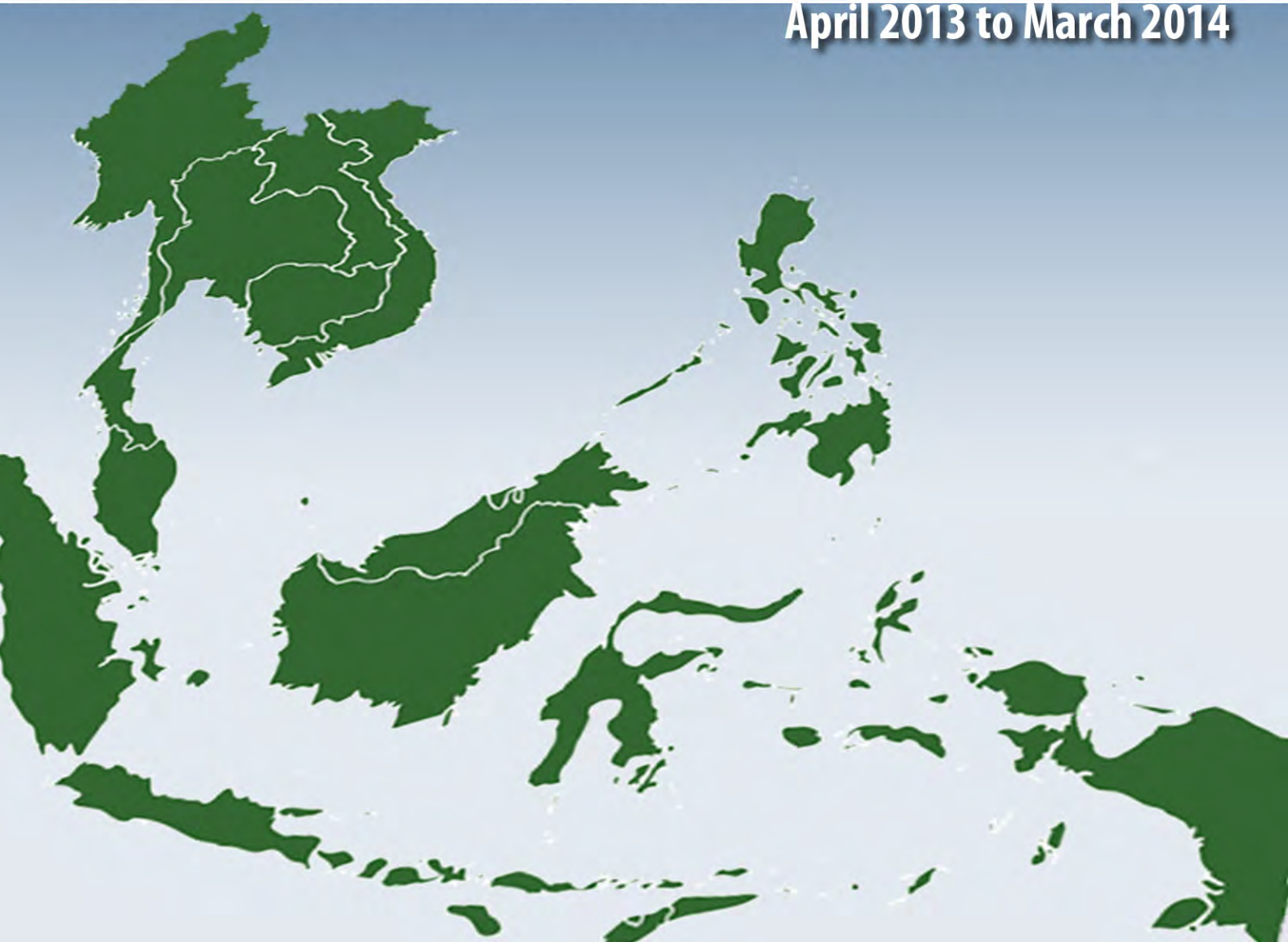
ANNUAL REPORT

Economy and Environment Program for Southeast Asia

April 2013 to March 2014



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Donors:
International Development Research Centre
Swedish International Development Cooperation Agency

Implementing Agency:
WorldFish

March, 2014

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1.0 RESEARCH AWARDS

EEPSEA offers three types of research awards: a) ***competitive research grants*** (CRG), which are chosen from those who responded to EEPSEA's Call for Proposals, are evaluated in time for EEPSEA Annual Conference, and include dissertation research grants secured by Southeast Asian graduate students in developed countries like the USA, Canada and Australia; b) ***cross-country research grants*** (XRG), which are funded through a closed call for proposals on key research areas and whose researchers meet to set common objectives, develop a common framework and agree on common research instruments to be used; and c) ***small research grants*** (SRG), which are offered to research projects that have shorter duration or to researchers from provincial colleges and universities from countries where capacity for environmental economics (EE) research is still at a relatively low level.

EEPSEA approved a total of 25 research grants during FY 2013-2014 (Table 1). Many (60%) of the 25 grants approved are in the CRG category. Of these, nearly half (7 of 15) are from China with three in Vietnam, three in Philippines, one each in Thailand and Lao PDR (Table 2).

Of the two XRG approved, one deals with climate change issues with the other focusing on mangrove ecosystems (Table 2). The climate change XRG takes an intra-household perspective in analyzing the impacts of climate change to households, focusing on households in coastal communities. The other XRG focused on identifying the research gaps in the valuation of mangrove ecosystem service in five Southeast Asian (SEA) countries with the intent to comprehensively review studies on mangrove valuation in each country, synthesize methodologies used to estimate the value of mangrove ecosystem services, and assess the extent and quality of research associated with mangrove values conducted in in each country.

Lastly, almost one-third (32%) of the approved research grants are SRGs (Table 1). Most of the grants under this category (5 of 8) form the EEPSEA-led cross-country research entitled *"Documentation of Existing Cases of Payment for Environmental Services (PES) in the Philippines, Thailand, Cambodia, Lao PDR, Indonesia, and Malaysia"*, which aims to review PES implementation in six Southeast Asian (SEA) countries so as to highlight the success stories, describe the challenges, and determine future research needs to advance the implementation of such initiatives (Table 2).

Table 1. Approved research grants by type

Type of Research Grant	Number of Grants	Percentage
Competitive Research Grants	15	60
Cross-Country Research Grants	2	8
Small Research Grants	8	32
Total	**25**	**100**

Table 2. List of research grantees by type of grant

Researcher/Grantee	Research Project Title
Competitive Research Grants	
1. Liping Gao, China	Land Use Change as Adaptation to Changing Society and Climate in Inner Mongolia, China
2. Wei Sun, China	Environmental Policy, Environmental Quality and Health: Evidence from China
3. Jin Jianjun, China	Farmer's Risk Attitudes and their Farming Decisions on Climate Change Adaptation in Changfeng, China
4. Chunhua Wang, China	Environmental Satisfaction among Residents in Chinese Cities
5. Haitao Yin, China	Protecting the Environment by Informing Customers in China
6. Zhuangfang Yi, China	Where Can Payment for Ecosystem Services Tip the Rubber Monoculture to Rainforest Recovery in Xishuangbanna, China?

Researcher/Grantee	Research Project Title
7. Xiaodong Chen, China	Evaluating the Impacts and Feedbacks of Payments for Ecosystem Services
8. Kaysone Chansina, Lao PDR	Estimating the Economic Value of Tourism Resources in Champasak Province, Lao PDR: Evidence from Travel Cost Method
9. Ma. Angles Catelo, Phils	Regulatory and Public Policy Challenges to Reducing Air Pollution Concentrations in Baguio, Philippines
10. Salome Bulayog, Phils	Assessment and Valuation of Natural Assets in the Aquatic Agricultural Systems of Sogod Bay, Southern Leyte, Philippines: A Baseline Study
11. Jaimie Kim B. Arias, Phils	Impact of and Adaptation to Flood: An Intra-household Perspective
12. Kannika Thampanishvong, Thailand	Using Feedback as a Tool for Household Energy Conservation: An Experimental Approach
13. Truong Dang Thuy, Vietnam	The Ecological Services, Institutions and Dynamics of Mangrove Forests in South Vietnam
14. Tran Tuan Anh, Vietnam	Cost-Benefit Analysis of Climate Resilient Housing in Central Vietnam
15. Yen Dan Tong, Vietnam	Dyke Heightening in the Vietnamese Mekong Delta: A Cost-Benefit Analysis
Cross-Country Research Grants	
1. Cambodia, Philippines, Vietnam (1 grant each)	Intra-household Impacts of Climate Hazards in Coastal Communities: A Cross Country Perspective
2. Malaysia, Indonesia, Vietnam Philippines, Thailand (1 grant each)	Valuation of Ecosystem Functions and Services Provided by Mangrove Ecosystems in Southeast Asia: Literature Review and Assessment
Small Research Grants	
1. Mohd Shahwahid, Malaysia	Economic Costs of Haze to the Malaysian Economy
2. Hoang Anh Ho, Vietnam	Compliance with Environmental Regulations Among Small and Medium Enterprises: Evidences from Vietnam
3. Mya Lwin Lwin Aung, Myanmar	Assessment of the Local Community's Willingness to pay for Waste Disposal in central Business Districts Versus Periphery Areas of Yangon City, Myanmar
4. Rawadee Jarungrattanapong, Thailand	Payment for Ecosystem Services in Thailand and Lao PDR
5. Mia Amalia, Indonesia	Payment for Ecosystem Services in Indonesia
6. Naret Heng, Cambodia	Payment for Ecosystem Services in Cambodia
7. Paula Macandog, Philippines	Payment for Ecosystem Services in the Philippines
8. Awang Noor Ghadi, Malaysia	Payment for Ecosystem Services in Malaysia

While the topics of the cross-country research projects were partly determined according to the research priority setting of EEPSEA, the choice of topics for the competitive and small research grants (with the exception of those part of the EEPSEA-led PES cross-country research project) are largely dependent on national priority research concerns. Based on the distribution of the CRGs and the SRGs (not part of the EEPSEA-led XRG on payment for ecosystems services) by research area (Table 3), research on *pollution control* issues dominated followed by *climate change* and those on *ecological services*.

Table 3. Distribution of competitive and small research grants by research area

Research Area	Number of Grants	Percentage
Pollution control & waste	7	39
Climate change	5	28
Ecological services	5	28
Energy	1	5
Total	**18**	**100**

FEATURED REPORT:
Building Capacity to Adapt to Climate Change in Southeast Asia (CCW-EEPSEA funded)

Background

In 2011, EEPSEA received supplemental funding from Sida to support climate change research. It used this fund to leverage additional support from the IDRC's Climate Change and Water (CCW) Program. For the first time, EEPSEA managed to provide a relatively bigger grant size to three country institutions to implement the project *"Building Capacity to Adapt to Climate Change in Southeast Asia"* over a three-year grant period.

The Philippines and Vietnam are often visited by typhoons, which are often accompanied by landslides and flooding. On the other hand, Cambodia's vulnerability is mostly due to long periods of dry season, which leads to drought in Kampong Speu province and other places. Some parts of Cambodia near the Mekong River suffer floods during the rainy season.

The project grant recipients included: Hue College of Economics (HCE) in Vietnam, The Southeast Asian Regional Center for Graduate Study and Research in Agriculture (SEARCA) in Philippines with researchers from the University of the Philippines at Los Banos (UPLB), and the Royal University of Phnom Penh (RUPP) in Cambodia.

The project adopts a multi-disciplinary and participatory approach. Each country research team is composed of researchers with natural science, sociology, and economic backgrounds. Their mandate is to work with their study site's local government in undertaking vulnerability assessment, in identifying and evaluating adaptation projects, and in developing the climate change adaptation proposal/plan for submission to donor agencies. Each country research team's local partner institutions are summarized in Table 4.

During project implementation, the project implemented a series of training courses, joint field visits, and a series of dialogues. The three main courses offered to the participating team members are: a) a course on Vulnerability Assessment adopting the framework used in the Yusuf and Francisco (2009) Vulnerability mapping research; b) a training on the Economic Analysis of Adaptation Options led by the economist members of the team; and c) a course on how to package an adaptation proposal for funding support. Interestingly, many of the team members have begun getting involved in consultancy services or similar efforts as their expertise in the field gets recognized in their own country.

Flooding in Thua Thien Hue

Flooding in Laguna, Philippines

Drought in Kampong Speu, Cambodia

Table 4. Local partner institutions

Country/academic institutions	Local partners
CAMBODIA: Royal University of Phnom Penh	**Kampong Speu:** • Department of Agriculture • Department of Environment
PHILIPPINES: SEARCA, UP Los Banos	**Laguna province:** • Laguna Lake Development Authority (LLDA) • Provincial Government of Laguna • Provincial Environment and Natural Resources Office (PENRO)
VIETNAM: Hue College of Economics	**Thua Thien Hue Province:** • Department of Agriculture and Rural Development, Thua Thien Hue • Provincial Department of Natural Resources and Environment • Center for Hydrology and Meteorology • NGO (Nordic Assistant to Vietnam)

People Trained in the Project

The number of participants to the various training courses and workshops conducted in the three countries is shown in Table 5. Female members account for about a third of the participants.

Table 5. Participation to local and international training courses and workshops

	Participants			
Training Topics	**Researchers**	**LGU staff**	**Total**	**% Female**
Vulnerability assessment	47	80	127	37
Economic analysis of adaptations	49	81	130	38
Adaptation proposal development	44	88	102	46
TOTAL	**140**	**249**	**359**	**40**
Workshop Topics	**Researchers**	**LGU Staff**	**Total**	**% Female**
Vulnerability assessment	76	275	351	28
Economic analysis of adaptation	35	94	129	43
Adaptation proposal	18	59	77	31
Evaluation	40	78	103	41
TOTAL	**169**	**506**	**660**	**33**

Reports Produced by the Project Team

The team produced several types of publications: Research Reports, Policy Briefs and Journal papers, which are summarized in Table 6. These reports or papers were also presented at various conferences, both at the national and international level. It is worth noting that the Project provided partial support for graduate studies of five researchers from Cambodia (2 PhD; 3 MS).

Table 6. Number of publications produced per country research team

	Cambodia	Philippines	Vietnam	Total
Research reports	5	5	5	**15**
Papers presented at national and international workshops	2	14	7	**23**
Policy briefs	3	2	2	**7**
Journal articles published/submitted	3	7	5	**15**
Adaptation proposals	1	5	1	**7**

Policy Impact/Development Outcome

Capacity Development

According to accounts of the LGU representative from Vietnam, the engagement of the LGU people to the project have brought about several benefits as follows: a) greater awareness on the risks from climate change; b) generation of climate change risk maps that were used in developing agricultural production plans for three sub-regions in Thua Thien Hue; c) integration of climate risks into the socio-economic development plan; and d) improved knowledge on how to conduct vulnerability assessment and economic analysis of adaptation options as well as proposal development.

A survey instrument was designed to assess change in knowledge and skills of the people involved in the project using a self- rating score of 1 to 5, with 5 being the highest. This instrument was implemented at the start of the project and at the end of the project. Since the rating is done by the team members themselves, comparison across countries will be difficult. At best, we can only assess change within a country at the start and the end of the project (Table 7). As noted, all teams have claimed to have improved knowledge and skills on the various items used to assess them. The biggest improvement was claimed by the research team members from Cambodia.

Table 7. Self-rated scores on knowledge and skills, selected indicators, all countries

Results of Impact Evaluation	Average	
	Baseline	After
PHILIPPINES		
Knowledge on climate change vulnerability and adaptation	2.48	2.78
Vulnerability assessment skill	2.17	2.77
Vulnerability mapping skills	2.01	2.85
Skill in undertaking an economic analysis of adaptation	1.99	2.38
Skill to develop climate change adaptation proposal	2.09	2.48
Overall Score	**2.15**	**2.65**
CAMBODIA		
Knowledge on climate change vulnerability and adaptation	2.43	3.55
Vulnerability assessment skill	1.87	3.19
Vulnerability mapping skills	1.87	2.92
Skill in undertaking an economic analysis of adaptation	1.76	3.30
Skill to develop climate change adaptation proposal	1.64	3.26
Overall Score	**1.91**	**3.24**
VIETNAM		
Knowledge on climate change vulnerability and adaptation	2.34	3.18
Vulnerability assessment skill	1.89	2.81
Vulnerability mapping skills	1.77	2.50
Skill in undertaking an economic analysis of adaptation	1.87	2.88
Skill to develop climate change adaptation proposal	1.97	2.89
Overall Score	**1.97**	**2.85**

Adaptation Proposals

The team also packaged adaptation proposals for the LGU that they can then submit for funding support:

- A technology-based flood early warning system for the Sta. Cruz River Watershed in the Philippines
- Improved irrigation system for Kampong Speu, Cambodia
- Upgrading of the An Xuan tributary banks and dredging the rivers in Vietnam

These projects were found to be the most economically efficient option for the three sites based on economic analysis of several alternative projects.

Conclusion

The team members found that working together did not come easy at first, given their different background. After the adjustment period, however, they developed a better appreciation of the benefits of working in an interdisciplinary project and are now advocating that this be done in development-oriented research work. Each team produced numerous reports that they jointly own and are proud of. They have shared such reports to their local partners and have also presented them in various regional and international conferences. It is worth noting that many of the team members are now considered as experts in the area of climate change adaptation and are already serving as resource persons or consultants to similar projects in their respective country.

The experience of working with the local government was also considered rewarding and productive by the three teams. Since they are working closely with the end users of the research, the contribution of the project to local level planning is faster and better appreciated as compared to the usual 'touch and go' interaction made by researchers. The heavy workload of the LGU people and the part time engagement of the research team members who are involved in many other activities outside the research are challenges that are faced by participatory action research projects such as this. Similar projects in the future should confront these constraints in order to be even more effective in producing research that will have significant and substantive influence in policymaking at the local level.

Local stakeholders training on cost-benefit analysis in Vietnam

LIMASMARINA River Basin Council members with the Philippine project team during the consultation and project information dissemination meeting held in Sta. Cruz, Laguna on October 2013

Vietnam, Cambodia and Philippine project teams in Phnom Penh for the Final Project Workshop held last 7-9 January 2014

2.0 LEARNING & KNOWLEDGE EVENTS MANAGED AND SUPPORTED

EEPSEA organizes as well as sponsors several learning and knowledge events that are relevant to the needs of researchers, policymakers and natural resource (NR) managers. Specifically, EEPSEA provides:

a) ***regional training courses***, which focus largely on EE tools and theories and are mainly for researchers;

b) ***in-country courses/events***, which caters to the specific needs of researchers, NR managers and policymakers of the country they are held in; and

c) ***regional partnership courses/events***, which are offered jointly with other regional organizations to meet the needs of NR managers/policymakers in SEA.

Table 8 summarizes the courses and events conducted by EEPSEA during the reporting period. Each event, per type offered by EEPSEA, is described in the succeeding subsections.

Table 8. List of EEPSEA courses and events

No.	Event	Partner	Date	Venue	No. of Pax	% Female
REGIONAL TRAINING COURSES				**SUB-TOTAL**	**76**	**45**
1	Valuation and Risk-Based Cost-Benefit Analysis	-	20-30 Oct 2013	Penang, Malaysia	36	39
2	Case Study Writing	-	8-10 Mar 2014	Manila, Phils	15	47
3	Meta-analysis of Valuation Studies and Benefits Transfer	-	17-20 Mar 2014	Manila, Phils	25	48
IN-COUNTRY EVENTS				**SUB-TOTAL**	**120 (232)**	**36 (44)**
4	Economics of Ecosystems Services	DMCR	18-20 May 2013	Bangkok, Thailand	26	58
5	Priority Policies on Climate Change and Environmental Problems in the Vietnamese Mekong Delta	Can Tho University	26 Sep 2013	Can Tho, Vietnam	42	31
6	Economic Instruments for Green Economy: Southeast Asian Experiences	UNPAD	21-22 Oct 2013	Jakarta, Indonesia	42	43
7	Learning from Each Other: A National Symposium on Building Blocks for Climate-Resilient Local Communities in the Philippines	UPLB	27-28 Nov 2013	Manila, Phils	10 (122)	10 (42)
REGIONAL PARTNERSHIP EVENTS				**SUB-TOTAL**	**106 (148)**	**42 (39)**
8	Scenario Building Workshop	SUMERNET	13 May 2013	Penang, Malaysia	20	30
9	Vulnerability, Impact & Adaptation Assessment for Climate Change: Approaches, Methods and Tools	SEARCA	10-12 Jul 2013	Hanoi, Vietnam	15	27
10	Introduction to Environmental Economics	UEH, SUMERNET	19-29 Aug 2013	Ho Chi Minh City, Vietnam	32	50
11	Valuing and Accounting for the Environment in the Asia-Pacific Region: A Workshop for Senior Policy Makers and Managers	SANDEE	8-10 Oct 2013	Bangkok, Thailand	7 (49)	57 (43)
12	Economics Research on Payment for Ecosystem Services	ACB	3-7 Dec 2013	Manila, Phils	32	47
				TOTAL	**302 (456)**	**41 (42)**

NOTE: Figures in parenthesis indicate the complete number of event participants, including those not directly supported by EEPSEA but also benefited from the sessions wherein EEPSEA served as convenor/speaker.

2.1 Regional Training Courses

EEPSEA offered three regional training courses during the reporting period. Two of these events are method-focused and one was a writing course that aimed to help improve EEPSEA researchers' capacity to share the relevance of EE in decision making.

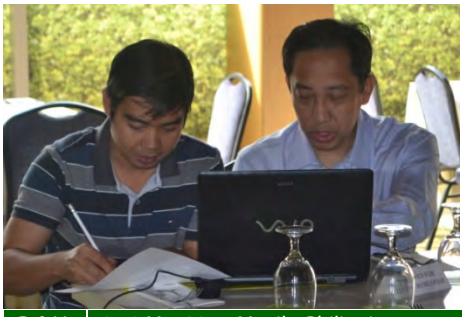
2.1.1 Valuation and Risk Cost-Benefit Analysis

A ten-day course on *Valuation and Risk Cost-Benefit Analysis* was conducted on October 2013 in Penang, Malaysia. Twenty-six participants from various universities and government agencies in Southeast Asia attended the course. The first part of the course was delivered by EEPSEA Senior Researchers It discussed market-based valuation methods focusing on travel cost method, hedonic price method, contingent valuation method, and choice modeling. The second part covered risk cost-benefit analysis (CBA) with special focus on the use of the Monte Carlo method and Cost Effectiveness Analysis and Multi-Criteria Analysis.

D & V	20-30 Oct 2013, Penang, Malaysia
PAX	26 researchers (by application) 10 EEPSEA researchers (by invitation)

2.1.2 Course on Case Study Writing

EEPSEA studies provide a wealth of knowledge and information that should be considered in environmental and natural resource management decision-making in the region. Hence, on 8-10 March 2014, EEPSEA invited 15 researchers to a writeshop to generate teaching case study materials, based on issues and findings contained in their research. The goal is to produce instructional materials that highlight the tradeoffs that need to be made when deciding how natural resources will be used as well as the complex issues surrounding decisions involving these resources. The materials are intended for courses with policymakers and natural resource managers as participants. Dr. Eduardo Araral of Lee Kuan Yew School of Public Policy, National University of Singapore facilitated the discussions and the preparation of the case study instructional materials.



D & V	8-10 Mar 2014, Manila, Philippines
PAX	15 EEPSEA researchers (by invitation)

2.1.3 Course on Valuation, Meta-analysis and Value Transfer for Ecosystem Services from Protected Areas

EEPSEA provides research grants to carry out primary studies to generate environmental values and/or evaluate institutional and policy options for improved environment and natural resources management. There are situations, however, wherein policymakers will ask researchers to generate environmental values in a short period of time—based on information provided by studies done elsewhere. How can these values be transferred or used in the area of interest? What value adjustments must be done to ensure a better fit to local situations? What steps must be carried out to ensure that the values are interpreted correctly by the end users? These questions were answered in the four-day course offered in Manila on 17-20 March 2014. The course was facilitated by Dr. Luke Brander, an environmental economist who has carried out meta-analysis and value transfer for select ecosystem values in the region.

D & V	17-20 Mar 2014, Manila, Philippines
PAX	25 researchers (by invitation)

2.2 In-Country Events

EEPSEA sponsored four in-country events during the reporting period. Two of these events provided a venue for EEPSEA researchers in the country to present the findings of their EEPSEA-sponsored research to policymakers as well as to engage these research end-users in a dialogue on how to widen the dissemination of their findings so as to better inform policy and decision making.

2.2.1 Economics of Ecosystems Services

In August 2011, the Department of Marine and Coastal Resources (DMCR) of Thailand invited EEPSEA to host a panel where selected studies on marine ecosystem were presented. As a follow up collaboration, DMCR requested EEPSEA to offer a training-workshop on the *Economics of Ecosystem Services* and this took place on 18-20 May 2013 in Bangkok, Thailand. Twenty-six (26) participants from DMCR and the Mekong River Commission (MRC) attended the course. Dr. Wiktor Adamowicz of the University of Alberta and EEPSEA Senior Economist Dr. Orapan Nabangchang served as the resource persons of the course. Mrs. Kunlayanee Pornpinatepong of Prince of Songkhla University also presented her EEPSEA-funded research study entitled "Estimating Economic Values of Songkhla Lake Ecosystem" as a case example of how economic valuation can be used to estimate the value of ecosystem services.

D & V	18-20 May 2013, Bangkok, Thailand
PAX	26 DMCR and MRC representatives

2.2.2 Priority Policies on Climate Change and Environmental Problems in the Vietnamese Mekong Delta

A policy dialogue on *Priority Policies on Climate Change and Environmental Problems in the Vietnamese Mekong Delta* was held on 26 September 2013 in Can Tho University, Vietnam. The dialogue was organized by the university's School of Economics and Business with support from EEPSEA. Forty-two participants attended the event composed of: provincial-level policymakers from Can Tho, Soc Trang, An Giang, Vinh Long and Tra Vinh; EEPSEA researchers from Can Tho University, An Giang University, University of Economics Ho Chi Minh City, and Ha Noi National University; and staff of projects related to climate change and environment in the Mekong Delta such as the Mekong Development Research Institute.

D & V	26 Sep 2013, Can Tho, Vietnam
PAX	42 policymakers, EEPSEA researchers

The dialogue had the policymakers presenting the challenges they faced in managing natural resources and the environment of Mekong Delta. Four EEPSEA researchers in turn demonstrated how research could be used to analyze Climate Change, b) Aquaculture and Pollution, c) Industrial Pollution, and d) Protected Area Management.

A news story featuring the policy dialogue was aired on 26 September on the Cantho City-based Central Television. A journal paper on the researches presented during the dialogue was requested by the Journal of Sciences and Technologies, which is owned by Ministry Of Sciences and Technologies. The paper was submitted to the Journal last November 2013.

2.2.3 Economic Instruments for Green Economy: Southeast Asian Experiences

Indonesia solicited EEPSEA's support to learn from its neighboring countries about their experiences in policy implementation towards Green Economy. Speakers from Singapore, Thailand, and Vietnam were invited to present their experiences to 42 participants from various government agencies in Indonesia (i.e., Ministry of National Development Planning, Ministry of Economic Affairs, Ministry of Energy and Mineral Resources, Ministry of Finance) on 21 October 2013 in Jakarta. The workshop was organized by Padjadjaran University's (UNPAD) Center for Economics and Development Studies with support from EEPSEA.

D & V	21-22 Oct 2013, Jakarta, Indonesia
PAX	42 government representatives

Prof. Armida Alisjahbana, State Minister of National Development Planning, served as the keynote speaker of the event. Other forum speakers included: Kasetsart University's Dr. Montchai Pinitjitsamut who spoke on economic instruments to support alternative energy in Thailand; Mr. Ruddy Gobel of the National Team for the Acceleration of Poverty Reduction in Indonesia who spoke on the compensation scheme to support Indonesian fuel pricing reform; Ms. Mai Huynh Thi of Vietnam's Biodiversity Conservation Agency who spoke on payment for ecosystems services in Vietnam; and National University of Singapore's Prof. Mark Goh who spoke on electronic road pricing.

Ms. Nartalia Derodofa of the ASEAN Secretariat and EEPSEA Senior Economist Dr. Arief Anshory Yusuf closed the workshop with a discussion on the way forward. Ms. Derodofa discussed the various ASEAN initiatives on greening the economy such as the annual ASEAN Plus Three Leadership Programme on Sustainable Production and Consumption and the ASEAN-China Cooperation on Green Economy and Development. Dr. Yusuf, on the other hand, highlighted EEPSEA's role in strengthening local researchers' capacity in the conduct of EE research to provide sound policy recommendations, especially towards achieving a greener economy.

2.2.4 Learning from Each Other: A National Symposium on Building Blocks for Climate-Resilient Local Communities in the Philippines

EEPSEA co-sponsored a national symposium on the *Building Blocks towards Climate Resilient Local Communities* on 27-28 November 2013 in Manila, Philippines. It was attended by 122 participants, two-thirds of which are officials or representatives of local government units (LGUs) from all over the Philippines. Other participants included representatives from academic and research institutions and civil society. EEPSEA supported the participation of 10 LGU participants from five in Luzon LGUs, three Visayas LGUs and two Mindanao LGUs. The Program also sponsored the panel on "Considerations in the Implementation of Climate Change Adaptation", wherein three EEPSEA studies in the Philippines was presented. The symposium was organized by the University of the Philippines Los Baños with support from EEPSEA, GIZ, ADB, SEARCA, and the Philippine Climate Change Commission.

D & V	27-28 Nov 2013, Manila, Philippines
PAX	122 LGU representatives & researchers

2.3 Regional Partnership Events

EEPSEA co-sponsored five events in partnership with other regional organizations during the reporting period.

2.3.1 Scenario Building Workshop

A workshop on *Scenario Building* was offered by EEPSEA and Sustainable Mekong Research Network (SUMERNET) on 13 May 2013 in Penang, Malaysia. The workshop was scheduled a day before the EEPSEA Annual Conference and was attended by 20 EEPSEA researchers who are currently or will potentially be implementing research projects that will involve the economic analysis of climate change adaptations. Through SUMERNET, Dr. Eric Kemp-Benedict, Asia Centre Director of the Stockholm Environment Institute, served as resource speaker.

D & V	13 May 2013, Penang, Malaysia
PAX	20 EEPSEA researchers (by invitation)

The workshop used the EEPSEA study by Dr. Vo Thanh Danh of Can Tho University on *"Adaptation to Sea Level Rise in the Vietnamese Mekong River Delta: Should a Sea Dike be Built?"* as the sample case for the workshop activity. Participants were asked to list scenario possibilities and a scenario framework based on the information provided by the study.

2.3.2 Vulnerability, Impact and Adaptation Assessment for Climate Change: Approaches, Methods and Tools

EEPSEA sponsored three sessions during the workshop on *Vulnerability, Impact and Adaptation Assessment for Climate Change: Approaches, Methods and Tools* on 10-12 July 2013 in Hanoi, Vietnam. Dr. Herminia A. Francisco spoke on the *"Economics of Climate Change"* by explaining the economic perspective in dealing with climate change. She emphasized the role economists can play in estimating damage and translating the impacts of changes in climate on various economic activities; the usefulness of economics in deciding on a course of action or in evaluating adaptation options by showing the benefits and costs of these actions; and the various ways by which uncertainty can be dealt with in the economic analysis of climate change issues.

D & V	10-12 Jul 2013, Hanoi, Vietnam
PAX	13 technical officers, 2 focal Climate Change Office execs

The second EEPSEA-sponsored session was by Dr. Bui Dung The of Hue University. Dr. The spoke on *"Climate Change Vulnerability and Economic Analysis of Adaptation"*, which drew from the findings of an EEPSEA-funded cross-country research project in Cambodia, Philippines and Vietnam. Lastly, Mr. Le Van Thu of the People's Committee of Thua Thien in Hue Province spoke on *"Planning, Implementation and Evaluation of Climate Change Adaptation"* by providing the local government perspective.

The workshop was attended by 13 technical officers and two executives from focal Climate Change Offices, which belong to the Southeast Asian Network of Climate Change Offices (SEAN-CC) of UNEP, from seven SEA countries (i.e., Cambodia, Indonesia, Lao PDR, Malaysia, Philippines, Thailand and Vietnam). The workshop was organized for SEAN-CC by the Southeast Asian Regional Center for Graduate Study and Research in Agriculture (SEARCA), an EEPSEA regional partner. It provided an overview of the approaches, methods, and tools in vulnerability, impact and adaptation assessment as inputs to planning of adaptations to climate change.

2.3.3 Introduction to Environmental Economics

EEPSEA conducted an introductory course environmental economics on 19-29 August 2013 in Ho Chi Minh City, Vietnam. The course was designed to enable participants to understand the linkages between economic activities and the environment. It discussed theories and tools that can be used to understand and measure this relationship so that appropriate decisions on how to best manage natural resources can be identified.

D & V	19-29 Aug 2013, Ho Chi Minh, Vietnam
PAX	32 researchers (by application)

The course was divided into four modules, the last three of which focusing on selected research topics related to environmental problems in Southeast Asia. The first module provided an overview of basic economics and was delivered by Dr. Myriam Hadness of the Vietnamese German University in Ho Chi Minh. The second module, delivered by EEPSEA Senior Economists Dr. Pham Khanh Nam and Dr. Orapan Nabangchang, focused on various valuation tools that can be used to value environmental services. Dr. Piyaluk Buddhawongsa of Chiang Mai University delivered the third module on Economics and Policy Analysis. Dr. Bui Dung The of Hue University closed the course with a module on climate change economics.

The course was tailored for research purposes with research-oriented topics. Of the more than 100 applicants of the course, 32 researchers were chosen to participate, most of which coming from various universities in Southeast Asia. The course was conducted in partnership with the Sustainable Mekong Research Network (SUMERNET) and the University of Economics Ho Chi Minh City (UEH).

2.3.4 Valuing and Accounting for Natural Capital: A Workshop for Senior Policymakers and Analysts in the Asia-Pacific Region

EEPSEA participated in a workshop on *Accounting for Natural Capital* on 8-10 October 2013 in Bangkok, Thailand. Organized by the South Asian Network for Development and Environmental Economics (SANDEE), the workshop brought together senior policy practitioners and statisticians within governments of the Asia-Pacific region, along with experts on environmental and national income accounting and ecology, to discuss approaches to augment existing macroeconomic aggregates. It used the two starting points of valuation and accounting to initiate a dialogue with statisticians, economists and ecologists on how green accounting can be implemented in national contexts. The workshop is also seen as a building block towards implementing the System of Environmental Economic Accounting (SEEA) Central Framework.

EEPSEA Director Dr. Hermina A. Francisco was invited to contribute to the discussion on *"Experimental Ecosystem Accounting and Valuation"*, a session which introduced concepts in economic valuation, reviewed valuation tools, and discussed the challenges and opportunities of valuation in the context of natural capital accounting. The session also focused on formulating the experimental ecosystem accounting research agenda.

The workshop was attended by 49 participants from 13 countries (i.e., Bangladesh, Bhutan, China, India, Indonesia, Lao PDR, Malaysia, Myanmar, Pakistan, Philippines, Sri Lanka, Thailand, and Vietnam). EEPSEA sponsored the participation of the following environmental economists in the workshop:

- Ms. Maria Ratnaningsih of the Global Green Growth Institute Indonesia Program;
- Dr. Gem Castillo of the Resource and Environmental Economics Foundation of the Philippines, Inc. ;
- Dr. Awang Noor Abd. Ghani of the Faculty of Forestry, Universiti Putra Malaysia;
- Dr. Do Nam Thang of the Vietnam's Institute of Science for Environmental Management;
- Dr. Kaysone Chansina of Lao PDR's National Academy of Politics and Public Administration;
- Mr. Zanxin Wang of the School of Development Studies in China's Yunnan University; and
- EEPSEA Senior Economist Dr. Orapan Nabangchang.

2.3.5 Economics Research on Payment for Ecosystem Services

D & V	3-7 Dec 2013, Manila, Phils
PAX	29 researchers (by application), 3 heritage park mgrs

A five-day course on *Economics Research on Payment for Ecosystem Services* was conducted on December 2013 in Manila, Philippines with the ASEAN Centre for Biodiversity (ACB) with 27 course participants. The course was divided into three modules. The first focused on providing the participants with an understanding of the link between ecosystem functions and services so that they may better appreciate the science of PES assessment and design. Dr. Rex Victor O. Cruz, Chancellor of the University of the Philippines Los Baños, Dr. Porfirio M. Aliño of UP Marine Sciences Institute, and ACB's Dr. Filiberto A. Pollisco presented on this from the forest ecosystem, coastal ecosystem and biodiversity point of view, respectively.

The second module focused on the economics of PES. EEPSEA Director Herminia Francisco explained the economic basis of PES and the valuation theory in estimating the benefits and costs involved in PES design. How to measure the benefits and costs in PES for watersheds, biodiversity and landscape and scenic amenities, and carbon sequestration were then discussed by UPLB's Dr. Margaret Calderon, EEPSEA Senior Economist Dr. Orapan Nabangchang, and University of Putra Malaysia's Dr. Awang Noor Ghani, respectively. The module was closed by Dr. Grace Villamor of the University of Bonn and Dr. Beria Leimona of the World Agroforestry Centre who provided insights on the PES buyers' perspective and the importance of stakeholder analysis during PES design. The course ended with a discussion on PES implementation led by ACB Executive Director Roberto Oliva, who shared some legal issues related to PES.

3.0 CONFERENCES & WORKSHOPS SUPPORTED AND ATTENDED

EEPSEA organized a conference on *"Economics of Climate Change"* this fiscal year, to which it supported the participation of EEPSEA and non-EEPSEA researchers alike. In addition to this, as part of its capacity building mandate, EEPSEA supports the attendance of its researchers to non-EEPSEA conferences and workshops that allow them to present and disseminate the findings of their EEPSEA-funded research to the wider scientific community as well as to participate in discussions on issues pertaining to environmental and resource economics. In total, for the reporting period, EEPSEA supported the attendance of 81 researchers in three conferences (Table 9).

The EEPSEA director and her Senior Economists also attend such events to contribute in discussions on emerging issues in environmental and resource economics. During the reporting period, three such conferences/workshops were attended by EEPSEA staff: a) 4th ASEAN Heritage Parks Conference; b) New Opportunities for Wealth Management: A Public-Private Dialogue on Green Growth in the Greater Mekong Subregion; and c) 7th Annual Conference of the Environment for Development Initiative.

The details of the conferences/workshops attended by EEPSEA staff and EEPSEA-supported researchers are in the following subsections.

Table 9. List of conferences wherein EEPSEA supported the participation of researchers

No.	Conference	Date	Venue	No. of Researchers Supported	% Female
1	Singapore Economic Review Conference 2013	5-8 Aug 2013	Singapore	2	0
2	4th Congress of the East Asian Association of Environmental and Resource Economics	12-14 Feb 2014	Busan, Korea	3	67
3	Conference on Economics of Climate Change	27-28 Feb 2013	Siem Reap, Cambodia	78	44
			Total	83	37

3.1 Conferences attended by EEPSEA-supported researchers

3.1.1 Singapore Economic Review Conference 2013

Two EEPSEA papers from EEPSEA-funded research projects were presented at the *Singapore Economic Review Conference 2013*:

- *"Does Piped Water Increase Happiness and Can Happiness Evaluation Be Used to Estimate Monetary Values?"* by Dr. Phumsith Mahasuweerachai of Khon Kaen University, Thailand
- *"Willingness to Pay for Cleaner Public Transportation in Metro Manila"* by Dr. Jamil Paolo Francisco of Ateneo de Manila University, Philippines

Attendance of EEPSEA researchers in this biennial conference is highly recommend by those supported as it is a good opportunity to present their research on environmental topics to a broader audience as well as to gain insights from researchers outside the field and network with an international pool of researchers. It provides a good opportunity to pick up new ideas for future research in the latest frontiers of economics.

3.1.2 4th Congress of the East Asian Association of Environmental and Resource Economics

Three EEPSEA papers from EEPSEA-funded research projects were presented at the 4th EAAERE Congress on 12-14 February 2014 in Busan, Korea:

- *"Within-subject decisions in multiple games and the actual cooperative behavior: Evidence from lab-in-the-field experiment in Thailand"* by Dr. Rawadee Jarungrattanapong of the Thailand Development Research Institute
- *"Thailand's 2011 Flood: Household Damages, Compensation and Natural Catastrophe Insurance"* by Dr. Orapan Nabangchang
- *"Government aid crowding out farmer's adaptation: Does it exist?"* by Dr. Phumsith Mahasuweerachai of Khon Kaen University, Thailand

3.1.3 Conference on the Economics of Climate Change in Southeast Asia

D & V	27-28 Feb 2014, Siem Reap, Cambodia
PAX	76 researchers from Australia, Cambodia, Canada, China, Finland, Indonesia, Lao PDR, Malaysia, Philippines, Taiwan, Thailand, USA, and Vietnam

The *Conference on the Economics of Climate Change in Southeast Asia* was held on 27-28 February 2014 in Siem Reap, Cambodia. The event was mainly organized by EEPSEA in collaboration with the East Asian Association of Environmental and Resource Economics (EAAERE). It served as a venue for those doing research on the economics of climate change (CC) in the region to hear about what others are doing and to share what they have done. It was attended by 78 participants from 13 countries.

Fifty-seven (57) papers were presented on the following topics and methodological focus: CC impacts and adaptation gap analysis (29%); cost-benefit analysis of GHG reduction projects (17%); CC impacts and economics of adaptation in coastal areas (14%); economic analysis of adaptation projects (12%); flooding (10%); modeling impacts of carbon tax (9%); downscaling vulnerability mapping and adaptation planning (5%); and institutional and policy analysis (3%) (Figures 1 & 2). Twenty-four percent (24%) of the conference papers are EEPSEA studies. The percent distribution of the country focus of the papers in the conferences is as follows: 21% Vietnam, 19% Philippines, 17% Indonesia, 16% regional focus, 10% Malaysia, 9% Thailand, 7% China and 2% Cambodia.

The conference's four plenary presentations were given by notable experts in the field of CC economics. Dr. Benoit Laplante drew from his work with the World Bank and the Asian Development Bank on various projects aiming to enhance knowledge on the economics of adaptation to CC and talked about the knowledge gaps and research avenues on this area for SEA. He emphasized that considering that SEA will be badly affected by CC then current emphasis on adaptation as opposed to mitigation by multilateral development banks and SEA governments is justified. The choice of which adaptation projects should be emphasized will benefit from CBA that considers uncertainty and analysis of tipping points. He emphasized the need for research on CC impacts on the energy demand, health, and migration/environmental refugees.

Dr. Michael Hanemann, a leading authority on the methodology of non-market valuation using revealed and stated preference techniques, talked on the limitations in the conventional analysis of CC damages. He explained that the traditional approach in estimating impacts and damages of CC based on future CC scenarios is deficient. This is because the use of a uniform 2°C increase in temperature does not consider spatial variation of warming and its corresponding CC impacts. It excludes other impacts resulting from extreme climate events, acidification of oceans, loss of glaciers, and others – all of which resulted in underestimation of CC damages. As a result, there is underinvestment in mitigation and adaptation projects or policies. Research on the measurement of CC impacts at the regional or national level, or even lower, should be encouraged. Estimating damages from extreme events in this region, where we have plenty of experience, should be carried out. Such research should pay attention to losses – not only on physical capital but also on natural and human capital over the period they are affected.

Dr. Ian Coxhead, a specialist in the economies of East and Southeast Asia at the University of Wisconsin-Madison, talked on "The Incidence of Energy Policy Reform: Fossil Fuel Subsidies in Southeast Asia". He pointed out that the removal of fuel subsidies will eliminate perverse incentives that drive up carbon emissions, create price signal for investment on low carbon emission and will free up public money that can be used to support other development programs. He emphasized that more evidence is needed to present these facts to SEA governments who provide such subsidies.

Dr. Kevin Parton, of Charles Stuart University in Australia, drew from his work on the economics of climate change policy and talked on "Climate Change Adaptation: Great Planning, Little Action". There is a need to find ways to incorporate ambiguity in economics of CC research. Research to measure ambiguity aversion in SEA will be an interesting area of study. Research has shown that incorporating aversion to ambiguity in measuring impact of CC policy significantly affects the outcome of the analysis.

Most importantly, the exchange during the conference helped determine important research areas that may not have been given as much attention in the field of economics of climate change. Among those identified by Dr. Francisco during the conference closing is the need for:

- Crop-specific adaptation and impact studies particularly those that consider future climate scenarios;
- More research on renewable energy sources to look into comparison of marginal cost functions across types of renewable energy, measuring co-benefits of biogas and biomass power, and incorporating energy security concerns and technology transfer across sources;
- Studies on sea level rise impacts that consider alternative use of inundated areas; and
- Research on bio-ecological impacts of climate change on fisheries and aquaculture, which translate the impacts on livelihoods of fishers and aquaculture farmers (particularly small-scale and vulnerable groups).

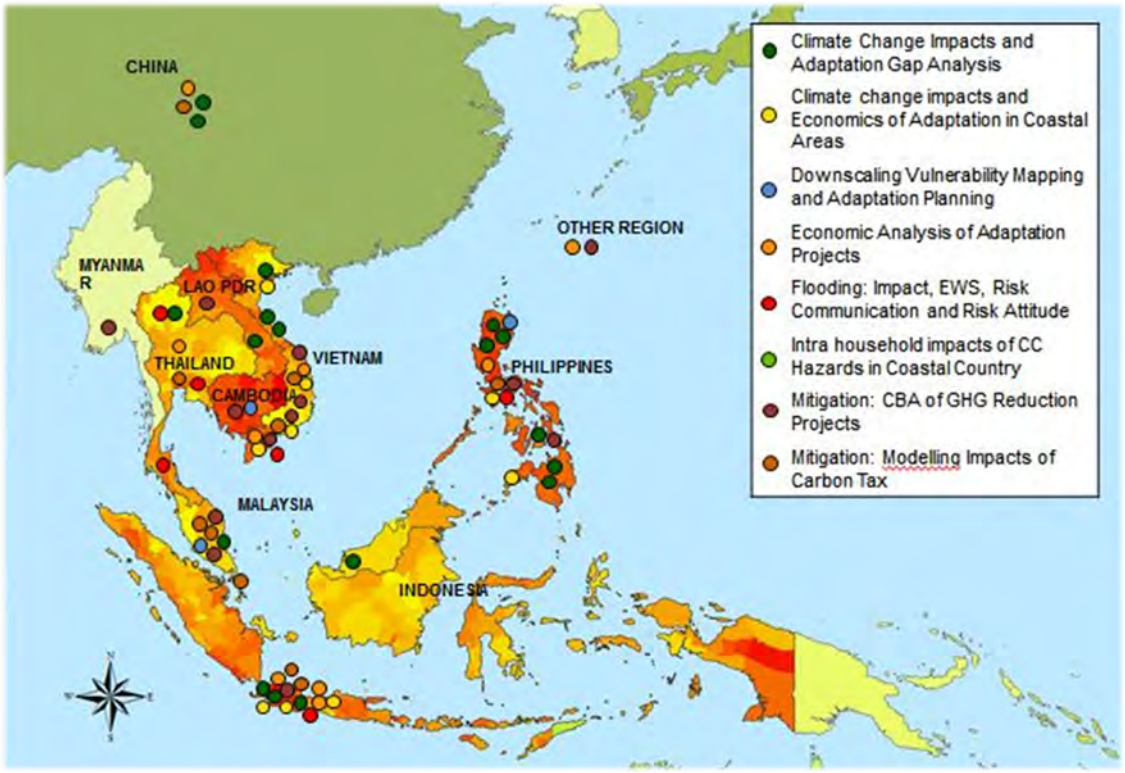


Figure 1. Distribution of conference papers by country of study

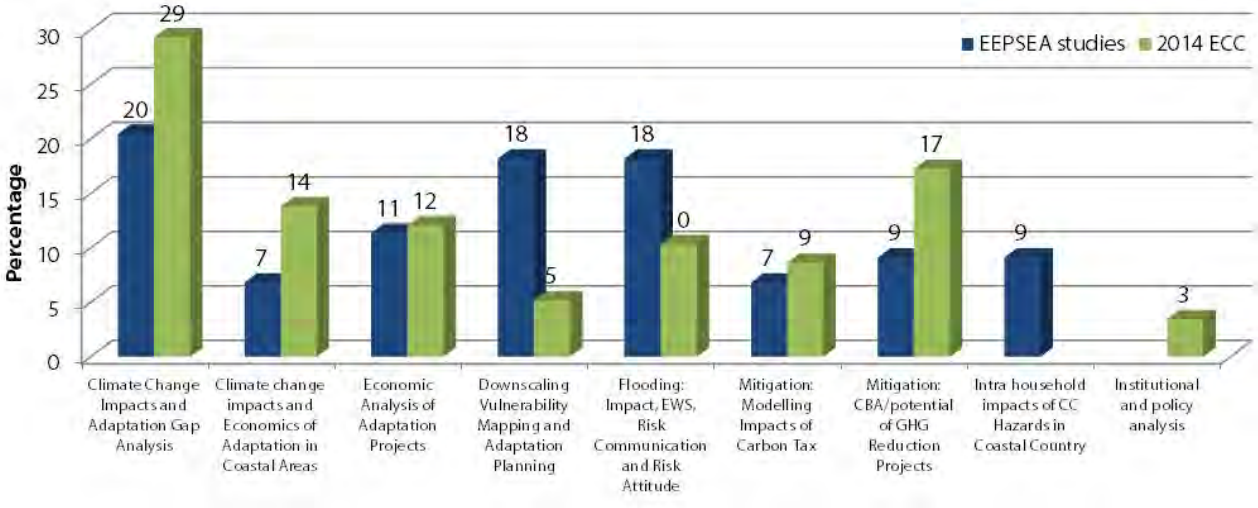


Figure 2. Distribution of conference papers by theme

3.2 Conferences attended by EEPSEA staff

3.2.1 4th ASEAN Heritage Parks Conference

EEPSEA Director Dr. Herminia A. Francisco was invited to serve as Chairperson of the thematic session *"Integrating Biodiversity Values"* during the *4th ASEAN Heritage Parks Conference* on 14 October 2013 in Tagaytay, Philippines. With the theme of *"Integrating Global Challenges for Sustainable Development and Effective Management of ASEAN Heritage Parks"*, the conference aimed to develop a strategy and concept to improve the management of terrestrial and aquatic ASEAN Heritage Park (AHP) sites and other protected areas, taking into consideration the issues of climate change, biodiversity values, sustainable financing through development of ecotourism and engagement of private sector, and involvement of indigenous and local communities (including traditional knowledge and access and benefit sharing).

D & V	14 Oct 203, Tagaytay, Phils
EEPSEA ATTENDANCE	Dr. Herminia Francisco

During the said event, EEPSEA signed a Letter of Cooperation with the ASEAN Centre for Biodiversity (ACB), formalizing the partnership between the two regional organizations which started with an initial meeting last November 2012 on EEPSEA's possible role in the ASEAN extension of *The Economics of Ecosystems and Biodiversity* (TEEB) initiative and Dr. Francisco's participation in the ACB-GIZ Biodiversity and Climate Change Project (BCCP) Planning Workshop last 29 June 2013.

3.2.2 New Opportunities for Wealth Management: A Public-Private Dialogue on Green Growth in the Greater Mekong Subregion

EEPSEA Director Dr. Herminia A. Francisco and Dr. Orapan Nabangchang were invited to share the work being done by EEPSEA in the field of ecosystem valuation during a public-private dialogue on green growth in the Greater Mekong Subregion (GMS) on 17-19 June 2013 in Bangkok, Thailand. EEPSEA experience in this field was deemed integral during the second part of the dialogue, which detailed the technical tools and leading approaches available to support decision making in support of green growth.

D & V	17-19 Jun 2013, Bangkok, Thailand
EEPSEA ATTENDANCE	Dr. Herminia Francisco Dr. Orapan Nabangchang

Jointly organized by the Asia Development Bank (ADB), the Food and Agriculture Organization (FAO), the Global Mechanism of the United Nations Convention to Combat Desertification (UNCCD),the Poverty Environment Initiative (PEI) of the United Nations Development Programme (UNDP) and the United Nations Environment Programme (UNEP), and the World Wildlife Fund (WWF), the dialogue brought together key public and private stakeholders in the GMS, along with regional and international experts, to discuss benefits from emerging opportunities in green economies, and in turn catalyze a dialogue on enabling conditions for sustainable natural wealth management.

3.2.3 7th Annual Conference of the Environment for Development Initiative

D & V	24-27 Oct 203, Cape Town, South Africa
EEPSEA ATTENDANCE	Dr. Pham Khanh Nam

EEPSEA Senior Economist Dr. Pham Khanh Nam attended the *7th Annual Conference of the Environment for Development Initiative* (EfD) on 24-27 October 2013 in Cape Town, South Africa. He presented the EEPSEA research paper on "*Risk Preferences and Development Revisited: A Field Experiment in Vietnam*" with Dr. Ferdinand Vieder during one of the conference parallel sessions. Presented during the conference come from within the EfD network of collaborating institutions and research topics presented were a mix of development and environment issues such as land use, energy, technology adoption and intervention in agriculture, organic agriculture and bio-energy, agroforestry, forestry, parks and wild life, fisheries, ecosystem services and water, environmental policy instruments, transport and health, climate change, REDD, and economic experiments.

Dr. Nam also attended the Beijer Institute meeting to brainstorm on an interdisciplinary research program on ecology and economics in developing countries. Participants in the said meeting included representatives from EEU, Gothenburg; EfD; Duke University; World Bank; SANDEE; Environmental Policy Research Unit, University of Cape Town; CATIE/EfD Central America; Environmental Economics Program in China/EfD China; EfD Chile; IDRC; Smithsonian Tropical Research Institute; Stockholm Resilience Center; SAPECS; Swedish Environmental Protection Agency; and Beijer Institute. The meeting participants identified the criteria and themes for the new research program.

4.0 EEPSEA ANNUAL CONFERENCE

EEPSEA's annual conference is the focal point of the Program. It brings together researchers, resource persons, eminent speakers, and the Sponsors Group and the Advisory Committee. The four-day event includes individual consultations between researchers and their advisors; concurrent working group sessions during which research reports and proposals are presented for further comment; and plenary sessions with talks by international experts. The conference is held yearly in May.

EEPSEA's 2013 Annual Conference was held in Penang, Malaysia on 14-16 May 2013. It was attended by 59 participants from 11 countries. The four plenary talks are summarized below.

PLENARY TALK 1: A Random Walk along the Edge of a Cliff: Risk and Uncertainty When the Normal Distribution Isn't Enough

Dr. Eric Kemp-Benedict, Asia Centre Director of the Stockholm Environment Institute, likened the uncertainty of climate change projections to a random walk along the edge of a cliff – we know it will be random (with occasional jumps), we just don't how random. He provided various evidences on how uncertain climate change projections are and concluded that we should interpret probability distributions of climate change as fat-tailed (i.e., probabilities of big changes could be higher than normal). He explained that the climate problem is complicated since *"uncertainties compound other uncertainties"* and, therefore, *"we cannot rule out truly catastrophic outcomes in the distant future"*.

To deal with the large uncertainty, Dr. Kemp-Benedict suggested that climate policy should build scenarios to make robust decisions, not optimal ones. In particular, he thought that we need to utilize our understanding of complex systems to build multi-purpose systems with increasing disaster resilience capacity. For example, ecosystem restoration can not only lessen impacts from storms and floods but can also provide employment and enjoyment. Moreover, ecosystem restoration also improves the disaster resilience of the social-ecological-economic system.

PLENARY TALK 2: Ecosystem Services, Economic Growth and Impact Evaluation

Green growth is gaining traction as a central topic of discussion in both the academic and policy arenas. The message of the green growth paradigm is that economic growth is compatible with environmental conservation. However, during his plenary talk, Dr. Jeffrey Vincent of Duke University warned that for conservation to be compatible with economic growth in the short term, some necessary conditions must be met.

First, a conservation program must either restore a degraded ecosystem or reduce the loss of an intact one. Investment in protected areas and payment for ecosystem services are good examples of conservation initiatives that can reduce ecosystem loss.

Second, positive ecosystem change must increase the supply of ecosystem services. However, empirical evidences on the correlation between conservation and supply of ecosystem services are rather scarce. For example, despite common arguments that forest conservation can increase the supply of flood protection services, more scientific studies that show this correlation are needed. Many of these studies, as Dr. Vincent argued, suffer from various methodological issues like inadequate controls for confounding factors, sample selection, and omitted variable bias. Moreover, for conservation to be compatible with economic growth, increase in the supply of ecosystem services needs to occur within a short period of time. Otherwise, its value will be easily overshadowed by other development agenda. Finally, ecosystem services must be economically viable.

Dr. Vincent suggests not only to promote more research on the relationship between conservation and economic growth or welfare in general, but also to increase the rigor of those analysis. One way to improve the method of looking at how much impact a conservation program made is by borrowing methodology from the impact evaluation literature. Impact evaluation is a reliable tool to analyze the impact of a conservation program by identifying its causal effect.

In his concluding remarks, Dr. Vincent is rather pessimistic about the promise of ecosystem services as a source of short-term growth stimulus. However, he stressed that it does not imply that conservation programs are not economically justified as it raises long-run social welfare.

PLENARY TALK 3: Valuation, Ecosystem Service Markets and Policy: Observations and Opportunities

Dr. Wiktor Adamowicz of the University of Alberta observed that while there was increased emphasis on ecosystems framework and valuation, contribution to decision making has not always been clear as results are not always linked to policy issues. Likewise, while there is considerable research into markets for ecosystems services, there have been few on market-based instruments.

Referring to various studies, Dr. Adamowicz pointed out the types of benefits generated by different ecosystems services, emphasizing the need to understand biophysical changes and how these are linked to economic changes as well as the suitable valuation approach to use. He cited David Panell's analytical framework, which can assist in better understanding the trade-offs between public and private benefits as well as the interventions that are beneficial to both parties' interests. He shared the case of

Southwest Saskatchewan Milk River watershed in Canada to demonstrate how the Ecosystems Framework can be used for land use planning.

Dr. Adamowicz concluded that ecosystem service valuation could play an important role in addressing market failures, designing economic instruments, and providing information on return on investments for ecosystems service programs. As such, it should be given more emphasis in policy design, the analysis of costs, land use behavior, monitoring and evaluation, and policy responses. However, to do so, some challenges need to be overcome such as: credible information on public benefits from ecosystems services values; credible information on costs; and political behavior of policy makers, which leads to the need to recognize that striving to address market failures may be problematic if the 'political equilibrium' is affected.

PLENARY TALK 4: The Art and Practice of Creating Natural Capital Accounts

Dr. Nancy Olewiler from Simon Fraser University delivered a talk on creating natural accounts, informed by her interaction with the team from the Environmental Statistical Accounts division of Statistics Canada. She started by emphasizing the important role that natural capital provides in supporting the economy's wealth, which in turn is vital to the people's well-being. Sustaining this well-being requires that we focus not only on the economic growth but also on the productive base or assets that supports this growth. There are major efforts by the UN Statistics Agency to measure the change in the natural capital base, called the System of Environmental-Economic Accounting (SEEA), and to integrate this in standard national accounts. Developed countries like Canada and Australia are advanced in developing their own environmental statistics accounts. Most recently, the World Bank, through its Wealth Accounting and the Valuation of Ecosystem Services (WAVES) initiative, is supporting several countries to start developing their Natural Capital Accounts while also engaging experts to develop guidelines in incorporating ecosystem services into such an account.

Dr. Olewiler stressed that since national statistics cannot cover all statistics, but has a focus on a subset that could inform progress on societal goals, environmental statistics could also focus on key statistics that could inform governments on the status of its natural resource base. This could include monitoring ecosystem diversity of the country's protected areas and accounting of key sectors like forest resources, minerals, and fisheries. The latter is already being done in some countries. The key point is to develop a framework that will give the status of the country's natural resource wealth, natural resource reserve, and some indicators of ecosystem quality. She stressed that EEPSEA researches should be prepared as they have an important role to play in this renewed efforts to develop natural capital and environment accounts.

5.0 PUBLICATIONS

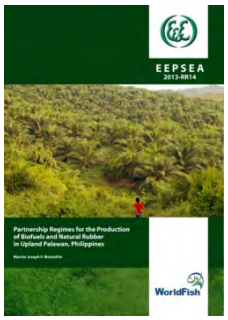
EEPSEA generates several types of publications: Research Reports, Policy Briefs, Climate Change Briefs, books and other special publications. All are available electronically for web download in the EEPSEA website (www.eepsea.org). Some have versions translated in the local dialect to facilitate research results dissemination to local policymakers and natural resource managers. Most have a hard copy version, which we send biannually to selected university libraries all over Southeast Asia.

5.1 Research Reports

This fiscal year, EEPSEA published 15 research reports. A summary of each is provided below and in succeeding pages.

2013-RR14

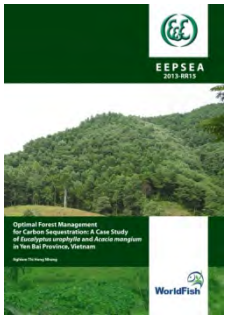
Partnership Regimes for the Production of Biofuels and Natural Rubber in Upland Palawan, Philippines
by Marvin Joseph F. Montefrio (October 2013)



The study aimed to understand how the economic and environmental perceptions of upland farmers in the context of biofuels and natural rubber production regimes in Palawan explain their behavioral intents, especially regarding intensification of production and cooperation in such partnership regimes. Research findings reveal that upland farmers tend to equate high economic benefits with the wage labor opportunities and maintenance support offerred by these production partnership regimes. Using logistic regression models, the following economic and environmental variables are found to be significantly associated with upland farmers' behavioral intents to intensify crop production and cooperate with new partnership regimes: socio-economic satisfaction; preference for high revenues; evaluative beliefs on soil productivity and remaining forest; place satisfaction concerning forest; past experiences; age and education.

2013-RR15

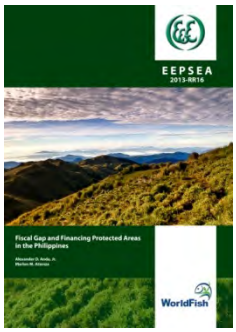
Optimal Forest Management for Carbon Sequestration: A Case Study of Eucalyptus urophylla and Acacia mangium in Yen Bai Province, Vietnam *by Nghiem Thi Hong Nhung (October 2013)*



The study aimed to find out optimal management strategies for productive planted forests when carbon benefits are considered. Results reveal, compared to the actual rotation age of five year, the optimal rotation age of *E. urophylla* and *A. mangium* (when only timber has market value) is 10 and 13 year for households and 9 and 13 years for forest enterprises, respectively, at a 5% discount rate. The NPV is VND 16 million per hectare for households of both *E. urophylla* and *A. mangium.* For forest enterprises, the NPV is VND 57 million and VND 62 million per hectare for *E. urophylla* and *A. mangium*, respectively. Adding carbon values make the optimal rotation age slightly shorter and the NPV higher.

2013-RR16

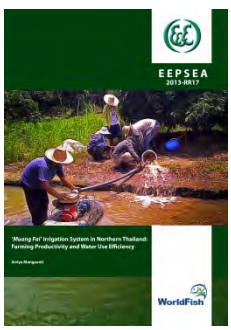
Fiscal Gap and Financing Protected Areas in the Philippines
by Alexander D. Anda, Jr. and Marlon M. Atienza (October 2013)



This study is part of the cross-country analysis of the fiscal and resource gap of protected areas (PA) in the South East Asian region. It focused on the protected areas in the Philippines that are under the jurisdiction of the Department of Environment and Natural Resources (DENR). Results show that if national benchmarks as of 2009 are used, it is estimated that there is a shortfall of 1,478 staff and USD 8.4 million in operating expense in the 79 PAs covered (1,509,557 hectares). It is recommended that the DENR pursue the enactment of mandates or enabling laws for each PA to include the organization and staffing pattern that will be used for the PA as well as allow them to contract out PA management or to co-manage the area with interested local government units as well as to upgrade the general entrance fee and other charges, among others.

2013-RR17

Muang Fai' Irrigation System in Northern Thailand: Farming Productivity and Water Use Efficiency
by Arriya Mungsunti (December 2013)

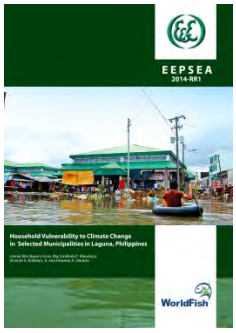


This study explored the various factors that influence farmers' participation in the *muang fai* irrigation system. It also compared this tradition with the underground pump irrigation systems. Results show that the *muang fai* system is better than underground pump irrigation in terms of water conservation and at improving the livelihood of farmers. The study therefore recommends that the Thai government fully or partially subsidize investment in the new canals to make water from the *muang fai* system more accessible.

2014-RR1

Household Vulnerability to Climate Change in Selected Municipalities in Laguna, Philippines

by Jaimie Kim Bayani Arias, Ma. Emilinda T. Mendoza, Vicente G. Ballaran, Jr., Rowena A. Dorado (January 2014)

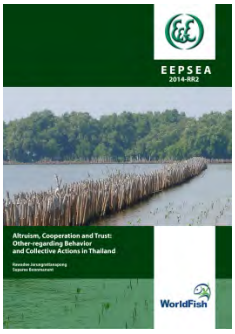


This study assessed the climate change vulnerability of households in 12 municipalities in Laguna province. The vulnerability incidence was high for those employed in the commercial and services sector, and for those with agriculture-dependent livelihoods. Female-headed households were also found to have high vulnerability incidence. In terms of frequency and proportion of households affected, results further indicate that the most significant natural hazards for the province are typhoon and floods. The most widespread impacts were damage to houses, psychological and emotional distress, and loss of income. The interventions preferred were financial, livelihood and medical assistance; relief goods provision; information dissemination; and flood mitigation infrastructure.

2014-RR2

Altruism, Cooperation and Trust: Other-regarding Behavior and Collective Actions in Thailand

by Rawadee Jarungrattapong and Suparee Boonmanunt (February 2014)

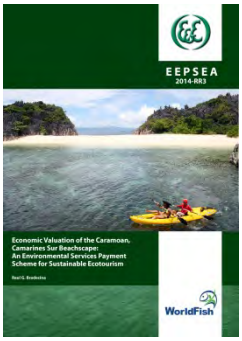


The study tried to answer how well experiment measures for other-regarding behavior could generalize real behavior or enable it to be called "the external validity". The results of the three experiments were combined as proxies of other-regarding behavior and actual collective behavior of villagers in coastal conservation activities. The Kok Kham sub-district in Samut Sakorn province served as the study site because villagers here have acted collectively to conserve the coastal area. Results of the three experiments were not significantly correlated with actual collective actions, and answers to survey questions on attitudinal trust and past behavior trust did not appear to predict participation rates for actual contribution. These results suggest that the context-free standard game as manifested in the three experiments used may not be able to generalize cooperative behavior in real life.

2014-RR3

Economic Valuation of Caramoan, Camarines Sur Beachscape: An Environmental Services Payment Scheme for Sustainable Ecotourism

by Raul G. Bradecina (February 2014)



This study determined the extent of tourists' willingness to pay (WTP) for Caramoan beachscape beauty conservation; it will input into the plans for establishing a payment for ecosystem services scheme for the sustainable development of ecotourism and coastal resource management in the area. Results show that half the tourists are willing to pay for beachscape beauty conservation to promote its sustainability. Distrust of the management of generated conservation funds served as the main basis for unwillingness to pay. The visitors' WTP is estimated at PhP 897 and Php 1,147, when protest and uncertain responses were not considered. Using these mean WTPs, the total economic value of conserving the beachscapes is estimated at PhP 10.76 and PhP 13.764 million annually, respectively. These estimates justify the relevance of investing public funds to pursue sustainable beachscape ecotourism development in Caramoan.

2014-RR4

Economic Impacts of Artificial Reefs: The Case of Fisher Households in Peninsular Malaysia

by Shaufique Sidique, Kusairi Mohd Noh, Gazi Md Nurul Islam and Aswani Farhana Mohd Noh (March 2014)

Ths study examines the impact of artificial reefs on fisher households' income in Terengganu, Malaysia. Data obtained from a survey involving 312 respondents in three contiguous districts indicate that respondents fishing near AR areas are found to have a higher monthly catch value as compared to those fishing in non-AR areas. Regression models also indicate that fishing in AR areas help reduce vessel operation costs. There is also significant difference in catch value between fishers with outboard-powered and inboard-powered vessels. Fishers operating an inboard-powered vessel obtained an average of RM5,935 per month compared to RM3,126 for fishers who use outboard-powered vessels. It was also found that fishers with inboard-powered vessels are less dependent on ARs as they are able to fish further into the sea.

2014-RR5

Cost-Benefit Analysis of Flood Adaptations in the An Xuan Tributary Basin, Thua Thien Hue, Vietnam

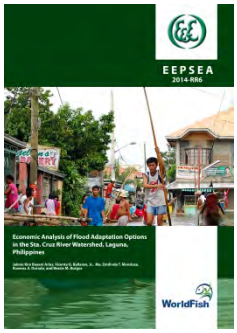
by Bui Dung The and Bui Duc Tinh (March 2014)

This study has looked at the costs and benefits of a proposed flood adaptation project in one of the country's most flood-prone areas, the Xuan Tributary in Thua Thien-Hue province. Results indicate that upgrading the flood defenses and drainage systems along the entire An Xuan tributary would bring a wide range of economic and social benefits at both the household and community level. It also found that the value of these benefits would far outweigh any costs. It therefore recommends that the government should invest in the project.

2014-RR6

Economic Analysis of Flood Adaptation Options in the Sta. Cruz River Watershed, Laguna, Philippines

by Jaimie Kim Bayani Arias, Vicente G. Ballaran, Jr., Maria Emilinda T. Mendoza, Rowena A. Dorado and Bessie M. Burgos *(March 2014)*



This study focuses on the economic analysis of flood adaptation options. Three sub-studies were undertaken: a) Direct Damage Cost Estimation for Floods; b) Benefit-Cost Analysis of a Technology-Based Early Warning System, and c) Cost Effectiveness Analysis of Relocation vis-à-vis Evacuation and Building Modification. Results indicate that the typical direct damage cost per hectare for built-up land is about Php410,000, Php215,000 and Php85,000 for neck-level, waist-level and knee-level floods, respectively. Farming land (rice) incurred a damage cost of Php29,600 per hectare for a flood level of 2.5 feet and above. The estimated mean willingness to pay for a technology-based early warning system is between Php127 and Php152 per household per month. Male respondents were more likely to indicate their willingness to pay. The analysis also shows that the proposed project produces large social net benefits, with a Benefit Cost Ratio (BCR) of as much as 33. In comparing the cost-effectiveness of three adaptation options suitable for long-term flooding in Sta. Cruz (i.e., relocation, the use of evacuation centers, and building modification), results suggest that building modification is the most cost-effective option.

2014-RR7

Financial and Economic Viability of Bioplastic Production in Thailand

by Siriluk Chiarakorn, Chompoonuh K. Permpoonwiwat and Papondhanai Nanthachatchavankul (March 2014)

This study looked at the costs and benefits of producing bioplastics from one of Thailand's leading crops, cassava. It compares the production of the bioplastic Polylactic acid (PLA) from cassava, with the production of high-density polyethylene (HDPE) from petroleum. It finds that the production of PLA has a net positive benefit for society as a whole. However, it also finds that the efficiency and management of the bioplastic production process must to be significantly improved if PLA is to be a cost-competitive and environmentally preferable alternative to petroleum-based plastics. In light of this, the study makes a number of recommendations as to how the production of PLA could be supported and improved, so that the end product can be both sustainable and cost-competitive.

2014-RR8

Regional Economic Development, Energy Consumption and Carbon Emissions in China

by Chunhua Wang (March 2014)

The study aimed to understand the relationships between regional economic development, energy consumption and total carbon emissions in Chinese provinces by analyzing panel data from 1995-2010. Uneven growth across regions was found to contribute significantly to lower carbon dioxide emissions in China during this time period. It was also found that differential growth saved about 580.34 million tonnes of CO_2 from 1996-2010, which accounts for about 2.32% of the total changes. Simulations were conducted to analyze the chances of lowering energy intensity and emissions intensity in the 12th Five-Year Plan, as well as the goal of lowering carbon emissions intensity by 2020.

2014-RR9

Policy Conflicts and Performance of Emissions Trading Markets: An Adaptive Agent-based Analysis

by Bing Zhang and Yongliang Zhang (March 2014)

This study looked at whether existing environmental policies conflict with China's emissions trading approach and reduce its effectiveness. The study used an agent-based model to assess the SO_2 emissions trading market in the Chinese province of Jiangsu. It was found that four main policies are in conflict with the emissions trading approach. Of these, China's Regional Total Pollution Control Policy has the most significant impact. In all, the study's modeling shows that policy conflicts reduce both the quantity of emissions traded and the potential cost savings that the emissions trading approach can bring. The study recommends a hybrid policy approach that combines an emissions trading policy with a low emissions discharge levy.

2014-RR10

Payment for Environmental Services in South East Asia: A Regional Review of Policy Implementation

by Nguyen Thi Y Ly and Pham Thanh Nam (March 2014)

This study looked at 12 projects on payment for environmental services (PES) from four countries where it has been applied. Results show that most of the projects have had a positive impact both on the environment and on people's livelihoods and their awareness of the value of natural resources and environmental services. However, the study recommends that, to make PES projects more effective in the future, steps need to be taken to secure land tenure and to establish a clear PES implementation framework. Such a framework should address issues such as service evaluation, legal support, finance, and social capacity.

2014-RR11

Economic Benefit of Management Options for a Suburban Forest in South Thailand

by Saowalak Roongtawanreongsri, Prakart Sawangchote, Sara Bumrungsri and Chaisri Suksaroj (March 2014)

This research determined the net economic benefits of three forest resource management strategies to help inform the stakeholders of the most economically efficient management option for Kho Hong Hill. Based on the cost-benefit analysis (CBA) performed (with a projection period spanning 25 years), under Scenario I (base case scenario), the annual benefits from the ecosystem services of KHH would turn negative from year 15 onwards. Meanwhile, both Scenario II (establishment of protected areas) and Scenario III (implementing forest rehabilitation programs) yielded positive net present values (NPV). Forest management through reforestation can yield higher NPVs than preserving the existing forest areas; albeit, the former involves higher management costs.

5.2 Policy Briefs

EEPSEA Policy Briefs summarize the key results generated by EEPSEA-supported research projects and provide policy recommendations based on these results, as presented in detail in EEPSEA Research Reports. Twelve (12) policy briefs were produced during the reporting period:

2013-PB6: *Can Carbon Forestry Provide a Solution for Community-led Conservation? A Case from the Philippines*

2013-PB7: *Payment for Forest Environmental Services: A Case Study from Vietnam*

2013-PB8: *Eco-labelling Offers a Sustainable Future for Indonesian Coffee*

2013-PB9: *Resource Gap and Benchmarking Protected Areas: A case study in the Philippines*

2013-PB10: *Attaining Food Security in the Midst of a Changing Climate: Is Agricultural Subsidy Still Relevant?*

2014-PB1: *What Role Can Traditional Irrigation Play in Rural Development: A Study from Northern Thailand*

2014-PB2: *Collective Action and Other-regarding Behavior in Thailand: An Assessment of Games versus Reality*

2014-PB3: *Do Artificial Reefs Help the Environment and Fishers: An Assessment from Malaysia*

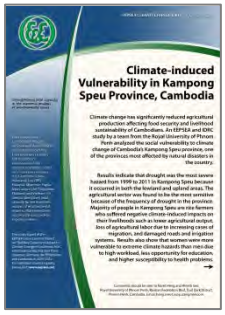
2014-PB4: *Can Bioplastics Help Reduce Our Dependency on Petrochemicals: A Study from Thailand*

2014-PB5: *The Impact of Regional Economic Growth Patterns on Carbon Emissions: A Study from China*

2014-PB6: *The Impact of Policy Conflicts on Emissions Trading in China*

2014-PB7: *Is Payment for Environmental Services the Future of Environmental Management in Southeast Asia?*

5.3 Climate Change Briefs



Like the EEPSEA Policy Briefs, EEPSEA Climate Change Briefs summarize the key results and lessons generated by EEPSEA-funded climate change research projects. Four (4) climate change briefs were produced during the reporting period:

2013-CCB1: *Climate-induced Vulnerability in Kampong Speu Province, Cambodia*

2013-CCB2: *Does Government Aid Crowd Out Thai Rice Farmers' Adaptation?*

2014-CCB1: *Choosing Flood Adaptation Options: An Economic Assessment from the Philippines*

2014-CCB2: *How Can Vietnam Adapt to Flooding and Climate Change? A Cost-Benefit Analysis*

5.4 Translated Books and Research Reports

The EEPSEA book *"The Economics of Environmental Management in Vietnam"*, a compilation of EEPSEA studies in Vietnam, was translated into Vietnamese so that it can be better used for instruction in universities all over the country. The book will be shared with the Vietnamese Ministry of Natural Resources and Environment, Ministry of Planning and Investment, Ministry of Finance and the provincial governance bodies where studies in the book were conducted. The book will also be sent to libraries of research institutions and universities that have economics department. Complimentary copies also will be sent to authors.

The research reports "Adaptation Strategies to Address Coastal Erosion/Flooding: A Case Study of the Communities in Bang Khun Thain District, Bangkok, Thailand" (2009 by Rawadee Jarungrattanapong and Areeya Manaboonphempool) and "Adaptive Capacity of Households and Institutions in Dealing with Floods in Chiang Mai, Thailand" (2011-RR2 by Rawadee Jarungrattanapong and Areeya Manaboonphempool) were translated into Thai to facilitate results dissemination to local policymakers and natural resource managers.

6.0 OUTCOMES/IMPACTS

Research impacts take time to manifest and so we are reporting here outcomes that we have gleaned from the 18 research grantees and 104 training participants who responded to our January 2014 Impact Tracer Survey. Of the 104 trainees who answered the survey, half attended courses in 2013. Of the 18 research grantees who answered the survey, eight received their research grant in 2013. Many of those who responded to the researchers' survey also attended one or more of our training courses for researchers.

6.1 Presentation of Studies at Conferences and Policy Forums

EEPSEA research grantees are encouraged to disseminate their research findings so that they may be used to inform policy discussions and formulations and affect change. Table 10 below summarizes the conferences and policy forums wherein EEPSEA research grantees presented the results of their EEPSEA-funded studies.

Table 10. List of conferences wherein EEPSEA-funded research were presented

	EEPSEA Research	Conference	Date & Venue
1	Adaptive capacity of households and institutions in dealing with floods in Chiang Mai, Thailand *by Rawadee Jarungrattanapong (Thailand)*	The Second International Conference on Climate Change: Impacts and Responses	8-10 Jul 2010 University of Queensland, Australia
2	Economic analysis for multi-pollutant control in China's coal-fired electricity plants *by Wu Dan (China)*	2nd International Conference: Environment and Natural Resource Management in Developing and Transition Economies	Oct 2012 Clemont, France
		3rd Congress of the East Asian Association of Environmental and Resource Economics	Feb 2013 Huangshan, China
3	Co-control of air pollution and GHGs in China's iron and steel sector: An integrated modeling assessment of policy and technology options *by Zhaoyang Liu (China)*	2012 Planet under Pressure	Mar 2012 London, England
		Ministry of Environmental Protection Policy Workshop on the Co-control of Air Pollution and GHGs in Major Industrial Sectors	June 2012 China
4	Household demand for improved drinking water quality: A cross-country project *by Phumsith Mahasuweerachai (Thailand)*	Singapore Economic Review Conference 2013	6-8 Aug 2013 Singapore
		4th Congress of the East Asian Association of Environmental and Resource Economics	12-14 Feb 2014 Busan, Korea
5	Developing capacity to adapt to climate change in Southeast Asia *by Jaimie Kim B. Arias (Philippines)*	Developing Capacity to Adapt to Climate Change: Asian Conference on Social Sciences	8 June 2013 Osaka, Japan
		National Conference on Climate Change	28 Nov 2013 Manila, Phils
		Resource Economics Association of the Philippines Conference	23 Aug 2012 Manila, Phils
		LIMASMARINA Council Meeting	17 Oct 2013 Sta. Cruz, Phils
6	Cost-benefit analysis of sustainability standards in smallholder oil palm farming in Sumatra, Indonesia *by Ernah (Indonesia)*	Indonesian Students' Scientific Conference	7 Nov 2013 Wageningen University, the Netherlands
7	Reverting disused fishpond areas covered by fishpond lease agreement to mangrove forests in Region VI, Philippines *by Alice Joan G. Ferrer (Philippines)*	14th Global Conference of the International Association for the Study of the Commons	3-7 June 2013, Mt. Fuji, Japan

6.2 Policy and Community Influence

EEPSEA studies create impact and influence by:

a. ***Affecting the well-being of the intended beneficiaries.*** Seven (7) out of the 18 researchers indicated this influence and the details of three not reported in previous years' progress report are discussed below (i.e., Pini Wijayanti, Jaimie Kim B. Arias, Raul Bradecina).

b. ***Supporting environmental regulation and national policy agenda.*** Three (3) researchers indicated this influence and the details of two not previously reported are further discussed below (i.e., Zhaoyang Liu, Wu Dan, Alice Ferrer).

c. ***Creating further interest in the issue by being invited to develop another research project.*** Two (2) researchers reported this, both of which are discussed below (i.e., Asa Sajise, Zhaoyang Liu).

China's Ministry of Environmental Protection takes notice of two study results

Wu Dan's study on the "Economic analysis for multi-pollutant control in China's coal-fired electricity plants" has caught the eye of China's Ministry of Environmental Protection (MEP). MEP found the research results supportive of China's air pollution control strategy transformation agenda. The study's findings had been elaborated into policy recommendations for the Environmental Protection Bureau of Beijing and the MEP drafted by the Institute of Environment and Economy, and Peking University's College of Environmental Sciences and Engineering.

MEP has also taken notice of the policy suggestions presented in Zhaoyang Liu's EEPSEA study on "Co-control of air pollution and GHGs in China's iron and steel sector: An integrated modeling assessment of policy and technology options". The study results and recommendations were presented to MEP policymakers from the Division of Policies, Laws and Regulations and the Division of Pollution Emission Control, during the ministry's *Policy Workshop on the Co-control of Air Pollution and GHGs in Major Industrial Sectors*.

Jakarta governance finds study results useful to flood reduction efforts

Pini Wijayanti's research findings on the "Estimation of flood river damage in Jakarta" were presented to Jakarta governance. They found the estimates on flood damage and on benefits from ongoing flood control measures to be useful in informing decision making with regards to flood reduction in Jakarta.

Pini's research team conducted a half-day workshop in Jakarta on 22 October 2013, which was attended by representatives from the following Jakarta agencies: disaster mitigation agency (BPBD), South Jakarta municipality, West Jakarta Municipalities, university lecturers from University of Indonesia and Bogor Agricultural University. Participants found the results useful in managing the flooding problem in the Pesanggrahan area of Jakarta. They found the research comprehensive because it covered damage, vulnerability, perception, and gender concerns. Specifically, the government agency representatives found the EEPSEA study's estimation of actual flood damage per household more detailed and accurate than the results of the government flood damage survey for all Jakarta areas. Moreover, Pini's research produced a range of land compensation values that will be accepted by households living in Pesanggrahan area. This information was found very useful because this kind of survey has not been conducted yet.

Research inputs into tourism plan

The results of the research project led by Raul Bradecina, "Economic Valuation of the Beachscape Beauty of Caramoan, Camarines Sur, Philippines: Towards Establishing Payment for Environmental Services for Sustainable Eco-Tourism", were recognized by Partido Development Administration (PDA), a government-owned and controlled corporation that coordinates, implements, and evaluates trans-municipal plans and projects in the fourth congressional district of Camarines Sur. They found the results highly valuable in the design of the tourism policies, which will form a part of the Tourism Master Plan for Atulayan Island in Sagnay, Camarines Sur and the Lahuy group of islands in Caramoan, Camarines Sur. Ms. Rosa B. Catolico, PDA Administrator, wrote to EEPSEA saying that "the data generated [by the study] provide LGUs and development bodies like PDA with comprehensive information" which they will use as key inputs to the tourism master plan.

Philippine government uses EEPSEA study in developing a fishery resources development plan in Visayan Sea

Because of Alice Ferrer's EEPSEA research project entitled "Reversion of Disused Fishpond Lease Agreement Areas to Mangrove Forests in Region VI, Philippines", she was consulted in the development of the National Economic Development Agency's (NEDA) Special Plan entitled "Coastal, Aquatic and Fishery Resources Development along the Influence Areas of the Visayan Sea, 2011-2020"[1]. She reported that the decision to adopt the Visayan Sea was inspired by this EEPSEA study. The main recommendations of the EEPSEA report (i.e., to set up of integrated MPAs and the Special Management Unit (SMU) were adopted in the Plan.

Alice also served as reviewer of the "Manual on Mangrove Reversion of Abandoned and Illegal Brackishwater Fishponds"[2]. The manual was launched last 12 February 2014 during the Regional Mangrove Forum organized by the Zoological Society of London - ACCCoast project with funding from GIZ. The EEPSEA report and the book on Disused FLA areas that EEPSEA supported were cited several times in the manual, particularly in the section on Fishpond Lease Agreement.

On-the-ground impact of climate change research

The research project led by Jaimie Kim B. Arias, which is part of the cross-country research project "Developing capacity to adapt to climate change in Southeast Asia", created much on-the-ground impact in their Laguna study site. The various trainings they conducted provided Laguna local government planning staff with greater appreciation for, and understanding of, climate change adaptation planning and analysis. Specifically, they organized trainings on vulnerability assessment and economic analysis of adaptation, economic analysis of adaptation options, and on project proposal development and fund mobilization for climate change adaptation.

Besides the training on proposal development, Kim's team also supported their local government partners in drafting their respective adaptation project proposals through continuous consultation meetings

[1] The Plan's approval is cited in the following news articles: President Aquino approves area development plan for Visayan Sea (http://balita.ph/2012/07/28/president-aquino-approves-area-development-plan-for-visayan-sea/); and NEDA crafts long-term development for Visayan Sea)

[2] JH Primavera, WG Yap, JP Savaris, RJA Loma, ADE Moscoso, JD Coching, CL Montilijao, RP Poingan, ID Tayo.(2013). Manual on Mangrove Reversion of Abandoned and Illegal Brackishwater Fishponds ---- Mangrove Manual Series No. 2. London, UK: ZSI. xii +108p.

to follow-up on their project proposals and by providing broad technical assistance in crafting their proposals. As a result of this technical support, the Global Green Growth Institute (GGGI) and the Philippine Climate Change Commission has touched-based with the Laguna Provincial government and are currently discussing the possible funding for Laguna as an ecotown demonstration/implementation area.

Philippine Bureau of Agricultural Research funds a follow-up project

The EEPSEA cross-country research led by Asa Sajise on the "Economic analysis of climate change adaptation in selected coastal areas in Indonesia, Philippines and Vietnam" has perked the interest of the Philippine Department of Agriculture's Bureau of Agricultural Research (DA-BAR). The rigorous methodology and the sound results from this study have led to DA-BAR signifying its intention to fund a new round of studies in the Philippines as part of the new EEPSEA cross-country project "Intra-household Impacts of Climate Hazards in Coastal Communities: A Cross Country Perspective". This offshoot project covers a broader set of issues in climate change adaptation and will be patterned from the EEPSEA cross-country research on climate change. CGIAR's research program on Climate Change, Agriculture and Food Security (CCAFS) also signified its intention to fund extensions of this new EEPSEA cross-country study.

The first study's results methodology combined participatory methods (not common in EE research) and the more quantitative EE methods. This, along with the inclusion of capacity building of State University teams in different provinces, led to DA-BAR's continued interest in the follow-up project. During the first run of the project, DA-BAR was impressed with the depth and breadth of the results ranging from the academic to the more policy-oriented results that address the practical concerns of local-level planning for climate change. The researchers' credit EEPSEA's calculated approach of allowing researchers to make and learn from their mistakes, which enabled them to refine the methodologies thereby making it more interesting and appealing to both the academe and policymakers.

British Academy funds a project offshoot of an ongoing EEPSEA study

Zhaoyang Liu's ongoing EEPSEA research project, "Livelihood and conservation impacts analysis of forestland tenure reform in Guizhou Province, China", already has an offshoot project. Funded by the British Academy (BA), the new project will be a spatial analysis of forestland tenure reforms in rural areas of China. The fieldwork of Liu's EEPSEA research gave him a better idea on how spatial analysis can directly contribute to policy research and policymaking, which helped him convince the BA to fund further research on the topic. Moreover, the progress of his current EEPSEA research convinced the BA of the feasibility of further research. Lastly, in the BA proposal, Liu mentioned that the knowledge and data from his EEPSEA research can be shared with this BA project, suggesting that their funding will generate considerable added value.

6.3 Development of New Academic Courses

Thirty-nine percent (39%) of the 84 EEPSEA trainees who answered the survey and who are working in the academe shared that they incorporated or used the lessons and materials from the EEPSEA training courses they attended in the economics courses they handle in their respective universities. Of these, 10 reported having developed new courses related to EE after their EEPSEA training. These courses are summarized in Table 11.

Forty-eight percent (48%) of the same group of EEPSEA trainees reported that their EEPSEA training helped them improve an economics-related degree program in their university. Of these, three reported that they are currently developing a degree related to EE in their respective units. These degree programs are summarized in Table 12.

It is also worth noting that sixty-three percent (63%) of the same group of EEPSEA trainees are currently teaching courses related to EE. On the other hand, outside of the classroom, 22% of the 104 EEPSEA trainees who answered the survey used EEPSEA materials during stints as a resource person in training sessions.

Table 11. List of new courses developed

New Course Developed	University Unit
Graduate	
Economics and Financing of Ecosystems Services and Biodiversity; Economic Valuation of Forest for Climate Change Adaptation and Mitigation (under Special Topics)	College of Forestry and Natural Resources and School of Environmental Science and Management, University of the Philippines Los Baños
Environmental and Natural Resource Economics	Yunnan University, China
Resource Economics	Faculty of Agriculture, Department of Socioeconomics, Lambung Mangkurat University, Indonesia
Behavioral Economics (under Special Topics)	Faculty of Economics, Chiang Mai University, Thailand
Environmental Economics	China University of Petroleum (Beijing campus), China
Undergraduate	
Cost-Benefit Analysis	School of Economics and Business Administration, Cantho University, Vietnam
Valuation Techniques for Natural Resources	School of Accountancy and Business Management, St. Louis University, Philippines
Environmental and Resource Economics	Beijing Normal University, China
Introduction to Behavioral Economics	Airlangga University, Indonesia
Environmental Economics	Department of Economics, Silliman University, Philippines

Table 12. List of new degree programs being proposed and developed

New Degree Program	University Unit
BS Natural Resources Science	College of Forestry and Natural Resources, University of the Philippines Los Baños
MS Marine Ecosystem Management and Climate Change	Nha Trang University, Vietnam
MS in Natural Resources and Environmental Economics	School of Economics and Business Administration, Cantho University

6.4 Publication in Journals

Eleven (11) journal articles were published based on EEPSEA-funded studies:

Bing Zhang, Hui Zhang, Beibei Liu, and Jun Bi. 2013. *Policy interactions and underperforming emission trading markets in China.* Environmental Science Technology. 47(13). 7077-7084.

Jaimie Kim Bayani-Arias, Moises A. Dorado and Rowena A. Dorado. 2012. *Economic vulnerability and analysis of adaptation options to coastal erosion in San Fernando, La Union.* Journal of Environmental Science and Management 15(2): 35-49.

Kien V. Nguyen and Helen James. 2013. *Measuring household resilience to floods: A case study in the Vietnamese Mekong River Delta.* Ecology and Society 18(3): 13.

Loan T. Le, Ekko C. vam Ierland, Xueqin Zhu, Justus Wesseler and Giang Ngo. 2013. *Comparing the social costs of biofuels and fossil fuels: A case study of Vietnam.* Biomass and Bioenergy 54: 227-238

Nghiem N. *Optimal Rotation Age for Carbon Sequestration and Biodiversity Conservation in Vietnam.* For Policy Econ (in press).

Nghiem N. 2013. *Biodiversity conservation attitudes and policy tools for promoting biodiversity in tropical planted forests*. Biodivers Conserv. 22(2):373-403.

Nyda Chhinh and Bunnak Poch. 2012. *Climate change impacts on agriculture and vulnerability as expected poverty of Kampong Speu Province, Cambodia.* International Journal of Environmental and Rural Development. 3(2): 28-37.

Nyda Chhinh, Hoeurn Cheb and Naret Heng. *Drought risk in agriculture and potential treatment option in Cambodia. International Journal of Environmental and Rural Development.* (in press)

Nyda Chhinh and Hoeurn Cheb. 2013. *Climate change vulnerability: Household assessment levels in Kampong Speu Province, Cambodia. International Journal of Environmental and Rural Development.* 4(1): 31-38.

Thanh Cong Nguyen and Jackie Robinson. 2013. *Analysing motives behind willingness to pay for improving early warning services for tropical cyclones in Vietnam.* Meteorological Applications.

Yingluk Kanchanaroek, Mette Termansen and Claire Quinn. 2013. *Property rights regimes in complex fishery management systems: A choice experiment application.* Ecological Economics: 363-373.

Zhuang-Fang Yi, Grace Wong, Charles H. Cannon, Jianchu Xu, Philip Beckschafer and Ruth Swetnam. 2014. *Can carbon-trading schemes help to protect China's most diverse forest ecosystems? A case study from Xishuangbanna, Yunnan.* Land Use Policy. 38: 646-656

6.5 Research Citations in the Media

Two (2) of the 18 research grantees reported media citations in 2013, summarized in Table 13.

Table 13. EEPSEA media citations in 2013

Article Title	Link	EEPSEA Studies Cited
Vietnam Mekong Delta Blues (1 Jan 2013) in Southeast Asian Press Alliance (website)	http://www.seapa.org/?p=5360	"Adaptation to Sea Level Rise in the Vietnamese Mekong River Delta: Should a Sea Dyke be Built?" by Vo Thanh Danh, "Hotspots! Mapping Climate Change Vulnerability in Southeast Asia"
Shelter from the storm: Coastal greenbelts of mangroves and beach forests (19 Dec 2013) in Philippine Star (newspaper)	http://www.philstar.com/science-and-technology/2013/12/19/1269584/shelter-storm-coastal-greenbelts-mangroves-and-beach	**"**Evaluation of Fisheries Management Options for the Visayan Sea, Philippines: The Case of Northern Iloilo" by Alice Joan G. Ferrer

6.6 Downloads and Citations of EEPSEA Reports

Since 2009, EEPSEA has listed three publication series (i.e., research reports, special and technical reports, policy briefs) in the Research Papers in Economics (RePEC) database (http://repec.org). As of December 2013, the papers in RePEC have been downloaded 13,804 times or at a monthly average of 242 times. The average number of downloads per month experienced a decrease in 2012, during the EEPSEA move from IDRC to WorldFish wherein no new research reports were published (Figure 3). However, downloads is on the rise again in 2013.

According to citation analysis by RePEC, EEPSEA publications have been cited by 1,679 papers since 2009. Of this, 112 papers cited EEPSEA publications in 2013.

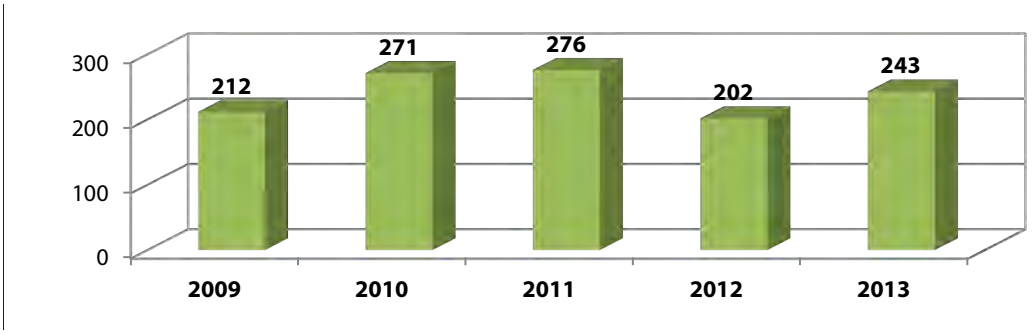


Figure 3. Average monthly download of EEPSEA publications in RePEC[3]

6.7 Contribution to Career Advancement

Eighty-three percent (83%) and 90% of EEPSEA research grantees and trainees, respectively, affirmed that EEPSEA has contributed to their professional development in various ways, described below.

Research grantees

- Key factor in getting scholarship/new job/higher position (22%)
- Improved research and teaching skills (22%)
- Publication improved my credentials (17%)
- Facilitated the completion of PhD dissertation (17%)
- Widened professional network (11%)

Training grantees

- Improved EE research skills/expanded understanding of EE methods (40%)
- Improved capacity to teach EE/provided new teaching materials (18%)
- Improved qualifications for EE consultancy projects (12%)
- Widened professional network (8%)
- Provided impetus/improved capacity to develop EE research proposal (7%)
- Key factor in getting scholarship/higher position (6%)

Moreover, 67% of the trainees report that their working relationship with non-economic disciplines improved as a result of the training. Similarly, all EEPSEA research grantees indicated that their EEPSEA project improved their interaction/networking at the local, national, regional and international levels.

[3] Does not include direct downloads from EEPSEA website.

7.0 MANAGEMENT

7.1 Secretariat

EEPSEA management is composed of its Director, Dr. Herminia A. Francisco, and four Senior Economists: Dr. Orapan Nabangchang based in Thailand, Dr. Arief Anshory Yusuf based in Indonesia, Dr. Pham Khanh Nam based in Vietnam, and Dr. Canesio D. Predo based in the Philippines. All four have been long-standing EEPSEA researchers who continue to work from their home institutions, e-communicating with EEPSEA on a one-third-time basis.

The Secretariat is also supported by four other personnel: Dr. Noor Aini Zakaria, Research Manager; Ms. Julienne V. Bariuan, Grant Administrator and Training & Communication Manager; Ms. Mia Mercado, Program Assistant; and Ms. Rhona Coronado, Finance Officer.

7.2 Sponsors Group

The Sponsors Group of participating donors sets policy, provides financial support and approves the annual program of work and budget. It is comprised of representatives from:

- The International Development Research Centre (IDRC), Canada
- The Swedish International Development Cooperation Agency (Sida)
- WorldFish

7.3 Advisory Committee

The Advisory Committee advises the Director on priorities for research and training and recommends the annual program of work and budget to the Sponsors Group. The Committee consists of senior scholars and policymakers active in environmental management in Asia. Most of the Committee members are from Asia. Each member has a two-year term, renewable once for Asian members. The Committee meets once a year in conjunction with the EEPSEA Annual Conference. The current Committee members are listed below.

- *Dr. Xu Jintao*, Beijing University, China
- *Dr. Vitoon Viriyasakultorn,* Mekong River Commission
- *Dr. Daigee Shaw,* Academia Sinica, Taiwan
- *Mr. Raman Letchumanan, ASEAN Secretariat*
- *Dr. David James, Environmental Economist, Freelance Consultant*
- *Dr. Mohd Shahwahid Haji Othman, Universiti Putra Malaysia*
- *Dr. Maripaz Perez, WorldFish*

Strengthening local capacity in the economic analysis of environmental issues

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