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Realities of Watershed Management in the Philippines: The Case of the Iloilo-Maasin Watershed

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Philippine Institute for Development Studies
Surian sa mga Pag-aaral Pangkaunlaran ng Pilipinas

Realities of Watershed Management in the Philippines: The Case of the Iloilo-Maasin Watershed

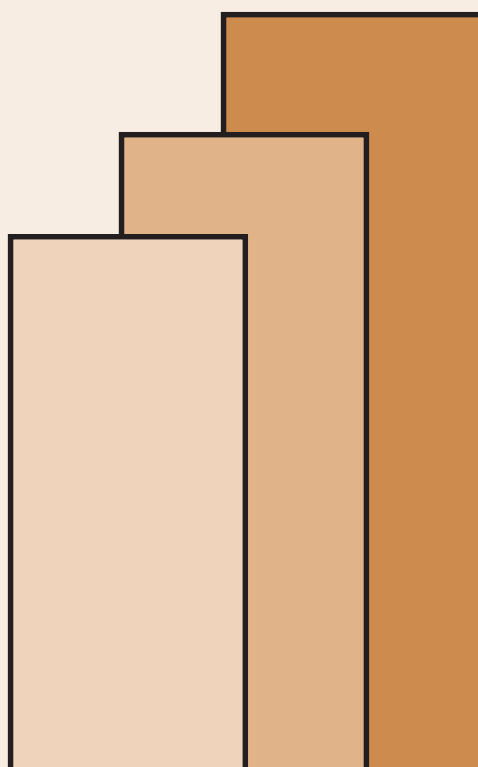
Herminia A. Francisco and Jessica C. Salas

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*Realities of Watershed
Management in the
Philippines: The Case
of the Iloilo-Maasin
Watershed*

By

*Herminia A. Francisco
Jessica C. Salas*

Abstract

The paper analyzed the presence or absence of elements needed to have an effective system of watershed management in the Maasin Watershed, Iloilo Province. IT concluded that: a) both the legal and institutional structures needed support watershed management effort are in place; b) there is evidence of a strong social capital existing in the upland and lowland communities; c) there is an adequate level of technical capital investment to sustainably manage the watershed; and d) there is sufficient financial resources to undertake various site development initiatives. Nonetheless, with the culmination of the project, the remaining gap would be to sustain the gains already made by the stakeholders in protecting the watershed, particularly in supporting upland communities who undertake watershed protection efforts so that they will not pose a threat to the Maasin watershed. One approach put forward is to tap Environmental Service Payments.

Key words: watershed management approach, social capital, institutional infrastructure, human capital, financial capital, and environmental service payments



Realities of Watershed Management in the Philippines: The Case of the Iloilo-Maasin Watershed

by

Herminia A. Francisco & Jessica C. Salas¹

Introduction

The call for the adoption of watershed management approach is not something new. This was made as early as two decades ago (Tesoro, 1997; Crux, 1997) and was already embodied in many forestry programs of the Department of the Environment and Natural Resources (Javier, 1999; Acosta; 2004; and Francisco; 2004). The question that could logically be asked then is: How come this approach has not gotten widespread implementation if it is indeed the right way to manage the countries natural resources- land and water resources alike?

This paper is part of a larger program that aims to answer this question by way of looking at the country's experiences in areas where watershed management has been implemented. Specifically, four watersheds were chosen: The Magat Watershed in Nueva Ecija- a critical watershed on account of its important role in supplying water for irrigation requirements of vast areas of rice lands in Central Luzon and the hydropower supply for this region as well; the Manupali watershed that traverses the Upper part of the Pulangui River Basin-which drains water to the Pulangui River that is a source of irrigation water and hydro-electricity for Bukidnon residents; the Maasin watershed² in the Province of Iloilo-which is the headwater of the watershed that supplies the water requirements of the Iloilo city residents and the domestic and water needs of neighboring towns; and the smallest watershed in Laguna, Pakil where the strong leadership of community groups has resulted in improved situation of the watershed for the sustained use of water in the municipality. This paper focuses on the case of the Iloilo Maasin watershed.

The paper is organized as follows: the next section discusses the framework of the case studies. This was followed by a brief description of the biophysical and socioeconomic conditions of the Iloilo Maasin Watershed. The history of the evolution of the watershed management approach in the area as it exists today is then described followed immediately by an evaluation of the watershed experience using the case study framework as presented in the earlier section. Finally, the paper ends with recommendations on how the watershed approach could be sustained for the Maasin-Iloilo watershed and the identification of what lessons could be learned for watershed management in general in the country—based on experiences from this particular watershed.

¹ Associate Professor, University of the Philippines Los Banos and President, Philippine Watershed Management Council, respectively.

² The Maasin watershed referred to is the headwater of the Tigum River; it belongs to the uplands of the bigger Tigum-Aganan watershed.

Framework of Case Study Analysis

The book recently published by PIDS-SANREM-UPLB entitled-- Winning Water Wars: Water Policy, Watershed Approach & Water Governance provides the framework for watershed-based management approach. Figure 1 shows the various elements that need to be present to have an effective system of watershed management on the ground.

As shown, these elements include the need to design management around the biophysical system and the ecological inter-relationships that govern this system. The rationale for this is being that anything that you do in any part of the ecological unit is bound to create impacts on the rest of the system—there is thus a need to consider how the system components (natural and human) are inter-related so that the resource managers are made aware of the consequences of any actions or inactions made within that ecological unit—the watershed.

The level of resources available to the watershed managers also determine the type of management initiatives that could be undertaken therein and how long they could undertake protection and/or rehabilitation efforts in the watershed. Sustaining the management initiatives in an area that is exposed to encroachment of rural communities who have very limited options to select from in supporting their livelihood is a tough challenge. In addition, there are interest groups who would plunder the natural resources for short-term gains and greed, whenever the opportunities arise—the watershed needs to be protected from them as well.

The type of resources available to the watershed managers does not only refer to financial resources—they include the technical resources as well. Having financial resources alone without capable people to manage these resources well is not enough for financial resources are often limited and will be gone soon. Technical resources would refer to the capability and skills possessed by those in the position to manage the watershed resources. An analysis of the level of technical capacity that exists in the watershed is thus important.

But adequacy of financial and technical resources alone would not be sufficient to ensure that watershed management initiatives would succeed. A critical element is the support of the communities living within the watershed and even those in adjoining areas, as they are both area of influence and source of pressure on the watershed resources. In turn, communities are likely to support any initiative that they understand will affect them somehow, more so, in an economic fashion. While the economic linkage is easily seen and appreciated by the communities directly dependent on the resource, the ecological linkage is equally or even far more important as they affect the whole of the watershed community and the rest of the society. There is thus a need to get community support—with support that transcends the short-term appreciation of the upland communities but one that mirrors full understanding of the ecological importance of watershed management initiatives. Achieving this state may require large level of IEC efforts but such efforts would depend on the level of social capital that exists in the area. Determining the status of this social capital is critical in pushing for and sustaining the watershed management efforts in any area.

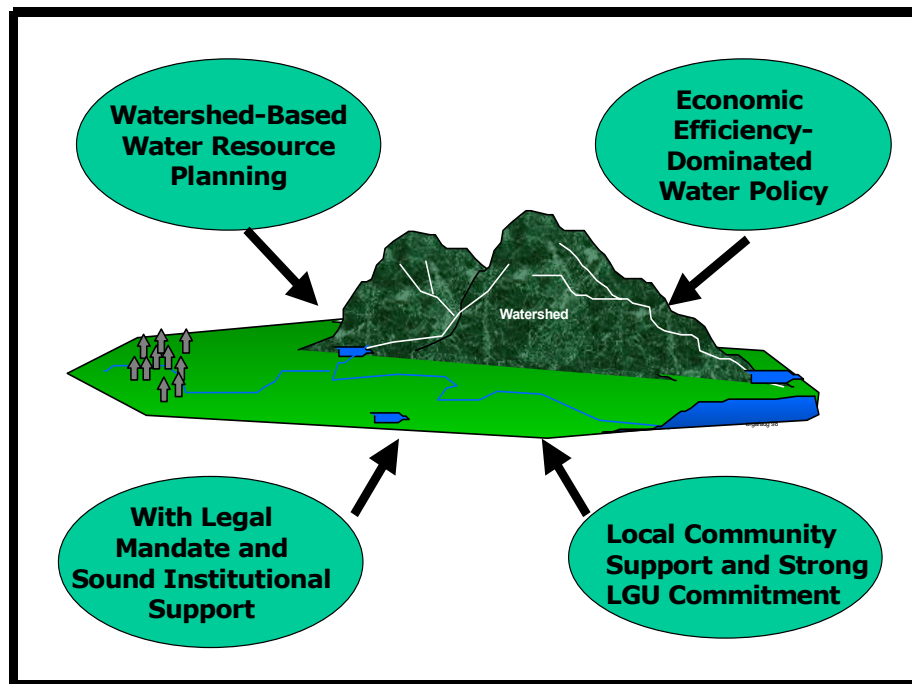


Figure 1. Water Resource Management Strategy (cf: Rola and Francisco 2004)

Finally, there are actions that resource managers would do in the watershed that may involve making land use changes or policy reforms to achieve the management goals. The resource managers could only make those actions if they have the legal basis and institutional support is in place for making said decisions. It is thus important to ensure that these legislative support for watershed management actions—be they national or local, be present in the area. Likewise, it is important that the supporting institutional structure to implement management decisions in the watershed be put in place before or in the process of implanting those initiatives.

To sum it up—watershed management is likely to work in an area where the relevant community and the resource managers understand fully well the ecological inter-relationship within the system; with a community having high level of social capital that supports the watershed management initiatives; with adequate financial resources and capable technical expertise of resource managers; and supporting legal and institutional support to undertake those watershed management initiatives. The level of the financial; technical; social and legal & institutional capital that was available for the management of the Maasin watershed and the bigger Tigum-Aganan watershed was assessed in the paper.

The Maasin Watershed Reserve and the Tigum-Aganan Watershed: A Brief Profile

This section includes a brief characterization of the biophysical condition of the area and its socioeconomic environs. The discussion is expected to give an idea of what resources are there in the watershed that will be subjected to management and who is the watershed community that we are talking about in this paper.

The Maasin watershed is a 6,150 hectare land-area that forms part of the Tigum-Aganan watershed; it is headwater source of the Metro Iloilo Water District (MIWD) that supplies the water requirements of the Iloilo City. This part of the Tigum-Aganan watershed has been the subject of early site development efforts on account of its critical role to the water supply of the City. Most of the discussions in this paper of terms of watershed management initiatives will focus on this watershed. The birth of the Iloilo Watershed Management Council in 2000 formalizes the need to manage all the watersheds of the province of Iloilo. The Maasin watershed falls under the Tigum-aganan watershed that is governed by a watershed management board.

The Tigum-Aganan Watershed in turn is 29,700 hectares in size, 10,400 hectares of which is located in the Aganan watershed and the rest (19,300 hectares) falls under the Tigum watershed. In terms of land classification, there are 11,250 hectares of forestlands within the watershed and 18,250 hectares of alienable and disposable land. The forest vegetation covers only 4,000 hectares however, with brush lands consisting of 19,500 hectares. Rice paddies were estimated at 1,700 hectares while areas devoted to other crops come to around 4,100 hectares.

The entire Tigum-Aganan watershed is home to eight (8) municipalities and one city, namely: Maasin, Cabatuan, Sta. Barbara, Pavia, Leon, Alimodian, San Miguel, Oton, and Iloilo City. Of these, three are upland watershed: Maasin, Leon, and Alimodian. Together, they account for 23% of the watershed population. As shown in Table 1, some 309 barangays are found inside the Tigum-Aganan Watershed.

Table 1.- The Barangays of Tigum-Aganan Watershed³

Municipality	Barangays inside the watershed		Barangays outside the watershed		Total
	No.	%	No.	%	
(1) Maasin –upland	49	98	1	2	50
(2) Alimodian – upland	52	85	9	15	61
(3) Leon – upland	9	11	76	74	85
(4) Cabatuan – lowland	68	100	0	0	68
(5) San Miguel – lowland	24	100	0	0	24
(6) Sta. Barbara – lowland	50	83	10	17	60
(7) Pavia – coastal	17	94	1	6	18
(8) Oton – coastal	17	46	20	54	37
(9) Iloilo City – coastal	23	13	157	87	180
Total	309	53	274	47	583

³ Kahublagan Sang Panimalay Foundation Report, Tigum-Aganan Watershed Board Strategic Plan, 2003.

The Tigum-Aganan watershed as shown in Figure 2 includes the eight towns and one city listed in Table 1. As will be shown later—the birth of watershed management initiatives in Iloilo started with the Maasin Watershed 16 years ago.

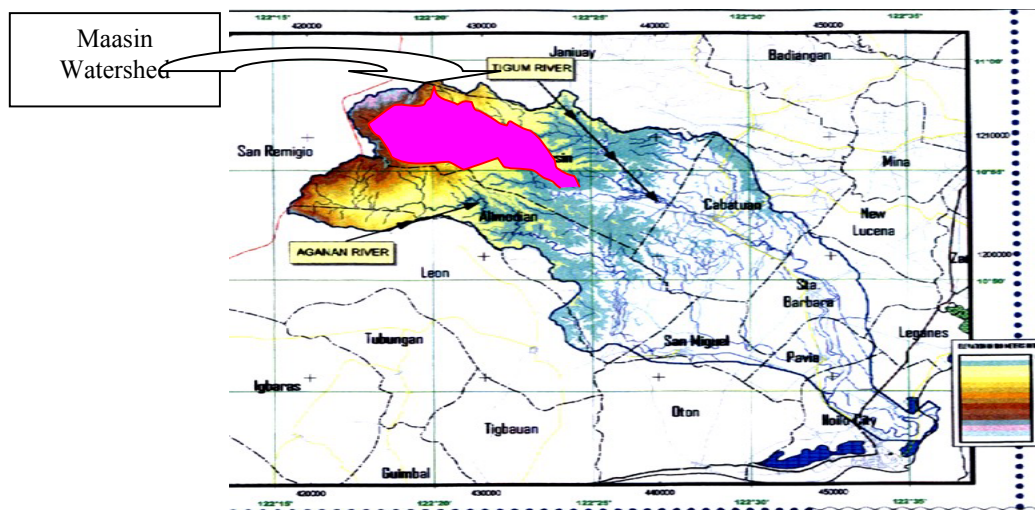


Figure 2
The Tigum-Aganan River Basin—showing the Maasin Watershed (not in scale)

Historical Evolution of the Watershed Management Approach in the Area

The responsibility of protecting the Maasin Watershed belonged to the Metro Iloilo Water District (MIWD) as part of their water franchise to the area in the early 1990s. They have not been able to successfully protect the entire 6,150 hectares from intruders such that by 1992, about 10,000 people have been maintaining farms within the reserved area. Still, it must be said that the MIWD has been successful in preventing the development of settlements in the area. Figure 3 shows the condition of the Maasin watershed in 1991.

Aware that this situation would soon threaten the conditions of the watershed in the area, the LGU, DENR and the NGO Community, including the MIWD, through the Maasin Task Force, took over the management of the reserved watershed. The MIWD realized that the efforts to protect the watershed should include the people who depend on the watershed for their water source. To obtain the support of the people, the MIWD had spearheaded series of awareness campaigns and construction of billboards across the city informing everyone that by the year 2000, the Tigum River will not have enough water for drinking—if the Maasin watershed will not be protected. The NGO community, for its part, also started similar campaigns and this gave birth to the “Save the Maasin Movement”.

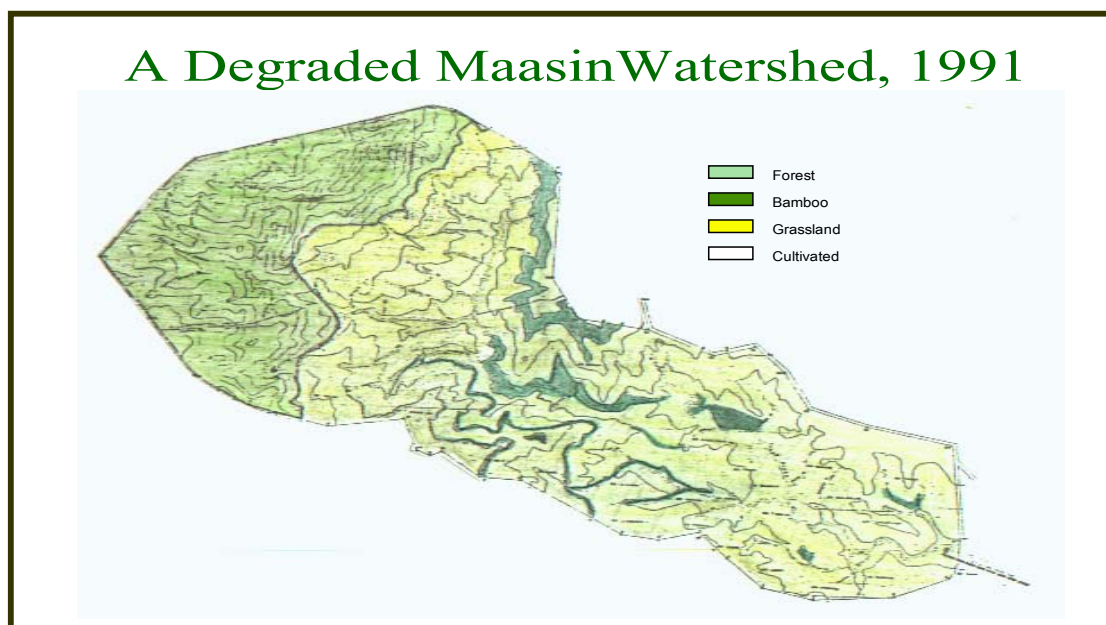


Figure 3. The Maasin Watershed Land Use Map, 1991⁴

The City, having felt the problem, have responded to the call—under the leadership of the provincial government led by the then Governor Defensor.

The immediate task on hand was the rehabilitation of the degraded watershed. This translated to the reforestation of the upper portion of the Maasin watershed, this being the headwater of the Tigum River. Efforts to prevent further forest degradation were likewise launched.

The immediate action undertaken by the DENR, being the source of technical advice on forestry concerns was the setting up of tree plantations in areas cultivated by the communities living around the watershed. Despite this action, however, the anticipated problem with the water supply situation still manifested in later years. It was noticed that heavy siltation of the Tigum River had taken place and this has affected the MIWD's treatment costs of the water going to the Iloilo City.

The response of the people was massive. They participated in tree planting activities and help raised the funds the support these initiatives in the watershed. The MIWD itself has contributed PhP1 million to this effort, twice—once through the LGU and the second, through the DENR. The result was the reforestation of some 500 hectares of forestlands in the Maasin Watershed.

⁴ Salas, Jessica et al., Feasibility Study of the Rehabilitation of Maasin Watershed. KSPFI, 1993

The LGU was jubilant of this success in reforesting a large part of the watershed—but realized that this success was miniscule when compared to the size of the whole Maasin watershed—some 6,150 hectares in all. It has set its eye on the entire Maasin watershed and had asked the DENR to fund the project from the then existing Forestry Sector Project of the Philippines. This project was funded by the loan money from JBIC, then, still called the OECF. The area was subjected to project appraisal carried out by a team from DENR and has subsequently been granted a loan to reforest 3,150 hectares of forestlands. The loan was for site development activities and community organizing efforts. Community organizing was contracted to the Kahublagan Sang Panimalay Foundation, on account of its track record in the Province and after stiff competition with other local and national NGOs. Community organizing efforts took two years and site development activities started in 1992 with contract from general fund of DENR and ended in 1995. Expansion of organizing works and site development followed for another two years with loan funds from JBIC. By the end of 1995, the project had accomplished the following:

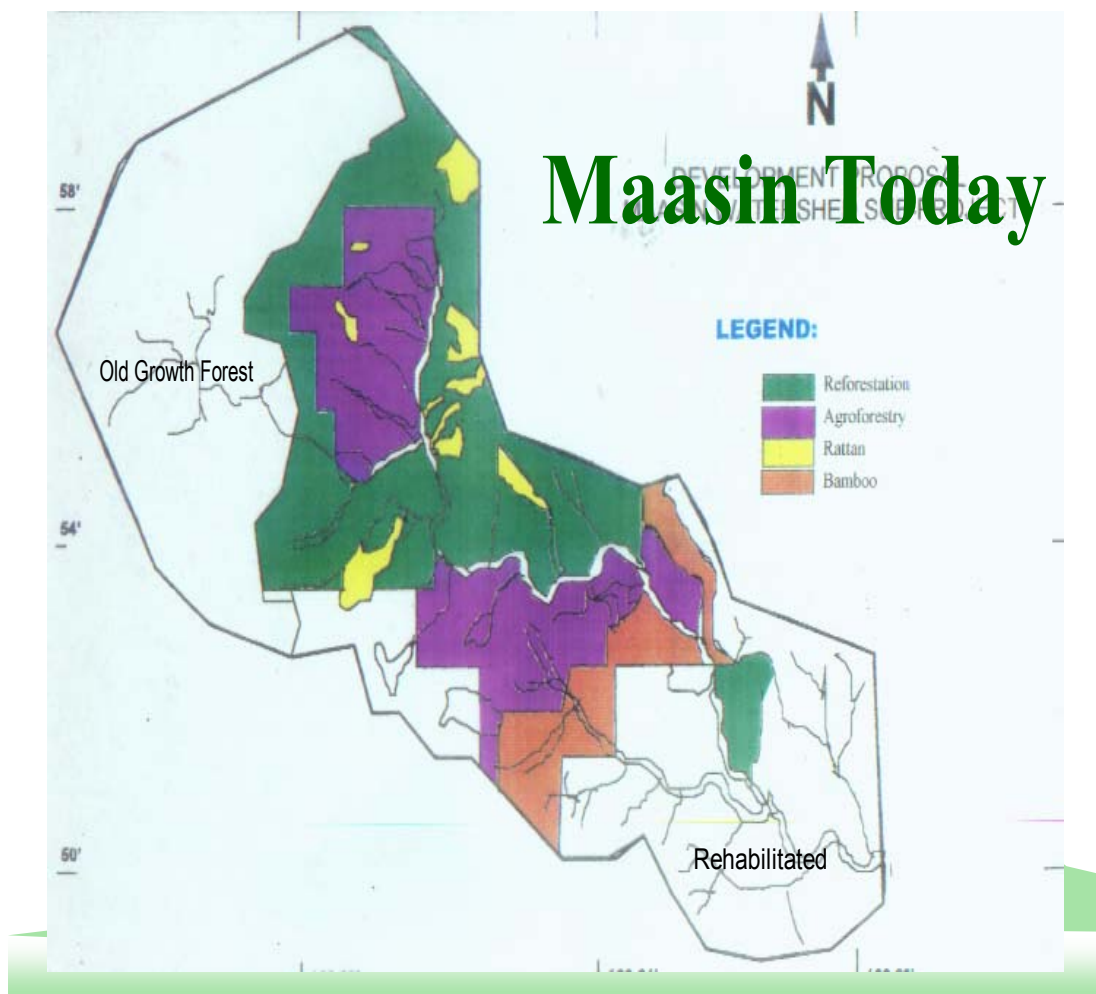
Box 1: Summary of Major Accomplishments in the Maasin Watershed

- 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)¹ 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

Figure 4 shows the land use map of the Maasin watershed, after undertaking those site development activities.

The project comes with certain conditions however. This includes the creation of the Supervising Site Management Office (SuSiMo) that will oversee site development activities in coordination with the community groups and their leaders. As designed, a Protected Area

Management Board (PAWB) was created as well—with representatives from various sectors, including the LGU. The PAWB should have taken the role of the management body for the Maasin Watershed but this role was not realized as the SuSiMo took over the management function. The role of the local government unit has thus become minimal and those of the communities in the lower watershed—the city of Iloilo, along with other stakeholders. The major players become the upland communities⁵, the DENR and the assisting NGO. After the



⁵ The upland communities have had bad experience under past attempts to reforest the area. Specifically—the farmers were made to believe that they could undertake agroforestry systems in the Maasin watershed. However, even that scheme was not allowed in so-called critical watersheds of the country—under which the Maasin watershed falls. Because of this bad experience, they did not participate in the efforts made by the Iloilo City residents. The JBIC funding however provided them employment opportunities and most communities took advantage of this project and became participants to the project.

Community organizing contract—the role of the NGO becomes marginalized as well. The LGU realizes that the SuSiMo's role and the active participation of the PO's are at best temporary in nature—dependent on the existence of JBIC funding. A more sustainable institutional structure needs to be put in place. This led to the creation of the Iloilo watershed management council (IWMC), which will be discussed in more detail in another section.

Elements of the Watershed Approach in the Maasin Reserve and the Tigum-Aganan Watershed

This section presents the analysis of whether the various elements depicted in Figure 1 are present in the case of the Maasin watershed. The question on whether the natural resource management is being governed by the ecological unit-defined by the watershed seems to be a non-issue in this particular case—as the watershed-water linkage has clearly been established in the early 1990s when the water crisis was felt in Iloilo City. The ensuing information, education, and communication (IEC) campaigns undertaken by the *Kahublagan Sang Panimalay* Foundation carries this 'think watershed' theme as its banner message in all its endeavors. There is therefore a high level of acceptance of the watershed-based management approach in the study area.

Are There Legislative and Institutional Support for Watershed Management Approach in the Area?

The 1991 Local Government Code (LGC) or Republic Act (RA) 7160 provides the legal basis for local governance of the country's natural resources—including its watershed. This code transferred certain responsibilities and powers relating to environmental management functions to LGUs as shown in Table 1.

Supported by this legislation, the Iloilo Watershed Management Council (IWMC), a multi-sectoral local body created by the Iloilo provincial local government was created through an ordinance to put into action the provisions of the LGC.

The Iloilo Watershed Management Council

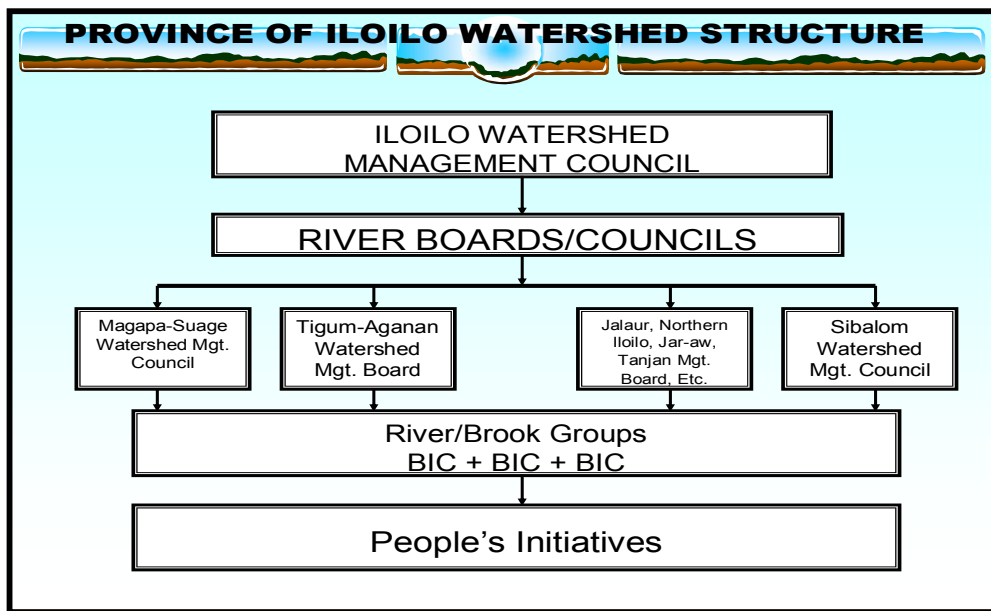
On October 2, 2000, the provincial government of Iloilo passed Ordinance No. 2000-41 creating the Iloilo Watershed Management Council (IWMC). The council will be responsible for the conservation, development, protection, and utilization of the 15 watersheds in the Province of Iloilo. To carry out this task, the IWMC is empowered to form watershed boards for each specific watersheds or cluster of watersheds. To date, three watershed boards are already created (Tigum Aganan Watershed Management Board; Magapa-Suaga Watershed Management Council; and Sibalom Watershed Management Board) with a fourth, coming up soon—Barotac Nuevo River watershed council.

The creation of the Council was not a difficult process as it simply 'formalizes 13 years of efforts of a multi-sectoral and multi-tiered group of stakeholders within the province to respond to problems and issues that initially started with the objective of reforesting and rehabilitating the

upper Maasin watershed which is positioned inside the Tigum-Aganan River Basin’—Salas (2004) .

The structure of the IWMC is shown in Figure 5. The IWMC governs the activities of the various watershed boards/sub-councils, which in turn is responsible for their particular watershed. Four watershed boards were created by the early part of 2000. The Boards are responsible for managing the Barangay Information Centers (BICs). By 2003, there are 88 BICs that were formed. As initially envisioned, the BICs are the venues for continuing education activities at the barangay levels. Eventually, however, they have evolved as the implementers of the so-called, peoples’ initiatives that include various community level efforts to take care of the environment. Most of the people’s initiatives activities include: tree planting, riverbank protection and rehabilitation, solid waste management, eco-friendly livelihood projects and promotion of sustainable agriculture technologies—all of which are geared in protecting the watersheds.

Figure 5
The Organizational Structure of the Iloilo Watershed Management Council



The council is made up of 16 members, from various groups within the watershed. Among them are members from Sanggunihang Panlalawigan, from the League of Municipalities, the City of Iloilo, and relevant government agencies, such as the National Irrigation Authority (NIA), the Philippine Information Agency (PIA), the Metro Iloilo Water District (MIWD), Department of Public Works and Highways (DPWH), Department of Agrarian Reform (DAR), and other entities like the Iloilo Business Club, the Kahublagan Sang Panimalay Foundation and the KAPAWA-Maasin or the peoples organization.

The Watershed Boards, in turn is made up of representatives from the irrigators’ association, water district or water association, business groups, non-government organizations, people’s organizations, river quarry association, and the academe. Note that the IWMC is still part of a higher hierarchy and in turn is also governing several level of management hierarchy under it (Table 2).

Table 2. Multi-level Structure of Watershed Management

Area	Managing Body	Responsibility
Regional	Water Committee of the Regional Development Council IV	Monitoring and evaluation of water programs, policy advocacy, information dissemination and support of the creation of multi-sector watershed management groups in the region.
Provincial	Iloilo Watershed Management Council (IWMC)	Policies, funds, actuation, networking.
Watershed	Watershed Management Board	Planning, actuation, technical application, decision making, programming, watershed monitoring and evaluation
Municipal	Municipal Watershed Council or the watershed core group ^b	Implementation, participation in planning, consolidation, facilitation of technical services and information to barangay
Barangay	Barangay Information Center	Provision of information to people's initiatives, whether individual or group. Conduct of community mapping and water planning exercises.
Households or the neighborhood	People's Initiative	Participation in community mapping, water plans. Access of information, Demand for technical services. Decision and initiation of action.
^a Created on June 5, 2003 under the Regional Sustainable Development Council. Still to be endorsed to the Regional Development Council. ^b The core group is used for informal steering groups in municipalities that have not yet legalized their councils.		

Cf: Salas, J. 2004

The Provincial Environment and Natural Resource Office (PENRO) of the LGU of Iloilo province serve as the Secretariat to the Council in the first few years. This as subsequently transferred to the office of the provincial administrator. The Secretariat function is currently shared by the *Kahublagan Sang Panimalay* Foundation.

At the watershed level, the watershed board created for each unit has clearly defined goals for their particular watershed. For the Tigum-Aganan watershed for instance, the framework plan has already been formulated as follows:

Box 1. Framework Plan of the Tigum-Aganan Watershed Management Board

Vision Statement

A habitable and productive Tigum-Aganan Watershed sustained and protected by well-informed LGUs and empowered communities working in harmony towards an improved quality of life.

Mission Statement

We commit to work together, develop our capabilities, pool resources, effect policies, and network and advocate initiatives for watershed protection, rehabilitation and management.

Objectives:

1. To protect the forest and to increase vegetative cover. (Forest)
2. To promote and practice environment friendly technology in agriculture, conserve water and soil, and promote “food for health” of the people. (Agri-forest) To protect the river system through quality water monitoring by the communities.
3. To promote continuous education, information and dissemination that translates into action.
4. To improve access to minimum basic needs.
5. To draw and promote alternative livelihood activities for communities.

In addition, the watershed has already identified a clear training program for its members, as shown in Box 2.

Box 2. Training for Community-based Integrated Watershed Management

1. Area delineation
2. Establish institutional mechanism
3. Watershed Framework Plan
 - a. Vision-Mission-Objectives
 - b. Impact indicators
4. Watershed Characterization
 - a. Barangay community mapping
 - b. Barangay water planning
5. Strategic planning
 - a. Consolidation of community maps
 - b. SWOT exercise
 - c. Consolidation of water plans
 - d. Identification of the central strategy and programs
6. Integration of the Watershed planned activities with the municipal Annual Investment Plan and Annual Development Plan
7. Monitoring and Evaluation
8. Information Education Communication

More importantly, the Watershed Management Plan is already integrated in the municipality's Annual Investment Plan and Annual Development Plan. This link ensures that the plans for the watersheds now become part of the regular programs of the municipalities that comprise the watershed.

From all indications therefore, one could only conclude that there is a full acceptance among the local government units at all levels that their natural resources should be managed with the watershed as the relevant ecological unit. This was manifested in the creation of the watershed management council and the various watershed boards who are responsible in putting into action this approach of natural resource management.

The legal basis from the national levels (through the Local Government Code), the provincial, municipal and even the lowest political unit—the barangay level (through various types of ordinances) for the implementation of the watershed-based management approach seem to be in place already for the various Iloilo watersheds, and for the Maasin watershed, in particular. Also, it would appear that the institutional structure to support the implementation of the various watershed level activities seems to be in place as well through the various peoples' initiatives and the existence of the barangay information centers.

Social Capital: Are the watershed communities capable of tackling the job?

Putnan (1995) defines social capital as: 'features of social organization such as networks, norms, and social trust that facilitate coordination and cooperation for mutual benefit.' A community with high level of social capital is expected to perform better in carrying out community project-such as watershed management initiatives. This causality is not hard to accept, as this in fact is the essence of all community organizing efforts that form part of almost all development projects. One could argue also that social capital is the effect or result of

development project since almost all development projects do invest in social capital formation. Regardless of whether it is a cause or an effect or both (13, Putnam et al 1993), its importance in determining project's success is acknowledged (19, 27, Narayan and Pritchett 1997, Heller 1996, WB 1998).

There are various ways by which higher social capital could contribute to project success. For one, they tend to reduce transaction costs since communities that have higher level of social trusts and solidarity, formed groups and networks, and have experienced undertaking collective actions and cooperation tend to work better and would need less investment in meeting costs to carry out community projects. Dissemination of information among members is also easier. In addition, there is less incentive for defection and the group, thus, reducing the risks of loss to everyone, shares free riding when social capital is stronger and the risks of the project.

There are five dimensions of the social capital that one could look into: a) groups and networks, b) trust and solidarity, c) collective behavior, d) information dissemination, and e) social cohesion. Groups and networks could be assessed in terms of membership to organizations and relationship of the group with other groups, and the presence of ready source of credits that households could easily run into. Trust and solidarity in turn could be evaluated using such variables as assessment of whether community would help the household in times of need and the household's willingness in turn to help the community, either in terms of time or financial contribution and the degree of trust that they place on the government leaders. Quite a related set of variables are those pertaining to collective action and cooperation which measures the extent to which the household do participate in communal activities and their willingness to help in said actions.

The watershed communities can be divided into two broad groups: upland communities and lowland communities. The former are either living within the watershed or/ or cultivating farms therein and/ or collecting forest resources found within the forested portion of the watershed. The lowland communities are those whose stake to the watershed comes in the form of the environmental services, e.g. water supply and ecological functions, derived there from. To a large extent, the interests of these two groups in the watershed do run in conflict with each other, especially in a degraded watershed where the causes of degradation are people's use of resources in the upstream. However, some compromise solutions may be achieved to ensure that the interests of both are accommodated in the management decisions over the watershed.

As indicated elsewhere in the report, there is high level of awareness among the lowland communities on the importance of protecting the watersheds to support their water supply. They have felt the problem and have responded by participating in various tasks undertaken in watershed management efforts in the watershed in the early 1990s. The social capital that was formed in those early efforts to protect the watershed was harnessed through the continuing IEC program carried out by Kahublagan Sang Panimalay Foundation. The Ford Foundation—through the project "Hydrosolidarity", in turn supported the Kahublagan's IEC initiatives. Several training activities on various aspects of watershed management were also provided through this program. There is thus high level of social capital already established among the lowland communities. These translate more concretely to the formation of some ---Barangay Information Centers (BICs) that were formed in the ---barangays that make up the Tigum-Aganan Watershed. The formation of these BICs in support of watershed management was formalized through barangay resolutions.

What about the upland communities? The funding provided by the Forestry Sector Project for the rehabilitation of the Maasin watershed included a 2-year funding for community organizing (CO) efforts. The task of undertaking this CO works was awarded to the Kuhublagan Foundation also. The efforts included building capacity to undertake cooperative endeavors, harnessing inter-personal relationship among the members, and provision of managerial and technical skills to undertake reforestation activities and management of the field-level activities. The results are the formation of several people's organizations in the various upland communities surrounding the Maasin watershed and their coalition into the KAPAWA—or the --- ----. Overall, therefore, one can say there are strong social capital has been enhanced in the upland communities of the Maasin Watershed and in the lowland communities of the Tigum Aganan watershed, to some extent.

The remaining challenge is fostering lowland-upland interactions in the watershed, as there seems to be limited interactions taking place at this level. This level of interaction is particularly critical as we discuss the proposed role of 'environmental service payments' in sustaining success in rehabilitation efforts in the upland watershed towards the end of this paper.

Technical Capital: Are those involved in watershed management technically equipped to handle the tasks?

The huge support provided by the Forestry Sector Project for the rehabilitation of the Maasin watershed included funding for building technical capacity of those who are involved in watershed management activities. Those trained included the participating people's organizations that took part in the various site development activities and the staff of the DENR who are engaged in directing these activities. The training covers the technical aspects of preparation of site management plan, mapping and surveying, nursery establishment and maintenance, plantation development, agro-forestry, silvi-cultural practices for fruit plantation, and management of remaining secondary forests through timber stand improvements and assisted natural regeneration. In addition, the people organizations were taught various managerial skills like financial accounting and book keeping, and marketing linking and even preparation of project proposals and feasibility studies. Kahublagan has been contracted by DENR to give these training as provided in the CO contract. In addition, Kahublagan has also prepared the management manual, forms, policies and rules and regulations that covered the operations for site development activities. To provide guidance on these matters—the various staffs of DENR who were assigned to the project were likewise given training on various topics—along with other DENR staff involved in other Forestry Sector Projects in various parts of the country.

One problem though exists and that is the difference in opinion on the method of restoring the vegetative cover of the Reserve area, i.e., the use of fast growing exotic species or use of endemic species. There is also still a gap on the technical skills with regards appropriate farming practices that will protect soil and water quality. Overall, however, one could say that there is relatively good level of technical capital that was formed in the area from the various watershed management initiatives in the past—and these could help in sustained management of the Maasin Watershed.

Financial Capital: Were Financial Resources Adequate and Is the Availability of Funds Sustainable?

The building of technical capital, the social capital, and the legal and institutional capacity in the Maasin watershed was made possible by the infusion of large financial resources that were made available to the area. In fact, one could even say that there was indeed an ‘investment over-kill’ in the area given the massive resources poured in largely through the Forestry Sector Project and the additional funds raised prior to the entry of the said project.

In summary, the following financial resources were brought in for the implementation of various watershed management initiatives in the Maasin Watershed:

- During the water-crisis period that led to the civil society’s (lowland communities) participation to support protection of the watershed—some P0.5M donations from various groups were raised with the provincial government providing a counterpart fund of P0.5M as well.
- Metro Iloilo Water District provided P1M contribution for watershed protection activities to the Iloilo LGU. Their subsequent yearly contribution of P1M went to the DENR.
- The National Economic 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 measures.
- The Ford Foundation has also provided funding for the IEC activities of the Kahublagan Foundation
- 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

The enormity of these financial resources poured in to the Maasin Watershed would lead anyone to expect the project to have accomplished the various site development goals the project has set. It seems it does—if improvement in the vegetative cover of the watershed is to be used as the gauge. In fact, DENR is quite pleased with the high performance rating of the Maasin watershed and so, is the LGU who takes pride in seeing a greener and forested Maasin Watershed⁶. Are these gains in vegetative improvement worthy of the costs invested to have

⁶ An interview with key informants in the area revealed however that the fruit trees planted in the area have not been growing as fast as expected—they even refer to their growth as ‘stunted’—something that they blamed to the unsuitability of those fruit species to the area.

them or are these goals even achieved in the most cost-effective manner...are questions that surely deserve some answers but not in this paper—as answering them requires a separate study altogether.

Conclusion: Watershed Management for the Maasin Watershed...Quo Vadis?

The Forestry Sector Project support to the project has ended—the remaining funds for maintenance of the site development activities have been exhausted. The people organizations have been paid of their last payments from the project. The question that they now face is—where will they get their income now that the project is over? They have given up their farms inside the watershed, in return for their participation to the project—but now, they do not even know where they will get the money to buy the rice that their family needs? What about livelihood activities started during the project—they do have the cooperative but not everyone could be involved in the livelihood activities—in fact, very few are involved. Will this pose a threat to the watershed—this is likely because if the people do not have the resources to support them—they may go back to the forest if they run out of options.

From the key informant accounts, it would seem that there are already some families who have started clearing up of the forests just outside of the Tigum-Aganan watershed—reluctantly admitting that a few has even started farming inside the watershed. What do people's organizations do about this? Aren't they supposed to undertake protection activities in the area after all the training that they have received? When posed these questions, the key informants admitted that they have tried to talk to those few families encroaching in the area—but when they reasoned out that they needed the food to feed their family—they could only sympathize with them for they know how difficult life is to many of their community members—and they admitted that this situation could go out of hand—if no serious efforts to provide livelihood alternatives to the upland communities will be undertaken.

It was also pointed out that recommendation to implement community-based management in the area has already been made to DENR even in the early stage of the project's implementation—the idea is to provide the community members opportunities to earn from limited land use activities within the watershed—so that they would continue in providing protection to the watershed. This however was denied since the Maasin Watershed falls on the critical watershed category (strictly no-utilization allowed). The LGU of Maasin has furthermore passed an existing legislation that also prohibits any form of agricultural cultivation in the area. Again—the intent is to limit access of upland communities to the area.

But, while the intent of these laws is meant to protect the greater members of society—mostly, in the lowland communities—the reality is such that the upland communities continue to pose some threats to all those that have been gained from the various watershed management initiatives undertaken in the Maasin Watershed. It would seem pitiful to lose those—if this threat will not be addressed.

At still another level is the question on how the gains on the various fronts: social, technical, institutional/legal capital could be sustained? Surely, the IWMC and their boards need financial resources to operate. The social capital—while already strong would continue to need to be pushed in the right direction through information, education and communication (IEC) campaigns—for complacency could set it...and likewise, the technical capability of the people needs financial resources to be put in use. All these questions boil down to the question of how we get the funds to support watershed management activities in the Maasin Watershed. Given

the gains achieved to date—the financial resources need not be big...compared to what another watershed which still requires substantial site development activities. All that is needed are funds to support protection and forest maintenance efforts by upland communities, either as salaries to as many people who can be involved in protection activities or funds to support livelihood investments, and the minimum needed to support the operation of the various councils and boards.

To this end, it is worth mentioning that for the Tigum-Aganan watershed, the Local Government Unit members have passed an ordinance that shall allocate 1% fund out of their annual IRA for its watershed management programs. Likewise, there was a commitment from the business sector NGO and PO members to initiate fund raising activities for this endeavor. These funds may be sufficient for the Board's operationalization—but not to support the upland communities in the area.

On the part of the IWMC—the commitments made by MIWD for P1 Million annual contribution could be tapped. The MIWD has made two payments already—one to the LGU and the other to the DENR, but did not continue making the payments as they were not satisfied with the way their contribution has been used. Essentially—they were not convinced that the money went directly to watershed management efforts. A key informant has mentioned that the MIWD is willing to make the contribution to the Kahublagan, but Kahublagan would rather have the payment be made to IWMC, as this body needs the resources to finance its various projects for the Tigum-Aganan watershed. This money could form part of the 'environmental service payments' discussed in the next section.

Sustaining Watershed Management Initiatives in the Maasin Watershed: Through the Environmental Service Payments Scheme⁷

The preceding analysis has shown that the major challenge faced by the IWMC is how to sustain the gains made from the various watershed management efforts in the upper portion (i.e. the Maasin Watershed) of the Tigum-Aganan watershed and how to expand said efforts to the rest of the watershed. One mechanism to raise resources for said efforts—that is even more sustainable than other means—is through the 'Environmental Service Payment Scheme' that is discussed in this section.

'Payments' 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 6). 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, these two terms are used interchangeably.

⁷ This portion of the report was lifted from the paper written by Francisco (2003)

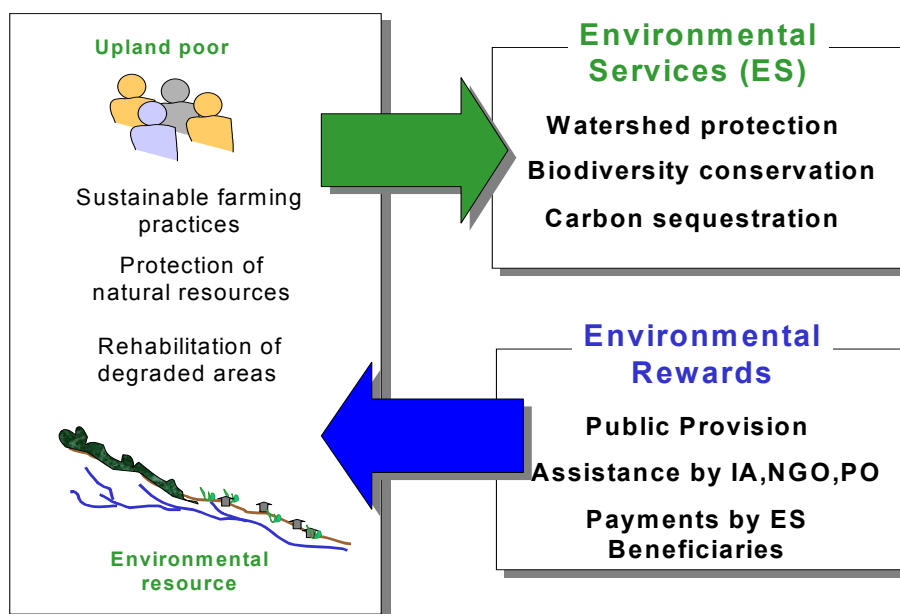


Figure 6
The Environmental Payment Scheme

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 are 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 this task—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 are the beneficiaries 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 6 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); support given by NGO, international organizations, and even by business firms, usually packaged through upland development projects or pro-poor initiatives;

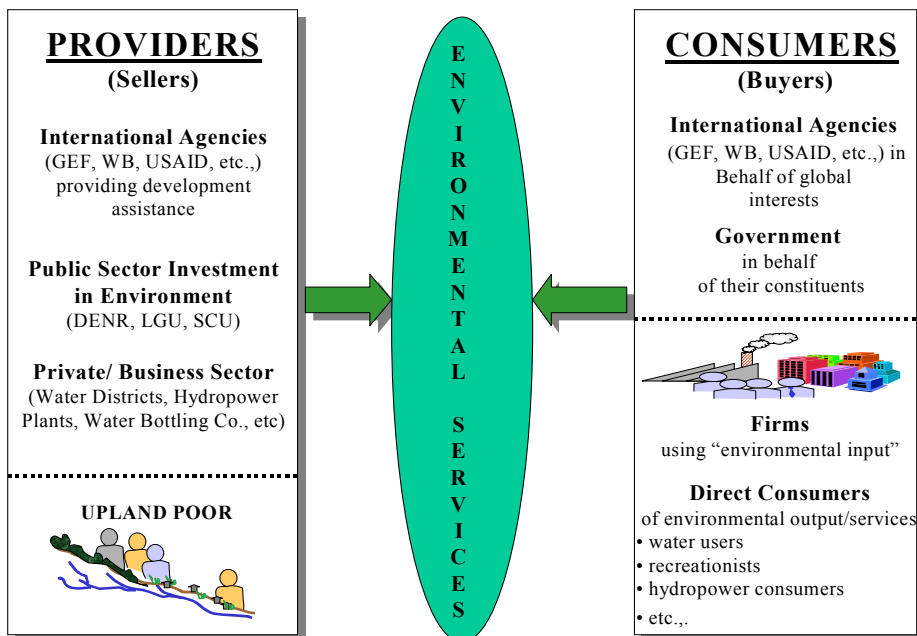


Figure 7
Actors Involved in the Environmental Service Payments Scheme

and payments made by direct beneficiaries of the environmental service (e.g., water districts, hydroelectric firms, fisher folks, industries engaged in bio-prospecting and those that exceed their carbon emissions, among others).

For the Maasin Watershed, the lowland communities have made some forms of payments through their contributions (in cash and in kind) in the early efforts to reforest the 500 hectares portion of the headwater of the watershed. The MIWD has also made this contribution through the P2 M payments it has made to the LGU of Iloilo and the DENR, respectively. The government—through public provision (i.e through, the Forestry Sector Project of DENR), has also made some forms of payments to the upland communities, particularly in undertake the various site development and maintenance activities.

So—why are payments still needed at this stage? Because—there are costs to undertaking protection activities for the sites that have been developed through the various forms of investments made by the government and the lowland communities as well. Surely, it will be a big loss if those gains will be lost by lack of protection efforts in the area. Can DENR not do the protection efforts? History has shown that the DENR capacity to handle this task was

constrained by limited manpower and financial resources also. Hence, they have learned to rely on community-based forest management approach, and more recently, has actively called upon the LGU to be active players on this regard. But even the LGU would need the support of the upland communities in this task.

As such, the upland communities who will perform the service of protecting the watershed and all the site development investments made therein, should somehow, be compensated.

How and in what forms should the upland communities be compensated? From Figures 6 and 7→ it would seem that tapping the 'payments of beneficiaries' of watershed services is the more sustainable way to do this. Public provisions and contributions from external/foreign funding are not sustainable. These are dependent on the existence of the project and ends as the project ended. However, payments anchored on receipts of watershed service (say, clean and plenty of water) are sustainable as the flow of these services should be sustainable as well and is in fact, dependent on the provision of watershed protection. Upland communities perform a service and get paid. Lowland communities receive an environmental good and have to pay. In real-life scenario—this would mean that part of the water bill paid by water consumers should go to the watershed protection efforts. While it is true that MIWD has started making such payments—there is a need to review of the amount of payment that they make is adequate for the service that it gets. It is also possible that water consumers who understand the situation could be willing to pay some more to contribute to protecting their watershed. A strong IEC effort is needed to mobilize this support by lowland communities. This aspect about determining the appropriate amount of environmental service payments to be made by water users—domestic, industries, farmers and commercial water consumers need further study. Allocating this potential payment to services by upland communities and the operation of the IWMC to sustain this lowland-upland community linkage should also be determined as this scheme is studied further in the future. The future should not take long, however, as the threats to the watershed is real and do exists at present.

**Box 3: 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 proceed 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.

References

- Cruz, R. 1997. *Integrated Land Use Planning and Sustainable Watershed Management*. Paper presented at the Third Multi-Sectoral Watershed Management Forum, Forestry Development Center, Institute of Forest Conservation, UPLB-CF, College, Laguna. 27-28 October.
- Francisco, H. 2002. ENVIRONMENTAL SERVICE "PAYMENTS": Experiences, Constraints and Potential in the Philippines. Paper presented at an ICRAF-sponsored Conference in Bogor, Indonesia.
- Francisco, H. 2004. "Watershed-based Water Management Strategy: Why Push for it?" In: *Winning the Water Wars: Watersheds, Water Policies, and Water Institutions*. Ed: Rola, Francisco, and Liguton. SANREM-CISP, PIDS, & UPLB. Pasig, Philippines
- Acosta, Romy.2004. "Assessment of the Implementation of the Watershed Approach in Natural Resources Management in the Philippines" In: *Winning the Water Wars: Watersheds, Water Policies, and Water Institutions*. Ed: Rola, Francisco, and Liguton. SANREM-CISP, PIDS, & UPLB. Pasig, Philippines
- Javier, J. 1997. *Watershed Management Policies and Institutional Mechanisms: A Critical Review*. Paper presented at the Third Multi-Sectoral Watershed Management Forum, Forestry Development Center, Institute of Forest Conservation, UPLB-CF, College, Laguna. 27-28 October.
- KAHUBLAGAN SANG PANIMALAY FOUNDATION INC. 2001. *Watersheds' Learning Communities*. A Final Report to the Ford Foundation. October.
- KAHUBLAGAN SANG PANIMALAY FOUNDATION INC. 2003. *Working Towards Hydrosolidarity: Managing Upstream-Downstream Concerns in the Watershed*. Final Report to the Ford Foundation.
- KAHUBLAGAN SANG PANIMALAY FOUNDATION INC.2003. *Tigum-Aganan Watershed Board Stategic Plan Report*
- Salas, Jessica et al., 1993. *Feasibility Study of the Rehabilitation of Maasin Watershed*. KAHUBLAGAN SANG PANIMALAY FOUNDATION INC.
- Tesoro, Florentino. 1999. "Watershed Management: Challenges and Opportunities". Paper presented during the GOLD Conference entitled: *Local Experiences and Collective Actions in Watershed Management*, October 26-28. Cebu Midtown Hotel, Cebu City.