

33. REWARDING SMALLHOLDERS FOR THEIR ENVIRONMENTAL SERVICES: LESSONS LEARNED FROM MIDWESTERN LEYTE

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A study was conducted to determine smallholders' perspectives on the various forest environmental services, the types of rewards expected to enhance the revenue of small-scale farmers, and views on who should be the providers of rewards and preferred rewarding or payment mechanisms. The sites of the study were Barangay Gabas and Barangay Kilim in Baybay, Leyte, Philippines, immediately below the 2236 ha Community-Based Forest Management (CBFM) project where all the respondents are residing. Respondents' perspectives on forest environmental services, rewards and rewarding mechanisms or approaches were assessed through individual interviews and focus group discussions. Provision of improved water quality was considered the most important forest ecosystem service while cash payments were the most frequently mentioned type of reward. One of the rewarding mechanisms that emerged was the drafting of a resolution to be forwarded to the municipal or local government unit for financial support.

INTRODUCTION

Forests provide enormous environmental services to various societies on earth. However, in many countries – including the Philippines – the undue pressure imposed on forests by the growing number of people has relentlessly damaged these ecosystems. Population pressure has gradually deprived people of the environmental services that they used to enjoy everyday as a result of forest depletion due to increased demand in timber for construction and timber products. The Philippines was the world's leading tropical hardwood producer in 1975, but became a timber-importing nation in 1994 (Chiong-Javier 2001). Hence, the Philippine Government has designed various programs to protect and conserve the remaining forest¹. The Community-Based Forest Management Program (CBFMP) introduced in 1995 in particular recognized the indispensable role of the local people in managing the remaining forest resources in the country.

In recent years the focus on forest management and conservation has shifted from the highly technical commercial forestry to a more people-oriented social forestry. Gone are the days when forestry was looked upon as solely management and utilization of trees by large-scale timber product-oriented logging corporations to meet demands for wood and wood-based products. The more recent scenario is a paradigm shift in the forestry sector to small-scale, multiple-product-based, people-oriented, and community-based sustainable forest management (Mangaoang 2002). The concern to improve the socio-economic condition of the rural populace and particularly the smallholders, however, still remains a challenging issue for the Philippine Government.

Despite the effort of the Philippine Government to improve the per capita income of the Filipinos, many are still within the poverty line. In selected barangays in Baybay, Leyte, the mean annual income of small-scale farmers ranged only from PhP46,434 to PhP76,217 (Pasa 2006). In Leyte Province, average annual family income from 1994 to 2000 ranged only from PhP51,042 to PhP93,251 while the per capita poverty threshold for rural areas as of 2000 was PhP9,725 with a poverty rating of 47.6%. This implies that nearly half the people in rural areas of the province can be considered poor (Emtage and Suh 2005). This also implies some challenges to improve their level of income.

Based on the four Barangays surveyed by Emtage and Suh (2005), households manage on an average of 2.91 ha of farmland, and own about 1.44 ha of this land. With the limited land area, small-scale farmers in Leyte are left behind in the socio-economic race. Adding value to their goods and services is viewed as an important element in enhancing socio-economic status of Philippines

¹ These include the Integrated Social Forestry Program (ISFP), Upland Development Program (UDP), National Forestation Program (NFP), Forest Land Management Program (FLMP), Low Income Upland Communities Project (LIUCP), Community Forestry Program (CFP), Regional Resources Management Project (RRMP), Forestry Sector Project (FSP), and Community-Based Forest Management Program (CBFMP) (Harrison *et al.* 2005).

farmers (Aggangan and Faylon 2005). Another opportunity where farmers could increase their annual income is through some form of payment for the environmental services they provide, since vegetation in their small-scale forest farms, agroforestry farms and Community-Based Forest Management Projects undoubtedly sequester and store carbon, enhance biodiversity as well as providing soil and water conservation.

Rewarding – or as commonly known in South America – *payment for environmental services* (PES) is a newly emerging initiative in forestry and agroforestry development programs. For example, the program for '*Rewarding the Upland Poor for their Environmental Services (RUPES)*' explores new ways of addressing poverty (Van Noordwijk 2007). The goal of the program is to enhance livelihood and resource security for the upland poor in Asia, and maintain or enhance environmental functions (De los Angeles 2007). Opportunities exist for local farmers to maintain or restore local agro-ecosystem functions that protect watersheds, conserve biodiversity and sequester carbon. These include financial incentives and resource security that promote conservation. In addition, new market mechanisms that have the potential to reward the upland poor communities for effective and sustainable natural resources management, are emerging. These opportunities are supported by the global political commitment of halving poverty by 2015 (RUPES c2002).

At present, there is very limited information in the Philippines about rewards and rewarding approaches with reference to forest environmental services. This is particularly true in the case of smallholders who are a vital source of information useful for policy formulation on rewarding for environmental services. They are the targeted clientele for environmental services rewards and for that reason their voices should be heard, thus this study was conducted. This paper explores views of smallholders in midwestern Leyte on rewarding mechanisms for their environmental services. The research has been designed to contribute information to policy makers for facilitating payments for environmental services in order to widen the livelihood opportunities of smallholders and promote sustainable land management.

REWARDING FOR ENVIRONMENTAL SERVICES

Payment for environmental services is a newly emerging initiative in forestry and agroforestry development programs. Environmental services provided to the wider community (positive externalities of spillover benefits) from small-scale farms or agroforestry systems are quantified in physical and financial terms, and corresponding rewards or payments granted to farmers who provide such services. RUPES trials are currently undertaken at the Kalahan Reserve in Luzon, the Philippines and Kulekhani watershed in Nepal (Chandler 2004). Other trials are being conducted in Bakun Reserve, an indigenous cultural community in northern Luzon, the Philippines as well as in Singkarak, in Sumberjaya, and in Bungo, Indonesia (Van Noordwijk 2007).

A number of distinctly environmental services of forestry have been recognized, including carbon sequestration, biodiversity conservation and soil and water conservation. Some highlights on the current developments on these services are presented in the succeeding paragraphs.

Carbon Sequestration and Storage

One of the environmental services of small-scale tree farms and agroforestry farms is the sequestration and storage of carbon dioxide (CO₂). This gas is responsible for about 49% of the global warming (Field 1997). According to best scientific estimates, CO₂ concentration will reach the equivalent of 560 parts per million (ppm) by the year 2030, which is double than the natural level (Lean *et al.* 1990). The recorded CO₂ concentration in the atmosphere in 2005 was 379 ppm which exceeds by far the natural range of the last 650,000 years (180 to 300 ppm) and warming in the last 100 years has caused about a 0.74 °C increase in global average temperature. The best estimate for surface air warming for a 'high scenario' is 4.0 °C with a likely range of 2.4 to 6.4 °C (IPCC 2007). Thus, efforts to mitigate climate change are underway, including the greenhouse gas inventory for the LUCF sector in the Philippines, Thailand, and Indonesia, as reported by Magcale-Macandog (2000).

Potential opportunities exist for smallholders to increase their annual income through forestry carbon trading. Calderon (c2002) pointed out that despite the uncertainties regarding the inclusion of carbon forestry projects under Clean Development Mechanism (CDM), many parties are already engaging in carbon forestry trading. While the price per ton of carbon varies (from as low as US\$4/tC to as high as US\$353/tC), it is clear that substantial amounts of money are involved (Appendix Table 1). In Australia, the Sydney Futures Exchange has already established a carbon credits trading market, and so far, many carbon emitters are already buying credits from forest growers (AAS n.d. as cited by Calderon c2002). In December 2006, the total Carbon Financial

Instrument (CFI) volume traded on the Chicago Climate Exchange (CCX) platform was 10,272,400 metric tons (mt) of carbon dioxide while the European Climate Exchange traded 443,496,000 mt of carbon dioxide (CCX 2006).

Biodiversity Conservation

In addition to carbon sequestration and storage, small-scale forestry and agroforestry farms also enhance conservation of flora and fauna. In Indonesia, O'Connor *et al.* (2005) found 52 species of birds in multi-storey agroforestry farms and 31 species in a dammar (*Shorea javanica*), compared with only 20 species in *Imperata* grasslands and 14 species in rice paddies. In Costa Rica, living fences of silvopastoral systems likewise enhanced the diversity of birds. Living fences have the capability to attract forest, generalist, and savannah specialist bird species and facilitate the movement of wildlife across the fragmented landscape (Francesconi 2006). The 2236 ha CBFM project in Baybay, Leyte, the Philippines, where small-scale farmers have initiated biodiversity conservation, revealed an enormous genetic pool of diverse flora and fauna. A total of 193 species of plants, 11 species of mammals, 40 species of birds, 16 species of reptiles and 26 species of amphibians were found. These include the endangered faunal species of rufous hornbill (*Bucerus hydrocorax*), tarctic hornbill (*Penelopides panini*), Philippine flying fox (*Pteropus vampirus*), Philippine flying lemur (*Cyanocephalus volans*) and Philippine tarsier (*Tarsius syrichta*) (Pasa 2006).

Potential opportunities also exist for small-scale farmers to enhance their revenue from biodiversity conservation. For their forestry program alone, the World Wildlife Fund (WWF), the world's largest private organization promoting biodiversity conservation, spends more than US\$40 M/year (WWF 2006). The World Conservation Union (IUCN) (2007) with funding from United States Agency for International Development is facilitating innovative PES mechanisms for sustainable financing in alleviating poverty and conserving biodiversity and natural resources in the Mekong region of Vietnam. Small-scale farmers have the opportunity to access funds from both of these organizations as reward payments for their biodiversity conservation service.

The PES program in South America has increased the visibility of the village or community vis-à-vis both donors and public entities. Some villages in Bolivia involved in landscape beautification and ecotourism initiatives (which also promote biodiversity conservation) suddenly found it easy to attract a donor for a health clinic or gain support from their municipal government regarding their land tenure claim (Wunder 2005).

Soil and Water Conservation

Many downstream water users benefit from the soil and water conservation services of agroforestry systems, small-scale tree farms, tree plantations and natural forest ecosystems. These include the municipal water districts, water-based companies (e.g. drinking water bottling companies), and irrigation associations. If payments for soil and water conservation services were collected from these water consuming entities, the income of small-scale farmers who protect and conserve those ecosystems could increase substantially. The payment could be considered by water companies as a watershed protection fund which would in turn reduce the expenditures of their maintenance operations. For example, New York City anticipates saving US\$4 to US\$6 billion on filtration and treatment facilities by investing US\$1 billion in land protection and conservation practices (Johnson *et al.* 2002).

A charge could also be levied from the water users by indicating in their bills a particular size of payment for watershed protection as in the case of Heredia, Costa Rica (Gamez 2007). Redondo-Brenes and Welsh (2006) reported that people around the world have expressed their willingness to pay for higher water quality. They added that in Costa Rica, a bottle of water costs approximately US\$1.50, and 1000 litres of water supplied to households costs only US\$0.20. Thus, it is more economical for local water users to pay for watershed protection and to have access to potable water than to spend a large amount of money buying bottled water.

A PES program was implemented in Costa Rica in 1996 where a range of environmental services (which include carbon fixation, hydrological services, biodiversity protection and scenic beauty enhancement) derived from natural forests, tree plantations and agroforestry systems were identified (Subak 2000). Payments were made for these services, which obviously widens the livelihood opportunities of the local farmers. Redondo-Brenes and Welsh (2006) reported that landowners receive US\$540/ha for establishing new tree plantations, US\$210/ha for established plantations, US\$210/ha for forest conservation and regeneration and US\$0.8/tree for supporting the establishment of agroforestry systems over a period of five years. As a component of PES program, private companies support the program through signed agreements with FONAFIFO that promotes watershed conservation in Costa Rica. The hydroelectric power company Energia Global is

paying US\$10/ha/yr for the protection of 1818 ha near the San Fernando River watershed and 2493 ha around the Volcan River. Plantanar, another hydroelectric power company, is paying between US\$15/ha/yr and US\$30/ha/yr to protect 3654 ha in the Plantanar watershed. The State Power Producer (CFNL) is paying US\$40/ha/yr to protect 10,900 ha around the Balsa Superior River, the Aranjuez River and the Cote Lake (Redondo-Brenes and Welsh 2006).

Rights to environmental services in tree plantations, natural forests, small-scale agroforestry farms or small-scale tree farms are not legally established in most countries. As the financial value of these services increases, there will be greater political negotiations over these rights. If the local rights are enforced and equitable, transparent and efficient systems for organizing resource transfers and compliance monitoring are developed, payment schemes for these services could provide large financial benefits to the rural poor (Scherr *et al.* 2004).

RESEARCH METHOD

The sites of this study were Barangay Gabas and Barangay Kilim in Baybay, Leyte, the Philippines, immediately below the 2236 ha Community-Based Forest Management (CBFM) project where all respondents resided. The sites lie between 124°48' longitude and 10°43' latitude, having a climatic type IV with more or less evenly distributed rainfall throughout the year. On average, June to January are wet months while February to May are relatively dry. Average annual rainfall is 2500 mm while the average annual minimum temperature is 22.3°C and maximum is 33.67°C (PAGASA 2007)².

An interview schedule, field-tested three times to capture the necessary information, was used for the interviews. Thirty members from the CBFM project and 30 members from the irrigation association (IA) were individually interviewed. All respondents were asked about forest environmental services, rewards for the service providers and rewarding mechanisms so that rewards would reach to the environmental service providers. Data generated were analyzed using the Statistical Package for Social Sciences (SPSS 11.0).

Following the survey, a focus group discussion (FGD) with the interviewed respondents was conducted to identify their collective perspectives on forest environmental services, the rewards for service providers and the feasible approaches or mechanisms of rewarding. Both groups were divided into two sub-groups, making a total of four sub-groups in all³.

FINDINGS FROM THE SURVEY OF CBFM AND IA MEMBERS

Respondents' socio-demographic characteristics

The oldest among the CBFM member-respondents was 72 years old and the youngest 22 years. The oldest among the non-member respondents was also 72 years while the youngest was 26 years. The majority of the respondents were male with only eight and seven females for the CBFM members and IA members, respectively. All had married but four were widowers and one was separated.

The literacy level of the respondents was low except for one IA member with a doctoral degree. The majority of the CBFM respondents had reached grade six, as did the majority of IA members. There were 22 natives and eight migrants among CBFM respondents, and 26 natives and four migrants among IA respondents. Both groups of respondents had a maximum family size of 12, with a minimum of three for CBFM members and four for IA members. Farm size ranged from no land managed to 13.5 ha. The maximum annual income of CBFM respondents was PhP189,200 and the minimum was PhP6600. The majority of the respondents (41.67%) worked as hired labourers and farmers with various tenure arrangements. The rest were engaged in vehicle driving, trading or small-scale vending.

Respondents' perspectives on forest environmental services

Respondents considered that the provision of superior quality water was the most important service or public good their forests provided. This is due to the fact that most of them were farmers and highly dependent on water for rice and vegetable production. Only five of the 60

² The sites are contiguous, separated only by a river, so uniform temperature and rainfall conditions apply.

³ Division into sub-groups was undertaken to obtain small groups of five to seven members for ease of managing discussions, and to obtain an indication of how varied the responses are for members of the larger group (i.e. as a form of replication).

respondents mentioned provision of a desirable microclimate, four mentioned aesthetics, and four mentioned soil and water conservation. No-one mentioned biodiversity conservation. Farmers tended to place the greatest importance on forest goods and services from which they directly benefited. In fact, nobody pointed out carbon sequestration and storage as an important contribution of forests to climatic change mitigation. Nevertheless, their responses to other questions that followed, particularly during the FGD, revealed that they valued forests not only due to tangible benefits but also for environmental reasons. The top three services mentioned by the respondents were provision of improved water quality (100%), followed by provision of food and provision of wood (Table 1).

A distinction may be drawn between forest ecosystems services and forest environmental services. During the Global Event on Payments or Rewards for Environmental Services in Lombok, Indonesia, FROM 22–27 January 2007, it became a working definition that ‘forest ecosystems services’ include provisioning (e.g. food, freshwater wood, fibre, and fuel), regulating (e.g. climate regulation, flood regulation, disease regulation and water purification) and cultural services (e.g. aesthetics, spiritual, educational and recreational services), while ‘forest environmental services’ include only regulating services and cultural services. Although this study focused only on forest environmental services, responses on provisioning services were also considered, as shown in Table 1. Thus respondents were asked to list everything about forest ecosystem services from which they have benefited. Spontaneous responses finally revealed, though in a limited sense, their perspectives on environmental services. During interviews, respondents found the questions on environmental services highly technical and difficult to answer, particularly on climate change mitigation and on carbon sequestration and storage.

Table 1. Respondents’ perspectives on forest ecosystem services and the corresponding frequency of preference

Forest ecosystem services	Classification of services	Number of mentions ^a	
		CBFM members	IA members
Provision of water	Provisioning	30	30
Provision of food	Provisioning	16	7
Provision of wood	Provisioning	11	17
Favourable microclimate	Regulating	3	3
Aesthetics	Cultural	2	2
Provision of medicine	Provisioning	1	1
Soil and water conservation	Regulating	2	1
Provision of minor forest products	Provisioning	1	0

a. Totals for each group exceed 30 because multiple responses were obtained.

Respondents’ perspectives on types of rewards

The favoured types of rewards ranged from monetary payments to the education of children of environmental service providers. Seventeen CBFM respondents and 20 IA members mentioned money as the ideal type of reward for environmental service providers. Provision of food was mentioned by six CBFM members and seven IA members. They considered that service providers should receive food when they climb the mountains to secure the forest against illegal cutters, river polluters and kaingineros. The third was recognition or appreciation as pointed out by five CBFM members and six IA members, who suggested that environmental service providers should be honoured or recognized as public servants or given some form of special treatment as a form of gratitude for their efforts. That recognition is similar to being a barangay official but without honorarium or monetary remuneration.

The rest of the respondents nominated the provision of job or livelihood opportunities and materials including raincoats, boots, flashlights and two-way radios necessary to secure the forest ecosystem (Table 2). It appeared that the respondents’ views about rewards were focused on things that would directly compensate the efforts of those who were protecting the forest instead of wider institutional interventions such as provision of infrastructure, security of land tenure or greater tax breaks.

Table 2. Respondents' perspectives on the types of rewards for environmental service providers and the corresponding frequency of preference

Types of reward	Number of mentions ^a	
	CBFM members	IA members
Monetary/cash	17	20
Food	6	6
Recognition/appreciation	5	6
Job/livelihood opportunities	5	2
Provision of materials (raincoats, boots, flashlights, and two-way radios)	5	3
Share harvest from farm	1	1
Education of their children	1	0
No idea	2	3

a. Totals for each group exceed 30 because multiple responses were obtained.

When the respondents were asked about how much they were willing to give or donate on a monthly basis to the environmental service providers, values mentioned ranged from a minimum of Php1.00 up to a maximum of Php1000 (Table 3). It was suggested that donations be collected by a barangay official, kept under her or his custody, and given to the environmental service providers each month.

In aggregate, the sample of CBFM members was willing to donate Php4570/month and the sample of IA members Php2238/month. This amount is equivalent to what Wunder (2005) stated as 'bundled payment scheme' for the synergistic services from the forest. However, the figure is relatively small and probably not attractive to the service providers. People protecting the forests might be discouraged and opt to stay on their farms and grow crops. Nevertheless, the result was only based from 60 participants. If the whole community will be involved, large amount could be pooled together for that purpose.

Table 3. Statistical description of the monetary rewards that individual respondents were 'willing to give or donate' to the service providers per month (in Php)

Statistical parameter	CBFM members	IA members
Mean	152.33	74.60
Median	50.00	10.00
Mode	50.00	1.00
Standard deviation	226.66	199.60
Minimum	1.00	1.00
Maximum	1000.00	1000.00

Respondents' perspectives on rewarding mechanisms

Most of the respondents mentioned the 'collection of donations (food, money or both) from the barangay residents' as one of the rewarding mechanisms. Accordingly, a person should be assigned to collect such donations on a monthly basis and give these to the service providers. The next most favoured mechanism was to 'ask support (in livelihood opportunities or funds) from the local government unit (LGU) through a barangay resolution'. On the other hand, two of the respondents (among those with higher education) pointed out 'the need to evaluate the people who should receive rewards' as one criterion in rewarding mechanism. They emphasized that only the deserving service providers should receive rewards. Some respondents mentioned allocating a set percentage from farm income while others suggested seeking non-farmer sponsors to provide rewards (Table 4).

Table 4. Respondents' perspectives on rewarding mechanisms and the corresponding frequency of preference

Rewarding mechanisms	CBFM	IA
	members	members
Ask support (livelihood opportunities, funds for forest protectors) from LGU through a barangay resolution	9	8
Meet barangay residents/farmers to agree on the kinds of rewards and the modes of rewarding mechanisms	3	3
Formulate barangay ordinance to support (in kind) the people protecting the forest	2	0
Collect donations (food and/or money) from the barangay residents (somebody should collect)	12	10
Personally show hospitality to people protecting the forest	1	1
Look for sponsors to give rewards	0	2
Share percentage from farm income	0	2
Evaluate the performance of forest protectors and determine the compensating reward	1	1
No idea	2	3

Respondents' perspectives on the reward providers

When respondents were asked which agencies they thought should provide rewards, 68.3% pointed to the government as the responsible institution while 1.7% mentioned non-government organizations (NGOs). Two respondents mentioned that the beneficiaries of water from the forest and the barangay residents who gathered fuelwood, non-timber products and food from the forest should provide the rewards. One IA member respondent nominated the 'rich people' who may have the heart to share something for the good of the environment. Two religious CBFM members mentioned God as the ultimate provider of rewards. The rest had no idea about the topic (Table 5).

Table 5. Agencies mentioned by the respondents that should provide rewards to environmental service providers

Reward providers	Number of mentions ^a	
	CBFM members	IA members
Government (LGU and DENR)	23	25
NGO/foreign funding agencies	3	2
People who benefit from water	1	4
All barangay people	1	1
Rich people	0	1
God	2	0
No idea	3	1

a. Totals for each group exceed 30 because multiple responses were obtained.

FINDINGS FROM THE FOCUS GROUP DISCUSSION

The focus group discussion produced more pronounced responses on forest environmental services (Table 6). Three sub-groups mentioned that the forest enhances the microclimate and aesthetic value of the site. Also, all groups agreed on two aspects: that the forest serves as wildlife habitat and as a source of high quality water for farms and other domestic uses. Even though the focus group discussion involved the same set of respondents who were individually interviewed, the responses on environmental services provided further insights which could be due to the collective effort of the group members in looking for answers to the given questions.

Varied responses emerged when the smallholders were confronted with the types of rewards. Only one group mentioned a budget from the LGU, one mentioned incentives (in kind), one some recognition or appreciation, and one mentioned supplies and equipment. The two sub-groups among IA members agreed that money through contribution from the community residents was one possible reward.

As to the mechanisms by which rewards would reach the service providers, the two sub-groups in the CBFM member category agreed that barangay officials should make a joint resolution together

with the environmental service providers or forest protectors and endorse it to the LGU and DENR for funding. One group pointed out that barangay officials should recommend the environmental service providers to the LGU for financial support through a resolution while one group suggested giving the cash rewards directly to the forest protectors. Groups 1 and 2 under CBFM and group 1 under IA were undecided about how much they were willing to donate to people for forest protection. According to the IA members, they needed to meet the people in the barangay to determine the appropriate amount. Furthermore, all sub-groups identified that the government should be the rewarding agency for those who protect the forest. One group mentioned the water district, two sub-groups (IA members) pointed to the barangay residents while the rest mentioned NGOs.

Table 6. Respondents' collective perspectives during the FGD

Parameter	CBFM members		IA members	
	Group 1	Group 2	Group 1	Group 2
Forest ecosystem services				
Enhance aesthetic value to the environment	/	/	/	X
Enhance microclimate amelioration	/	/	/	X
Protect soil against erosion	X	X	X	/
Purify water	/	X	X	X
Provide source of livelihood	/	/	X	X
Provide source of water for farms and other domestic uses	/	/	/	/
Provide source of wildlife for food	X	X	/	X
Provide source of wood, food and medicine	/	/	X	X
Provide wildlife habitat	/	/	/	/
Types of rewards for forest protectors				
Budget from LGU	X	/	X	X
Incentives (in kind other than cash)	/	X	X	X
Money through contribution from the community residents	X	X	/	/
Radio and other supplies and equipment needed for forest protection	/	X	X	X
Recognition/appreciation	X	/	X	/
Rewarding mechanisms				
Barangay officials recommend financial support for forest protectors through a resolution to the LGU	X	X	X	/
Give cash rewards directly to the forest protectors	X	X	/	X
Look for sponsors to give the rewards (either cash or in kind useful in protecting the forest)	X	X	X	/
Forest protectors and barangay officials make a joint resolution and endorse it to the LGU, DENR and/or the National Government	/	/	X	X
Amount they are willing to donate as cash reward per month				
Cash	X	X	X	5000
Undecided	/	/	/	X
The right agency/institution that should reward service providers				
Barangay residents	X	X	/	/
Government (DENR, LGU, NIA)	/	/	/	/
NGO	X	X	X	/
Water district	X	/	X	X

Note: Abbreviations and symbols used: / = cited by the group, X = not mentioned, DENR-Department of Environment and Natural Resources, LGU-Local Government Unit, NIA-National Irrigation Authority

CONCLUSION AND RECOMMENDATIONS

There is a need to further enlighten the respondents and the various stakeholders on the potential revenues that can be generated from carbon sequestration and storage, biodiversity conservation as well as soil and water conservation, which could enhance income of smallholders engaged in forestry and agroforestry initiatives. Nevertheless, it is clear that respondents value highly the forest ecosystem as a source of water, food and wood and recognize that environmental service providers deserve rewards in view of the latter's effort to protect the remaining forests in the Philippines. In their modest ways, they were willing to contribute a portion of their monthly

income to sustain the generation of those environmental services. They were, however, counting on the Philippine Government and non-government organizations to play a greater role so that rewarding the environmental service providers in the country could be realized.

The Philippine Government is affirmative on establishing a PES program in the country. On 9 March 2007, the Philippine Government conducted the National Multi-Sectoral Forum on 'Costing for Environmental Services: Implications to Policies' as a formal recognition of a PES program in policy formulation.

Rewarding for environmental services is a potential venue for smallholders to enhance their income. However, it is still a new program in the country that requires intervention by the Philippine Government. It is suggested that, in line with this, the government consider the perceptions of smallholders on rewarding environmental service providers including the findings from this study and strengthen the rights of the local people over these environmental services through policy implementation. The government could also establish and strengthen clear and efficient market mechanisms for these forest environmental services and should serve as mediator between sellers and buyers of environmental services to ascertain that the rural poor or smallholders would generate financial benefits from these mechanisms.

ACKNOWLEDGMENTS

The author is grateful to the Southeast Asian Regional Centre for Graduate Study and Research in Agriculture (SEARCA) and the Commission on Higher Education (CHED) of the Republic of the Philippines for their financial support. He is also indebted to Teodoro Villanueva, Wilfredo Carandang, Myrna Carandang, Juan Pulhin and Tony Abamo for their technical assistance.

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Appendix Table 1. Carbon sequestration forestry project (adopted from Calderon, c2002)

Host Country	Company/Country Involved	Forest Area	Nature of Activity	Estimated C Benefit	Cost	Year/Duration	Source
Innoprise Corp. of Sabah, Malaysia	Forest Absorbing CO2 Emissions (FACE), the Netherlands for Dutch power companies	2,017 ha by 1994 4500 ha for Phase 3 (1998) 150,000 ha total area targeted	Enhanced natural regeneration with native species	183tC/ha over 60-year rotation	US\$1.3 M or US\$353/tC		Makundi <i>et al.</i> 1999
ICSB, Malaysia	New England Power (Already acquired by US Generating Co., Inc.)	Phase 1: 1,415ha (1995) Phase 2: 2400ha	Reduced impact logging	65tC/ha	US\$4/tC		Makundi <i>et al.</i> 1999
Salish and Kootenai Tribes of Montana, USA	London Office of Sustainable Forestry	250 ha	Reforestation of high-altitude pineland	47,972 tC	Initial investment US\$50,000 (Tribes will own C offset after 80 year term)	80 years	ENN 2001
Belize, Central America		97,166 ha of subtropical, humid, savannah, and marsh	Reduced impact logging and protection				Asamadu 1999
Government of Bolivia	3 US Energy Companies, Local conservation NGO	850,000 ha	Forest Protection, management as carbon sink		US\$9.5 M		Asamadu 1999
Government of Costa Rica	Government of Norway	Plantation forest in Costa Rica	Carbon Offset		US\$2.0 M		Subak 2000
State Forests in New South Wales, Australia	Tokyo Electric Power Co. (TEPCO) Japan	40,000 ha	Forest Plantation establishment		US\$130 M (world's largest C trading agreement)	10 years	Ponder 2000
Government of the State of New South Wales, Australia	Pacific Power	1,000 ha	Eucalyptus hardwood plantation			1998	Asamadu 1999
Queensland government- Department of Primary Industries- Forestry Australia	Southern Pacific Petroleum, Central Pacific Minerals and Greenfield Resource Options	150 ha	Mixed hardwood species for carbon sequestration and timber production			25 years	www.egoli.com.au