

Cambridge University Press

978-1-107-00714-7 - Environmental Valuation in South Asia

Edited by A. K. Enamul Haque, M. N. Murty and Priya Shyamsundar

Frontmatter

[More information](#)

# Environmental Valuation in South Asia

*Edited by*

A.K. Enamul Haque, M.N. Murty and Priya Shyamsundar



CAMBRIDGE  
UNIVERSITY PRESS

Cambridge University Press

978-1-107-00714-7 - Environmental Valuation in South Asia

Edited by A. K. Enamul Haque, M. N. Murty and Priya Shyamsundar

Frontmatter

[More information](#)

CAMBRIDGE UNIVERSITY PRESS

Cambridge, New York, Melbourne, Madrid, Cape Town,  
Singapore, São Paulo, Delhi, Tokyo, Mexico City

Cambridge University Press

4381/4, Ansari Road, Daryaganj, Delhi 110002, India

Published in the United States of America by Cambridge University Press, New York

[www.cambridge.org](http://www.cambridge.org)

Information on this title: [www.cambridge.org/9781107007147](http://www.cambridge.org/9781107007147)

© A.K. Enamul Haque, M.N. Murty and Priya Shyamsundar 2011

This publication is in copyright. Subject to statutory exception  
and to the provisions of relevant collective licensing agreements,  
no reproduction of any part may take place without the written  
permission of Cambridge University Press.

First published 2011

Printed in India at .....

*A catalogue record for this publication is available from the British Library.*

*Library of Congress Cataloguing in Publication data*

Environmental valuation in South Asia / edited by A.K. Enamul Haque, M.N. Murty, and  
Priya Shyamsundar.

p. cm.

Includes bibliographical references and index.

Summary: "Provides an overview of different environmental problems in South Asia  
and examines how economic valuation techniques can be used to assess these  
problems"--Provided by publisher.

ISBN 978-1-107-00714-7 (hardback)

1. Environmental economics--Asia, South. 2. Environmental quality--Asia, South.

I. Haque, A. K. Enamul. II. Murty, M. N. (Maddipati Narasimha), 1942- III.  
Shyamsundar, Priya, 1964- IV. Title.

HC430.6.Z9E5425 2011

333--dc22

2010040402

ISBN 978-1-107-00714-7 Hardback

Cambridge University Press has no responsibility for the persistence or  
accuracy of URLs for external or third-party internet websites referred to in  
this publication, and does not guarantee that any content on such websites is,  
or will remain, accurate or appropriate.

Cambridge University Press  
978-1-107-00714-7 - Environmental Valuation in South Asia  
Edited by A. K. Enamul Haque, M. N. Murty and Priya Shyamsundar  
Frontmatter  
[More information](#)

Contents

<i>List of Figures</i>	<i>ix</i>
<i>List of Tables</i>	<i>xi</i>
<i>List of Appendices</i>	<i>xvi</i>
<i>List of Contributors</i>	<i>xvii</i>
<i>Preface</i>	<i>xxi</i>
<b>Chapter 1: Introduction</b>	<b>1</b>
1.1. About the Book	1
1.2. Environmental Valuation in South Asia	2
1.3. Valuation Methods	4
1.4. Implementing Full Cost Pricing in Agrarian Settings	6
1.5. Accounting for Linked Ecological and Social Systems	8
1.6. Improved Health Outcomes	10
1.7. Micro to Macro: Valuation and Better Measures of Sustainable Development	12
1.8. Increasing Revenues through Better Valuation	13
1.9. Challenges to Environmental Valuation in Developing Countries	14
<b>Chapter 2: Environmental Valuation: A Review of Methods</b>	<b>19</b>
<i>A.K. Haque, M.N. Murty and P. Shyamsundar</i>	
2.1. Environmental Resources and Economic Valuation	19
2.2. Environmental Values	20
2.3. Measuring Environmental Values and Policy Changes	22
2.4. Valuation Methods	23
2.5. Conclusion	32
<b>Chapter 3: Valuing the Environment as a Production Input</b>	<b>36</b>
<i>Jeffrey R. Vincent</i>	36
3.1. Introduction	36
3.2. Production Function	38
3.3. Cost Function	46
3.4. Profit Function	54

Cambridge University Press  
978-1-107-00714-7 - Environmental Valuation in South Asia  
Edited by A. K. Enamul Haque, M. N. Murty and Priya Shyamsundar  
Frontmatter  
[More information](#)

3.5. Empirical Implications	57
3.6. Implications of Relaxing Key Assumptions	64
3.7. Example: Rainfall and Rice in India	70
<b>Chapter 4: Should Shrimp Farmers Pay Paddy Farmers?: The Challenges of Examining Salinization Externalities in South India</b>	<b>79</b>
<i>L. Umamaheswari, K. Omar Hattab, P. Nasurudeen and P. Selvaraj</i>	
4.1. Introduction	79
4.2. Study Area	80
4.3. Data	82
4.4. Homogeneity of Paddy Villages	84
4.5. Soil Characteristics	84
4.6. Comparing Paddy Cultivation	87
4.7. Estimation of Externality Cost	88
4.8. Factors Causing Soil Salinity	90
4.9. Production Function Analysis	91
4.10. Welfare Gains from Salinity Reduction	95
4.11. Conclusion	96
<b>Chapter 5: Evaluating Gains from De-Eutrophication of the Dutch Canal in Sri Lanka</b>	<b>99</b>
<i>W.R. Rohitha</i>	
5.1. Introduction	99
5.2. Study Area and Data	101
5.3. Water Quality Valuation Techniques	103
5.4. Analysis of Results	108
5.5. Conclusion and Policy Implications	112
<b>Chapter 6: Pesticide Productivity and Vegetable Farming in Nepal</b>	<b>115</b>
<i>Ratna Kumar Jha and Adhrit Prasad Regmi</i>	
6.1. Introduction	115
6.2. Pesticide Use in Agriculture: A Review	118
6.3. Study Area and Data	120
6.4. Theory and Methods	123
6.5. Results and Discussion	127
6.6. Conclusions and Policy Recommendations	135

<b>Chapter 7: Forests, Hydrological Services, and Agricultural Income: A Case Study from the Western Ghats of India</b>	<b>141</b>
<i>Sharachchandra Lele, Iswar Patil, Shrinivas Badiger, Ajit Menon and Rajeev Kumar</i>	
7.1. Introduction	141
7.2. Forest Ecosystems, Watershed Services and Social Well-being: the Existing Literature	142
7.3. Framework and Objectives	145
7.4. Study Site: Ecological, Social and Agro-hydrological Characteristics	146
7.5. Relationship between Rainfall, Catchment Response and Tank Filling	151
7.6. Socio-economic Data Collection and Sampling	155
7.7. Estimating Agricultural Incomes and Wage Employment Under Alternative Hydrological Scenarios	157
7.8. Likely Impacts of changes in catchment vegetation on agricultural incomes and wage employment in the tank command	162
7.9. Conclusions and Implications	164
<b>Chapter 8: Can Mangroves Minimize Property Loss during Big Storms?: An Analysis of House Damages due to the Super Cyclone in Orissa</b>	<b>170</b>
<i>Saudamini Das</i>	
8.1. Introduction	170
8.2. Studies on Valuing the Storm Protection role of Coastal Forests	172
8.3. Study Area	174
8.4. Methodology	175
8.5. Data	184
8.6. Results and Discussion	188
8.7. Conclusions and Policy Recommendations	200
<b>Chapter 9: Valuation of Recreational Amenities from Environmental Resources: The Case of Two National Parks in Northern Pakistan</b>	<b>211</b>
<i>Himayatullah Khan</i>	
9.1. Introduction	211
9.2. Studying two Parks in Pakistan	213

9.3. Research Methods	214
9.4. Results and Discussion	222
9.5. Conclusions and Policy Implications	228
<b>Chapter 10: Valuing the Land of Tigers: What Indian Visitors Reveal</b>	<b>232</b>
<i>Indrila Guha and Santadas Ghosh</i>	
10.1. Introduction	232
10.2. Studies Estimating Recreational Value	234
10.3. Methodology for ZTCM	235
10.4. Nature of a Sundarban Tour	237
10.5. Survey Design and Sampling	240
10.6. Data Exploration: Descriptive Statistics	241
10.7. Empirical Estimates	248
10.8. Conclusion and Policy Implications	253
<b>Chapter 11: Estimating Welfare Losses from Urban Air Pollution using Panel Data from Household Health Diaries</b>	<b>256</b>
<i>Usha Gupta</i>	
11.1. Introduction	256
11.2. Study Site	258
11.3. Data Sources and Survey Design	260
11.4. Methodology	262
11.5. Estimating Household Health Production Function Model	264
11.6. Results	268
11.7. Conclusion	272
<b>Chapter 12: Children in the Slums of Dhaka: Diarrhoea Prevalence and its Implications</b>	<b>276</b>
<i>M. Jahangir Alam</i>	
12.1. Introduction	276
12.2. Determinants and Costs of Child Diarrhoea	278
12.3. Study Area and Sampling	281
12.4. Methods of Estimation	283
12.5. Results and Discussion	290
12.6. Cost and Sensitivity Analysis of Child Diarrhoea	296
12.7. Conclusions and Policy Recommendations	301

<b>Chapter 13: Red Wells, Green Wells and the Costs of Arsenic Contamination in Bangladesh</b>	<b>306</b>
<i>M. Zakir Hossain Khan and A.K. Enamul Haque</i>	
13.1. Introduction	306
13.2. Background	307
13.3. Methods	309
13.4. Results	317
13.5. Discussions and Conclusions	323
<b>Chapter 14: Air Quality and Cement Production: Examining the Implications of Point Source Pollution in Sri Lanka</b>	<b>328</b>
<i>Cyril Bogahawatte and Janaranjana Herath</i>	
14.1. Introduction	328
14.2. Air Pollution and Health Impacts	329
14.3. Study area	331
14.4. Data	332
14.5. Methodology and Estimation	336
14.6. Results and Discussion	341
14.7. Conclusions and Policy Implications	345
<b>Chapter 15: Revisiting the Need for Improved Stoves: Estimating Health, Time and Carbon Benefits</b>	<b>348</b>
<i>Min Bikram Malla Thakuri</i>	
15.1. Introduction	348
15.2. Indoor Air Pollution Problem in Developing Countries: A Review	349
15.3. Study Area and Data	353
15.4. Methodology	355
15.5. Results and Discussion	362
15.6. Conclusions and Recommendations	374
<b>Chapter 16: Benefits from Reduced Air Pollution in Delhi and Kolkata: A Hedonic Property Price Approach</b>	<b>380</b>
<i>M.N. Murty, S.C. Gulati and Avishek Banerjee</i>	
16.1. Introduction	380
16.2. The Hedonic Price Model and Choice of Functional Forms	382
16.3. Data Sources and Design of Household Survey	386

Cambridge University Press  
978-1-107-00714-7 - Environmental Valuation in South Asia  
Edited by A. K. Enamul Haque, M. N. Murty and Priya Shyamsundar  
Frontmatter  
[More information](#)

viii	Contents	
16.4.	Model for Estimation and Measurement of Variables	387
16.5.	Estimates of Hedonic Property Value Model with Alternative Functional Forms	394
16.6.	Inverse Demand Functions for Environmental Quality and Welfare Gains from Reduced Air Pollution	403
16.7.	Conclusion	406
<b>Chapter 17:</b>	<b>The Value of Statistical Life</b>	<b>412</b>
	<i>K. R. Shanmugam and S. Madheswaran</i>	
17.1.	Introduction	412
17.2.	Methodology	414
17.3.	Econometric Specification of the Hedonic Wage Function	418
17.4.	Estimation Issues	418
17.5.	Empirical Analysis	426
17.6.	Concluding Remarks	437
<b>Chapter 18:</b>	<b>An Assessment of Demand for Improved Household Water Supply in Southwest Sri Lanka</b>	<b>444</b>
	<i>Herath Gunatilake, Jui-Chen Yang, Subhrendu Pattanayak and Caroline van den Berg</i>	
18.1.	Introduction	444
18.2.	Use of the CV Method to Measure WTP	446
18.3.	Planning, Design and Administering the Survey	448
18.4.	Results	461
18.5.	Conclusion	470
<b>Index</b>		<b>475</b>



Cambridge University Press

978-1-107-00714-7 - Environmental Valuation in South Asia

Edited by A. K. Enamul Haque, M. N. Murty and Priya Shyamsundar

Frontmatter

[More information](#)

## List of Figures

- 2.1. Different Categories of Environment Values
- 3.1. Modeling an Environmental Improvement: Production Function
- 3.2. Valuing an Environmental Improvement: Production Function
- 3.3. Modeling an Environmental Improvement: Cost Function
- 3.4. Valuing an Environmental Improvement: Cost Function
- 3.5. Valuing an Environmental Improvement: Profit Function
- 3.6. Modeling Environmental Degradation: Production Function
- 3.7. Modeling Environmental Degradation: Cost Function
- 4.1. Externality Effect of a Decline in Soil Quality
- 6.1. Optimal Use of Pesticides
- 6.2. Impact of Pesticide on Yield Loss Reduction in a Production System
- 6.3. Average Amount of Pesticides Used on Cole Crops (gm a.i./ ha)
- 6.4. Resultant Damage Abatement Function of Pesticide
- 6.5. Pesticide Productivity Curve
- 6.6. Marginal Value Product of Pesticide Use in Cole Crop Production
- 7.1. Conceptual Framework
- 7.2. Intra-annual Variation in Rainfall near Baragi Village
- 7.3. Monthly Rainfall and Tank Level of Baragi Irrigation Tank for 1994–2005
- 7.4. Variation in ‘Probability of Exceedance’ of Rainfall Required to Fill Tank with variation in forested catchment runoff coefficient during the northeast monsoon (September–December)
- 8.1. Sea Elevations at Orissa Coast during 1999 Super Cyclone Landfall
- 10.1. Distribution of Visitors to the Sunderban
- 10.2. Projection of Revenue Collection with Varying Entry-Fee Rate
- 11.1. Monetary Valuation of Air pollution–Sick Days
- 12.1. Duration of Child Diarrhoea with a Recall period of 15 Days
- 12.2. Specification Test
- 13.1. Marginal Effect by Age
- 16.1. Average Concentrations of SPM, NO<sub>x</sub>, SO<sub>2</sub> and the Exposure Index for 7 Monitoring Stations in Delhi for the Period October 2001 to March 2002

Cambridge University Press

978-1-107-00714-7 - Environmental Valuation in South Asia

Edited by A. K. Enamul Haque, M. N. Murty and Priya Shyamsundar

Frontmatter

[More information](#)

x  *List of Figures* 

- 16.2. Average Concentrations of SPM, NO<sub>x</sub>, SO<sub>2</sub> and the Exposure Index for 19 Monitoring Stations in Kolkata for the Period October 2001 to March 2002
- 16.3. Inverse Demand Function for Clean Air in Delhi
- 16.4. Inverse Demand Function for Clean Air in Kolkata
- 16.5. Inverse Demand Function for the Pooled Model of Delhi and Kolkata
- 17.1. Wage-Risk Trade-off
- 18.1. Household Demand for Improved Water Service in Sri Lanka

Cambridge University Press

978-1-107-00714-7 - Environmental Valuation in South Asia

Edited by A. K. Enamul Haque, M. N. Murty and Priya Shyamsundar

Frontmatter

[More information](#)

## List of Tables

- 2.1. How to Evaluate Environmental Policy Changes
- 2.2. Valuation Techniques
- 3.1. Estimation of Cobb-Douglas Production Function for Irrigated Rice Farms in Tamil Nadu during Northeast Monsoon
- 3.2. Estimation of Profit Function for Irrigated Rice Farms in Tamil Nadu during Northeast Monsoon
- 4.1. Land Use and Cropping Characteristics of Paddy Villages
- 4.2. Soil Salinity during Pre-Shrimp Farming Period (1994–1995)
- 4.3. Range of EC Values for Poovam Soil Samples
- 4.4. Range of EC Values for Thiruvettakudy Soil Samples
- 4.5. Descriptive Statistics for Transplanted Paddy
- 4.6. Descriptive Statistics for Direct Sown Paddy
- 4.7. Estimated Log-Log Function of Salinity on Distance Parameters
- 4.8. Descriptive Statistics of Affected Farms
- 4.9. Descriptive Statistics of Unaffected Farms
- 4.10. Descriptive Statistics of Combined Sample
- 4.11. Estimates of Production Function for Paddy Farms
- 4.12. Estimates of Losses per Hectare from Increased Salinity Obtained Using Different Methods
- 5.1. Description of Variables
- 5.2. Descriptive Statistics of Variables
- 5.3. Estimated Shrimps Yield Function
- 5.4. Gains from Improving Water Quality to a Safe Level in the Dutch Canal
- 6.1. Pocket-wise Distribution of Cultivated and Cole crop area in Bhaktapur
- 6.2. Summary Statistics of the Variables
- 6.3. Results from the Non-linear Estimation of Various Production Functions
- 6.4. Computation of Damage Abatement and Yield Increment due to Pesticide Use

Cambridge University Press

978-1-107-00714-7 - Environmental Valuation in South Asia

Edited by A. K. Enamul Haque, M. N. Murty and Priya Shyamsundar

Frontmatter

[More information](#)

- 6.5. Cole Crop Production Using Different Level of Pesticides by Farmer
- 7.1. Landholding Classes among Tank Command Farmers
- 7.2. Estimated Production and Income in Entire Tank Command: Unirrigated kharif
- 7.3. Estimated Aggregate Production and Income in Entire Tank Command: Irrigated kharif
- 7.4. Estimated Aggregate Production, Income and Employment Generated in Entire Tank Command: Summer Paddy
- 7.5. Predicted Impact of Catchment Forest Regeneration on Gross Income of Baragi Tank Command Area Farmers
- 7.6. Predicted Impact of Catchment Forest Regeneration on the Net Income of Baragi Tank Command Area Farmers and Wage Employment Generated in the Command Area
- 8.1. List of Variables
- 8.2. Description and Sources of Data
- 8.3. Descriptive Statistics of House Damage Model
- 8.4. Ordinary Least Squares Estimates with Robust Std. Errors for Fully Collapsed Houses
- 8.5. Weighted Least Squares Estimates (weight = area) for Partially Collapsed Houses
- 8.6. Averted House Damages and Values
- 8.7. Storm Protection Values of Mangroves
- 9.1. Sample Respondents Interviewed in Different Seasons and Locations of the MHN Park
- 9.2. Explanatory Variables and Hypotheses
- 9.3. Descriptive Statistics of the Respondents
- 9.4. Visitor's Perceptions Regarding Improvements in two National Parks
- 9.5. Reasons for Visiting MHN Park by Sample Respondents
- 9.6. Estimated Results of Linear Regression Equations for Visitation
- 10.1. Types of Tours Packages: Seven Options in the Survey Questionnaire
- 10.2. Percentage of Multipoint Visitors Across Regions: Survey Estimate
- 10.3. Average Travel Cost and Per-capita Income Across Tour Packages
- 10.4. The Two-segment Split of the Recreational Market Used in the Study
- 10.5. Identification of Zones Used in Estimating TGF (excluding foreign nationals)
- 10.6. Zonal Data from Secondary Sources

- 10.7. Summary Statistics from Survey Data: Distribution of Visitors, Travel Cost and Per-capita Income across Zones, Durations and Market Segments
- 10.8. Variables Used for Estimating TGF
- 10.9. Regression Result for the Trip Generating Function
- 10.10. Distribution of Aggregate CS Across Zones, Segments and Durations (in Million INR)
  - 11.1. Descriptive Statistics
  - 11.2. Number of Sick Days (H): Poisson Estimates
  - 11.3. Tobit Equations of Mitigating Activities (M) Left Censored (0)
  - 12.1. Cost of Child Diarrhoea per Child per Episode
  - 12.2. Socio-Economic Conditions of Slum Households
  - 12.3. Variable Explanations and Expected Sign
  - 12.4. Descriptive Statistics
  - 12.5. Negative Binomial-Logit Hurdle Regression of the Prevalence of Child Diarrhoea and Duration
  - 12.6. Different Types of Cost of Child Diarrhoea (BDT) (15 days)
  - 12.7. Sensitivity Analysis of the Cost of Child Diarrhoea (BDT) (15 days)
  - 12.8. Probability of Diarrhoeal Attack for a Child
  - 12.9. Yearly Cost of Child Diarrhoea
  - 12.10. Yearly Expected Cost (BDT) of a Representative Child Diarrhoea
  - 12.11. Yearly Expected Cost (BDT) of a Representative Household for Children
    - 13.1. Household Level Information
    - 13.2. Individual Level Information
    - 13.3. Distribution of Arsenic Related Diseases among Sick Households
    - 13.4. Estimating the Probability of Sickness (Probit Model)
    - 13.5. Estimating the Probability of Incurring Medical Costs (Probit Estimates)
    - 13.6. Calculation of Cost of Illness or Welfare Gain
    - 13.7. Lower Bound of Willingness to Pay to Avoid Arsenicosis
    - 13.8. Comparison of WTP from Other Studies
    - 13.9. Total WTP or Welfare Loss for Bangladesh
    - 13.10. Unit Cost of Different Types of Arsenic Removal/Mitigating Technologies
    - 14.1. Sampling of Households for the Socio-economic Survey
    - 14.2. Air Pollution Levels within 3Km Distance of the Cement Factory, Puttalam District (National Building Research Organization)

Cambridge University Press

978-1-107-00714-7 - Environmental Valuation in South Asia

Edited by A. K. Enamul Haque, M. N. Murty and Priya Shyamsundar

Frontmatter

[More information](#)

- 14.3. General Characteristics of the Surveyed Households
- 14.4. Kitchen Characteristics (Indoor Air Pollution)
- 14.5. Respiratory and Related Diseases among Surveyed Households
- 14.6. Summary Statistics of the Regression Variables
- 14.7. Estimated Coefficients for Dose Response Functions for ARI, LRI and URI
- 14.8. Estimated Coefficients of the Mitigation Cost Functions for ARI, LRI and URI (Tobit Analysis)
- 14.9. Welfare Gain from Various Reductions in Current SPM levels per Annum
- 15.1. Household Characteristics: Descriptive Statistics
- 15.2. Characteristics of Intervention and Control Households
- 15.3. OLS and IV Regression results (Dependent Variable: CO level)
- 15.4. Symptoms of Illness in Main Cook (Woman) over 12 months Period
- 15.5. Symptoms of Illness in Children below Five Years over last 12 months Period
- 15.6. Probability of Reduction in Illness in Woman Cooks and Children below five years after Intervention
- 15.7. OLS, IV and Tobit Results (Dependent Variable: log of treatment cost)
- 15.8. Marginal Effects: Negative Binomial Estimates (Dependent Variable: Days lost due to illness)
- 15.9. Determinants of Firewood Consumption – OLS and IV estimates
- 15.10. Summary of Cost and Benefits (in Rs.)
- 15.11. CBA Analysis – the Results
- 16.1. Descriptive Statistics of Variables Used for Estimation of the Hedonic Property Value Model: Location Delhi
- 16.2. Descriptive Statistics of the Variables Used for Estimation of the Hedonic Property Value model: Location Kolkata
- 16.3. Estimates of Hedonic Price Equation for Delhi
- 16.4. Estimates of Marginal Willingness-to-pay Equation for Delhi
- 16.5. Estimates of Hedonic Price Equation for Kolkata
- 16.6. Estimates of Marginal Willingness-to-pay Equation for Kolkata
- 16.7. Estimates of Marginal Willingness-to-pay Equation for the Pooled Model
- 16.8. Estimates of Welfare Gains in INR to Urban Households in Delhi, Kolkata and for Pooled Model

Cambridge University Press  
978-1-107-00714-7 - Environmental Valuation in South Asia  
Edited by A. K. Enamul Haque, M. N. Murty and Priya Shyamsundar  
Frontmatter  
[More information](#)

- 17.1. Wages and Standard Benefit Rates
- 17.2. Risk Measures and Workers by Industry
- 17.3. Variable Definitions and Descriptive Statistics
- 17.4. Box-Cox Non-linear Regression Model Estimates of Wage Equations
- 17.5. OLS and WLS Estimates of Log Wage Equations
- 17.6. Regression Estimates of Job Risk Equations
- 17.7. Non linear Estimates of Log Wage Equation
- 17.8. Summary of Labour Market Studies on the Value of Life and Injury
- 17.9. Summary of (selected) Studies Estimating Implicit Discount Rates
- 18.1. Impact of Household Characteristics and Related Variables on Demand for Improved Piped Water Service-Probit regression
- 18.2. Predicted Uptake Rates of Improved WSS for Different Groups
- 18.3. WTP Estimates by Sub-groups with Connection Fees of Rs. 0 for Connected and Rs. 6000 for Unconnected Households
- 18.4. WTP Estimates by Sub-groups without Connection

Cambridge University Press

978-1-107-00714-7 - Environmental Valuation in South Asia

Edited by A. K. Enamul Haque, M. N. Murty and Priya Shyamsundar

Frontmatter

[More information](#)

---

## List of Appendices

- 6.1. Empirical Finding from Pesticide Productivity Studies
- 8.8. Ordinary Least Squares Estimates with Robust Std. Errors for Fully Collapsed Houses with *Tahasildar* Dummies
- 8.9. Weighted Least Squares Estimates (weight = area) for Partially Collapsed Houses with *Tahasildar* Dummies
- 8.10. Ordinary Least Squares Estimates with Robust Std. Errors for the Ratio of Fully Collapsed to Partially Collapsed Houses



Cambridge University Press

978-1-107-00714-7 - Environmental Valuation in South Asia

Edited by A. K. Enamul Haque, M. N. Murty and Priya Shyamsundar

Frontmatter

[More information](#)

## List of Contributors

*M. Jahangir Alam*

Department of Economics and  
Social Sciences  
BRAC University  
Dhaka, Bangladesh

*Shrinivas Badiger*

Centre for Environment and  
Development  
Ashoka Trust for Research in  
Ecology and the Environment,  
Bangalore, India

*Avishek Banerjee*

Institute of Economic Growth  
Delhi University Enclave  
Delhi, India

*Caroline van den Berg*

World Bank  
1818 H. Street NW  
Washington DC, USA

*Cyril Bogahawatte*

Department of Agricultural  
Economics  
University of Peradeniya  
Peradeniya, Sri Lanka

*Saudamini Das*

Institute of Economic Growth  
University of Delhi Enclave  
Delhi, India

*Santadas Ghosh*

Department of Economics and  
Politics  
Visva-Bharati  
Santiniketan, West Bengal, India

*Indrila Guha*

Department of Economics  
Vidyasagar College for Women  
Kolkata, West Bengal, India

*S.C. Gulati*

Institute of Economic Growth  
Delhi University Enclave  
Delhi, India

*Herath Gunatilake*

South Asia Department  
Asian Development Bank  
6 ADB Avenue,  
Mandaluyong City 1550,  
Metro Manila, Philippines

Cambridge University Press

978-1-107-00714-7 - Environmental Valuation in South Asia

Edited by A. K. Enamul Haque, M. N. Murty and Priya Shyamsundar

Frontmatter

[More information](#)

xviii ■ List of Contributors

*Usha Gupta*

Department of Business Economics

Bhim Rao Ambedkar College

University of Delhi

Main Wazirabad Road

Delhi, India

*A.K. Enamul Haque*

Department of Economics

United International University (UIU)

Satmasjid Road, Dhanmondi

Dhaka, Bangladesh

*K. Omar Hattab*

Department of Soil Science and

Agricultural Chemistry

Pandit Jawaharlal Nehru College of

Agriculture and Research Institute

Puducherry U.T., India

*Janaranjana Herath*

Department of Agricultural

Economics and Business

Management

Faculty of Agriculture

University of Peradeniya

Peradeniya, Sri Lanka

*Md. Zakir Hossain*

Transparency International

Bangladesh

Dhaka, Bangladesh

*Ratna Kumar Jha*

District Agriculture Development

Office, Bhaktapur

Department of Agriculture, Nepal

*Himayatullah Khan*

Institute of Development Studies

NWFP Agricultural University

Peshawar, Pakistan

*Rajeeva Kumara*

Sobaganahalli, Kothigere Post

Kunigal Taluk

Tumkur District, Karnataka, India

*Sharachchandra Lele*

Centre for Environment and

Development

Ashoka Trust for Research in

Ecology and the Environment

Bangalore, India.

*S. Madheswaran*

Centre for Economic Studies and

Policy

Institute for Social and Economic

Change

Bangalore, India

*Ajit Menon*

Madras Institute of Development

Studies

andhinagar, Adyar

Chennai

Tamil Nadu, India

*M. N. Murty*

Institute of Economic Growth

Delhi University Enclave

Delhi, India

*P. Nasurudeen*

Department of Agricultural

Economics and Extension

Pandit Jawaharlal Nehru College of

Agriculture and Research Institute

Cambridge University Press

978-1-107-00714-7 - Environmental Valuation in South Asia

Edited by A. K. Enamul Haque, M. N. Murty and Priya Shyamsundar

Frontmatter

[More information](#)

List of Contributors xix

Karaikal  
Puducherry U.T., India

*Min Bikram Malla*  
Practical Action Nepal Office  
Pandol Marg, Lazimpat  
Kathmandu, Nepal

*Iswaragouda Patil*  
Head Post Kunnur  
Shiggaon Taluk  
Haveri District  
Karnataka, India

*Subhrendu Pattanayak*  
Sanford School of Public Policy  
and Nicholas School of the  
Environment  
Duke University  
Durham, NC, USA

*Adhrit Prasad Regmi*  
Centre for Rural Development  
and Self-help  
Dallu Residential Area, Chhuni  
Kathmandu, Nepal

*W.R. Rohita*  
No. 56, Darshanapura  
Kundasale, Sri Lanka

*K. R. Shanmugam*  
Madras School of Economics  
Gandhi Manadapam Road, Kottur  
Chennai, India

*Priya Shyamsundar*  
South Asian Network for  
Development and Environmental  
Economics  
32/25 Sukhumvit Soi 67  
Bangkok, Thailand

*P. Selvaraj*  
Fisheries College and Research  
Institute  
Chidambaranagar  
Thoothukudi  
Tamil Nadu, India

*L. Umamaheswari*  
Department of Agricultural  
Economics  
Pandit Jawaharlal Nehru College of  
Agriculture and Research Institute  
Karaikal  
Puducherry U.T., India

*Jeffrey R. Vincent*  
Nicholas School of the  
Environment  
Duke University  
Durham, NC, USA

*Jui-Chen Yang*  
Research Triangle Institute (RTI)  
Research Triangle Park, USA

Cambridge University Press

978-1-107-00714-7 - Environmental Valuation in South Asia

Edited by A. K. Enamul Haque, M. N. Murty and Priya Shyamsundar

Frontmatter

[More information](#)

## Preface

Applied research in environmental economics has gained momentum in recent times and is viewed as a means to aid environmental management. The South Asian Network for Development Economics and Environment (SANDEE) has contributed to this momentum in South Asia, a region with a vast and growing ecological footprint. During the last ten years, SANDEE has sponsored research on several aspects of environment and development. It has also organized numerous workshops to meet training needs.

SANDEE uses innovative strategies to build capacity in environmental economics. Researchers and managers from universities, governments and NGOs are provided with repeated opportunities to improve their skills. The process for an economist to produce a useful piece of research is detailed. It involves his/her attending a teaching workshop, writing a research proposal related to an environmental problem in his/her country, presenting ongoing research to receive comments, receiving guidance from a SANDEE advisor and writing a manuscript. The final research output is peer-reviewed by an international expert. Thus, SANDEE research is grounded in the realities of local problems but benefits from the advice of scholars from around the world.

This book contains contributions from SANDEE researchers and advisors. The papers in the book are on environmental valuation in South Asia and provide information for designing sustainable development policies. They constitute detailed micro case studies of air, water, land and forest resources from the region.

The studies in this book have benefited from comments from many experts including Kenneth Arrow, Partha Dasgupta, Jean-Marie Baland, Kanchan Chopra, Herath Gunathilake, K. G. Maler, Subhrendu Pattanayak, E. Somanathan, Rehana Siddiqui and Jeff Vincent, to name a few. Many chapters have also been anonymously peer-reviewed. The editors have acted as advisors on specific projects and worked with several researchers from the beginning to the final culmination of this book.

Cambridge University Press

978-1-107-00714-7 - Environmental Valuation in South Asia

Edited by A. K. Enamul Haque, M. N. Murty and Priya Shyamsundar

Frontmatter

[More information](#)xxii *Preface*

The credit for producing the research presented in this book also goes to the highly motivated team at the SANDEE Secretariat. Manik Duggar, Pranab Mukhopadhyay, Kavita Shresta, and Anuradha Kafle, who were at SANDEE when these studies were done, have made the development of these projects possible. Current staff, including Mani Nepal and Krisha Shresta, has continued to work with the same spirit.

The task of preparing this book from SANDEE projects was entrusted to the Institute of Economic Growth (IEG) with M. N. Murty as coordinator. The IEG organized three book-related workshops and brought together contributors so that they could further develop their chapters. The former Director, Kanchan Chopra and several IEG faculty and staff provided intellectual and administrative support. We express our thanks to them.

Finally, we are thankful to SANDEE'S donors – IDRC (International Development Research Center), Sida (Swedish International Development Cooperation Agency), NORAD (Norwegian Agency for International Cooperation) and the World Bank for their financial assistance, and, to the staff who represent these agencies on SANDEE'S Board for their advice and support.

**Enamul Haque, M. N. Murty and Priya Shyamsundar**