



**Economy and Environment Program
for Southeast Asia**

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Annual Report

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What is EEPSEA?

The Economy and Environment Program for Southeast Asia was established in May 1993 to support training and research in environmental and resource economics. Its goal is to strengthen local capacity in the economic analysis of environmental problems so that researchers can provide sound advice to policy-makers. The program uses a networking approach to provide financial support, meetings, resource persons, access to literature, publication avenues, and opportunities for comparative research across its nine member countries. These are Thailand, Malaysia, Indonesia, the Philippines, Vietnam, Cambodia, Lao PDR, China, and Papua New Guinea.

EEPSEA's structure consists of a Sponsors Group, comprising all donors contributing at least USD 100,000 per year, an Advisory Committee of senior scholars and policy-makers, and a small secretariat in Singapore. EEPSEA is a project administered by the International Development Research Centre (IDRC) on behalf of the Sponsors Group.

Typically, researchers learn about EEPSEA through various means and apply for a research or training award. Most applicants attend one of EEPSEA's courses before or in conjunction with their research project. Budget ceilings for research projects are CAD 20,000-28,000, depending on the country. Researchers may be affiliated with a university, government or non-government organization and the grants are normally made to that institution. Teams of researchers carry out most projects.

Research project proposals are sent to experts for written review. Those recommended for further consideration must then be revised and presented at a working group session at the next EEPSEA biannual meeting. Further revisions are usually called for until the project is judged satisfactory and a grant, approved. After approval, interim findings are presented and critiqued every six months until the project is completed. Researchers receive frequent technical assistance and literature from the Secretariat and resource persons. Final reports of successful projects are widely disseminated by EEPSEA and the researchers themselves through publications, the media, and consultations with policy-makers.

The selection process for both training and research awards is highly competitive. Approximately one in four applications for research awards is accepted.

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EEPSEA Management and Staff

Message from the Director

Another year has passed, one as full and productive as the years before it and yet, also exceptional. For one thing, we co-sponsored five regional training courses with a number of international organizations working in Southeast Asia compared to the usual 2-3 offerings. Another major achievement was the expansion of our clientele base—formerly confined to mainly natural resource managers, policy makers, and researchers—to judges and the media through courses held for these two groups for the first time, in Bali and Manila, respectively.



Forming a link with the judiciary in Asia was indeed a significant breakthrough for EEPSEA—it presented us with a golden opportunity to introduce environmental economics to real life cases by sharing with the judiciary the necessary knowledge to assess environmental damage. Two high caliber environmental economists—Drs. Michael Hanemann and Vic Adamowicz—ably conducted the training course on damage valuation for the judges.

The course for Asian journalists, on the other hand, enabled us to establish a personal link with members of the media for important networking and outreach. In turn, the journalists provided useful suggestions on how we can better communicate our research findings.

Both the judges and journalists now receive all our policy briefs. It is my hope that our ties with both groups will continue to be strengthened in the years to come as they play very important roles in bringing the practical value of environmental economics to everyday life.

Another breakthrough for the year was making new inroads into Papua New Guinea (PNG). PNG had long been one of the member countries of EEPSEA but other than providing research grants to two of its researchers in the distant past, we were not able to attract new researchers from the country. A joint regional course for policy-makers, organized with the UNDP-UNEP and ADB in April 2009, was attended by key environmental officials from PNG who, on that occasion, requested EEPSEA and the UNDP to offer environmental economics courses for their policy-makers and researchers. These courses took place back-to-back from April 27 to May 1, 2009, and are expected to pave the way for more training of PNG researchers in the coming years.

We continued to widen our outreach in the region through our in-country 3-week environmental economics (EE) course for economics teachers in local colleges and universities. This course was offered in China and Indonesia where the offering of environmental economics as a subject, even at the undergraduate level in many

universities, does not exist as yet. The main aim of the course is to create an interest to specialize in EE and develop research proposals. Just like what we did for the Philippines course in 2007-2008, we encouraged the graduates of the above courses to submit research proposals to EEPSEA under the small research grants program.

Finally, EEPSEA found itself in the media spotlight for months following the release of its Climate Change Vulnerability Map for Southeast Asia in January 2009. The release made a tremendous impact in the region and even attracted the attention of international media. This map was another milestone project for EEPSEA and propelled it squarely into the middle of top level climate change adaptation deliberations. Policy-makers in the SEA countries covered in the mapping exercise engaged us in discussions on adaptation action for the most vulnerable areas in their countries. We intend to continue contributing to this critical area of concern with the follow-up research projects we initiated in 2008-2009 on climate change adaptation behavior. We also plan to downscale our vulnerability mapping assessment to smaller geographical areas in partnership with selected local government units in the region.

Overall, it has indeed been a very fruitful year for EEPSEA. This was made possible with the continued and generous backing of our donors (IDRC, Sida and CIDA), the strong cooperation and support of the IDRC-ASRO and ENRM management, the dedication of our resource persons, the hard work of our researchers, the untiring efforts of the EEPSEA team and support staff, and the support of all our partners and associates. To each and every one of you, my sincere appreciation! I look forward to forging another exciting year for EEPSEA with all of you.



Herminia Francisco

1.0 Regional Research Awards

Offering regional research awards has been one of EEPSEA's flagship activities. For 2008-2009, EEPSEA approved 17 research projects, six of which were part of the Cross-Country Climate Change Adaptation Behavior Research Program.

1.1 Regional Competition

There were 11 research awards approved in 2008-2009 under the regional competition (Table 1). The research topics varied widely with three focusing on the use of biofuels as alternative sources of energy.

Table 1. List of research projects approved from July 2008-June 2009

Researcher/ Country	Research Title
1. Mia Amalia, Indonesia	Air Pollution from Transportation Sector on Health and the Environment in the Jakarta Metropolitan Area (JMA)
2. Nghiem Thi Hong Nhung, Vietnam	Optimal Forest Management for Carbon Sequestration: A Case Study of <i>Eucalyptus urophylla</i> and <i>Acacia mangium</i> in Yen Bai Province, Vietnam
3. Wang Zanzin, China	Producing Biodiesel from <i>Jatropha curcas L.</i> in Yunnan, China: Life Cycle Environmental, Economic, and Energy Performance
4. Shun Wang, China	Social Capital, Local Government, and the Management of Irrigation Systems in Northwest China
5. Qiu Huanguang, China	Socioeconomic and Environmental Impacts of Biofuel Development and the Policy Implications: A Case Study of China
6. Kanittha Tambunlertchai, Thailand	Voluntary Environmental Programs in Developing Countries: An Examination of the ISO 14001 Environmental Management System Certification in Thailand
7. Ligu Lin, China	The Effects of 2003 Pollution Levy Act on Firm Pollution Emission
8. Ditya Agung Nurdianto, Indonesia	Economic Impacts of Carbon Tax in an Integrated ASEAN
9. Nyda Chhinh, Cambodia	Costs and Benefits Analysis of Small Scale <i>Jatropha curcas</i> Plantation in Cambodia

Researcher/ Country	Research Title
10. Erdenesaikhan Naidansuren, Mongolia	Economic Analysis of Negative Impacts of Goat Grazing to Environment in Mongolia
11. Udi Udiansyah, Indonesia	Forest Rent Valuation for Coal Mining Activity in South Kalimantan, Indonesia

1.2 Climate Change Adaptation Behavior Research Project

EEPSEA launched this research program in November, 2008, to better understand what determines the adaptive capacity of households, communities and local government units to deal with climate change. The program is a follow-up initiative to the EEPSEA climate change vulnerability mapping project which was started in early 2008. Adaptive capacity is one of the three major determinants of vulnerability to climate change and the program focuses on the analysis of adaptation actions taken by households, communities and local governments when confronted with major climate-related disasters such as tropical storms, typhoons or floods. The studies cover what adaptation actions were and were not carried out and the reasons for these actions or non-actions (Table 2).

Table 2. List of climate change adaptation research projects approved from July 2008-June 2009

Researcher/ Country	Research Title
1. R. Jarungrattanapong and A. Manasboon-phempool, Thailand	Adaptation Gaps to Flood in Chiang Mai Province, Thailand
2. Yueqin Shen, et al. China	Cross-Country Study on Climate Change Adaptation Behavior of Households, Communities, and Local Government Units
3. Nghiem Phuong Tuyen, et al. Vietnam	Learning from Past Adaptation: Assessing Adaptive Capacity to Climate Changes in the Red River Delta of Northern Vietnam
4. Tran Huu Tuan, et al. Vietnam	Adaptation Behaviors of Communities and Households to Extreme Disasters Induced By Climate Change in Central Coast of Vietnam: Towards a Set of Possible Adaptation Measures to Bridge the Gaps
5. Linda Penalba, et al. Philippines	Analysis of the Climate Change Adaptation Behavior of Households, Communities, and Institutions to a Typhoon Event: The Case of San Juan and Talisay, Batangas, Philippines
6. Armi Susandi, et al. Indonesia	Adaptive Behavior Assessment Based on Climate Change Event: Jakarta's Flood in 2007

This program is taking place in five countries: China, the Philippines, Thailand, Indonesia and Vietnam. There are two research teams in Vietnam, working on Central Vietnam and the Red River Delta, with the rest having one study team each. Four of the research teams have chosen to focus on a major tropical storm that hit their countries and two are looking at adaptation to extreme flooding events.

2.0 Regional Training and Partnerships

EEPSEA is now in its 15th year of leading capacity-building in the field of environmental and resource economics in Southeast Asia. On a biannual basis, EEPSEA conducts a 3-week regional course on environmental economics. In addition, it organizes/sponsors several workshops and courses each year to respond to the needs of researchers and policy-makers and to current environmental concerns in the region.

In partnership with other organizations in Southeast Asia, EEPSEA conducted five regional training courses and workshops in the past year. Interestingly, two of the courses were in response to demands of two new ‘users’ of environmental economics research—the media and judiciary. The link to the media was an outcome of the 2008 Climate Change Adaptation Conference in Bali, Indonesia. The course for the judges was triggered by a demand from the Thai justices who participated in the EEPSEA training course for public agencies in Thailand last year. By engaging with other partners, EEPSEA widens its role and reach in strengthening local capacity in environmental economics research and policy-making in Southeast Asia.

2.1 Climate Change Workshop for Asian Journalists

Climate change is one of the most critical if not the most urgent issue of the 21st century and has become a hot topic in the mass media. Yet, there are so many uncertainties on the nature and extent of its impacts on different sectors and localities. At the same time, not much is known about how to enhance adaptation responses/capacity in dealing with such impacts. Thus, there is an important role that research can play in addressing these gaps in the climate change crisis. The media also has a critical role to play in disseminating important research findings to support policy decisions and action. For this reason, EEPSEA hosted the “Climate Change Media Workshop for Journalists” from Southeast Asia, China, and Bangladesh in collaboration with the Philippine Science Journalists Association, Inc. (PSciJourn) and with support from the International Development Research Centre (IDRC) Regional Office for Southeast and East Asia.

From August 12-13, 2008, 40 members of the mass media as well as climate change technical experts met at the Traders Hotel in Manila, Philippines. The two-day workshop examined the science of climate change, journalists’ perceptions of risks and impacts, and the different scenarios of extreme climate changes in the region. The journalists and researchers also discussed how to improve communication between them.

“Good communications among all key players can go a long way in keeping everyone engaged.”

- Richard Fuchs, IDRC Regional Director for Southeast and East Asia

Source: Research and Media Network Website



The technical experts invited for this meeting were: Dr. Rex Victor Cruz and Dr. Rosa Perez from the Philippines, Dr. Joyashree Roy of India, Mr. Suppakorn Chinvanno from Thailand, and Mr. James Fahn, the Executive Director of Internews' Earth Journalism Network based in Chiang Mai, Thailand.

Governor Joey Salceda of Albay Province in the Philippines was the keynote speaker for the opening of the workshop. Governor Salceda is known for introducing the first local government initiative on climate change adaptation in the Asia Pacific Region. In his speech, he emphasized that climate change adaptation should be treated as the governing policy in any province. Governor Salceda also challenged the journalists to use their expertise and influence in identifying and recognizing climate change-related issues, encouraging wider public participation, inviting innovation to resolve problems, and promoting climate adaptation and mitigation practices.

“Researchers and journalists do not have very many opportunities to meet. We hope that bringing the experts and journalists together will foster deeper understanding of this complex subject [climate change] from their different perspectives and help build greater collaboration among all.”

- Herminia Francisco, EEPSEA Director

Source: Research and Media Network Website

(L-R) Participants and technical experts exchanging information at the Climate Change Workshop for Asian Journalists.



2.2 Course on Environmental Economics and Development for Policy Makers

True to its commitment to integrate environmental protection into developmental planning and familiarize policy-makers with the broad linkages between environmental change, poverty, and economic development, EEPSEA co-organized a regional workshop on “Economic Development, Poverty Reduction and the Environment, and Climate Change: Environmental Economics for Policy-Makers” in Bangkok, Thailand, from September 17-19, 2008. The collaborating agencies for this course were the UNEP and UNDP offices in Thailand and the ADB office for the Mekong sub-region.

The workshop exposed policy-makers to issues such as the impact of environmental regulations on economic development and growth, the contribution of environmental management to poverty reduction, the impact of climate change to the region and national economies, ways to meet the Millennium Development Goals and increase the benefits from natural resource use, and economic tools and mechanisms to mitigate and adapt to climate change without compromising growth.

(L) Dr. Willy Cruz lecturing on micro and macro linkages between economy and environment.

(R) A Cambodian participant shares his views on the topic.



The participants included key members of policy-making bodies in the region such as Ms. Masnellyarti Hilman, Indonesia's Deputy Minister of Environment; Dr. Wari Imo, Papua New Guinea's Secretary of the Department of Environment and Conservation; Mr. Abilio de Jesus Lina, Timor Leste's Secretary of State for the Environment; and Mr. Sam Chamroeun, Cambodia's Director of Environment. Dr. Wilfrido Cruz, formerly of the World Bank, served as resource person for a number of topics while Mr. Paul Steele of the UNDP coordinated the event. A total of 30 policy-makers from nine countries (Cambodia, China, Indonesia, Lao PDR, Malaysia, Papua New Guinea, the Philippines, Thailand, and Timor Leste) participated.

2.3 Environmental Economics for Asian Justices

The Southeast Asian judicial system is receiving an increasing number of environmental cases related to pollution, land use, urbanization, and industrialization. The majority of the cases brought to the courts stem from the unsustainable use of natural resources leading to deterioration of water and air quality and damage to critical ecosystems. To address these issues, the Southeast Asian judiciary needs to strengthen its environmental

adjudication capacity and this requires a better understanding of how to assess damages for the loss of natural resources.



Participants of the Environmental Economics Workshop for Asian Justices.

Cognizant of this challenge, EEPSEA, in partnership with the Asian Environmental Compliance and Enforcement Network (AECEN)—a network funded by USAID—sponsored a workshop for Southeast Asian judges in Bali, Indonesia, from November 22-23, 2008. The aims of the workshop were to strengthen the capacity of judges to review environmental cases and award appropriate compensatory and punitive damages by introducing them to the basic principles and tools that can be used in natural resource damage assessment.

The resource persons included eminent speakers such as Dr. Michael Hanemann of the University of California, Dr. Wiktor Adamowicz of the University of Alberta, Justice Vijender Jain of the Delhi High Court, and Justice Brian Preston of the Land and Environmental Court of Australia, all of whom engaged the 30 participants in active discussion throughout the two days.



Thai Justices at the Land and Environmental Court of New South Wales.

As a follow-up to this activity, Dr. Orapan Nabangchang, the EEPSEA Senior Economist from Thailand, accompanied eight Thai Justices on a visit to the Land and Environmental Court of New South Wales, Australia, to learn about the cases it handled. This trip took place from March 15-20, 2009, and was supported by AECEN.

2.4 EEPSEA-SEARCA Course on Environmental Economics for Policy-Makers

As part of EEPSEA's ongoing partnership with the Southeast Asia Regional Center for Graduate Study and Research in Agriculture (SEARCA), the two institutions collaborated on a 5-day forum on environmental economics for policy-makers in Los Banos, Laguna, Philippines from March 29th to April 3rd, 2009. Topics discussed included the science and economics of climate change, the economics of biodiversity and multilateral environmental agreements, and payments for ecosystem services. Twenty participants from Cambodia, Lao PDR, Malaysia, Philippines, Thailand, and Vietnam attended the forum.



Dr. Asa Sajise opening the EEPSEA-SEARCA course in Los Banos.



Dr. Susan Zhang Shiqui giving a lecture on pollution management in China at the EEPSEA-SEARCA course.

Dr. Susan Zhang Shiqui, a member of the EEPSEA Advisory Committee and former EEPSEA researcher; Dr. Orapan Nabangchang, EEPSEA Senior Economist from Thailand; and the EEPSEA Director presented on environmental economics and valuation methodologies. Dr. Gene Peralta, a former EEPSEA researcher, now with the World Health Organization (WHO), gave a lecture on the economics of health.

Several EEPSEA researchers; Dr. Lina Tan, Dr. Marge Calderon, Ms. Les Catelo, and Ms. Kim Bayani, also shared the results of their EEPSEA-funded research. Ms. Rusyan Jill Coburn, an EEPSEA training alumnae, spoke on biodiversity issues and payments for ecosystem services.

Equipped with the information from the lectures and discussions, the participants took on the challenge of developing concept proposals that employed environmental valuation as a tool for policy-making and environmental planning. The proposals were deemed to have a lot of potential and the participants were invited to expand them according to EEPSEA's format and submit it to EEPSEA for possible funding.



EEPSEA-SEARCA course participant presenting his group's proposal.

2.5 Payments for Environmental Services

PES or payments for environmental/ ecosystem services is a scheme by which the beneficiaries of ecosystem services e.g. watershed protection, forest conservation, biodiversity conservation, and carbon sequestration, pay back the providers of such services. It has generated growing interest over recent years in both developed and developing countries. In Southeast Asia, however, the scheme is still in its infancy stage. Furthermore, while the creation of markets for ecosystem services and the resulting benefits of promoting conservation and supporting local livelihoods have been theoretically recognized, they are yet to be realized and documented.

“I would like to express my sincere gratitude to EEPSEA, SANDEE, and ICRAF-RUPES, for organizing the training and to all those august personalities who delivered us very informative presentations and lectures with entertaining games. It was a worthwhile experience and the knowledge gained would be very useful. Let this type of meetings be continued in the future as well!”

- Khem raj Dahal, Associate Professor
Institute of Agriculture and Animal Science,
Chitwan, Nepal,

Source: ICRAF Website

At present, there is a very limited number of scoping assessments and action research in Southeast Asia on determining enabling conditions for establishing PES schemes. In recognition of this shortfall, EEPSEA conducted the “Science, Economics and Institutions of Managing and Paying for PES” training course in partnership with its sister network, the South Asian Network for Development and Environmental Economics (SANDEE) and the World Agroforestry Centre (formerly, ICRAF).



PES Workshop participants actively participating in group and role-play exercises.

The 8-day training course was held in Chiang Mai, Thailand, from April 23-30, 2009. A total of 53 participants from Bangladesh, Cambodia, China, Indonesia, India, Lao PDR, Maldives, Nepal, Pakistan, Philippines, Singapore, Sri Lanka, Thailand, United States, and Vietnam attended it.

Divided into two parts, the first half of the course focused on the introduction of the PES scheme by ICRAF facilitators led by Dr. Meine Van Noordwijk, while the second part dealt with the economic and institutional issues of PES. The main resource person for the second part was Dr. Steve Polasky of the University of Minnesota. The course also included a field visit to Mae Sa Village located in Doi Suthep National Park in the Upper Ping River Basin and Mae Wang Village at Mae Wang National Park where the participants were given practical training on how to measure ecosystem services.

3.0 In-Country Activities

One of EEPSEA's main priorities in its current phase is to encourage selected national institutions to play a stronger role in building local research capacity in the field of environmental economics. This means having them implement training and small research grants programs to reach out to researchers from local colleges/universities in the country. The resource persons for these in-country programs are normally EEPSEA alumni members. EEPSEA launched such a program in Vietnam some years back; in the Philippines in 2007-2008; and in China and Indonesia in 2008-2009. These courses and various other in-country activities initiated by EEPSEA are discussed below.

3.1 China –Training Course on Environmental Economics for University Lecturers

The School of Environment (SOE), Beijing Normal University (BNU), and the Chinese Society for Environmental Economics hosted the First EEPSEA National Training Course on Environmental Economics for University Lecturers in Beijing, China, from October 20-30, 2008. Twenty six participants from 20 universities and colleges in the country participated.

The two-week course was divided into five modules. Module 1 was on the “Introduction to Environmental Economics and Welfare Economics” while Modules 2 and 3 dealt with “Natural Resource Economics” and “The Economics of Pollution Control”, respectively. Valuation methods and cost-benefit analysis (CBA) were the focus of Module 4. The last module was directed at helping teachers prepare proposals for environmental economics research studies/projects.



Webpage used in training the participants of the First National Training Course for Environmental Economics Teachers in China.



(L-R) Participants of the National Training Course for Environmental Economics Teachers in China.

The resource persons were mainly EEPSEA alumni: Prof. Mao Xianqiang and Dr. Jin Jianjun from Beijing Normal University, Dr. Cao Jing from Tsinghua University, Dr. Zeng Xiangang from Renmin University, and Dr. Gong Yazhen from the University of British Columbia. They employed a combination of methodologies; lectures, case studies, games, and role-playing exercises. The EEPSEA Director also gave a special lecture on “The Economics of Climate Change” in the closing session.

3.2 Indonesia – Training Course on Environmental Economics for University Lecturers

The Center for Economics and Development Studies (CEDS) in the Faculty of Economics, Padjadjaran University, Bandung, Indonesia, hosted the first EEPSEA-funded training course on environmental economics for university lecturers in Indonesia from October 13-25, 2008. This training course was dedicated to undergraduate program lecturers in universities who wanted to develop an environmental economics course or subject in their curriculum. Twenty five participants from 22 leading universities in Indonesia were selected to attend the course based on work experience and regional representation.

The course followed the outline as that used for the same training in other countries, which basically included: (1) An Introduction to Environmental Economics, (2) The Causes of Environmental Degradation, (3) Economic Efficiency and Markets, (4) Economic Valuation, (5) The Economics of Pollution Control, and (6) The Economics of Natural Resource Use.



(L-R) Participants attending lectures during the National Training Course for Environmental Economics Lecturers in Indonesia.

The lecturers of the course were prominent environmental economists from Indonesia as well as from EEPSEA. They were Prof. Surna Djayadinigrat from Bandung Institute of Technology; Dr. Arianto Patunru from the University of Indonesia; Prof. Akhmad Fauzi from the Bogor Agriculture Institute and an EEPSEA alumnus; and Prof. Armida Alisjahbana, Dr. Arief Ramayandi, and Dr. Budiono from Padjadjaran University. Two EEPSEA Senior Economists, Dr. Orapan Nabangchang and Dr. Arief Anshory Yusuf, also gave lectures at the course.

3.3 Lao People's Democratic Republic – Environmental Economics Overview Course

At the request of Lao PDR's Environment Research Institute (ERI), EEPSEA offered a one-week overview course on environmental economics from September 1-5, 2008. Twenty eight participants from several government agencies and a university attended the course. The agencies represented were the Water Resources and Environment Administration (WREA) departments including the Environment Research Institute (ERI), the Ministry of Planning and Investment, the National Agriculture Food Research Institute (NAFRI), the National Economics Research Institute, the National Administration Politics Institute, and the National University of Laos. The course was taught by the EEPSEA Director, Dr. Herminia Francisco; EEPSEA Senior Economist, Dr. Orapan Nabangchang; and EEPSEA Senior Researcher, Dr. Adis Israngkura.

3.4 Papua New Guinea – Environmental Economics for Local Researchers and Policy-Makers

In response to the request of Dr. Imo Wari and Dr. Gwen Sissiou (Secretary and Deputy Secretary, respectively, of Papua New Guinea's Department of Environment and Conservation) during the UNEP-UNDP-EEPSEA-ADB course for policy-makers held in Thailand in April 2008, EEPSEA, in collaboration with the UNDP, offered a course on environmental economics for local researchers and policy-makers in Papua New Guinea

(PNG). The program was split into a two-day course for PNG policy-makers and a three-day course for PNG researchers, which were conducted back-to-back from April 27 to May 1, 2009.



(L-R) Participants in the Environmental Economics Training Course for Local Researchers and Policy-Makers in Papua New Guinea.

The course focused on building awareness and understanding of the role of economic tools and techniques in addressing key policy issues relating to the environment, natural resources and economic development in PNG.

EEPSEA brought in three of the four resource persons for the course. They were Dr. David James, a long-standing resource person of EEPSEA from Australia and an EEPSEA alumnus; Dr. Budy Resosudarmo of the Australian National University; and Dr. Billy Manoka of the University of Papua New Guinea.



◀ **The importance of collaboration and the use of environmental economics in decision-making**

To achieve environmentally sustainable economic growth in PNG, Dr. Billy Manoka emphasized the importance of collaboration between policy-makers and researchers. He also encouraged the participants to promote the use of economics in policy formulation and decision-making.

A total of 80 people attended the two-day course for policy-makers while 45 researchers participated in the more technical discussions in the last three days. The topics covered included economy-environment models, environmental economics tools and techniques and their applications, and discussions on key issues involving fisheries, water resources, forestry, land, and minerals in PNG.

3.5 Philippines – Small Research Grants for Environmental Economics Studies

EEPSEA gave a Small Research Grants Project to the University of the Philippines at Los Banos (UPLB) in 2007-2008. The main aim of the small grants is to spur interest in and build capacity to conduct rigorous and policy-relevant environmental economics research in the country. The project is being implemented by the Department of Economics of UPLB.

The grants are split into two research categories (Table 3). The ‘open topic’ category accepts proposals on any environmental topic from the graduates of the First National Training Course for Environmental Economics Teachers, funded by EEPSEA and held in March 2008. Three of the six submissions under this category were accepted for the 2008-2009 period. The individual research grants were awarded up to PhP 400,000 each.

Table 3. List of research projects under the Small Research Grants for Environmental Economics Research in the Philippines

Researcher/ Institution	Research Title
1. Wilma Tejero, Silliman University	Recreational Use Value of Apo Island: A Travel Cost Approach
2. Raul Bradecina, Partido State University	Economic valuation of the Beachscape Beauty of Caramoan, Camarines Sur: Towards Establishing an Equitable Payment for Environmental Services for Sustainable Ecotourism
3. Anita Cular, University of the Philippines - Visayas	Ecotourism a Pathway for Sustainable Development? An Evaluation of the Case of Sohoton Cave and Natural Bridges in Basey, Western Samar
Climate Change Adaptation	
4. UPLB School of Environmental Science and Management (SESAM)	Old Livelihoods under New Climate: Assessing Potential Adaptation Strategies in Vulnerable Areas in the Philippines
5. Institute of Fisheries Policy and Development Studies	Adaptation and Coping Strategies to Extreme Climate Conditions: Case Study of Selected Sites Affected by Typhoon Franck in Iloilo, Philippines

The second category is the ‘theme-focused grants’, open to institutions interested in climate change adaptation. There are two recipients in this category: the School of Environmental Studies and Management (SESAM) based in UPLB, and the Institute of Fisheries Policy & Development Studies, University of the Philippines, at Visayas Miagao (UPV). Both research groups are implementing their projects with a network of NGOs supported by Christian Aid International (CA). The link to CA came about from the Innovation at the Base of the Pyramid (IBoP) project meeting that was attended by the EEPSEA Director in March 2009 (CA is one of the partners of the IDRC-funded IBoP). The two studies were awarded a total of PhP 1.6 Million.

The resource persons for the projects are EEPSEA researchers Dr. Asa Sajise, Ms. Les Catelo, and Ms. Kim Bayani, all based in UPLB’s Department of Economics, and Dr. Rodel Subade from UPV.

4.0 Bi-Annual Workshops

EEPSEA’s biannual (twice-yearly in May and November) workshops are the focal point of its work program. They bring together all active researchers, including PhD thesis students and new proposal applicants, as well as resource persons and eminent speakers. The Sponsors Group joins the May event and the Advisory Committee joins the November workshop every year. The four-day event generally involves 50-60 people and includes individual consultations between researchers and their advisors; concurrent working groups in which research reports and proposals are presented; and plenary sessions with talks by international experts.

4.1 November 2008: 30th Bi-Annual Workshop

From November 18-21, 2008, EEPSEA held its 30th Biannual Workshop in Bali, Indonesia. A total of 52 participants attended.

The workshop featured a plenary talk on “Investing in Health: A Driver of Economic Development?” by Dr. Dale Whittington of the University of North Carolina, Chapel Hill. Dr. Whittington shared the results of the Copenhagen 2008 Consensus Challenge where investments in health interventions dominated the choices of experts in their allocation of funds. Despite this, Dr. Whittington said that health investments seemed to receive less priority in actual government and development spending and the demand for preventive health interventions in many developing countries was, in fact, still low.



Participants listening to a lecture at EEPSEA’s 30th Bi-Annual Workshop.

Following Dr. Whittington's plenary talk was a presentation by Mr. Paul Steele of the UNDP on "Environmental Management for Pro-poor Growth: What is the Role for Environment Economics?" Paul encouraged researchers to rethink how environmental economic analysis could contribute to designing pro-poor growth programs in developing countries. This could be done by looking into how people used natural resources and linking natural resource use to environmental and public financial management. Dr. Benoit Laplante and Mr. Richard Paton gave the third plenary talk on "Effective Environmental Compliance and Enforcement: Assessing the Resource Gaps of Environmental Agencies". They presented a preliminary assessment of the impact of information, monitoring, and enforcement on the environmental performance of companies. The analysis pointed to the need to understand better the extent of the staffing and resource gaps being experienced by environmental agencies in Southeast Asia.

Dr. Michael Hanemann of the University of California, Berkeley, delivered the last plenary talk on "The Economics of Climate Change Reconsidered." He pointed out that existing damage estimations of climate change, specifically the Nordhaus and Stern Reviews, were seriously under-estimated while the costs of mitigation were over-estimated. He elaborated on the reasons for this observation and discussed how the California government was dealing with climate change and the mix of policy options it had adopted, which other governments could learn from.

4.1.1 Course on Effective Writing

Throughout the years, EEPSEA has offered a course on effective writing to new researchers joining its network. It offered a half-day session on this topic on November 18, 2008, as a side event to its 30th Biannual Workshop in Bali. About twenty participants attended. Dr. David Glover, founding Director of EEPSEA, facilitated the training course. Dr. Glover gave valuable tips on how to write and present research reports more effectively. He also discussed common errors by researchers which he had observed in the course of editing EEPSEA research reports when he was still the Director of EEPSEA.

4.1.2 Financial Requirements

After the writing course, Ms Teresa Lum and Ms Cathy Ndiaye briefed the new researchers on the financial requirements that research grant recipients had to comply with.

4.2 May 2009: 31st Bi-Annual Workshop

EEPSEA held its 31st Biannual Workshop in Da Lat, Vietnam, from May 25-28, 2009, with a total of 57 participants.

One highlight of the workshop was the ‘homecoming’ of one of EEPSEA’s research alumni, Dr. Xu Jintao, a dissertation grantee of 10 years ago who was presently providing policy advice to the Chinese government on forestry issues. The meeting also brought back two of EEPSEA’s pioneer resource persons; Drs. Jack Ruitenbeek and Daigee Shaw. The three delivered plenary talks, along with Dr. Celia Reyes, the Co-Program Director of the IDRC-funded Poverty and Environment Program (PEP).



Dr. Xu Jintao speaking on China’s forest tenure reforms at EEPSEA’s 31st Bi-Annual Workshop.

Dr. Xu Jintao spoke on “China’s Forest Tenure Reforms: Outcomes and Analysis of Driving Forces”. Dr. Daigee Shaw shared on “Why are Flood and Landslide Victims Less Willing to Take Mitigation Measures than the Public?” while Dr. Jack Ruitenbeek talked about “Modeling GHG Emissions in the Energy Sector: Lessons for Thailand and Future Research Challenges”. Finally, Dr. Celia Reyes spoke on “Community-Based Monitoring Systems in SEA: Research Opportunities”.

(L) Dr. Jack Ruitenbeek and (R) Dr. Daigee Shaw presenting their papers at the 31st Bi-Annual Workshop.



A back-to-back meeting between the IDRC’s Partnership and Business Development Division (PBDD) and four EEPSEA recipients of its proposal development grant (PDG) also took place during this biannual event. These four senior researchers each received grants from the PBDD to develop proposals that had both economics research and development components in them, to be submitted to EEPSEA and other donors for funding. The recipients presented their resource mobilization experience and received comments from Ms. Vivien Chiam, Ms. Mayan Quebral, and the EEPSEA Director.

4.2.1 Overview Course on Game Theory

In the field of environmental economics, game theory has become a key analytical tool in addressing strategic environmental issues. With the increased level of natural resource extraction and the rising number of stakeholders involved in such activity, game theory has gained prominence among researchers in developed countries, but has yet very limited application in Southeast Asia.



Participants of the Overview Course on Game Theory.

Cognizant of its importance, EEPSEA invited Dr. Hsiao Chi Chen from the National Taipei University to give an overview of game theory and its potential application in the analysis of natural resource and environmental issues. Dr. Chen introduced the concept of cooperative and non-cooperative game behavior and how the theory could be applied to emission tax systems and international environmental agreements. This one-day course was held on May 28, 2009, with about 30 participants, as another side event to EEPSEA's 31st Biannual Workshop in Vietnam.

5.0 Publications Program

EEPSEA has always been cognizant of the fact that in order for it to contribute effectively to the field of environmental economics, the publication of research reports, technical documents, and policy briefs is a must. It has, therefore, made its research findings and results available in various formats. These publications are available electronically as well as in the form of hard copies.

5.1 Research Reports

For 2008-2009, EEPSEA published 11 research reports. These reports are readily available at the "Eldis Gateway to Development Information", an online information archive and news service financed by SIDA and other donors.

- *2007-RR4: The Value of Statistical Life Estimates for Children in Metro Manila, Inferred from Parents' Willingness to Pay for Dengue Vaccines, by Rosalina Palanca-Tan*



Based on parents' stated willingness to pay for dengue vaccines for their children, this paper arrived at estimates of the value of statistical life (VSL) of children in Metro Manila. The results of the estimation procedure consisting of a household vaccine demand model and a random effects probit model of the vaccine purchase conformed with economic intuition and yielded VSL estimates for children in Metro Manila in the range of USD 0.70-0.80 million.

- *2008-RR1: The Distributional Impact of Environmental Policy: The Case of Carbon Tax and Energy Pricing Reform in Indonesia, by Arief Anshory Yusuf*

This study was an attempt to further understand the social and environmental dimensions of sustainable development focusing on the impact of environmental reforms, such as pollution reduction and energy pricing policies, on inequality and poverty in Indonesia. This study showed that there need not be a conflict between environmental and equity objectives, especially when policies or reforms to achieve specific environmental goals are carefully designed.



- *2008-RR2: A Cost-Benefit Analysis of Alternative Pig Waste Disposal Methods Used in Thailand, by Siriporn Kiratikarnkul*



This study carried out a cost-benefit analysis of alternative methods of animal waste disposal used on pig farms in three main livestock regions of Thailand where intensive pig farming has increased rapidly in recent years. The results of the study showed that among five existing methods of waste disposal, the Net Present Value (NPV) of the government-promoted technological alternative of converting pig waste into biogas was lower than the NPVs of some of the other methods.

- *2008-RR3: Household Switching Behavior in the Use of Groundwater in the Mekong Delta, Vietnam, by Vo Thanh Danh*

This report identified the options available to households in the Mekong Delta of Vietnam in dealing with the quality of their water sources and presented an analysis of their switching behavior across such sources. The study found that the water consumption of groundwater supply unit (GSU) users was lower compared with those using private tube-wells for their water needs. Thus, it was suggested that switching from private tube-wells to GSU water would encourage water saving, thereby preventing groundwater resources from being over-extracted.



- *2008-RR4: Pollution Taxation in China: The Impact of Inspections, by Liguo Lin*

This study investigated how manufacturing plants reacted to inspections made by environmental authorities under pollution taxation regulations in China. The study found that China's regulations made inspections mainly effective in verifying the pollution reports submitted by the firms, but not in reducing their actual levels of pollution.



- *2008-RR5: The Impact of Trade Liberalization on Industrial Pollution: Empirical Evidence from Vietnam, by Pham Thai Hung, Bui Anh Tuan, and Nguyen The Chinh*



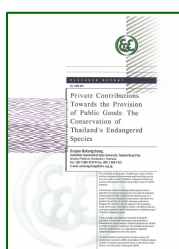
Using data from the Vietnam Enterprise Survey (VES) and the World Bank's Industrial Pollution Projection System (IPPS), this study conducted a partial equilibrium analysis and found that trade liberalization had exacerbated industrial pollution in Vietnam. Based on this, the study concluded that more explicit awareness of the trade-offs between trade liberalization and pollution was necessary.

- *2008-RR6: The Impact of Irrigation on Aquatic Wetland Resources – A Case Study of That Luang Marsh, Lao PDR, by Phouphet Kyophilavong*

This paper analyzed the impacts of irrigation on Aquatic Wetland Resources (AWR) in That Luang Marsh (TLM) in Lao PDR. The results showed that despite there being an irrigation project in TLM, the total net benefit from its AWR was substantially higher than the net benefit from irrigated rice production during the dry season. This showed that AWR played a more important role than rice cultivation during the dry season. Therefore, policy-makers should give priority to AWR in water distribution decisions.



- *2008-RR7: Private Contributions towards the Provision of Public Goods: The Conservation of Thailand's Endangered Species, by Orapan Nabangchang*



The study explored the issue of private contributions towards the provision of public goods. It examined the differences between mandatory and voluntary payment mechanisms and examined responses to fund-raising incentives such as seed money and refund options. The results showed higher positive responses to the willingness to pay question under the mandatory payment scheme.

- *2008-RR8: The Transition to Organic Tea Production in Thai Nguyen Province, Vietnam – Economic and Environmental Impacts, by Nghia Dai Tran*



This study evaluated the economic and environmental impacts of organic tea production using panel data from tea-producing households in representative tea-producing villages in Thai Nguyen Province. The results showed that organic tea production had high production and profit efficiency levels of 0.998 and 0.836, respectively, and also a net present value of 2,946,536 thousand Vietnamese dong (VND). Organic tea production also contributed to the reduction of agrochemical residues in the soil, water and tea products.

- *2008-RR9: Compliance of Paper-Making Plants with Environmental Regulations in Bac Ninh Province, Vietnam, by Nguyen Mau Dung*

This study compared the current costs of compliance with the full costs of compliance of paper-making plants in Phong Khe Commune of Bac Ninh Province. The results showed that type of plant, location of the plant, and number of schooling years of the plant owners were significant factors affecting compliance. The option of wastewater treatment plants for groups of paper-making plants located close to one another was widely accepted.



- *2008-RR10: Towards the Development of a Sustainable Financing Mechanism for the Conservation of the Ifugao Rice Terraces in the Philippines, by Margaret Calderon et al.*



The study found that the Ifugao farmers' water supply problems in the rice terraces would be reduced considerably if the irrigation system and damaged terrace walls were to be repaired. The incentives that could strengthen the Ifugaos' resolve not to abandon the terraces, and lure back those who had left, are the repair of the irrigation system, a labor subsidy for terrace repair and maintenance, and additional livelihood opportunities.

To finance these activities, the researchers explored tourists' willingness to pay (WTP) to support the conservation of the Ifugao Rice Terraces. They found that the average WTP values for local and foreign tourists were USD 9 and USD 71, respectively, and suggested ways to tap this potential source of conservation funds.

5.2 Technical Reports

Technical reports are research reports of a more technical nature. These reports are not edited and are aimed at researchers rather than the general public. EEPSEA published one technical report last year.

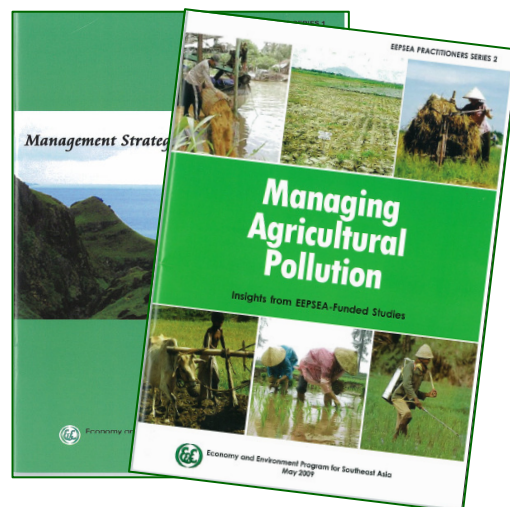
- *Economic and Environmental Concerns of Philippine Upland Coconut Farmers: An Analysis of Policy, Farming Systems, and Socio-economic Issues, by Isabelita Pabuyan et al.*

5.3 Practitioners' Series

In 2008, EEPSEA initiated the Practitioners' Monograph Series with the aim of making the findings and recommendations of EEPSEA research reports more accessible to natural resource managers in the region. The monographs focus on practical lessons for the better management of the environment and natural resources. In 2008-2009, EEPSEA published a second monograph entitled "Managing Agricultural Pollution".

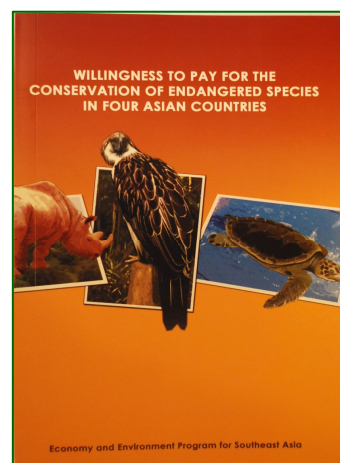
Managing Agricultural Pollution

This monograph explores how to best address the four major forms of agricultural pollution in the region; soil erosion, agrochemical misuse, extensive soil salinity, and the illegal dumping of agricultural waste. Emphasized in the monograph are the economic losses suffered by the agricultural sector as a result of such pollution and the dire need to address these threats so as to ensure food security in the years to come.



5.4 Books

In 2008, EEPSEA published a book containing a collection of studies that it had supported in 2005-2006 dealing with the conservation of endangered species. The book featured the report on the cross-country project for marine turtle conservation. It also included two conservation studies in the Philippines involving Philippine eagles and whale sharks, a study on the conservation of the Vietnamese rhinoceros, and another on conserving the black-faced spoonbill in Macao.



All these studies involved the use of the contingent valuation method (CVM) in estimating the value of endangered species conservation. The editor was Dr. David Glover, who commented on the use of CVM in the studies in the introduction chapter.

5.5 Policy Briefs

In order to reach out to policy-makers and natural resource managers, EEPSEA regularly publishes a four-page policy brief of its research reports. For 2008-2009, the following policy briefs were produced:



- Tourism and Rice Terraces – An Assessment of Funding Options from the Philippines by Margaret Calderon et al.
- Paper-Making and Pollution – An Assessment of Environmental Performance and Improvement Options in Vietnam by Nguyen Mau Dung
- How Much Will People Pay for Wildlife Conservation? – A Study from Thailand by Orapan Nabangchang
- When Wetland Conservation Works – An Assessment from Lao PDR by Phouphet Kyophilavong
- Environmental Enforcement Under the Spotlight – A Study of Industrial Pollution Control in China by Ligu Lin
- Making the Switch to a Sustainable Water Supply – A Study from Vietnam by Vo Thanh Danh
- The Pig Waste Question: An Assessment of Slurry Disposal Options in Thailand by Siriporn Kiratikarnkul
- It is Fair to Act Now! The Distributional Impact of a Carbon Tax Policy in Indonesia by Arief Anshory Yusuf
- Valuing A Life: An Assessment from Metro Manila by Rosalina Palanca-Tan

5.6 Policy Brief Translations

To increase the dissemination of its research results at the local level, EEPSEA embarked on translating its policy briefs into different local languages in the region. In 2008-2009, the following policy briefs were translated, printed and distributed.

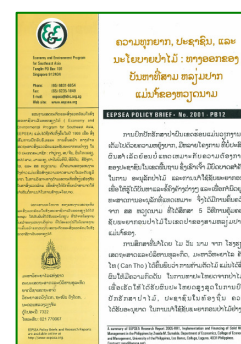
Into Cambodian Language:

- Rags Among Archaeological Riches: Sustainable Development in the Angkor World Heritage Site by Thanakvaro Thyl de Lopez
- Can a Carbon Tax Help the Poor? A Study from the Philippines by Erwin Corong
- What Price Crop Insurance? An Environmental Analysis from China by Funing Zhong et al.
- Pollution Clean Up at What Price? A Cost-Benefit Study from Thailand by Varaporn Punyawadee et al.
- Paying for Environmental Services: A Trial in Vietnam by Bui Dung The
- Saving Thailand's Temples: How Much are People Willing to Pay by Udomsak Seenprachawong



Into Thai Language:

- Saving Thailand's Temples: How Much are People Willing to Pay by Udomsak Seenprachawong
- Saving Tourism from Itself: Attitudes and Actions in Thailand by Udomsak Seenprachawong
- Pollution Clean Up at What Price? A Cost-Benefit Study from Thailand by Varaporn Punyawadee et al.
- Elephants and Electric Fences - A Study from Sri Lanka by LHP Gunaratne and PK Premaratne
- Valuing A Life: An Assessment from Metro Manila by Rosalina Palanca-Tan
- Reef Rescue: Financing Marine Conservation in the Philippines by Rodel Subade
- Will People Pay to Protect Watersheds? A Case Study from the Philippines by Margaret Calderon et al.
- Paying for Environmental Services: A Trial in Vietnam by Bui Dung The



Into Vietnamese Language:

- Pollution Clean Up at What Price? A Cost-Benefit Study from Thailand by Varaporn Punyawadee et al.
- Funding Solid Waste Disposal: A Study from the Philippines by Antonia Corinthia Naz and Mario Tuscan Naz
- Water Woes: Why Water Quota Systems in China are Not Working by Junlian Zhang
- Sharing the Cost of Conservation: The Fanjingshan Nature Reserve in China by Gong Yazhen
- The Hidden Benefits of Cooling the Global Greenhouse: A Lesson from China by Jing Cao
- Pulling the Plug on Water Mining: A Groundwater Conservation Strategy from the Philippines by Rosalina Palanca-Tan and Germelino M. Bautista
- Tracking the Trade: Vietnam's Illegal Wildlife Business by Nguyen Van Song



The Vietnamese-translated policy briefs were also published in the Environmental Economics Review of the Vietnam Environmental Economics Association.

6.0 Impact and Outreach

The key success indicator for EEPSEA is the degree of positive impact its activities and research studies generate in terms of facilitating sound decision-making and action on environmental issues and helping to bring about beneficial behavioral shifts in society. EEPSEA seeks to make every activity it organizes one that is especially meaningful, relevant, and useful to the beneficiaries of such initiatives.

6.1 Policy Impact and Influence

EEPSEA researchers, trainees, and alumni have managed to influence policy and promote change in the region through their research and expertise. Some of the most significant impacts for 2008-2009 are featured here.

6.1.1 Research Findings Bring About Optimal Visitation Fee Structure to Support the Preservation of a World Heritage Site

One recommendation of Tran Huu Tuan's EEPSEA-funded study on the economic benefits of preserving the My Son World Heritage Site in Vietnam was to implement a larger differential pricing policy for foreign and Vietnamese visitors to the site—this would increase revenues as well as facilitate preservation, due to more funding becoming available for preservation. Although the entrance fees for local visitors at My Son have remained unchanged since the study was published in 2006, the rate of foreigners visiting My Son have increased considerably in the last three years; by 25 per cent per year, on average. This high rate can be seen as evidence supporting the study's finding that the existing price for visiting My Son was significantly below what foreign visitors were prepared to pay.

In addition, the cost-benefit analysis results of the study showed that the proposed preservation plan for My Son was economically viable under different social discount rates and time frames. It is noteworthy that the preservation plan for My Son, which was initially proposed in 2004, was finally approved by Vietnam's Prime Minister in December 2008. This shows that the government recognized the validity of the study and its recommendations.

6.1.2 Coal Mining Study Spurs Regulation on the Use of Public Roads by Coal Trucks

An EEPSEA-funded research reported that coal mining in Kalimantan, Indonesia, caused a number of environmental problems such as dust, noise, soil erosion, land degradation, and congestion. The study, entitled "Forest Rent Valuation for Coal Mining Activity in South Kalimantan, Indonesia", by Udi Udiansyah recommended the regulation of small-scale miners and limiting the number of coal trucks on public roads. The local government heeded the call of the study and other organizations that supported such recommendations by issuing a local regulation to limit coal trucks from using public roads with effect from July 23, 2009.



South Kalimantan Governor Announced the Regulation

On July 21, 2009, South Kalimantan Governor issues Provincial Regulation No.3 (2008) limiting the number of coal trucks on public roads.

6.1.3 Study's Recommendation to Collect Environmental Fees Based on Electricity Bill Implemented

The recommendations proposed by Nguyen Mau Dung and Tran Thi Thu Ha's EEPSEA-funded study which examined pollution control options for handicraft villages in the Red River Delta of Vietnam have been adopted by the local authorities. Changes in environmental and sanitation services in Duong Lieu Village/Commune (where the study took place) have been observed. In the past, regardless of business scale, all the handicraft processing households in the village contributed the same amount of money per year towards environment protection and sanitation. Now, based on the study's recommendations, the commune's People's Committee is collecting contributions from handicraft processing households based on their electricity bills—an additional 50 VND per kilowatt of electricity—to fund improved environmental sanitation services. It is estimated that the total revenue amounts to around 70 million VND per year. The money is used for the cleaning of the drains and roads in the village.

In addition, the commune authorities now allocate more money for environmental protection. In the past, the annual budget for sanitary activities was 150 million VND. In 2008, they set aside 250 million VND, an additional 100 million for sanitation purposes.

Of the additional amount, 70 million VND came from the mentioned collected fees based on electricity use and 30 million VND from the commune budget. With the additional budget, the sanitation team has managed to purchase more equipment and the members are also more motivated as they now get higher wages. It should also be noted that the commune authorities have now drafted a project proposal for the environmental protection of the village.



Environmental sanitation has improved in Duong Lieu cassava processing village after EEPSEA's study it.

6.1.4 EEPSEA Study Helps Government Determine Rent for Timber Resources

The Malaysian government determined the rent for timber resources using the results of an EEPSEA-funded study carried out by a team of researchers from Universiti Putra Malaysia comprising Awang Noor Abd. Ghani from the Department of Forest Management and Mohd. Shahwahid Hj. Othman from the Department of Hospitality & Recreation, Faculty of Economics and Management. The results of the study entitled "Forest Pricing Policy in Malaysia" together with other inventory studies that the researchers conducted proved useful in the formulation of appropriate and equitable rates for timber rents in the country.

6.1.5 Research Leads to Upland Farmers in Vietnam Switching to Forest Plantations and Better Soil Management Practices

The findings and recommendations of Bui Dung The's EEPSEA-funded study which examined the on-site costs of soil erosion and choice of land use systems by upland farmers in Central Vietnam helped local governments and farmers in the uplands of Thua Thien Hue Province make well-informed decisions on land use. By considering the results of the study, upland farmers have since given up sugarcane. They now plant forests and other perennial industrial crops. Upland rice-farming families have also abandoned the slash-and-burn practice. Meanwhile, local extension systems and rural development projects in the area used the results of the study to focus more on the adoption of agroforestry and soil erosion control measures such as alley cropping, intercropping, and sediment traps.

6.1.6 Wetland Case Study in China Used to Develop Irrigation Reconstruction Plan

In March 2009, the Water Affairs Bureau of Baoqing County in China proposed an irrigation system reconstruction in the surrounding area of Qixinghe Wetland, the site of Wu Jian's EEPSEA-funded study on the "Cost-Effectiveness of Policy Options to Reduce Off-Site Water Use for Sustainable Wetland Conservation in Qixinghe Wetland in Sanjiang Plain, China". The provincial government of Heilongjiang, China, used the results of the study to assess the economic viability and environmental feasibility of such a reconstruction project.



Ms. Wu Jian presenting the results of her study on the Qixinghe Wetland to government officials in China.

6.1.7 More Dairy Cattle Farms in Vietnam Have Biogas Digesters Thanks to Study

The recommendations proposed by Nguyen Quoc Chinh in his study that assessed the environmental consequences and pollution control options of dairy cattle farming in Ha Noi, Vietnam have been adopted by the local authorities. At the time this study was undertaken in 2003, only some biogas digesters supported under a foreign-funded project were found in the research site. Dairy cattle-raising households in the area were faced with heavy negative impacts from dairy cattle development and confused about the different pollution control options. But now, almost all the dairy cattle households have installed small biogas digesters.

This treatment option has become more popular not only in the project site but also in nearby communes and other parts of the region. The ambient environment including the air and water is much improved compared to before even though the dairy cattle industry in the research area has grown.

6.1.8 Indonesian Policy-Makers Employ EEPSEA-Funded Economic Model to Achieve Low Carbon Economy Plan

Using INDONESIA-E3, a computable general equilibrium model developed with support from EEPSEA, Arief Anshory Yusuf, EEPSEA Senior Economist from Indonesia, and his team from Padjadjaran University have been working closely with the Indonesian Deputy Minister for the Environment, Ms. Masnellyarti Hilman, and her team to find alternative strategies for energy efficiency, energy mix, carbon tax, and REDD mechanisms to achieve a low carbon economy for Indonesia. The outputs of this exercise will be concrete policy recommendations for submission to the new Indonesian government.

6.1.9 Better Compliance with Environmental Regulations in Bac Ninh Province, Vietnam

A study by Nguyen Mau Dung on the compliance of paper-making plants in Bac Ninh Province, Vietnam, led to discussions between the research team and the local authorities with the latter agreeing to implement environmental education programs and use the local mass media to raise the awareness of the people in the commune, especially the paper-making plant owners, on environmental protection. The local authorities will also devote more efforts to persuading the paper-making plant owners to voluntarily comply with environmental regulations. Furthermore, the capacity of the local environmental authorities is improving. Three more environmental staff have been recruited for the Environmental Management Unit of Bac Ninh.

6.1.10 Study on Trade Liberalization and Industrial Pollution Capture the Attention of Policy-Makers in Vietnam

The findings and recommendations of the study by Pham Thai Hung, Bui Anh Tuan and Nguyen The Chinh on the impact of trade liberalization on industrial pollution were widely discussed between the research community in Vietnam and relevant state officials at three workshops organized in 2008. Most notable was the workshop held at the National Economics University with the participation of, among others, delegates from the Ministry of Natural Resources and Environment; Ministry of Industry and Trade; Hanoi Department of Natural Resources and Environment; World Bank and UNDP Vietnam.

6.2 Mass Media Mileage

For the last 15 years, EEPSEA has been on the radar of the mass media, with peaks in 1998-2000 and 2009. These peaks were associated with two major events. The first was linked to the haze pollution study that EEPSEA undertook in response to the 1997 forest fires and haze caused by forest burning in Indonesia, which badly affected neighbouring countries. The second was related to the climate change vulnerability report that EEPSEA and IDRC-ASRO produced in 2009. Section 7 in this annual report is dedicated to the vulnerability study and the media attention it received. Thus, the latter is not covered in this section. This section highlights the media exposure of EEPSEA researchers, trainees, and alumni.

6.2.1 EEPSEA Senior Economist Steals the Limelight in Thailand

EEPSEA's Senior Economist from Thailand, Dr. Orapan Nabangchang, was in the media spotlight a few times in the last year, spreading the word on what environmental economics had to offer to improve the management of Thailand's natural resources. She gave three interviews to the national television channel, Thailand Public Broadcasting Services (TPBS). The first was when TPBS covered the national conference organized by the Biodiversity-Based Economy Development Organization (BEDO) from August 21-23, 2008, and one of its journalists interviewed Dr. Orapan on the subject of economic values of biodiversity. The second interview took place on September 10 in the same year. It focused on the role of environmental economists and how the economic valuation of damage to natural resources and the environment could contribute to the judiciary process. Dr. Orapan was interviewed a third time on December 17 when she was asked for her views on the establishment of environmental courts in Thailand, the concept of economic values of natural resources and the environment, and the application of economic valuation methods.

6.2.2 EEPSEA Research on the Impacts of Coal Mining on the Economy and Environment of Indonesia Discussed on TV

In October 2008, EEPSEA researcher, Dr. Udi Udiansyah, was engaged by an Indonesian television station, TVRI, in a one-hour interview on the impacts of coal mining on the economy and environment. It was an interactive interview and the station opened telephone lines so that viewers could call in and ask the researcher questions directly. The majority of the viewers gave positive feedback on and affirmed the research findings. Some viewers further recommended using the research findings to encourage the local government to implement the necessary changes.

6.3 Members' Accomplishments and Career Developments

EEPSEA's research and training initiatives have produced a remarkable number of alumni who have made important contributions to the field of environmental economics. These members continue to grow and evolve in their respective fields of expertise. In the past year, the following EEPSEA alumni had significant accomplishments and/or developments in their careers.



As of November 2008, **Dr. Nghia Dai Tran** is the UNDP team leader for the mid-term review of Vietnam's Five-year Natural Resources and Environment Plan (2006-2010). This project is under UNDP's Poverty and Environment Project.

In the same month, **Dr. Alice Joan Ferrer** was appointed as the Vice-Chancellor for Planning and Development in the University of the Philippines, Visayas. Reporting to the UPV Chancellor, her tenure is until October 2011.



Dr. Rosalina Palanca-Tan served as Technical Advisor to the Selection Committee for the category on 'The Economics of Natural Resource Management' in the 2008 Global Development Awards and Medal Competition at the Global Development Network Annual Conference in February 2009. As Technical Advisor, Dr. Tan was involved in selecting the first and second place winners from among the five finalists in the category. The prize money for first place was USD 10,000 and for second place, USD 5,000.

In the same month, Dr. Tan received the Most Outstanding Scholarly Work for Social Sciences for 2008 Award from the Ateneo de Manila University in the Philippines for her EEPSEA research entitled "The Demand for a Dengue Vaccine: A Contingent Valuation Survey in Metro Manila."

Ms. Beria Leimona's paper entitled "A Revealed Preference Approach to Estimating Supply Curves for Ecosystem Services: The Use of Auctions to Set Payments for Soil Erosion Control in Indonesia" received the second place award at the World Agroforestry Centre's Annual Scientific Meeting in Nairobi, Kenya, held from February 28 to March 1, 2009.



Dr. Udi Udiansyah became the Chairperson of the Natural Resources and Environment Department at his institution, Lambung Mangkurat University, starting June 23, 2009.

Thailand's Office of Environmental Policy and Planning appointed **Dr. Orapan Nabangchang** as a member of the Sub-Committee of the National Environment Board. The function of the sub-committee is to review environmental impact reports particularly investment projects affecting water resources.

In addition to this, the Board of Directors of the Biodiversity-based Economy Development Organization (BEDO) also appointed Dr. Orapan Nabangchang as a member of the Biodiversity-based Economy Working Group. The working group is tasked to prepare and submit a policy framework for a biodiversity-based economy to the Cabinet.



Dr. Nguyen Van Song was appointed Head of the Department of Resources and Environmental Economics at Hanoi Agricultural University. The university is planning to expand its program on environmental economics to be able to train 100 students per year on average.

In a photo competition organized by the International Development Research Centre's Regional Office for Southeast and East Asia (IDRC/ASRO), based in Singapore, several EEPSEA researchers took part and won prizes. These were **Dr. Nathaniel Bantayan** ("Mountain Rice", Ifugao, the Philippines); **Ms. Rawadee Jarungrattanapong** ("Losing the War Against Nature"); **Dr. Alice Joan Ferrer** ("Municipal Fishing Grounds"); **Dr. Canesio Predo** ("Climate Change Vulnerability"); **Dr. Syukur Umar** ("The Economy and Environment Challenging the Mangroves"); and **Ms. Kunlayanee Pornpinatpong** ("Fishery Value of Songkhla Lake").



Threatened Municipal Fishing Grounds of Concepcion, Iloilo, Philippines
by Alice Joan Ferrer



3rd prize: Nathaniel Bantayan
Mountain Rice from the Ifugao Rice Terraces, the Philippines

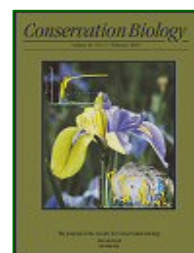


Mangroves and Environmental Challenges in East Kalimantan, Indonesia
by Syukur Umar

6.4 Journal Articles and Special Publications

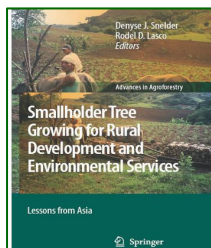
EEPSEA takes pride that the reports of the research studies it supports get published in international and peer-reviewed journals. In 2008-2009, the following EEPSEA-funded studies were included in international journals and special publications.

Jack Kelsey, Beria Leimona, and Paul Ferraro. 2009. A Revealed Preference Approach to Estimating Supply Curves for Ecosystem Services: Use of Auctions to Set Payments for Soil Erosion Control in Indonesia. *Conservation Biology*. 3: 359-367.



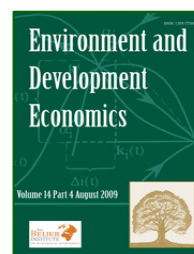
Tran Huu Tuan, Undomsak Seenprachawong, and Stale Navrud. 2009. Comparing Cultural Heritage Values in Southeast Asia – Possibilities and Difficulties in Cross-Country Transfers of Economic Values. *Journal of Cultural Heritage*. 10: 9-21.

Ying Lu and Zanzin Wang. 2009. A SWOT Analysis of Producing Biodiesel from *Jatropha curcas L.* in Yunnan. *Resource Development and Market*. 25(6): 534-537.



Canesio D. Predo and Herminia A. Francisco. 2008. Improving Productivity, Profitability and Sustainability of Degraded Grasslands through Tree-Based Land Use Systems in the Philippines. In “Smallholder Tree Growing for Rural Development and Environmental Services”, D.J. Snelder and R.D. Lasco (eds). © Springer Science + Business Media B.V. 2008.

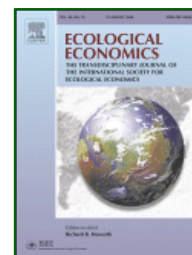
Thang Nam Do and Jeff Bennet. 2008. Estimating Wetland Biodiversity Values: A Choice Modelling Application in Vietnam’s Mekong River Delta. *Environment and Development Economics*: 14(2).





Nguyen Van Song. 2008. Wildlife Trading in Vietnam. *Journal of Environment & Development*: 17(2). 145-165,

Jin Jianjun. 2008. Valuing Black-faced Spoonbill Conservation in Macao: A Policy and Contingent Valuation Study. *Ecological Economics*: 68. 328-335.



◀ Extending EEPSEA Outreach through RePEc

In an effort to extend its publication outreach, EEPSEA has signed onto the database of RePEc (Research Papers in Economics), the most popular bibliographic database in the field of economics.

With this, EEPSEA joins the ranks of some 11,200 institutions which share their publications on RePEc. The uniqueness of RePEc is that it links institutions, publications, and authors in an integrated manner and monitors the outreach of the publications through monthly records which include the number of downloads, number of times abstracts have been viewed, and where the different publications have been cited.

EEPSEA has listed three publication series in RePEc namely, EEPSEA Policy Briefs, EEPSEA Research Reports, and EEPSEA Special and Technical Papers. EEPSEA in RePEc can be accessed at <http://edirc.repec.org/data/eeptesg.html>. Authors of EEPSEA publications are encouraged to register themselves as affiliates of EEPSEA at <http://authors.repec.org/>.

6.5 Applications and Citations



In a number of cases, the methods applied by EEPSEA researchers are used in other research and development projects elsewhere. The results of EEPSEA studies get cited or re-published in other publications and at times, translated into other languages. This year's applications and citations are as follows.

- The research project of Tran Dinh Thao which assessed the on-site costs of soil erosion and the benefits of soil conservation in the mountainous regions of Northern Vietnam was included in the training materials developed in a joint project between the governments of Australia and Vietnam on “Capacity Building for Applied Natural Resource Economics and Management for Vietnam.” The materials were distributed nationwide to extension workers. The distribution of the materials further resulted in local authorities extending assistance to farmers in the Hoabinh and Hagiang Provinces. Each farming household received five million VND to build terraces.
- The manuals written by Camille Bann, namely, "The Economic Valuation of Alternative Tropical Forest Land Use Options" and "The Economic Valuation of Mangroves" were cited in the Fondazione Eni Enrico Mattei Working Papers on Mapping of Forest Biodiversity Values: A Plural Perspective.
- Parts of the EEPSEA-funded research on the impact of trade liberalization on industrial pollution in Vietnam were included in the syllabus of the International Trade and Environmental Economics course at Vietnam’s National Economics University. Using the research report, the concerned faculty hopes to enhance the students’ understanding of the linkage between trade and the environment. The research team that produced the paper comprised Pham Thai Hung, Bui Anh Tuan, and Nguyen The Chinh.
- An article in the Journal of Sustainable Development entitled “A Contingent Valuation Study of Marine Parks Ecotourism: The Case of Pulau Payar and Pulau Redang in Malaysia” cited the 2002 research report of Jamal Othman entitled “Household Preferences for Solid Waste Management in Malaysia”.

6.6 Conference Presentations

EEPSEA researchers are actively involved in sharing the results of their research at regional and international conferences. In 2008-2009, the following EEPSEA researchers spoke at and/or presented their EEPSEA-funded work at various conferences. The conference participation of most of these researchers was funded by EEPSEA.

- Dr. Zanzin Wang attended a conference sponsored by the Yunnan Provincial Department of Science and Technology on June 24, 2009. In this conference, he presented part of his research work with EEPSEA on the lifecycle, economic, environmental, and energy performance of Jatropha oil.

- Drs. Herminia Francisco, Orapan Nabangchang, Gong Yazhen, Tran Huu Tuan, and Nghiem Thi Hong Nhung attended the 17th Annual Conference of the European Association of Environmental and Resource Economists (EAERE) held in Amsterdam, Netherlands, in June 2009. Gong Yazhen and Tran Huu Tuan presented their EEPSEA research findings. 
- Dr. Nghiem Thi Hong Nhung also attended the IARU International Scientific Congress on Climate Change in Copenhagen, Denmark, from March 10-12, 2009, and presented a paper based on her EEPSEA research entitled “Optimal Forest Management for Carbon Sequestration: A Case Study in Yen Bai Province, Vietnam.”
- Dr. Udi Udiansyah attended the Natural Resources Management and Climate Change Meeting organized by Indonesia’s Ministry of Research and Technology on June 13, 2009. He presented his EEPSEA paper on “Forest Rent Valuation for Coal Mining Activity in South Kalimantan, Indonesia”. The same paper was also presented at the Coal Mining Problem Meeting and National Conservation Conference in Indonesia on May 16, 2008, and from August 20-22, 2008, respectively.
- Dr. Margaret Calderon presented her paper entitled “Tourists’ Willingness to Pay for the Conservation of a UNESCO World Heritage Site: The Case of the Rice Terraces of the Philippine Cordilleras” at the 5th Biannual Conference of the United States Society for Ecological Economics held at the American University in Washington, DC, USA, from June 1-3, 2009. 
- Dr. Orapan Nabangchang gave a presentation on “Stated Preferences and Contingent Valuation” on May 17, 2009, at SANDEE’s environmental economics course. She also served as resource person at the Science, Economics, and Institutions of Managing and Paying for Ecosystem Services Workshop in Chiang Mai, Thailand, from April 23-30, 2009. The workshop was jointly organized by EEPSEA, ICRAF, and SANDEE.
- Dr. Arief Anshory Yusuf participated in the Swedish Environmental Secretariat Retreat in Kunming, China, from March 16-19, 2009. He represented EEPSEA in the planning exercise for SIDA-supported projects in the region.
- Dr. Herminia Francisco gave a talk on “Climate Mapping Results and Case Studies on Adaptation to Climate Change” at the IBoP Conference in Manila from March 1-7, 2009. EEPSEA also supported the participation of Dr. Canesio Predo, an EEPSEA researcher, and Dr. Maria Victoria Espaldon, an EEPSEA resource person who presented the paper entitled “Knowledge Systems in Climate Change Adaptations among Farming Communities in the Philippines.”

- Dr. Herminia Francisco and two EEPSEA-supported researchers attended the 4th East Asian Symposium in Taipei, Taiwan, from March 2-3, 2009. Dr. Luthfi Fatah presented his paper on the use of the social accounting matrix in setting coal mining policies while Dr. Canesio Predo presented his research on climate adaptation strategies by households in Ormoc, Philippines. Dr. Francisco gave a talk on the climate change vulnerability maps developed by EEPSEA in early 2009.



- Dr. Alice Joan Ferrer attended the Global Development Network's 10th Annual Conference on "Natural Resources and Development" hosted by the Arab Fund for Economic and Social Development at its headquarters in Kuwait City from February 3-5, 2009. At this conference, she presented the results of her EEPSEA-funded research on the evaluation of fisheries management options in the Visayan Sea in the Philippines.
- Drs. Herminia Francisco, Arief Anshory Yusuf, and Orapan Nabangchang participated in the Climate Game Change Conference held in Bangkok, Thailand, on January 22, 2009.



This event was hosted by the Swedish International Development Cooperation Agency (SIDA) and the United Nations Economic and Social Commission for Asia and the Pacific (ESCAP). About a hundred people from both the public and private sectors attended.

- Dr. Orapan Nabangchang attended a conference organized by the Land Policy Study Institute under the Thailand Research Fund on Climate Change and Impact on Land Use. She spoke on EEPSEA activities relating to the issue of adaptation to climate change.
- Dr. Rosalina Palanca-Tan presented her EEPSEA research paper on "Metering and a Water Permits Scheme for Groundwater Use in Cagayan de Oro" at the International Conference on Sustainable Urban Environmental Practices held from October 28-31, 2008, in Chiang Mai, Thailand. The conference was organized by the Asian Institute of Technology.

- Dr. Thang Nam Do of Vietnam attended a conference on “The Emergence of Vietnam as a Middle Income Country: Opportunities, Constraints and Regional Implications” in Singapore and presented his EEPSEA paper on “Vietnam: Today’s Growth at Tomorrow’s Environmental Cost?” The conference was organized by the Institute of Southeast Asian Studies (ISEAS) at the National University of Singapore and held from October 30-31, 2008.
- Dr. Maria Rebecca Campos presented her EEPSEA research paper "Moving Forward to the Future: Bio-economic Modeling of Fishery Conservation Policies in the Philippines" at the 17th Annual Meeting of the North Pacific Marine Science Organization on October 31, 2008, in Dalian, China.
- On October 9, 2008, Ms. Beria Leimona presented her EEPSEA research on estimating the cost of ecosystem services using experimental field auctions in Indonesia at the 2008 IUCN World Conservation Congress in Barcelona, Spain. The same paper was presented at the World Agroforestry Centre’s 2008 Annual Scientific Meeting and the 9th Meeting of the CGIAR Science Council at Nairobi, Kenya, in February and March 2008, respectively.



- Drs. Herminia Francisco and Orapan Nabangchang presented the EEPSEA paper on “Pricing the Environment: Case Studies on Climate Change and Marine Turtle Conservation” at the ISEAS’ Environment and Climate Change Seminar Series last October 29, 2008, in Singapore.
- From August 25-28, 2008, Dr. Herminia Francisco participated as a resource person at the Regional Workshop on Biodiversity Indicators and Database Uses & Applications organized by the ASEAN Centre for Biodiversity held in Siem Reap. At this workshop, she presented on the “Rationale for Collecting Socio-Economic Indicators for Biodiversity Assessment.”



- Dr. Margaret Calderon presented her EEPSEA paper entitled “Who Will Tend the Terraces? Keeping the Rice Terraces of the Philippine Cordilleras in the UNESCO World Heritage List” in Nairobi, Kenya, last August 9 at the International Society for Ecological Economics Conference 2008.



- Dr. Canesio Predo attended the Third Annual Conference of the Resource and Environmental Economics Foundation of the Philippines, Inc. on July 10, 2008, and presented his EEPSEA-funded study entitled “Adaptation and Coping Strategies to Climate-Induced Disasters: A Case Study of Households and Communities in Leyte, Philippines.”
- Dr. Orapan Nabangchang helped organize a conference on “Economic Analysis for Damage Assessment to Support the Judiciary Process” for Thai justices, in collaboration with the Thai Office of the Supreme Court. The conference was held on September 10 and attended by 50 participants, mainly judges, with some representatives from the Royal Forestry Department, Department of Marine & Coastal Resources, Department of Pollution Control, Department of Minerals, academics and NGOs.

6.7 Course Development

Some of EEPSEA’s researchers have applied what they learned from EEPSEA training courses in their teaching jobs:

- Dr. Syukur Umar included the results of his EEPSEA research and EEPSEA training materials in the teaching materials he developed for his class at Tadulako University, Indonesia.



- Dr. Zanzin Wang introduced a Natural Resource Economics Course to his graduate students at Yunnan University. The course was conducted from September 2008 to January 2009 using training materials from EEPSEA.



7.0 SPECIAL FEATURE: Climate Change Vulnerability Mapping

In early 2009, EEPSEA published a report by Arief Anshory Yusuf and Herminia Francisco (2009) entitled “Climate Change Vulnerability Mapping for Southeast Asia” (please refer to www.eepsea.org for the full report). This report identified the provinces/districts most vulnerable to climate change in the region.

The report defined vulnerability as a function of exposure, sensitivity, and adaptive capacity. It measured exposure to five climate hazards: tropical cyclones, floods, landslides, droughts, and sea level rise. It examined sensitivity using population density as a proxy for human sensitivity and the extent of protected areas as a proxy for ecological sensitivity. Adaptive capacity was measured based on selected socio-economic variables, technology, and infrastructure. Vulnerability to climate change was then illustrated through spatial maps showing the hotspots in seven countries in Southeast Asia.

7.1 Background and Objectives

The participants of the EEPSEA Climate Change Adaptation Conference held in Bali in February 2008 concluded that the identification and characterization of vulnerable communities and sectors was a priority concern for the region. The identification of the most vulnerable groups by way of determining the most vulnerable regions within countries and in Southeast Asia as a whole was an urgent task for development agencies.

In response to this need, EEPSEA embarked on a climate change vulnerability mapping study with the main aim of identifying which regions in Southeast Asia were the most vulnerable to climate change. It was expected that this information would be useful to policy-makers in the region as well as to external donors in better targeting their support towards climate change efforts. The specific objectives were as follows:

1. To identify which sub-national areas/units (regions, provinces, or districts, depending on the availability of the data) of Southeast Asian countries (Thailand, Vietnam, Laos, Cambodia, Indonesia, Malaysia, and the Philippines) were the most vulnerable to climate change.
2. To show these vulnerable areas in a map for the ease of reference of interested parties.

7.2 Translating Best Available Data into Policy Maps

The authors used the best available national and local community socio-economic and climatic data and adopted the concept contained in the Third Assessment Report of the IPCC where vulnerability was defined as a function of exposure, sensitivity, and adaptive capacity, as shown below:

$$\text{Vulnerability} = f(\text{exposure, sensitivity, adaptive capacity})$$

Indices of climate change vulnerability of sub-national administrative areas in seven countries in Southeast Asia, *i.e.*, Vietnam, Laos, Cambodia, Thailand, Malaysia, the Philippines, and Indonesia, were constructed. The assessment covered 530 sub-national areas comprising 341 districts (kabupaten/kota) in Indonesia, 19 provinces (khet) in Cambodia, 17 provinces (khoueng) in Lao PDR, 14 states (negeri) in Malaysia, 14 provinces in the Philippines, 72 provinces (changwat) in Thailand, and 53 provinces (tinh/thanh pho) in Vietnam. The climate change vulnerability index was derived through the steps shown in Figure 1.

- Exposure was assessed using information from historical records of climate-related hazards considering past exposure to climate risks as the best available proxy for future climate risks.
- Climate hazard maps were obtained for five climate-related risks: tropical cyclones, floods, landslides, droughts, and sea level rise.
- Population density was used as the proxy for human sensitivity to climate-hazard exposure. The assumption here was that regions that were relatively less inhabited would be less vulnerable compared to regions with high population densities, given the same degree of exposure to climate hazards.
- In addition to the human aspect of vulnerability, the ecological sensitivity of the region using biodiversity information as a proxy variable was assessed. A biodiversity-rich region, measured by the percentage of protected areas, was thus considered as more vulnerable than other areas to climate hazards, all other things being equal.
- An index of adaptive capacity was constructed as a function of socio-economic factors, technology, and infrastructure.

By following the above methodology, the overall vulnerability map for SEA was generated, along with maps showing adaptive capacity, sensitivity, and exposure to natural disasters. Electronic copies of these maps in high resolution are downloadable from the EEPSEA website. Limited hard copies are also available upon request from the EEPSEA Secretariat.

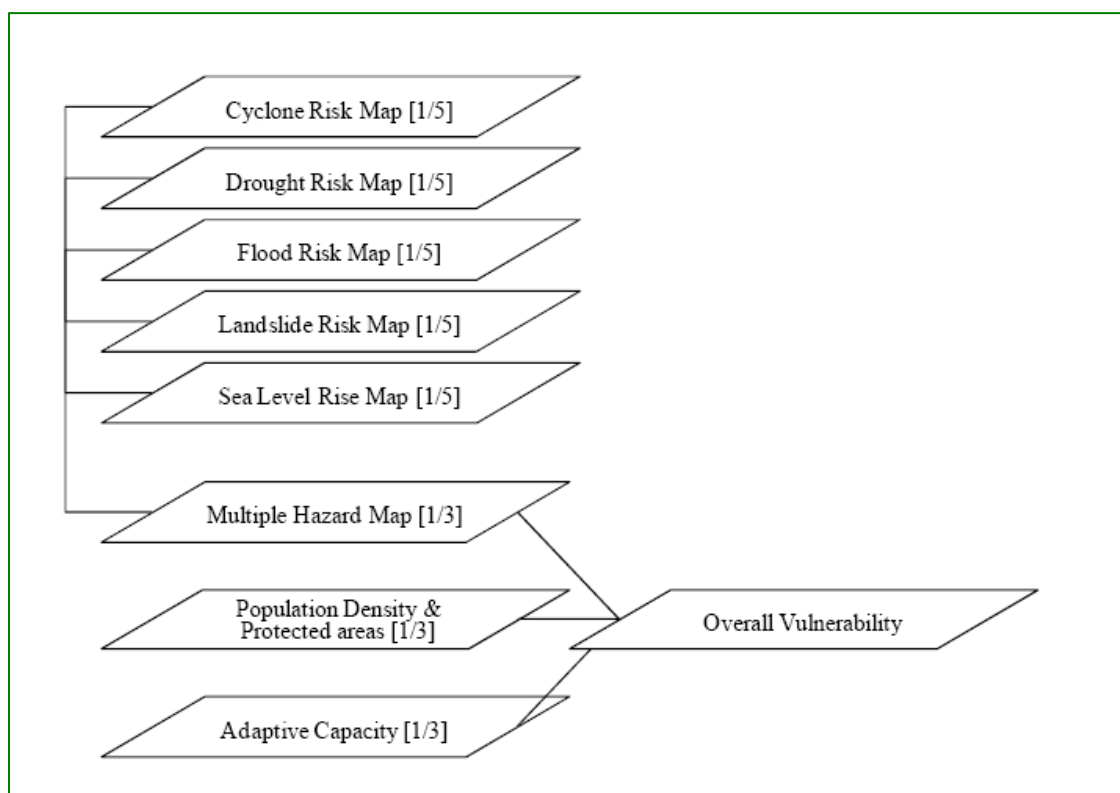


Figure 1. Method used in deriving the climate change vulnerability index

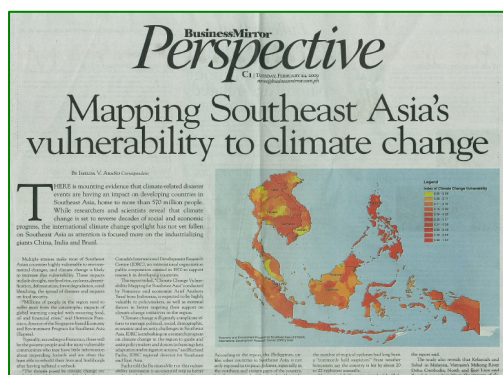
Note: The figures in parenthesis indicate the weights given to the respective factors.

7.3 Vulnerability Map Catches the Attention of the Media and Policy-Makers in Southeast Asia

Ever since the results of the vulnerability mapping exercise were featured in the Jakarta Post on January 23, 2009, the interest and response of the media and policy-makers have been remarkable. From the time of its release to date, the report has received 172 citations in the Google News Search. In Manila, where the maps were initially launched in March 2009, state senators and former members of the Philippine Congress and Senate came with full support for using the results of the mapping exercise as a platform for changing how the country perceived the impacts of climate change.



Article on EEPSEA's climate change vulnerability map featured in the Jakarta Post on January 23, 2009.



EEPSEA's climate change vulnerability map featured in the Business Mirror after its launch in Manila.

One of the Philippines' national daily newspapers, the Business Mirror, dedicated its centrespread to EEPSEA's climate change vulnerability mapping report. The article highlighted the urgency of the problem and called for action from the different sectors involved, particularly the government. Following the publication of this article, several other online dailies featured the maps and interviews with the EEPSEA Director.



Print and electronic media exposure of the climate change vulnerability map in the Philippines.



Because of the very positive response that the maps generated in the Philippines, its launch in Indonesia on May 6, 2009, stirred international interest with the United Nations Television production crew present to document the entire event and interview the researchers who undertook the mapping exercise. Similarly, Indonesia's national dailies and online news websites such as the Jakarta Post, Bisnis Indonesia, and Tempo Interaktif featured articles that highlighted the results of the mapping study for Indonesia. They mentioned how valuable the maps and forecasts would be to policy-makers as well as agencies investing in local adaptation to climate change.



Indonesian policy-makers and dignitaries at the launch of EEPSEA's climate change vulnerability map in Jakarta.

Dr. Herminia Francisco explaining the significance of the vulnerability map to the policy-makers in Jakarta.



In addition to EEPSEA's media coverage in the Philippines and Indonesia, international media agencies such as the Thomson Reuters Foundation and many others have also featured the results of the climate change vulnerability mapping exercise on their websites.



Electronic citations of EEPSEA's climate change vulnerability map.



Climate Vulnerability Map Launched in Manila

On March 6, 2009, EEPSEA officially launched the Climate Change Vulnerability Map in Manila with 123 people present. The Earth Institute hosted the event, which attracted three current and former national senators; Senator Loren Legarda, former Senator Leticia Ramos-Shahani, and former Senator Heherson Alvarez who was also the Philippine Presidential Advisor on Climate Change. Several media representatives also attended the event.

EEPSEA Director, Dr. Herminia Francisco, presented the findings of the study, which were featured in several national dailies soon after the launch. These news reports were then picked up by other news agencies globally.

On March 4, 2009, Dr. Francisco and IDRC Regional Director, Mr. Richard Fuchs, participated in the DZRH radio show for an hour to talk about climate change and research and development. The interview was a multimedia program broadcasted simultaneously on radio, television, and the Internet. The program has 2 million listeners/viewers in the Philippines alone.

"Looking at the map with the Philippines in a red alert color, it is sad and difficult because it means there's so much work to be done. With the creation of the climate-change commission, we can expect leadership from the government to tackle climate change and reduce disaster."

- Philippine Senator Loren Legarda
Source: Senator Legarda's Senate Webpage

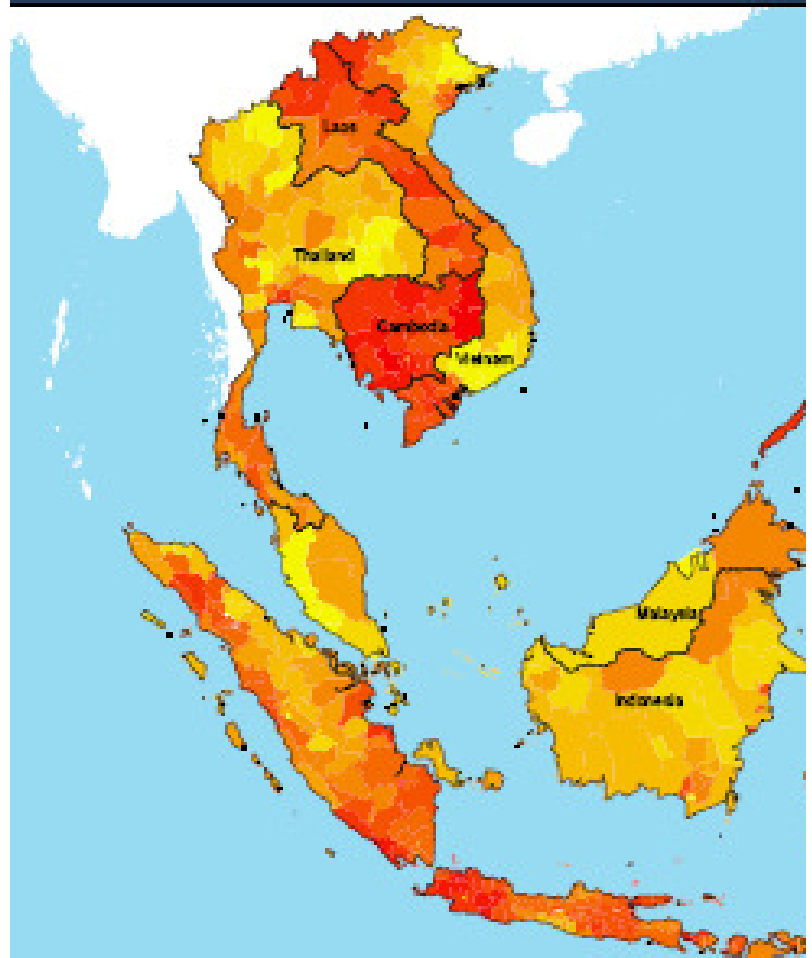
Climate M in Southeast Asia

This study, conducted by EEPSEA, identifies the regions most vulnerable to climate change in Southeast Asia. This information is expected to be highly valuable to policy-makers as well as external donors in resource-allocation decisions on climate change initiatives in the region.

The assessment covers 530 sub-national areas which consist of 341 districts in Indonesia, 19 provinces in Cambodia, 17 provinces in Lao PDR, 14 areas in Malaysia, 14 provinces in the Philippines, 72 provinces in Thailand, and 53 provinces in Vietnam.

The study assesses climate hazards using information records based on the assessment of exposure is the best of future climatic risks.

Climatic hazard maps related risks—tropical landslides, droughts, and are generated. Population as the proxy for human climate hazard exposure protected areas is considered the ecological sensitivity sub-national areas.



Economy and Environment Program for Southeast Asia (EEPSEA)
International Development Research Center (IDRC) 2009

Climate Change Vulnerability in South

"Based on this mapping assessment, all the regions of the Philippines; the Mekong River Delta in Vietnam; and regions of Cambodia; North and East Lao PDR; the Bangkok region of Thailand; and West Sumatra, South Sumatra, West Java, and Eastern Java of Indonesia are among the most vulnerable in Southeast Asia" (Yusuf & Francisco).

A report on this mapping project is available online at <http://www.eepsea.org>

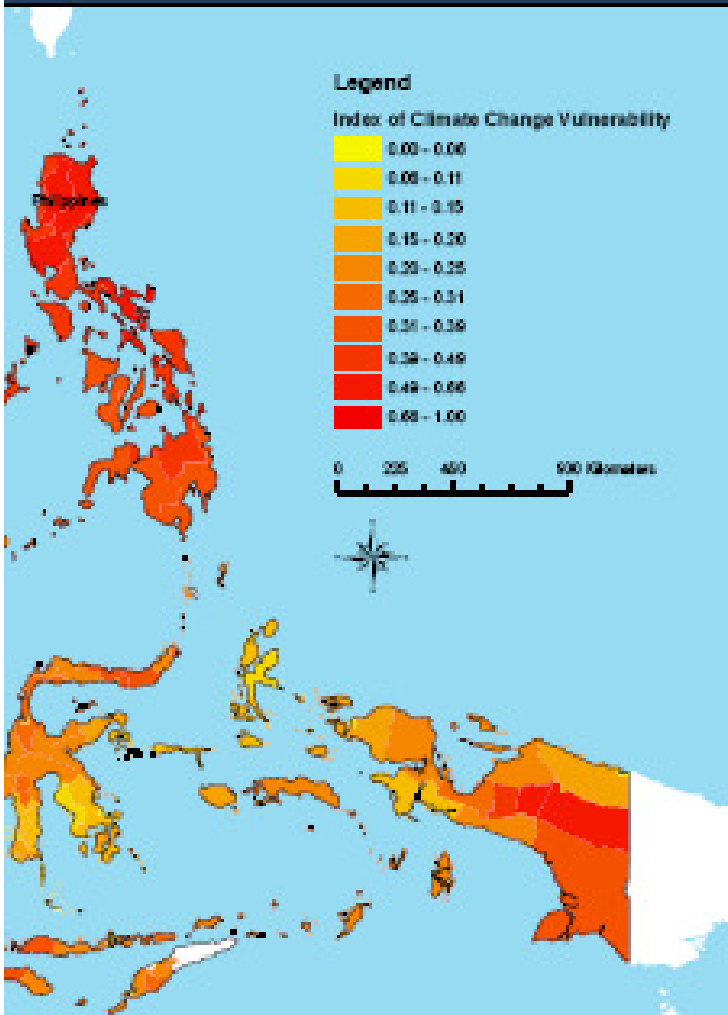
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An index of adaptive capacity is also created, as a function of socio-economic factors, technology, and infrastructure. The socio-economic variables comprise the Human Development Index (income, literacy, and life expectancy), poverty, and inequality.

Finally, an index of overall climate change vulnerability for Southeast Asia is produced. We ranked the regions according to the index and consider those areas falling in the 4th quartile as the vulnerable areas.



east Asia

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vulnerable regions

sea.org.

IDRC
International Development
Research Centre



CRDI
Centre de recherches pour le
développement international



Geography and Environment
Program for Southeast Asia

“Jakarta residents who are aware of their city’s vulnerability to climate change should support the government’s policies to mitigate the impact of environmental degradation.”

- Indonesia’s Environment Minister Rachmat Witoelar
Source: Jakarta Post

National Launch of Climate Change Vulnerability Map in Jakarta

The Climate Change Vulnerability Map was launched in Jakarta, Indonesia, on May 6, 2009, at a conference hosted by the National Council on Climate Change, headed by Dr. Agus Purnomo, a former EEPSEA Advisory Committee member.

EEPSEA Director, Dr. Herminia Francisco, presented the findings of the mapping study together with Dr. Arief Anshory Yusuf, EEPSEA Senior Economist attached to Padjadjaran University, Bandung. Dr. Yusuf presented the findings in Bahasa Indonesia.

Senior Indonesian policy-makers and government officials including the Minister of Environment, Mr. Rachmat Witoelar; Jakarta’s Deputy Governor, Mr. Achmad Harjadi; and several other senior officials from the Ministry of Finance, National Disaster Management Agency, and other ministries attended the launch. Two of EEPSEA’s donors, CIDA (represented by Marco Domaschio) and SIDA (represented by Christer Holtsberg) also attended the launch and spoke briefly on their institutions. Richard Fuchs represented the IDRC.

The Minister of Environment, Mr. Witoelar, expressed his appreciation for EEPSEA’s work and urged the officials and press present to raise public awareness on the issue of climate change. About seven media representatives were present, including the mainstream Jakarta Post, Antara News Agency, Sinar Harapan, Jakarta Globe, and the British Broadcasting Corporation. The UN TV film agency also recorded the conference as part of a documentary on climate change that it was producing.

The event was reported in more than 20 media articles that highlighted the mapping and the need to address the threat of climate change.



8.0 Management

8.1 Secretariat

EEPSEA's management is composed of the Director, Dr. Herminia Francisco, and three senior economists; Dr. Orapan Nabangchang from Thailand, Dr. Bui Dung The from Vietnam, and Dr. Arief Anshory Yusuf from Indonesia. All three have been long-standing EEPSEA researchers. They continue to work from their home institutions, e-communicating with EEPSEA on a one-third-time basis.

EEPSEA has a new Research Officer, Ms. Rusyan Jill Mamiit-Coburn, a former EEPSEA training grantee. Ms. Catherine Ndiaye continues as Grant Assistant, with full-time assistance from Ms. Ang Cheng Hiang, Regional Program Assistant.

8.2 Sponsors Group

The Sponsors Group of participating donors sets policy, provides financial support, and approves the annual work program and budget. It comprises donors that contribute at least USD 100,000 per year. The current membership is listed below.

- International Development Research Centre (IDRC), Canada
– CAD 1,000,000/year
- Swedish International Development Cooperation Agency (SIDA)
– CAD 556,000/year
- Canadian International Development Agency (CIDA)
– CAD 400,000/year

8.3 Advisory Committee

The Advisory Committee advises the Director on priorities for research and training and recommends the annual work program to the Sponsors Group. The Committee consists of senior scholars and policy-makers active in environmental management in Asia. The majority of the committee's members come from Asia. Each member has a three-year term, renewable once for Asian members. The Committee meets once a year, in conjunction with the November biannual workshop.

The existing committee members are:

- Dr. Zhang Shiqui (Susan), Beijing University, China.
- Dr. Vo Tong Xuan, AnGiang University, Vietnam.
- Ms. Elizea Gozun, Former Secretary of the Department of Environment and Natural Resources, the Philippines.
- Ms. Monemany Nhoybouakong, Environmental Research Institute, Lao PDR.
- Dr. Wiktor Adamowicz, University of Alberta, Canada.

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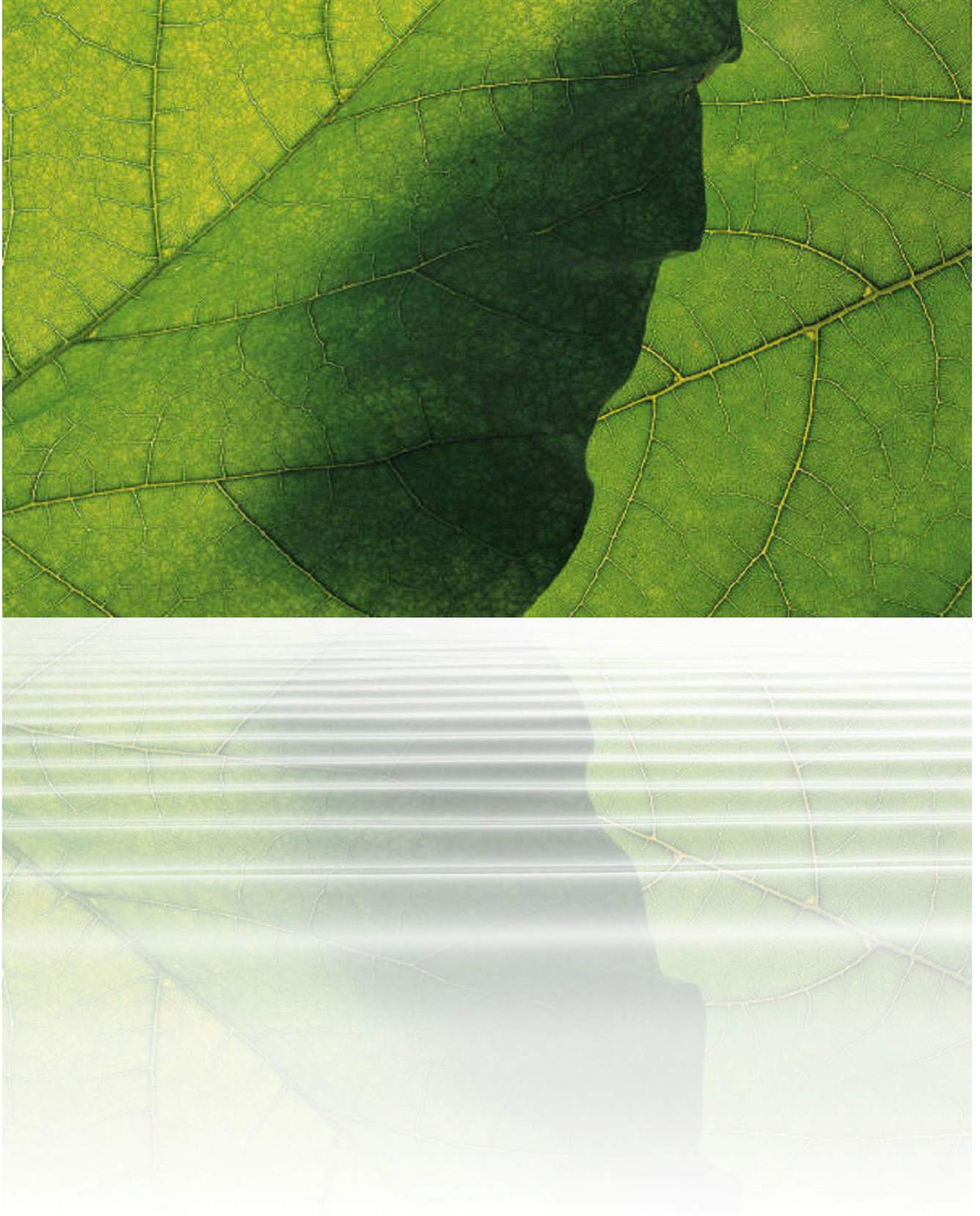
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