



SANDEE 

ECONOMICS & THE ENVIRONMENT

Annual Report
2013

**South Asian Network for Development and Environmental Economics
(SANDEE) © 2013**

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Annual Report 2013

SANDEE 

South Asian Network for Development and Environmental Economics

Bangladesh • Bhutan • India • Maldives • Nepal • Pakistan • Sri Lanka

Our Mandate

The South Asian Network for Development and Environmental Economics (SANDEE) is a regional network that brings together analysts from different countries in South Asia to address development-environment problems. SANDEE's activities include research support, professional training, policy dialogue and information dissemination.

Our Mission

SANDEE's mission is to strengthen the capacity of individuals and institutions in South Asia to undertake research on the inter-linkages among economic development, poverty, and environmental change, and to disseminate practical information that can be applied to development policies.

Our Core Activities

Research

A competitive research grants programme focuses on ecosystems management, the economics of climate change, and policies and programmes for greening economic development.

Training

International and regional experts teach workshops that build skills in environmental and natural resource economics, policy analyses and research methods.

Underserved Areas Programme

Activities, scholarships and courses offer smaller countries and less advanced areas institutional strengthening and improved access to skills and information.

Dissemination and Dialogue

Publications and workshops facilitate information sharing and networking among individuals and institutions.

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Madhu Khanna is a professor in the Department of Agricultural and Consumer Economics at the University of Illinois at Urbana-Champaign and a member of the Science Advisory Board of the US Environmental Protection Agency. Dr. Khanna holds editorial positions at several environmental and agricultural economics journals and has published numerous environmental policy analyses. She holds a Ph.D. and M.S. from the University of California at Berkeley.

Chair's Message

Compared to the tiny, nascent organisation of thirteen years ago, SANDEE has grown to be the institution of record in the international arena for South Asian environmental economics. By the end of 2013, SANDEE was serving its mandate both by training economic researchers and advising national governments.

Through 2013 SANDEE continued its signature research and training programs for South Asia's emerging environment development economists. It also hosted a seminal environmental value and accounting conference for international agencies that are exploring the greening of accounts at the national and international level.

I am thrilled that SANDEE now operates from the ground up and the sky down, and that SANDEE's work is helping influence economic policies at the highest levels even while we are training future leaders.

We push on with the support of our generous sponsors to grow our efforts ever more on behalf of environmental and development issues of global importance.

I look forward to another successful year for SANDEE.

Madhu Khanna
Chair, Management and Advisory Committee
SANDEE

Executive Director's Message

SANDEE has experienced an exciting year of training, research, outreach, and dialogue at the national and international level about key development environment issues.

Throughout the past year we were engaged in two major efforts to improve Systems of National Accounts so that they better measure environmental changes. Prime Minister Manmohan Singh of India released the report of the Expert Group on greening India's national accounts. The report, called "Green National Accounts in India: A Framework," was the result of deliberations by a panel chaired by our own Sir Partha Dasgupta. The panel also included several members of the SANDEE family and Secretariat.

Another important effort in 2013 was the regional workshop SANDEE co-organised with UNEP, ESCAP and seven other partners on "Valuing and Accounting for the Environment in the Asia Region." Senior policy practitioners, economists and statisticians from a variety of Asian countries met to discuss ways to augment existing macroeconomic accounts. Recommendations from this conference will, we hope, improve the understanding that government and international partners have on what it will take to implement environmental-economic accounts in Asian countries.

Our reach through partnerships is also expanding and we are seeing the increasing influence of on-site, SANDEE-trained economists on regional policy. SANDEE training and research has gone a long way towards ensuring that there is local capacity and skills for putting South Asian countries on a more sustainable path.

Priya Shyamsundar
Executive Director
SANDEE



Priya Shyamsundar oversees SANDEE-supported research and training, and has authored several articles on environment development issues. She has been a consultant for the World Bank, taught at Duke University, and served as Senior Program Officer for the John D. and Catherine T. MacArthur Foundation as well as Research Associate at the Institute of Social Studies Trust. She has a Ph.D. in Environmental Economics from Duke University and a Masters in Economics from Delhi University.

The Year Gone By

In 2013, SANDEE stepped onto the world stage, collaborating with a variety of national and international organisations to promote change in environmental outcomes and green accounting in Asia – an exciting phase in SANDEE’s policy and development activities.

In India, SANDEE representatives sat on an Expert Group charged with greening the country’s national accounts. Indian Prime Minister Dr. Manmohan Singh released the recommendations of the panel in April. Then in October, SANDEE brought this experience and the breadth of knowledge of the SANDEE family to an international development conference on augmenting existing macroeconomic aggregates to include the use of natural capital.

*Indian Prime Minister
Dr. Manmohan Singh releases a
report on Green National Accounts
in India in New Delhi in April 2013.*



In addition to these important developments, SANDEE continued research and training efforts for new and existing environmental economists throughout South Asia. SANDEE hosted Research and Writing Workshops in Pakistan and Bhutan, and Research and Training Workshops in Thailand and Nepal. In total for 2013, SANDEE’s eight workshops filled with 181 teachers and professionals from universities and agencies across the region.

Within research topics, SANDEE continues to award grants in the core themes of climate change, ecosystems management, and greener development. From a total of 194 concept notes, SANDEE awarded 16 grants and four micro-grants in 2013. Grants went

to six researchers from India, four from Bhutan, three from Nepal, two each from Bangladesh, Pakistan, and Sri Lanka and one researcher from the Maldives.

Training included the annual semester-length course in Environment and Resource Economics, as well as advanced courses on environmental topics, Quantitative and Empirical Economics (IQEE), and research methods. Two of the year's highlights were a presentation on policy analysis by Professor Nancy Olewiler of Simon Fraser University and a specialty writing workshop for wildlife researchers from Bhutan.

SANDEE researchers publish their findings via working papers and in peer-reviewed publications. In 2013, SANDEE work appeared in *Nature*, *Unasylva*, and the *Journal of Environmental Management*. SANDEE's two books, *Environmental Valuation in South Asia* and *Promise, Trust, and Evolution: Managing the Commons of South Asia*, continue as course material for graduate programmes in universities across the region. Current working papers and policy briefs are available through SANDEE's website and the listserv that now distributes to some 5,000 subscribers.

Centre for Environmental Excellence



Kerala, at the southwestern tip of India, is the state with the country's highest Human Development Index, literacy rate, and life expectancy. SANDEE researcher P. Indira Devi teaches at Kerala Agricultural University (KAU) where she specialises in agricultural and forest economics. In 2013, KAU established the Centre for Environmental Excellence (CEE) at the behest of the Department of Environment and Climate Change of the

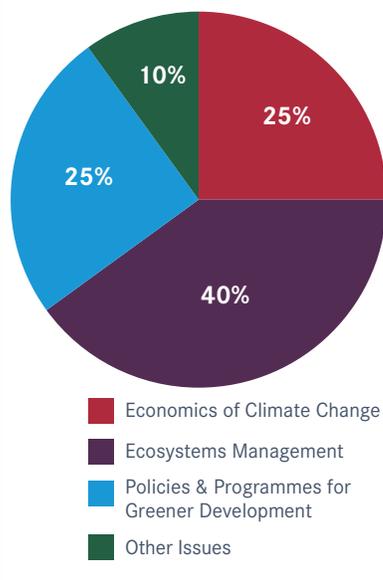
Government of Kerala. Indira was named the Director of this important new institution. The Centre will research issues of natural resource management and protection, including organic and sustainable agriculture, and provide policy support to the Kerala government as well as basic data for environmental impact assessments. CEE also plans to train local officials, farmers, and other stakeholders and publish reports accessible to the public at large.

2013 in a Nutshell

- SANDEE awarded 16 research grants and four micro grants from 194 proposals.
- SANDEE published seven working papers and associated policy briefs.
- SANDEE-sponsored work appeared in 11 peer-reviewed publications.
- SANDEE's eight workshops filled with 181 participants, including university teachers, policy analysts and economists.
- SANDEE held research and writing programmes in Pakistan and Bhutan, and a writing workshop in Nepal.
- SANDEEites gave presentations at 11 conferences across nine countries.
- SANDEE publications were course materials at 19 university graduate programmes.
- With UNEP and ESCAP, SANDEE hosted a seminal international conference on greening national accounts.
- SANDEE activities and researchers were endorsed by the Indian Prime Minister, the Kerala government, which set up a new environmental economics centre, and via international awards and sponsorships.

Research

Figure 1: Grant Distribution by Issues (2013)



Grant Competition

SANDEE awards grants based on twice yearly research competitions. In 2013, SANDEE received 194 concept notes, as compared with 117 in 2012 and 105 in 2011. Sixteen grants were awarded, along with four micro-grants. As of December 2013, there were 42 on-going research projects.

Research sponsored by SANDEE focuses on the parity of long-term environmental stability and economic health. The three core areas of emphasis are Climate Change, Ecosystems Management and Policies and Programmes for Greener Development.

Achieving the goal of long-term environmental sustainability has become a pressing challenge that involves complex issues. SANDEE is committed to prioritising research whose goal is to measure and guide environmental performance. SANDEE is steadfastly employing local and regional research to advise decision-makers how to implement sound and sustainable economic policy.

Climate Change. In 2013 new research from India tackled the questions of low-carbon goods and services trade under free trade agreements, the electrification of remote villages through solar options, and the effects of livelihood intervention programmes on adaptation to climate change. Researchers from Nepal and Pakistan looked into the effects of climate change on Nepalese farmers and on mortality in Pakistan, respectively.

Ecosystems Management. Seven researchers spanning four countries undertook research in ecosystems management and policy in 2013. In Sri Lanka, researchers examined aspects of agriculture including the demand for organic rice and preferences for genetically modified banana crops. Research launched this year on rural development impacts in firewood use in India and tradeoffs among ecosystem services in Nepal. SANDEE sponsored exciting new research in Bhutan with a series of micro grants on human-wildlife conflicts.

Greening Development. A quarter of SANDEE's 2013 grants concerned greener development policy. In Pakistan and India, researchers studied the effects of environmental regulations on the textile and tanning industry. In Nepal, research centered on new industrial pollution control regulations. At the macro level one researcher examined changes in non-renewable wealth such as natural gas in Bangladesh, while another focused on eco-labeling in fisheries in the Maldives. Developing countries have multiple environmental laws and policies in place but compliance is a challenge.

Figure 2: Concept Note and Grant Distribution by Country (% of total, 2013)

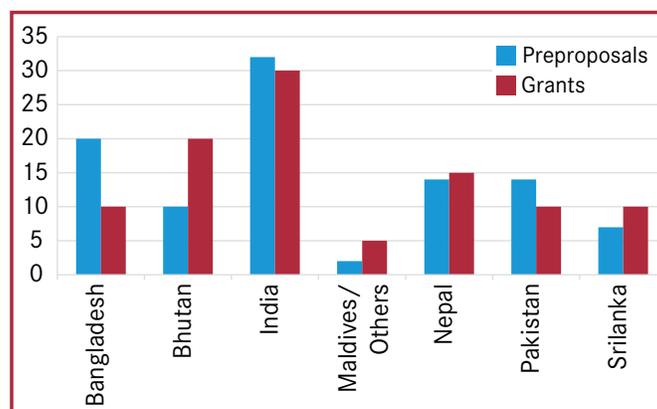


Table 1: 2013 Research Grants

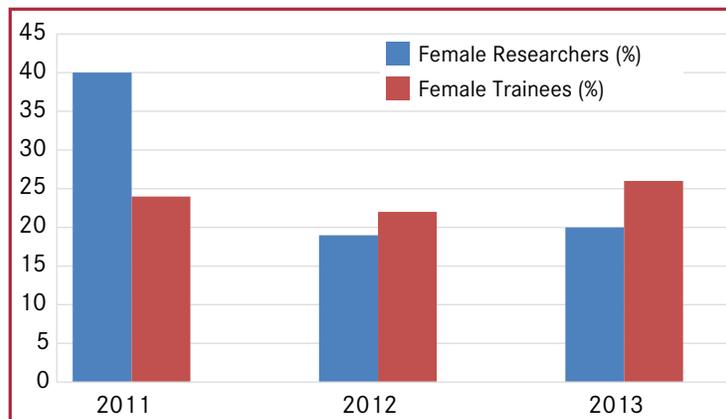
Bangladesh	<ul style="list-style-type: none"> ■ Mahfuz Kabir, Valuation and emission accounting of subsoil minerals: Natural gas and coal in Bangladesh ■ Atonu Rabbani, Identifying the causal links between local political leadership and sanitation
Bhutan	<ul style="list-style-type: none"> ■ Jamyang Choda, Evaluation of mitigation measures used for wildlife protection: A case study in Bartsham Gewog, Trashigang, Bhutan ■ Phurpa Dorji, Have mitigation strategies balanced the needs of human and wildlife in Langchenphu Gewog? ■ Nandu Giri, Evaluation of mitigation practices on human-elephant conflicts in Sipsu Gewog Samtse, Bhutan ■ Sangay Rinzin, Evaluation of mitigation measures on human-wildlife conflict: A case study of wild pigs in Kangling Geog
India	<ul style="list-style-type: none"> ■ Ashokankur Datta, NREGA and firewood consumption: Estimating the ecological impact of NREGA on Indian forests ■ Amrita Ghatak, Environmental regulations and compliance in the Textile Dyes Sector of Gujarat, India ■ Surender Kumar, Embodied carbon trade and trade resistances: Evidence from South Asian countries ■ Hippy S. K. Nathan, Remote village electrification in India through solar home systems – assessment and options ■ Unmesh Patnaik, Effect of Livelihood Intervention Programmes on adaptive capacity of households in Odisha, India ■ Amit R.K., Coping strategies and coping costs for accessing safe water in Chennai
Maldives	<ul style="list-style-type: none"> ■ Mohammad Shumais, Ecolabeling in the Maldives: Case of skipjack tuna fisheries
Nepal	<ul style="list-style-type: none"> ■ Arjun Baral, Effectiveness of Pollution Control Certification (PCC) in brick and cement industries of Eastern Nepal ■ Nanda Kaji Budhathoki, Nepalese farmers' adaptation strategies to climate change ■ Narendra Chand, Provision of ecosystem services and their trade-offs and synergies in the watersheds of Nepal
Pakistan	<ul style="list-style-type: none"> ■ Ihtasham Padda, Compliance with cleaner production: An appraisal of the tanning industry in Sialkot, Pakistan ■ Sobia Rose, Impact of climate change on morbidity and mortality in Pakistan
Sri Lanka	<ul style="list-style-type: none"> ■ Wasantha Athukorala, Valuation of crop genetic resources: Farmer preferences for banana diversity and genetically modified banana in Sri Lanka ■ Chatura Rodrigo, Economic analysis of organic rice production in Sri Lanka: Opportunity cost of supply vs. willingness to pay

Beyond Expectations: Field Work during Hartal in Bangladesh

Three-wheeled rickshaws raced the clock, sometimes swerving to avoid crowds of protesters and sometimes stalled in traffic, to deliver samples of industrial wastewater to laboratories for Mehruna Chowdhury's study on pollution management in the Bangladeshi textile sector. Chowdhury and her surveyors faced many difficulties in obtaining and getting water samples to the lab in a timely fashion. They coordinated permission from factories, the government, and industrial association officials, but still found they needed to visit sites several times to gain admission. Once the surveyors collected treatment water, they had to maintain the samples at a certain temperature and keep them from contact with direct sunlight. Chowdhury and colleagues transported samples in iced coolers via rickshaw, public transport or a rented minivan, depending on the volume of samples, road conditions and the size of anti-government protests. On a normal day without any transport issues, the average time from treatment plant to testing facility was three hours.



Figure 3: SANDEE is determined to seek gender balance in its training and research activities. Some 20-40% of SANDEE researchers, and 20-30% of trainees are women.



Beyond GDP: Sustainability Through Greener Accounting

As each of SANDEE's member nations endeavor to meet United Nations Millennium Development Goals by 2015, SANDEE is looking beyond that deadline to address one particular objective, that of ensuring environmental sustainability.

One of the most important strategies to encourage sustainability in a particular country or region is to persuade the government to augment its system of national accounts to reflect natural capital when measuring economic growth. This is aptly called "greening accounts." Equally crucial to training nations and local governments to adopt a new method of measurement is the establishment of a standard accounting metric for environment-economic accounts.

Traditional Systems of National Accounts and the conventional primary indicator of economic progress, Gross Domestic Product (GDP), do not incorporate the liquidation of natural capital or in any way take the sustainable use of environmental resources into account. A framework for the first international measurement standard, the System of Environmental-Economic Accounting (SEEA) was adopted by the United Nations in 2012.

SANDEE and other organisations are ahead of the curve in promoting sustainability through augmented economic models. The World Bank's Wealth Accounting and the Valuation of

“Contemporary economic models give a misleading picture of the foundations of economic systems. They therefore point in the wrong direction to glimpse the economic possibilities of the future.”

– Sir Partha Dasgupta, Professor Emeritus of Economics at Cambridge University



SANDEEites at the WAVES meeting, World Bank, November 2013.

“A significant segment of India’s population, particularly the rural poor, depends on natural resources for their subsistence and earning their livelihood. The poor need to be fully factored in when we deliberate the calculus of growth, which can be sustained only if natural resources are managed on a sustainable basis.”

– Prime Minister
Dr. Manmohan Singh of India



International Workshop on “Green National Accounting for India,” New Delhi, April 2013.

Ecosystem Services (WAVES), the United Nations Environment Programme-supported Economics of Ecosystems and Biodiversity (TEEB), the Economy and Environment Program for Southeast Asia (EEPSEA), and SANDEE have been working together and separately to strengthen policy demand, pilot methodological tools, and build skills related to environmental valuation.

In October 2013 SANDEE organised an international workshop called “Valuing and Accounting for the Environment in Asia” along with the United Nations Environment Programme (UNEP) and the United Nations Economic and Social Commission for Asia and the Pacific (ESCAP). Attendees hailed from South and East Asia, Australia, the Netherlands, the United Kingdom and the United States. They analysed advances in the implementation of SEEA by countries like Australia, Bhutan, Malaysia, Philippines, India, Indonesia, Sri Lanka and Vietnam.

Nearly 100 conference goers discussed challenges related to integrating environment into national accounts. They examined policy issues that greener accounting could constructively support. They appraised the implementation challenges involving data, technical capacity and institutional barriers; and they identified research priorities that could strengthen progress toward greener accounting.

Three priority issues emerged: (1) Raising awareness at multiple government levels about the link between greening accounts and policy needs. (2) Institutionalising efforts by piloting accounts, especially in forest, water and land sectors, and coordinating the necessary mechanisms to do so. (3) Training and building skills indispensable for environmental-economic accounting and the valuation of ecosystem services.

For more than a decade, the SANDEE mandate has been to raise awareness for environmental sustainability in economic development, to encourage policy and research to that end, and to train researchers and other professionals while building capacity throughout South Asia to address development-environment problems. SANDEE is one of the premiere organisations serving to further the greening of accounts in South Asia.

Several countries in SANDEE's purview have taken steps to augment national accounts or have piloted specific regional accounts. India organised an expert panel to look into greening India's national accounts. That Expert Group is composed of senior economists, statisticians and policy advisors, and chaired by SANDEE's own Sir Partha Dasgupta. SANDEE Fellows Kanchan Chopra, HariPriya Gundimeda, Priya Shyamsundar and E. Somanathan were also panel members. The Expert Group made recommendations to the Indian government on how to quantify natural capital to see whether the Indian economy is growing in a sustainable fashion.

In April 2013, as a direct result of the work by this group, Prime Minister Dr. Manmohan Singh released "Green National Accounts in India: A Framework." The report includes specific practical guidelines for the Central Statistics Office on greening India's national accounts. The framework paves the way for other countries in South Asia to begin improving their own measures for sustainable development.



International conference on "Valuing and Accounting for the Environment in Asia," Bangkok, October 2013.

SANDEE Researcher Profiles: Examining Environment-Development Challenges in Bhutan



Ngawang Dendup is Head of Social Sciences at the Royal University of Bhutan, Sherubtse College in Kamlung, Bhutan.

Ten years from now, I see myself providing mentor services to younger faculty members and students after perfecting different economics research tools myself.

A serious aversion to chemistry pre-empted **Ngawang Dendup's** grand plan to be a medical doctor. Luckily for SANDEE, Ngawang decided to become an economist instead. He says he continues working toward this goal every day.

Ngawang (pronounced *n'wong*) grew up in Dramitse in the far eastern reaches of Bhutan, in a small and remote valley that serves as a marketplace for some 30 villages that surround it. Today Ngawang lives in the slightly larger Kamlung, where he heads the School of Social Science at the Royal University of Bhutan's Sherubtse College. There, he feels much more connected to the world and current events through online news channels.

He first found SANDEE while conducting internet research on community forestry, and applied to SANDEE's summer course on environmental and resource economics. The classes were interesting for him because attending students came from diverse cultural backgrounds. The course was also very challenging in terms of developing skills in econometrics and data analysis. Ultimately Ngawang felt he reached the point where he literally had to dream about these subjects in order to master them, but master them he did.

Ngawang's work with SANDEE focuses on examining the benefits of improved sanitation services. He is using secondary data to analyse household preferences for these services, which should be useful for assessing the economic viability of water and sanitation infrastructure projects. In addition to this water sanitation study and other work on labor migration and forestry in Bhutan, Ngawang lectures economics students, develops undergraduate curricula on environmental economics, and conducts research on training and development for his college. He has an MBA from Edith Cowan University in Perth, Australia and has attended sustainability and governance policy workshops in Japan.

"I am so passionate about teaching and talking about different research ideas with my colleagues. And my current job provides me this platform," he says. Ngawang, who speaks English, Hindi and Nepalese in addition to Dzongkha, has a very bright future indeed. SANDEE is pleased to help Ngawang Dendup on his path toward becoming an even more successful economist.

One of SANDEE's newest researchers is **Om Katel**. Om also comes to SANDEE via Bhutan where he was born and raised in a village called Lhayul, a day and a half's walk from the nearest rural road.

Om's initial schooling was the study of Sanskrit in a Pathsala until the age of ten. His pursuit of education then took him to Kalimpong, India where he attended school and completed college. He received his Ph.D. from the Asian Institute of Technology in Thailand and first heard about SANDEE when studying there. In 2012 he received a SANDEE grant to research Mapping and Designing Payments for Ecosystem Services in Punkha, Bhutan.

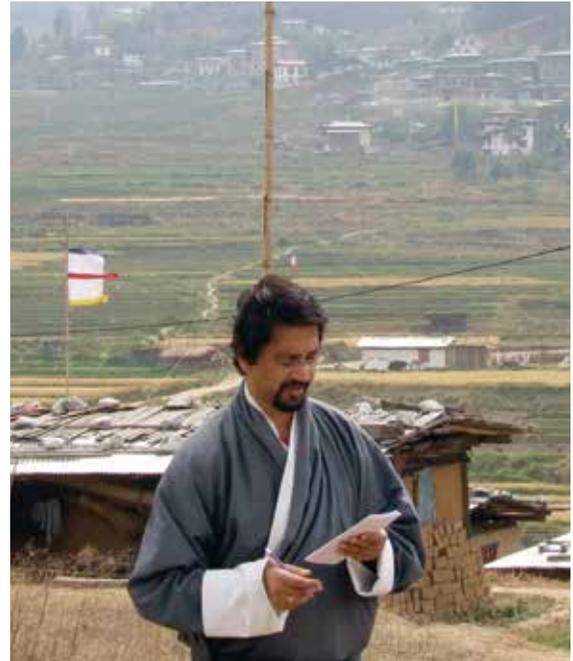
Om has come to believe that environmental economics is not only an important subject for scientists, but also the link connecting natural, social and policy sciences. As a professor in Lobesa at the Royal University of Bhutan's College of Natural Resources, Om teaches Applied Conservation Sciences, GIS, Integrated Watershed Management and Natural Resource Economics.

His current work in forest resources and wildlife conservation was likely influenced by the natural surroundings of his remote upbringing. The first time Om saw a moving vehicle—at 17 years of age—he fled from what he saw as a roaring metal monster. Happily he has at this point resolved his issues with transportation and commutes daily to work at the university.

According to Om, SANDEE provided rigorous and quality research skills above and beyond what he had already learned through his graduate programme. His presentation at the Research and Training workshop was a whirlwind experience of preparations and critique that changed the course of his research several times.

Om's family are farmers who raise rice and vegetables in Noonpani. Neither his mother nor his father read or write and treat Om's work rather reverentially when he visits. His mom never throws out any of his papers, fearing that she may destroy Om's important research.

SANDEE also thinks his work shows great potential. Look for his upcoming publications on forest resources management, white-bellied heron habitat and wild dogs' effect on farmers' livelihoods.



Om Katel lectures in the Department of Forestry at the Royal University of Bhutan, College of Natural Resources in Lobesa, Bhutan.

SANDEE is the one big ship that rescued me from drowning in the cloud of letters of disciplines and discourses. The rigor and the quality is truly rewarding.

Publications



SANDEE believes in transforming research, that simple gathering of facts, into knowledge mobilisation. The wide array of research results in SANDEE publications represents the breadth of data SANDEE can bring to regional and national economic policymakers in South Asia.

SANDEE publications have become valuable resources on environmental management and valuation techniques. Environmental economic coursework throughout the region now includes one or both of SANDEE's books, *Promise, Trust and Evolution: Managing the Commons of South Asia* and *Environmental Valuation in South Asia*. At least 19 universities in Bangladesh, India, Nepal, Pakistan, and Sri Lanka use SANDEE materials in their graduate coursework (see Table 3 on page 20).

Eleven peer-reviewed external publications emerged from SANDEE research in 2013, reflecting SANDEE's desire to ensure research of international quality. In addition to the peer-reviewed publications, SANDEE published seven working papers and associated policy briefs.

Each spring and fall SANDEE's newsletters feature excerpts from the latest research, and list the most recent publications and advances of SANDEE Fellows and researchers. A full list of working papers and peer-reviewed publications are below. The complete papers and policy briefs are available at www.sandeeonline.org.

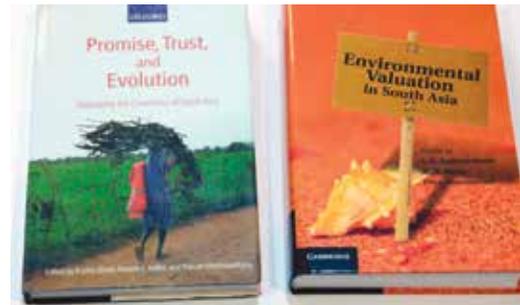
Peer-reviewed and other Publications

Bhat, M.G., Bhatta, R. & Shumais, M. (2014) Sustainable funding policies for environmental protection: The case of Maldivian atolls. *Environmental Economics and Policy Studies*, 16(1), 45-67. <http://link.springer.com/article/10.1007%2Fs10018-013-0070-x>

Das, S. & Crepin, A.S. (2013) Mangroves can provide protection against wind damage during storms. *Estuarine, Coastal and Shelf Science*, 134, 98-107. <http://dx.doi.org/10.1016/j.ecss.2013.09.021>

Ghate, R., Ghate, S. & Ostrom, E. (2013) Cultural norms, cooperation, and communication: Taking experiments to the field in indigenous communities. *International Journal of the Commons*, 7(2), 498-520.

- Goswami, K. & Choudhury, H.K. (2013) Determinants of expansion of area under jatropha plantation in North East India: A Tobit analysis. *Forest Policy and Economics*, 30, 46-52.
- Griggs, D., Stafford-Smith, M., Gaffney, O., Rockström, J., Öhman, M.C., Shyamsundar, P., Steffen, W., Glaser, G., Kanie, N. & Noble, I. (2013) Policy: Sustainable development goals for people and planet. *Nature*, 495: 305-307, doi:10.1038/495305a.
- Haider, M.Z. (2013) Benefit of rice residue burning in the field. *International Journal of Agriculture, Environment and Biotechnology*, 6(1): 145-55.
- Haider, M.Z. (2013) Determinants of rice residue burning in the field. *Journal of Environmental Management*, 128, 15-21.
- Matta, J.R., Ghate, R. & Nagendra, H. (2013) The sustainability of traditional community forest management systems: Lessons from India. *Unasylva*, 64(1), 50-56.
- Mukherjee, V., Das, A., Akhand, A. & Gupta, G. (2013) Toxicity and profitability of rice cultivation under wastewater irrigation: The case of the East Calcutta wetlands. *Ecological Economics*, 93, 292-300.
- Shyamsundar, P. (2013) Accounting for natural wealth – Practical challenges ahead. *Environmental Development*, 7, 181-183.
- Swain, M. (2013) Agricultural risk and efficacy of crop insurance schemes in Odisha. In S. Chandra, K.V. Babu & P.K. Nath (Eds.) *Agrarian Crisis in India: The Way Out*. New Delhi: Academic Publishers.



2013 Working Papers

In 2013 SANDEE research associates published seven working papers and associated policy briefs, all of which target solutions to existing problems in South Asia, from fuel efficiency in Karnataka to incentives to stop biomass burning in Nepal.

- Examining Private Participation in Embankment Maintenance in the Indian Sundarbans, WP 75-12
- Why Do Farmers Burn Rice Residue? Examining Farmers' Choices in Punjab, Pakistan, Tanvir Ahmed and Bashir Ahmad, WP 76-13
- Tobacco Curing and Fuel Efficiency in Karnataka, India, Nayanatara S. Nayak, WP 77-13
- Do Open Sewers Lead to a Reduction in Housing Prices? Evidence from Rawalpindi, Pakistan, Muhammad Irfan, WP 78-13
- Economic and Environmental Impacts of Bt Cotton: Evidence from Pakistan, Khuda Bakhsh, WP 79-13
- Climate Change, Submergence and Rice Yield: Evidence from Coastal Barisal, Bangladesh, Afsana Haque and Sarwar Jahan, WP No 80-13
- What Incentives Do Farmers Need to Stop Biomass Burning? A Reverse Auction Study From Nepal, Krishna Prasad Pant, WP No 81-13
- To Cultivate or Not? Examining Factors that Influence Jatropha Agriculture in North East India, Kishor Goswami, WP 82-13

Professional Progress by SANDEE Researchers in 2013

- The Center for Environmental Risk Assessment at the University of California awarded **Khuda Bakhsh** a research grant for assessing agricultural management practices and externalities of Bt cotton plantations in Pakistani Punjab under the Biosafety Research in Pakistan Grants Program. Khuda also won a grant from the Endowment Fund of the Secretariat, University of Agriculture, Faisalabad, on the water economics of growing basmati, hybrid and coarse rice. Additionally, Khuda received the certification of LEAD Fellow in the Leadership Development programme of Pakistan for his focus on Green Economy.
- **P. Indira Devi** now heads the new Centre of Excellence in Environmental Economics at Kerala Agricultural University after her research into Kerala environmental health helped create the centre along with the aid and support of the Department of Environment & Climate Change of the government of Kerala.
- The international non-profit Blacksmith Institute invited **Yamini Gupt** to extend her work on lead battery recycling, and work together with the Indian Ministry of Environment and Forests, the institute, and other stakeholders on policy initiatives to help solve lead pollution issues in India.
- **D. Suresh Kumar** received a promotion and is now full Professor in the Department of Agricultural Economics at Tamil Nadu Agricultural University, Coimbatore, India.
- **Harini Nagendra** was among the eight winners of the Elinor Ostrom Award on Collective Governance of the Commons. Award criteria included diversity of work, innovation and use of different methodological approaches as an active practitioner of the Commons.
- **P. Paramasivam** is the lead Principal Investigator, and **R. Balasubramanian** and **Suresh Kumar** are co-Principal Investigators for a research project called “Integrated Assessment of Climate Change Impacts on Principal Crops and Farm Household Incomes in Southern India.” Their project is part of a global crop study that examines the effects of climate change for the Agricultural Model Inter-comparison and Improvement Project sponsored by CGIAR and the governments of the United Kingdom and United States.
- **Rajesh Rai** was awarded the Sir Partha Dasgupta Post-Doctoral Fellowship in Environmental and Developmental Economics from SANDEE. Rai is researching ecosystem services related to watersheds in collaboration with colleagues at SANDEE and ICIMOD.
- **Wasantha Ratnayake** completed his Ph.D. in Environmental Economics from the University of Sri Jayewardenapura, Sri Lanka. His thesis was on “Value Based Approach for Recreational Planning in Horton Plains and Kaudulla National Parks in Sri Lanka.”
- A proposal written by **Mohammad Shumais** from the Maldives won an award and grant in a World Bank-Microsoft competition titled “Youth Solutions! Technology for Skills and Employment.”
- **Mamata Swain** was awarded a Commonwealth Fellowship by the Commonwealth Scholarship Commission, UK. Mamta was a Visiting Senior Fellow at the Asia Research Centre of the London School of Economics and Political Science from September-November 2013 to extend her SANDEE research on “Crop Insurance for Adaptation to Climate Change in India.”

Dissemination

Information sharing that can be applied to development policies by individuals and institutions in South Asia is at the heart of SANDEE's mission. The dissemination of SANDEE research encourages economic analysis and the inevitable comprehension of links among poverty, development and environmental change.

The dissemination of SANDEE materials is growing. The wider distribution of SANDEE research reflects professional development as well as a stronger presence in academic and policy circles. In 2013, SANDEE researchers gave presentations at more than 11 conferences and seminars across nine countries from China to Iran to Germany (see Table 2). SANDEE is now routinely invited to present panels at South Asia wide events such as the annual South Asian Economic Summit (SAES) and the Biennial Indian Society for Ecological Economics (INSEE) meetings.

This year SANDEE researchers were also featured on regional television programmes where they were able to speak directly to the local population about environmental issues. Mohammed Rafiq was interviewed by Islamabad-based Pushto TV about pollution, waste management and the biodegradability of shopping bags and other plastics. Along with Indian Sunderbans Minister Sri Manturam Pakhira, Indrila Guha was part of a segment on TARA NEWZ out of Kolkata that aired in India and Bangladesh. Participants on the programme discussed the effect of tourism on the Sundarbans.



SANDEE is taking young people now beginning their careers, and molding that career towards an understanding of the region as a region, towards an understanding of environment and development connections. The immediate impact is that research gets done, papers get published, knowledge gets created. What is beautiful is that these young researchers are going to be the ones solving problems 10, 20, 30, 50 years from today.

— Adil Najam, Dean, Pardee School of Global Studies, Boston University

Climate Change and Groundwater Dynamics: A Hydro-economic Analysis of Impacts and Adaptation in South India, Coimbatore, India

July 18, 2013

SANDEEite R. Balasubramanian of the Department of Agricultural Economics at Tamil Nadu Agricultural University reported the effects of climate change on groundwater in the state of Tamil Nadu.



Table 2: A Selection of Conference and Seminar Presentations in 2013

	Conference Name	Country	Date	Presenter
1.	Frontiers in Conservation Agriculture in South Asia and Beyond	Nepal	March 2013	Krishna Prasad Pant
2.	Green Economy: Opportunities and Challenges for South Asia	Nepal	June 2013	A. Mishra, B. Adhikari, R. Ghate and A. Senaratne
3.	20th Annual Conference of EAERE	France	June 2013	Krishna Prasad Pant
4.	Climate Change and Groundwater Dynamics: A Hydro-economic Analysis of Impacts and Adaptation in South India	India	July 2013	R. Balasubramanian
5.	The 8th National Biotechnology Congress of Iran and the 4th Congress on Biosafety and Genetic Engineering	Iran	July 2013	Khuda Bakhsh
6.	6th South Asian Economic Summit	Sri Lanka	September 2013	Kishor Goswami, R. Balasubramanian, Abdul Saboor, Prabath Edirisinghe, Bishnu Sharma and Indira Devi
7.	Conservation Tenders in Developed and Developing Countries - Status Quo, Challenges and Prospects	Germany	September 2013	Krishna Prasad Pant
8.	Natural Buffers, Disaster Management and Evaluation: Implications for Ocean Economies	China	October 2013	Saudamini Das
9.	Valuing and Accounting for the Environment in Asia	Thailand	October 2013	Sir Partha Dasgupta, Priya Shyamsundar, Pranab Mukhopadhyay, Prasanthi Gunawardena, Haripriya Gundimeda
10.	Environmental Orientation in the Hotel Sector in Sri Lanka	Sri Lanka	November 2013	Kanchana Wickramasinge
11.	Seventh Biennial Conference Indian Society of Ecological Economics (INSEE)	India	December 2013	R. Balasubramaniam, Sarvana Kumar, Krishna Prasad Pant, Saudamini Das, Gautam Gupta and Neeraj Hatekar

Table 3: Institutions and Courses that Utilised SANDEE Material in 2013

The influence of SANDEE research, training and information sharing is reflected in teaching programmes across South Asia. Typically about 50% of the trainees in the flagship environmental economics summer course are university-level teachers. SANDEE monitors the professional progress of SANDEE associates and tracks the various teaching programmes that launched as a result of SANDEE training. This is a partial tally of programmes that used SANDEE working papers, books and materials in 2013.

Country	Institution and Course
Bangladesh	<ul style="list-style-type: none"> ■ Khulna University, Masters of Science (Economics) ■ Sylhet University, Masters of Science (Forestry) ■ United International University, B.Sc. (Economics) ■ Bangladesh Agriculture University, B.Sc. (Agricultural Economics)
India	<ul style="list-style-type: none"> ■ Visva-Bharati University, M.Phil. / Ph.D. (Research Methods) and M.A. (Economics) ■ Ravenshaw University, M.A. (Economics) ■ Goa University, M.A. (Economics) ■ University of Calcutta, M.Sc. (Economics) ■ TERI University, M.A. ■ Ravenshaw University, Odisha, M.Phil. (Economics) ■ University of Hyderabad, M.A. (Economics)
Nepal	<ul style="list-style-type: none"> ■ Rampur College, M.A. (Agriculture) ■ Goldengate College, Tribhuvan University, M.Sc. (Environmental Science) ■ Patan Multiple Campus, Tribhuvan University, M.Sc. (Environmental Science), M.A. (Economics)
Pakistan	<ul style="list-style-type: none"> ■ International Islamic University, Islamabad, M.Phil. ■ Pakistan Institute for Development Economics, Quaid-i-Azam University, M.Phil. (Economics) ■ COMSATS Institute of Information Technology, Lahore, B.S. (Economics) ■ IM Sciences, Peshawar, B.Sc. (Economics) and M.Sc. (Economics)
Sri Lanka	<ul style="list-style-type: none"> ■ Sabaragamuwa University, B.Sc. (Economics)



Spotlight on SANDEE Fellows

The SANDEE Fellows, some 25 in number, are a key part of SANDEE's research support system and a huge help with regional and topical issues. The group is composed of SANDEE Advisors and exceptional researchers who have contributed significant research and publications of their own, and have given a considerable portion of their time in assistance to SANDEE. The Management and Advisory Committee of SANDEE elects new Fellows. In 2013, SANDEE welcomed two new Fellows: Ziaul Haider and Arabinda Mishra.



Mohammed Ziaul Haider is the Dean of Social Sciences and Head of the Economics Discipline at Khulna University, Bangladesh. He teaches courses on environmental economics and industrial economics and supervises the thesis work of both undergraduate and graduate students. He serves on the Khulna University Syndicate and Academic Council and on the editorial board of three international journals. Ziaul has published more than 20 peer-reviewed articles. He received his Ph.D in Economics from Tohoku University, Japan.

Arabinda Mishra is the Director of the Earth Sciences and Climate Change Division of The Energy and Resources Institute (TERI) and the Dean of Policy and Planning at TERI University in New Delhi, India. Arabinda was a Fellow in the Centre for Multi-disciplinary Development Research (CMDR) in Karnataka, which is an affiliate of the Indian Council of Social Science Research (ICSSR). He received his Ph.D. at Sambalpur University, Orissa and has published a number of articles in international journals.



The Cycle of a SANDEEite

Researchers submit concept notes to SANDEE. The SANDEE team reviews these and invites researchers for training on research methods and environmental economics. SANDEE awards a researcher a grant and gives further guidance, group mentoring, and additional training on specific research tools and topics. Over the course of two years, the researcher receives peer reviews, edits and produces a working paper, and disseminates the results through presentations and a policy brief. Successful SANDEE researchers typically return materials and knowledge back to their university teaching programmes.

A select few are invited to become SANDEE Fellows.

Training

A core SANDEE activity is providing training to South Asian environmental researchers whose backgrounds cover the entire spectrum from recent graduate to experienced economist. SANDEE develops institutional capacity in environmental and natural resource economics as trained researchers return to introduce new skills and tools to colleagues.



In 2013, SANDEE's eight workshops filled with 181 students and professionals from universities and agencies across the region. Attendees at the annual winter and summer schools picked up practical, hands-on knowledge about teaching and researching. Those who continued on in Bangkok after the flagship summer school to attend the specialty course with Professor Nancy Olewiler on policy analysis added critical thinking skills about policy requirements into their research repertoire. Attendees of Dr. Madhu Khanna's three-day course in December in Kathmandu strengthened their abilities to conduct cost-benefit analyses.

Those at SANDEE's Research and Writing Workshops in Lahore and Lobesa built capacity in environmental and natural resource economics, as did the attendees of a "Write-shop" organised this year in Kathmandu (see The Underserved Areas Programme). SANDEE researchers at the biannual Research and Training Workshops in June and December refined proposals, streamlined their work, and benefitted from the advice and instruction of professors pre-eminent in their fields.



Winter School in Research Methods in Environmental and Resource Economics

January 14-24, Dhulikhel, Nepal

Summer School in Environmental and Resource Economics

April 29-May 17, Bangkok, Thailand

Policy Analysis for Environmental Economics

May 19-22, Bangkok, Thailand

Cost-Benefit Analysis Workshop

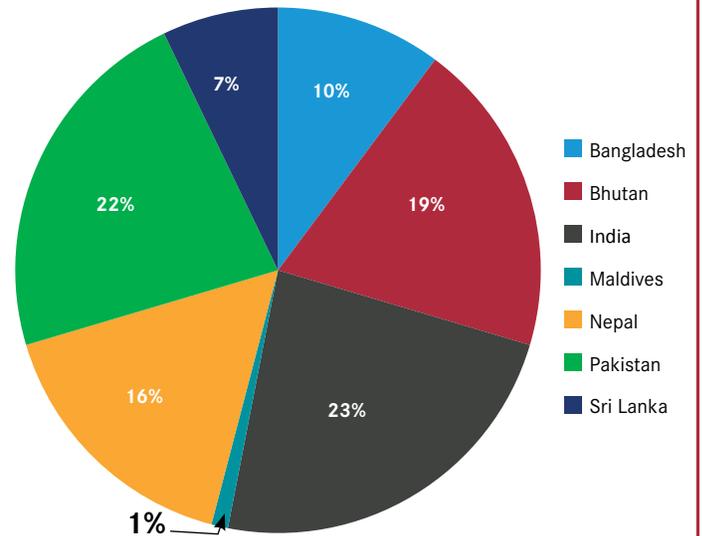
December 6-8, Kathmandu, Nepal

Biannual Research and Training Workshops

June 19-23, Baeng Saen Beach, Thailand

December 10-14, Kathmandu, Nepal

Figure 4: Trainee Distribution by Country (2013)



The Underserved Areas Programme

In 2013 SANDEE focused on the relatively underserved areas of Pakistan and Bhutan to build the professional skills required of local researchers to enable them to study and address their indigenous environmental concerns.

Each year SANDEE continues efforts to increase the number of researchers from Bangladesh, Bhutan and Pakistan. This year, the focus was on Lahore and Lobesa, where SANDEE organised Research and Writing Workshops. SANDEE also hosted a specialised Write-shop in Kathmandu for Bhutanese researchers. As a result of the emphasis on capacity building for the attendees from Bhutan, SANDEE was able to award four micro grants for the study of mitigation practices in ongoing human-wildlife conflict to researchers there.

Research and Writing Workshops in Environmental and Natural Resource Economics

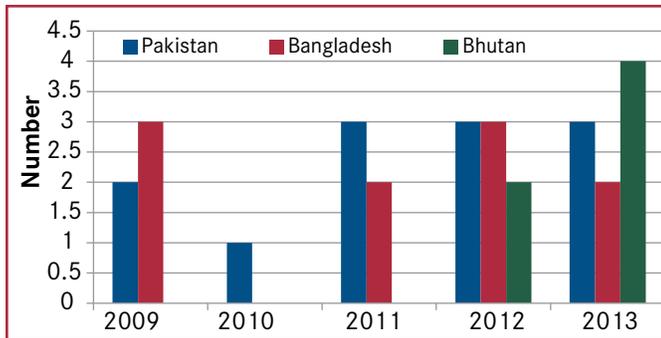
March 6-9, 2013, Lahore, Pakistan

August 5-10, 2013, Lobesa, Bhutan

SANDEE partnered with The Lahore University of Management Sciences (LUMS) in Pakistan and The Royal University of Bhutan (RUB) in Bhutan to co-host Research and Writing Workshops in environmental and natural resource economics. Sixteen Pakistani researchers and fifteen Bhutanese researchers participated in the respective workshops that introduced current environmental policy concerns, built research capacity, and improved proposal-writing techniques so that participants could develop their concept notes into research proposals.



Figure 5: Distribution of New Grants in Underserved Areas by Year (2009-2013)



Write-shop for Bhutanese Researchers

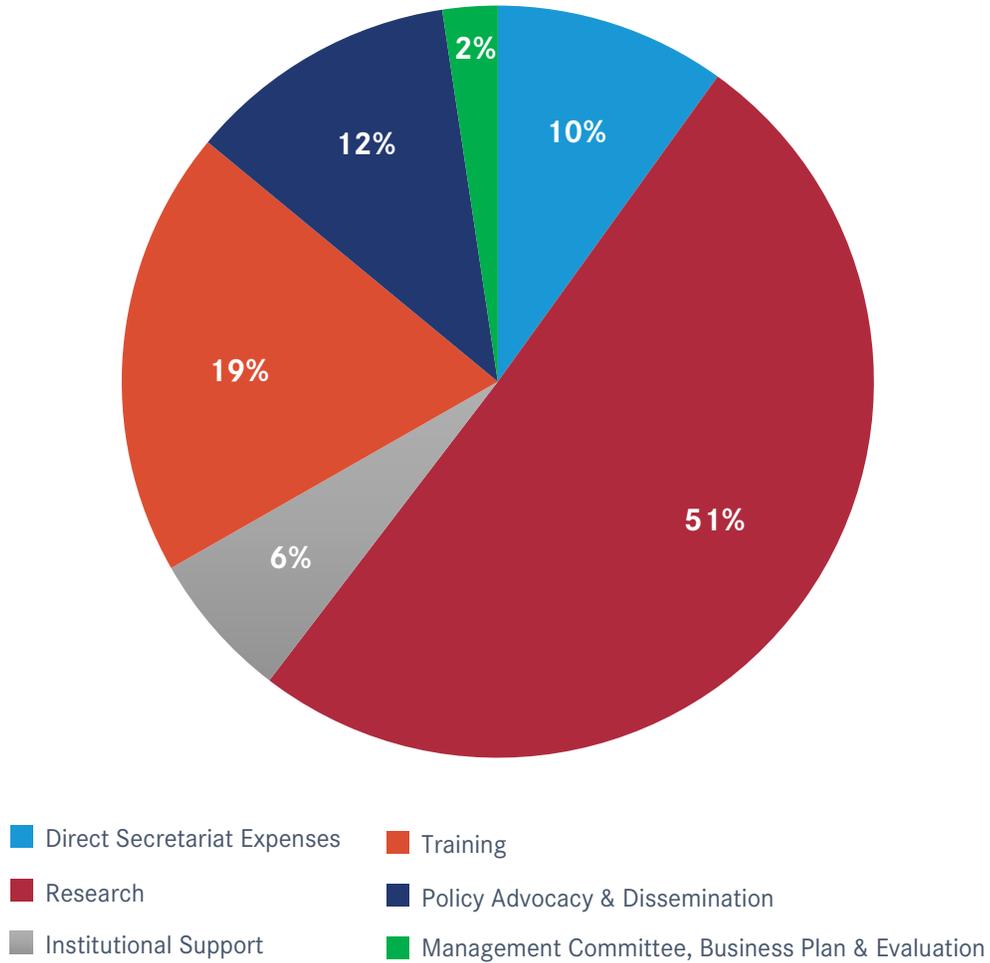
September 9-14, 2013, Kathmandu, Nepal

SANDEE organised a six-day writing workshop in Kathmandu for researchers from Bhutan to work on their research concept notes. Attendees worked closely with the SANDEE team on developing concept notes into research proposals in the topic area of human-wildlife conflict in Bhutan.



Financial Information

Expenditures 2013: USD 1,138,406.45



Sponsors and Partners

SANDEE was established in late 1999 with initial support from the Swedish International Development and Cooperation Agency (SIDA), Sweden, and 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 has been hosted at the International Centre for Integrated Mountain Development (ICIMOD) since August 1, 2009.

SANDEE could not undertake such a wide breadth of activities on its own, and is grateful for the cooperation and support of our sponsors. SANDEE also counts among its friends a large supportive network of institutions and teaching faculty.

Institutional Partners

- Economic Research Group, Bangladesh
- ICIMOD, Nepal
- INSEE, India
- Kerala Agricultural University, India
- Lahore University of Management Sciences, Pakistan
- Royal University of Bhutan, Bhutan
- Srinakarinwirot University, Thailand
- UNEP
- UN ESCAP
- ADB
- E&E
- WAVES
- UNDP

Faculty Partners

- Cambridge University, UK
- Duke University, USA
- Queensland University, Australia
- University of Namur, Belgium
- ERG, Bangladesh
- IBA, Pakistan
- Indian Statistical Institute, India
- Jadavpur University, India
- PIDE, Pakistan
- SDPI, Pakistan
- Royal Society for the Protection of Nature, Bhutan
- Royal University of Bhutan
- Goa University, India
- Khulna University, Bangladesh
- Visva-Bharati University, India
- Wildlife Conservation Society, Singapore

Sponsors



Farewell and Welcome



SANDEE welcomes our new MAC member, **Dr. Adil Najam**, Dean of the Pardee School of Global Studies at Boston University. Adil is from Pakistan and did his graduate work at the Massachusetts Institute of Technology. He taught at Boston University and Tufts University and served as Vice Chancellor of the Lahore University of Management Sciences. He has served on the boards of numerous environmental and philanthropic organisations and has authored multiple books. His specialty is developing country environmental policy with a focus on climate change.

This year we bid goodbye to **Herath Gunatilake**. Herath supported SANDEE from his position as the Principal Energy Economist of the Asian Development Bank in the Phillipines and we wish him all the best.

Governance

Management and Advisory Committee

A Management and Advisory Committee of scholars and policymakers governs SANDEE.

Adil Najam

Dean, Pardee School of Global Studies,
Boston University, USA

Eli Koefoed Sletten

Advisor, NORAD, Norway

Madhu Khanna

Professor, University of Illinois, USA

Priya Shyamsundar

Executive Director, SANDEE

Annamaria Oltorp/Renée Ankarfjärd

Head/Research Advisor, Asia Region, SIDA,
Sweden

Syeda Rizwana Hasan

Chief Executive, Bangladesh Environmental
Lawyers Association, Bangladesh

Bhim Adhikari

Programme Leader, Environmental Economics,
Senior Programme Specialist, IDRC, Canada

David Molden

Director General, ICIMOD, Nepal



Research Advisors

A global group of Research Advisors support and mentor the researchers in the SANDEE network.

A.K. Enamul Haque

Professor, United International University, Bangladesh

Céline Nauges

The University of Queensland, Brisbane, Australia

E. Somanathan, Professor, Indian Statistical Institute, India

Jean-Marie Baland

Professor, Facultés Universitaires, Notre-Dame de la Paix, Belgium

Jeffrey Vincent

Professor, Duke University, USA

Subhrendu Pattanayak, Professor, Duke University, USA

Secretariat

Anuradha Kafle

Senior Training and Research Coordinator

Heman Lohano

Senior Economist

Malvika Joshi

Accountant

Mani Nepal

Research Programme Manager

Neesha Pradhan

Administrative Programme Associate

Pranab Mukhopadhyay

Goa University, Technical Support

Priya Shyamsundar

Executive Director

SANDEE Research Advisors Set the Bar High

Our SANDEE Advisors are invaluable mentors to our researchers. They bring environmental economic skills and experience to SANDEE from all over the world. At workshops they present topics and team up with researchers to review work and suggest edits. They set very high professional standards for research and help ensure SANDEEites meet those criteria. Because of our Advisors, the quality of SANDEE publications is excellent and the reputation of its graduates well deserved.

The SANDEE Secretariat runs the day to day operations from ICIMOD in Kathmandu, Nepal. They are the first point of contact and the nexus of all SANDEE activity.



The Year Ahead

Research

- Research and Training Workshop, June 16-20, 2014, Bhutan
- Research and Training Workshop, December 7-11, 2014, Nepal
- Planning Meeting, Ecosystem Services, April 2014, India
- CARIIA Inception Meeting, Jan-Feb, 2014, Nepal
- Collaborative and Comparative Analyses (on-going)

Training

- Winter School in Research Methods, Nepal, February 10-16, 2014, Nepal
- Summer School in Environment and Resource Economics, 6-22 May, 2014, Thailand
- A Training Course on Environmental Valuation Methods, 15-18 September, 2014, Maldives
- Write-Shop, 7-9, November 2014, Nepal
- Advance Course, 4-6 December, Nepal

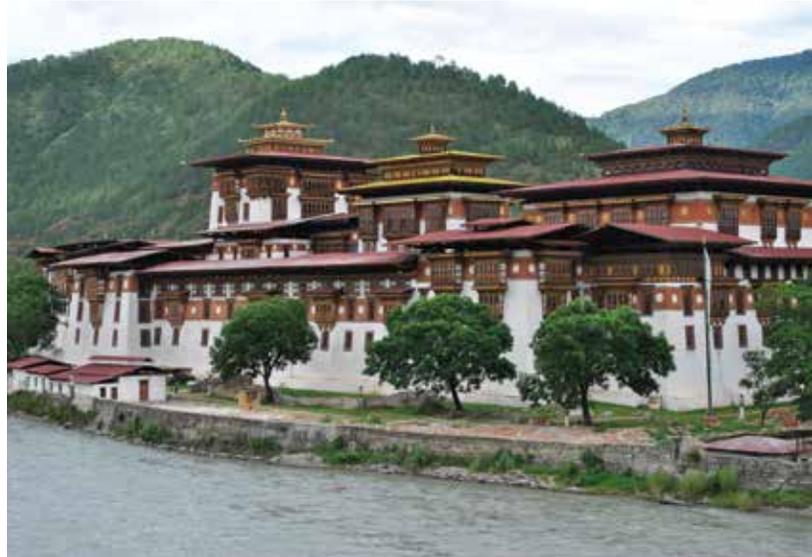
Capacity Building in Underserved Areas

- Research and Writing Workshop, January 14-18, 2014, South India/Sri Lanka
- Building capacity on economic analyses of coastal resources and mangroves, Bangladesh (IUCN/ERG)

Dissemination and Policy Support

- Conferences
- Working Papers, Newsletters, Policy Briefs (on-going)
- International Geosphere Biosphere Programme Scientific Committee
- Wealth Accounting and Valuation of Ecosystem Services Policy and Scientific Committee

SANDEE looks forward to a successful and productive 2014.



Key Environmental Indicators for South Asia

	Bangladesh	Bhutan	India	Maldives	Nepal	Pakistan	Sri Lanka
Population (millions)	150.5	0.738	1,241.50	0.32	30.5	176.7	20.9
GNI per capita, Atlas method (\$)	780	2,130	1,420	5,720	540	1,120	2,580
GDP (\$ billions)	111.9	1.7	1,872.80	2.1	18.9	210.2	59.2
Agriculture							
Land area (1,000 sq. km)	130	38	2,973	0.3	143	771	63
Agricultural land (% of land area)	70	14	60	23	30	34	42
Forests and Biodiversity							
Forest area (% of land area)	11.1	84.9	23.1	3	25.4	2.1	29.4
Annual deforestation (% change, 2000-2010)	0.2	-0.3	-0.5	0	0.7	2.2	1.1
Nationally Protected Area (% of land area)	1.8	28.3	5	—	17	10.1	21.5
Energy, Emissions and Pollution							
GDP per unit of energy use (2005 PPP\$/kg of oil equivalent)	209	354	566	985	341	487	478
Electricity generated using fossil fuel (% of total)	96.1	—	83.1	—	0.1	62.7	47.5
Electric power consumption per capita (kWh)	279	—	616	—	93	457	449
CO ₂ emissions per unit of GDP (kg/2005 PPP\$ GDP)							
CO ₂ emissions per capita (metric tons)	0.3	0.6	1.6	3.3	0.1	0.9	0.6
Water and Sanitation							
Access to improved water sources (% of total population)	81	96	92	98	89	92	91
Access to sanitation in rural areas (% of rural population)	55	29	23	97	27	34	93
Internal freshwater resources per capita (cubic meters)	698	105,653	1,165	94	6,501	311	2,530
Total freshwater withdrawal (% of internal resources)	34.2	0.4	52.6	19.7	4.9	333.6	24.5
Under-5 mortality rate (per 1,000 live births)	46	54	61	11	48	72	12
National Accounting Aggregates							
Gross national savings (% GNI)	33.5	..	35	..	34	19.5	22.4
Consumption of fixed capital (% GNI)	7.6	10.4	9.3	13.5	8	8.5	10.3
Education expenditure (% GNI)	1.8	3.2	3.1	5	4.2	1.6	1.7
Energy depletion (% of GNI)	1.9	0	3.1	0	0	2	0
Mineral depletion (% GNI)	0	0	1.3	0	0	0.1	0
Net forest depletion (% GNI)	0.4	3.4	0.5	0	2.2	0.6	0.3
CO ₂ damage (% GNI)	0.4	0.2	0.9	0.5	0.1	0.6	0.2
Adjusted net savings (% GNI)	24.4	—	22.5	—	27.8	8.3	13.2

Source: Little Green Data Book, 2013. World Bank.

