

Environmental Service “Payments”: Experiences, Constraints and Potential in The Philippines

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Developing Mechanisms for
Rewarding the Upland Poor in Asia for Environmental Services They Provide

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INTRODUCTION

About 70% of the country's total land area consists of watersheds. A watershed is a land area that catches and drains water into particular catchments downstream. The ability of the watersheds to regulate the quantity and quality of water depends on its land cover. Forests have traditionally been associated with watershed protection since trees can regulate the flow and cleanse water that drains to the catchments. The forestlands (accounting for 53% of total land area or 15.88 M-ha) are mostly found in the watersheds. In the mid 1990s, however, the land area with natural forest cover was reduced to only 5.49 M-hectares (National Watershed Management Program, 1998). The rapid rate of deforestation over the last fifty years was attributed to rampant logging activities, both legal and illegal, which paved the way for forestland conversion into agricultural lands and settlements. The practice of shifting cultivation also played an important part in the rapid denudation of the country's forests. The situation was aggravated by the high population growth, tolerated and even encouraged, in a Christian-dominated country. This puts extreme pressure on the nation's fixed land resources, a big part of which is under the control of a few, politically influential, families. It was estimated in 1988 that 18M people are already residing in the now fragile upland watersheds, which at the growth rate of more than 2% would have risen to 25 Million in year 2000 (Lim Suan and Rosario 1995).

Knowing the importance of the forests for watershed protection, the challenge is to protect the remaining natural forest, encourage non-destructive/pro-environment land uses in secondary forests, and promote sustainable land uses/practices¹ in deforested areas, including cultivated areas. Natural forests and tree-based land uses are important not only because of the critical role they play in providing adequate quantity and quality of water to consumers/users. Their role is also important in maintaining high biodiversity of flora and fauna and also in contributing to reduction of global warming. These environmental services are very important since they serve as the base of economic activities; they support ecological balance, and provide nature-based amenities that make living an enjoyable experience. These are in addition to the life support function that a forest-based ecosystem provides to all life forms, other than humans. It is also important to point out that

¹ Existing land uses in deforested areas vary from grasslands, mono cropping of annual crops (e.g. rice, corn, vegetables), mixture of horticultural, forest, and cash crops (agroforestry), and tree plantation forests.

fortunately, the provision of watershed protection, biodiversity maintenance, and carbon sequestration are joint products, with minimal tradeoff to be expected at some point in time (e.g. cutting down of trees to increase quantity of water may entail loss of biodiversity). These three-fold benefits are important considerations that must be weighed vis-à-vis the cost of maintaining the desired land uses.

The results of this benefit-cost balancing process seem to yield obvious implications—but this could only be true from society's perspective! Unfortunately, land use decisions in a big part of the uplands cum watersheds are private decisions², made by farmers whose main concern are benefits that accrue to their households in terms of returns from land-based production and forest-extraction activities. Oftentimes, the preferred land uses are those that yield short-term private benefits but at the expense of environmental services that are important to society, at the national and global level. It is the recognition of these potentially non-tangential interests of society and upland farmers (albeit, only a short-run perception) that led to the dominance of community-based project initiatives of the government and other development agencies in upland areas. Under this approach, upland communities are engaged as partners in efforts to protect the environment. Cooperation is oftentimes achieved through provision of various forms of assistance directed at improving the socioeconomic conditions of the upland communities.

This paper reviews the form of incentives or rewards that have been provided to upland communities in a number of sites under different management leadership in the Philippines. It also discusses what the upland farmers have to do in return for these rewards. The goal of such a review is to evaluate what elements are present in these communities that will support an environmental reward system and in the process, assess the potential of the case study sites for inclusion in RUPES.

The succeeding discussion is divided into three parts: The first part briefly presents the situations

² It is recognized that government or non-government agencies and even business sector (water and electricity utilities) can themselves engaged in land use activities in upland areas—especially, in critical areas to support any or a combination of the three environmental services mentioned. These activities are not the concern in current and renewed efforts to promote environmental service payments. After all, these agencies are already doing environmental service provision—because it is their mandate or their business. This is not true for many upland farmers.

with regards ESP and environmental service provision in a number of forest communities in the country. This is followed with a discourse of the key observations discerned from the cases analyzed. The concluding part identifies the issues that must be resolved in the design and institutionalization of ESP system in Philippine watersheds.

CASE STUDIES OF ENVIRONMENTAL SERVICE 'PAYMENTS' IN THE PHILIPPINES

'Payment' in the true sense of the word involves transfer of cash (or a good in a barter economy) in exchange for a good or a service, usually occurring in a market setting. This definition is quite limiting, however, when one speaks of environmental services, as different forms of 'payment' exist in the 'production' of said services (Figure 1). Upland communities collaborating in the implementation of forest /watershed management projects could be 'paid' or compensated in terms of wages for services rendered, provision of free planting materials, conduct of skills-training, technical assistance, and tenure security, among others. In this broader sense, the payment takes the meaning of rewards. For the purpose of this paper, however, these two terms are used interchangeably.

Nonetheless, a parallelism can be drawn in a market setting in the sense that the payment or reward involving environmental services also involves 'buyers' and 'sellers'. In this paper, the 'seller' is the provider of the environmental service—particularly, the upland farmers performing sustainable agricultural land use practices and/or participating in reforestation and watershed rehabilitation activities.

The focus on the upland farmers as providers of environmental services is justified since other environmental service providers (e.g. government, non-government organization [NGO], water district, and hydropower company) are presumably already getting 'paid' for doing their respective tasks—either in terms of salaries for organizations whose mandate is environmental service provision or through the revenues received from the product (e.g., water, hydroelectric) that made use of the environmental service as 'input' to production.

The 'buyer' referred to here is the beneficiary of the environmental service, e.g., water users, hydroelectric consumers, bio-prospecting firms, water district and hydropower firms, generator of carbon gases, and society (–national and global--at large, represented by the government, NGO, Local government unit, and international organizations).

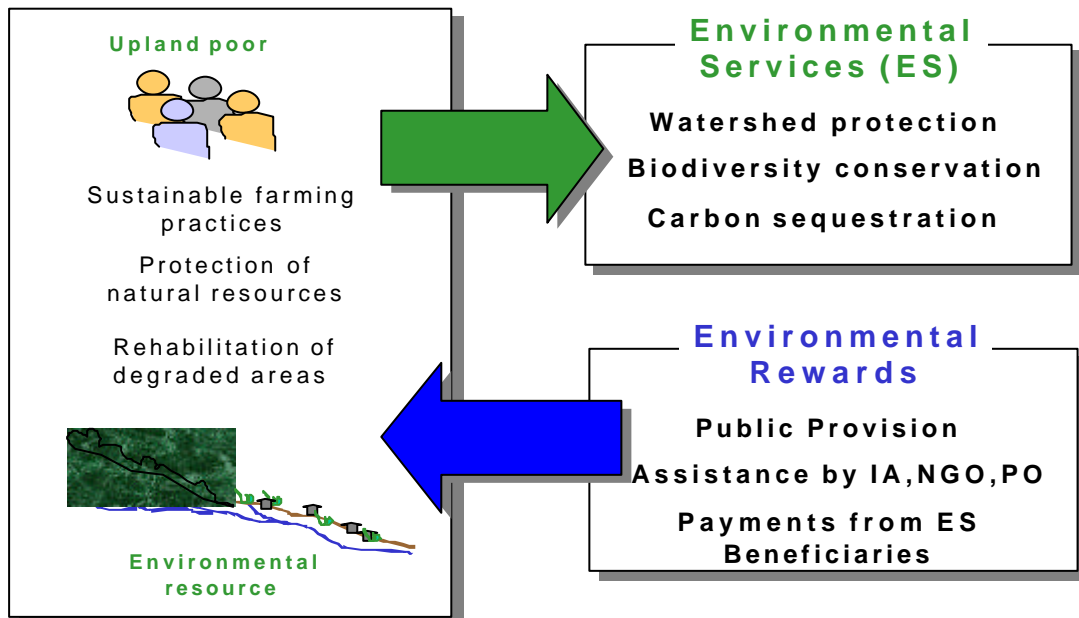


Figure 1.

Figure 2 presents a schematic presentation of the actors (buyers and sellers) involved in environment service provision. It also shows that 'payments' or rewards can be broadly classified into public provision (for assistance provided by the government, usually, as part of the development assistance packages);

(MFR) to the 359,486 ha-Northern Sierra Madre Natural Park (NSMNP). They also vary in management leadership consisting of a State University (MFR), LGU-spearheaded Watershed Management Council (Maasin Watershed), Protected Area Management Board (PAMB)-with NGO support (Plan International) for the NSMNP,

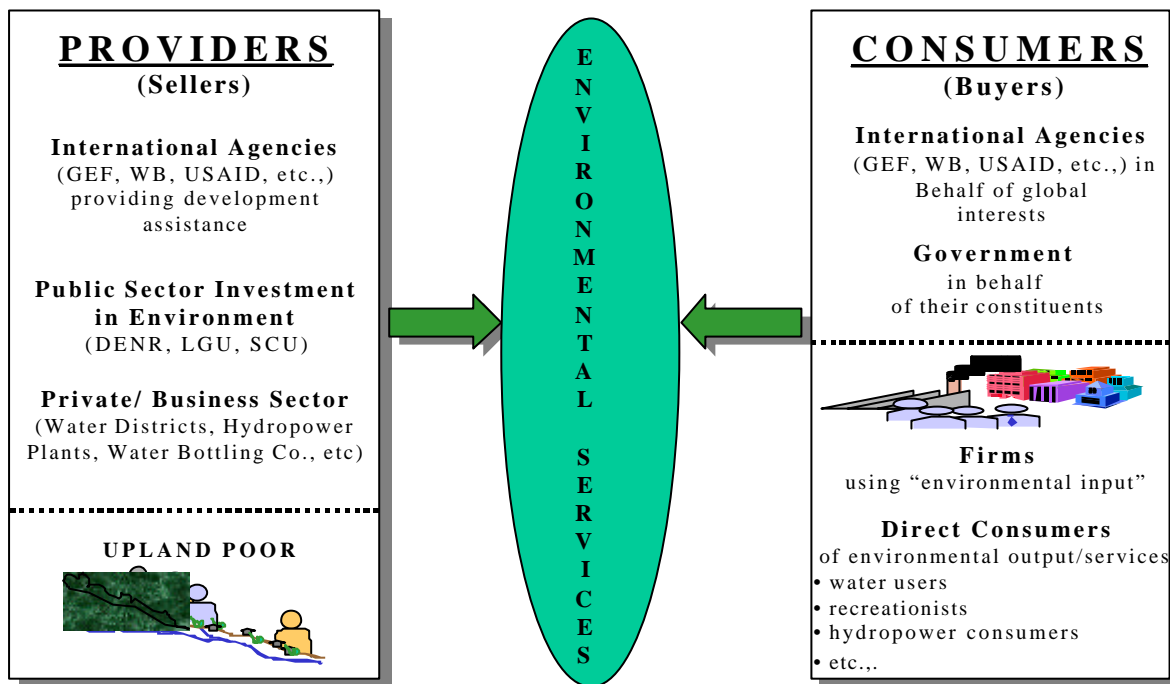


Figure 2.

support given by NGO, international organizations, and even by business firms, usually packaged through upland development projects or pro-poor initiatives; and payments made by direct beneficiaries of the environmental service (e.g., water districts, hydroelectric firms, fisher folks, industries engaged in bio-prospecting and firms that exceed their carbon emissions, among others).

The succeeding discussion presents cases where these relationships are examined.

The case study sites were chosen to represent the wide range of development assistance and interventions taking place in different watersheds of the country. The sites vary in size of land area ranging from the 4,244-ha Makiling Forest Reserve

and PAMB-with NIPA (NGOs for Integrated Protected Areas) for the Mt. Kanla-on Natural Park. The last site was included specifically to highlight the important role that the business sector (water bottling company) can play in developing an effective ESP schemes. The funding sources for watershed protection, rehabilitation and management activities also varies with the University-led MFR having the least external support with greater funding going to CPPAP-MKNP from GEF-WB and the NSMNP from EU and USAID. Equally well-funded is the Maasin watershed where the important role that a local government unit can play in addressing an environmental problem is demonstrated. The cases also point to the important legal provisions that can support the implementation of ESP program in the country.

Case 1: The Makiling Forest Reserve (MFR): Managed by the University of the Philippines

The Mt. Makiling Forest Reserve (MFR) is a 4,244-hectare forestland whose administration and management are vested in the University of the Philippines Los Banos (UPLB). It is an important resource because of its biological diversity, watershed, recreation, geo-thermal and scientific functions³. It is also a major source of livelihood to some 300 households living within the watershed and is being farmed by another 700 farmer-claimants who are residing outside of the watershed in adjoining communities.

The Problem: There are reports of poor water quality in some areas and inadequate supply during the dry season. This was largely attributed to the relatively growing proportion of degraded lands in the MFR that require rehabilitation. There are also signs of continuing encroachment in the area, signifying inadequacy of monitoring and enforcement mechanisms due in part to inadequate resources allotted for resource protection and rehabilitation of the MFR.

The Solution: The University has shifted the focus from punitive (eviction policy) in the late 1970s to open policy of partnership with communities in protection efforts in the 1990s. The 1980s was characterized by a period of inaction by the University, at which time, the people organizations, with assistance from a project funded by CIDA through the School of Environmental Science and Management (SESAM) and from some NGOs, have gained strength in number and organizational and bargaining skills. By the mid 1990s, there was a renewed concern by the University, specifically, the College of Forestry and Natural Resources (CFNR) for improved management of the MFR. Towards this end, it has developed the Master Plan for the MFR area, which was signed as Executive Order by the President of the Philippines in 1996. One of the key elements of this Plan is the issuance of accreditation system to formally recognize the bona fide residents of the area through some form of tenure in exchange for the people's commitment to conserve and protect the forest.⁴ The Master Plan also puts strong

emphasis in the involvement of various stakeholders in MFR management. It has also identified several projects for the maintenance of biodiversity in the area and the rehabilitation of the degraded areas, as well as the continuing promotion of sustainable farming practices in the uplands. The major constraint the University faces is the inadequacy of funds to generate the resources it needs to support the various programs and initiatives embodied in the Plan.

Environmental Service Provision by Upland Communities: In the 1990s, the upland communities in MFR have begun to demonstrate their eagerness to be considered as a key player in issues concerning MFR. This interest has resulted largely from the community organizing (CO) efforts made by certain NGO and through the University Project in the community early part of the 1990s. For instance, the upland farmers through the people organizations (POs) have collaborated with the University in boundary delineation efforts that entail the planting of tree species along MFR boundary. They also helped put signs that mark the area as a protected zone. Some of the farmers also participate in reforestation activities, funded through the University, largely as labor. They have also been involved in protecting the water sources of the area in exchange for the pump donated to the community by an NGO. Most importantly, majority of the upland farmers are adopting agro-forestry systems in their occupied areas. In addition, the POs themselves have made a commitment to prevent entrants into the place and also to prevent further expansion by members into the remaining forest zones. There were cases of apprehensions and cases filed in court from these efforts though one traveling to the site can still easily spot new land clearings and additional houses being built along the forest boundary.

Prior to the 1990s, the involvements of the upland farmers were limited to their engagement as hired workers in some reforestation activities by the University.

Environmental 'Payments' or Rewards to Upland Communities: In return for the cooperation of the upland communities in forest protection, the University has provided various forms of rewards to the upland communities. A few years back, it has offered to accredit bona fide farmers through some form of memorandum of

³ The basic function of MFR is as a social and experimental laboratory for the University; hence, its control was placed under the UPLB.

⁴ Not much success on this instrument has been achieved, however, because of resistance of certain people organizations ((POs) to acknowledge the authority of the University in the MFR. The community organizing efforts have succeeded in dividing POs into two groups: the more vocal-

"anti" University who has been taught of the power of an organized group in getting what they want—and the other, more pro-institution, but less vocal group who are willing to cooperate with the University's Programs in MFR.

understanding between the farmer and the University. However, some of the more active vocal farmer-groups want a more secure tenure than this arrangement; something that the University felt it is in no position to provide. Since, there is no consensus on this aspect among the POs, the efforts by the University to push this was put to a halt. The POs who participated in forest boundary delineation were given some cash incentives for the services they rendered. Those who participate in reforestation efforts were also paid for their labor. The University has also sponsored a number of training on sustainable land uses and practices and also on livelihood development. There are also limited scholarship supports to high school students in the University's efforts to provide the young people better employment opportunities. Lately, the University has also given the upland farmers medical discounts for the use of the University Infirmary. It has also provided skills-training to those who can be employed in the resorts in the Los Banos-Calamba area, as a commitment made by these resort operators as the form of their in-kind contribution or 'payment' for watershed protection services of the upland communities. Some business sectors have also sponsored reforestation/tree-planting projects, which were contracted to the PO. There was also an NGO, which provided a water pump in return for the POs efforts to protect the water sources.

Currently, there is no payment made to the farmers who are adopting agro-forestry systems and other sustainable practices and this situation is likely to remain. There is an un-written understanding that upland farmers may cultivate the land in MFR, in exchange for the environmental services that they provide. In a way, the environmental service becomes a "payment" by the farmers for their continued use of the land resource or vice-versa, the use of the land becomes the 'payment' by society for the environmental service—akin to a barter transaction.

Potential for ESP Payments (RUPES): To address the concern regarding inadequacy of funds required to implement the projects embodied in the MFR Master Plan and at the same time, to effect the desired attitude towards the use of environment and natural resources in the area and in the downstream communities, the University has initiated efforts to use Economic Instruments for MFR resources⁵. The development of economic

instruments, particularly, watershed protection fee to be imposed to water users (industrial and household), recreationists, and other off-site beneficiaries of watershed protection was studied. Various public consultations and meetings with concerned agencies were held and a decision was reached that there is a need for a multi-sectoral group to be formed to manage the Fund into which the revenues from the watershed protection fees would be deposited.

The major bottleneck to this effort of imposing a watershed protection fee is the legal basis of such a collection. Though the University has claimed that it has the legal authority to do so by virtue of the Republic Act 6967 that vests control over MFR to the University, which was supplemented by Executive Order 349 that approves the MFR Master Plan, it is not clear if these bases will hold water on the legal court. It was nonetheless established that there seem to be a general acceptance of the principle that "beneficiaries of the forest should contribute financially to efforts of managing the resource" among the different stakeholders. Still, the legality of such a collection by the University needs to be resolved. Alternative possibilities under discussions are collaboration with the National Water Resources Board or the Local Government Unit (LGU). Discussions on this matter points to the strength of the Local Government Code (see Box 1) as the best alternative to impose the fee. The recent experience in the Maasin watershed sets a precedent that may be adopted by other LGUs.

The only complication is that the reliance by the University on the LGU would mean the transfer (or sharing) of control of MFR management to the LGU. There is still a general apprehension in certain sectors of the University that bringing in LGU into the picture may jeopardize the function of MFR as social laboratory. This is especially so since some LGUs have already expressed the desire to gain control over the resource, knowing its huge revenue potential. Some of their constituents are also residents of the MFR, and therefore it will give them political mileage to have the controlling force over the resource. Where the situation will end—is anybody's guess but is something that can be influenced after careful design of the strategy that the University must take. To this end, the MFR seems to offer a good potential for RUPES application in the Philippines since some initiatives have already been made towards this direction.

⁵ This activity was funded by UNEP in collaboration with the Resources, Economics, and Environment Centre for Studies, Inc (REECs) in 1998 to 2000.

Case 2: Maasin Watershed: Management Spearheaded by LGU with Multiple Funding Sources ⁶

The Maasin watershed covering 6,738 hectares was declared a watershed reservation as early as 1923. It covers three municipalities, 16 barangays, and 80 sitios and is source of water to 500,000 residents of Iloilo City and about 2000 households along the way. It also provides irrigation water to 2,900 hectares belonging to 1,276 farmers.

The Problem: About 64% of the watershed is already open or cultivated. The loss of forest cover resulted in the reduction of the watershed resource potential of the area. As a consequence, only 35% of the household water requirements of Iloilo City could be met by the resource, with the remaining water requirements being sourced from Guimaras Island and nearby districts. There is also shortage of irrigation water during dry season, thus, reducing cropping intensity in the place.

Furthermore, the water users are already beginning to notice poor water quality and intermittent faucet flow from service pipes of the Metro Iloilo water district. These situations led to strong clamor for watershed rehabilitation in the area.

The Solution and LGU role: The Governor of Iloilo responded to the situation by making the rehabilitation of the Maasin watershed a top priority of the province. To push this agenda, he created and chaired the Maasin multi-sectoral task force. The task force then asked the Department of Environment and Natural Resources (DENR) to undertake the feasibility study of the planned Watershed Rehabilitation Project. At the same time, the task force launched a massive information, education and communication (IEC) campaign in print, radio, and television to generate public awareness and support to the Watershed situation.

Financing: As a result of the various efforts, the task force was able to raise funds from the following sources:

- P0.5M donations from various groups of civil societies. The provincial government has provided a counterpart fund of P0.5M as well.
- DENR has allocated the following funds from various sources:
 - ADB Fund of P1, 778,450 for Survey, Mapping and Planning

- OECF fund of P44, 269,143 for community site development activities in 2,685 hectares and P4, 833,000 for community organizing, and P2, 610,635 for monitoring and evaluation
- National Government provided P9, 473,936 for rehabilitation of 1,070 hectares and P2, 479,000 for community organizing
- OECF loan of P1, 884,294 covering 100 hectares and P41, 000 for the establishment of 20,000 sqm of vegetative strips
- Metro Iloilo Water District provided P1M contribution for watershed protection activities.
- The National Economic and Development Authority (NEDA)—has also allocated P3.7M for the construction of 2,850 cum of structural measures (GABION) and provided P1.4M to undertake three research studies. It has also provided P573, 000 for the establishment of 53,900 sqm of vegetative erosion control measures.

Environmental Service Provision and Reward of/to Upland Communities:

The communities are tapped in the project as partners in this massive watershed rehabilitation projects. The organized communities were contracted to undertake comprehensive site development (CSD) with full funding for various activities such as reforestation, assisted natural regeneration, timber stand improvement, agroforestry, rattan and bamboo enhancement, and others. To carry out this big task—technical assistance was also provided through the assisting organization and the DENR. The upland communities are also provided training in various aspects of forest management, both technical and organizational/management. One big problem with working with recognized POs is that membership oftentimes represents only a small segment of upland population. In which case, a few families, often the more vocal and influential members of the community, largely appropriate the “rewards” of participation in watershed protection endeavors. This is one dominant reason why activities initiated by the project are not sustained once project life ends.

Accomplishments: With these ample resources⁷ allocated to the project over the last 3 years, significant accomplishments were achieved in terms of both Physical and Social Accomplishments. These are summarized in Box 1 below

⁶ Facts were taken from the paper presented by Maasin Mayor Mariano Malones in a water forum sponsored through a UNEP-funded project in Mt. Makiling Forest Reserve.

⁷ The *Kahublagan Sang Panimalay Foundation, Inc* (2001) termed this “investment overkill”.

Box 1: Summary of Major Accomplishments in the Maasin Watershed

- CO organizing works with 16 people associations (PO) organized into a federation
- Completion of socioeconomic baseline surveys in upland communities
- Assistance provided to POs who were contracted to do site development
- Conducted series of IEC
- Provided numerous training for team building, leadership, preparation of feasibility studies, and others.
- Tenure security embodied in the community-based forest management agreement (CBFMA)⁸ that allows 25 years of stewardship renewable for another 25 years.
- Assisted PO in establishment of 17 livelihood projects
- Physical accomplishments of the OECF Loan as of December 1999 comprise of: reforested 1,050 ha; agroforestry (749 out of 884 ha target); bamboo (249 ha) and riverbank stabilization (60 ha) and rattan (94 of the 111 ha target).
- The GOP funding accomplished the following: riverbank rehabilitation of 270 ha, agroforestry development in 300 ha, ANR in 300 ha, and vegetative measures in 20,000sq.m
- The following protective infrastructures were also put in place: 85 km trails; 700 m fire lines; 77 units of nursery, look-out tower of 7 units, 14 Gabion, and 6 units of concrete dam.

Sustaining the gains: The efforts made under the CBRMP can be considered a success. The area's old growth forest was protected and open cultivated areas were reduced significantly in exchange for various watershed protection initiatives mentioned earlier. There were also substantial investments in IEC, capacity building and training of project implementers--the people organizations, being the active players. The remaining concerns of the LGU is sustaining the watershed protection efforts through sustained IEC activities, successful livelihood activities and maintenance of people organizations' commitment to what have been achieved this far.⁸

To this end, the Ford Foundation immediately responded with the funding of "Watersheds' Learning Communities" in mid 1999 to 2001. This project basically adopts an IEC and networking approach to mobilize community

participation in environmental protection projects within the watershed, including solid waste management. The project supported the school-on-air;

"Ugat Sang Tubig" that was launched in 1998 has formed 70 barangay information centers. These centers become institutionalized in the local Government and serve as venue for initiating community actions that benefit the environment—termed as "People's Initiatives". In these initiatives, the role of the youth, children and women are encouraged.

⁸ The release of this instrument suffered a major drawback when the local government unit did not endorse this to the DENR—largely due to what they termed "limited understanding by LGU of the benefits and potentials of community-based forest management" and political differences. In spite of agreements among LGUs, the DENR has not yet released the tenure instrument causing major disappointment among the people (*Kahublagan Sang Panimalay Foundation, Inc.* 2001).

Equally important is the success of the Project in facilitating the creation of the Iloilo Watershed Management Council through a Provincial Ordinance. This social infrastructure is very important in sustaining and operationalizing the watershed approach of managing forest resources in this important area—something that is really going to be a 'learning experience'.

Potential for RUPES: One cannot help but agree with the assessment made by the *Kahublagan Sang Panimalay Foundation, Inc.* that there appears to be an 'investment overkill' in the Maasin Watershed Rehabilitation Program with funding sourced out from various sources. This was made possible by the strong leadership of the LGU. One would require a lot more information (and wait for some more time) to be able to say if this cost is justified by its benefits. The listing of accomplishments needs to be validated and their sustainability—assessed for these to translate into real benefits.

Nonetheless, one can safely say that the extensive CO efforts and the massive IEC in the area, as well as the establishment of the watershed management council have resulted in the development of a social infrastructure that are important in the operationalization of the watershed approach by community management in the area.

The big role of the LGU is another very important element of the social infrastructure in this site that makes this a strong candidate for RUPES application. The LGU has behind it a powerful law that can support any initiatives it may have in natural resource management of areas under this jurisdiction.

The legal basis is provided by the Local Government Code and is summarized in Box 2.

Box 2: Legal Basis for the collection of the Share of the local government

(Republic Act 7160, otherwise known as the Local Government Code of 1991; specific provisions)

Section 289—Share in the proceeds from the Development and utilization of the National Wealth. Local Government Units shall have an equitable share in the proceeds derived from the utilization and development of national wealth within their respective areas, including sharing the same with inhabitants by way of direct benefits.”

Article 386 (b) for the Rules and Regulations Implementing the Local Government Code of 1991. The term Natural Wealth shall mean all natural resources situated within the Philippine Territorial jurisdiction including lands of public domain, waters, minerals, coal, petroleum, oils, potential energy forces, gas, and oil deposits, forest products, wildlife, flora and fauna, fishery and aquatic resources, and all quarry products.

Section 291. Share of the local government from any government agency or owned and controlled corporation engaged in the utilization and development of national wealth based on the following formula, whichever, will produce a higher share for the LGU:

- One percent (1%) of the gross sales or receipts from the preceding calendar year; or
- 40% of mining taxes, realties, forestry and fishery charges, and such other taxes, fees or charges, including related surcharge interest of fines the government agency or owned or controlled corporation would have paid if it were not otherwise exempt.”

Section 293. Remittances of the share of LGU. The share of the LGU from the utilization and development of national wealth shall be remitted in accordance with section 286 of this Code. Provided, however, that in the case of any government agency or government owned or controlled corporation engaged in the utilization and development of the national wealth, such shall be directly remitted to the provincial, cities, municipal, or barangay treasurer concerned within 5 days—after the end of each quarter.

This legal basis was used by the Maasin LGU to demand in court that the Metro Iloilo Water District pay 1% of the MIWD gross revenue for its use of (portions) of the watershed, part of which is expected to be used for the protection of the Maasin Watershed. The court decided in favor of the LGU—which compelled the water district to make this regular payment to the LGU for the last few years now. Another important element in the project’s success is the strong role of the IEC campaign. The IEC activities have created high awareness among the relevant populace on the problem and the need to address it. It succeeded in mobilizing voluntarism towards watershed protection, which now is the basis of the watershed protection efforts’ sustainability.

Case 3: The Northern Sierra Madre Natural Park (NSMNP): Managed by Plan International (an NGO) with funding from EU and USAID

The 359,486-hectare NSMNP was proclaimed a National Park⁹ in March 1997. The NSMNP is one of the 10 priority protected areas in the country identified as important for biodiversity conservation.

This status was earned because of the following important features of the area, among others: 1) it has varied types of forests along its landscape, consisting of lowland evergreen forest, limestone forest, ultra-basic forest (a rare occurrence), and montane forest, mangrove forest, and beach forest; 2) its lowland rainforest is the largest remaining in the country; 3) it houses at least 28 globally

⁹ The government ensures the protection of genetic pool of biological resources and the life support system of the country through the creation of National Parks.

threatened or near-threatened bird species and six wildlife species; 4) it is the only known habitat in Luzon of the Philippine Eagle (*Pithecophaga jefferyi*)¹⁰; and 5) it is home to indigenous people belonging to the tribes of *Dumagats*, *Palananon*, and *Kalingas* who depend on the forests for their economic and cultural life (Danielsen, F., et al 1994 [in](#) Arano and Acay, 1998).

The Problem: Widespread logging and shifting cultivation practices have reduced the forest resources to 25% its 1950s level by the early of 1990s (Conservation International, 1992). The destruction continued despite of the designation of the area as a Palanan Wilderness Area in the late 1970s. The population in the area was estimated to be close to 26,000 people made up of around 5,000 households of various origins. Livelihood activities are dependent on the forest, agriculture, and fishing in communities close to the sea.

The Solution: To avert the continuous loss of forest resources in the NSMNP, various programs were initiated in the watershed. These include the NSMNP-Conservation cum Development Project¹¹, funded by the Dutch Government and managed by Plan International. There were also the community-based forest management (CBFM) projects under the Natural Resources Management Program (NRMP) funded by USAID—established mostly in designated buffer zones to protect the area’s remaining residual and old growth forests. In addition, there was also the Community-based

¹⁰ This eagle is said to be one of the rarest and is the second largest in the world.

¹¹ The project was collaborated on by: the Department of Environment and Natural Resources (DENR), the Protected Area management Board (PAMB), and the so called-Interagency Coordinating Group.

Forestland Regeneration and Related Research Project—jointly undertaken by Plan International and Cagayan Valley Program of Environment and Development (CVPED) with funding also from USAID. In addition, the LGU was also tapped to provide funding for resource management initiatives. In 1996, LGU counterpart funding to the USAID-funded project was P625, 000. This increased to P1, 907,000 in 1997 and to more than P2M in 1998. These are spent mostly for supplies and meals for preparatory activities such as perimeter survey, resource inventory, training activities, nursery establishment, and other livelihood activities. Communities' counterpart takes the form of labor or in-service while private sector investment in CBFM sites was estimated to amount to P1.72 M in 1997.

Accomplishments: The specific accomplishments under the NSMNP-Conservation cum Development Project are given in Box 3:

Box 3: Summary of Accomplishments of the EU-funded NSMNP Conservation Project

- Training of POs and other stakeholders
- IEC
- Community-based Health Program in the Pacific side
- Livelihood program
- Boundary demarcation
- Soil survey
- Hydrologic study and weather monitoring
- Flora and Fauna Survey
- Coastal/marine survey
- Ethnographic studies
- Mapping activities
- Preparation of community-based management plans
- Preparation of management zone demarcation plans
- Infrastructure
- Monitoring and evaluation

For the Community-based Forestland Regeneration and Related Research Project, the major activities are: community profiling, designing and testing of community-based resource management plans; and implementation and monitoring of said plans. It has 5 sites where these plans will be prepared.

Environmental Service Provision Activities by Upland Farmers:

The POs in the CBFM communities have established forest protection teams to protect and arrest illegal entrants /poachers into the area.

This resulted in significant reduction of timber poaching in most CBFM sites (Dolom 1998). They are also contracted to undertake reforestation and other site development activities, with funding from the project and also from the LGU.

Rewards to Upland Farmers: In addition to short-term compensation for participating in various watershed protection activities, the promise of tenure security is the main attraction for people's participation in the project. The community-based forest management (CBFM) agreement is the main instrument used by the DENR to provide access and control to forest resources in the project site. By providing security of land tenure and access to forest resources, it is anticipated that the feeling of co-ownership to watershed protection initiatives among the upland communities will be attained.

This is what is expected in theory! In reality, there are some policy constraints that prevent the communities from realizing the benefits of the community-managed forest resources. Top on the list will be the permitting requirement that tree growers need to comply with before they can cut the trees that they planted. In addition, it is quite common to hear of complaint regarding DENR's tendency to allow overlapping projects with CBFM areas. All these negate the very principle of community management, and thus, have been constraining any move to attain sustainable forest management in the Philippines.

Potential for RUPES: Substantial data on the watersheds have already been collected through the previous projects implemented in the watershed. As noted, most of the works done are data collection, preparation of the plans and community organizing. These efforts are good starting point for RUPES. The big area of coverage though is both a negative and a positive factor. On the positive side, the potential impact is big given that the area covers a wide land area that are mostly degraded. On the negative side, the logistical requirement of implementing any activity in the area is likewise going to be big. On the other hand, the Plan International is still actively implementing the rehabilitation project in the place—and so, RUPES can simply dovetail to the existing initiative in the area.

Case 4: Mt. Kanlaon Natural Park: GEF-WB Funded and Managed by DENR and the NGOs for Integrated Protected Areas (NIPA)

Mt. Kanla-on Natural Park was proclaimed a protected area under the NIPAS Law on May 1997, by virtue of PD 1005. It is one of the 10 priority sites covered by the Conservation of Priority Protected Areas Project (CPPAP), having a land area of 24,557.60 hectares. It covers four cities and two municipalities, with 3,000 household-claimants to the Park. The protected area status of MKNP was earned because of its rich biodiversity—with a big number of flora and fauna, classified as threatened, critical, or endangered. Portion of the park also serves as headwater catchments of three major river systems that drain into Northwestern Negros. Seventy-five percent (75%) of the park belongs to Bago watershed and the rest, to the Nahalin and Binalbagan River Watersheds (MKNP Management Plan 2001).

The Problem: Just like other forest-upland areas, many households inhabit a big portion of the area—both migrants and indigenous people who are economically and culturally dependent on the forest. The importance of the area in biodiversity conservation demands that efforts be made to conserve the diverse life forms found in the park. The watershed function of the park needs to be protected by averting the on-going deterioration of the watershed. Further, there is a need to invest in the rehabilitation of denuded areas, particularly the headwater source portion of the watershed. These efforts must include stabilization of riverbanks and investment in soil conservation measures to arrest soil erosion.

The Solution: As mandated in the NIPAS Law, the policy and decision-making with regards the park's management is vested on the Protected Area Management Board (PAMB). The operational management of the park, on the other hand, rests on the Protected area superintendent (PASu)'s office, duly formed by DENR. The big funding to undertake park protection and conservation activities was provided under CPPAP, a project funded by GEF through the WB from 1996-2001. In the CPPAP scheme, a host NGO (Multisectoral Alliance for Development—MUAD-Negros) was contracted to work with the PASu—with the PASu, largely responsible for the protection, maintenance and rehabilitation activities and the Host NGO with community organizing, IEC, and training of the upland communities. In addition, a big component of the fund was allotted for livelihood projects—a 'come-on' to community participation. As of 2001, however, very limited success on the livelihood

component has been achieved due to the long process of community preparatory work, unclear guidelines on the use of the livelihood fund and lengthy learning process on the approval procedures.

Environmental Service Provision by Upland Communities: The upland communities play a big role in the protection, conservation, and management of the resource. This is because CPPAP advocates community-based, participatory, and multi-sectoral approach of resource management. By Year 2000, 26 POs have been organized comprising of 1,617 members. Out of this membership, 200 Kanlaon Green Brigade (KGB) members have been deputized to engage in forest protection efforts. It was noted that KGB participation is higher in communities with LGU strongly supporting protection efforts in MKNP. The KGB does regular patrolling to spot illegal activities in the park and also to prevent occurrence of forest fires, which used to be a major threat in the area. There were apprehensions made and criminal cases filed, as a result of this cooperation by the upland community.

The POs were also involved in biodiversity assessment, in collaboration with the PASu and the Host NGO staff. This resulted in the documentation of 183 species of flora and 48 species of fauna, both endemic and migratory. Some members of the community were taught to keep field diaries and do photo documentation of species that they can spot along transects that were established for the purpose.

The project also financed reforestation projects with the involvement of the POs. As of 1999, some 500 hectares have been reforested.

Environmental Rewards to Upland Communities: The PO expects to receive tenure security in their cultivated areas and in communal resource through the community-based forest management agreement (CBFMA)—subject to approval by DENR and the preparation of a management plan. Some of the POs have already received funding in their non-destructive livelihood projects, and many are expecting the same benefits once the long-delayed approval of said projects are granted. In addition, some of the POs were contracted to undertake reforestation projects, to which they get cash compensation.

Various training activities were implemented in the area to enhance the capability and skills of the people—particularly those required to make them better managers of the resource and of their livelihood projects. These training and intensive IEC efforts in the area have resulted in heightened

environmental awareness among the people. The end result is reduced occurrences of illegal collection of forest products and shifting cultivation.

Environmental Service Provision by Water Bottling Co. (The Kanla-on Spring Water Plant): The Kanla-on Spring Water Plant (KSWP), owned by La Tondena Distillers, Inc., is located some 8-km away from the park but draws spring water whose headwaters can be traced to the innermost strict protection zone of the park. It is thus easy to see that its business depends on the maintenance of the watershed function of the forest. La Tondena Company is aware of this linkage. Even before its operation in the area, the company has sponsored a 50-hectare project in Bago watershed, its host community. La Tondena Foundation carried out the project in collaboration with the Philippine Business for Social Progress (an NGO) and the PO of Barangay Ilijan. Close to 100 thousand fruit trees were planted along with some forest trees. The Company has also established two nurseries and has assisted 51 local farmers in the adoption of sustainable agro forestry practices such as SALT, multi-storey, rock walling and use of organic fertilizers (Rosales, et al 2001).

When the project was launched, the Company was also required to undertake additional environmental protection activities, as per the Environmental Compliance Certificate issued by DENR. Specifically, 20 hectares were reforested and 80 hectares of forestland were rehabilitated. In the process, about 28 upland farmers were involved, with a budget of P200, 000 in 1997. These farmers were subsequently accredited as members of the Kanla-on Green Brigade.

In addition to these forest rehabilitation activities, the Company also invests in social development projects. It also provides to the host community:

spring boxes that benefits 50 households, 1-2 km-access road, a 2-room school building, free medical clinics, feeding programs and cash donations.

It has assisted the organization of the Ilijan Development Organization (IUDO)—a PO with 98 farm families as members. This PO was contracted to do reforestation activity and was provided with livelihood enhancement programs. The IUDO performed so well in forest management that they have been recipient of the DENR Tag-Amlig Award from 1998 to 2000, making them a Hall of Fame Awardees in the People's Organization-Upland Category—a reflection of the success of the company's efforts in rewarding the upland poor. For its part, the KSWP also won in the Industry category in 1999 and 2001 for its efforts in the community, the most visible of which is the 207 hectares reforested area.

Potential for RUPES: The recent survey of upland households in MKNP by Francisco, et al (2001) indeed revealed a very high level of environmental consciousness among the upland people, a seed planted through CO initiatives and

IEC campaign under CPPAP. The people are also well organized, which makes it relatively easy to come in with ideas that will help them improve their capacity to manage the natural resource. The social infrastructure in place goes beyond the existence of organized communities, since the Law provides not only the management system in place (through PAMB) but also the legal basis for collection of fees for environmental services as defined in the NIPAS Law. Specifically, the Law creates the Integrated Protected Area Fund (IPAF) where funds for resource protection and management can be channeled. Box 4 describes briefly the IPAF mechanism under the NIPAS Law.

Box 4: The Integrated Protected Areas Fund (IPAF)

Legal basis:

RA 7586 or the National Integrated Protected Areas Fund (NIPAS) Act of 1992, Section 60, created the IPAF for purposes of financing projects of NIPAS.

Sources of Financial Resources for IPAF:

These may come from taxes for permitted sales of export of flora and fauna and other resources. Proceeds from lease of multiple-use areas including tourism concessions, facilities directly benefiting from the protected areas; fines; user fees and others shall also go to the IPAF. Donations from local or foreign sources should also be coursed through the IPAF.

How is the Fund to be Managed, Disbursed, and Allocated?

All income generated from the use of resources within the protected areas are remitted to the national treasury under a special account or IPAF sub-account. The PENRO accountant or regional accountant whose office is nearest the PA shall maintain a book of account. The accountant is then required to submit the report of collection through the Protected Areas and Wildlife Bureau (PAWB) to the DENR Central Office, to the Department of Budget and Management and to the Bureau of National Treasury.

The Protected Area Superintendent (PASU) is the one authorized to collect fees or income generated in the protected areas. He should request the Regional Director or the PAWB Director to authorize a permanent employee of DENR to act a special officer for the PA. The special officer will be responsible in remitting the collection to the PENRO cashier and shall deposit the same to the Government's depository bank, under the IPAF sub-account.

Income from PA is divided into two parts: 75% for the concerned protected area and 25% to be retained to IPAF. The PENRO/Regional cashier handling the IPAF has to prepare a statement of trust receipt and request the Bureau of National Treasury for a certificate of deposit as evidence of collection.

The PAMB shall prepare a Work and Financial Plan, which needs to accompany any budget request for use of the IPAF. The special budget request will be prepared by PASU, which is then submitted to the DBM through the DENR and the PAWB. The deposit slip duly validated by the Bank and certified by the National Treasury must be attached to the request.

There is also a need for the local treasurer's office to issue a certification that a certain amount is deposited under the IPAF-sub-account. The accountant is also requested to prepare the latest financial balance statement and the detailed estimates of expenditures. Note that the Office of the DENR Secretary will first evaluate the request and subsequently forwards this to the Department of Budget Management (DBM). The DBM then evaluates request and issues Notice of Cash Allocation to the requesting PAMB through the

PASU. Support from CPPAP within the first half of 2002. The big issue then confronting the management is how to sustain the gains that have been achieved under the project. Indeed, it is difficult to visualize a situation wherein the people will continue 'rendering environmental service provision' without getting 'paid' for it—as they have been used to getting under CPPAP.

The livelihood project promises to provide this reward—but their late start-up makes it difficult to assess to what extent these will succeed. There seems to be a big opportunity for RUPES to come at this critical time.

KEY OBSERVATIONS BASED ON THE CASE STUDIES

- The severity of the environmental degradation in the uplands appears to be a major driving force in getting immediate attention to the problem—with the visibility of the environmental problem being the real 'push factor'. This is exemplified in the case of the Maasin Watershed where the affected communities are the city-based water consumers. The link to watershed deterioration was fairly visible as well—given that the deforested watershed is easily noticeable by the people in this site. The close proximity of the city to the forest watershed made it fairly easy to establish this link.
- The LGU's immediate response to the problem and the strong leadership it has provided is, however, seems to be the main ingredient that spelled the difference for the Maasin watershed! The Provincial Governor (with the strong support of the Municipal Mayor of Maasin) exerted all efforts to mobilize resources to finance the watershed rehabilitation—thus, acting as the 'champion' for this activity. His strong political leadership has enabled the Province to capture a big portion of the OECF Loan money for the Forestry Sector Program in the country. In addition it has mobilized resources from the National Government, the other agencies in the Province (e.g., NEDA), and has also appropriated part of the LGU funds. More importantly, it has tapped the resources of the water district and the local populace to support watershed protection projects. The importance of bringing in LGU in watershed rehabilitation is also shown in the case of the NSMNP where the LGU have already been giving some contributions to said efforts. This is the same for MKNP where the LGU's role in the protected area management board is lauded. The potential contribution of LGU is still to be tapped in MFR but is something that seems to be critical in its success to push the charging of watershed protection fee for MFR.
- The importance of information, education, and communication (IEC) in mobilizing support from all sectors has been demonstrated quite clearly in the two case study sites: Maasin watershed and the MKNP. In the former, the IEC initiatives have led in the creation of 70 barangay information centers, which is serving as environmental movements in the area; it has also facilitated the adoption of the watershed management strategy through the formation of the Watershed Management Council for the Maasin Watershed. In MKNP, the importance of IEC was also demonstrated as this facilitated the mobilization of the different stakeholders' support to the various activities in Mt. Kanlon.
- Not to be forgotten is the major role that a Non-government organization working closely with the community can play in any initiative in the upland watersheds. In all the cases analyzed, they were instrumentals in raising environmental awareness through IEC and various community organizing initiatives. This is true in Maasin watershed where the efforts of *Kahublugan Sang Panimalay Foundation, Inc.* have given birth to the establishment of 70 barangay information centers where voluntary activities in support of the environment are carried out. The important role played by the MUAD-

Negros needs to be mentioned as well since their work gave to the rise of the KGB (Kanlaon Green Brigade) which is doing the important task of forest protection activities in the area. The Plan International in NSMNP is also performing the same task of helping the communities, though bulk of their work is still on data generation and community organizing—an understandable situation given the huge area covered by this watershed. Even in MFR, the NGO was credited for successfully organizing the upland communities, even if some of the POs were trained heavily in 'conflict resolution'.

- The presence of external funding is important in supporting any reward system in upland communities. There is, however, a need to ensure that there will be no "investment overkill", particularly if funding is coming from different sources (see Maasin Watershed case). In many upland communities, substantial community organizing works have already been done—what is needed is to sustain the people's positive consciousness about the environment with IEC works—targeted at creating an environmental movement among the concerned communities (see the Ford funded initiative through the *Kahublugan Sang Panimalay Foundation, Inc.* in Maasin Watershed).

It is worth mentioning that the IEC efforts need to be targeted to the entire watershed—not only to the upland communities. The off-site beneficiaries of watershed protection efforts must be reached out as well for after all, they stand to benefit the most from the environmental services of the upland poor.

Correspondingly, they should be made to pay or contribute to raise the funds for the 'payments'.

- The case studies demonstrated also that there are different levels of social preparedness in the different upland communities. Some have already undergone extensive community organizing activities than others. This means that any new intervention should not assume a homogeneous situation across all watersheds. In like manner that biophysical baseline conditions across watersheds are different, the social baseline situations are also different. This requires site specificity of approach. In some areas, the people are well organized and therefore it will take a little less effort/funding for CO works—though IEC will still be required to sustain the gains from earlier CO works. But the nature and level of IEC

activities will vary also depending on the baseline conditions—how aware and environmentally awake are the people already. This points to the need to define what the baseline conditions are—in the social environment and in the biophysical environment as well.

- The size of the watershed is seen as closely linked to the degree of watershed protection initiatives taking place in the area. The relatively smaller watersheds (Maasin and MFR) are in fairly advanced stage of watershed protection (including the use of resource pricing) efforts compared to the huge watershed of NSMNP where bulk of the efforts have been and are still currently being spent on more-research (data collection and plan development) oriented activities. There seems to be greater potential for RUPES success in watershed areas that are relatively smaller in size (and in upland population) since these areas are more likely to be in advanced stage of 'social' and 'institutional' preparation to accept ESP initiatives. The aspect of manageability (in coverage) is an important consideration in the design of ESP scheme. The case of the Kanla-on Spring Water Plant (KSWP), owned by La Tondeña Distillers, Inc. demonstrated the important role of business sector in ESP. The firm has not only provided funds for reforestation of the headwater source of its water business, it has helped in organizing the community. In fact, it has done very good that for three years, the PO it helped organized has won the *Tag-Amlig Award* from 1998 to 2000, making them a Hall of Fame Awardees in the People's Organization-Upland Category. This indeed is a reflection of the success of the company's efforts in rewarding the upland poor—something that is worth exploring in other sites.
- An important lesson that can be learned from the case studies is the identification of the Legal Basis for the collection of funds to support ESP scheme. The MFR watershed faces the question of how it can support its efforts to raise watershed protection fee. Several discussions have been made on this matter and all seem to lead to the direction of the provision in the Local Government Code (see Box 2). The experience of the Maasin watershed to use this provision has paid off—it has won in a legal case against the Metro Iloilo water district on this matter, a proof that indeed, Local government unit can tap firms using its natural resources to give the

community a share of its income. This share can be used to support development projects in the community, which surely can include resource rehabilitation efforts to include ESP. For watersheds covered by the NIPAS Law, the Law itself has provided said legal basis. The funds to be collected from the resource use shall form part of the IPAF (see Box 4), 75% of which can be used by the Protected Area Management Board (PAMB) to support watershed rehabilitation efforts. So far, these two laws, the Local Government Code and the NIPAS Law, are the main legal basis for collection of resource use fees (charging of payments) in the country's watersheds.

In addition to the above-cited observations based on case study results, some general observations can be made about experiences with ESP in the Philippines as follows:

- ❑ ES "PAYMENTS" have always been part of development assistance—by government agencies, international donors, non-government organizations and even, the one done through private initiative (see La Tondena Company) independently or collaboratively. Payments by direct ES beneficiaries' are still few (e.g. water district, recreationist, product discount). Payments vary in form over time, by type of provider from direct assistance (e.g. social services, production assistance, credit) and hiring of labor to payment for the provision of an ES. Most of the 'payments' provided by GO, NGO and IA are in the forms of subsidies and livelihood support.

These 'payments' are not categorically-earmarked as ESP—but more for poverty alleviation—as a means to achieve an end—that, of environmental protection.

- ❑ In a way, "payments" were made as INCENTIVES for upland communities to take part in efforts to protect the environment. The thinking being, that by alleviating POVERTY, there will be less pressure to engage in resource-damaging activities. The basic problem with "payments" made in the guise of development assistance is that there could be little link with EP—Oftentimes, people perceived such assistance as something that is due to them—a responsibility of the government. Viewed this way, they do not feel 'obliged' to deliver the ES—even, if IEC efforts to make this link are made. The recent developments—RUPES—look at "payments" as rewards for ES—thus, directly linking the

payment to ES provision. Poverty alleviation becomes a welcome- by-product. There are two important dimension of this new ESP Perspective:

- ❖ "ES "sellers" must be made aware of the fact that they are selling a product—ES—for which payments will be made.
- ❖ "ES "consumers" must realize that for them to avail of the service that they must "buy" the product or make payment. The recent call is for the consumers to take a more active role in making ES payments.
- ❑ These two dimensions necessitate that:
 - ❖ "The link between the EP activities to ES provision is established—even, in some crude way initially, while scientific measurements are still going on. This is important in determining amount of payments and who the recipients should be.
 - ❖ "The Link between ES provision and ES payments is made for the 'price' to perform a resource-allocation function.
 - ❖ In both cases, the role of scientific research and IEC are very important in effecting the two links just described.
- ❑ Note that encouraging greater role of Direct ES consumers does not mean lesser participation of other financing organizations. The latter are still needed to help ES providers capture payments for ES by global consumers—biodiversity and carbon sink.
- ❑ Other sources of funds to finance the ESP scheme are business firms, whose business lies in natural resource conservation. One such firm is the National Power Corporation (NPC). The NPC is mandated by Law (RA 9136) to allot one-fourth of one centavo per kWh on Environment Fund for watershed protection. The community can tap the amount, only upon submission of project proposals. So far, many communities which host NPC has been not able to tap this fund to the fullest, probably because of the absence of information on how said funds could be obtained. In addition to this, the NPC provides the communities affected by their power plants with free electricity and water. In return, the communities provide the labor counterpart for the building and maintenance of the water system. Some big firms like the Ayala Foundation can also be sought to provide to environmental service provision. This move has

appeals to big business firms who realize that it is in their best interest to have good relations with the community. In fact, Ayala has already invested in a number of environmental projects—as a way of showing their commitment to the welfare of the host community.

FINALLY, the following issues must be addressed in designing the Environmental Service Payments Scheme in the Philippines and elsewhere:

- Deciding on ESP objective (What environmental services are to be the focus of the program?
 - ❖ How are these services to be measured?
 - ❖ Will there be different objectives for different regions or watersheds? Or will this even vary within a watershed?
- There is also the question of targeting: (“Who should get the payments?”)
 - ❖ Do you target those in degraded areas? — So that they will adopt practices that will improve the environment?
 - ❖ those in well-protected/intact areas still— so that this condition can be sustained?
 - ❖ Should payments go to areas where the provision of the services has significant environmental impacts?
 - ❖ What selection criteria should be used to decide on who should get the ES payments?
- Deciding the amount of the payments?
 - ❖ How much will farmers be paid?
 - ❖ How is this link to the “amount” of ES provision?
 - ❖ Will payments vary spatially?
 - ❖ How much is the total payments to be made available?
- “What is the form of the ES provision?
 - ❖ What should farmers be paid to do?
 - ❖ Should payments be based on performance, on the adoption of specific management practices or on a whole farm conservation plan?
- What is the appropriate baseline from which to evaluate payments?
 - ❖ Should payments be made only for improvements from status quo or for past ES provision?
 - ❖ Will constraints be imposed on which lands are eligible for payments?
- What is the ESP administration going to be?
 - ❖ How will the payments be administered?
 - ❖ How often will the payments be made?
 - ❖ How will compliance be monitored and enforced?
 - ❖ What monitoring criteria will be used?
 - ❖ What penalty will be imposed for non-compliance? If any?
- “Finally, what is the payment scheme to be used? What payment scheme will ensure that beneficiaries will make the payments?

A corollary question is: Given that ES are joint products, how will payments be appropriated to/ shared by different consumers/ beneficiaries?

 - ❖ Watershed protection fee as part of water and power utility bill
 - ❖ Eco-labeling for Forest-based products
 - ❖ Carbon Tax for the carbon sequestration function of the land use from foreign firms who want to enter into carbon offsets arrangements
 - ❖ Share to revenues of watershed dependent business entities (like water districts, water bottling company, etc)
 - ❖ Recreationists’ user fees
 - ❖ Share to bioprospecting revenues
 - ❖ Others

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