 mt)	
	in Selected Asian Regions, 1963-2003	239
8.2B	Percentage Increase in Rough Rice Production	
	in Selected Asian Regions 1963-2003	240

8.3	Investments in Infrastructure Development in the Irrigation	
	and Drainage Sector by the African Development Bank,	
	Asian Development Bank, Inter American Development	
	Bank, and World Bank Region, 1961-2002	248
9.1	National Producer Federations/Associations and	
	their Main Activities	279
9.2	Direct and Indirect Determinants of Cost and Returns	
	to Private-for-Profit Extension	289
10.1	Importance of Forest, Rate of Change in Forest Area,	
	and Importance of Fuelwood Across Major Regions	
	of the Developing World	307
10.2	Hypothesised Relationships Among the Cost of Protection,	
	Management Intensity, and Efficient Land Use and Land	
	Tenure Institutions	319
10.3	Characterisation of Study Sites	321
11.1	Growth Indices of Rice Production, Area, and Yield	352
11.2	Agricultural Land Use Trends in Southeast Asian	
	Economies (Per cent of Land Area)	355

FIGURES

2.1	Incentive Compatibility in Irrigation Finance	50
4.1	Snapshots of Future Food Insecurity from the IFPRI	
	IMPACT Model	86
5.1	Growth Convergence	123
5.2	Poverty Convergence	124
7.1	The Global Extent of Drylands	193
7.2	All-India Production, Yield, and Cultivation Area	
	of Coarse Cereals, Rice, and Wheat, 1950-2003	195
7.3	Yields of Cereal Crops in Irrigated and Rainfed India,	
	1966-97	197
7.4	Population in Asia, 1961-2003	201
7.5	Entry Points for Development in Dryland Agriculture	217
7.6	ICRISAT's Research for Development Model	220
8.1	Evolution of Large Dam Construction in Asia	
	(Pre-1900 to Post-1980)	231
8.2	Trend in Cereal Grain and Urea Prices (Computed as Five-Year	
	Moving Average)	232
8.3	Trend in Area Irrigated by Groundwater in India	234
8.4	Number of Irrigation Pumps in Agriculture in Bangladesh	
	and Vietnam, 1975-2000	235
8.5	Trend in Water Supplied by Zhanghe Reservoir and Rice	
	Production in Zhanghe Irrigation District, 1965-2003	257
9.1	Economic Classification of Agricultural Information	
	and Technologies	271
9.2	Accountability Relationships Between Farmers, Extension	
	Providers, and Policymakers	273

9.3A	Alternative Channels for Public and Non-Profit Sector	
	Extension Service Delivery	276
9.3B	Alternative Channels for Private Sector Extension Service	
	Delivery	277
10.1	Choice of Natural-Resource-Intensive vs Labour-Intensive	
	Land Use Systems	313
10.2	Evolutionary Changes in Stock of Natural Resources	317
11.1	The Environmental Kuznets Curve: Relationships Between	
	Per Capita Income, Policies, Institutions, and Environmental	
	Change	340
11.2	The Harris-Todaro Model and Effects of Population Growth	343
11.3	Effects of the Green Revolution in Lowland Agriculture	346
11.4	Effects of Industrial Job Growth	348
11.5	Southeast Asia: Area of Oil Palm Harvested, 1980-2005	356
11.6	Southeast Asia: Area of Coffee Harvested, 1990-2005	357

PREFACE

This volume is the final product of efforts to revisit familiar themes and controversies that have played a crucial role in shaping the way we view rural development. We are in deep gratitude to all the colleagues and organisations that have assisted us in the different stages of the project.

The idea for this volume drew inspiration from a SEARCA initiative in 1979, which, in cooperation with then Agricultural Development Council (ADC) of New York (now Winrock International), resulted in the publication of a book entitled *Risk*, *Uncertainty and Agricultural Development*, featuring such respected authors as Hans Binswanger, Jean-March Boussard, Robert Evenson, David Newberry, James Roumasset, Inderjit Singh, and Joseph Stiglitz, to name a few. Now, three decades and many global changes after, SEARCA has found it timely and relevant to revisit their views of agricultural development vis-à-vis the current situation in the region. The main objective is to draw up policy lessons from the major ideas and paradigms that have influenced academic and policy thinking in agricultural and rural development in the past 30 years.

SEARCA began formulating the plan for a conference as early as the first quarter of 2004, with the end goal of producing this book. It was decided that the conference would mark the beginning of the celebration of SEARCA's 40th Anniversary in November 2006. We sought the assistance of Emmanuel Esguerra in drafting a concept paper for the conference. We are thankful to him for the initial discussions and thoughts he shared with us toward this volume.

By bringing together an international group of acknowledged research scholars in agricultural and rural development in dialogue with policymakers from the Asian region, the conference, held in November 2005, provided a venue for articulating policy options on emerging development issues in the region. The discussions focused on several thematic and issue papers on agriculture and rural development, food security, population and environment, institutions, and biotechnology, among others. The papers presented were revised accordingly, taking into account the suggestions from the editors and discussants. The resulting volume attempts to identify the rural development challenges in the next 10 years and draws up possible directions for future academic and policy research. In addition, a separate publication, a monograph entitled *Challenges and Priorities for Agricultural Research in the Next Decade*, synthesizes the issues raised at the panel discussion among Mahfuzuddin Ahmed, Taco Bottema, William Dar, Mark Rosegrant, and Robert Zeigler during the conference.

Richard Day, in his foreword in the 1979 volume, said that the volume "is no doubt an intermediate product, for evidently much remains to be done in the field and doubtless, as well, the present works will stimulate many new investigations in what must surely be a most crucial branch of economic research." Certainly, much has been done in the field of development, in particular, agricultural development. Nevertheless, the work is a continuing saga and it will remain to be as people, technology, and institutions continue to evolve and propel development.

Special thanks are in order to all the book's contributors: Jock Anderson, K.V. Anupama, P. Anand Babu, Ma. Cynthia S. Bantilan, Randolph Barker, Ian Coxhead, William Dar, Deepthi Harkar, Yujiro Hayami, Keijiro Otsuka, R. Padmaja, Prabhu Pingali, Terri Raney, Thomas Reardon, Mark Rosegrant, James Roumasset, C. Peter Timmer, and Dina Umali-Deininger, who contributed papers with only gratis in exchange. Without their support and enthusiasm, this volume would not have been possible.

We are also grateful for the financial support and generosity given by the following organizations: AusAID International Seminar Support Scheme (ISSS), International Food Policy Research Institute (IFPRI), International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), International Rice Research Institute (IRRI), Australia Department of Primary Industries and Fisheries-Queensland Government (DPIF), Worldfish Center, Philippines Department of Agriculture – Bureau of Agricultural Research, and Lapanday Foods Corporation.

Discussants and other speakers at the November 2005 conference in Makati City, Philippines helped enhance the quality and usefulness of the papers and this volume. A note of thanks to the following colleagues who participated in this respect: Mahfuzuddin Ahmed, Germelino Bautista, Taco Bottema, Ramon Clarete, Cristina David, Larry Digal, Desiree Hautea, Mahabub Hossain, Eliseo Ponce, Agnes Rola, Sushil Pandey, and Robert Zeigler.

Our appreciation also goes to the following individuals who kindly facilitated and chaired sessions during the conference: Nicomedes Briones, Rhoel Briones, Gelia Castillo, Emmanuel Esguera, Arnold Garcia, Emil Javier, Edilberto de Jesus, Tirso Paris, Nipon Poapongsakorn, and Noel Vock.

This project could not have been possible but for the concerted effort of the people at SEARCA, particularly the staff of the Research and Development Department managed by Arnulfo Garcia. Majah-Leah Ravago and Jessaine Soraya Sugui were not only efficient assistants but also kind naggers, always demanding adherence to deadlines. Administration and other logistics were ably accomplished by Ruby Johnson. Vivian Teresa M. Ledesma and the staff of the Knowledge Management Unit headed by Lorna Malicsi worked under a tight deadline to deliver the conference program and in transforming the manuscript to the final polished version of this volume. A number of people from all departments and units of SEARCA assisted during the conference and in various stages of the project: Althea Aragon, Nelia Belen, Edith Cedicol, Jaymark Dia, Vic Evan, Jess Fernandez, Susan Fernandez, Randy Foronda, Jolo Logon, Nyhria Rogel, Toti Menorca, Sonny Tababa, Lily Tallafer, Carol Tolentino, and Wanah Velo. Collectively, they did a good job.

We thank our co-publisher, Institute of Southeast Asian Studies (ISEAS) of Singapore, for its support to this project, particularly to K. Kesavapany, Chin Kin Wah, Triena Ong, Tan Kim Keow, and Rahilah Yusuf for their interest in seeing the volume through to its present form.

Arsenio M. Balisacan Nobuhiko Fuwa

CONTRIBUTORS

Arsenio M. Balisacan is a professor of economics at the University of the Philippines Diliman since 1988, and serves as the director of the Southeast Asian Regional Center for Graduate Study and Research in Agriculture (SEARCA) in the Philippines on secondment basis starting July 2003. He has also been serving as President of the Human Development Network (a UNDP-assisted organisation producing the Philippine Human Development Report) since 2003, and as Chairman of the Board of Advisors of the Asian Institute of Management-Mirant Center for Bridging Societal Divides since 2004. His research interests are poverty, inequality, food security, agricultural and rural development, globalisation, and political economy of policy reforms.

Nobuhiko Fuwa is an associate professor of agricultural economics at the Graduate School of Science and Technology of Chiba University in Japan. He is also a visiting research fellow of SEARCA. He previously served as an international research fellow at the Social Sciences Division of the International Rice Research Institute in the Philippines and was on the staff of the World Bank's Gender and Development Group, Poverty Reduction and Economic Management Network. His research interests are poverty, rural development, household decision-making, and gender and development.

XV1 CONTRIBUTORS

Jock R. Anderson works on impact assessment at the International Food Policy Research Institute in Washington, DC, aside from doing other consultancy undertakings. He is an elected fellow of the Australian Institute of Social Sciences in Australia and the Australian Agricultural and Resource Economics Society, and an honorary life member of the International Association of Agricultural Economists.

Guvvala Venkata Anupama works as scientific officer in the Global Theme on Institutions, Markets, Policy and Impacts at International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) in India. Her expertise is statistical analysis and database management. She has worked on research projects on agricultural transformation, research impacts, ICRISAT's Village Level Studies, and strategic assessments of the Institute.

Prakasam Anand Babu a scientific officer in the Global Theme on Institutions, Markets, Policy and Impacts at the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) in India. His research fields are agricultural economics, applied econometrics, and development economics. His current research looks at dryland agriculture, climate change, global policy issues, the economics of commodity markets, and the macroeconomics of developing countries.

Ma. Cynthia S. Bantilan is currently the theme leader of the Global Theme on Institutions, Markets, Policy, and Impacts of International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) in India. She specialises in agricultural research evaluation and impact assessment, poverty and income distribution, econometrics, agricultural economics and agricultural statistics, information systems management, and applications for decision support and policy analysis. She currently heads the development of key research resources on agriculture and health at ICRISAT based on village level studies in Southern Africa and India.

Randolph Barker has been involved in teaching and research on issues related to agricultural and rural development in Asia. Much of his work has been related to rice production, irrigation management, and water resource development. At present, he is a professor emeritus at Cornell

CONTRIBUTORS XVII

University. He has won several awards, including best publication from the American Agricultural Economics Association for *The Rice Economy of Asia*, which he co-authored with Bob Herdt. This has been the most widely cited publication among his written works.

Ian Coxhead is a professor in the Department of Agricultural and Applied Economics at the University of Wisconsin-Madison and concurrent chair of the UW Development Studies Ph.D. program. His research interests are trade, development policy, agricultural development and the environment in developing economies; land use, technology choice and environmental consequences in upland agriculture; and policy lessons from upland- and watershed-based research.

William D. Dar has been director-general of the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) in Andhra Pradesh, India since January 2000. He is the first Filipino chairman of the Alliance of Future Harvest Centers, an international body that governs the collective functioning of individual CGIAR centers. He is a member of the UN Millennium Task Force on Hunger. Since leading ICRISAT, he has intensively advocated for a "Gray to Green Revolution" in the dry tropics of Asia and Sub-Saharan Africa through "Science with a Human Face."

Deepthi Harkar is currently working as data analyst in ICRISAT's Global Theme on Institutions, Markets, Policy and Impacts. She was actively involved in SWOT analysis of the Institute and had contributed to the implementation of many research projects.

Yujiro Hayami is the chairman of the graduate faculty in the Foundation for Advanced Studies on International Development (FASID) in Japan. His current research interests focus on the role of communities in economic development, specifically the participation of local people, the relative positions of peasants and plantations in agricultural production, and the interactions among community, market, and state in economic development. He is a fellow of the American Agricultural Economics Association and an honorary lifetime member of the International Association of Agricultural Economists.

XV111 CONTRIBUTORS

Keijiro Otsuka is currently the director of the Foundation for Advanced Studies on International Development (FASID) Graduate Program and a professor at the National Graduate Institute for Policy Studies (GRIPS) in Japan. His research interests include land rights, land tenure, and natural resource management. His current research attempts to formulate an "East Asian model of industrial development" primarily on case studies of industries in Japan, Taiwan, and China.

Ravula Padmaja is a senior scientific officer in the Global Theme on Institutions, Markets, Policy and Impacts of International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) in India. Her research interests are social analysis, poverty and gender analysis in research technology design and diffusion for the semi-arid tropics, strategic assessments for Semi-arid Tropics (SAT) agriculture, social capital, and social networks. She has coauthored and contributed to several publications and collaborated in the production of a video documentary showcasing the process of empowerment through technology.

Prabhu Pingali is the director of the Agricultural and Development Economics Division of the Food and Agriculture Organization (FAO) of the United Nations in Italy. He was the president of the International Association of Agricultural Economists (IAAE) in 2003-06. He co-chairs the Millenium Ecosystem Assessment Panel's working group on Future Scenarios. He is editor of the newly established *e-Journal of Agricultural and Development Economics* (e-JADE). He has authored many books and journal articles on technological change, productivity growth, and resource management issues in Asia, Africa, and Latin America.

Terri L. Raney is a senior economist at the Agricultural and Development Economics Division of the United Nations Food and Agriculture Organization (FAO) in Italy. She concurrently serves as the editor of *The State of Food and Agriculture*, a publication by FAO. She was conferred with the Quality of Communications Award in 2005 by the American Agricultural Economics Association for "Agricultural biotechnology: meeting the needs of the poor?" in *The State of Food and Agriculture 2003-04*. A significant body of her research focus is on agricultural biotechnology, international trade, and food security.

CONTRIBUTORS

Thomas Reardon has been a professor at the Department of Agricultural Economics at the Michigan State University since 1992 where part of his research and teaching hours are devoted to supervising master's and doctoral thesis students. He is also currently involved in research projects in Guatemala, Nicaragua, Mexico, China, Indonesia, and Vietnam. His research interests include links between the rapid rise of supermarkets and agricultural development in developing countries; food safety and quality standards; fruit and vegetable and dairy product markets; and international joint ventures in the produce industry.

Mark W. Rosegrant is the director of the Environment and Production Technology Division at the International Food Policy Research Institute (IFPRI) in the USA. His research interests include policy analysis in agriculture and economic development, with emphasis on agricultural and natural resource policies as they affect regional and global food security, rural livelihoods, and environmental sustainability. He developed IFPRI's International Model for Policy Analysis of Agricultural Commodities and Trade (IMPACT), which has become a standard for projecting global and regional food demand, supply, trade, and prices; and global water supply and demand to 2020. He is a prolific writer of books and professional papers on agricultural economics, water resources, and food policy analysis.

James Roumasset is a professor of economics at the University of Hawaii-Manoa, where he has taught since 1976. He specialises in agricultural development, environmental and resource economics, and public microeconomics. He is on the Board of Directors of the Western Economic Association International and a member of the American Economic Association, American Agricultural Economics Association, Association of Environmental and Resource Economists, and International Society for New Institutional Economics. He has published widely on agricultural development, environmental and natural resource economics, transaction cost economics, risk and decision-making, and the nature, causes, and consequences of public policy.

XX CONTRIBUTORS

Charles Peter Timmer is currently a senior research fellow at the Center for Global Development in the USA. He is also a professor emeritus of Harvard University and University of California, San Diego. His professional affiliations include membership in the American Economics Association, the American Agricultural Economics Association, and the American Association for the Advancement of Science. He has received several professional awards and has authored many publications.

Dina Umali-Deininger is the lead agricultural economist in the World Bank's Sustainable Development Unit (South Asia Region), where she oversees the preparation of analytical studies. She has authored several World Bank reports and papers on agricultural policy, food security and nutrition, food grain, cotton, and livestock sector policy in India and Sri Lanka. Prior to joining the South Asia Region, she worked on agricultural policy issues in East Asia and Eastern Europe.