

Annual Report



2009



South Asian Network for Development
and Environmental Economics



South Asian Network for Development and Environmental Economics

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The SANDEE Secretariat



Priya Shyamsundar
Programme Director



Mani Nepal
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Chairman's Message

SANDEE was conceived in 1996 at a teaching workshop in Kota Kinabalu, Borneo. The workshop itself was part of a programme on development and environmental economics for young economists in developing countries. Some years earlier Karl-Goran Maler, then of the Stockholm School of Economics, and I had initiated a similar teaching programme for the World Institute of Development Economics Research (WIDER), Helsinki. With WIDER's support we had also organised two international conferences for the purpose of creating a summary literature at the interface of economic development and the natural environment. The WIDER programme had ended in 1994. By then, however, Professor Maler had assumed Directorship of the Beijer International Institute of Ecological Economics and had invited me to Chair the Institute's Scientific Advisory Board. Together we revived the earlier set of activities at WIDER by establishing the Beijer Institute's teaching programme in 1995, aided by funds from the MacArthur Foundation in Chicago.

Participants at the Borneo workshop were mainly from South Asia. In the course of the workshop a group of participants from Bangladesh, India, and Pakistan suggested the creation of a network in South Asia that would serve to promote teaching, training, and research in environmental and development economics. It was my former student Scott Barrett, now of Columbia University, who at a subsequent workshop suggested that we should approach Priya Shyamsundar, who had recently moved to the World Bank from the MacArthur Foundation, to assume the Directorship of what was to become SANDEE. That she accepted our offer was perhaps the most significant event in SANDEE's growth and development.

Today it is hard to imagine how foreign the interface of the natural environment and economic development was even at that time. Environmental and development economists in the

West were for the most part unfamiliar with the economics of poverty and development, while development economists viewed natural capital as a luxury good. There were certainly no suitable textbooks on offer. What we had was the three-volume collection of essays and case studies Professor Maler and I had edited for WIDER; a scattered set of publications by NGOs, such as the Indian Centre for Science and Development in Delhi; and the 1992 *World Development Report* of the World Bank. But there was a small group of outstanding young economists, who were willing, even eager, to commit their time to SANDEE and help develop a rigorous and quantitative course of lectures involving wide social sympathies. What I know today as environmental and development economics was shaped at SANDEE.

Our idea had been to use the teaching workshops also as venues for encouraging original research on local environmental problems in South Asia. Professor Maler and I had earlier used funds from the MacArthur grant to help establish the Cambridge University Press journal, *Environment and Development Economics*. It was then but natural for Priya to institute a regular series of research and training workshops that would complement SANDEE's teaching workshops. Additional funding enabled SANDEE to offer research grants, which are now so greatly sought after. They are sought after in part obviously because they enable grantees to engage in original research of their choice. I believe though that an equal attraction of the grants for applicants is the knowledge that with grants come further training and attention from some of the best minds in the subject. Priya's insistence of tying grants to further training in methods has been an inspired innovation.

Teaching programmes for scholars in developing countries are now a regular component of the activities of many international aid agencies. To the best of my knowledge, though, the particular mixture of teaching, research, and training that SANDEE has established is unique and entirely far-reaching. I do not know of any other instance in the developing world where an institution has been able to create

a family of scholars from disparate academic centres in an entire continent to live together for extended periods of time, discuss academic matters, exchange ideas, learn technical material, develop friendships, and go on to uncover novel socio-ecological pathways in the world round us. SANDEE scholars are now a regular sight at international conferences. They publish regularly, not only in volumes collected by them for such renowned publishers as Oxford University Press and Cambridge University Press, but also in such journals as *Environment and Development Economics* and the *Proceedings of the (US) National Academy of Sciences*. Moreover, their work has begun to enter the reading lists of university courses round the world.

Since SANDEE's inception I have served on its Management and Advisory Committee (MAC). As I write this on the occasion of my retirement from MAC, I realise that SANDEE has been fortunate not only in its Director and the wonderful band of scholars who have acted as a sort of permanent Professoriat for the network, but also those who have helped to make the network function and prosper from a small office in Kathmandu. Manik Duggar, Anuradha Kafle, and Kavita Shrestha have offered friendship, assistance, and advice to literally hundreds of scholars from the sub-continent. Pranab Mukhopadhyay and now Mani Nepal have given Priya the advice and help she has needed to develop SANDEE's vision. They are exceptional people.

I have long believed that pretty much everything of any significance in our lives is personal. The political is personal as is the academic. It is the atmosphere of friendship that has been the hallmark of SANDEE and the deep cause of its success.



Partha Dasgupta
Frank Ramsey Professor of Economics, University of Cambridge
and Retiring Chairman, Management and Advisory Committee,
SANDEE



Programme Director's Message

Dear friends and colleagues,

It has been a busy year, with SANDEE engaged continuously in capacity-building activities, but also facing many changes internally.

On the research front, SANDEE continues to build its portfolio on climate change economics and regional pollution issues. We are supporting an interesting set of parallel case studies on rice-wheat residue burning in different countries in South Asia, which should shed some light on why farmers burn and what incentives may allow them to use alternative ways of managing crop residue. Further, to take research ideas directly to policy makers, SANDEE, along with UNDP, UNEP and the Planning Commission of Bangladesh, held a policy workshop on climate economics in Bangladesh.

Ecosystem services are vital to our daily lives but are continually being carelessly eroded. To understand the economic underpinnings of managing services such as watershed, carbon sequestration and storm protection services, SANDEE organised its first pan-Asian course on Ecosystem services jointly with our East Asian sister organisation EEPSEA. This issue will likely become an important research topic in the future.

On the institutional front, SANDEE bid goodbye to our former host IUCN-the World Conservation Union. We are very grateful for the many good years we spent with IUCN in Kathmandu and we hope to continue to partner with them on various fronts. We will miss our many friends there. Our new host is ICIMOD. We are well settled there and have integrated ourselves into their systems. We think we have found an ideal home in Nepal with the right mix of intellectual and administrative support.

Let me end by thinking aloud about two people who have motivated many of us in the SANDEE family. First, our hearty

congratulations to Elinor Ostrom, the first woman to win the Nobel Prize in Economics. She won the prize for her theoretical and empirical work on common property resources. SANDEE has had a strong focus on common property issues and our first book, *Promise, Trust and Evolution*, is a collection of papers on managing the commons. We are delighted that Lin won the Nobel because of the limelight this puts on an important issue in South Asia and also because Lin has been such a source of inspiration for many of us at SANDEE.

Sir Partha Dasgupta has been a friend, teacher and mentor for many years. He helped found SANDEE and stayed on the Board for nine years – helping us through challenging times with his intellectual contributions and allowing us to draw on his support to bring new people in. Partha will retire from the SANDEE Board in 2009 but will, no doubt, be as accessible to us as he has ever been – such is his commitment to the idea of SANDEE. I speak for many in thanking him for his friendship and guidance.

2010 is a big year for SANDEE. We will celebrate our 10th anniversary, a signal that we are no longer a young institution, but one that is perhaps reaching its strongest stage where it can build on its youth and maturity to provide even better support for research on environment and development in South Asia. My hope is that we will build stronger partnerships next year to both disseminate SANDEE research and to make it more relevant to the region. We also hope to launch a new Research and Writing Fellowship, expanding the different instruments we have to strengthen research.



With every best wish,

Priya Shyamsundar

The Year Gone By

SANDEE's core activity is grant support for research on the economics of environmental problems in South Asia. In 2009, SANDEE organised two research and training workshops and made 13 research grants. The latter were made in the areas of urban environmental management, environmental issues related to agriculture, and natural disasters and climate change.

Training in environment and development economics and research methods is another important activity. Five training workshops were organised in 2009 and 164 researchers, policy makers and teachers were trained. The workshops included: (a) The science, economics and institutions of managing and paying for eco-system services; (b) Environmental and natural resource economics; (c) Research and writing; (d) Economic approaches to climate change and poverty in Bangladesh; and (e) Estimating limited dependent variables models in valuation studies.

SANDEE also supports 'under-served areas' or smaller countries and less advanced areas in the region. The Environment Research Centre in the Maldives was provided support to complete a valuation project related to marine resources.



Participants at the 18th R&T workshop, which was held in July 2009 in Sri Lanka.



SANDEE research shows that kitchen improvements enhance women's health in Nepal by reducing indoor air pollution.

SANDEE also provided small grants support for MA economics theses writing among students in Tribhuvan University in Nepal. Several peer-reviewed publications emerged from the SANDEE research stable (including a paper in the US Proceedings of the National Academy of Sciences) in addition to SANDEE's own working papers and policy briefs. Our second book manuscript 'Environmental Valuation in South Asia' was accepted by Cambridge University Press and will be published in mid-2010. SANDEE researchers and trainees also undertook significant professional activities over the last year (see box on page 16).

SANDEE-supported research has had two major policy impacts. In Nepal, Mr Min Malla and the organisation he works for, Practical Action Nepal, signed a Memorandum of Understanding with the Government of Nepal and developed draft National Guidelines on Indoor Air Quality. Mr Malla's SANDEE research documented the bad air quality in rural households and showed how small interventions in the kitchen (improved stoves and chimneys) could contribute to improved health outcomes. This work is reinforced by a second study in Nepal on indoor air pollution and health improvements through small interventions by Dr. Krishna Pant.

Another interesting policy outcome emerged from work supported in the Maldives. Here, based on tourist surveys, researchers had been able to identify a particular island as being an area with extremely rich coral reefs. A harbour was being proposed for this island, which would have harmed the coral significantly. The researchers working on this project reviewed an environment impact analyses for the harbour and recommended that the plans be rejected. The government accepted the recommendation and a revised plan to build a jetty is now being implemented. This Environmental Impact Assessment (EIA) was the only one that led to a proposal rejection out of 100 EIAs undertaken.

Last year was a big year for SANDEE because of the change in the host institution. SANDEE moved from IUCN to ICIMOD in August 2009. The transition has been smooth.

SANDEE At A Glance

The South Asian Network for Development and Environmental Economics (SANDEE) is a regional network that brings together the best minds in South Asia interested in the inter-connections among development, poverty and the environment. SANDEE focusses on the critical issue of economic development and environmental sustainability by using economic tools and analyses to address South Asia's environmental challenges.

SANDEE's mission is to strengthen individual and institutional capacity to undertake research on the inter-linkages among economic development, poverty, and environmental change. It works on two levels in pursuance of this goal. It not only builds the professional skills required for the task, but also disseminates information that can be applied to development policies on the ground. It enables researchers, analysts and institutions to coordinate and address local and global environmental concerns.

SANDEE was established in late 1999 with initial support from the Swedish International Development and Cooperation Agency (SIDA), Sweden, guidance from the Beijer International Institute of Ecological Economics at the Royal Swedish Academy of Sciences, as well as institutional and individual goodwill and support from many people within and outside South Asia. SANDEE is now supported by the International Development Research Centre (IDRC), Canada; the Norwegian Agency for Development Cooperation (NORAD), Norway; SIDA; and World Bank. The network operates in Pakistan, Bangladesh, Sri Lanka, Bhutan, Nepal, India and the Maldives.

A Management and Advisory Committee of scholars and policy makers govern SANDEE and a global group of Research Advisors support and mentor SANDEE's researchers. Operations are managed by a Secretariat in Kathmandu, Nepal, which is hosted by the International Centre for Integrated Mountain Development (ICIMOD), Nepal.

This annual report discusses SANDEE's achievements and activities from January to December 2009.

Research

SANDEE's core activity – grant support for research – is based on biannual research competition and meetings that help monitor and support the grants. SANDEE made 13 grants in 2009 and organised two research and training (R&T) workshops, one in June 2009 and again in December 2009. Each workshop included researchers from Pakistan, Bangladesh, India, Sri Lanka and Nepal, and advisors from within and outside Asia.

SANDEE received 40 pre-proposals and invited nine research proposals for grants in Spring 2009 (cycle 18). Five grants and two conditional grants were made based on the R&T workshop held in June 2009.



Research Associates Ali Dehlavi from Pakistan and Pragya Mishra from India discussing commonalities in their research.

Another forty pre-proposals were received and seven research proposals for grants were invited in Winter 2009 (cycle 19). Five grants and one conditional grant were made based on the R&T workshop held in December 2009.

Research grants were made in the area of urban environmental management, industrial pollution, irrigation management, forestry reform, climate change, and vulnerability and adaptation to natural disasters. The grants made in 2009 are presented in Table 1. Five out of 13 grantees were women.

Research Grants 2009

Name	Country	Research Topic
Mr Tanvir Ahmed	Pakistan	Economics of rice crop residue burning in rice-wheat cropping systems of the Punjab, Pakistan
Mr Naeem Akram	Pakistan	Climate change and the economic growth nexus: Evidence from South Asia
Ms Kanupriya Gupta	India	A study of tax and regulatory policies for the use of plastic bags in urban India
Ms Ridhima Gupta	India	The economic causes of crop residue burning in the rice-wheat system of the Indo-Gangetic plain in India
Mr Ziaul Haider	Bangladesh	Rice residue burning in the South-West region of Bangladesh
Ms Afsana Haque	Bangladesh	Impact of climate change: A multi-sector regional analysis
Mr Iftikar Husnain	Pakistan	Is organic agriculture economically viable?
Mr Sumeet Patil	India	Effect of climate change on water quality and diarrhoeal diseases
Ms Prajna Paramita Mishra	India	Recreation vs. pollution? A study of Hussain Sagar Lake and its surrounding in Hyderabad
Mr Krishna Pd. Pant	Nepal	Exploring alternatives to open-field crop-residue burning in the plains of Nepal
Mr Santadas Ghosh	India	Dynamics of household responses to natural disasters - Observations from Sundarbans after cyclone Aila
Mr Saravana Kumar	India	Economic impact of climate change on yield variability of major food crops in Tamil Nadu
Ms Moshahida Sultana (Study Grant)	Bangladesh	Factors that influence two conflicting groups - farmers and fishermen to participate in integrated water resource management: The case of coastal areas of Bangladesh

To strengthen researchers' capacity, five plenary presentations were organised during these workshops. Presented by experts from universities and development agencies, these sessions helped foster informed decision making amongst SANDEE researchers.

SANDEE Fellows 2009

SANDEE Fellows are nominated by our Board and include advisors as well as researchers who have distinguished themselves through publications and support to the SANDEE family.



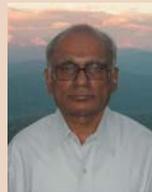
Saudamini Das



Keshav Kanel



Pranab Mukhopadhyay



U. Sankar



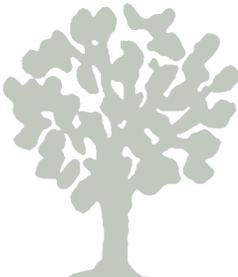
Nikhat Sattar

Plenary Presentations At Research Workshops

Presented here are synopses of the plenary sessions organised in 2009.

Strategic Corporate Sustainability: The Emerging Paradigm for Sustainable Business (by Mr Ravi Fernando, Sri Lanka Institute of Nanotechnology (SLINTEC); June 2009)

CEO of the Sri Lanka Institute of Nanotechnology (SLINTEC), and Director of Corporate Branding and Strategic Sustainability at MAS Holdings Ltd, Mr Fernando discussed corporations and sustainability. Mr Fernando argued that there is an emerging paradigm that involves pursuing long-term goals that include social, ethical and environmental responsibility. This 'triple bottomline' approach is different from simple Corporate Social Responsibility which is concerned only with the image of the company. Increasingly, corporate organisations are likely to identify future environmental concerns such as energy and water shortages or greenhouse gas (GHG) emissions and take voluntary mitigating actions. He cited several examples of





Deforestation and degradation are closely linked to livelihood choices - a snapshot of a Jhum farmer and his forests and fields in Bangladesh.

corporate giants who have adopted policies towards regeneration, reusing and recycling to ensure their survival.

Cap and Trade Principle and Design Issues: Experience from Current US Climate Change Legislative Proposals

Incorporating Reduced Emissions from Deforestation and Degradation (REDD) in Global Climate Policy
(both by Mr Brian Murray, Nicholas Institute, Duke University, June 2009)

In his first plenary presentation, Mr Murray compared tax versus cap-and trade systems to reduce GHG emissions. In general, taxation often results in higher cost of reducing emissions compared to cap-and-trade system. However, whether cap-and-trade is the best strategy or not depends on how steep the expected marginal damage function is (that is, how sensitive climate is to marginal changes in emissions). If the marginal damage function is steep, then cap-and-trade systems are preferred over fixed emission price (tax) whereas tax is a better

option for flatter marginal damage function. So far, the arguments in favour of steep damage function and, thus, cap-and-trade system are winning. In a second plenary, Dr. Murray discussed the challenges related to REDD.

How to Conduct Household Surveys: Parts I and II (by Prof. Jean Marie Baland- FUNDP, Belgium, December 2009)

In the first plenary session on 'Household Surveys', Prof. Baland stressed the importance of improving the quality of the data collected through the household survey method. His talk provided 10 tips related to survey implementation and content, and sampling issues. He ended with a note on the accuracy of the data entry. In his second plenary, Prof. Baland talked about survey instrument design as well as respondent-enumerator interactions. Several issues such as clarity of questions, logical sequencing of questions, consistent coding and units of measurement that are comprehensible to the respondent were discussed. As regards respondent-enumerator interaction, it is essential to administer enumerator trainings and pre-surveys to prepare the enumerator. Several SANDEE questionnaires were used to enumerate various points identified during the course of this interactive session.



SANDEE Advisor J.M. Baland, University of Namur, teaching about survey methods.

Professional Progress Made By SANDEE Researchers

- Mr Sakib Mahmud was selected as the 2008-09 recipient of the William E. Morgan Graduate Award for contributions in research by the Department of Economics and Finance, University of Wyoming, for the 58th Annual College of Business Awards.
- Ms Indrila Guha continues to work on the Sundarbans on new projects in association with Jadavpur University and in her role as a Climate Change 'Leader'.
- Md. Tarekul Hasan Chowdhury from Chittagong University, Bangladesh, got a scholarship to pursue a Ph.D. at Deakin University, Australia.
- Mr Monayem Miah is working on two Food and Agriculture Organisation-funded research projects: (i) Land use pattern, nutritional status and food security for indigenous people in hill areas of Bangladesh; and (ii) Identifying livelihood patterns of ethnic minorities and their coping strategies in Chittagong hill tracts region, Bangladesh. These projects are closely related to his earlier SANDEE project.
- Mr R. Balasubramanian is visiting Professor at Konkuk University, Seoul, South Korea for two years starting March 1, 2009. He is teaching Mathematical Economics and Risk Analysis in the Food Industry.
- Mr Ram Chandra Bhattarai served as a team member at the Ministry of Finance for preparing the Government of Nepal's budget for the fiscal year 2009/2010, where he often raises environmental concerns. He is also on the Executive Committee of the Rastriya Banijya Bank of Nepal.
- Ms Ratna Kumar Jha is currently in National Chung Hsing University Taichung, Taiwan on a Ph.D. scholarship.
- Ms Rucha Ghate and Mr Pranab Mukhopadhyay won the Karl-Goran Maler Scholarship for Environmental Economics and visited the Beijer Institute of Ecological Economics, Stockholm. They worked with Ingela Ternstrom of the Beijer Institute on commons management.
- Ms Rucha Ghate's organisation, SHODH, has adopted a tribal forest village that was displaced where she began her field research almost two decades ago. SHODH is undertaking a series of development activities with the villagers.
- Mr Santadas Ghosh and Mr Prasenjit Sarkhel were invited to contribute chapters to the West Bengal District Human Development Report for their in-depth knowledge of rural Bengal.

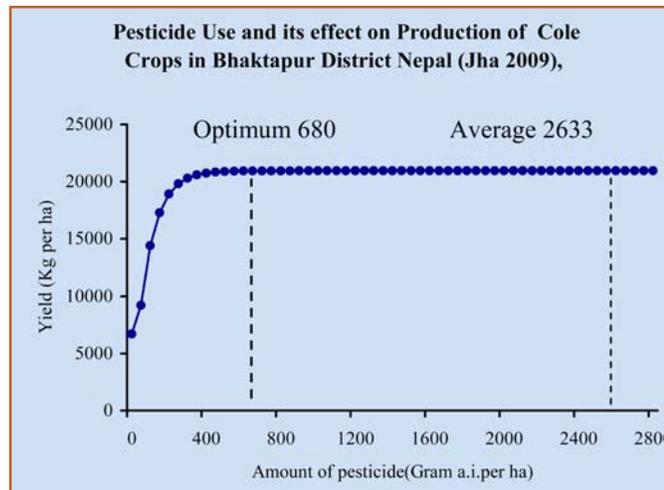
Publications

SANDEE Working Papers And Policy Briefs

SANDEE published the following working papers and policy briefs based on its research in 2009.

Working Papers

1. Partha Dasgupta. The Place of Nature in Economic Development. SANDEE Working Paper No 38-09.
2. Indrila Guha and Santadas Ghosh. A Glimpse of the Tiger: How Much are Indians Willing to Pay for It? SANDEE Working Paper No 39-09.
3. Subhrendu Pattanayak. Rough Guide to Impact Evaluation of Environmental and Development Programs. SANDEE Working Paper No 40-09.
4. Ratna Kumar Jha. Productivity of Pesticides in Vegetable Farming in Nepal. SANDEE Working Paper No 43-09.



Over-use of pesticides by vegetable farmers (Jha 2009).

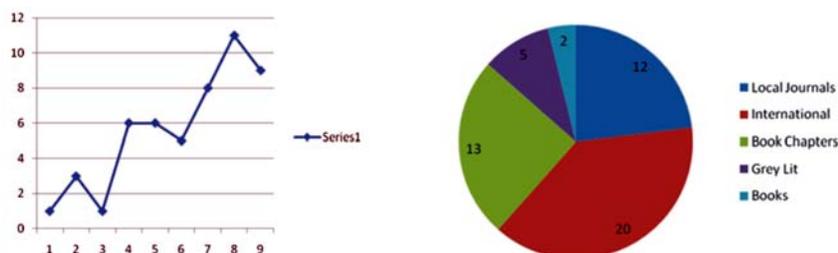
5. Umamaheswari, L., K. Omar Hattab, P. Nasarudeen, and P. Selvaraj. Should Shrimp Farmers Pay Paddy Farmers? The Challenges of Examining Salinisation Externalities in South India. SANDEE Working Paper No 41-09.
6. Saudamini Das. Can Mangroves Minimise Property Loss during Big Storms? An Analysis of House Damages due to the Super Cyclone in Orissa. SANDEE Working Paper No 42-09.
7. Min Bikram Malla Thakuri. Revisiting the Need for Improved Stoves: Estimating Health, Time and Carbon Benefits. SANDEE Working Paper No 44-09.
8. K.S. Kavi Kumar. Climate Sensitivity of Indian Agriculture: Do Spatial Effects Matter? SANDEE Working Paper No 45-09.
9. Muhammad Jahangir Alam. Prevalence and Costs of Childhood Diarrhoea in the Slums of Dhaka. SANDEE Working Paper No 46-09

Policy Briefs

1. Fuel for the Clean Energy Debate – A Study of Fuel wood Collection and Purchase in Rural India, Arabinda Mishra, SANDEE Policy Brief No 34.
2. Valuing the Land of Tigers – What Indian Visitors are Willing to Pay, Indrila Guha and Santadas Ghosh, SANDEE Policy Brief No 35.
3. Shrimps, Salinity and Sustainability – An Assessment from Southern India, Umamaheswari, L. SANDEE Policy Brief No 36.
4. Productivity of Pesticides in Vegetable Farming in Nepal, Ratna Kumar Jha, SANDEE Policy Brief No 37.
5. Revisiting the Need of Improved Stoves: Estimating Health, Time and Carbon Benefits, Min Bikram Malla, SANDEE Policy Brief No 38.
6. Climate Sensitivity of Indian Agriculture: Do Spatial Effects Matter? K. S. Kavi Kumar, SANDEE Policy Brief No 39.
7. Prevalence and Costs of Childhood Diarrhoea in the Slums of Dhaka, Jahangir Alam, SANDEE Policy Brief No 40.
8. Climate Change Economics in Bangladesh – A Policy Note, Dhaka Workshop, SANDEE Policy Brief No 41



Peer-reviewed publications from SANDEE research (2001 - 2009)



Peer-reviewed and other popular publications based on SANDEE research in 2009

- Baksh, Khuda. 2009. 'Growing BT Cotton: Merits and Demerits', *Dawn Newspaper*, Pakistan. <http://www.dawn.com/wps/wcm/connect/dawn-contentlibrary/dawn/in-paper-magazine/economic-and-business/growing-bt-cotton-merits-and-demerits-559>
- Chowdhury, M. Jahangir Alam. 2009. 'Microfinance and Environment: Does Participation in the Micro Credit-based Social Forestry of Proshika in Bangladesh Improve Environmental Literacy?' Working Paper No 47843, University of Dhaka, Centre for Microfinance and Development.
- Das, S., and J.R. Vincent. 2009. Mangroves Protected Villages and Reduced Death Toll during Indian Super Cyclone. *Proc Natl Acad Sci*, USA, 106: 7357-7360.
- Guha, Indrila, and Santadas Ghosh. 2009. 'Tourism, Local Livelihood, and Conservation: A Case Study in Indian Sundarbans'. In Pushpam Kumar and Roldan Muradian, eds, *Payment for Ecosystem Service*. New Delhi: Oxford University Press.
- Mia, Monayem. 2009. 'Valuing Soil Conservation Benefits in Hill Areas of Bangladesh'. In Unai Pascual, Amita Shah and Jayanta Bandopadhyay, eds, *Water, Agriculture, and Sustainable Well-Being*. Oxford University Press, 360 p.
- Ojha, V.P. 2009. 'Carbon Emission Reduction Strategies and Poverty Alleviation in India'. *Environment and Development Economics*, Vol 14, Issue 03.
- Pokhrel, Ridhish. 2009. 'Pro-poor Programs Financed through Nepal's Community Forestry Funds: Does Income Matter?' *Mountain Research and Development*, 29 (1).
- Yusuf, M. 2009. 'Legal and Institutional Dynamics of Forest Management in Pakistan'. *International Journal of Sustainable Development, Law and Policy*, McGill University, Spring 2009.

SANDEE's second book 'Environmental Valuation in South Asia' has also taken shape. A compilation of valuation studies done through SANDEE support, the book has been edited by Mr M.N. Murty, Mr Enamul Haque and Ms Priya Shyamsundar.

Issues in Focus

SANDEE research is examining the role of mangroves in several ways. Ms Saudamini Das has shown that some of the impacts of the 1999 supercyclone in Orissa would have been significantly mitigated if more mangroves were in place; Ms Indrila Guha and Mr Santadas Ghosh have examined the potential of eco-tourism in the Indian Sundarbans; and Mr Sakib Mahmud is looking at the role of mangroves in disaster management in the Bangladesh Sundarbans.

Mangroves In South Asia

Mr Tahir Qureshi (tahir.qureshi@iucnp.org)

Mangroves in the South Asian region have received very little attention in terms of rational management, despite a growing awareness that mangroves are being depleted and degraded at alarming rates. Currently, mangrove loss is globally estimated at 150,000 hectares or 1 per cent per year. While we cannot be sure that these numbers are the same for Asia, it is clear that mangrove degradation is an on-going process. The mangrove ecosystem is a very complex and open system. It is composed of various interrelated elements in the land-sea



Saudamini Das

Mangrove roots provide multiple ecosystem services.

interface zone and is further intertwined with other natural systems in the coastal zone such as corals, sea grasses, coastal fisheries and beach vegetation. Mangroves are important for many reasons: they provide subsistence goods such as fuel wood to local communities, offer shelter for birds, act as a nursery for many commercial fish, prevent coastal erosion and provide significant storm and wind protection during rough weather.

Unfortunately, large mangrove areas have been converted to agriculture, to brackish water aquaculture ponds or to other uses. There is an urgent need to utilise the surviving mangrove resources on a sustainable basis to reduce the levels of conversion to other land and water uses, and to declare certain mangrove areas, especially those still in a pristine state, as conservation and preservation zones. The general objectives of resource conservation and mangrove land allocation need to be properly spelt out to formulate a mangrove development plan to sustain the benefits of the resource over a long period of time, and for a greater number of people.

Proper and rational management would ensure that ecological costs arising from improper use of the land and resources are minimised, if not totally controlled. These costs are basically long term and difficult to evaluate but more often exceed the actual cost of developing the mangrove areas. Ecologists and biologists associate these costs with the loss of flora and fauna, food chain effects, alteration of energy material flows and exposure of human settlements to cyclone and tidal waves. There are various ways in which economists can measure these costs – and this needs to be done. It is also imperative that mangroves' management should be pursued in an integrated manner and not in isolation from other sectoral development objectives, for example, fishery, forestry and other national, regional and site-specific development objectives.

A lot can also be done to restore mangroves. Restoration of mangroves ecosystems requires a great deal of detail-driven effort and techniques. It is impossible to rehabilitate completely destroyed mangrove forests to their original

conditions. It is heartening, however, that over 13 South and South East Asian countries have initiated mangrove restoration programmes on a long-term basis. Due to the increase in the occurrence of cyclones, tsunamis and other natural disasters in the region, mangrove protective plantations are a necessary step.

Economic Instruments For Conserving Urban Ecosystems

Mr M.N. Murty (mnm@iegindia.org)

Urban development, if unregulated, can cause irreversible damage to urban resources such as land, air, water and forests. Damages to ecosystems will result in loss of health and recreation benefits, and water stress, to urban residents. The carbon footprint of urban consumption, production and solid waste management can also contribute to the global externality problem of climate change.

Sustainable urban development requires regulation and planning such that its ecological footprint does not exceed the carrying capacity of local ecosystems. Integrated urban ecosystem management methods, which usually combine regulatory instruments instituted by the government and community participation and market-based incentives, can contribute to sustainable production and consumption practices in an urban economy. Sustainable production practices involve process changes and input changes in production and relocation of industries. For example, in the case of urban transport, the most air polluting of urban activities, process changes might imply changes in the mode of transport, say from road to metro rail, and fuel changes involving compressed natural gas substitution for petrol. Urban authorities can use a variety of regulatory instruments to reduce pollution by influencing people's behaviour or demand for various goods and services. Some instruments that are in use globally include pollution taxes and emission trading mechanisms to control air and water pollution, user charges to manage demand

Research on the plastic ban in Delhi by Kanupriya Gupta.



for water and waste disposal, and deposit refund methods for solid waste management.

Inter-disciplinary approaches are needed for integrated urban ecosystem management. Take, for example, the management of urban atmospheric air quality. Ambient atmospheric air quality depends upon air pollution from different sources – households, industry and urban transport – and reducing ambient air pollution requires the reduction of pollution at all these sources. An environmental engineer has to undertake air quality modelling to tell us how much of pollution at each source has to be reduced to improve ambient atmospheric quality such that it meets safety standards. An epidemiologist would then be able to examine how much of a reduction of disease incidence is likely to occur if pollution is reduced to safe levels. An economist would then be able to estimate the costs of pollution reduction at different sources and the health benefits to urban residents if ambient air quality is maintained at a safe level. All this inter-disciplinary information is required for designing economic instruments such as pollution taxes or marketable pollution permits for controlling urban air pollution. There are, of course, significant implementation issues that need to be considered to manage urban pollution.

Many South Asian cities are in urgent need of urban planning and management. However, the good news is that pollution reduction is possible to undertake. The next decade may see the evolution of several strategies that will help create better and more liveable cities and urban areas.

SANDEE research supports a better understanding of urban environmental management. We now have studies in Dhaka, Kanpur and Kathmandu that document the health costs of urban air pollution. Two emerging studies by Ms Kanupriya Gupta and Ms Yamini Gupta are looking at economic instruments and incentives for managing plastic bags and lead batteries in India

Training

SANDEE organises training courses and workshops to develop institutional capacity in environmental and natural resource economics in the region. The aim is also to increase the number of South Asian professionals who can use economic tools to analyse environmental problems and who can then teach these tools to other colleagues.

The science, economics and institutions of managing and paying for eco system services

Chiang Mai, Thailand; April 21–29, 2009



Organised in tandem with EEPSEA and World Agro Forestry Centre, this nine-day training workshop co-organised by SANDEE focused on understanding how ecosystem services function and respond to exogenous changes, how they can be valued to create and

strengthen conservation tools such as payments for ecological services (PES), and the institutional design of such schemes.

Environmental and natural resource economics course

Bangkok, Thailand; May 5–22, 2009



This is a three-week course for practicing South Asian economists interested in upgrading their skills and learning related to Environmental and Natural Resource Economics. The workshop provided the basic skills necessary to teach environmental and natural

resource economics and to undertake research in this area. The

course covered economic issues underlying sustainable development, poverty-environment interactions, and natural resource use and pollution management. Participants were exposed to theoretical issues and economic tools for analysing environmental problems in developing countries.

Research and writing workshop

Kathmandu, Nepal; August 26–29, 2009



A four-day workshop on 'Climate change, environmental economics and policy: Research and writing' discussed key policy concerns in South Asia related to climate change and how economic research can help address them. Participants had an opportunity to receive

detailed feedback on their proposed research questions and methodology. This type of workshop is undertaken regularly to build a pipeline of research projects for later support.

Economic approaches to climate change and poverty: A workshop for economic policy makers and researchers

Dhaka, Bangladesh; October 13–14, 2009



This two-day workshop was jointly organized by the United Nations Development Programme, United Nations Environment Programme, the Planning Commission of Bangladesh and SANDEE. The objectives were to develop a more rigorous understanding of the economic analysis

required as Bangladesh considers various climate and adaptation options. The workshop examined economic

analysis in Bangladesh and reviewed methodologies, economic results and priority areas for research. The details of the workshop have been captured in a Policy Note.

Estimating limited dependent variables models in valuation studies

Kathmandu, Nepal; December 13–14, 2009

This workshop provided theoretical as well as hands-on knowledge on the use of limited dependent variables in econometric analyses, particularly in research pertaining to environmental valuation. The workshop also allowed researchers to learn and use STATA to undertake data analyses. The course was taught by Jeff Vincent of Duke University. Participants included SANDEE grantees and new researchers.

Participants At The SANDEE Training Courses (2009)

Training course	Period	Country-wise participants list							Gender		Total
		Bangladesh	India	Nepal	Maldives	Pakistan	Sri Lanka	Other	F	M	
PES	Apr '09	2	4	9	1	4	2	23	18	27	45
EE course	May '09	5	6	4		5	4		8	16	24
Proposal Writing	Sep '09	3	4	2		1			2	8	10
Policy Dissemination	Oct '09	35	3						8	30	38
Advance Econometrics (LDV)	Dec '09	2	7	6		4	2		5	16	21
Total		47	24	21	1	14	8	23	41	97	138

Under-served Areas Programme



Scholarships are given for field studies for Economics students at Tribhuvan University.

An important part of SANDEE's mandate is its support to 'under-served areas' or smaller countries and less advanced areas in the region. The benefits flow to researchers in the region as capacity-building activities in various categories.

Scholarships to students, Tribhuvan University, Nepal

SANDEE provided small grants to support MA economics' theses writing by students of Tribhuvan University. The objective was to attract student researchers to the area of natural resource/ environmental economics in Nepal. The Central Department of Economics will offer four scholarships to students to undertake field research in the area of natural resources and poverty. Each student will work in a different district, collect district level data and will, in some part, focus on income streams to the districts from natural resources.

Graduate fellowship

In 2007, SANDEE started a joint Fellowship programme in Jadavpur University, Kolkata, for junior/mid-career teachers and researchers from 'under-served areas' interested in graduate work in environmental economics. In 2009, the Fellowship was awarded to Mr Kapil Subedi. However, the Indian Government rules regarding Ph.D. students have now changed and SANDEE is waiting to understand the final implications.

Institutional support in the Maldives

In 2008, SANDEE provided institutional support for the Environment Research Centre (ERC) to undertake research and training on environmental economics issues. The ERC also contributed its own resources for this work, which is now complete, and SANDEE is waiting for a revised manuscript. The research has already had an impact locally. The findings of the tourist surveys of coral reefs conducted as part of this project resulted in the Environmental Impact Assessment (EIA) for a harbour on Gan Airport Island being rejected.



Research on tourism in the Maldives.

Governance Structure



The SANDEE team (from left to right) — Pranab Mukhopadhyay, Mani Nepal, Krisha Shrestha, Anuradha Kafle and Priya Shyamsundar.

Secretariat

On August 1, 2009, SANDEE moved its hosting arrangements from IUCN, The World Conservation Union, to the International Centre for Integrated Mountain Development (ICIMOD). SANDEE is now in new premises designed specifically for it; staff members have received new contracts and completed their orientation at ICIMOD. The last few months have been a transition period for SANDEE, and the organization is now well versed with ICIMOD's rules and regulations. SANDEE looks forward to many productive years with ICIMOD and to working in collaboration.

Management And Advisory Committee

- Mr Partha Dasgupta, Frank Ramsey Professor of Economics, Cambridge University.
- Mr Y.K. Alagh, Chairperson, Institute for Rural Management, Anand, India.



*Herath Gunathilake,
a new SANDEE
Board Member.*

*SANDEE advisors
Somanathan, Murty
and Jeff Vincent in
Sri Lanka.*



- Mr William Chameides, Dean, Nicholas School of the Environment, Duke University, USA.
- Mr Herath Gunathilake, Principal Energy Economist, South Asia Department, Asian Development Bank, Philippines.
- Mr David Glover, Programme Leader, Environmental Economics, IDRC, Canada.
- Mr Eli Koefoed, Advisor, NORAD, Norway.
- Ms Annamaria Oltorp, Head, Asia Region/Renee Ankarfjard, Research Advisor, Regional Team for Asia, SIDA, Sweden.
- Ms Priya Shyamsundar, Programme Director, SANDEE.

Research Advisors

- Mr A.K. Enamul Haque, Professor, United International University, Bangladesh.
- Mr Jeffrey Vincent, Professor, Duke University, USA.
- Mr M.N. Murty, (Professor, retired), Institute of Economic Growth, India.

- Mr Subhrendu Pattanayak, Associate Professor, Duke University, USA.
- Mr Jean Marie Baland, Professor, Facultes Universitaires Notre-Dame de la Paix, Belgium.
- Mr E. Somanathan, Professor, Indian Statistical Institute, India.

Donors And Partners

SANDEE is generously supported by multiple donors – SIDA, Sweden, IDRC, Canada, NORAD, Norway and the World Bank.

The Year Ahead

Calendar 2010

Research

- Climate Change Adaptation in India – Research workshop with MSE and MSSRF, Chennai, India (February 12–13, 2010)
- Research and Training workshop, Colombo, Sri Lanka (July 7–12, 2010)
- Review/new strategies–on-going (22 + two conditional) grants, eight to ten working papers
- Research and Training workshop, Kathmandu, Nepal (December 9–12, 2010)

Training

- TERI-SANDEE Workshop on Climate Change Tools, Delhi, India (February 5–11, 2010)
- Proposal Writing Workshop with the Institute of Policy Studies of Sri Lanka, Colombo, Sri Lanka (March 30–April 2, 2010)
- Environmental and Natural Resource Economics Course, Bangkok, Thailand (May 3–20, 2010)

Capacity Building In Under-served Areas

- Introduction to Quantitative Environmental Economics, Pokhara, Nepal (January 24–29, 2010)
- Fellowships and other institutional support

Moshahida Sultana from Bangladesh and Dukhabandhoo Sahu from India - participants of the EE course held in May 2009 in Thailand.



Kanupriya, Krisha, Moshahida, Prajna, Anu and Asha enjoying a trek to Dhampus, during the 19th R&T workshop held in December 2009 in Nepal.



Dissemination

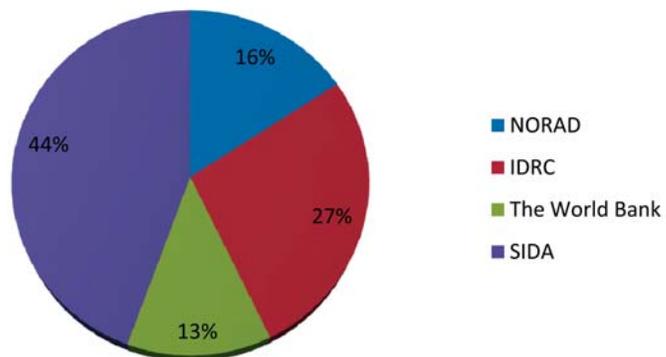
- Environmental Valuation in South Asia (forthcoming), Cambridge University Press
- Working papers, newsletters and policy briefs
- Contribution to the Handbook of Indian Economy, Oxford University Press
- Web-based and other media dissemination
- Panels at the World Congress of Environmental and Resource Economics, Montreal, Canada (June 28-July 2, 2010) and other policy workshops
- The Environments of the Poor, New Delhi, India (November 24-26, 2010)

Other Activities

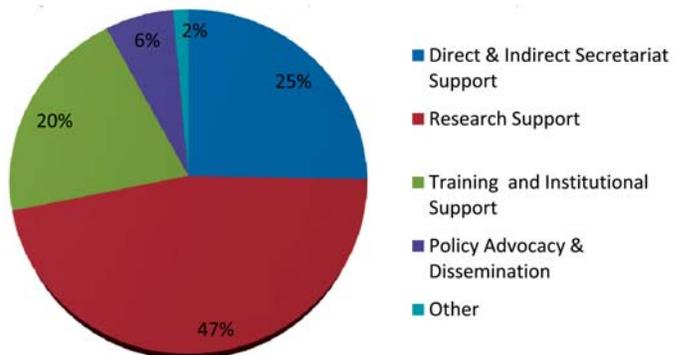
- SANDEE Evaluation (July 2010)
- MAC meeting, Kathmandu, Nepal (December 5, 2010)
- Environmental Economics in South Asia – 10 years down the road, Kathmandu, Nepal (December 6–7, 2010)

Financial Information (January–December 2009)

Income 2009 - Funds from Donors (USD 789,334)



Expenditures 2009 (USD 633,800)



Key Environmental Indicators For South Asia

	Bangladesh	Bhutan	India	Maldives	Nepal	Pakistan	Sri Lanka	Region
Population (millions)	159	0.657	1,125	0.305	28	162	20	1,522
GNI per capita, Atlas method (\$)	470	1,770	950	3,190	350	860	1,540	880
GDP (\$ billions)	68.4	1.1	1176.9	1.1	10.3	142.9	32.3	1,443.5
Agriculture								
Land area (1,000 sq km)	130	47	2,973	0.3	143	771	65	4,781
Agricultural land (% of land area)	69	13	61	47	30	35	36	55
Forests and Biodiversity								
Forest area share of total land area (%)	6.7	68.0	22.8	3.3	25.4	2.5	29.9	16.8
Annual deforestation (% change, 1990-2005)	0.1	-0.3	-0.4	0.0	1.9	1.9	1.3	-0.1
Nationally Protected Area (% of land area)	0.7	26.4	5.1	..	16.0	8.5	17.5	5.6
Energy, Emissions and Pollution								
GDP per unit of energy use (2000 PPP\$/kg of oil equivalent)	7.0	..	4.7	..	2.9	4.6	8.0	4.8
Electricity generated using fossil fuel (% of total)	94.3	..	80.9	..	0.2	65.2	50.6	78.3
Electric power consumption per capita (kWh)	146	..	503	..	80	480	400	453
CO ₂ emissions per unit of GDP (kg/2000 PPP\$ GDP)	0.2	..	0.6	0.6	0.1	0.4	0.2	0.5
CO ₂ emissions per capita (metric tons)	0.3	0.6	1.3	2.4	0.1	0.9	0.6	1.1
Water and Sanitation								
Access to improved water sources (% of total population)	80	81	86	83	89	90	82	87
Access to sanitation in rural areas (% of rural population)	32	50	18	42	24	40	86	23
Internal freshwater resources per capita (cubic metres)	662	144,509	1,121	..	7,051	339	2,499	1,196
Total freshwater withdrawal (% of internal resources)	75.6	0.4	51.2	..	5.1	308.0	25.2	51.7
Under-5 mortality rate (per 1,000 live births)	61	84	72	30	55	90	21	78
National Accounting Aggregates, 2003								
Gross national savings (% GNI)	32.2	70.0	38.8	..	28.2	24.5	24.9	36.2
Consumption of fixed capital (% GNI)	7.7	9.9	9.6	11.9	8.0	9.1	10.3	9.5
Education expenditure (% GNI)	1.8	4.2	3.2	6.5	2.4	2.1	2.6	3.0
Energy depletion (% of GNI)	2.9	0.0	2.7	0.0	0.0	3.3	0.0	2.7
Mineral depletion (% GNI)	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.6
Net forest depletion (% GNI)	0.7	3.8	0.9	0.0	4.4	0.9	0.3	0.9
CO ₂ damage (% GNI)	0.4	0.4	1.1	0.6	0.2	0.7	0.3	1.1
Adjusted net savings (% GNI)	21.8	60.0	26.4	..	17.9	11.0	14.3	23.9

Source: Little Green Data Book, 2009. World Bank.



South Asian Network for Development
and Environmental Economics

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