

FROM PAPER TO POLICY

**Building Environmental
Economics Research Impact**

EEPSEA 2000-2009





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About **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, 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.

Forging Ahead:

Building Research Capacity and Impact in Southeast Asia



Dr. Herminia Francisco

On the opening day of the EEPSEA Impact Conference in Hanoi in February this year, a quick glance at the local English newspaper revealed no fewer than 10 articles on the kind of issues covered by EEPSEA research grants. For the most part, they focused on Vietnamese infrastructure and environmental issues such as water treatment plants; traditional and biomass energy plants; farming incentives; flood control; solid waste management; global warming; and livestock practices.

EEPSEA's role over the last 16 years has been to build the capacity of researchers and institutions to enable them to deal with issues just like these. By developing high caliber environmental economics researchers within member countries, EEPSEA has given policy-makers an effective source of information which they can use to solve pressing environmental problems and to plan for the future.

Over the years, EEPSEA has funded 247 projects. It has provided training through courses and workshops to over 1,330 participants from Cambodia, China, Indonesia, Lao PDR, Malaysia, the Philippines, Sri Lanka, Thailand, Vietnam, Mongolia, and Papua New Guinea (*Figure 1*). The list includes core courses in environmental economics for approximately 340 researchers as well as intensive training for approximately 160 university teachers. It also includes familiarization courses targeted specifically at policy-makers, natural resource managers, NGOs, judges, and journalists. Equally important are the achievements of EEPSEA alumni: developing curricula and

new programs at local universities; forming national associations for networking and additional training; taking their expertise to government agencies, NGOs, and advisory groups; disseminating findings through journals and international conferences; and more.

We are proud of the achievements of our researchers, but that does not stop us asking ourselves how we can help them to do more. The answer lies in understanding the constraints they face as researchers trying to access and influence policy-makers. Getting policy-makers to listen to and support research recommendations can be difficult for senior researchers, let alone for less experienced ones. Policy-makers have limited time and resources with which to work. Moreover, their credibility and professional reputations depend on their decisions. In order for them to adopt policy recommendations, policy-makers have to be confident that they are going to work. This means knowing that the research is the best available and that the research team is highly qualified. While we do our best to ensure the highest standards of research, we have less control over the confidence levels of policy-makers. Thus, we strive to maintain on-going outreach to government agencies, NGOs, and natural resource managers. We share our work with them at conferences, seminars and workshops, and through journals. We provide training for and create partnerships with their staff. By doing this, we raise awareness of the value of our researchers' work and of the tools of environmental economics.

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At EEPSEA, we practice a collaborative approach to networking. Our researchers share with one another recommendations for overcoming constraints at the local level, project by project. Some of these recommendations can be found on page 44. My own recommendation to EEPSEA researchers is to keep up the good work and don't give up. Southeast Asian countries are increasingly seeking to balance economic growth with social development and maintaining a healthy environment. It is an extremely complex task but one that you are well-trained to do. So, rise to the challenge!

EEPSEA researchers and alumni have worked long and hard to bring about positive changes in the management of natural resources and the environment in SEA. They have persistently sought ways to make their research relevant to the environmental problems facing their communities. For such a driven, results-orientated group, progress can sometimes seem frustratingly slow. Donors, resource people, and others however advocate perseverance and patience. Lasting change does not happen overnight, particularly when it comes to policy and the academia. As the following pages will show, however, it is happening a step at a time. The EEPSEA network's efforts to provide valuable services to policy-makers are beginning to bear fruit and it is more important than ever to keep up the momentum. This we will strive to ensure in the years to come.

“Oceans crucial
in global warming fight”

“HCM City waste treatment
plants to come on line soon”

“Treatment plants
to clean up lakes”

“Truck overloading
blitz sought”

“Ministry to build solid
waste treatment plants”

“Illegal poultry trade
stokes bird flu fears”

“Electricity Viet Nam (EVN)
plans new power plant projects”

“Japanese to help build,
maintain infrastructure”

[including bio-mass power plants, water supply
projects, recycling operations, etc.]

“Ministry incentives
to boost farming”

“Authorities
get tough on floods”

Quality Control: **Evaluators**



Jeffrey Vincent

One of the ways in which EEPSEA keeps its edge is through regular evaluations by outside experts. Jeffrey Vincent, first of the University of California - San Diego and later of Duke University, performed independent evaluations in 2005 and in 2008. Just as with previous evaluators, Vincent had high praise for EEPSEA. Several of his comments on different aspects of EEPSEA's work are included throughout this report.

“ EEPSEA made strong progress toward achieving its objectives, such as...increased influence on policy, including several instances of impacts on policy regimes, and expanded efforts to stimulate demand by policymakers for environmental economics analysis. ”

Putting Environmental Economics to Work:

Impact Stories

The accumulated knowledge of EEPSEA researchers and their colleagues is adding to a better understanding globally of the management of environmental issues. The message from EEPSEA is consistent: make the research useful to policy-makers and natural resource managers, and disseminate results as much as possible. This directive has resulted in a long list of research reports and policy briefs dealing with exactly the kinds of dilemmas faced by community leaders every day (*Table 1*). More than merely a collection of reports, this list represents an impressive wealth of expertise, human resources, established community relationships, and useful tools for those looking to address current and future environmental problems. Printed on each report are the names of experts who are eager to help develop practical solutions. The case studies that follow demonstrate some of the ways in which EEPSEA researchers have contributed throughout the region.

Table 1: Research projects by topic (1993 - 2009)

Pollution Control	59
Coastal and Marine Issues	20
Water and Energy	33
Research Methods	15
Forests, Agriculture, and Conservation	81
Common Property Management	3
National Global Issues	19
National Global Issues - Climate Change	17
	247

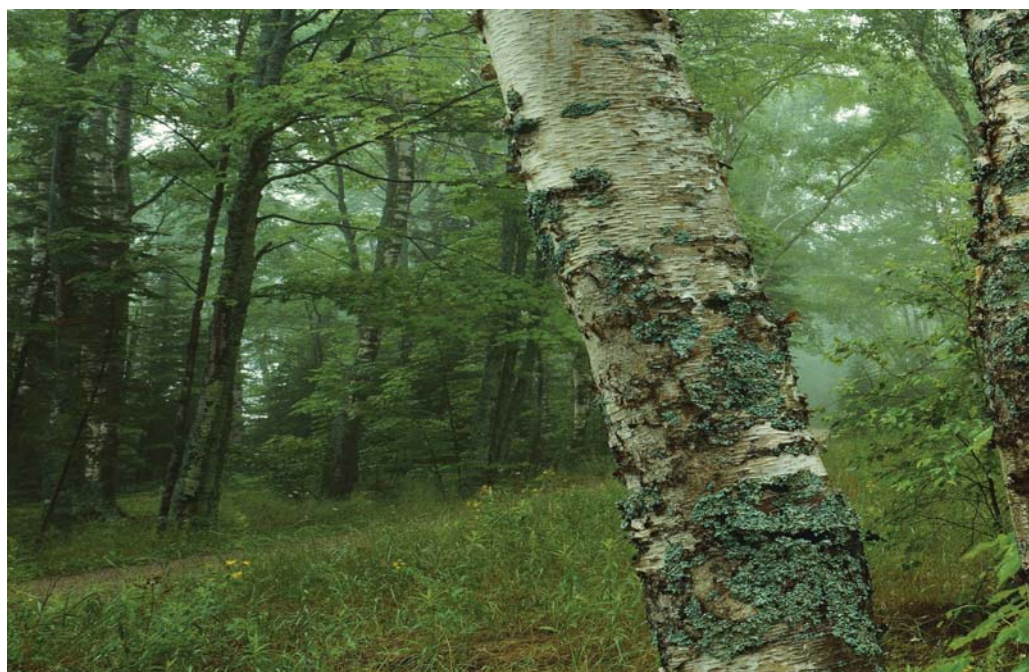
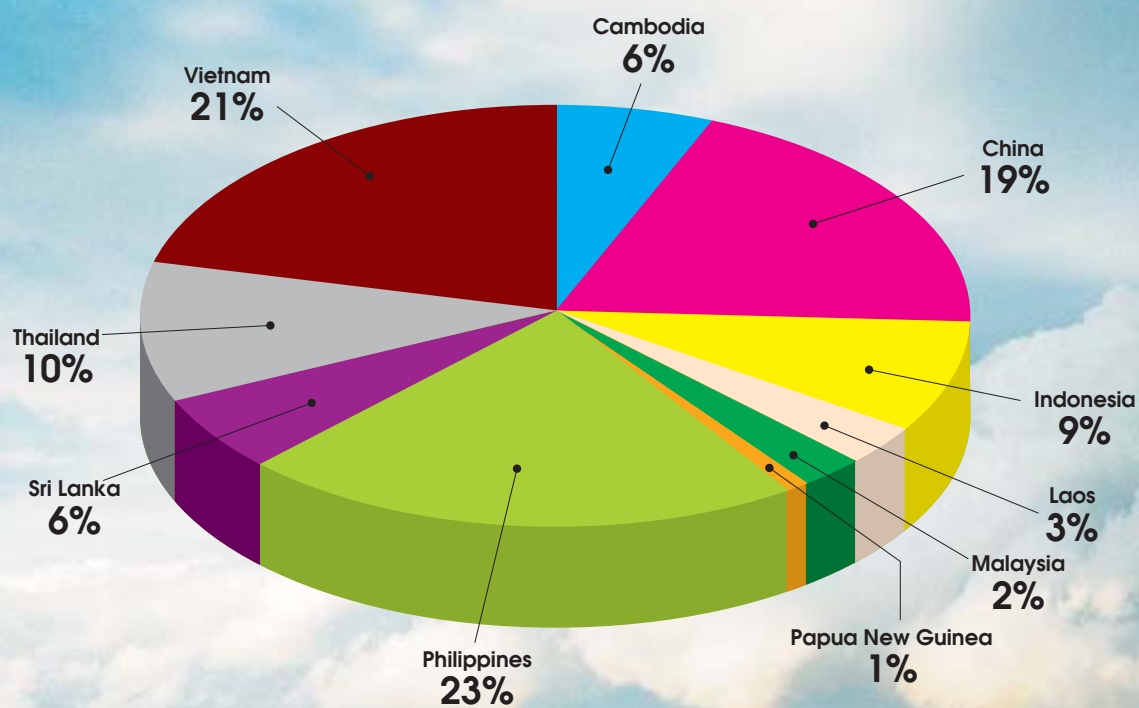


Figure 1: Project distribution by countries (1993 - 2009)



Meeting the needs of **Decision-Makers**

Only with a thorough understanding of the needs of research users will EEPSEA researchers be able to maximize policy impact. To gain this understanding, EEPSEA has adopted a simple approach: ask the research users. When EEPSEA sought to strengthen its work in Cambodia and Lao PDR in 2005, for example, it sent EEPSEA Director Herminia Francisco, who at the time was Deputy Director, to Phnom Penh to build relationships. Her first step was to approach policy-makers and natural resource managers to determine their research priorities. Subsequent EEPSEA in-country training and activities were designed based on that feedback. Such a client-driven approach, while not the only method used to determine EEPSEA's activities, ensures that the research is relevant to the research users' agendas.

Workshops, forums, conferences, seminars, training, and one-on-one meetings are all opportunities to obtain useful feedback and explore possibilities for collaboration. Over the past 10 years, EEPSEA has held training and networking events for research users in Lao PDR, Vietnam, Thailand, Cambodia, and the Philippines. By providing training to decision-makers on the basic principles and methods of environmental economics, EEPSEA is providing access to new tools for problem-solving. It is a

win-win situation. Policy-makers and natural resource managers learn how environmental economics research can enhance their work, and EEPSEA gains wider recognition for its efforts as well as useful feedback.

There is more involved than networking and raising awareness however: participants become part of a global discussion on environmental issues. Being part of the EEPSEA network, and informed by international scientists and other experts from a variety of fields, research users enhance their ability to shape future priorities. They have an opportunity to move beyond the role as client to one as partner in future sustainability planning.

What research users are telling EEPSEA

The research users in the EEPSEA network say that they are willing to seek funding for environmental economics research projects provided they are in priority areas. The areas identified specifically are climate change adaptation at a country specific level, haze and toxic pollution at the local level, and effective management of natural resources (particularly those projects involving coastal erosion and biodiversity conservation).



Attendees of the EEPSEA Impact Conference in Hanoi, February 2010.



Dialogue with Lao PDR officials

The Laotian government is actively seeking EEPSEA involvement to aid its policy-makers. In September 2009, at the government's invitation, EEPSEA Director Herminia Francisco and five EEPSEA researchers met with policy-makers on a two-day information exchange session in Vientiane. The group presented various projects that might be useful to Laotian officials: Senior Economist Orapan Nabangchang shared her EESPSEA work and explained how her research results were used to develop policies in Thailand; Vu Thanh Phoung of Vietnam described his team's experience of implementing payments for ecosystem services in Vietnam; Dolara Nepomuceno from the Philippines imparted her agency's findings on the use of an environmental user fee system; Adis Israngkura of Thailand and Mohd Shahwahid Haji Othman of Malaysia shared their research in the areas of mining valuation and land use change. The meeting was an excellent opportunity to demonstrate the applications of environmental economics research.



Powering **Southeast Asia**

Much of Southeast Asia's rapid development has been aided by artificially low energy prices. The results of these subsidies are huge inefficiencies in energy use, rising pollution, and an alarming growth in dependence on fossil fuels. China's declared intention of greening its economy is a welcome development. Similarly, other countries in the region are working on different means to lower their carbon footprints. EEPSEA researchers are helping them find ways of doing this.

Electricity pricing in Vietnam

Two EEPSEA-supported economists in Vietnam have helped shape the country's policies on electricity pricing. In 2000 and 2001, Nguyen Van Hanh and Nguyen Van Song studied in detail the environmental costs associated with a coal-fired power plant and a hydropower plant in Vietnam. They found that the electricity prices covered only the direct costs of operating the plants and neglected the considerable costs to the environment and the communities surrounding the plants. In addition to higher electricity prices, the researchers recommended the incorporation of environmental costs in future projects. In 2002, the government issued a decree mandating a significant increase in electricity rates. Nguyen Van Hanh and Nguyen Van Song's results were published in *Energy of Vietnam* magazine.

Delayed gratification: micro-hydro electricity plants in Thailand

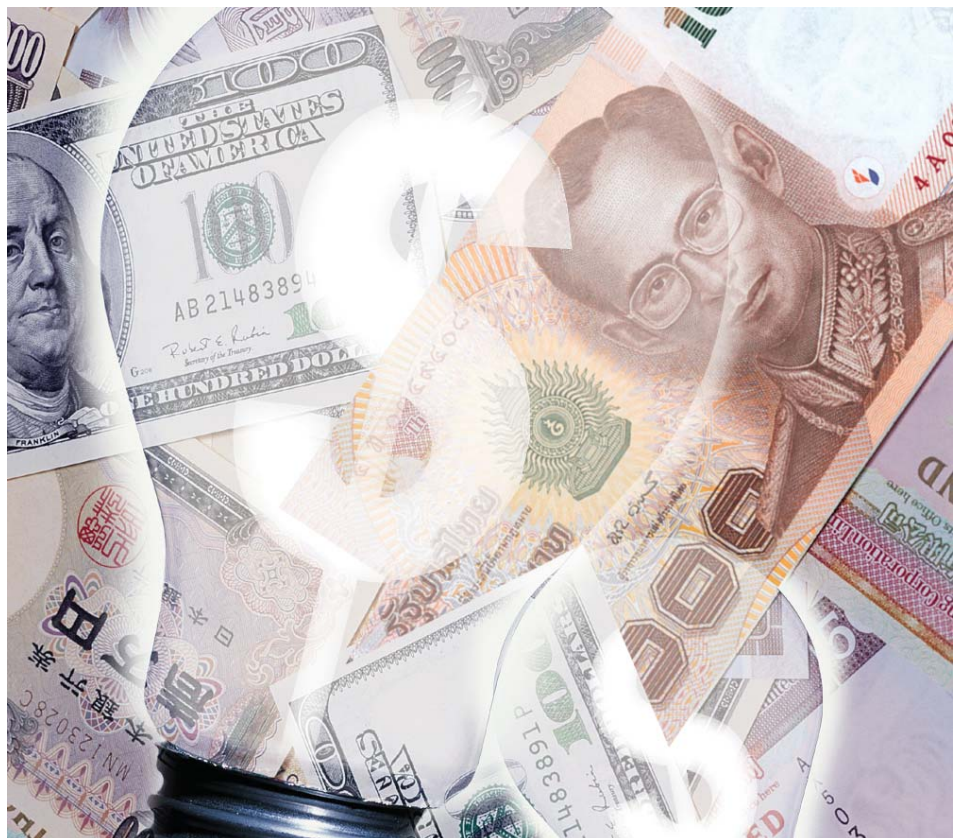
Sitanon Jesdapipat (then with the Thailand Environment Institute) and Siriporn Kiratikarnkul of Maejo University from Thailand have finally seen progress on their 1997 project concerning Chiangmai's struggling micro-hydro electricity plants. The EEPSEA-supported researchers set out to determine why, at a time when governments sought to increase renewable energy sources, the plants were beginning to shut down. They found that the output from the micro-hydro plants had become unreliable due to deforestation, and that most

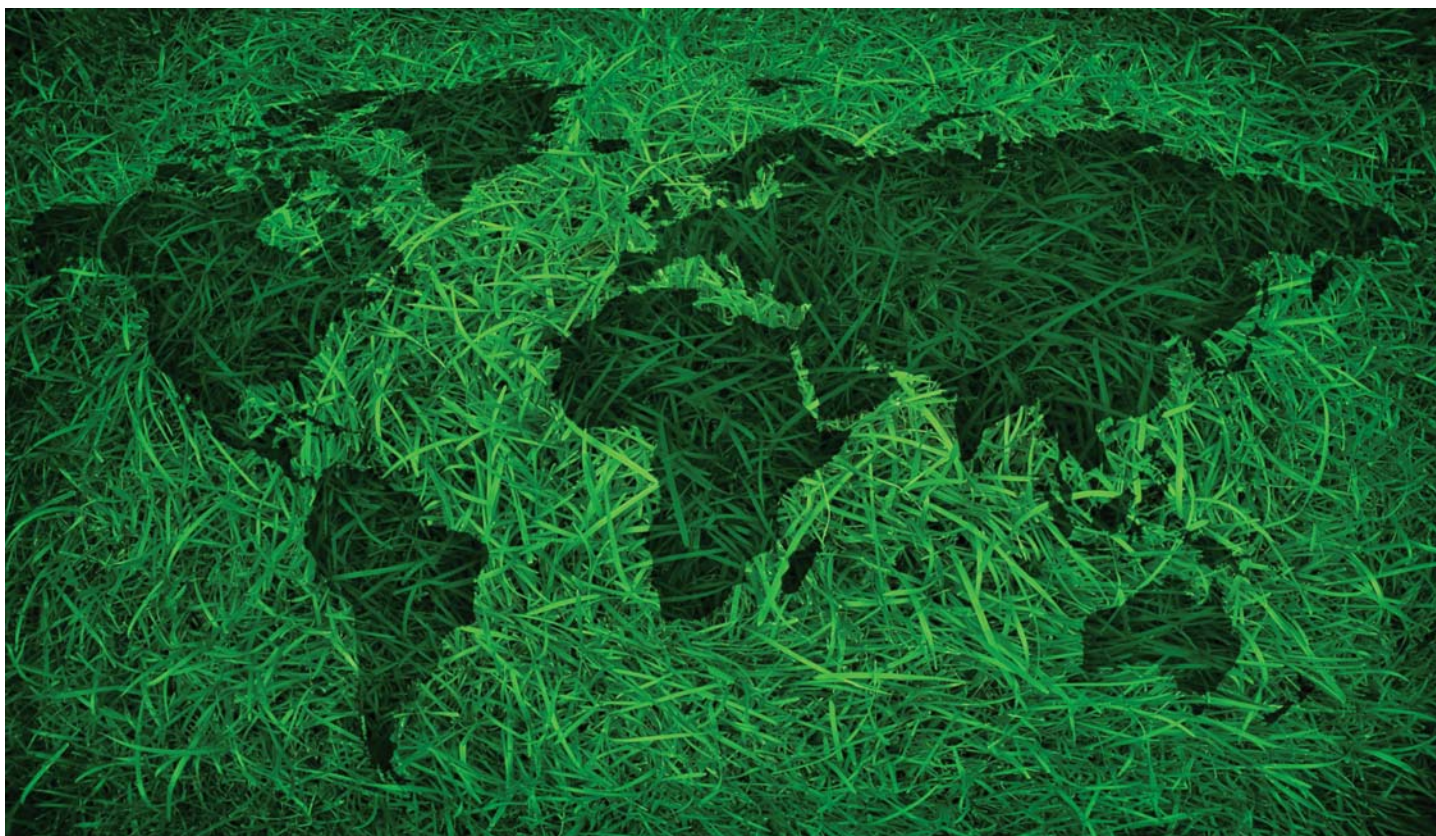
residents of the area would prefer to switch to the national grid as it became available in their region.

Jesdapipat and Kiratikarnkul recommended that the plants be modified to connect to the grid, allowing local villages the option of buying from the grid. Such a scheme would take advantage of the existing renewable energy supply as well as the reliability of the provincial energy authority. At the same time, the researchers suggested a revised pricing scheme that would improve the efficiency of energy usage. A key aspect of the study was the need to limit deforestation. Part of the benefit of supporting the micro-hydro plants is their direct link to the value of the forest ecosystems. The forests

surrounding the plants help regulate the water flow in the region and minimize soil erosion. The plants' dependence on healthy forests provides strong incentives for communities to protect the ecosystems.

Since the time of the study, the Thai government has been slowly laying the groundwork for the commercialization of micro-hydro plants, first by exploring ways of connecting them to the national grid, and then by including the plants in a net metering scheme that allows community plants to buy and sell energy to the grid. In 2007, the government budgeted 150 million baht over three years to commercialize the plants.





Biogas - from pollution to energy production

As Kiratikarnkul found in the above example, simply introducing the technology for renewable energy is not enough. In 2008, she published a policy brief on pig waste disposal options in Thailand. As with the micro-hydro energy study, this was a case in which a government-sponsored program related to renewable energy was floundering. Despite financial incentives to adopt biogas technology, few pig farms were using it. Kiratikarnkul assessed medium- and large-scale pig farms in several regions and found that 80% of the existing biogas production was wasted. Farms used a small percentage of the energy to power their operations, but had no use for the rest. The study suggested that if the government invested in a scheme to allow pig farms to sell excess energy to the national grid, the biogas technology would become worthwhile financially. In addition, Thailand would be closer to meeting its renewable energy targets as defined by the National Energy Policy Office.

This was not the first research on biogas energy funded by EEPSEA. Ma. Angeles Catelo of the University of the Philippines Los Banos examined ways of dealing with increasing pig waste in the province of Laguna. The results, published in 2001, provide recommendations for both waste reduction and waste treatment. The most beneficial of the treatment options presented was biogas technology. The Laguna Lake Development Authority used the study to produce guidelines for the operation of small-scale hog farms in the area. Thanks to her thorough engagement with pig farmers in the development of the options, a number of them were ready to implement the guidelines before they were even in place. Catelo has been asked to contribute her expertise on the issue in other parts of the Philippines as well as in the international arena. The International Food Policy Research Institute has included her research in its seminars and publications.

Vietnam is looking to biogas digesters for its backyard cattle-raisers. Subsequent to an EEPSEA-funded study by Nguyen Quoc Chinh of the Hanoi Agricultural University, almost all dairy cattle-raising households in the Hanoi suburbs have installed the technology. Nguyen's recommendations included not only financial and technical support for the households, but also demonstration sites and an educational campaign to convince farmers of the benefits. Already the communities are noticing improved air and water quality, and farmers are making use of the digester outputs (biogas for cooking fuel and clean compost for fertilizer). Neighbouring communities are starting to adopt the technology as well.



Backyard Pig Farm in the Philippines.

Coastal and Fisheries

Resource Management

Coastal areas are among the most stressed ecosystems on earth. Communities depend on them for industrial use, food provision, transport, tourism, and recreation. All of these conflicting uses take a toll on the health of the ecosystems. A careful balance is needed to ensure that coastal environments, and the people that depend on them, are around for the foreseeable future.



Tubbataha Reefs, a Philippine natural World Heritage Site.

Tubbataha Reefs Marine Park in the Philippines

The Tubbataha Reefs Marine Park is one of two natural UNESCO World Heritage sites in the Philippines. Being a UNESCO site, the park is universally recognized as being valuable and even irreplaceable. Merely achieving status as a protected area, however, is not enough to ensure sustainability. In cooperation with the Tubbataha Management Office and staff from the World Wide Fund for Nature, Rodelio Subade used EEPSEA research funding to answer practical questions about the long-term management of

the park. One of the results of these efforts was an executive order issued by President Arroyo in 2007 to expand the protected area. Subade was asked to join the management council and to assist in drafting local ordinances and policies regarding the economic value of endangered species and habitat conservation. Another result of his EEPSEA-supported research was recruitment by WWF-Philippines to work as a consultant in a socio-economic study of the communities near Tubbataha and the impacts of illegal fishing on its conservation.

Aquaculture in Vietnam and the Philippines

Tra fish farming has been a highly successful means of raising the standard of living for many Vietnamese in the Mekong Delta. Unfortunately, it has also been a major cause of pollution to the waterways on which so many depend. Local governments have introduced guidelines for the fish

farmers but compliance has been poor. Vo Thi Lang of Cantho University conducted studies to determine the most cost-effective methods of treating wastewater from the fish farms. Local agencies continue efforts to find feasible solutions and to educate fish farmers on the mutual benefits of better management practices. City authorities are collaborating with the Farmers' Union to improve compliance, and are also planning to install a clean water system for households affected by the polluted water.

Also looking to solve problems created by aquaculture is Zenaida Sumalde from the University of the Philippines Los Banos. Her 2002 EEPSEA study on the devastating effects of badly regulated milkfish farms in the Lingayen Gulf was eye-opening for local officials. Diminishing water quality and the resulting fish kills experienced in the area were an ominous sign of the eventual collapse of the industry. Sumalde presented her findings to the local regulatory agency, which agreed with the need to step up enforcement of fish farms considerably. Based on this study, the Food and Agriculture Organization (FAO) hired Sumalde to do a similar assessment of the rapidly declining Taal Lake in Batangas. Local officials in Batangas have committed to limiting the number of fish cages although no official legislation has been enacted yet. Sumalde's work continues to inform the research of the FAO on small-scale aquaculture. In addition, her results have been included as chapters in two books, and at a regional conference on coastal management in 2006.





Commercial fishers in the Philippines' Iloilo fishing grounds take an active role in preserving fish stocks for future generations.



Alice Ferrer

Involving all the stakeholders

Environmental economics research is all about getting the right information. Getting data from government agencies, businesses, and households is often challenging. Getting cooperation from polluters or perceived offenders can be much worse. Thankfully EEPSEA researchers have an advantage over enforcement agencies or local government units. As neutral observers coming in to view the problem from a fresh angle, they can often avoid the pitfalls of local dynamics.

Take Alice Ferrer from the Philippines. She set out to find solutions to the problem of over-fishing in the Visayan Sea. She found that the commercial fishers had thus far been left out of discussions and were described as the missing link. With a little perseverance on her part, Ferrer got them talking. The fishers felt frustrated by public misconceptions about them. Most likely relieved to be seen as part of the solution rather than part of the problem, the commercial fishers financed and installed buoys marking a marine protected area. By clarifying these boundaries, the fishers took a positive step toward protecting both an important ecological resource and an industry that is crucial to the local community. Regardless of the formal outcomes of Ferrer's study, the process of the research itself has resulted in new lines of communication that are likely to benefit the local community in the long run.

Wetlands Protection

The global community is finally beginning to understand the environmental services provided by wetlands: flood control, natural water filtration, bio-diversity conservation, and coastal erosion control are a few of these. In many cases, authorities are seeking to limit or reverse decades of encroachment by development and degradation by toxic pollution.

Wetland values in Vietnam

In 2007 Thang Nam Do produced a research report supporting the rehabilitation of Tram Chin National Park in the Mekong River Delta. Over time, local farmers have built up dykes that impede the natural functions of the wetlands. Authorities were reluctant to take up recommendations to lower the dykes because of the losses that the farmers would incur from lower rice yields and other impacts on farming. Thang's study demonstrated that the value of the rehabilitated wetland ecosystem more than justified fair compensation for the affected farmers. Thang's methods for valuing wetlands in Vietnam have proven useful. The government included the value estimates in its application to have Tram Chim adopted as a Ramsar site (resulting from the Ramsar International Convention on Wetlands, approved sites are recognized as wetlands of international importance).

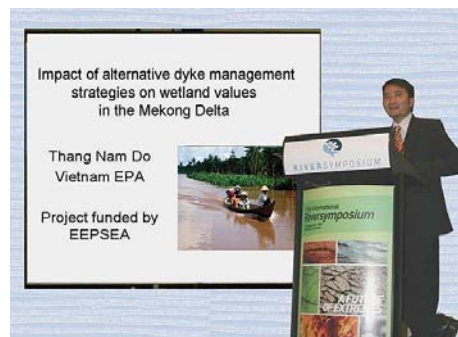


Water contamination in Cambodia

The wetlands in the Phnom Penh area are in crisis. They absorb not only the bulk of Phnom Penh's raw sewage, but also effluent from over 3,000 industrial entities. Water samples show high levels of bacterial content as well as toxic metals and other pollutants; yet hundreds of farmers grow vegetables on this toxic land to be sold in Phnom Penh's markets. An estimated 20% of the markets' vegetables come from this source. Given the dangers of lead, mercury, and other toxins to the public, getting the produce off the shelves is essential to public health.

Sideth Muong from Cambodia's Ministry of the Environment conducted a study in 2004 to examine options for stopping food production in the wetlands. Muong compared various options for relocating and compensating the farmers, and carefully considered costs, feasibility, and long-term impacts for those involved. He recommended a plan in which farmers were given new land on the banks of the Mekong River, to be irrigated using treated household wastewater. Another recommendation was an immediate public awareness campaign on the danger of the produce in question.

Following this study, the International Water Management Institute recruited Muong to consult on its Assessment of Wastewater Irrigation Practices in Selected Cities of Less Developed Countries. His work was cited on the website of the Resources Centre on Urban Agriculture and Forestry.

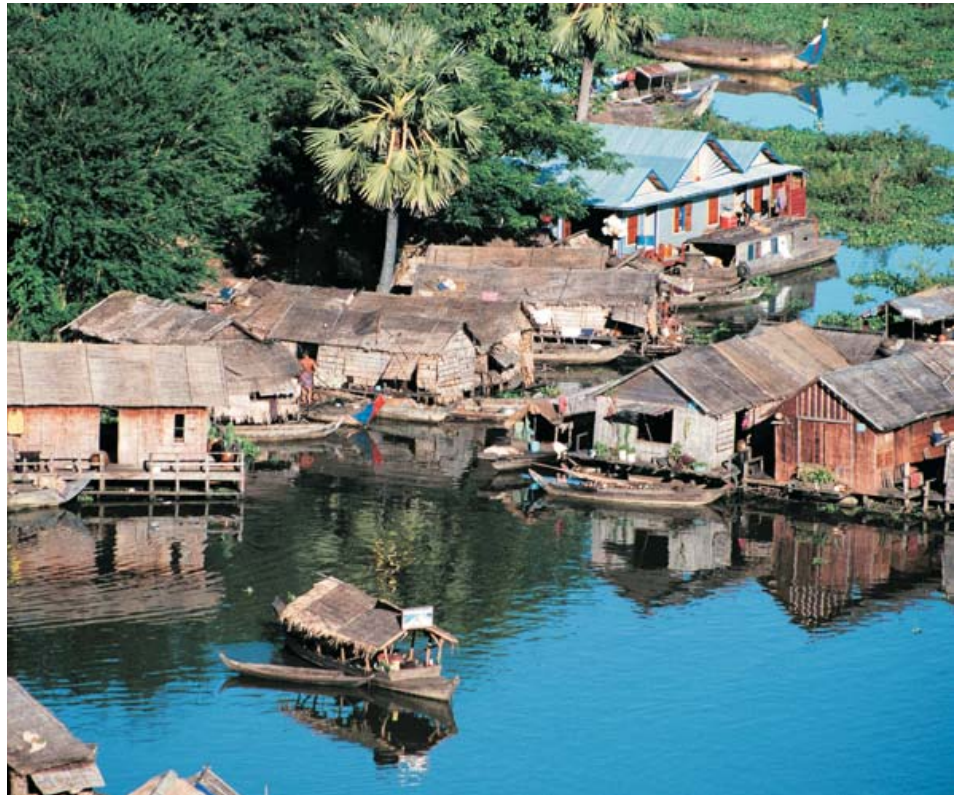




Farming on That Luang Marsh in Laos.



Vietnamese on Mekong Delta.



That Luang marsh in Lao PDR—up against a larger plan

Much to his surprise, Phouphet Kyophilavong of the National University of Laos, found himself in the middle of controversy over the development of the That Luang marsh in Vientiane. His study provided recommendations for the sustainable management of small-scale irrigation systems in the marsh. The presentation of his results happened to coincide with the government's announcement that it would develop a new town on the site of the marsh. The Minister for the Environment and several natural resource managers attended the workshop and listened as Kyophilavong carefully fielded unexpected questions about the impact of the proposed development. Kyophilavong was summoned by the Deputy Prime Minister, who stressed the importance of the development plan to the capital's growth.

The government is moving ahead with partial development of the marsh.

Many different organizations are providing input on ways to preserve and improve the marsh's natural functions of water treatment and flood control. These include the World Wide Fund for Nature, IUCN - the World Conservation Union, the Lao National Mekong Committee, and the Wildfowl and Wetlands Trust. For several years, they have been testing built-wetlands around the city to improve water treatment and to protect the existing wetland. Hopefully the government will incorporate their techniques into the development plan.

Kyophilavong's recommendations regarding the small-scale irrigation operations remain relevant to unaffected parts of the marsh, and may or may not influence the management of the marsh eventually. For the time being, the study is overshadowed by a much larger project. One certain outcome from this study is that Laos' Deputy Prime Minister and the Minister of the Environment have taken notice of Kyophilavong's work and EEPSEA's funding of it.



Farming on That Luang Marsh in Laos.

Sustainable Water Management



Ipo watershed conservation structures. Philippines.

Diminishing groundwater supply in the Philippines

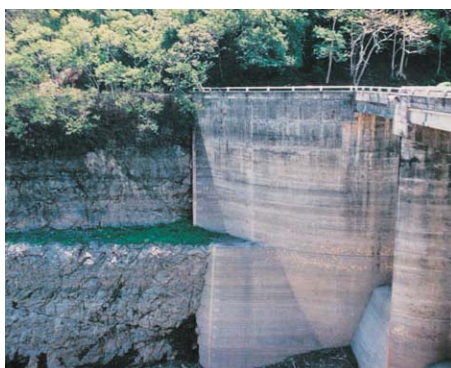
The city of Cagayan de Oro depends entirely on groundwater for its potable water supply. Alarming, a combination of growing population, rapid industrialization, and artificially low water prices has led to an accelerating decline in groundwater levels. Exacerbating this problem are the private wells used by most businesses in the area. Rather than pay even the existing cheap water prices, 65% of businesses have opted to operate their own wells without hooking up to the city water supply. Neither the low city water-pricing scheme, nor the unregulated private well system provides incentives for water users to limit their consumption.

Rosalina Palanca-Tan from the Ateneo de Manila University studied the extent of the problem and proposed measures to save the water supply. By conducting a Willingness to Pay (WTP) survey aimed at businesses using private wells, she discovered that more than half were willing to abandon their unregulated water use. The businesses had been experiencing rising problems with water quality and inconsistent supply due to the declining groundwater levels. To remedy the situation, they were willing to have their groundwater use metered

and to contribute to sustaining the water supply.

The instrument Tan recommended was chosen for its simplicity and flexibility: groundwater extraction permits allocated yearly by auction. Supply of the permits would be determined based on the replacement rate of the groundwater supply, thus ensuring that water scarcity would be reflected in higher prices. The permits would also be tradable, enabling businesses that conserve water to benefit from selling excess supply. Proceeds from the permits would be sufficient to cover implementation of the scheme, as well as measures to protect the city's water catchment areas. Provided the permit auctions and trading were well-managed, Cagayan de Oro would have a simple, transparent system that provided incentives on several levels to minimize groundwater use.

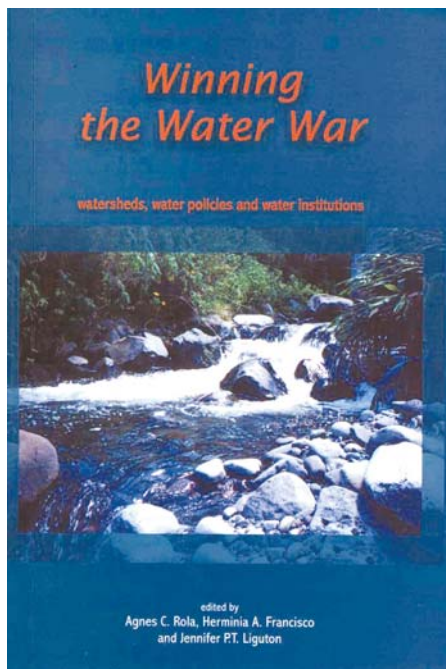
Tan presented her findings at a multi-sector forum including government agencies, business representatives, academia, research institutions, media, and NGOs. The Mayor of Cagayan de Oro responded by publicly supporting Tan's recommendations and asking the City Council to begin implementation of a raw water fee scheme.



Critically low water levels in Manila's water reservoirs.



Angat spillway, another key to maintaining public water supply in the Philippines.



Herminia Francisco et al's publication on *Winning the Water War: Watersheds, Water Policies and Water Institutions* was featured in the 2 August 2007 Philippine Daily Inquirer for winning the Philippine National Agriculture, Science, & Technology (NAST) 2007 Book Award.



Manila's watersheds require urgent protection to ensure water for the megacity. Philippines.

UP cites study new taxes OK for clean water

BAGUIO CITY—MANY FILIPINOS LIVING in cities are willing to be taxed to finance the preservation of watersheds so they can be assured of their daily supply of potable water, according to studies discussed at a national convention on water conservation here last week.

The value of subsidizing watershed upkeep is starting to dawn on regional governments that used to resist the idea, said Margaret Calderon, forestry professor at the University of the Philippines Los Baños and one of the experts who attended the annual convention of the Water Environment Association of the Philippines (WEAP) here on July 24.

"Despite these developments, it can be said that there has been very little effort made to price and collect fees for raw water in the Philippines," Calderon said.

What's a watershed?

The regional development councils in the Cordillera, Ilocos and Cagayan Valley are pursuing water valuation programs for 22 critical watersheds that supply water to farmlands and hydroelectric plants in Northern Luzon.

Primitivo Galinato, Cordillera director of the Department of Environment and Natural Resources, said the three regions have agreed to jointly manage upland forests.

He said the study was commissioned to help design a new approach to forest management.

Unlike upland communities, where environmental awareness is high, Calderon said Metro Manila households were less conscious of watersheds when UP proceeded "to look into people's attitudes towards and evaluate their willingness to pay for watershed conservation."

Calderon said only 16 percent of 2,232 Metro Manila households knew what a watershed was, although 91 percent was aware of how important forests are to water supply.

The studies showed that 60 percent of the respondents agreed that a water user fee, which could add P29.11 a month to consumers' water bills, is essential to securing water supply.

UP drew positive responses from 54 percent of 1,521 households in Camarines Sur, where additional water fees could reach P55.14 monthly. **Vincent Cabreza, Inquirer Northern Luzon**

Active observers

Unlike traditional scientific researchers, environmental economics researchers have no qualms about altering the behaviour of their study subjects. It is not unusual for a study to affect its target community long before policy recommendations are taken up. Raising awareness, for instance, is often an integral part of the research design.

Margaret Calderon of the Philippines set out to determine Metro Manila residents' Willingness to Pay-for watershed protection. She used a contingent valuation method that

involved surveying 2,232 residents. Over the course of her study, she determined that only 16% of respondents understood the meaning of 'watershed' yet 91% were familiar with the role of forests in sustainable water supply. Regarding the best known watershed, 87% were familiar with La Mesa yet only 11% knew that it was a watershed. The survey itself helped to raise the respondents' awareness of their city's water sources, and in doing so, increased their Willingness to Pay. Granted, 2,232 is a small number in a mega city of over

13 million. The impact of the survey on public awareness increased dramatically however, when the *Inquirer Northern Luzon* reported the results of the study along with information on the watersheds.



Land-Use

Many EEPSEA researchers are contributing to better farming practices and strategic planning in land-use choices. Environmental degradation is rising along with populations. Farming practices that worked well for the generations on a small scale are increasingly contributing to depletion of watersheds, disappearing forests, decreased soil quality, and the numerous problems associated with these. Southeast Asia can no longer afford to leave rural development to chance.

Forest pricing in Peninsular Malaysia

In 2003, Awang Noor Abd Ghani at the Universiti Putra Malaysia partnered with veteran EEPSEA alumni Mohd Shahwahid Haji Othman to evaluate Malaysia's forestry pricing policy. The team found that the government was capturing only a fraction of potential revenue using their system. Furthermore, the existing system encouraged unsustainable forestry practices that had devastating long-term implications for Malaysia's forests. Awang and his team determined that by switching to a tendering system for logging rights, the government could improve both the revenue problem and environmental stewardship. They also recommended reducing the area available for logging to ensure the long-term availability of resources.

Awang's EEPSEA study and subsequent consulting work have contributed to significant changes in Malaysia's pricing and valuation methods at local and national levels. The government's improved valuation methods are also leading to appropriate compensation for environmental damage from timber harvesting. Since the study, Awang has received Research Exhibition Awards at a national exhibition for his research. He has also received Excellent Consultancy Awards in 2005 and 2008, and a Vice Chancellor Award in 2009.



Timber permits in Sri Lanka

Researcher Herath Gunatilake of the University of Peradeniya provided policy recommendations in 2002 to government officials on timber permits in Sri Lanka, where a rising population was contributing to increasing deforestation. The existing permit system, meant to discourage deforestation, was instead driving users to illegal logging and inhibiting investment in sustainable forest plantations. The result was high timber prices for consumers and unsustainable exploitation of forest resources. Clearly, the forestry policies needed reform. Gunatilake suggested several measures: removing the complex timber permit requirements; encouraging the establishment of timber plantations; modernizing the antiquated and wasteful mills used to process the timber; and liberalization of the timber market. Following discussions with government agencies, permits for several tree species were eliminated in 2003.



EEPSEA researcher Awang strives to improve Malaysia's timber industry.

Agricultural options in the Uplands of the Philippines

Canesio Predo from the University of the Philippines Los Banos did a study of agricultural options in the uplands of the Philippines. Existing farming practices, primarily annual maize crops, were destroying the land and resulting in decreasing yields. After using biophysical modelling to determine which land uses provide the best combination of financial returns and soil conservation, Predo focused on the farmers themselves and what factors influence their land-use choices. This allowed him to provide recommendations for influencing the uptake of the chosen land-use options, and also provided an opportunity to educate the farmers on simple conservation practices.

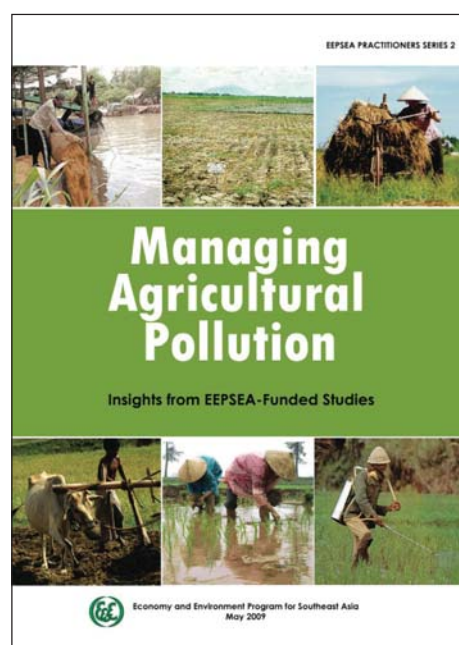
Predo's research was subsequently used in a joint Philippine-Australian Landcare project. A paper derived from the research report, entitled "Bio-economic Analysis of Land-Use Options for Grassland Areas in Claveria, Misamis Oriental, the Philippines" won the AFMA Best R&D Paper Award and was presented during the 14th National Research Symposium organized by the Philippines Department of Agriculture. (AFMA is the Agriculture and Fisheries Modernization Act).



Agricultural policies in China

Should China continue to provide crop insurance to its farmers? In the wake of China's WTO commitment to eliminate price subsidies in agriculture, China implemented a low-premium crop insurance scheme to support its farmers. Studies then emerged suggesting that the scheme led to increased use of environmentally damaging chemicals. Funing Zhong implemented a research project to determine the actual effect on chemical use. He found that the protection against disasters provided by the insurance made the chemicals less worthwhile financially for the farmers. The crop insurance was more likely to reduce chemical use than lead to its increase.

Zhong's choice of topic precisely met the needs of the Chinese Ministry of Agriculture. Following his presentation to the Ministry and to OECD (Organisation for Economic Cooperation and Development) at an international conference, the crop insurance scheme was extended nationwide. His work has been published in several journals, as well as in a book which received an award from the Chinese Ministry of Education. Zhong continues to develop his knowledge in this area by conducting research on a related topic for The China National Natural Science Fund.



Managing Agricultural Pollution, part of the EEPSEA Practitioners' Series, combines expertise and lessons learned from across Southeast Asia.

A multi-disciplinary approach: Soil erosion in the Uplands of Vietnam



Vietnam's eroded uplands were the subject of Bui Dung The's first EEPSEA project.

One of the strengths of environmental economics research is its ability to address multiple aspects of a problem simultaneously. Bui Dung The of the Hue University in Vietnam provides a good example of this with his 2001 study of soil erosion in the hills of Thua Thien Hue Province.

Science: First, he had to study the existing agricultural practices and their environmental impacts. Bui studied the four main uses of the farmland: upland rice cultivation; sugarcane growing; eucalyptus plantations; and agro-forestry. He used an agricultural science model to determine the soil erosion resulting from each crop type.

Economics: Secondly, he had to apply economic models to determine the financial cost of the soil erosion and compare it to the financial returns on each crop.

Cultural studies: Thirdly, Bui had to develop an in-depth understanding of the cultural and socio-economic background of the farming communities. To do this, he interviewed 260 farmers of varying backgrounds. Bui found that the population consisted of two different ethnic groups, the Kinh (lowlanders investing in crops based on market demand) and the Van Kieu (an ethnic minority group practising subsistence farming). In order to provide policy recommendations that worked for both groups, Bui had to account for the different reasons behind their crop choices.

Common sense: Although science indicates that the fruit-tree-based agroforestry system is the least erosive and most financially profitable system, Bui cautions against dictating general use of that system. The Van Kieu are living at poverty levels, and the high initial costs of switching to an agro-forestry system are prohibitive for them. Instead, he argues for a gradual shift toward agroforestry combined with rapid implementation of soil conservation techniques on the upland rice crops. Due to his recommendations, local authorities have been working with farmers on better practices to control soil erosion, including alley cropping, intercropping, and sediment traps. The damaging sugar cane crops are gone, as are slash-and-burn land clearing methods. Agro forestry and perennial crops are on the rise.

The means to implementation: Having provided his recommendations on the use of the uplands, Bui submitted a new proposal to research the best way to finance such recommendations. He decided to conduct a pilot study in Payment for Environmental Services (PES). Under this scheme, land users become land stewards, and are compensated for the benefits they agree to forego and the extra measures they take to ensure the conservation of the soil. The financing comes from the public, who receive benefits such as watershed protection, lower carbon emissions, and the preservation of bio-diversity. Stakeholders in the study were positive in their feedback. Bui found that PES could well be a useful tool for Vietnamese conservation. Large-scale application, however, would require reconciling PES schemes with current government land use policies. Bui recommends further trials, as well as introducing PES schemes to State Forest Enterprises who manage larger areas and could thereby benefit from economies of scale.

Preservation of Cultural Heritage

Southeast Asia is rich with cultural heritage. Sadly, the preservation of heritage sites is often neglected in the face of more pressing concerns. It is understandably difficult to argue that resources should be diverted to antiquities when communities are struggling to provide for the basic needs of their people; yet, by definition, these sites are unique pieces of these communities' identities. Once they are gone, there is no replacing them. Moreover, many of these sites attract the tourists on which local economies rely. A number of EEPSEA researchers in the past 10 years have studied sustainable methods of financing the preservation of cultural heritage sites across Southeast Asia.



The Philippines' Ifugao Rice Terraces have been moved to the World Heritage In Danger list due to neglect.

Ifugao Rice Terraces in the Philippines

Margaret Calderon of the University of the Philippines Los Banos wants to keep the Ifugao Rice Terraces on the World Heritage List. In 2001, the Terraces were reclassified to the World Heritage In Danger List due to the absence of a management plan or maintenance resources. In the first phase of her project, she determined the main obstacles to the rehabilitation and upkeep of the Terraces. These were primarily a lack of funding and a shift in the local agricultural culture. With fewer young people entering agriculture, farmers would need subsidies to hire the necessary labour. Calderon's recommendation was to engage the local farmers in the preservation of the Terraces and provide them with Payment for Environmental Services (PES).

The next phase of her project investigated the best way to finance the PES scheme. Financing should naturally come from the users that

benefit from the site - namely, the tourists. By undertaking a Willingness to Pay survey, she was able to calculate optimum fees for local tourists and foreign tourists separately. At a summit in August of 2009, Calderon presented her findings to the Ifugao Governor, the Philippine Ambassador to UNESCO, the mayors of the towns involved, and the farmers. The local officials were receptive and pledged to consider the recommendations in revising or crafting their Tourism Ordinances. Revisions to the Ordinances are currently on hold until political changes from the recent elections have settled. In the meantime, Calderon has laid the groundwork for an effective solution to the deterioration of the Terraces, and at the same time, educated the farmers in their role as protectors. Calderon presented papers on her findings at conferences in Nairobi and in Washington, D.C.

My Son Sanctuary in Vietnam

Another Southeast Asian World Heritage site, this time in Vietnam, was the subject of a Willingness to Pay survey by Tran Huu Tuan of Vietnam's Hue University. The site was the 4th century My Son Sanctuary. The Sanctuary is considered one of the most important Hindu temple complexes in Southeast Asia, and it is succumbing to both natural deterioration and the human pressures of tourism and, previously, war.

The Willingness to Pay survey served three purposes:

1. It determined the value that different stakeholders, i.e. tourists and Vietnamese communities, place on the temples.
2. It determined the benefits of charging different levels of fees for different stakeholders.

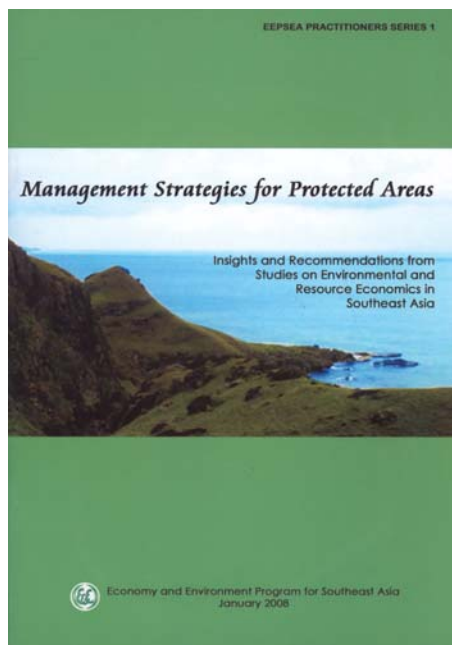


Rice paddy harvested from the terraces.

3. It examined what levels of conservation investment are justified.

Tran's findings were that with differentiated fees for local and foreign tourists, as well as benefits derived from non-users, the preservation project was economically viable. Since publication of the study, Vietnam's Prime Minister has approved the long-stalled management plan for the site, and authorities have increased entrance fees for foreigners to a more appropriate level.

Tran's study earned him a Ph.D. and enabled him to make presentations at environmental economics conferences in Kyoto and Greece. Tran has also presented at a tourism economics conference in Spain. His findings have been published in four international journals.



Management Options for Protected Areas, published by EEPSEA in 2008, compiles multiple case studies to inform policy makers.



The 4th century My Son Temple in Vietnam.

Angkor World Heritage Site in Cambodia

Tourism in Siem Reap is flourishing. Before the late 1990's the area received a few thousand visitors annually. Currently nearly a million tourists per year descend on the region to see the legendary temples. In addition to paying park entrance fees, the tourists spend their cash at local hotels and restaurants. They shop. They pay for taxis, tours, and tuk-tuks. The area should be a prime example of the benefits of tourism to a local community. It is not.

According to Thanakvaro De Lopez of the Cambodian Research Centre for Development, who studied the sustainable development and

“ 80% of households (in the Angkor Park protected zones) consider that tourism has made little or no improvement to their lives.”

management of the Angkor Archaeological Park region, most of the people living there are not better off than they were before the tourism boom. In terms of literacy, access to clean water, agricultural capacity, and education, the population of 70,000 remains woefully underdeveloped. Moreover, the large numbers of tourists place significant pressures on the local environment, particularly the water supply. De Lopez argues that the development of the region should be sustainable financially, environmentally, and socially.

Existing fees should go a long way toward accomplishing this. Unfortunately, APSARA, the organization responsible for

managing the area, sees only a fraction of visitor entrance fees. According to a 1998 report by J.M. Howse et al., APSARA receives from the private company managing the fees an estimated 5-15% of the funds. This amount is not nearly enough to restore and maintain the temples. Without effective and fair management policies, the Angkor Park region will deteriorate through physical degradation and the alienation of the local communities. Tourism is unlikely to thrive for long under those circumstances. De Lopez recommends a new, transparent bidding system for the collection and handling of visitor entrance fees. This is consistent with earlier recommendations from the International Monetary Fund. A large part of the fees should then be used for

both the preservation of the temples and the social well-being of the communities within the park zones.

De Lopez's report, along with a New Zealand Aid-funded survey of villages in the Angkor Wat area, offers possibilities for involving communities in the management of the Park. The findings were useful inputs to subsequent efforts by a New Zealand Aid group to develop a comprehensive management plan for the area. The Director of the IDRC-Regional Office for Southeast Asia, Richard Fuchs, referred to the report when he met with the APSARA Authority in preparation for an IDRC-funded project to develop a regional plan that integrated urban planning and tourism.



Angkor Wat in Cambodia.

Solid Waste Management in the Philippines

The problem

EEPSEA has funded solid waste management (SWM) research in a number of places (China, Malaysia, and Vietnam, for example), but most extensively in the Philippines. In 2001 the government mandated that local governments must manage their own solid waste. Up to this point, garbage was a looming problem. Much of it was either burned in the open air or dumped illegally at dumpsites that had become dangerous mountains of trash. Several open landfills had been closed in recent years, and the problem was becoming a crisis. Local government units now had to design a 10 year solid waste management plan and come up with the means to pay for it. In addition, their plan had to provide for segregation of waste at source. By their own admission, they had no technical expertise or financing tools in place. There were no guidelines and very little precedence for the collection of fees. Newspapers were full of headlines condemning the cities' leaders for failure to respond to the new waste management laws.

Policy-makers needed solutions quickly. They needed ecologically sound options that were logistically viable. The chosen option had to be financially feasible, and it had to be marketable to a sceptical public. It was a tall order, and it was exactly the kind of complex problem for which environmental economics tools have been developed.

EEPSEA's contribution

Around this time, EEPSEA approved a number of research proposals designed to help: Ma. Eugenia Bennagen studied the impacts of introducing user fees on solid waste services and did a survey on the

household attitudes toward waste segregation and recycling in Metro Manila; Loreta and Carlito Rufo Jr. provided a cost benefit analysis of clean incineration options for Manila; Zenaida Sumalde, using a selection of 41 different local government units, did a study on the financing and implementation of SWM services; and Corinthia Naz helped the mayor of Tuba win an award for his action on SWM when she undertook a choice modelling analysis to determine the public's preferences. The Environment Secretary at that time, Elisea Gozun, attended the inauguration of the Tuba project in 2004 in order to lend her support.



User fees for solid waste management are currently being incorporated in the draft revised revenue code of Tuba, Philippines.

After the project-on-going benefits

Because EEPSEA researchers are so oriented on policy impacts, their involvement with their research topic often continues long past the final submission of the research report. For example, Sumalde and her colleagues at UPLB provide an annual summer training course to local government staff on ecological solid waste management. In 2007, Naz, Bennagen, and Sumalde shared the findings of their various EEPSEA studies in a clinic on ecological solid waste management financing and cost recovery for local governments in Camp John Hay, Baguio City, Philippines.

These EEPSEA researchers' collective findings on solid waste management continue to add value both within the Philippines and in the international arena. The Cambodian Development Resource Institute recruited Naz to help with their SWM problems, and Sumalde was part of a European Union-funded project on bio-waste reuse across Asia.



Waste segregation is one of the requirements for the municipal waste plans mandated by the Philippine government.



Transforming the Philippines' multitude of legal and illegal garbage heaps into sustainably managed facilities is a priority for local communities. Large scale composting sites (see above on the left) are part of the solution.



Environmental Taxes: Making them Work

Southeast Asian governments are increasingly turning to varying types of environmental taxes to alter behaviours and to fund environmental projects. Governments are understandably wary of unintended side effects of such taxes. Careful studies are needed to determine not only if the tax will meet its main objective, but also if different segments of the population will be affected more than others. EEPSEA researchers are providing those studies. They are discovering detrimental side effects in some cases, and unexpected co-benefits in others. Their research will go a long way toward ensuring the best use of environmental taxes and other policy instruments.

Carbon tax in Indonesia

A widely-held belief that fuel tax has an unfairly high impact on lower income citizens is wrong. This assumption, based on circumstantial observations and on data from developed countries, does not apply to Indonesia; yet it is being used as an argument against the introduction of a carbon tax in the country. Indonesia is the fourth most populous country in the world and its dependence on fossil fuels is growing at alarming rates (in part because of artificially low fuel prices). Its role in the global mitigation of climate change is substantial, and delaying action can only be detrimental.

Arief Anshory Yusuf challenged the assumption. He used an EEPSEA research grant to build a model to analyse the impacts of a carbon tax on different sectors of the population. An impressive 50,000 equations later, Yusuf had INDONESIA-E3. "E3" stands for Economy, Equity, and the Environment. The model showed that, far from being detrimental to the poor, fuel taxes had strongly positive impacts on the rural poor and slightly positive to neutral impacts on the urban poor. Spread over the entire population, the effects were positive.

Both the Indonesian Ministry of Environment and the Ministry of Finance recognize the usefulness of INDONESIA-E3. The model can be applied to many different questions and scenarios. Yusuf is working with the Ministry of Finance on a Green Paper study, and the Deputy Minister of the Environment is using the

model to examine ways to bring Indonesia toward a low carbon economy.

Yusuf's findings were widely publicized. They were printed in ASEAN's 2008 *Economic Bulletin* and cited in a report for the UNFCCC Climate Change Conference in 2007. Several Indonesian daily newspapers, *Kompas* and *Pikiran Rakyat*, printed his results as well. Yusuf presented his research at the 2008 European Association of Environmental and Resource Economists annual conference in Gothenburg, Sweden, and at a conference in Italy in 2007 organized by Unidea/UniCredit Foundation, the University of Florence and the European Development Network.

The Jakarta Post

Monday, November 30, 2009 7:57 PM

Study asks Indonesia to adopt green economy

Adianto P. Simamora, The Jakarta Post, Jakarta | Wed, 07/01/2009 8:32 AM | National

A study analyzing the impacts of switching to a low-carbon economy has shown that investing more in energy efficiency, reducing the use of coal-based fuels and stopping deforestation, could improve per capita incomes and help ease the level of unemployment.

The joint study was conducted by Padjadjaran University, the Center for Economic and Development Studies (CEDS), Strategic Asia and the office of the State Minister for the Environment.

The study found that these benefits would be gained by increasing energy efficiency by 25 percent, reducing the use of coal-based fuels by 50%, implementing a US\$50 per ton tax on carbon production, and reducing the rate of deforestation by 10 percent.

Pollution levies in China

One of the research priorities highlighted at the EEPSEA 2010 Impact Conference in Hanoi was environmental monitoring and enforcement. Insufficient planning for this crucial aspect of environmental policies will result in the failure of otherwise effective instruments. Liguo Lin of the Shanghai University of Finance and Economics has been studying the topic in China. He conducted a study on industrial pollution enforcement and the effects of pollution levies and inspections. Manufacturing firms in China report their own pollution levels and pay levies based on these reports. Inspections by environmental agencies prove that firms generally under-report pollution levels and thus underpay levies. Inspections will increase the levies paid, but not compliance with regulations. Under the existing system, firms have no incentive to lower pollution levels. It is cheaper to under-report and pay for

actual pollution outputs only if caught. Lin calls for a reform of the levy system. Since the study, Lin's team has met with the chief inspector of the district's Environmental Protection Bureau to discuss ways of improving compliance. In addition, the team delivered a lecture as part of the Bureau's training program.



Comparing tax options in China

The international community is increasingly committed to protecting the global environment through measures such as reducing greenhouse gases (GHGs). Often there is a perception that local communities have to make sacrifices toward this greater good. Jing Cao, now at Tsinghua University in China, challenged that perception in 2004 with her studies on the "co-benefits" of GHG abatement technology. By using environmental economics tools to gain a more complete picture of costs to the community, Cao demonstrates that the community actually gained more than it paid out for the technology used in the study.

Cao stated at EEPSEA's 2010 Impact Conference in Hanoi, "Environmental tax is a good policy, but only if you get the details right." Her 2007 EEPSEA policy brief on the effects of environmental taxes on migration trends reflects that belief. Cao compared the likely impacts of two different types of environmental taxes (output tax versus fuel tax) on rural-urban trends. Her findings were clear that the fuel tax is better in terms of both environmental and social impacts. As China develops its next Five Year Plan with a view to meeting its 2020 carbon emissions target, Cao and her colleagues are working to ensure that

its environmental policies are not developed in isolation, and that socio-economic factors are taken into account. She and her colleagues have received a substantial amount of recognition for their work. Her team's papers have been published in the Review of Environmental Economics and Policy and the Asian Economic Policy Review special issue on climate change. They have been interviewed by the China Economic Times and China Daily.

Pollution levies in Cambodia

Sideth Muong from Cambodia's Ministry of the Environment has been advocating the implementation of a pollution tax since 2006. His recommendations are based on his study of industrial effluent being dumped into the wetlands and the Mekong River. The Ministry of the Environment has imposed limits on discharges by industries, but to date, has no effective methods for enforcing them. Industries lack the incentives to comply on their own. Choosing the textile industry for its large scale and high levels of pollution, Muong compared different levy schemes to the industry's costs for pollution reduction. He proposed the introduction of a levy over two years. Initially, the bulk of the funds would be used to staff a new agency to manage the levy. Over time, an increasing portion of fees collected could be used to subsidize pollution-control efforts by the industry.

Four years later, the government has yet to pass the necessary legislation. Even with government support for tax legislation, policy-makers can face multiple barriers to implementation. One of the barriers in this case is the economic downturn that deeply affected the textile industry.



Recognizing policy-makers' constraints: trade liberalization in Vietnam

While EEPSEA researchers seek out win-win recommendations, it is not always possible to provide them. In 2008 Pham Thai Hung published a policy brief, *The Trade-Off between Trade and the Environment - A Study in Vietnam*, confirming the negative impact of trade liberalization on the environment. Hung and his colleagues found that a correlation between trade liberalization and industrial air pollution was particularly strong. Recognizing that any backwards movement in the liberalization process would be unacceptable to the country as a whole, he clearly states that he is not recommending any sort of restriction on trade liberalization.

The lesson here is that there is not always an easy answer. Hung and his colleagues recommend that policy-makers bear in mind the negative environmental impacts and work toward mitigating them. They provide specific suggestions for further studies and recommend high pollution industries on which to concentrate clean-up efforts.

To highlight the study results, the research team held three workshops in 2008 which were attended by delegates from the Ministries of Natural Resources and Environment, and Trade and Industry, as well as the World Bank and UNDP Vietnam. In addition, the findings are taught at the National Economics University.

Wildlife Protection

EEPSEA has funded several projects on wildlife preservation, including an ambitious cross-country study on marine turtles, which is described in the next section. A few of EEPSEA Wildlife protection studies are described below.

“The Golden Turtle has a black market price of USD 2,500 per kg... forest rangers that protect them earn about USD 18 per month.”

Illegal wildlife trade in Vietnam

This single statement is enough to provide a clear picture of the challenges to protecting Vietnam's dwindling wildlife populations. Nguyen Van Song of Hanoi Agricultural University published a research report in 2003 exploring the in-depth workings of the illegal wildlife trade in the country. He interviewed all the relevant stakeholder groups, including poachers, enforcement officials, suppliers, consumers, restaurants, and NGOs. He found that, despite numerous laws and permit requirements designed to deter wildlife trade, the illegal industry was growing steadily larger. Nguyen's research report provided several recommendations for revising Vietnam's failing wildlife protection policies. He suggested a twin-pronged approach: strengthening the enforcement capacity of government agencies while at the same time lowering demand for wildlife projects through awareness campaigns and wildlife farming.

Nguyen's work on the topic has attracted widespread media attention. The Ministry of Natural Resources and Environment publicized the results three times in its magazine *Thuong Bieu*. Interviews with the author appeared on Vietnam Television, *Voice of Vietnam* and in 10 newspapers. The research report was also posted on the website of the Convention for International Trade in Endangered Species (CITES). Nguyen has since worked as an advisor to TRAFFIC-Indochina on the illegal wildlife trade. The fight against wildlife traffickers continues. If the trade is going to be stopped, it will require the combined efforts of researchers, government, media, and NGOs.



The endangered golden turtle, Vietnam.

Black-faced Spoonbill conservation in Macau

With today's relentless push for economic growth and development, communities often don't see environmental costs until it is too late. In Macau, the endangered black-faced spoonbill was set to be a victim of this trend. Increasing pressure from development on its ecosystem meant that it might quietly disappear while residents remained unaware of its contribution to the biodiversity of Macau. University of Macau researcher Jin Jianjun has made good progress in remedying this by conducting a Willingness to Pay survey to determine the value of spoonbill to the community. Jin found that even with poor knowledge of the bird, the public was willing to pay for the spoonbills' conservation.

Her research has resulted in a concerted effort on the part of the government and other institutions to raise awareness of the bird's plight and to include the spoonbills' value to the community in development planning. The government has increased the budget for an ecological conservation zone and built viewing platforms to improve local residents' awareness. In 2007, the government designated the black-faced spoonbill as the logo for the Asian Indoor Games, and the Macau Ecological Society held an international conference on the conservation of the species.



Moving Beyond Boundaries:

Cross-country Projects

National borders have little significance for some environmental problems. As a regional network, EEPSEA is well-placed to address these problems, which include issues such as the degradation of shared water sources, transboundary haze, and the disappearance of connected wildlife populations. By focusing the collective efforts of researchers from member countries on regional issues, EEPSEA is laying the groundwork for faster and more effective solutions.

WTP Marine Turtle Conservation The study

The conservation of marine turtles is an ideal example of an international problem that needs the coordinated efforts of multiple countries. The turtles' migration habits mean that any practical solutions are going to have to involve most of Southeast Asia as well as China. This begs the question, "Who's going to pay for the conservation efforts?" With all of the pressing needs facing countries today, where does the welfare of a single species rate on their list of priorities?

In order to tackle this tough issue, EEPSEA undertook concurrent studies in Vietnam, the Philippines, China, and Thailand which would determine public awareness of the turtles's plight and their willingness to pay for conservation measures. One surprising finding of the research was that public awareness is already fairly high, and that efforts to raise awareness were not likely to significantly increase the public's willingness to pay. A more important factor in the respondents' willingness to pay was faith in the management of the funds collected for conservation. In other words, rather than sinking resources into awareness-raising campaigns, project managers would be better off ensuring an effective, transparent system to manage the funds collected.

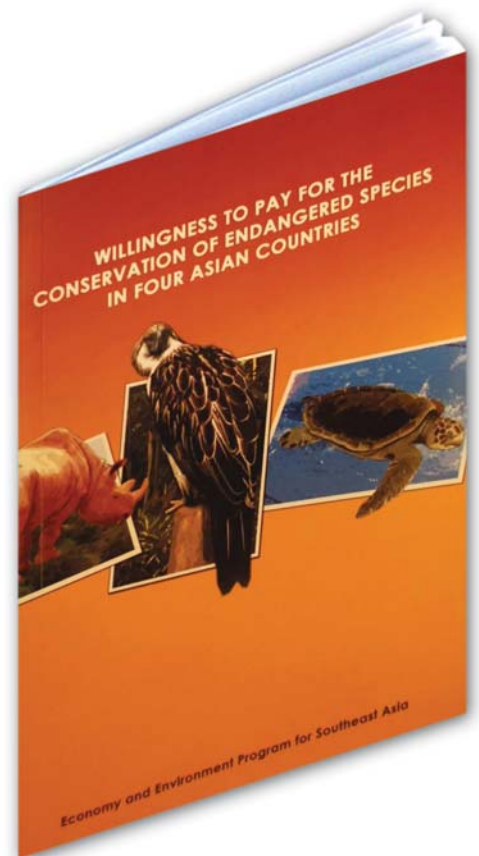
Dissemination

Results from the marine turtles study have reached a wide audience. The results were included in the ASEAN 2008 *Economic Bulletin*. In 2007, Senior Economist Orapan Nabangchang presented the topic at a meeting

organized by the Ministry of Natural Resources and Environment. In addition, the research team had the opportunity to present at a number of international conferences, including the European Association of Environmental and Resource Economists Annual Conference in 2008 and the 2006 Third World Congress of Environmental and Resource Economists in Kyoto, Japan. The research team combined the marine turtles study with a number of other projects on endangered species, such as the Vietnamese rhinoceros, the Philippine eagle, and the black-faced spoonbill in Macau. The compilation has been published in a book entitled *Willingness to Pay for the Conservation of Endangered Species in Four Asian Countries*.

Teaching value

The study is also useful as a teaching tool. EEPSEA and SANDEE have used the study in various environmental economics training courses, including their 2008 course for policy-makers. The International Waters Learning Exchange and Resource Network invited Nabangchang and Dang Thuy Truong to present the study at a workshop on Payments for Environmental Services (PES) in Hanoi. Later in 2008, the Institute of Southeast Asian Studies used the study in their Environment and Climate Change Seminar Series in Singapore. The uniqueness of this study, and hence the reason it is used as a teaching tool, is described in Jeffrey Vincent's Evaluation Report from November 2008; "It is one of the few cross-country valuation studies ever conducted in the developing world, and it is likely both the largest and the most carefully done."



Adapting to floods and typhoons in Vietnam

Vietnam has plenty of experience coping with extreme weather. Floods and typhoons are familiar events, and the government has established early warning systems and emergency response plans to cope. Its adaptive capacity is fairly high thanks to its extensive dyke system, strong local governance, and flood-tolerant building traditions. A close examination of households and communities affected by recent disasters, however, shows that traditional coping mechanisms are under stress. Do Nam Thang studied the adaptation methods, from the national level to the household level, applied to the Typhoon Xangsane event in 2006. He found that, despite their high adaptive capacity, Vietnamese households suffered significantly higher damage than others in the cross-country study (including the Philippines, China, Thailand, and Indonesia). The damage costs as a percentage of household income reached as high as 85% for Vietnam whereas Indonesia, which came in second, was 46%. The perception amongst households and local officials is that damage due to extreme environmental events is becoming more frequent and more severe. This would prove crippling to Vietnam's increasing population.

The study provided a number of recommendations designed to integrate emergency preparedness at local levels. These included increasing emergency training and supplies within communities, introducing measures and funding to limit damage to agricultural and other livelihoods, providing technical and financial support for reinforcing houses and other infrastructure, and assistance with rural insurance policies.

Haze: past and future projects

In 1998, EEPSEA and WWF completed a cross-country study on the short-term economic impacts of the catastrophic Indonesian forest fires of 1997. Malaysia, Indonesia, and Singapore were all a part of the study. The short-term costs were found to be approaching a staggering USD4.5 billion. Since that time, Indonesia, Malaysia, and Singapore have continued to experience sustained periods of haze between June and September each year. Health officials from these countries suspect that the on-going haze is having a significant negative impact on the long-term health of their populations. Wide-spread public concern on the issue is such that, 10 years after the EEPSEA study on haze, the media is still citing EEPSEA research on the issue. To address the concerns of the affected countries, the Singapore Institute of International Affairs and the Institute of Strategic and International Studies (of Malaysia) have hosted a series of dialogues on Transboundary Haze Pollution. EEPSEA Director Herminia Francisco joined the panel of experts. One of the needs highlighted by the dialogues was an assessment of the health impacts of the haze throughout the region. EEPSEA responded by issuing a request for proposals for a cross-country project on the issue. These proposals are currently under review.



Climate change: A global problem requiring local action

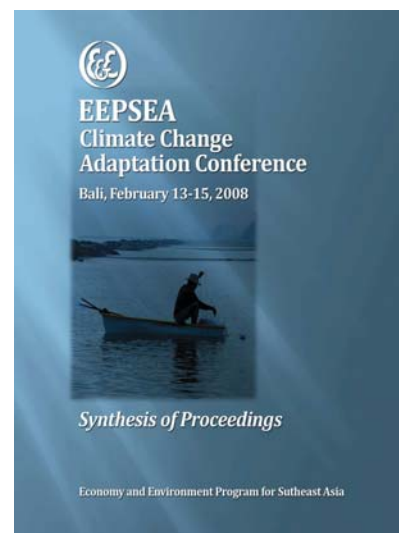
For years now, climate change has been at the forefront of the global environmental agenda. Despite recent controversies regarding some of the issue's leading scientists, climate change is likely to remain there for the foreseeable future. At the EEPSEA impact conference held in Hanoi in February 2010, it was an issue that emerged repeatedly. Journalists, government officials, sponsors, researchers, and NGO

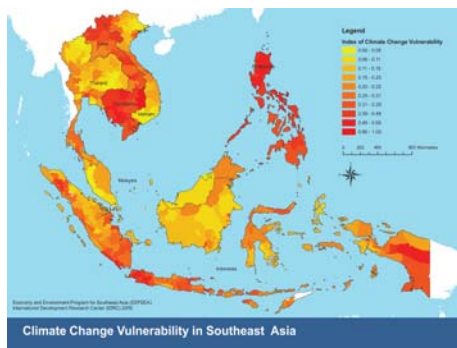
staff all had something to say about the need to focus on the issue moving forward.

The public has gone from wondering if global warming exists to demanding to know how they're going to cope when it hits. While international leaders examine ways of mitigating climate change through curbing greenhouse gases and reducing carbon footprints, local governments and the media have started asking for practical solutions to the problems they expect to encounter. They want to know what they'll have to do to adapt. In response to those demands, EEPSEA created its Climate Change Vulnerability Map.

Zeroing in on research needs: Bali conference

In February 2008, EEPSEA organized a conference in Bali on climate change adaptation. The purpose was to gather together researchers, policy-makers, NGOs, and donors to determine specific research needs for the region. A similar focus group was arranged for a combination of journalists and climate change scientists. The primary requirement that emerged from both meetings was the same: climate change impacts need to be examined at local levels in a way that will allow local communities to adapt. For developing countries, including most Southeast Asian nations, the ability to adapt is limited by the availability of funds and resources. What they need is a tool that enables them to allocate resources effectively. Governments need to know where the problems are most likely to arise as well as what solutions are going to be practical.





EEPSEA Vulnerability Map

To supply some answers, EEPSEA launched a mapping assessment project covering 530 areas throughout seven different Southeast Asian countries. The resulting map shows leaders which areas are at highest risk, but, more importantly, it also tells them why. Does the population have to prepare for sea level rises, or for increased droughts? Do communities need to invest in improved infrastructure, or do they need to prepare for mobilization? Which communities will be least able to cope with flooding or crop failures? The map provides direction to policy-makers seeking to address questions such as these.

EEPSEA deliberately applied a blanket approach, using only data consistently available from country to country, to enable comparisons of similar areas in different countries. Policy-makers can also use the map to predict effects on the country as a whole. In Vietnam for example, a government official can tell from a quick glance that the high-risk regions in the south are its primary rice-growing regions while those in the north provide upland watershed services to coastal communities.

Having launched the map officially in the Philippines, Indonesia, Cambodia, and Vietnam, EEPSEA is receiving repeated requests for the map to be made available for deeper in-country analysis. Indeed, that is the hope for this tool. Now that EEPSEA has provided the basic framework, researchers and policy-makers will be encouraged to find ways to adapt it for use within their own countries. Using data inputs that would not be feasible with the regional blanket approach, individual nations or even sub-national areas should be able to determine impacts on specific industries or demographic groups.

Climate change hot spots are mapped out

By Binh Chau

A climate change vulnerability map was launched last week, showing climate change hot spots across Vietnam.

This study, conducted by Canada's International Development Research Centre's (IDRC) Economy and Environment Programme for South East Asia (EEPSEA), identifies the provinces most vulnerable to climate change in Vietnam from an assessment of more than 50 provinces nationwide.

According to the study, eight out of the 10 most vulnerable provinces in Vietnam are located in the Mekong River Delta. They are Dong Thap, Vinh Long, Can Tho, Tra Vinh, Soc Trang, An

Giang, Tien Giang and Ben Tre. These provinces face the greatest risks to rising sea levels and flooding. Some of them, such as Dong Thap, Can Tho and Vinh Long, have already experienced frequent floods.

The two remaining vulnerable provinces are Lai Chau and Thai Binh, located in northern Vietnam. Lai Chau in particular is highly exposed to drought and mildly exposed to landslides. It is also the province with the least adaptive capacity among the 10 named. Vietnam's 10 most vulnerable provinces are among the top 25 per cent of the most vulnerable areas in South East Asia.

"The map will help local governments and people better understand how vulnerable they are and what they should do to protect themselves,"

said Dr. Herminia Francisco, director of EEPSEA, who also said that the map would help Vietnamese decision-makers allocate adaptation resources in a proper manner.

The study is part of a larger study of climate change vulnerability in 592 sub-national provinces or districts in Vietnam, Laos, Cambodia, Thailand, Malaysia, the Philippines and Indonesia.

Francisco said that in the next step, EEPSEA planned to update the map by taking account of new information and refining it by using different assumptions and scenarios. EEPSEA also proposed to help selected local governments apply some of the study's recommendations to their own situations.

Adaptation strategies

EESPEA is now moving onto the next step: how do communities adapt? The data from the mapping project is based on the history of climate hazards over the past 25 years. These climate hazards refer to actual floods, tropical cyclones, landslides, droughts, and changes in sea level. Communities are already coping with these hazards, which are predicted to intensify in the years to come. EEPSEA researchers set out to determine what communities are doing to adapt and how well it is working. Choosing communities in five Southeast Asian countries (Thailand, Vietnam, China, The Philippines, and Indonesia) researchers

conducted studies of local government units, communities, and households to determine behaviours and the reasons behind adaptation choices.



Villager showing flood mark during household survey, Vietnam.

Adapting to sea level rise in the Province of South Kalimantan, Indonesia

Over the past 25 years, the Indonesian government has been encouraging farmers in South Kalimantan to reclaim coastal swampland in order to achieve self-sufficiency in rice production. Now rising sea levels are threatening to destroy much of what they have built. In order to develop adaptation plans, the provincial government needed thorough data on which localities will be most affected. In 2009, Akhmad Saidy and Yusuf Azis of Lambung Mangkurat University employed geographic models to determine the extent to which different communities would be affected by rising sea levels. They used this information, along with household surveys and information from local communities, to compare various adaptation strategies. The

study led to a new building regulation in one of South Kalimantan's most threatened cities, Banjarmasin City. The regulation requires that buildings in the administrative areas of the city use staging house construction to limit the potential loss of lives and property due to floods. In addition, the government has taken up Saidy and Azis' recommendations for the improvement of dykes in the reclaimed land.



Strengthening Links

to a Wide Range of Research Users

By bringing environmental economics expertise and experiences to new audiences, EEPSEA is enabling new collaborative efforts to improve the management of Southeast Asia's environment and natural resources. Organizations from a wide range of sectors have sought EEPSEA experience and case studies to enrich their own work.

FAO Regional Office for Asia and the Pacific

In April 2007, for instance, EEPSEA collaborated with the FAO to provide two days lectures on economic tools and applications as part of the ten-days Executive Education Forest Policy Short Course.

United Nations Environment Program and Development Program (UNEP-UNDP)

EEPSEA partnered with the UNEP-UNDP in 2008 to provide training to policy-makers in both Thailand and Papua New Guinea. A total of 75 participants attended the sessions. Training research users in Papua New Guinea presented a good opportunity to re-establish a link within the country. EEPSEA alumnus Billy Manoka from PNG assisted at the workshop.

Asian Environmental Compliance and Enforcement Network (AECEN)

The Ministry of Justice in Thailand has sought EEPSEA's technical expertise in order to contend with the growing number of legal cases over natural resources and environmental damage. Orapan Nabangchang, EEPSEA's Senior Economist in Thailand, was invited to three conferences to talk about

environmental economics and its role in mitigation and damage valuation. The conferences, organized by the Ministry of Justice through the Rabibhadanasak Research Institute, brought together judges and lawyers involved in environmental disputes, along with doctors, academics, government officials, and NGOs. Following in this new direction, EEPSEA held a two-day workshop in Environmental Economics for Asian Justices in 2008. After the workshop, Nabangchang accompanied eight Thai Justices on a visit to the Land and Environment Court of New South Wales, Australia to learn about its activities.

IDRC and the Philippine Science Journalists Association

In 2008, EEPSEA went beyond traditional methods of press relations by hosting the two-day "Climate Change Media Workshop for Journalists." Collaborating with IDRC and the Philippine Science Journalists Association, EEPSEA invited 40 journalists and climate change experts to discuss what climate change impacts will mean to them and to their audience. Those journalists are now part of EEPSEA's network. They and other colleagues receive EEPSEA news and research materials. The journalists have become a resource for EEPSEA researchers who, in turn, provide new information that adds extra value to the journalists' work.

Southeast Asian Regional Center for Graduate Study and Research in Agriculture (SEARCA)

In 2009, EEPSEA combined efforts with SEARCA to develop an Executive Forum on Environmental Economics for Decision Making, hosted by the University of the Philippines-Los Banos. Over 40 natural resource project managers from all over Southeast Asia have attended this five-day course. That same year, EEPSEA and SEARCA collaborated with the Southeast Asian Ministers of Education and Organization Regional Training Center (SEAMEO RETRAC) to provide a course entitled, "International Training on Responding to Changing Climate." The training in Bangkok targeted more than 20 government planners and technical staff involved in agriculture and rural development, natural resource management, and disaster and risk management.

Association of Southeast Asian Nations (ASEAN) Centre for Biodiversity

In 2009, EEPSEA hosted a session on the economics of ecosystem biodiversity for the ASEAN Conference on Biodiversity held in Singapore. The conference was hosted by the Institute of Southeast Asian



Thai justices visit the Land and Environment Court of New South Wales.



EEPSEA climate change conference for journalists.



EEPSEA collaborates on an ASEAN conference on Biodiversity, Singapore.

Studies (ISEAS) at the National University of Singapore. Three EEPSEA researchers, Rodelio Subade of the University of the Philippines Visayas, Nguyen Van Song of Vietnam's Hanoi University of Agriculture, and Beria Leimona of ICRAF, presented their projects. In addition, Senior Economist Arief Anshory Yusuf presented the EEPSEA climate change vulnerability map at the Climate Change Session.

The previous year, David Glover, IDRC's Program Leader for Environmental Economics, edited a 2008 edition of the ASEAN Economic Bulletin (Vol. 25. No. 1. April 2008), the focus of which was "The Environment, Climate Change, and Natural Resources in Southeast Asia." Seven EEPSEA projects were featured in the publication.

Singapore Institute of International Affairs and the Institute of Strategic and International Studies (of Malaysia)

The persistence of the annual haze experienced by Singapore, Malaysia, and Indonesia has led to a series of dialogues on Transboundary Haze Pollution hosted by the Singapore Institute of International Affairs and the Institute of Strategic and International Studies (of Malaysia). EEPSEA's Director Herminia Francisco joined the panel of experts in order to contribute EEPSEA's significant experience to the dialogue.



Singapore Economic Review conference, Singapore.

South Asian Network for Development and Environmental Economics (SANDEE) and the World Agro-forestry Centre (ICRAF)

SANDEE, ICRAF, and EEPSEA teamed up in April of 2009 to provide advanced training to participants from all across Southeast and South Asia on Paying for Environmental Services (PES). During the first part of this ten-day course in Chiang Mai, ICRAF delved into the science behind ecological services provided by forests. These services, which include carbon sequestration, hydrological services, and biodiversity protection, provide benefits to communities that are measurable and worth paying for. Participants received not only a sound knowledge of the science involved, but also strategies for managing the often conflicting interests of the rural land users. The latter part of the course focused on the mechanisms and economic tools needed to implement a successful PES scheme. The 53 researchers attending the course attained skills that enabled them to be at the forefront of current forestry management practices.



Payment for Environmental Services workshop, Thailand.



Developing Experts:

Building People and Institutional Capacity

EEPSEA's ability to effect changes in the region hinges on the success of its researchers. Their numerous accomplishments are steadily raising the profile of environmental economics. Over the years, their hard work has resulted in new courses and curriculum, clearer understanding of the relationships between Southeast Asian communities and their environments, awareness of the usefulness of environmental economics as a tool, media attention to critical issues, policy changes, and finally, more researchers. Some of the ways in which EEPSEA supports its researchers, and the career movements which have resulted in part from this support, are detailed below.

Stringent training

EEPSEA researchers must win the confidence of policy-makers and natural resource managers if their studies are going to have any positive influence. Research methods, scientific input, and the research team's ability to communicate information all have to be rock solid. EEPSEA has developed multiple ways of ensuring high standards for its researchers, and is passing them on to the various networks and organizations that it supports.

EEPSEA's resource people are a key factor in sustaining the integrity of the field. In the words of evaluator Jeffrey Vincent, "EEPSEA's resource persons are internationally recognized contributors to...new theoretical and methodological developments in environmental

economics. Their involvement ensures that EEPSEA researchers receive advice based on the most up-to-date knowledge." Resource persons also provide checks and balances on long-standing methods. For example, in May 2008 Wiktor Adamowicz and Dale Whittington taught a three day course in Thailand on common survey method errors and ways of mitigating them. In addition to basic and advanced methodology training at courses and workshops, resource persons contribute special papers that are posted on the EEPSEA website.

EEPSEA brings in scientific experts on topics of interest to its courses as well. Over the years training courses have included experts in forest ecology, marine ecosystems, climate change, air and water pollution, and more.



Training in Siem Reap, Cambodia.



Training in Chiang Mai, Thailand.

Just as important as high quality-courses is the rigorous process that EEPSEA grantees undertake. Applying for an EEPSEA grant is highly competitive, and researchers must work hard on a proposal before a project is accepted. Once a proposal is accepted, researchers are expected to make careful revisions and to work closely with mentors over the course of the project. If a researcher applies for a second or third grant from EEPSEA, he or she is challenged to take on a more difficult or complex project. Conferences and workshops provide these veteran researchers with a chance to share their work with junior researchers, who in turn strive to match them. The result of this system is that, according to both resource people and evaluators, the quality of the research projects continues to rise over time.

When necessary, EEPSEA arranges in-country training targeted to the needs of current research teams. For example, four proposals from Laotian and

Cambodian teams recommended the use of the contingent (hypothetical) survey (CV) method to assess the recreational value of urban parks and protected areas, or to suggest appropriate pricing for improved solid waste management practices. EEPSEA senior researchers from Thailand designed and taught a training program on basic theory and techniques of the CV method for junior researchers from Vietnam, Cambodia, and Lao PDR. In addition, Vietnam hosted a six-day course on cost-benefit analysis to support other projects. Those same research teams were provided with in-depth writing workshops to help overcome the language barrier.

Getting published

Researchers in China, Vietnam, Malaysia, Indonesia, and the Philippines agree that local universities are expecting their staff to publish more than ever before. Published work is becoming increasingly important for career advancement. According to evaluator Jeffrey Vincent,

"EEPSEA is playing an especially important role in helping researchers break into international journals." Many researchers use their research reports and policy briefs as the basis for additional papers, which are then submitted to peer-reviewed journals. Consequently, the extensive feedback from resource persons and editors, as well as the EEPSEA writing workshops, are providing benefits far beyond the submission of a good final report.

These project outputs are used. Beyond their value as career stepping stones and outreach to policy-makers, EEPSEA publications are useful for sharing information across the globe. Certainly within the EEPSEA network, researchers learn from each other's work. In addition, Southeast Asian institutions make use of the publications for training (aided by the translation efforts of EEPSEA and its partners), and universities in the United States, Canada, Australia, and the United Kingdom have used EEPSEA publications in their courses.



Training in Chiang Mai, Thailand.



Training in Vietnam.



In country training in China.

Making the curriculum grow

Canesio Predo, himself a doctorate student at the University of the Philippines Los Banos (UPLB) when he first associated with EEPSEA, created a very real legacy for himself when he went back to work at the Visayas State University.

Assigned to teach an existing course on "Agricultural Resource Economics," Predo determined that the course could be redesigned to encompass much more than traditional agricultural resources. Little by little, he expanded the course contents to include additional natural resources and new economics methodology. The result was a course that was useful and desirable to a whole new range of students (e.g. students of development sociology, agricultural engineering, forestry, business management, etc.).

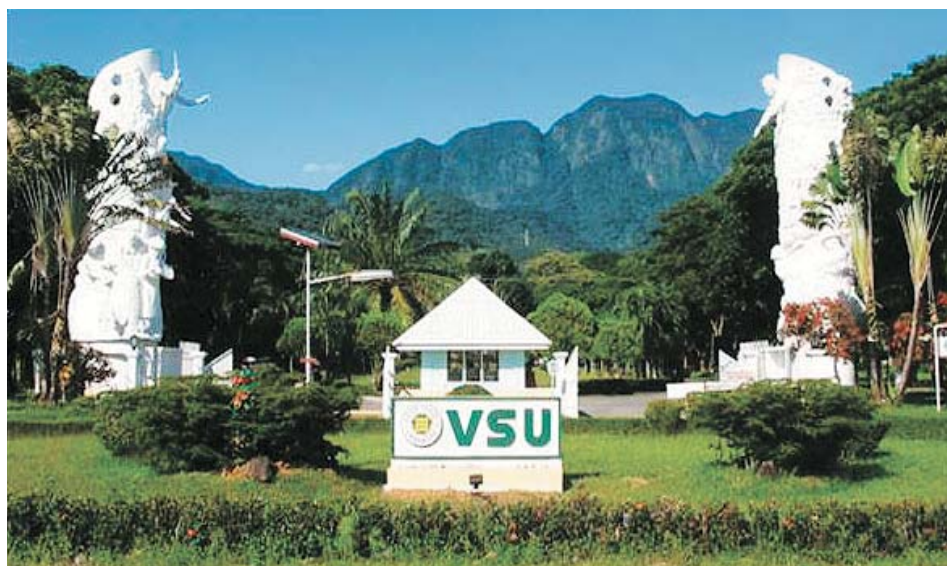
Predo then helped develop two new courses which would be required for the Bachelor of Science Economics degree by the Department of Economics. Those courses are Introduction to Natural Resource Economics and Cost Benefit Analysis. In both cases, EEPSEA publications served as key reference materials. EEPSEA's *User Manual for Benefit Cost Analysis Using Excel*, co-written by Predo and David James, is one these.

Today, Predo continues the EEPSEA mentoring tradition with his own students. He has recently transferred to the University of the Philippines Los Banos, where he undoubtedly contributes to their continued progress.



Academia

The most lasting changes that EEPSEA make are those that enable and improve the teaching of environmental economics. This is not an easy task given the vast differences in academic institutions throughout the region. No single method is going to work and EEPSEA has adapted by using several different approaches such as funding PhD studies, teacher training, small grants programs, and the translation for teaching materials. The current status of environmental economics curriculum across Southeast Asia varies widely.



Well on the way...

The Philippines, China, Thailand, and Malaysia came to EEPSEA with well-established programs in closely related subjects such as agricultural, forestry, or land-use economics. Their universities were able to provide both potential researchers and a framework to introduce new curriculum. Today students in these countries have multiple options for environmental economics training both at graduate and undergraduate levels. Despite the tremendous progress in these countries, they still have much to gain from EEPSEA's

influence. For example, Mao Xianqiang of Beijing Normal University points out that although China's sprawling university system produces a steady supply of environmental economists, the EEPSEA-trained researchers represent the top tier within the field. They stand out for their networking capabilities and for their high levels of influence and credibility. Indeed, EEPSEA researchers in most member countries note that, outside of the EEPSEA network, information sharing amongst researchers is limited or non-existent.





Making good progress...

Vietnam and Indonesia are both offering Bachelor's programs in Environmental Economics and are on the verge of providing graduate programs as well. Vietnam, new to market economies when EEPSEA first appeared, had to build the curriculum from the ground up. This was not necessarily a huge disadvantage. Vietnamese universities have a clear mandate from the government to teach the subject. As a result, EEPSEA has been helping them to rapidly catch up by modelling their programs on curriculum that was carefully developed elsewhere over the years. Indonesia, on the other hand, has had to struggle with a rigid academic structure in which curriculum changes can take several years. EEPSEA's Indonesian alumni have had to work hard to overcome the universities' resistance to change. Bogor Agricultural University and The Center for Economics and Development Studies (CEDs) at Padjadjaran University have both taken leading roles in expanding environmental economics within Indonesia.



Still much to do...

Cambodia and Lao PDR have, thus far, the least developed tertiary educational systems of EEPSEA member countries. Student populations, particularly at graduate levels, are too small to supply many different programs, and resources are extremely limited. Competition for qualified students and researchers is high. In addition, the language barrier is a much bigger factor in Cambodia and Lao PDR than it has been in other EEPSEA member countries. Despite this, EEPSEA has productive partnerships with the National University of Laos (NUoL) and with the Royal University of Phnom Penh (RUPP). EEPSEA has also identified government research organizations in both countries with a strong desire for building environmental economics capacity. The Cambodian Development Resource Institute (CDRI) has sought in-country training courses for its researchers, several of which have successfully applied to an EEPSEA small grants program. The Institute is helping to provide Khmer translations of training materials. In Lao PDR, the Water Resources and Environment Agency (WREA) is EEPSEA's primary institutional partner. In-country training courses based at WREA have benefitted 50 policy-makers and approximately 150 researchers. Already three researchers have been accepted for graduate work



Vietnam - catching up and moving beyond

Imagine being told to teach a new subject matter - environmental economics. You have no training in the field. You have no textbook or other reference materials in your language. The only mention you can find of the subject is in some engineering books. This was the problem faced by faculty at Hue University College of Economics in Vietnam in the 1990's. The faculty taught themselves as best they could and proceeded to teach environmental economics. In 1996, two of their staff attended an EEPSEA training course at Nong Lam University in Ho Chi Minh City. Based on this brief introduction, the course was revised and improved.

In the early 2000's, the Ministry of Education and Training issued a mandate making environmental economics a required course for all Bachelor of Economics degrees. EEPSEA has helped by providing teacher training, translations of teaching materials, and capacity-building through research projects.

Now the list of Vietnamese institutions providing quality training is expanding quickly.

The Vietnamese advantage

Not that long ago, Vietnam was a country with no market economy, no history of teaching economics, and no vocabulary equivalents of many traditional economic terms. Vietnam became a middle income country only recently, and the government has ambitious objectives of it becoming an industrial country by 2020. Vietnam's rapid advancement comes at a fortunate time. Earlier industrialized countries had to learn the hard way of the need for good natural resource management and environmental policy. Developing the necessary tools to remedy earlier mistakes was costly and time consuming. Now that governments all over the world are recognizing the need for balanced growth that ensures the long term preservation of natural resources, solutions are slightly easier to come by. The Vietnamese government has enlisted the help of numerous organizations to address this need. The International Development Research Centre, an EEPSEA sponsor, is one of them.

As a result, Vietnam not only benefits from environmental economics research instigated and encouraged by EEPSEA, it is also the site of a number of pioneering research projects. Specifically, it was host to one of the region's first experiments on Paying for Environmental Services (See page 19) Vietnam's growing ranks of quality researchers are contributing in many different areas of environmental policy. At the February 2010 Impact Conference in Hanoi, EEPSEA launched The Economics of Environmental Management in Vietnam. It is the second book of case studies from Vietnamese researchers.

Vietnam has another competitive advantage other than its capacity for rapid change and advancement: it has a long history of dealing with one of the world's looming climate change impacts - floods. EEPSEA has encouraged Vietnamese researchers to study the ways in which flood-prone communities adapt. The lessons learned in this area will be applicable to a much wider audience as more and more countries explore strategies to adapt to climate change (See page 29).

Region-wide Impediments to developing the field

Some of the hurdles to capacity building in academia are common to all EEPSEA member countries. These are primarily due to a lack of awareness of the field and relatively low pay for lecturers. Potential students, university management, and potential employers have only recently begun to recognize the value of environmental and natural resource economics. Consequently, demand is often lacking. Without demand, universities have little incentive to add new curriculum or hire new staff.

Convincing university management is only the first step. The next is to find qualified teaching staff, not an easy task in this region given that few universities are training them, and to figure out where to put them. Environmental economics is a cross-disciplinary field. Naturally it encompasses economics, but it also includes studies in social and rural development, agriculture, forestry, various environmental sciences, and public administration. Getting multiple departments to take ownership of a new program and work together on implementing it is a formidable task.

Retaining teachers in the field is notoriously difficult as well. The skills they acquire over the course of their research make them good candidates for better paying positions. Moreover, they do not always receive the support they need to perform both as lecturers and researchers. Professors from Lao PDR, Indonesia, the Philippines, and Vietnam have all confirmed that within their universities' traditions, teachers are not expected or encouraged to do research. Yet fieldwork is an integral part of the learning and mentoring process. It also provides the most sensible framework for teaching methodology, a subject that draws little interest from students not directly involved in research.

Brain drain - short term challenge, long term boon

Ask EEPSEA alumni involved in local capacity building to name their biggest obstacles and they inevitably mention "Brain Drain." While some students and graduates are understandably drawn to more lucrative careers in other disciplines, a significant number use their training in other capacities.

The alumni career highlights on the following pages include some of the NGOs that have hired EEPSEA alumni. These alumni may not directly contribute to the training of new researchers, but they are well positioned to raise awareness of the benefits of environmental economics. By doing this, they create new demand for graduates and for the courses those graduates require. In addition to their expertise in environmental economics, they bring in-depth, local knowledge of their chosen environmental topics to the global community. The chances for success of international NGO initiatives are greatly enhanced with the addition of local experts who have an understanding of the cultures and communities involved.

In short, EEPSEA researchers are valuable commodities throughout Southeast Asia, particularly in countries such as Cambodia where NGOs are numerous and trained local experts are not. It is not surprising that researchers are often lured away by higher paycheques and higher profile postings than they would obtain as a university professor. Despite this, these alumni remain assets to the EEPSEA program and to the environmental economics field.

EEPSEA has funded researchers from the following Southeast Asian institutions:

China

- Peking University
- Shanghai Jiao Tong University
- Zhejiang Forestry University
- Shanghai University of Finance & Economics
- Chinese Academy of Sciences
- Yunnan University
- Tsinghua University
- Renmin University
- South China University of Technology
- Jiangsu Polytechnic University
- University of Macau
- Nanjing Agricultural University
- China Agricultural University

Philippines

- University of the Philippines Los Banos (UPLB)
- University of the Philippines in the Visayas
- University of San Carlos
- De La Salle University
- Ateneo de Manila University
- National College of Public Administration and Governance

Thailand

- Sukhothai Thammathirat Open University
- Chiang Mai University
- Kasetsart University
- Maejo University
- Prince of Songkhla University
- National Institute of Development Administration

Vietnam

- Nong Lam University
- Hue University College of Economics
- Vietnam National University
- Vietnam Forestry University
- Technical University Hanoi
- Foreign Trade University
- Hanoi Agricultural University
- National Economics University
- Institute of Energy
- Can Tho University
- University of Agriculture and Forestry

Malaysia

- Universiti Putra Malaysia
- Universiti Utara Malaysia

Lao PDR

- National University of Laos
- Water Resources and Environment Agency (WREA)

Indonesia

- Bogor Agricultural University
- Padjadjaran University
- Lambung Mangkurat
- Institut Teknologi Bandung
- Universitas Tadulako

Cambodia

- Royal University of Phnom Penh
- Cambodian Development Resource Institute (CDRI)
- Community-based Natural Resources-Learning Institute (CBNR-LI)

Advancing careers

A few of the many people who credit EEPSEA support and training with adding to their success:



Jintao Xu

Jintao Xu is a professor of natural resource economics and Chair of the Department of Environmental Management within the College of Environmental

Sciences and Engineering at Peking University. His research covers the broad field of natural resource policy, ranging from forest tenure and regulatory reform, forest carbon and water resources, to valuation of industrial performance under environmental regulation. His papers were published in such journals as *Environmental and Development Economics*, *World Development*, *Land Economics*, and *Ecological Economics*. Currently he serves as senior editor for the journal "Regional Environmental Change" and associate editor for "Environment and Development Economics." Jintao Xu is head of the Environmental Economics Program in China (EEPC) based at Peking University, one of the six world centres sponsored by SIDA. With EEPC he is building capacity to conduct rigorous economic analysis into China's environmental and natural resource policies.



Shiqiu (Susan) Zhang

Zhang is a Professor and Deputy Dean of the College of Environmental Sciences and Engineering, as well as Director of the Institute of Environment and Economy at Peking University in China. She is the senior expert member of the UNEP Technology and Economic Assessment Panel for implementing the Montreal Protocol, Co-Chair of the Task force for Replenishment of the Multilateral Fund of the Montreal Protocol. She is a member of the Advisory Committee of EEPSEA and the Board of Directors for the East Asian Association on Environment and Resource Economics. She has won awards from both China and abroad, including: UNEP "Twentieth Anniversary Ozone Protection Awards;" the US EPA "2007 Best-of-the-Best Awards;" and the China Youth Science and Technology Prize.



Rosalina Palanca-Tan

"The two EEPSEA research projects that I finished were among my best and favourite."

-Rosalina Palanca-Tan,
EEPSEA Researcher

Rosalina Palanca-Tan is currently Associate Professor of Economics at the Ateneo de Manila University in the Philippines. She has done research and published extensively in the areas of water resources management and pricing, resource valuation using contingent valuation and choice modelling, and health economics. She was awarded the University's Outstanding Scholarly Work Award for Social Sciences twice - in 2008 for her paper titled "The Demand for Dengue Vaccines: A Contingent Valuation Survey in Metro Manila," published in the journal *Vaccine*, and in 2003 for her book, "Watershed and Groundwater Depletion in the Philippines - The Cagayan de Oro Experience," (co-authored with Germelina M. Bautista).



Arief Anshory Yusuf

Arief Anshory Yusuf, based at Padjadjaran University in Indonesia, is EEPSEA's Senior Economist in Indonesia. As with most EEPSEA

researchers, he strives to find the right balance between his role as a teacher and his goal to provide practical research to policy-makers. His solution has been the creation of the Center for Economics and Development Studies (CEDS) at Padjadjaran University. CEDS aims to become the top Indonesian research institution in the field. In addition to policy-relevant research outputs and academic excellence, CEDS provides capacity-building services and facilitates networking with other Indonesian institutions and organizations. Yusuf serves on the executive committee of the Indonesian Regional Science Association along with fellow EEPSEA alumnus Budy Resosudarmo.



Orapan Nabangchang

Orapan Nabangchang is EEPSEA's Senior Economist in Thailand and has taken a lead role in capacity-building not just in Thailand, but across

the whole of Southeast Asia. Nabangchang teaches at the School of Economics at Sukhothai Thammathirat Open University. When she is not doing that, she is working on numerous projects for EEPSEA and for several other organizations. She has been recruited on separate occasions as an advisor to Thailand's Ministry of Natural Resources and Environment, the Royal Forestry Department, the Ministry of Justice, and Thailand's Office of Environmental Policy and Planning. She is also a board member of the Biodiversity-based Economy Development Organization.



Bui Dung The

Bui Dung The, a professor at Hue University in the Faculty of Economics in Vietnam, is part of the team that is setting a high standard of quality for environmental

economics in the country. His 2001 EEPSEA study on soil erosion in the uplands of Vietnam examined land-use options and the reasons behind continued harmful agricultural practices (refer to page). The project led to one of Vietnam's first experiments in Payments for Environmental Services in forest management.

Bui's expertise in this area has led to multiple projects for World Vision, the Center for International Forestry Research, the World Agroforestry Centre, and the Swedish International Development Agency (SIDA). He has contributed a paper on the topic to the ASEAN Economic Bulletin, and to several international conferences. Bui is an affiliate trainer for the Asian Institute of Technology Center for Vietnam and is a working member of the "Committee of Scientific Research and Training" at Hue Economic University.



Awang Noor Abdul Ghani

Awang Noor Abdul Ghani is Dean of the Faculty of Forestry at the Universiti Putra Malaysia. He serves on various committees at the

faculty, university, national, and regional levels related to academic, research, networking, and student affairs. His research areas include economic valuation of forest goods and services, socio-economic analysis of forestry workers, demand and supply analysis of forest products, and benefit cost analysis of forestry investment. The outputs of his research projects have been published in refereed national and international journals, research reports, proceedings, books, seminars and symposiums. In 2009, he was awarded the Vice Chancellor Award (Professional Service Category) for excellent consultancy work and other contributions to the society.



Mohd Shahwahid Haji Othman

Mohd Shahwahid Haji Othman is Deputy Dean of the Faculty of Economics and Management at Universiti Putra Malaysia. By

expanding his expertise on forestry management and using his EEPSEA research experience, he has carved a niche within Malaysia in the area of Economic Valuation and Economic Instruments. Shahwahid has consulted for a wide range of international and national organizations including World Wide Fund for Nature, Wetlands International Asia Pacific, and Malaysia's Department of the Environment. He has served as Director for the university's Rainforest Academy and won a research grant from the Global Canopy Programme at Oxford. Most recently, he has been selected to serve on Malaysia's National Professor Council - Environment Cluster, which will allow him to advocate directly for the enhancement of environmental economics initiatives within the country.



Thanakvaro De Lopez

Thanakvaro De Lopez holds a PhD from Cambridge University in environment and development where he specialized in protected

area management. He was awarded an EEPSEA grant which was instrumental in enabling his field research at Ream, a national park located on the Cambodian coastline. He has worked on tropical forestry, renewable energy, and rural development. He has assisted Cambodia in formulating its national adaptation programmes of action to climate change, conducted economic analysis of conservation options, and estimated emission reductions for CDM projects. While at the Cambodian Research Centre for Development, he led a team of researchers funded by EEPSEA who examined the environmental and economic aspects of heritage conservation at the Angkor World Heritage Site. For the past year and a half, Thanak has been a researcher with the Risoe Centre at the University of Denmark where he works on the implementation of climate change and development projects in Africa and Asia.



Budy P. Resosudarmo

Budy P. Resosudarmo is an Associate Professor at the Crawford School of Economics and Government at the Australian National

University. His research interests include determining the economy-wide impact of environmental policies, analyzing the impact of fiscal decentralization on regional economies, and understanding the political economy of natural resource utilization. He has published papers in scientific journals such as Economic Record, Ecological Economics, Oxford Development Studies and Bulletin of Indonesian Economic Studies. In 2005, he edited a book titled The Politics and Economics of Indonesia's Natural Resources and, in 2009, he co-edited a book titled Working with Nature against Poverty: Development, Resources and the Environment in Eastern Indonesia, both are published by the ISEAS-Singapore. Resosudarmo received his PhD in development economics from Cornell University.



Rusdian Lubis

Rusdian Lubis is Chair of the Compliance Review Panel of the Asian Development Bank (ADB) in Manila. The CRP is an independent body appointed by the ADB's

Board of Directors to carry out compliance reviews for ADB projects based on stakeholder complaints regarding environmental and social impacts. His 30 years of experience in environmental economics and management include a senior level position at the Ministry of Environment, the World Bank in Washington DC, EVP/Deputy CEO at Freeport Gold and Copper Mining where he was responsible for managing and implementing the company policies on safety, health, and the environment and overseeing relationships with a wide range of stakeholders. He is also the present Chairman of the Board of Dana Mitra Lingkungan (Environmental Partnership Fund) in Indonesia.



Nguyen Nghia Bien

Nguyen Nghia Bien is Director of the Department of Planning and Finance under Vietnam's General Director of Forestry. The Department is

responsible for sectoral planning and projection, management of financial resources related to the forestry sector, forest inventory, and forest information.



Phouphet Kyophilavong

Phouphet Kyophilavong received his PhD in economics from Kobe University in 2003. He is now an Associate Professor and Deputy-

Director of the Economics Department, Faculty of Economics and Business Management, National University of Laos. He has been carrying out research on macroeconomic management issues, economic integration, natural resources and environmental issues, and poverty in Laos.

Having experts on call

When disasters strike, policy-makers, natural resource managers, and NGO's can save critical time and resources if they are able to identify experts who have done previous research on related incidents.

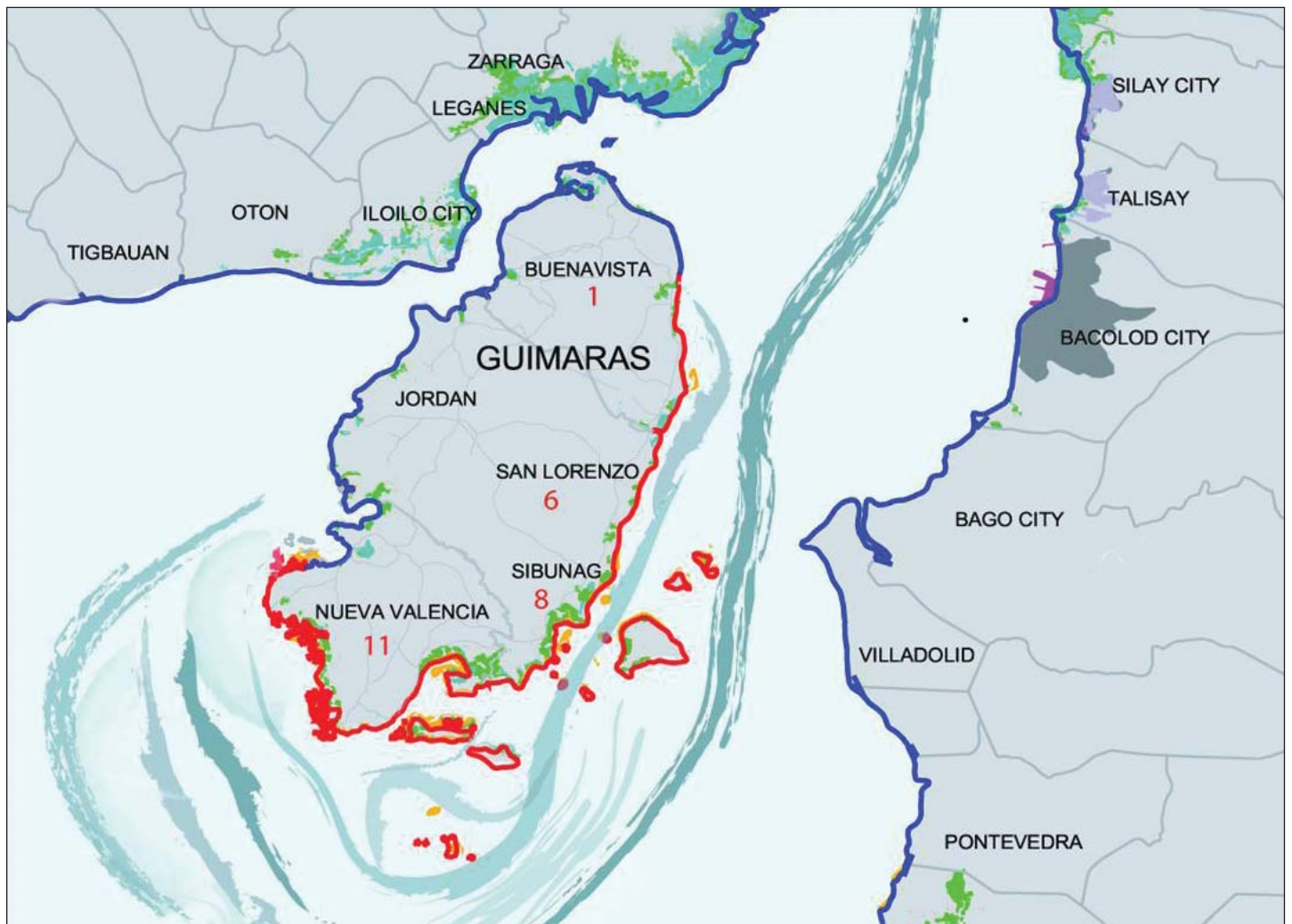
Oil spill in the Philippines

In 2005 the Philippines suffered a devastating oil spill when a National Power Corporation barge ran aground. Rodelio Subade was part of the team assigned to determine the damages. Less than one year later, a fuel oil transport ship sank and spilled an even greater volume of oil. As appalling as the situation was for the Philippine communities and ecosystems affected, they at least had an experienced team to enlist. Subade's expertise in damage valuation was crucial to the public hearings later held by the Philippine Senate Committee on the liability of oil

spills. In both cases, EEPSEA responded rapidly with partial funding for the teams' work.



Damages caused by oil spills on in the Philippines.



Map of areas affected by the oil spill.

Soil salinity in Sri Lanka

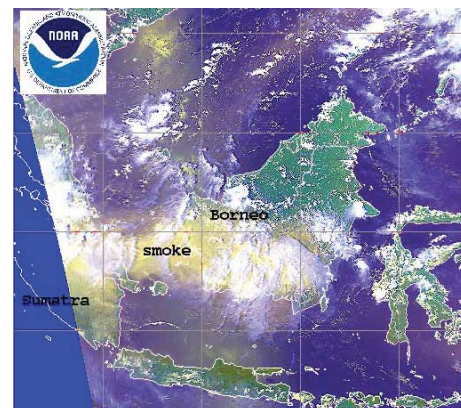
More than a decade ago, Selliah Thiruchelvam did a careful study of the problem of soil salinity in the Mahaweli River System in Sri Lanka. His recommendations regarding drainage and irrigation practices were widely distributed to farmers and to water management experts in the region. No

one could have predicted that his expertise in this area would be urgently required after the tsunami of 2004 dumped salt water on vast areas of the east coast of Sri Lanka. Thiruchelvam's previous experience working with farmers to fix their salinity problems is helping to restore productivity to these salt-polluted fields.



Transboundary haze

EEPSEA's ability to quickly mobilize resources was also demonstrated by the cross-country haze study in the late 1990's. As a result of the study, EEPSEA is considered one of the key participants in the regional dialogue on recurring haze (See page 28). EEPSEA's new cross-country project on transboundary haze is a direct response to that dialogue.



Haze crisis in Southeast Asia.



Farmers learning to mitigate increasing soil salinity, Sri Lanka.



Regional Environmental Economics Networking

The environmental problems faced by Southeast Asian communities are more or less the same the world over. Sharing expertise is without a doubt the most effective way of finding answers to these issues. EEPSEA and its alumni support a number of professional networking organizations in the region that facilitate the flow of information. It also provides members with links to international environmental economics networks.

Resources and Environmental Economics Foundation of the Philippines (REAP)

The Philippines' expanding pool of environmental economics professionals has created its own association to provide support and networking opportunities to its members. REAP works closely with EEPSEA to build capacity for environmental economics within the Philippines. Their conferences bring together people from universities, government agencies, international organizations, NGOs, and private organizations - in short - everyone with a part to play in the long-term management of the Philippines' natural resources. REAP was originally started in 2003 by several EEPSEA alumni, including current Director Herminia Francisco.

In addition to holding regular conferences, REAP publishes books

containing selected papers on environmental economics studies. EEPSEA has funded two books as well as a number of the studies contained within them.

Vietnam Association of Environmental Economics

Nguyen The Chinh of the Vietnam Association of Environmental Economics (VAEE) has been working closely with EEPSEA since 1999 to build capacity for environmental economics within Vietnam. Members of VAEE, who include both researchers and policy-makers, meet annually on World Environment Day to attend workshops and to share research. To enable researchers to examine how environmental economics can be applied in Vietnam, VAEE is providing Vietnamese translations of EEPSEA policy briefs and research reports from all over Southeast Asia.



REAP Conference.

Environmental Economics Program in China

Another organization working for quality research and greater capacity is the Environmental Economics Program in China (EEPC). Headed by EEPSEA alumni Jintao Xu and funded by EEPSEA sponsor SIDA, EEPC is based at Peking University. EEPC focuses on training new experts and providing China with recommendations on appropriate policy reforms. Several of its fellows, including Jing Cao and Shiqiu Zhang, are active members of the EEPSEA network. In the long term, EEPC may very well be able to take over EEPSEA's role in supporting capacity building for environmental economics in China.

Singapore Economic Review

In an effort to raise awareness within the mainstream economics community for environmental economics applications, EEPSEA co-sponsored a 2009 conference with the Singapore Economic Review, the leading economics journal in Asia. Four EEPSEA researchers were invited to present at a session focusing on environmental economics in Southeast Asia: Rosalina Palanca-Tan presented the findings of her EEPSEA research project entitled "Value of Life Estimates;" Pham Thai Hung and Liguu Lin gave a talk on the following papers: "The Impact of Trade Liberalization on Industrial Pollution: Empirical Evidence from Vietnam" and "Pollution Taxation in China: The Impacts of Inspections;" and EEPSEA Senior Economist Arief Anshory Yusuf presented his EEPSEA research entitled "On the Distributional Effect of Carbon Tax in Developing Countries."

Indonesian Regional Science Association (IRSA)

EEPSEA alumnae Budy Resosudarmo and Arief Anshory Yusuf are both on the executive committee of the Indonesian Regional Science Association (IRSA). According to Resosudarmo, who is a founding member of the Association, IRSA exists to create opportunities for experts of various disciplines to discuss the issue of regional autonomy and regional development. Every year, scientists, economists, planners, policy-makers, and others meet to apply their collective expertise to issues affecting Indonesia's development. The environment and the use of environmental economics are slated as main topics.



2006 World Congress in Kyoto, Japan.

Other regional networks

The European Association of Environmental and Resource Economists (EAERE) and the Association of Environmental and Resource Economists (AERE) are valuable links between environmental economics professionals in the west and those in the east. EEPSEA researchers are encouraged to submit proposals to their conferences, often with positive results.

The 2006 Third World Congress of Environmental and Resource Economists in Kyoto, Japan, was a valuable opportunity for EEPSEA researchers to present their work in an international forum. Six EEPSEA projects on endangered species conservation, cultural heritage preservation, watershed management, and coastal resources management were included.

In a testament to the success of EEPSEA, three new regional networks have been modelled on the program: the South Asian Network for Development and Environmental Economics (SANDEE - which has taken on the support of Sri Lanka); the Latin American and Caribbean Environmental Economics Program (LACEEP); and the Center for Environmental Economics and Policy in Africa (CEEPA). EEPSEA sponsor IDRC supports the three networks along with other sponsors.

Striving for **Further Impact**

From the beginning EEPSEA researchers have been charged with selecting research with practical applications to current and future problems. Wherever possible, policy recommendations are incorporated into research results with the aim of bringing them to the attention of relevant policy-makers and stakeholders. Sometimes it works and sometimes it doesn't. Ways of increasing those successes is an on-going discussion at EEPSEA events. At the recent Impact Conference in Hanoi, various challenges and suggestions emerged.

These tended to fall into one of 4 categories:

- 1) Planning for impact**
- 2) Engaging research users**
- 3) Effectively communicating results and engaging the media**
- 4) Getting recommendations implemented**

Planning for impact

Researchers need to start planning for impact during the design stage of the project. Outreach to policy-makers and natural resource managers as well as media should be built into the process. Moreover, the earlier in the process that the research users are engaged, the more their questions and concerns can be addressed throughout the project. Leaving outreach to the end of the study leads to a one-way flow of information and deprives the research team of valuable feedback that can improve the outcome.

Engaging research users

An early approach to decision-makers is only the first step for a researcher. The next is to convince them that the project is worthwhile pursuing. EEPSEA asked research users what would convince them of a research project's value. Obviously the subject has to be a priority for them. Research users have limited time and resources to spend on research, and they have to select projects that fit their agenda. They also need assurance that the focus of the research is to create positive change. Research by nature frequently uncovers flaws and failures in existing systems, putting policy-makers in an awkward position. That does not

necessarily mean it has to be a negative process. By engaging research users as partners in determining recommendations such as policy reforms, they become part of the solution.

Perhaps the most important factor for research users is assurance that the project will work. Very few policy-makers have training in environmental economics and they are unfamiliar with the methods. Research teams should show that they have the tools necessary and be ready to provide case studies from other parts of the world demonstrating the effectiveness of those tools. The teams should also be ready to recruit experts in other fields to guarantee a sound scientific basis for the study results. With regards to study results and methods, researchers should be forthright about the project's limitations to avoid creating unrealistic expectations. Policy-makers and natural resource managers who have confidence in the process and are engaged from the beginning are more likely to work for the implementation of recommendations.

Effectively communicating results and engaging the media

Presenting research findings effectively is critical. Contingent

valuation, willingness to pay, environmental services...these phrases have little meaning to those outside the environmental economics field. When talking to scientists, government staff, or media, researchers need concise, jargon-free communication. The written version of this is the policy brief, and almost every EEPSEA project produces one. EEPSEA has provided multiple writing workshops, as well as posted written guidelines on its website, aimed at improving the quality of policy briefs. The briefs may need to be translated for the benefit of local stakeholders. Researchers should keep in mind, however, that there is no substitute for face-to-face dialogue. To be effective, research results need advocates. They need to be marketed through meetings, seminars, press releases, and discussion forums. Only by actively bringing research out into the world will researchers take their impacts outside the academic realm.

Getting recommendations implemented

Although often the implementation process is out of a researcher's control, there are actions that they can take to maximize chances of success. Follow-up is important. By raising awareness within communities and the media,

researchers can keep their research subject on the political agenda. Building coalitions and developing relationships with relevant stakeholders will add clout and ensure that staff changes will not derail existing momentum. Be aware that any number of factors, such as economic downturns, changes in staff, transparency problems within the government, lack of coordination between departments, or changing public priorities, could slow or halt a project's progress. Be patient. The reverse is true as well: any number of opportunities, such as related high-profile events or new political initiatives, might appear that could place the topic back at the top of the agenda.

In the meantime

Future research priorities, as always, are guided by the needs of research users and the environment. Based on discussions with policy-makers and natural resource managers throughout Southeast Asia, EEPSEA will target regional issues such as climate change adaptation, transboundary haze, and cross-border water issues. This last issue is of increasing importance globally. As demands on the world's water sources grow, governments of countries sharing those sources must either find means of effective cooperation or risk conflict. The most obvious example of this in Southeast Asia is the shared dependence on the Mekong River of the 6 countries it flows through. EEPSEA researchers are already contributing to better stewardship of the river at local levels. They will likely have important parts to play in future regional dialogues.

EEPSEA is committed to continuing its efforts to support its researchers and to build capacity throughout the region, particularly in countries that require extra support, such as Lao PDR and Cambodia. It will strive to strengthen the regional network by creating new links with research users, and by supporting in-country networks and associations. EEPSEA will continue to seek out new opportunities to raise the profile of environmental economics research and its applications.



List of policy briefs and research reports cited

The policy briefs and research reports cited in this report are all available on the EEPSEA website at www.eepsea.org.

Awang Noor Abdul Ghani and Mohd. Shahwahid Haji Othman. 2003. Pricing Policies for Malaysia's Forests. Policy Brief 2003-07.

Bennagen, Ma. Eugenia C. and Vincent Altez. 2004. Pay to Throw: A New Way to Charge for Waste Disposal in the Philippines. Policy Brief 2004-08-58.

Bui, Dung The. 2001. Saving the Soil: Erosion in the Upland Farming Systems of Vietnam. Policy Brief 2001-12.

Bui, Dung The and Hong Bich Ngoc. 2006. Paying for Environmental Services: A Trial in Vietnam. Policy Brief 2006-PB3.

Calderon, Margaret M. et al. 2008. Tourism and Rice Terraces - An Assessment of Funding Options from the Philippines. Policy Brief 2008-PB10.

Calderon, Margaret M, Leni D Camacho et al. 2005. Will People Pay to Protect Watersheds? A Case Study from the Philippines. Policy Brief 2005-PB2.

Cao, Jing. 2004. The Hidden Benefits of Cooling the Global Greenhouse: A Lesson from China. Policy Brief 2004-08-20.

Cao, Jing. 2006. A Dynamic Computable General Equilibrium Analysis of Environmental Taxation and "Rural-Urban" Migration Distortions in China. Research Report 2006-RR9.

Catelo, Ma. Angeles O. et al. 2001. Living with Livestock: Dealing with Pig Waste in the Philippines. Policy Brief 2001-04.

De Lopez, Thanakvaro et al. 2006. Rags Among Archaeological Riches: Sustainable Development in the Angkor World Heritage Site. Policy Brief 2006-PB5.

Ferrer, Alice Joan G. 2009. Saving Fishers and Fish - An Assessment of Fishery Management Options for the Visayan Sea in the Philippines. Policy Brief 2009-PB5.

Gunatilake, H.M. and L.H.P. Gunaratne. 2002. Saving the Wood for the Trees: Sri Lanka's Options for Forest Protection. Policy Brief 2002-06.

Jesdapipat, Sitanon and Siriporn Kiratikarnkul. 1999. Surrogate Pricing For Water: The Case For Micro Hydro-electricity Cooperatives in Northern Thailand. Policy Brief 1999-12.

Jianjun, Jin, Rodelio Subade, Orapan Nabangchang, Truong Dang Thuy, Anabeth Indab et al. 2007. Willingness to Pay for Marine Turtle Conservation in Asia: A Cross-Country Perspective. Policy Brief 2007-PB3.

Jianjun, Jin. 2007. Economic Valuation of Black-faced Spoonbill Conservation in Macao. Technical Paper 2008-01-16.

Kiratkamkul, Siriporn. 2008. The Pig Waste Question: An Assessment of Slurry Disposal Options in Thailand. Policy Brief 2008-PB2.

Kyophilavong, Phouphet. 2008. The impact of irrigation on aquatic wetland resources: a case study of That Luang Marsh, Lao PDR. Research report, ISSN 1608-5434; 2008-RR6.

Lang, Vo Thi et al. 2009. Fish Farm Pollution - A Study of Clean-up Options in Vietnam. Policy Brief 2009-PB3.

Lin, Ligu. 2008. Environmental Enforcement Under The Spotlight - A Study of Industrial Pollution Control in China. Policy Brief 2008-PB4.

Muong, Sideth. 2006. Pollution Prevention Pays: Pollution Charges in Cambodia. Policy Brief 2006-PB1.

Muong, Sideth. 2004. Vegetables, Wetlands And Waste: Ensuring Food Safety in Phnom Penh, Cambodia. Policy Brief 2004-09.

Naz, Antonia Corinthia and Mario Tuscan N Naz. 2005. Funding Solid Waste Disposal: A Study from the Philippines. Policy Brief 2005-PB10.

Nguyen, Quoc Chinh. 2005. The Cattle Challenge: Controlling Backyard Pollution in North Vietnam. Policy Brief 2005-PB6.

Nguyen, Van Song. 2003. Tracking the Trade: Vietnam's Illegal Wildlife Business. Policy Brief 2003-11.

Nguyen, Van Song & Nguyen Van Hanh. 2001. Adding Pollution to the Bill: The Environmental Costs of Power Generation in North Vietnam. Policy Brief 2001-12.

Palanca-Tan, Rosalina and Germelino M. Bautista. 2003. Pulling the Plug on Water Mining: A Groundwater Conservation Strategy from the Philippines. Policy Brief 2003-11-01.

Palanca-Tan, Rosalina. 2007. Valuing a Life: An Assessment from Metro Manila. Policy Brief 2007-PB4.

Pham, Thai Hung et al. 2008. The Trade-Off Between Trade and the Environment - A Study from Vietnam. Policy Brief 2008-PB5.

Predo, Canesio D. 2003. Planting for the Future: Options for Upland Grasslands in the Philippines. Policy Brief 2003-11.

Predo, Canesio and David James. 2006. A User Manual for Benefit Cost Analysis Using Microsoft Excel. Special Paper 2006-09-28.

Rufo, Loreta and Carlito, Jr. 2004. The Burning Question: Better Options for Incineration in Manila. Policy Brief 2004-09.

Saidy, Akhmad. 2009. Protect or Retreat - How Should Kalimantan Deal with Rising Sea Levels Caused by Climate Change? Policy Brief 2009-PB1.

Shahwahid, Mohd. Haji Othman and Awang Noor Abdul Ghani. 2003. A Kinder Cut: Making Malaysian Logging Less Destructive. Policy Brief 2003-07.

Subade, Rodelio F. 2005. Reef Rescue: Financing Marine Conservation in the Philippines. Policy Brief 2005-PB4.

Sumalde, Zenaida M. 2005. Searching for a Solution to Solid Waste in the Philippines. Policy Brief 2005-PB1.

Sumalde, Zenaida M., Karen Lou A. Francisco and Mildren Penales. 2003. Pollution-Induced Fish Kills in Bolinao: Effects of Excessive Aquaculture Structures and Overstocking. Technical Paper 2003-05.

Thang, Nam Do. 2007. The Dyke Dilemma - A Cost-Benefit Analysis from Vietnam. Policy Brief 2007-PB1.

Thang, Do Nam. 2010. From his presentation on Climate Change Adaptation at the EEPSEA Impact Conference in Hanoi. February 2010.

Thiruchelvam, Selliah and S. Pathmarajah. 1999. Too Much Salt In The Rice Bowl: Irrigation In Sri Lanka. Policy Brief 1999-08.

Tran, Huu Tuan. 2006. How Much For World Heritage? The Value of Temple Preservation in Vietnam. Policy Brief 2006-PB5.

Yusuf, Arief Anshory. 2008. It Is Fair To Act Now! The Distributional Impact Of A Carbon Tax Policy In Indonesia. Policy Brief 2008-PB1.

Yusuf, Arief Anshory and Herminia A. Francisco. 2009. Report: Climate Change Vulnerability Mapping For Southeast Asia.

Zhong, Funing. 2006. What Price Crop Insurance? An Environmental Analysis From China. Policy Brief 2006-PB7.

EEPSEA Special Papers :

Environmental Economics Program of Southeast Asia (EEPSEA). Climate Change Adaptation Conference 2008: Synthesis of Proceedings. Climate Change Papers 2008-03-07.

Economy and Environment Program for Southeast Asia (EEPSEA). August 2008. Management Strategies for Protected Areas. EEPSEA Practitioner's Series No. 1.

Economy and Environment Program for Southeast Asia (EEPSEA). May 2009. Managing Agricultural Pollution: Insights from EEPSEA-funded Studies. EEPSEA Practitioner's Series No. 2.

EEPSEA-published guidelines on writing for researchers (available on-line in the Special Papers section):

How to Design a Research Project in Environmental Economics. 2003.

Help on Effective Writing. 2004.

Glover, David. What Makes a Good "Policy Paper"? Ten Examples. 2002.

Other citations:

Glover, David and Timothy Jessup, eds. 1999. Indonesia's Fires and Haze: The Cost of Catastrophe (with a 2006 update). Economy and Environment Program for Southeast Asia (EEPSEA) and the World Wide Fund for Nature (WWF). ISBN 9-81230-006-6.

Rola, C. Agnes, Herminia A. Francisco, and Jennifer P.T. Liguton, eds. 2004. Winning the Water War: Watersheds, Water Policies, and Water Institutions. Philippines: Philippine Institute for Development Studies (PIDS) and Philippine Council for Agriculture, Forestry and Natural Resources Research and Development (PCARRD). ISBN 971-564-075-3.

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Researched, written and produced by
Jennifer Marusiak jmarusiak@gmail.com

Designed by
roxaneandfriends roxane.ad@pacific.net.sg

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EEPSEA

22 Cross Street #02-55
South Bridge Court
Singapore 048421
Tel: 65 6438 7877
Fax: 65 6438 4844
Email: hfrancisco@idrc.org.sg

www.eepsea.org

