Assessing the Feasibility of Adopting Payments for Environmental Services (PES) Framework in Protected Area Conservation: The Case of Hundred Islands National Park, Philippines

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by

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Abstract

The study deals with assessing the feasibility of adopting Payments for Environmental Services (PES) framework in a protected area conservation. The viability of conserving a protected area lies in the involvement of different stakeholders. PES is one of the economic strategies that can address trade offs in terms of uses in and conservation of a protected area. The potentials of PES are not limited as a conservation mechanism but also as a framework in strengthening existing conservation programs and policies. This study generally aims to assess the feasibility of adopting PES framework in conserving the coastal and marine resources of a protected area using data on land use, programs and projects, legal instruments, institutional structures, and willingness to accept (WTA) of local fisherfolks.

The study was carried out by first doing literature survey on the concepts and emerging trends on PES as a framework for protected area conservation and other related concepts. A case study area in Alaminos City, Philippines was then selected, the Hundred Islands National Park (HINP). For the interest groups, the study focused on the local fisherfolks along the 10 coastal barangays (smallest administrative and political unit in the Philippines) of Alaminos City. Collection of data was done through official documents, conduct of formal and informal interviews, field observations and household surveys.

Results of the data gathering were assessed and analyzed based on local situation and the feasibility of adopting the PES framework in conserving the HINP. The existing and proposed land use of Alaminos City provide that the HINP has shifted not just into a protected area but more into tourism use and it affects its surrounding areas which includes the fishing and inland areas of the coastal barangays. The shift in the use of coastal and marine resources of Alaminos City, which have implications on the livelihood of the local fisherfolks, is supported by the legal instruments and institutional arrangements that gave greater autonomy to the City in implementing the programs and projects for conserving the HINP. In this sense, majority of the respondents (77%) from the household survey are willing to accept alternative livelihood aside from fishing. The WTA of the local fisherfolks and the amount needed to accept alternative livelihood statistically depend on two variables. The number of hours spent in a day for fishing is a positive determinant for the fisherfolk's WTA alternative livelihood. On the other hand, the household's daily income came out statistically as a positive determinant of the required amount in order for a fisherfolk to leave the fishing activity.

In conclusion, adopting PES as an overarching framework for protected area conservation serves as a good complement and enhancement to the existing policy and programs on conservation and protection of the HINP. The PES framework promotes a good model for understanding the conservation process and focusing on the affected interest groups. Utilizing the criteria involved in a PES framework pinpoints the crucial interventions (i.e. regulated activities of the fisherfolks and provision of alternative livelihood) and interactions (i.e., transactions and agreements between the City government and local fisherfolks) needed in implementing conservation programs.

Keywords: Payments for Environmental Services (PES); Willingness to Accept (WTA); Protected area conservation; Land use; Legal instruments; Institutional arrangements; Shift in coastal and marine resources use

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For the greater glory of GOD

Dedicated

to

My Parents,

Mr. Cirilo C. Cabotaje and Mrs. Clarita E. Cabotaje.

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List of abbreviations

AFMA	Agriculture and Fisheries Modernization Act
CAO	City Agriculture Office
CCO	City Cooperative Office
CLUP	Comprehensive Land Use Plan
CPA	Conservation Partnership Agreement
CPDO	City Planning and Development Office
CRMP	Coastal Resources Management Program
CRM-TWG	Coastal Resources Management Technical Working Group
EO	Executive Order
ES	Environmental Service
FAO	Food and Agriculture Organization
FARMC	Fisheries and Aquatic Resources Management Council
HINP	Hundred Islands National Park
ICRM	Integrated Coastal Resources Management
IEC	Information and Education Campaign
IMPUC	Alaminos City-Integrated Multi-Purpose Cooperative
IPAF	Integrated Protected Area Fund
IUCN	The World Conservation Union
J-CRMAP	Alaminos Joint Coastal Resources Management Action Plan
LGUs	Local Government Units
MERF	Marine Environment and Resources Foundation, Inc.
MOA	Memorandum of Agreements
NGOs	Nongovernment Organizations
NIPAS	National Integrated Protected Areas System
PhP	Philippine Peso
POSO	Public Order and Safety Office
PTA	Philippine Tourism Authority
RA	Republic Act
RUPES	Rewarding Upland Poor for Environmental Services Program
PES	Payments for Environmental Services
REECS	Resources Environment and Economics Center for Studies Inc.
SAGIP	Sustaining Management of Coastal Resources in Selected Municipalities of Lingayen Gulf Project
UNEP	United Nations Environment Program
WRI	World Resources Institute
WTA	Willingness to Accept
WTP	Willingness to Pay

1. INTRODUCTION

1.1. Background

Protected areas are mainly established for conservation of biodiversity and physical and biological features. Conservation can be defined as "the management of human use of the biosphere so that it may yield the greatest sustainable benefit to current generations while maintaining its potential to meet the needs and aspirations of future generations: Thus conservation is positive, embracing preservation, maintenance, sustainable utilization, restoration, and enhancement of the natural environment" (WRI, IUCN et al. 1992). Areas need protection from possible exploitative human uses and activities. Different human uses and activities compete within the boundaries and immediate surroundings of protected areas. These competitions of human uses and activities put pressure on the resources within the protected area. Most of these human uses and activities involve economic activities which mainly affect the livelihood of the people who live near the protected areas. Establishing protected areas therefore does not only affect the designated area itself but most importantly affects the lives of people who have stake in the area.

Protected areas involve various stakeholders having various interests in the area. More often, the establishment or existence of a protected area brings dilemma to local people (WRI, IUCN et al. 1992). Other users of protected area such as hunters, gatherers, loggers, miners, fishermen and tourists and tourism operators have conflicting goals and views on how to use the resources within the protected area. Trade offs happen between the respective uses and activities of the different users in the protected area. These conflicting goals and views as well as the trade offs present a challenge in managing a protected area.

The viability of conserving a protected area lies in the involvement of different stakeholders. It also greatly depends on how well it is ecologically, socially, and economically integrated into the surrounding area (WRI, IUCN et al. 1992). Protected areas cannot be isolated from the sustainable development efforts of an area, rather they are part of the development process. All programs in protected areas reflect a conflict of interests between alternative uses of scarce resources, and therefore, involve an economic aspect (Munasinghe and McNeely 1994). In most cases, economic activities happen within and the immediate periphery of a protected area. In particular, economic activities and benefits should be able to flow from the protected areas into the local communities. These economic activities and benefits can help mediate the inherent conflict between the pursuit of individual interest and the collective self interest of all those who have a stake in a protected area. In this regard, devising economic strategies distributes the economic benefits of a protected area.

Payments for Environmental Services (PES) is one of the economic strategies that can address trade offs in terms of uses in and conservation of a protected area. PES can be defined as "(1) a voluntary transaction where (2) a well-defined environmental service (ES) (or a land-use likely to secure that service) (3) is being 'bought' by a (minimum one) ES buyer (4) from a (minimum one) ES provider

(5) if and only if the ES provider secures ES provision (conditionality)" (Wunder 2005). This definition provides the criteria needed in designing and implementing PES. PES as a strategy involves direct conservation approaches with the use of economic incentives. It recognizes the trade offs that happen in conservation areas and seeks to reconcile conflicting interests through compensation. PES is based on the beneficiary-pays rather than the polluter-pays principle (Engel, Pagiola et al. 2008).

1.2. Justification of the Research

The extent of conservation lies heavily on the ability of the management of a protected area to cope with the different uses of the various stakeholders. Enhancing the contribution of a protected area in conservation efforts depend on modifying the management of an area in consideration with different activities by its users (WRI, IUCN et al. 1992). Protected areas need management strategies suited for local situations and issues within and around the area. Its objectives should reflect the aspirations and needs of the different users. Achieving these objectives would greatly depend on the availability of several factors that can support a particular management strategy or a program.

PES programs are not a panacea for deforestation or for water or biodiversity problems, but they certainly are a valuable addition to the set of policies available to solve them (Muñoz-Piña, Guevara et al. 2008). Studying the potentials of PES in different situations helps in advancing the understanding of PES as a concept. The potentials are not limited with PES as a new mechanism but also as a support mechanism in strengthening existing programs or policies. Studying the possibilities on the applicability of PES can serve as a guideline in improving equity in terms of economic activities and producing a more efficient allocation of resources. Efficient allocation of resources is important since trade-offs between different uses in a protected area are common issues which need to be addressed. In this sense, PES explicitly recognizes hard trade-offs in landscapes with mounting land-use pressures and seeks to reconcile conflicting interests through compensation (Wunder 2005). Also, the applicability of a PES program depends on the types of environmental services being provided.

Most of the PES studies deal with watersheds and forest areas services (Zbinden and Lee 2005; Muñoz-Piña, Guevara et al. 2008; Wunder and Albán 2008) but not on a protected area which in this specific case, a landscape/seascape beauty. Landscape services present interesting and challenging problems in terms of securing payments since users of these services tend to be many and fragmented as compared with water services where there is often a single dominant user (Pagiola 2008). It is also interesting to study the different uses that exist in a protected area providing the landscape service. These diverse uses definitely affect the quality of a landscape environmental services that are being provided. The quality, in return, affects the marketability of the environmental services. Thus, studying the applicability of PES in a protected area's provision of landscape environmental services, including the different uses that exist within and around the area, is an interesting field of study.

1.3. Research Problem

Establishing explicit conservation objectives is not enough, and in most cases these objectives need to be integrated with the fabric of social, environmental and economic welfare (WRI, IUCN et al. 1992). However, there are challenges and barriers in integrating conservation objectives with other factors. First, the establishment of protected area restricts the activities of local people living within and near

the area and in return creating conflict with the conservation objectives and way of life of the local communities. Too often, society at large reaps the benefits of protected areas while local people bear the costs (WRI, IUCN et al. 1992). Conflicts between protected areas management and local economic development are intensifying in many parts of the world, demanding new approaches to protecting biodiversity as well as rights of people who live in and around protected areas (Munasinghe and McNeely 1994). Second, the institutional stability in terms of managing protected areas affects the direction on how the conservation objectives will be carried out. The claim of WRI et al. (1992) that protected areas are often institutionally unstable since the agencies administering them are vulnerable to changing policies and budget cuts can then be investigated. Third, most protected areas need intensive management in order to meet or respond to the impacts of those who use the protected area or to mitigate impacts of development on surrounding areas. Fourth, the insecurity of funds for protected areas is another important issue that needs to be addressed. Economic benefits from protected areas are rarely channelled into protected area maintenance or community development on nearby lands (WRI, IUCN et al. 1992). Finally, there is a narrow perspective from people about the larger roles of protected areas which affects public support for protected areas in return. Protected areas are often seen only as exotic vacation spots or remote wilderness, not as essential elements of sustainable development (WRI, IUCN et al. 1992).

Philippines protected areas are established through the legislation of the National Integrated Protected Areas System (NIPAS) in 1992, which provides the framework for a decentralized, community-based reserve management strategy (Senga 2001). One of the features of the legislation is the establishment of the Integrated Protected Area Fund (IPAF) to finance projects of the system. All funds generated from the protected areas shall accrue to the IPAF, 75% of which will be allotted to the area where the funds were generated, and 25% going to a central IPAF to finance other non-revenue generating protected areas and the operations of the IPAF Governing Board (Resources Environment and Economics Center for Studies (REECS) Inc. 2003). Revenues are generated through users of the protected areas' various goods such as sustainable extraction of natural resources and access for recreation. Financial donations, endowments, and grants likewise form part of the IPAF. To avail of the 75% allocation, a work and financial plan for programs and projects complementary to protection efforts should be formulated. The adequacy of these allocations remains to be seen and whether it directly addresses those who are contributing (positively or negatively) to the conservation of a protected area. Aside from this, REECS (2003) criticized that the process for availing and accessing funds takes too long before the budget for protected area management is released. The longer it takes for these funds to reach the local areas, the more it will put pressure on the resources within a protected area through the extractive activities of the local people. REECS (2003) also identified that the system is too centralized wherein the process calls for a multi-layered process of approval for funds raised locally, to be disbursed at the local level eventually. Aside from these issues, Senga (2001) also claimed that the Philippine government has allocated little money to effectively manage these protected areas, specifically those who formed the initial components of the protected areas system.

There are more than 200 protected areas in the Philippines, ranging from large natural parks, to landscapes and seascapes, to wildlife sanctuaries and small watersheds that form the initial components of the NIPAS Act (Senga 2001). One of the protected areas which are included in the initial components is the Hundred Islands National Park (HINP) located at the city of Alaminos

province of Pangasinan in the northern part of the Philippines. HINP was declared as a national park even before the NIPAS was legislated. HINP is made up of 123 islands scattered along Lingayen Gulf and covers an area of 18.44 square kilometres (Alaminos City 2007b). The city of Alaminos has acknowledged that the once nurturing environment, particularly the sea, fell prey to desperate measures in past years and is now even threatening the ecosystem of the HINP. To address these problems, the City developed a ten point agenda which includes environmental conservation and coastal resource management. Different programs were initiated in order to operationalize the agenda and achieve the City's vision, particularly on promoting eco-tourism and environmentally-sensitive growth with equity (Alaminos City website).

Although PES looks as a potentially effective approach in addressing the issues and situations through directly addressing the trade-offs in a protected area with the use of economic incentives, "it is not a silver bullet that can be used to address any environmental problem" (Engel, Pagiola et al. 2008). PES can then be effectively designed and implemented in certain situations. Identifying the different stakeholder groups and understanding their different activities and uses in the protected area can be the first and second step, respectively. These stakeholder groups can have respective roles (i.e. ES user and ES provider) in implementing a PES scheme. The land use types within and near the national park affects the quality of ES provided in the area. Third, there is a need to identify the current programs that affect conservation efforts in the protected area as well as the existing national and local legal instruments and institutional arrangements that affect the conservation efforts. These programs as well as the local and national legal instruments and institutional arrangements can possibly be fitted within the PES framework. Finally, upon consideration of the above mentioned factors, there is a need of assessing the feasibility of adopting the PES framework in the national park conservation.

1.4. Research Objectives

1. To assess the existing and proposed land use types in the city and their impacts on conserving the HINP.
2. To identify the existing programs, legal instruments and institutional arrangements that support conservation of the HINP.
3. To assess the feasibility of adopting PES framework for conserving the HINP.

1.5. Research Questions

Questions for Objective 1

- What are the existing and proposed land use types in the city?
- How do the existing and proposed land use types affect the conservation of the HINP?

Questions for Objective 2

- What are the existing programs and legal instruments and institutional arrangements that support conservation of the HINP?
- How are the programs implemented and what are the issues and challenges in implementation?

Questions for Objective 3

- How willing are the fisherfolks to accept (WTA) PES scheme in order to conserve the HINP?
- To what extent is the feasibility of adopting PES mechanism in conserving the HINP?

1.6. Research Design

This research started with literature review on protected areas and PES. The literature review helped in defining and formulating the research problem, objective and questions. Consideration and assessment of the current situations in the HINP (i.e. existing and proposed land use types, programs and legal instruments and institutional arrangements, and stakeholders) led to the extent of the feasibility of adopting the PES framework in conserving the national park. The process of the research approach can be seen in Figure 1-1.

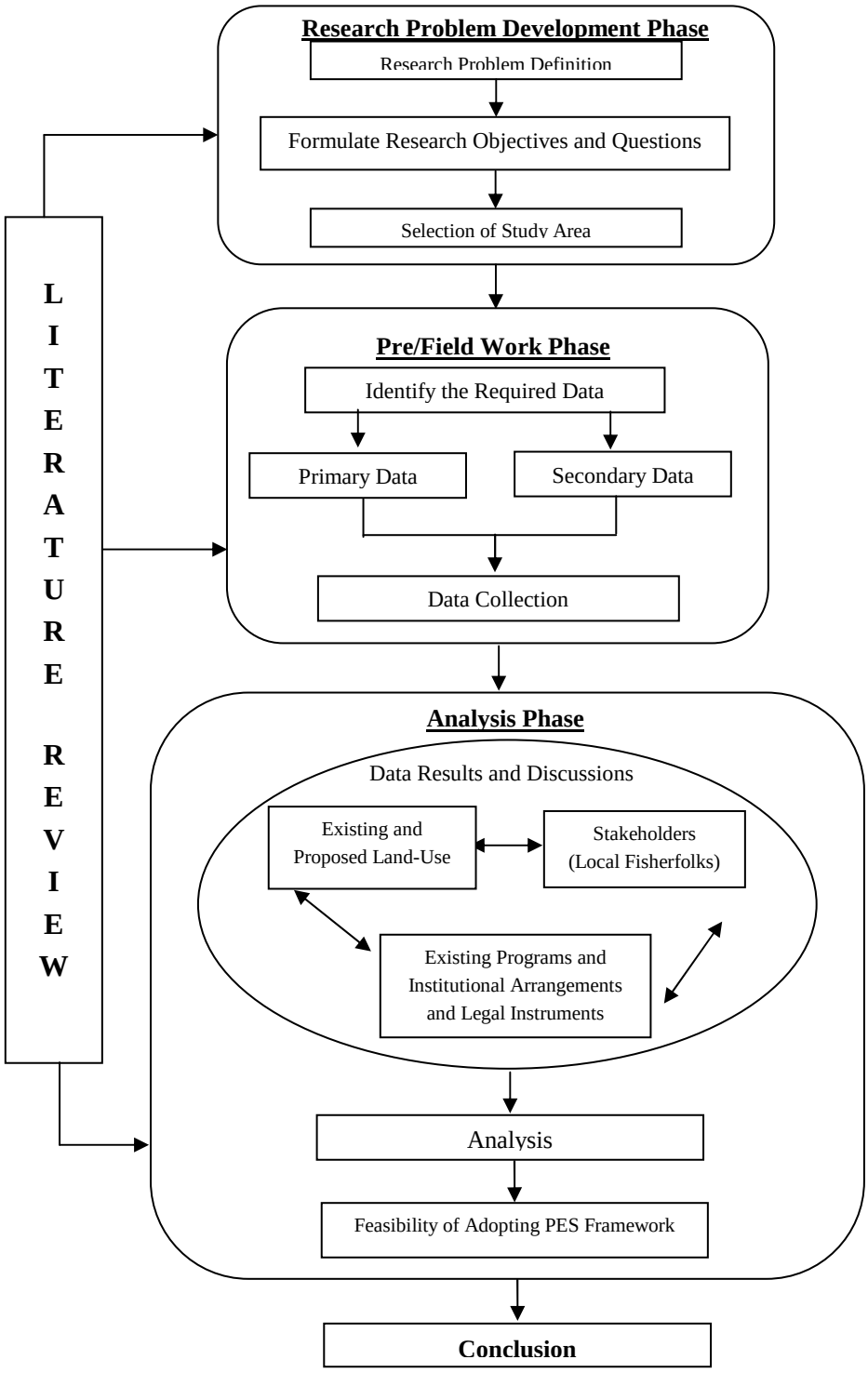

Figure 1-1. *Research Design*

1.7. Thesis Structure

This chapter presents the topic and settings of the study. A general concept on nature conservation and the framework for the needs of integrating economic activities in nature conservation were presented. The importance of conducting the study came next and the research problem followed. The research problem briefly introduced the study area as well as the existing situation. The research objectives and research questions revolved around the identified elements (stakeholders' willingness to accept, land use, and programs, institutional arrangements and legal instruments) for assessing the feasibility of adopting the PES framework. Lastly, the research design was presented which demonstrated the flow and the processes involved in the study.

Chapter 2 deals with the relevant concepts culled from the literatures. It focuses on the different concepts and trends involved with PES as a mechanism for conservation. The concepts of the three identified elements (stakeholders' willingness to accept, land use, and programs, institutional arrangements and legal instruments) and their respective relationship with nature conservation and PES scheme were discussed separately.

Chapter 3 presents the study site and how the research is conducted. The profile of the study area, Alaminos City, comes first followed by the profile of the HINP. This chapter also provides what are the methodologies and activities involved, both in data gathering and analysis.

Chapter 4 gives the results and discussions of the data gathered from the study site. The existing and proposed land use of the city, the willingness to accept of the stakeholders, and the programs and legal instruments and institutional arrangements gave an input on doing the analysis.

Chapter 5 is the result of the analysis of the data gathered. Literatures serve as framework for the analysis of the data. The analysis is divided into two segments with the first part dealing with the assessment of the local situation of Alaminos City in relation to HINP conservation and the implications to the local fisherfolks. The second part tackles the applicability of PES framework as a policy intervention for conserving the HINP by using the identified criteria (presence of ES, ES buyers and ES sellers, voluntary transaction, and conditionality of agreement) in the literature survey.

Chapter 6 presents the conclusion as well as the recommendations for further research. The conclusion is guided by the analysis on the feasibility of adopting PES framework while the recommendations focus on the possible topics for a research study.

2. CONCEPTS AND EMERGING TRENDS: A LITERATURE SURVEY

2.1. Introduction

This chapter provides an overview on the different concepts and trends, based on the existing literatures, on PES as a mechanism for conservation. Different concepts related to conservation were decomposed and their relationships with PES were established. In particular, elements of PES as a concept were discussed as well as issues and challenges in PES implementation and elements for assessing a PES scheme. The concept of land use and its relationship with nature conservation in general and with ES provision in particular were tackled. Also, programs, legal instruments and institutional arrangements and how are they related in establishing a PES scheme were presented.

This chapter serves as a framework in tackling the results of the data gathered from the case of the HINP. These concepts and trends will be the guidelines in doing the analysis and assessing the feasibility of adopting PES framework in conserving the HINP.

2.2. The Concept of Payments for Environmental Services (PES)

2.2.1. Criteria for a PES

Based on the definition by Wunder (2005), PES as a conservation approach has several criteria that need to be met. First among these criteria is that PES should be a voluntary transaction. ES providers are supposed to have other uses for the resources involved and that would be traded off for purpose of conservation. ES providers will not be forced to go into an agreement, instead they are given an option to perform conservation activity and being paid for by doing it. This component of PES gives the potential ES providers a sense of involvement and ownership for any conservation efforts that they will perform. It also gives ES providers a wider perspective on their important roles in environmental conservation.

The second criterion of a PES is that ES should be well-defined and that ES users or beneficiaries know exactly what they are paying for. It can be a direct measurable service (e.g. additional tons of carbon stored or land-use caps) that are likely to help providing that service (e.g. “forest conservation provides clean water”) (Wunder 2005). There should be a concrete evidence and measurement to base what the ES users or beneficiaries are paying for. Wunder (2005) assumed that a poor underpinning of ES will tend to decrease PES robustness and sustainability: the less realistic the scientific basis of a PES scheme, the more exposed it is to the risk of buyers questioning its rationale and abandoning payments.

The buyer and the provider of ES are the third and fourth criterion, respectively. The buyers are those that use and benefit from the ES being provided by the ES providers (Zbinden and Lee 2005). Even the act of “inaction” or refraining from extractive practices, which entails foregoing income

opportunities over an area to which the farmers have some form of land use rights, could constitute a form of environmental service provision (Francisco 2005). The relationship of these two criteria is bounded by the fifth criteria which is the conditionality that the ES provider secures provision of ES for the ES users or beneficiaries. The fifth criterion is an equally important aspect of PES wherein it gives option for both ES providers and ES users to opt out of the scheme when there is no performance from either one of the two actors (users and providers). This conditionality ensures that ES users get what they paid for and ES providers are paid for what they provided. Taking from these criteria, it can be said that PES as a conservation approach is on the side of being a direct rather than integrated conservation which uses economic incentives. Although it is tempting to compare PES with other conservation approaches, it will take away the focus of this research study.

In general, PES as a conservation approach concentrates on using economic incentives and building markets for ES providers and users. Having conditionality as one criterion, PES schemes are designed as transactions wherein both users and providers are given the leverage to agree or disagree and transact with each other based on economic activities and opportunities that they see or perceive that exist in a conservation area. In PES, ES users and providers are clearly defined in order to proceed with implementing the schemes and apply economic incentives. Identifying ES users and ES providers is very important since PES scheme might be paying for free-riders. Free-riders are those that may not be really providing any ES or they do not affect the conservation efforts at all or they are benefiting from an ES yet they are being paid (for ES providers) or not paying (for ES buyers) based for example on their association (e.g. with a community or a group) or impermanent actors in a conservation area (Muñoz-Piña, Guevara et al. 2008; Pagiola 2008).

2.2.2. Types of Environmental Services (ES)

Environmental Services are generally classified into four broad categories, which include watershed protection; carbon sequestration; biodiversity conservation; and landscape/seascape beauty. Padilla et al. (2005) provided broad categorization of the environmental services:

- Watershed protection services are the most common among the environmental services. These include, among others, water flow regulation, water quality maintenance, erosion and sedimentation control, and flood control.
- Carbon sequestration services of forest ecosystems play an important role in global climate regulation by sequestering and storing carbon emitted into the atmosphere by industry and other sectors.
- Environmental services provided by biodiversity consist principally of the maintenance of both global and local ecosystem functions, such as pollination, pest control, humus formation, and decomposition, among others.
- For landscape and seascape beauty services, the main service provided to society is nature-based tourism (often referred to as ecotourism).

Among these environmental services, Barr and Mourato (2009) claimed that most literatures focus on forest or watershed ecosystems and less studies, if non-existent, on marine-based PES. Marine-based PES can be considered as landscape and seascape beauty form of environmental services. This claim can be supported with the idea that somehow marine-based PES mechanism is more difficult to establish as compared with the other ES types (e.g. watershed and forest). Tongson (2005) argued that one of the major reasons why markets fail to emerge in a landscape and seascape beauty type of ES is

that it fall into the special category of public goods or positive externalities. Markets fail to compensate those who produce positive externalities because of the absence of property rights and other legal means, or because the service provision is not recognized by the beneficiaries or by the providers themselves (Tongson 2005).

Establishing property rights in the context of marine ecosystem can prove to be a challenge. Unlike in land-based ES where resources can be clearly seen (e.g. trees in reforestation programs) and boundaries can be easily set and bounded, most resources on marine-based ES are mobile (i.e. fish stocks) and marine waters can not be, if not impossible to be, bounded so as to maintain its resources within its property rights. Establishing property rights, especially on shared marine waters between different geographical units, is crucial in establishing who are the real beneficiaries and providers of services. These challenges of establishing property rights and legal means, being brought about by the nature of landscape and seascape beauty as a public good, provide justification for government interventions. These interventions can set rules and regulations between and among government institutions in order to conserve and secure this kind of ES. These kinds of interventions of setting rules and regulations however has its own set of problems as identified by Tongson (2005) such as weak bureaucracies, corruption, inefficiency and rent-seeking behaviour.

2.2.3. Different PES types

Wunder (2005) identified distinctions between different PES schemes such as area- vs. product-based schemes, public vs. private schemes, and use-restricting vs. asset-building schemes. Engel et al. (2008) provided other classifications which can be considered as similar to area-based and product-based as input-based and output-based respectively and categorized these two schemes as performance measures. Area-based or input-based schemes emphasize that payments are made based on the inputs being used for conservation such as number of land units, number of trees planted or working hours spent. Ideally, product-based or output-based schemes are paid directly on the basis of ES provided. Payments for these schemes are based on the output or effect of the conservation efforts or ES provided.

Public schemes and private schemes are also identified by Engel et al. (2008) as government-financed and user-financed, respectively. These PES types are focused on who are the ES buyers. In government-financed or public schemes, the government is the ES buyer where it usually acts as the third party paying the ES providers for the sake of other ES users or beneficiaries. It is also common that the government benefits from the ES being provided either directly or indirectly such as in the case of improved tourism from conservation activities which in return will also improve the economic activities within the entire community. In user-financed or private schemes, the buyers are the actual ES users and users pay directly to the ES providers. These schemes can be considered as direct and locally focused since the actors involved have information on the actual value of the ES being provided and bought. Being direct in nature, user-financed or private schemes enhance monitoring of the performance of each actor, the ES user and the ES provider. On the government-financed or public scheme, the government lends legitimacy on the transactions and is generally bigger in scope as compared with user-financed or private schemes (Wunder 2005). Engel et al. (2008) also noted that government-financed PES may be more cost-effective than user-financed because of “economies of scale” in transaction costs. However, Wunder (2005) also provided the downside of public schemes wherein it can “become overloaded with side objectives catering to voters rather than supplying

ecological services proper, they are less flexible vis-à-vis targeting of strategic ES sellers, and they tend to be less efficient in securing additional ES provision". The key distinction between user-financed (private scheme) and government-financed (public schemes) is not just who is paying the bills, but who has the authority to make decisions about paying the bills (Engel, Pagiola et al., 2008). Wunder et al.(2008) found significant differences between user-financed PES programs, in which funding comes from the users of the ES being provided, and government-financed programs, in which funding comes from a third party. The user-financed programs were better targeted, more closely tailored to local conditions and needs, had better monitoring and a greater willingness to enforce conditionality, and had far fewer confounding side objectives than government-financed programs (Wunder, Engel et al. 2008).

The last PES types discussed by Wunder (2005) are use-restricting schemes and asset-building schemes. Use-restricting schemes are mainly based on opportunity cost incurred by ES provider for the purpose of conservation. ES providers are paid because they restrict their activities which directly affect conservation. As an example in marine biodiversity conservation, fishermen can be qualified as ES providers by restricting their fishing activities in order to conserve and enrich the marine biodiversity resources in a fishing area. The opportunity cost incurred by the fishermen, especially those who are engaged in small-scale fishing, by not fishing in a conservation area will be the basis for use-restricting schemes to work (Wunder 2005). On the other hand, asset-building schemes are geared towards activities involved in restoring an area's ability to provide ES. As an example, people can be paid and considered as ES providers by planting mangroves which can restore depleting fresh water fish stocks. Adopting asset-building schemes entail that it can be changed into other applicable PES schemes once restoration objectives are achieved in order to sustain conservation efforts.

2.2.4. Payments, Payment Mechanisms and Willingness to Accept (WTA)

In providing payments for ES, there should be a clear link between the payments and the reasons why people are being paid. It is important that people will think of the payment as the result of doing their part in providing ES such as in marine protected area conservation. Payment modes can both be in cash and in-kind (e.g. provision of livelihood and technical assistance). Wunder (2005) presented the perceived advantages and disadvantages of both cash and in-kind mode of payments. In essence, the perceived advantages of in-kind payments include transfer of skills and entails long-run benefits while cash payments will not be affected with the preferences of other people as well as money can provide clear and flexible subdivision of benefits. Francisco (2005) however argued that payment involving cash that is linked directly to the provision of ES is the only meaningful transaction that qualifies under an environmental service payment scheme. This argument is based on the expectations of people that development assistance can be viewed as a complement to existing activities and not as a substitute. It can be argued however that limiting meaningful PES transactions based only on cash payments is very limiting in itself such as in the case of limited availability of funds and ES buyers' willingness to pay. As Wunder and Albán (2008) would argue that PES impacts are not always exclusively about income but there are also worthy side-effects (e.g. strong community organization) as impacts of PES participation.

Whether payments are in-kind or in cash, it is basic that payments should at least equal the opportunity cost or foregone income of those who are going to provide the ES. Martínez et al. (2009) agreed that the adequacy of payments for an ecosystem services is necessary to maintain conservation

efforts and prevent future destructive activities. However, one of the general lessons learned according to Padilla and Tolosa (2005), is that payment or compensation (cash and in-kind) must be sufficiently high to serve as economic incentive to those who will conserve the resources. It is also important that major assumptions should be monitored and tested and, if necessary, adjusted or revised altogether with clear and verifiable agreement on targets, and related implementation and monitoring arrangements when implementing a long-term PES scheme (Padilla and Tolosa 2005).

Different payment mechanisms can be applied to different ES. The identification of payment mechanism depends on the PES program that is implemented and the ES being offered. In terms of landscape and seascape beauty, different payment mechanisms are identified by Tongson (2005) which include: (a) Over-the-counter payments for entrance and user fees wherein establishments may pre-purchase entrance tickets in bulk on behalf of their guests; (b) Bed tax, airport tax and in-kind contributions, such as enforcement, research, education, solid waste management; (c) Direct negotiation (e.g. the tourist and the land custodian agree on a price for use of a service; (d) Vertical integration wherein land is bought or leased from a custodian and provisioning of the seascape beauty becomes part of the buyer's core business (e.g. a concessionaire may buy or lease the land to which it will bring in its customers); and (e) tenure to communities who are made responsible for the upkeep of the site.

On the side of the ES providers, the main concern for them is whether they are willing to accept (WTA) PES or not. The willingness to accept of ES providers is an important equalizing factor to obtain support for the establishment and maintenance of a conservation area. According to Tongson (2005), the allocation for WTA of affected groups (i.e. fisherfolks) is often missed out in the design of marine protected conservation areas which leaves disgruntled and resentful fisherfolks of these conservation areas. Fisherfolks who are not supportive and felt that they are being left behind and not included in the conservation program can cause a conservation effort to be unsustainable. Extractive activities in conservation areas will continue if the affected groups are not willing to participate or accept PES scheme mainly because of their basic needs for survival.

The WTA measures the losers of resources allocation as compared with the willingness to pay (WTP) as measure for gainers from the same reallocation (Edwards-Jones, Davies et al. 2000). Identifying the gainers and the losers can be a problem in itself and can therefore affect the scheme. Ideally, WTP and WTA should produce estimates that are close to monetary value with each other however, Edward-Jones et al. (2000) showed that WTA is usually significantly greater than WTP for the same good. This is supported by the study of Barr and Mourato (2009) in a marine protected area (MPA) in Mexico wherein the results indicated that the required compensation (WTA) values outweighed WTP by the tourist sector. This mismatch can point out that cash payments can be complemented with other means or source of payments. Tongson (2005) provided an example on his case study wherein fisherfolks received a share from the user fees paid by visiting divers as well as livelihood support from external donors for giving up access and jurisdiction when the marine park was established.

A stakeholder's WTA can be related to different factors which can be considered as determinants. Barr and Mourato (2009) identified (a) income from fishing; (b) prior experience with alternative employment; (c) owning of fishing equipment; (d) age and number of people working in the household; and (e) present and perceived income are significant determinants of fisherfolks' WTA.

These determinants can be used as guidelines but cannot be considered as exhaustive. Cultural and other practices as well as existing beliefs can influence people's WTA or leave extractive activities (in this case fishing). These factors (cultural practices and beliefs) can be considered as unique in every group of stakeholders which in return affect their everyday living and possibly with less regard to their socio-demographic status.

2.2.5. ES Payments as an Economic Tool

Paying the ES providers, regardless of their economic status, is a basic concept of PES. However, there should be a keen focus to those who are in poverty and have no alternatives once their source of livelihood is affected by providing ES. People who have no alternatives will definitely be affecting any conservation efforts negatively once a conservation program restricts their livelihood activities. For Francisco (2005), it is on the reason of equity grounds where beneficiaries of environmental services should share in the cost of provision and that ES beneficiaries should not take a free ride on the stewardship of poor ES providers. She provided an Environmental Payment Scheme, based on the figure below, with upland poor farmers as a setting and how their practices (e.g. rehabilitation of degraded areas and protection of natural resources) result into provision of ES (e.g. watershed protection and biodiversity protection) and environmental rewards for different groups of beneficiaries, who in return pays the upland poor farmers in order to maintain the provision of ES. This figure projects the flow and balance of an environmental payment scheme as well as the vulnerability of such scheme with the action or inaction of each group of actors.

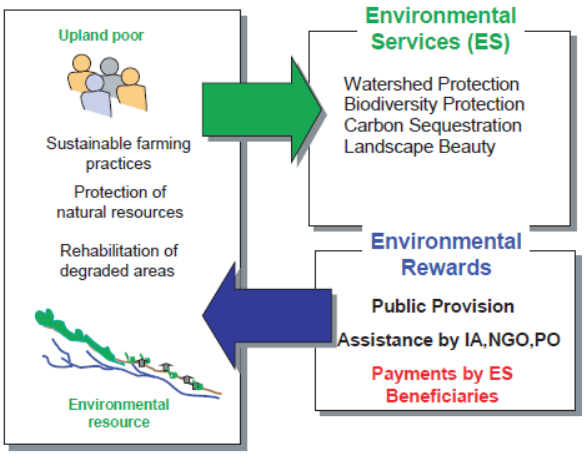

Figure 2-1. *Environmental Payment Scheme. Adopted from (Francisco 2005)*

Directing ES payments as an economic tool requires establishing market for the ES being provided. Markets can potentially provide local people and communities the chance to transform their natural capital into financial flows, whilst diversifying their income base and reducing vulnerability to natural and other calamities (Padilla, Bennagen et al. 2005). Establishing markets for ES requires several factors in order for ES providers to benefit from the payments and mechanism to work for conservation and poverty alleviation. Padilla et al. (2005) identified secured property rights, suitable skills, institutional frameworks, education, financial investments to develop products and services, access to information and distribution channels, and efficient coordination as crucial elements for ES market to prosper and for local people and communities to benefit economically while providing ES. It should be taken as a caution though that environmental conservation should always be the main

objective and not overburden the market mechanism with other unrealistic and excessive promises of economic development. So as to ensure that market mechanism for ES provision are not overburden with unrealistic and excessive promises of economic development, it is important that the benefits and costs of such mechanism are properly evaluated. Proper evaluation provides the realistic potentials of market mechanisms for ES provision and should ensure that the poor are not worse off than before, and should in fact be better off with such mechanism (Padilla, Bennagen et al. 2005).

2.2.6. Stakeholders in the PES

The two basic elements for a PES mechanism, as discussed earlier, are the ES sellers and ES buyers. These two elements are link together within the framework of markets for ES. Expanding the concept of other interest groups, aside from the ES sellers and ES buyers, who are involved in a PES mechanism can widen the understanding and the dynamics of how a market-based conservation mechanism can work. Francisco (2005) provided in the figure below the relationship between the ES sellers and the ES buyers. Obviously, the figure has its focus on the two basic elements of PES, however, it is quite interesting to note the existence of another element that goes between the ES sellers and the ES buyers. The existence or the need of intermediaries or facilitators can be attributed to the reality that some ES sellers are often disorganized, scattered over a big land area, adopt different land use practices, and may have different forms of tenure or rights over the use of land they are cultivating (Francisco 2005). The case of disorganization is not limited to the side of the ES sellers but it can also possibly exist on the side of ES buyers. ES buyers should be able to understand the circumstances of the ES they are to enjoy or benefit from as well as the circumstances of those who are going to provide that ES. It can also be said that intermediaries or facilitators are also important in establishing markets, both for the ES sellers and ES buyers. For ES sellers, the realization of potential economic benefits from nature conservation efforts and for ES buyers, the realization of paying for the sustainability of the ES they are enjoying.

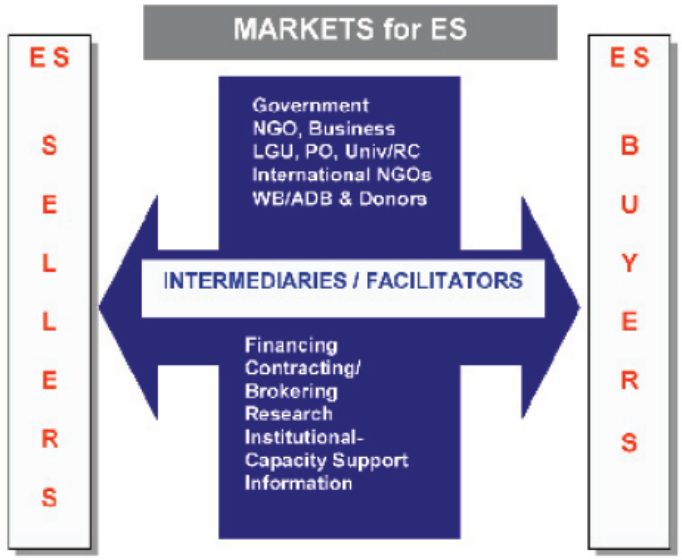

Figure 2-2. *Parties to the Environmental Payment Scheme. Adopted from (Francisco 2005)*

Tongson (2005) identified the different actors or interest groups in a PES mechanism as well as their respective roles which include:

- Buyers consist of end users (e.g. tourists). The government as a buyer happens when it allocates budgets for the maintenance of natural areas, such as parks, wilderness, and tourism zones. Another category of buyers is the institutional buyer.
- Providers/sellers are those whose activities sustain the provision of the environmental service and who enjoy property rights over the land/water where the ES is generated. Providers can be private landowners, lessees, concessionaires, real estate developers, LGUs, people's organizations, cooperatives and other tenured entities. Sellers may be the providers of ES themselves; otherwise, they may comprise intermediaries (e.g. operators, middlemen, agents, lessees, concessionaires, tenants).
- Intermediaries sell or package environmental services to end-users. Examples of intermediaries are tour companies, agents, lessees, concessionaires, middlemen, resort operators, time-sharers and others who may or may not invest in providing the service.
- Brokers are those that convene buyers and sellers to come together, negotiate agreements and develop institutional mechanisms. Brokers are distinct from intermediaries although it is a thin line of difference. In the case of public goods, brokers help in creating markets, estimate recreation values and establish appropriate institutional mechanisms. Brokers need to be trusted by both sellers and buyers. This is an important requirement for negotiations and agreements to take off. The broker's task is important as it brings sellers and buyers together in setting common goals and prices, and in forging agreements at the start. The broker may also act as conflict mediator when disagreements arise.

Interestingly, the actors identified by Tongson and Francisco go beyond the basic actors (i.e. ES sellers and ES buyers) of a PES mechanism based on the definition provided by Wunder (2005). The existence of intermediaries (Francisco 2005; Tongson 2005) provides the possibility of having a simple or complex PES mechanism. Simple in a sense that, without the intermediaries, payments or transactions between the ES sellers and the ES providers will be directly done among them and complex in a sense that middle-man (i.e. intermediary or broker) will be needed in implementing the PES mechanism. On the other hand, it is agreeable that intermediaries or facilitators are needed especially if the ES sellers and/or the ES buyers are unorganized or not clearly established. The role of a broker can be confusing with that of an intermediary but it can be simplified by considering that a broker deals mainly on establishing and developing the relationship between the ES sellers and the ES buyers while intermediaries deals with the ES sellers and the ES buyers once the ES market mechanism is established. The existence of other actors can be traced back on the type of PES mechanism, as discussed earlier, being employed. Still, it can be said that the more the identified actors in a certain scheme, the more complex it becomes in terms of organizing and fitting their different individual stakes within the scheme.

Given the nature of PES mechanism, which is based on agreement or conditionality, establishing agreements among the different interest groups can be a challenge. The diversity of interests being represented by different groups complicates the process of establishing agreements. It should also be taken into account that a PES scheme requires stakeholders to change their behaviour as well as their resource-use patterns. Local stakeholders share a disproportionate burden of the cost arising (e.g. from a no-take zone) compared to the benefits accruing to global stakeholders and more powerful groups (Tongson 2005). Having these considerations, establishing agreements and schemes among the

different stakeholders for implementing and monitoring performances within the PES scheme are important. Tongson (2005) and Padilla and Tolosa (2005) agreed on the importance of generating stakeholders' agreement and participation in sustaining conservation efforts under the PES scheme.

2.3. Land Use and PES

2.3.1. Concept of Land Use

Land use can be considered as a dynamic concept and can be viewed more as a process than an output (Cruz 2004). It denotes complex interaction and changes occurring over time. Dale and McLaughlin (1999) defined land use as the economic and cultural activities practiced upon land. Land use as a concept can be distinguished from land cover, which denotes the physical state of the land and describes the quantity and type of vegetation and other material that occurs on the earth's surface (Dale and McLaughlin 1999). Land use as an interaction and as a process can be described as the interconnection between human actions (economic and cultural) with the physical environment (land cover). This interconnection is a two-way relationship that directly affects both human actions and physical environment. The basic need of human for survival directs its activities towards the physical environment. The physical environment in return limits suitable activities based on its characteristics.

The view that land use being more of a process than an output can be debatable but differing concepts can have common grounds. Even with the differences on definition of the concept of land use, it is common that interaction between human activities and physical environment (land) is mentioned in the other concepts of land use. This interaction presents complexity with the process or human activities that take place in the land. Hill and Aspinall (2000) presented the complexity of land use as a process with their definition that *"land use is the result of interaction between physical, social, economic and legal factors within specific geographic context. The study and analysis of such an interacting, dynamic and complex set of factors is agreed to be multi-disciplinary endeavor that requires an holistic approach with the distinct geographic component adding to the complexity of analysis and interpretation."* This definition provides another aspect of the concept of land use as a process which does not limit its relevance to one or few fields of study as well as its relationship with other concepts.

2.3.2. Land Use and Nature Conservation

The concepts of land use and nature conservation can be link together. Nature reserves can be considered a land-use category that competes with other land-uses for territory (Bojórquez-Tapia, de la Cueva et al. 2004). Other land uses include forestry, agriculture, recreation, and urban and infrastructure development among others. Efforts for nature conservation can aim at protecting the most valuable lands for conservation as well as excluding those tracts of land valuable to other stakeholders and which are not feasible for nature conservation. This can be done by examining the different land uses that exist in an area. By doing so, consensus among different stakeholders with different interests is maximized and conflicts are minimized. Land use serves as a guideline on the suitability of different uses of a land as it delimits most valuable biological resources and segregating other uses based on suitability. Bojórquez-Tapia et al. (2004) applied land suitability assessment approach using land use data in designing conservation program for a national park. Land use data serve as an input for addressing environmental conflicts in a nature park.

Changes in land use, especially on areas with natural significance, affect conservation. Transformation of natural vegetation to other land-uses, such as crop cultivation and urban development, presents the most important threat to biodiversity (Wessels, Reyers et al. 2003). In terms of relationship between land use change and protected area, Izquierdo and Grau (2009) identified land use change as the main component of regional environmental change, while protected areas represent a direct land use policy to prevent its potentially negative effects on biodiversity and environmental services. Creation of protected areas affects the land use within the area being protected as well as the peripheral areas which can potentially affect the protected area. It is with this light that land use change can be considered as one of the important factors influencing the conservation of the natural environment. Land use change can positively or negatively affect nature conservation depending on the process of activities that will be done on the land.

Patterns of land-use change can be broadly classified into two main categories: 1) expansion of the agriculture frontier, which is a major driver of deforestation and destruction of natural habitats, particularly in tropical and subtropical lowlands where productive soils and growing global demand for food and other agriculture products provide incentives for transforming areas into agriculture; and 2) ecosystems recovery associated to decreasing of intensification of land use in marginal agriculture lands is associated to industrialization and population urbanization (Izquierdo and Grau 2009). Analysis of trends in land use change can provide information on prioritizing conservation efforts and bridging the gap of information and implementation of conservation programs.

Trends of land use change can be used to evaluate potential overlap with areas currently transformed by land-uses and potential co-occurrence with areas of natural vegetation cover likely to become cultivated (Wessels, Reyers et al. 2003). Trends of land use change allow identification of potential conflict areas between areas of biodiversity conservation interest and areas currently or likely to be subjected to land transformation in the near future.

2.3.3. Land Use and Environmental Services

Land use can be an indicator and a source of environmental services that can be provided in a natural resource conservation area. Land use practices provide wider perspective on how the PES mechanism can work. These land use practices can point out which practices should be restricted in order to conserve a natural resource area and which practices should be developed in order to accommodate stakeholders affected by the restrictions. The link between land use practices in the natural resource area and the supply of the ES should be made clear to the parties involved before any interest in this scheme can be generated (Francisco 2005). Abandonment of extractive land use practices which can be considered as ES cost money or have some opportunity cost in terms of foregone income. In this case, monitoring of land use practices and trends can potentially help in monitoring the PES mechanism since according to Francisco (2005) that abandoning destructive land use practices is meant to bring about only short-term loss to the farmers and it is expected that, as they adopt sustainable land use practices, incomes from land activities eventually rise with improvements in the condition of natural resources. This claim can somehow be debatable especially on the case of increasing number of stakeholders dependent on the natural resources (e.g. rich fishing grounds will attract more fisherfolks and therefore increasing competition and pressure on the area).

The future capability of ecosystems to provide ES is determined by changes in socio-economic characteristics, land use, biodiversity, atmospheric composition and climate (Metzger, Rounsevell et al. 2006). Among these changes, land use changes can be considered as the one in which humans can have the major control and which has been highlighted by Metzger et al. (2006) as a key human-induced affect on ecosystem. Such land use change directly influences the provision of ecosystem services (e.g. provision of food and timber, climate regulation, nutrient cycling, and cultural identity). Evidence of loss of ecosystem services owing to land use changes is gradually accumulating, especially in the case of pollination services; carbon storage; hydrology; and climate change, among others (Metzger, Rounsevell et al. 2006; Martínez, Pérez-Maqueo et al. 2009).

Relationships between land use and the ES are significant in implementing PES mechanism. Food and Agriculture Organization (FAO) (2004) identified that one of the lessons learned from several PES mechanism experiences is that there are significant uncertainties regarding the cause-effect relationships between land use and ES. These uncertainties, which can be brought about by several variables and their complex relationships (e.g. geographical and climatic conditions affecting watershed and fishing seasons), can lead on assumptions about land use impacts on ES provision.

Zooming out further, land use policy formulation can incorporate conservation guidelines as well as provision of ES. The importance of ES provision and nature conservation in the context of land use policy has gained ground. Zhao et al. (2004) concluded that future land use policy formulation should give precedence to conservation of the ecosystems over uncontrolled reclamation. Metzger et al. (2006) highlighted the importance of monitoring land use changes as an information which can be of interest to policy makers and can help determine future development pathways.

2.3.4. Programs, Legal Instruments and Institutional Arrangements and PES

A PES scheme emanates from programs (local and national), legal instruments (policy, legislations, etc) and institutional arrangements (organizational structures, partnerships, etc.). Experiences from countries who implemented a PES scheme started with a policy which evolved into a program (e.g. Mexico's Program of Payment for Hydrological Environmental Services of Forests (PSAH) (Muñoz-Piña, Guevara et al. 2008) and Costa Rica's Pago por Servicios Ambientales (PSA) (Zbinden and Lee 2005)). In some cases, the presence of an organizational structure paves the way for creating a PES scheme (e.g. Hondura's Council for Administration of Water and Sewage Disposal (JAPOE) (Kosoy, Martinez-Tuna et al. 2007)). Also, partnerships between decentralized government agencies and nongovernment organizations (NGOs) (e.g. Ecuadorean Corporation for the Development of Renewable Natural Resources (Wunder and Albán 2008)) showed the way for a PES scheme to materialize. Engel et al. (2008) claimed that the effectiveness and efficiency of PES depends crucially on program design since in practice, PES programs differ in the type and scale of ES demand, the payment source, the type of activity paid for, the performance measure used, as well as the payment mode and amount.

These policies, which were used later on as basis for PES scheme, are mainly concern with addressing the immediate environmental problems (e.g. deforestation and water scarcity) with their own set of strategies to address such problems. These strategies are more concern on controlling activities through law enforcement (Muñoz-Piña, Guevara et al. 2008) which can be categorized as "command-and-control" approach of conservation. With the case of Costa Rica, their PSA is the result of a more

than two decades-long evolution of the country's forestry policies (Zbinden and Lee 2005). With these experiences, it is safe to say that existing legal instruments can provide a framework for a PES scheme. Experiences show that a PES scheme does not need to start from a scratch. Improving an existing legal instrument and learning from implementation experiences can serve as a valuable input in designing a PES scheme. A legal instrument also provides the needed conditionality, which is one of the distinct elements of a PES scheme, as demonstrated from the case of Costa Rica wherein the law provides the regulatory basis to contract landowners for the services provided by their lands (Pagiola 2008). Legal instruments can also set up the user and/ or entrance fees and other site-based conservation finance mechanisms as well as generate and mobilize resources for conservation efforts (Tongson 2005).

Institutional arrangements include harnessing the existing organizational structures, who are involved in service provisions and nature conservation, and establishing partnerships with other government agencies, nongovernment organizations, and other private organizations. The Honduras experience showed a partnership between an international cooperation, Program for Sustainable Agriculture in Hillsides of Central America (PASOLAC), which technically supported JAPOE to create a payment scheme for environmental services (Kosoy, Martinez-Tuna et al. 2007). In the case of Ecuador, the PES proposal was part of a forest management plan, designed by a nongovernmental organization (NGO), the Ecuadorean Corporation for the Development of Renewable Natural Resources (CEDERENA), which also recommended sustainable land-use alternatives such as ecotourism and medicinal plant extraction (Wunder and Albán 2008). The second case from Ecuador, which also exhibits institutional arrangement as an instrument in establishing a PES scheme, is the Forest Absorbing Carbon-dioxide Emissions Forestation Program (PROFAFOR), an Ecuadorian company acting in extension of the Forests Absorbing Carbon dioxide Emissions (FACE) consortium, financed by Dutch electricity companies to offset their carbon emissions. These organizations and partnerships may have different extent of involvement in terms of establishing and implementing a PES scheme, but the underlying factor is the innovation in terms of doing conservation programs and focusing on the local situations (Zbinden and Lee 2005; Kosoy, Martinez-Tuna et al. 2007; Muñoz-Piña, Guevara et al. 2008; Pagiola 2008; Wunder and Albán 2008) in order to custom-fit the PES scheme within the conservation efforts.

The extent of a policy framework in establishing a PES scheme can be on a national or a local scale. Padilla et al. (2005) argued that a national PES program will require an overarching policy framework that provides a clear mandate to the national and local governments to implement PES on the ground. A legal and regulatory framework is necessary for a PES scheme to be effective and that laws and regulations help set up schemes which reduce transaction costs of establishing and maintaining PES schemes (Padilla and Tolosa 2005). Francisco (2005) has agreed on this claim and identified that one of the key elements that limits widespread implementation of an ES payment scheme is the lack of supporting legal basis. These claims are in contrast with what the FAO (2004) presented that most schemes operate without a specific legal basis and only few countries have specific legal frameworks for PES at the national or regional level. In this case, it can be said that although a national policy can serve as a good framework, it should not be taken as a generic approach since the local communities are the ones who are aware and more knowledgeable of their situations. As such, public institutions involved in the schemes are local rather than national in scope (Food and Agriculture Organization (FAO) 2004). There is no single, transferable model for payments for environmental services

schemes, thus, each must be tailored to the specific conditions of the market for a given environmental service at specific locations (Mayrand and Paquin 2004). Moreover, Engel et al. (2008) noticed a trend that recent PES approach have moved away from standalone PES projects to projects that implement PES as part of broader policy approaches. This trend can be explained by the fact that nature conservation issues have been getting a lot of exposure and other policies and programs are more oriented on sustainable use of natural resources.

Aside from a legislated policy framework, Padilla et al. (2005) identified supportive public institutions, strong public-private partnership, adequate data management, effective information and education campaign (IEC) and advocacy campaign, and innovative approaches from NGOs and research organizations as key elements for a national PES program. Public institutions include the national agencies and local government units (LGUs). Inter-LGU partnerships can be established in order to design PES schemes that will work for shared ES (i.e. landscape/seascape beauty) which will equalize the costs and benefits of maintaining these recreation areas (Tongson 2005). These institutions can facilitate the creation of a PES scheme and organize the different interest groups within a conservation area. It is essential therefore that these public institutions exercise transparency and good governance in their involvement of PES programs (Padilla, Bennagen et al. 2005). Intensifying public-private partnership can be initiated by working with and harnessing innovative approaches from NGOs and research organizations. Through the involvement and knowledge brought by NGOs and research organizations, private agencies will be properly informed and be encouraged to join in the conservation efforts. Well established NGOs, especially international NGOs, can shed a sense of influence and legitimacy for conservation efforts to be patronized by the private agencies.

Private sector and civil society can take the lead in implementing a PES scheme. The lesson from Rewarding Upland Poor for Environmental Services (RUPES) Program suggests that objectives of the program can be best met if they are implemented by private sector in cooperation with NGOs or other institutions enabling the involvement of all stakeholders (Leimona 2005). RUPES is testing mechanisms to reward the upland poor for the environmental services they provide at a number of sites across Asia and aims to enhance livelihoods and reduce poverty of the upland poor while promoting environmental conservation at local and global levels (Leimona 2005). In developing countries, the role of private sector in implementing a PES scheme is highlighted by the findings of Padilla and Tolosa (2005) that private sector and civil society can be tapped to complement conservation activities by the public sector, both by adding the resources allocated by government for conservation and freeing up of government resources. In the study by Boquiren (2005) on the Philippine policy framework for PES in the forestry sector, she found out that there are sufficient laws to guide the provision of environmental services, their harnessing, the protection of source areas, and the extension of benefits to communities in the source areas. She added that the Philippine policy framework and institutional setting for environmental services payments provide many opportunities for engaging local government units, civil society organizations and the private sector in market creation and enhancement (Boquiren 2005).

2.3.5. Issues and Challenges in PES Implementation

PES scheme should not be taken as a cure-all for environmental conservation problems. In itself, PES scheme has its own issues and challenges in implementation and are mainly based from experiences. PES should not be taken as the solution to all the country's environmental problems, but as a

complement to a set of policies and programs that address these problems, both market-based and regulatory or command-and control instruments (Padilla, Bennagen et al. 2005). It is quite possible that certain model of PES scheme which works in other countries or location is not replicable to other situations. It is likewise valuable to identify and re-examine existing environmental and natural resource policies that are in conflict with each other and may even create disincentives to improve resource management (Padilla, Bennagen et al. 2005).

In the case of Mexico, Muñoz-Piña et al. (2008) identified that many of the program's payments have been in areas with low deforestation risk. This issue can be attributed on the selection criteria and modifying it and making it effective might lead to greater benefits with ES users, in this case the water users. With this issue, the programs' main gains will be distributive, but without bringing a pareto improvement in overall welfare (Muñoz-Piña, Guevara et al. 2008). It might not lead to direct linking of actual contributions of users' payments on one side and provision of ES, land and forest owners, on the other side. It is like spreading the wealth without taking into consideration who are the real contributors and who are the so-called free-riders. Also, political restrictions make current payment per hectare difficult to reduce which in return create several targeting failures with the use of ad-hoc allocation mechanism (Muñoz-Piña, Guevara et al. 2008). Proper identifying of ES areas and providers was also identified by Muñoz-Piña et al. (2008) which might lead to allocating or paying for areas that were not going to be deforested anyway. This case benefits the forest owners but it does not maximize welfare gains for payments by the ES users. This issue also goes back to the bigger concern of proper targeting in order to maximize benefits from payments being made. Another issue is that the participation of the poorest of the poor is less as compared with the other ES providers (Muñoz-Piña, Guevara et al. 2008). This might be because of several reasons which include proper representation in the PES scheme and lack of information on the existing programs.

Although Costa Rica has a longer period of experience in implementing PES schemes for conservation, there are still possible areas for improvement as identified in the literatures. Even with a separate semiautonomous agency managing the PES program (FONAFIFO), it still remains subject to variety of government restrictions. Its budget must be approved by the Ministry of Finance, while payment levels and priorities are set annually by executive decree (Pagiola 2008). These procedures and restrictions can hamper the agency in performing expeditious works. Service users are initially reluctant to pay for conservation which could have been due to the lack of familiarity with the PES approach but with the program now well established, resistance to payments is most likely due to a desire to free ride on the efforts of the government and other users (Pagiola 2008). This issue might be particularly true when many users are using the same watershed and in tourism industry wherein it is highly fragmented. The government is still very much involved in the user payments and ES users are counting on the payments made possible by government financing. In relation to this, Pagiola (2008) also noted the lack of targeting and the use of undifferentiated payments. The other major weakness in the PSA program is the lack of data on the extent to which its activities are for instance its impact on biodiversity conservation and carbon sequestration (Pagiola 2008).

For an emerging market of a PES scheme, there are important factors that may limit or hinder on-the-ground implementation of a PES scheme. Padilla et al. (2005) identified (a) high transaction costs, (b) unclear property rights, and (c) weak institutions. High transaction costs arise from the following: the need to involve many stakeholders with different interests; costly information requirements (i.e.,

scientific data on the links between land use and environmental services, willingness to pay surveys, etc.); and drawn-out stakeholder consultations and negotiations (Padilla, Bennagen et al. 2005). Establishing clear property rights are easier said than done. Conservation areas are mostly public lands (e.g. forest and watersheds, marine protected areas and tourism sites) and therefore identifying property rights will prove to be a challenge in itself. The problems posed by open access regimes and lack of an accountable service provider are major challenges to closing the loop between buyers and sellers in the public domain (Tongson 2005). In this case, institutional responsibilities and roles at local and national levels play a vital role in identifying rightful beneficiaries of payments as well as the buyers of ES. Also, since a PES scheme is dependent on the compliance to an agreement, lack of clear property rights and lack of legitimacy provided by institutions lead to disincentives for ES buyers to enter into an agreement as there is no clear assurance on who will provide the ES.

On the side of ES sellers and ES buyers, the problem arises on fitting together these two elements together into a demand and supply equation. Sellers should be able to supply the ES and that there should a demand from the buyers for ES being supplied. The lack of business orientation and skills to manage conservation areas as a business enterprise result into difficulties in managing and sustaining them (Tongson 2005). In the experience of the RUPES (Leimona 2005), an uncertainty of having benefits from a PES scheme stems from the dynamics of ES supply and demand where a clear link between the ES provided and bought should be establish. Leimona (2005) identified at least three obstacles in mainstreaming PES:

a. Limited demand from the ES beneficiaries since PES is still nascent in developing countries, not many ES beneficiaries are confident about the PES mechanisms, often because the link between land use and ES provision is insufficiently understood or ambiguous;
b. Additionally, a second obstacle is poor knowledge about the dynamics of ES supply. In developing countries, the institutional preconditions required for suppliers to negotiate a PES deal sometimes do not seem clear enough, especially with regards to how to direct the payment to the poor communities;
c. Finally, communicating the PES concept is problematic. In many cases, proponents often use an economic rationale in delivering the PES scheme, while skeptics counter with their perspectives from other social sciences.

For a landscape/seascape beauty type of ES, which mainly provides tourism benefits, the reduction of tourism values can be attributed to market and institutional failures. Market failure occurs when landscape/seascape stewards are not compensated for the services they provide; hence, there are no incentives for conservation and conversely, the beneficiaries do not share in the cost of providing such services (Tongson 2005). Moreover, Tongson (2005) identified institutional failures as when policies and plans are inadequate and/or when there is a weak regulatory regime. These situations can be worsened by the ES sellers themselves who are often disorganized (Francisco 2005). It is therefore important to understand the unique circumstances of ES sellers and explain to them the potentials and logic of a PES scheme. This leads to proper information and research on the opportunity cost of alternative land uses, in favor of those that are more consistent with ES production, which proves to be crucial in setting up the ES payment scheme (Francisco 2005).

2.3.6. Assessing PES

Aside from the five elements (voluntary transaction, well-defined ES, presence of ES buyer and ES seller, conditionality of the transaction) provided by PES definition of Wunder (2005), there are several elements from field experiences in order to assess a PES scheme. Quite interesting is the PES design of assessing PES in a watershed provided by Bennagen and Beukering (2005). Based on the figure below, the design identified three key elements on assessing a PES for watershed protection: science, economics and institutions. The science aspect deals with the measurable physical and monetary value ES (e.g., cubic meters per hectare of irrigated land), while the economics deal with the valuation of ES in terms of monetary value using economics valuation techniques derived values can be used as basis for the payment scheme and institutions which reflects the institutional reforms in the form of watershed management interventions that will bring about an improved state of the watershed will need to be undertaken (Bennagen and Beukering 2005). The figure reflects the flow of the PES as a scheme which is subdivided into the three key elements and can be also considered as a cycle since the final result goes back to the initial stage of ensuring the proper state of a watershed area. This representation focuses on the stages of a PES scheme in assessing the key elements needed for PES implementation.

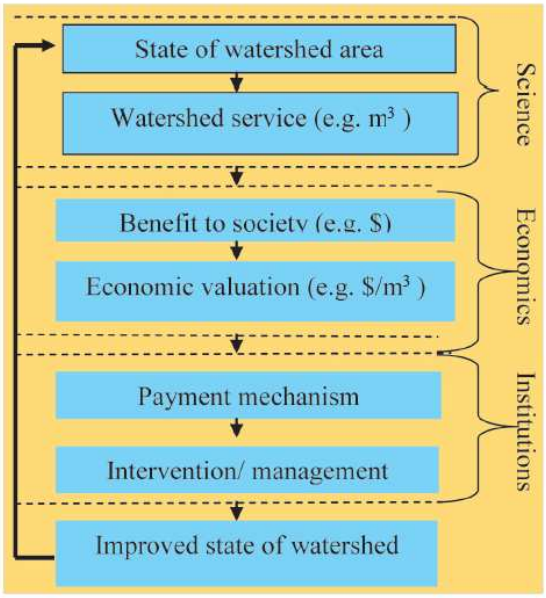

Figure 2-3. *Integrating Framework for Science, Economics and Institutions Dimension of PES. Adopted from (Bennagen and Beukering 2005)*

The FAO (2004) on the other hand has also identified a set of criteria (i.e., context; actors; valuation, financing and costs; operation and design of the scheme; and monitoring and follow-up) which was established to characterize and assess the practical experiences from the execution of PES schemes in watersheds in Latin America. The context deals with the policy, legal and institutional frameworks, management plan and time frame of the payments for environmental services scheme; actors refer to type of sources of financing, type of institutions collecting and managing the funds, types of institutions paying the services providers, socioeconomic status of providers and users, and number of providers, and intermediate and end users; valuation, financing and costs are the amount paid by users to service providers, fee structure, sustainability of financing, cost of preliminary studies, operations,

monitoring and evaluation, among others; operation and design of the scheme refer to the participation mechanism, operating conditions, activities, methods, and sources of risks, etc; and finally, monitoring and follow-up are the mechanisms for performance, assessment and monitoring (Food and Agriculture Organization (FAO) 2004). This set of criteria is more exhaustive and comprehensive as compared with the ones provided by Bennagen and Beukering but it might also be possible that some if not most of these identified criteria will not be applicable to other cases of watershed conservation and especially to other types of ES. The beauty of the assessment design by Bennagen and Beukering is that it focuses on the process of a PES scheme and therefore it is not limited into a particular ES type (i.e. watershed) and in this case it can be applied to other ES types as long as the process of PES scheme is clear.

For Mayrand and Paquin (2004), a PES scheme works best when services are visible and beneficiaries are well organized, and when land-user communities are well structured, have clear and secure property rights, strong legal frameworks, and when value of environmental services is high for beneficiaries and the costs of providing services are low. These elements may seem to be the ideals of a PES scheme but local situations may not fit into these ideals and in return other prerequisites might be needed just to address the local situation. Examples of other interesting criteria, based on local experiences, identified in a conference-workshop for PES site selection in the Philippines include readiness of communities, strong local government support, data availability, peace and order, availability of internal financing, existing agreements between local governments and other stakeholders, and doable projects (Padilla, Bennagen et al. 2005). These criteria are born-out from previous experiences in implementing conservation efforts, even though not necessarily a PES scheme, and which can be overlooked by the so-called global models of a PES scheme.

2.3.7. Conclusion

The discussion on PES has provided a general concept which serves as a background for the discussion of specific concepts related to PES. The different PES types revealed that PES schemes are localized based on the individual experiences and situations. Identifying the available ES is important in identifying the different roles, such as who will be the ES buyer and who will be the ES provider. Payments involved in the PES scheme can be a way to target economically poor stakeholders affected by conservation. Mechanisms for payment is not limited with cash but also on other forms, such as employment opportunities, which can be identified based on local needs. The willingness to accept payments can be attributed to several variables, specifically the socio-economic profile of the individual as well as the amount or remuneration involve. The stakeholders in a PES scheme are basically focused on the ES sellers and the ES buyers. How they interact with each other and how they perceived their respective roles provide for the formation of other stakeholders (i.e., intermediaries, facilitators and brokers).

The effects of land use as a process or an activity on nature conservation were clearly established by the literatures. It is interesting therefore to insert the concept of land use into the PES scheme. Land use identifies the affected processes or activities of the interest groups caused by conservation efforts. It also identifies possible alternative activities for those who are affected by the conservation.

Experiences from the literature in terms of implementing a PES scheme showed that a PES scheme emanates from programs (i.e., local and national), legal instruments (e.g., policy, legislations, etc) and

institutional arrangements (e.g., organizational structures, partnerships, etc.). Programs evolved from conservation efforts into a PES scheme which are backstopped by the existing legal instruments and institutional arrangements on conservation. Partnerships between the government and private sector and civil society groups in implementing a conservation program are common among the existing PES schemes.

The issues and challenges are specifically in the areas of implementing a PES scheme. Proper identification of ES sellers and buyers serves as one of the antidotes to the identified issues and challenges. Targeting the real ES providers and those who are directly benefiting from the conservation is a good start. In this case, the institutional support from the government is important.

In assessing a PES scheme, it is important to first establish the process or the flow of a conservation effort, which depends on the existing local situation. It is quite possible that a PES scheme may not be strictly followed, based on its criteria, in a conservation program but a PES scheme provides a good framework for identifying the respective stakes of interest groups in a conservation program and what are the possible actions to address these stakes.

3. RESEARCH SITE AND METHODOLOGIES

3.1. Introduction

The literature survey provided the set-up for choosing the case study site, the data needed and the methodologies in the data gathering. The HINP, as a case study site, merits most of the concepts of PES as a whole. The presence of different users of the HINP as well as the programs and projects implemented constitute the different stakeholders (i.e., ES buyers and ES providers) and transactions (voluntary transaction and payment scheme), respectively, identified within a PES framework. The different concepts (i.e., land use, legal instruments, institutional arrangements, WTA, and conservation programs and projects) discussed in the literature survey correspond to the data which can be gathered locally in the HINP. Concepts discussed in the literature survey serve as a guideline in data gathering, which in return requires different methods.

3.2. The Study Area

3.2.1. Reasons for Area Selection

The HINP was chosen for this study mainly because it is one of the protected areas included in the initial component of the NIPAS. It was declared as a national park as early as 1940 (Alaminos City 2007b), and several legal instruments have been passed since then that eventually affected its status. Secondly, among the protected areas included in the NIPAS, the HINP is one of the few who are being solely managed by the local government where it is located, in this case the City of Alaminos (Republic of the Philippines 2005). The researcher's local knowledge on the study site as well as knowledge on the local dialect helped in selecting the study site. This local knowledge has been valuable in terms of conducting the interviews and the household surveys. The familiarity of the legal and institutional systems has also added to the weight on choosing the study site.

Substantially, the selection of the study site was guided by the three elements to be used for assessing the feasibility of adopting PES scheme. Land use, both existing and proposed, should be documented. Second, there are interest groups that have been affected by the conservation of a national park. Lastly, there are existing programs as well as legal instruments and institutional arrangements, both local and national, for national park conservation.

These elements were present in the HINP. Alaminos City has its own existing Comprehensive Land Use Plan (CLUP), and is in the process of approving its City Development Master Plan. The interest groups were identified as the fisherfolks in the 10 coastal barangays (smallest administrative and political unit in the Philippines) around the HINP. Alaminos City also has its own programs for conserving the HINP. The institutional arrangements and legal instruments are also present at the national level and most importantly, for this study, at the local (city) level.

3.2.2. Alaminos City's Basic Geographic Profile

Alaminos City is located in the western part of the Province of Pangasinan, along the shore of the Lingayen Gulf. Pangasinan is part of the northern regions in the Philippines. The city's geographic location is on coordinates 119º58'40.47" East and 16º9'25.37" North (Alaminos City 2007a). The city is bounded on the north by the Lingayen Gulf, on the west by the Municipality of Bani, on the south by the Municipality of Mabini and the Municipality of Sual on the east. Alaminos was converted from a first class municipality into a component city via Republic Act No. 9025 and through a plebiscite in the year 2001 (Alaminos City 2007b). Prior to its conversion into a component city, Alaminos has already achieved economic improvements based on its gross income as a government unit as early as 1991 (Alaminos City 2007b). Gross income is one of the qualifications for classifying municipalities and converting them into cities. The city has emerged as the center for trade and commercial activities as well as educational, political, religious and cultural movements in Western Pangasinan mainly due to its accessibility to national roads, seaport and airport (Alaminos City 2007c). In light of these developments, the city has envision itself among others to sustain an "environmentally-sensitive growth with equity" (Alaminos City website).

Alaminos City is characterized by flat plain with an elevation of less than 20 meters high limestone hills (Alaminos City 2007a). The climate belongs to Type I, which has both the dry (December to May) and rainy season (June to November) (Alaminos City 1999).

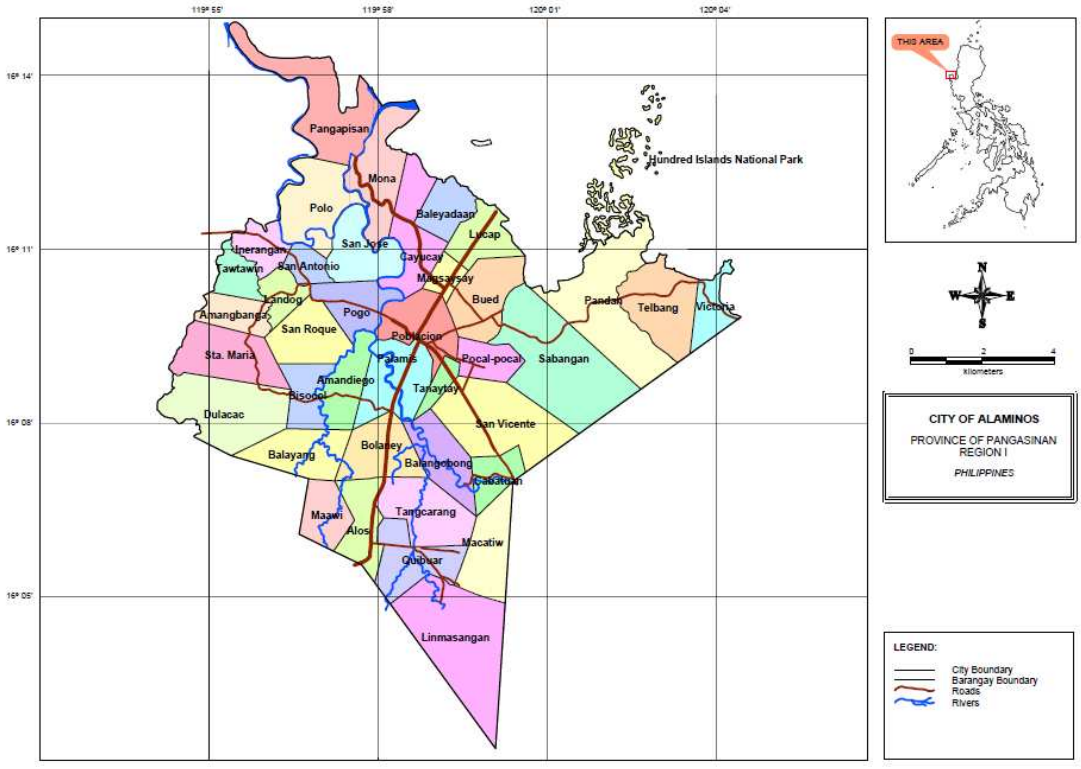

Figure 3-1. *City Map of Alaminos. Source: (Alaminos City 2007c)*

Alaminos City has a total land area of 16,623.39 hectares (Alaminos City 2007a) with a population of 79,788 based on 2007 census of population (Philippines National Statistics Office website 2007) and an average household size close to 5 (4.73) (Alaminos City website). The city's available alienable

and disposable land has a total area of 14,486.14 hectares (Alaminos City website). It has a total of 39 barangays with 10 barangays located along a coastal area (see Figure 3-1 below). The coastal barangays have a total land area of 5086.2 hectares with Barangays Telbang (869.8 hectares) and Lucap (853.6 hectares) having the biggest land area while Barangay Pandan (174.0 hectares) (see Table 3-1 below). These coastal barangays are the source for the key informants in the household surveys in this study. Fisherfolks are the key informants and the coastal barangays are home to the city's fisherfolks.

Table 3-1. *Land Area of Coastal Barangays. Source: (Alaminos City 2007c)*

Coastal Barangays	Land Area (hectares)	Population
Barangay Baley-adaan	302.0	1,340
Barangay Bued	412.4	2,791
Barangay Cayucay	267.5	1,409
Barangay Lucap	853.6	5,296
Barangay Mona	539.3	1,544
Barangay Pandan	174.0	1,044
Barangay Pangapisan	653.8	2,003
Barangay Sabangan	420.8	1,659
Barangay Telbang	869.8	2,839
Barangay Victoria	593.0	2,287
Total	**5086.2**	**22,212**

Farming and fishing are the major economic activities in the city. Eighty percent (80%) of the population depend on these two economic activities (Alaminos City 2007c). Areas devoted to agriculture, which is 8,490.5 hectares, are planted with rice, corn, watermelon, tomato, ampalaya and other high value commercial crops (HVCC). Majority of these agricultural areas are devoted to rice production with 8,020 hectares or 94.46% of the total agricultural areas (Alaminos City 2007c).

The city has a total area of 11,551.76 hectares of marine water which bounds the coastal barangays including the HINP (Alaminos City 2007a). Based on 2007 data, Alaminos City has a total of 1,080 registered fisherfolks with a total capture of 1,092 metric tons from motorized fishing boats while non-motorized fishing boats have a total capture of 199.68 metric tons (Alaminos City 2007a). In terms of aquaculture, where fishes are raised and cultivated in captivity, fish cages were able to produce 3,840 metric tons of fish while fishponds in brackish water were able to produce 3,286 metric tons and fish pens with 135 metric tons (Alaminos City 2007a). Species which are being cultured include Bangus (milkfish), Lapu-lapu (grouper), Talakitok (Caranx), Oyster, Seaweeds (Tamsaw), and Tilapia. Out of the 10 coastal barangays, four have fish landing centers (Lucap, Pangapisan, Sabangan and Mona). The coastal habitat of the city includes: coral reefs (682 hectares) along HINP and coastal part of Barangays Telbang and Victoria; mangroves (100 hectares) which include forest reserve and reforested expansion areas; seasgrass/seaweeds (10 hectares) along Barangays Lucap, Bued, Sabangan, Pandan, Telbang and Victoria; and islands/islets which include the HINP, Alo Island in Barangay Lucap and One island in Barangay Victoria (Alaminos City 2007a).

3.2.3. The Hundred Islands National Park (HINP)

Alaminos city prides itself as the home of the HINP, one of Philippines tourist attractions. HINP is a cluster of islands numbering to 123 covering an area of 1,844 hectares (Alaminos City website). The

national park is located at the northeastern part of Barangay Lucap (see Figure3-2 below). The drop off point in Barangay Lucap, which is 4 kilometers from the city center, serves as access point for tourists to the national park. There are several legends on the origin of the islands but "historically, there was no factual and written accounts pertaining to its existence except perhaps for one common belief that these islands were part of God's creation and have existed for million years" (Alaminos City 2007b). Some of the islands were named after national and local leaders, a miraculous saint and others were attributed to sea and other living creatures that can be seen around (Alaminos City 2007b).

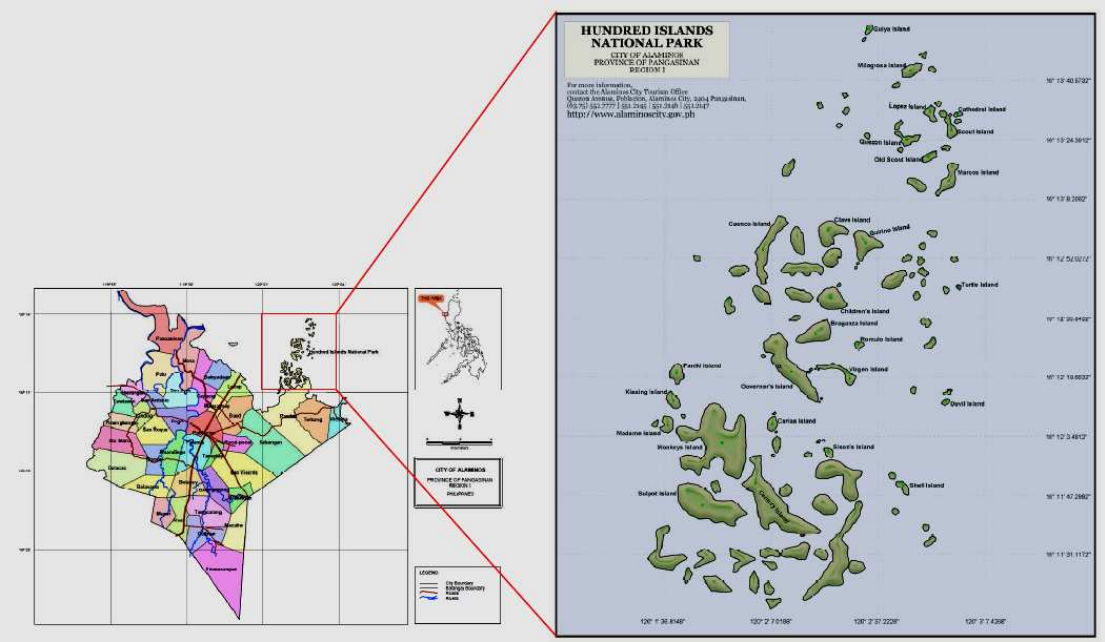

Figure 3-2. *Alaminos City Map with an inset of the Hundred Islands National Park. Source: (Alaminos City website)*

Several legal arrangements have affected the status of Hundred Islands as a national park. Hundred Islands was officially declared a National Park on January 18, 1940 under a Presidential Proclamation No. 667. On June 22, 1962, Republic Act (RA) No. 3655 created the Hundred Islands Conservation and Development Authority (HICDA), for the conservation, development and management of HINP(Alaminos City 2007b). Later on, Presidential order transferred the HINP from HICDA to the Philippine Tourism Authority (PTA) by virtue of Section 35 of Presidential Decree No. 554. Presidential Proclamation No. 2183 dated April 27, 1982 declared the HINP as a Tourist Zone and Marine Reserve under the control and administration of the PTA. On April 20, 1994, Executive Order No. 145 created the Lingayen Gulf Coastal Area Management Commission and placed the entire stretch of 2,109 square meters, from the tip of Bolinao in Santiago Islands, the Hundred Islands up to the coastal barangays of San Juan, La Union as endangered zone due to illegal fishing and wanton abuse of its vast marine resources (Alaminos City 2007b). On June 24, 2005, Executive Order No. 436 transferred the management, administration and maintenance of the HINP from the PTA to the City of Alaminos with its formal turnover on September 29, 2005 (Alaminos City 2007b).

There are several islands that are developed and well visited by tourists. These islands include the Governor's Island, the Quezon Island, the Children's Island and the Clave Island. These islands, as

compared with other unexplored and undeveloped islands, provide accommodation facilities such as hotels and cottages as well as infrastructures like hanging bridge and power generator (Alaminos City 2007b). The islands offer different tourist activities such as spelunking, inter-island boating, kayaking, trekking, scuba diving, camping, bird watching and nature photography (Alaminos City 2007b).

The national park can be accessed through all kinds of water transportation. For tourists, the access point is Barangay Lucap. The frequency of travel from Lucap wharf to the islands depends on the availability/sufficiency of tourists going to the islands (Alaminos City 1999). Tourists pay for the boat ride and entrance fee.

Since the turnover of the administration, maintenance and management of HINP from the PTA to the city government of Alaminos in 2005, the arrival of tourists has increased dramatically from 63,6556 in 2005 to 111,696 in 2006 (Alaminos City Tourism Office 2009b). Since then, the number of tourists visiting the national park have increased. Majority of the tourist that visits the HINP are domestic or local tourists. Based on the 2008 data, 130,261 local tourists visited the national park as compared with 9,997 foreign tourists (Alaminos City Tourism Office 2009b).

Being the administrator of the HINP, the city government of Alaminos was able to generate income for the operation and maintenance of the national park through different fees charged to the tourists. Entrance and parking fees were charged to the tourists depending on the length of their stay (i.e. day tour or overnight). There are also different rates for the spaces and facilities in the developed islands such as cottages, picnic tables and areas, and tent space and pitching fee (Alaminos City Tourism Office 2009a).

As part of the conservation efforts, the following activities are prohibited in the HINP (Alaminos City Tourism Office 2009a):

1. Throwing of garbage anywhere in the island except on garbage bins/bags situated on designated areas.
2. Eating in the sand portion of the island and in the water.
3. Burning of garbage and other waste materials.
4. Poaching/collecting corals, shells, marine life, sand and bonsai.
5. Birds or fruit bat hunting and disturbing their habitats.
6. Fishing of any form around the islands except on designated fishing zones.
7. Setting up tents during day time (6AM-5PM) in the sand portion of the developed islands.
8. Bonfire in the sand portion and rocky areas of the island.
9. Overnight stay in undeveloped islands and caves.
10. Vandalism of any form, e.g. writing on rocks, caves, cottages, structures, restrooms, facilities/equipment, excavation, etc.

3.3. Methodologies and Data Collection

In implementing the proposed framework of this research in Chapter 1, different types of data were collected based on: (1) socio-economic profile of the study area (2) legal instruments and institutional arrangements that affect the national park as a protected area, both local and national; (3) programs that are implemented in relation to conserving the national park; (4) existing and proposed land use in

the study area; and (5) identification of the different groups of stakeholders (e.g. resource users, area managers and others) and in particular the willingness to accept of the fisherfolks. Collection of secondary data, which forms the literatures, conduct of interviews and household surveys were done in the course of doing the fieldwork in the study area.

The initial search for the literatures has greatly helped in shaping the proposal for this research and in understanding the concepts and other related ideas. Literatures shaped the direction of conducting the fieldwork activities and the data needed for the research to prosper. As the research progressed, literatures served as guide on each of the components of the study.

Fieldwork was done to supplement the earlier searched literatures and collect specific primary and secondary data in relation to assessing the feasibility of adopting PES for the HINP conservation. Data gathering activities in the field include document search, conduct of formal and informal interviews, field observations and household surveys.

3.3.1. Document Search

Secondary data were mainly sourced from the government offices in the City of Alaminos, namely the City Agriculture Office, Tourism Office, City Cooperative Office and City Planning and Development Office. The local legislations on coastal resource management of the city and the fishery code as well as the proposed city fisheries ordinance form part of the local legal instruments. National legislations (i.e. Philippine Constitution, Local Government Code, Agriculture and Fisheries Modernization Act, Philippine Fisheries Code, Wildlife Resources Conservation and Protection Act, and the National Integrated Protected Areas System) on the other hand were sourced out from online sources. Profiles of conservation programs implemented by the city government were sourced out from the City Agriculture Office. Data on institutional arrangements included the Memorandum of Agreements (MOA) as well as Conservation Partnership Agreement and organizational structures involved in conserving the HINP. The existing and proposed land use of the city was provided by the City Planning and Development Office as well as the City's Conceptual Development Master Plan. Data on tourism and profile of the HINP was provided by the City Tourism Office.

3.3.2. Interviews and Field Observations

Interviews were primarily done for the purpose of identifying issues and challenges in implementing conservation efforts for the HINP. They were also done in order to verify data gathered from field observations and household surveys. The interviews were strategically done from 13-15 October 2009, after the household surveys and field observations. The three respondents for the formal interview are staff from the City Agriculture Office and City Cooperative Office. The respondents were identified by their immediate supervisors due to their involvement in implementing the programs. These two offices are deeply involved in implementing programs for the conservation of the HINP. For easy retrieval and documentation, the interviews were recorded with the permission of the interviewee. Informal interviews and discussions were conducted also with other staff from City Agriculture Office, Tourism Office and City Cooperative Office as well as some fisherfolks in the study area.

Interviews were done on the Filipino language and sometimes in the local dialect which greatly facilitated the discussions. Using the Filipino language or the local dialect made the respondents more comfortable and cooperative during the interview sessions.

Field observations were mainly done while doing the household surveys. The researcher was also able to do field observations by going with the staff of the City Agriculture Office and City Cooperative Office during their field visits in the different communities. Field observations were done to observe first-hand the way of living of the fisherfolks, who are the respondents of the household surveys, and the implementation of the conservation and other programs related to the HINP. It was unfortunate however that field observations were limited to few days since several typhoons have passed in the study area during the course of the fieldwork.

3.3.3. Household Surveys

The household surveys were done from the period 25 September-09 October 2009. The respondents were the fisherfolks from the 10 coastal barangays of the Alaminos City. These coastal barangays are near the HINP (see Figure 3-3) and the fisherfolks in these barangays are one of the identified interest groups in conserving the HINP.

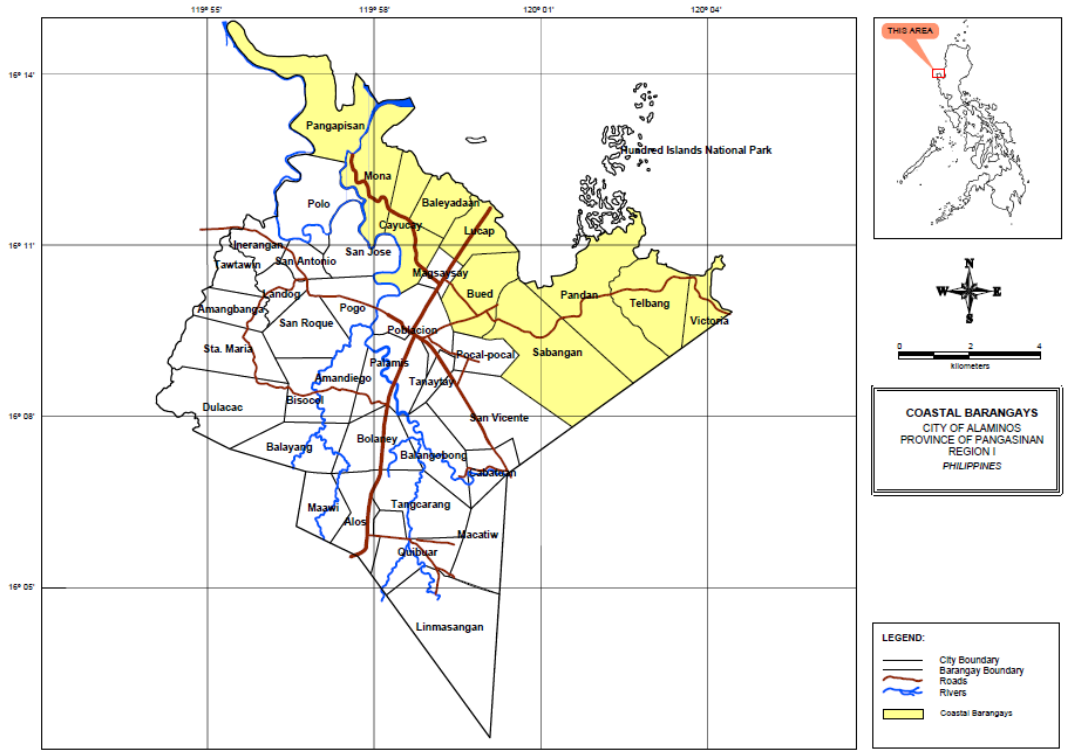

Figure 3-3. *Alaminos City Coastal Barangays. Source: (Alaminos City 2007c)*

Respondents were chosen using non-probability sampling. Although non-probability sampling may or may not be representative of the population, it can be used since there may be circumstances where it is not feasible, practical or theoretically sensible to do random sampling (Trochim 2006). In this research, the nature of the work of the fisherfolks was taken into consideration. Most of the respondents were interviewed while they are docking their boats in fish landing areas. As a result not all of the fisherfolks docking in the area were interviewed since they were eager to go home and take

their rest after so many hours fishing in the open sea. Also some fisherfolks were reluctant to participate and answer the questions because of lack of confidence. Their reluctance was somehow lessened when the researcher assured them of confidentiality and they will remain anonymous and that their responses will strictly be used only for academic purpose. It also helped that the researcher could speak their dialect. In some instances, the researcher was able to visit the fisherfolks and conduct the survey in their respective houses.

Figure 3-4. *Household survey session*

There were 60 respondents coming from the 10 coastal barangays (see Table 3-2 below). Barangays Cayucay, Lucap and Mona had the most number of respondents among the coastal barangays. The disparity on the number of respondents can be explained by the circumstances described above. Also, as earlier stated, the typhoons that passed through the study area have also limited the capability of the researcher to interview more respondents in some barangays.

Table 3-2. *Barangays and the number of respondents*

Coastal Barangays	Number of Respondents	Percent
Barangay Baley-adaan	4	6.7
Barangay Bued	2	3.3
Barangay Cayucay	10	16.7
Barangay Lucap	10	16.7
Barangay Mona	10	16.7
Barangay Pandan	5	8.3
Barangay Pangapisan	8	13.3
Barangay Sabangan	4	6.7
Barangay Telbang	2	3.3
Barangay Victoria	5	8.3
Total	**60**	**100**

In the elicitation of the WTA of the fisherfolks, the Contingent Valuation Method (CVM) was used. CVM is a survey method used in estimating values for public goods in general and for environmental goods in particular (Cummings, Brookshire et al. 1986). The CVM estimates environmental values by

asking people, usually with the use of questionnaire, to state what they are willing to pay (WTP) for an environmental benefit or what they are willing to accept (WTA) in compensation for a loss (Edward-Jones, et al. 2000). In this study, it is the WTA of the local fisherfolks which is elicited through the use of questionnaire during the household survey. Although CVM has received criticisms, the lack of alternatives to value changes for which there is no market trace provides a compelling reason for CVM to flourish (Barr and Mourato 2009).

The questions for the household survey are structured and in the form of questionnaire in order to facilitate the conduct of the interview. Some of the questions were also revised after some interviews were done due to applicability with the local situation and knowledge of the fisherfolks. The survey instruments were personally implemented by the researcher. The questionnaire is divided into three main parts namely: the household information, the attitude towards conservation, and the elicitation of the WTA of the fisherfolks (see Appendix A). The WTA elicitation was patterned from the study of Barr and Mourato (2009) with some modifications in order to fit the local situations in the study area. The local fisherfolks were asked for their willingness to accept alternative livelihood and leave their fishing activities. The fisherfolks were then asked if how much, in term of monetary value, will it take for them to totally leave their fishing activities. The researcher also translated the questions into Filipino language and if necessary into the local dialect.

3.3.4. Data Preparation and Analysis

Different data gathered from the field are stored in order to proceed with the analysis. Qualitative data, which are mainly secondary and formed part of the literatures, were organized, compiled and interpreted based on the structure of assessing the feasibility of PES as a conservation scheme for the HINP. Some of the documents were in hard copy so they were encoded for processing. Data from the household survey were entered in the Statistical Package for Social Science (SPSS) software in order to facilitate the processing and analysis of the data.

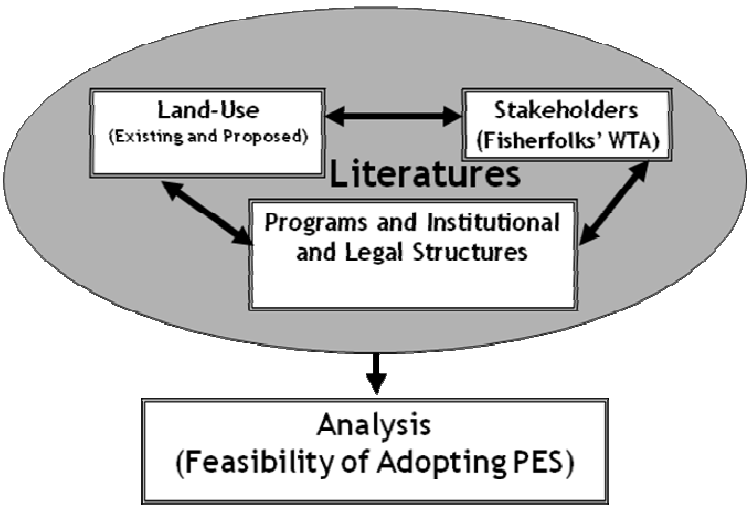

Figure 3-5. *Framework for Analysis*

Analysis was done by using the gathered data in assessing the feasibility of adopting PES framework for conserving the national park. The five criteria that were used in assessing the feasibility of adopting PES framework are based on the definition of PES provided by Wunder (2005). The criteria included (1) PES as a voluntary transaction; (2) well-defined ES being provided; (3) having an ES

buyer or user; (4) presence of ES provider; and (5) presence of conditionality or agreement (Wunder 2005). These criteria served as a framework in implementing the analysis for this research (see Figure 3-5).

Different data addressed the different components for the analysis part of this research. The data on legal instruments and institutional structures provided the framework on adopting PES mechanism and whether there are legal instruments and institutional structures that support any of the PES criteria. Data on conservation programs were used in assessing the mechanisms of implementation and whether PES mechanism is applicable in or complement the implementation. Data on issues and challenges of implementing the conservation programs were used to assess if PES mechanism can be used to address them. Existing and proposed land use data were used in identifying the effects of conserving the HINP in the land use pattern of the city as well as assessing the effects of changes in land use on the fisherfolks as stakeholders. For the household survey of the fisherfolks, the WTA and its relationships with other variables were the main concern for the analysis. In particular, the household profile of the respondents and their attitude towards conservation in relation to WTA were done through regression analysis.

4. THE CASE OF HUNDRED ISLANDS NATIONAL PARK: RESULTS AND DISCUSSIONS

4.1. Introduction

This chapter presents the case of conserving the HINP by the local government of Alaminos City and its effects on the ten coastal barangays. Results culled from the data sources, particularly national and local legal instruments, were focused on the salient features/provisions that affect the management and conservation of the HINP and the livelihood of the fisherfolks. There can be other results which might not fit into PES criteria, but can be helpful in the analysis. Discussion of results and findings focused on the ten coastal barangays as they are the main subject of this research.

There are four components in this chapter: the existing and proposed land use in the city; the legal instruments and institutional arrangements affecting the conservation of the HINP; the conservation programs; and the household survey on the fisherfolks willingness to accept PES. These components are the major inputs in analyzing and assessing the feasibility of adopting PES framework for HINP conservation.

4.2. Land Use

4.2.1. Land Use Objectives, Land Capability and Existing Coastal Subsystem

The existing land use of Alaminos city was guided by the city's 1999-2004 Comprehensive Land Use Plan (CLUP). The 1999-2004 CLUP determined the land area of various land uses, patterns of land use distribution, compatibility of various land uses, growth potentials and critical areas for conservation.

The CLUP's objectives took into consideration the existing capacity of the city in order to address the different needs for land. The limited resource, which is the common reality in planning, has led for the conservation and protection of what the city has to offer for land utilization. These conservation and protection efforts include the protection and enhancement of the city's environmental quality. Foremost among these efforts in environmental protection and enhancement is the HINP, wherein it does not only serve as a tourist spot but also breeding ground for aquatic resources. The economic potential of the HINP - in terms of generating income for the local government and its communities - spurred the development of the existing land uses in its nearby areas.

Different areas in the city have their own land capability, which shapes the activities that can be done within a certain area. The land capability shows the possible uses and limitations for livelihood or economic activities. Alaminos City has five types of land capability classification (see Appendix B).

Among these land capability classifications, Class A is the dominant type which occupies 44.12% of the land area while Class M has the least with only 4.65%. Suitable for rice production, Class A explains the fact that rice remains one of the leading agricultural produce of the city. Class M can only be found in Barangays Sabangan, Pandan and Linmasangan which have land areas that are too steep for cultivation but suitable for grazing and forestry.

Class Y covers Barangays Pocalpocal and Sabangan and the land area of HINP. The land area of the HINP is strictly under Class Y and can only be used for recreation, wildlife and reforestation. Barangay Sabangan has its mountainous area, which is also subject of the city's reforestation program.

Most of the coastal barangays (Telbang, Pandan, Sabangan, Lucap, Baleyadaan, Cayucay, Mona and Pangapisan) have Class X type of land capability. Class X suits well for fishpond and recreation. Among the coastal barangays, Sabangan has the diverse types of land capability within its area with Class Y, X and M. Bued and Victoria have only the Class A within their land area.

The coastal barangays in Alaminos City can be decomposed into coastal subsystem (see Appendix C). The subsystems are categorized into woodlands, agricultural lands, sand dunes, pastural lands, tidal flat, seabed and coral reef, and brackish water and ecologically significant/important islands. The coastal subsystem also presents the location of an existing subsystem, the estimated area, the present use and the benefits derived from the subsystem for the local people.

These subsystems are generally used for economic aspect either as tourist attractions and source of tourism activities or source of food for the local people with sea foods from fishing activities and farm produce from agricultural activities. Specifically, rice lands and fishing grounds are most common uses of these coastal subsystems. These subsystems are also important in terms of improving the fish habitats in the marine waters of the city.

4.2.2. Existing Land Use

Alaminos City has eight (8) existing general land use types as can be seen in Figure 4-1 below. The existing land use types include built-up areas (residential, commercial and industrial), agro-industrial, timberland/forest protection, aquaculture development, tourism and cemeteries/memorial parks.

Built-up area, which is composed of residential, commercial, and industrial uses, occupies a land area of 1,191.71 hectares or 7.17% of the total land area of the city (Alaminos City 2007c). Most of the residential areas are located in Barangay Poblacion with other barangays (Alos, San Roque, Lucap, Tangcarang and Tanaytay) also having significant residential areas. The remaining residential areas that exist in other barangays can be categorized as medium to low density since they are being significantly mixed with agricultural and other uses. Residential areas occupy a total land area of 971.44 hectares or 5.25% of the total land area of the city. Commercial uses are mostly found in the center of Barangay Poblacion for reason of accessibility to all kinds of transportation. Other than the concentration of commercial areas at the center of Barangay Poblacion, areas such as along the national highways leading to nearby cities are spotted with commercial establishments. Land use identified for commercial activities have a land area of 59.71 hectares or 0.32% of the city's total land area (Alaminos City 2007c). Industrial area is concentrated in Barangay Quibuar although some small

scale industries are dispersed in other areas of the city. Land area used for industrial activities totaled 160.55 hectares or 1.89 % of the total land area of the city (Alaminos City 2007c).

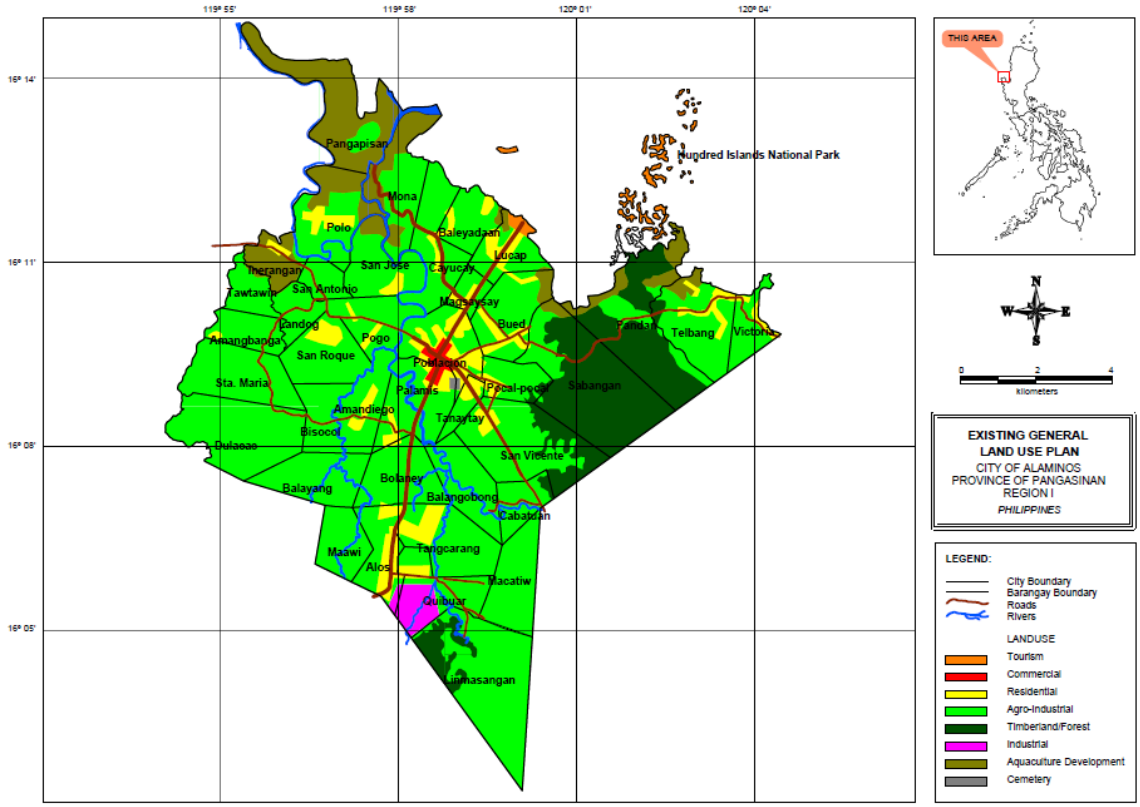

Figure 4-1. *Existing General Land Use of Alaminos City. Source: (Alaminos City 2007c)*

Agro-industrial use dominates the land uses in the entire city. It comprises 11,767.31 hectares or 63.71% of the total land area of Alaminos City (Alaminos City 2007c). Agricultural areas can be found in every barangay in the city and even the periphery of an urban area such as Barangay Poblacion has an agricultural area. However, it is observable that relatively small agricultural areas can be found in Barangays Inerangan, Pangapisan, Sabangan and Pandan. Rice and corn farming, livestock and poultry raising, and grazing/pasture activities comprise the agricultural activities in the city.

Timberland/forest protection areas can be found in Barangays Sabangan, San Vicente, Pandan and Linmasangan. Timberland/forest protection areas from these barangays composed a total of 1,962.63 hectares which is 10.62% of the total land area of Alaminos City (Alaminos City 2007c). In one of the informal interviews and field observations, it was identified that the timberland/forest areas in Barangays Sabangan and Pandan contributed to the conservation of the coastal resources of the city and of the HINP by preventing soil erosion towards these areas.

Although not identified in the existing land use map, there are several mangrove areas along the coastal zone of the city. These mangrove areas cover the coastal barangays and are the target of mangrove reforestation program of the city. Mangrove areas serve as habitat of small fishes of different species as well as windbreak and prevention of soil erosion.

Barangays Pangapisan, Mona, Inerangan, Pandan and Bued host most of the aquaculture activities of the city. Aquaculture activities are either done in inland or brackish water fishponds and have a total land area of 1,627.29 hectares or 8.81% of the city's total land area (Alaminos City 2007c). Noticeable among the coastal barangays is Barangay Pangapisan where majority of the land area is almost devoted to aquaculture development. The concentration of aquaculture activities in Barangay Pangapisan has spread in its neighbouring Barangay Mona with aquaculture activities found between the boundaries of the two barangays.

The HINP makes up the majority areas devoted to tourism activities. The other area devoted for tourism is the Lucap Wharf in Barangay Lucap. The combine area of these two is 1,900.81 hectares which is 10.28% of the city's total land area. The HINP has a land area of 1,844 hectares while the Lucap wharf has a land area of 56.81 hectares. Aside from these two areas, there are small patches of areas in some of the coastal barangays which are also used for tourism activities such as in Barangays Telbang and Victoria.

4.2.3. Proposed General Land Use (2007-2020)

The proposed general land use plan of Alaminos City is the product of revision and updating of the existing land use plan. It was projected for the period 2007-2020. The perceived development of the city, together with physical or ecological profile of the city, current demands of the different land use activities and the ideal or best use of the land were considered in developing the proposed general land use plan.

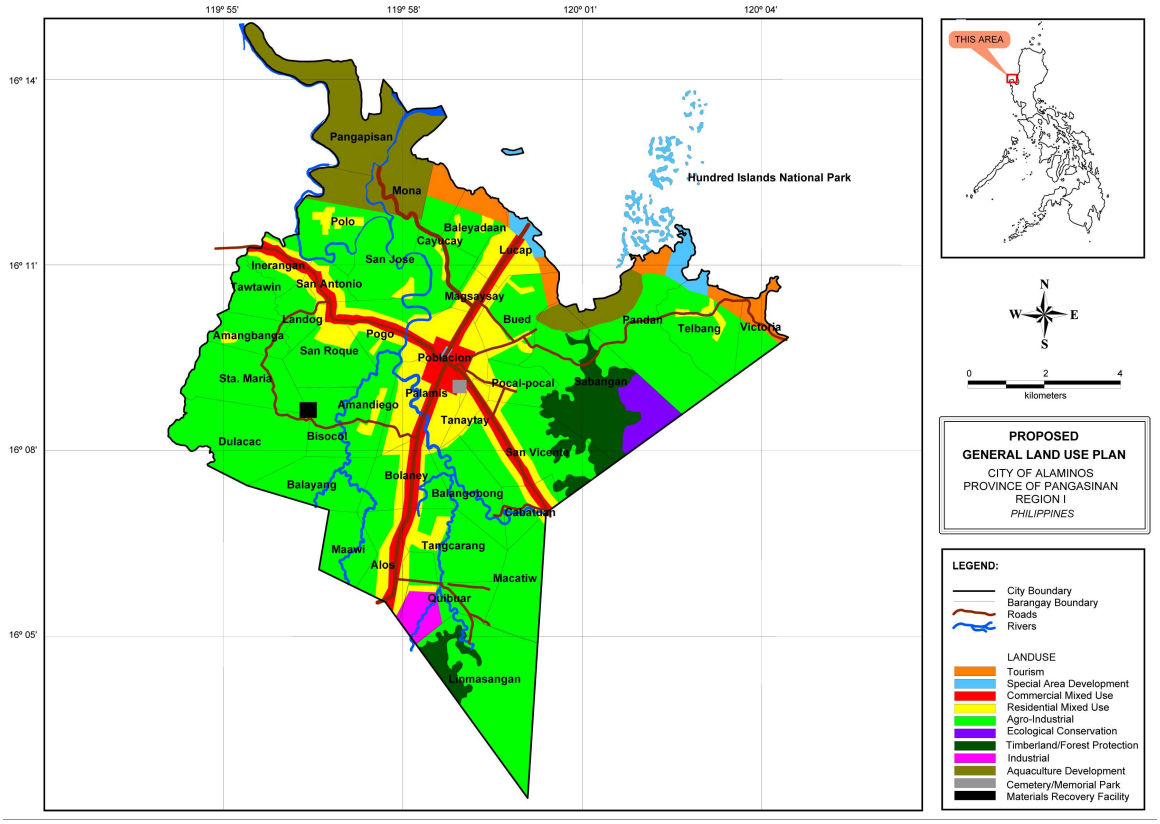

Figure 4-2. *Proposed General land Use Plan of Alaminos City (2007-2020). Source: (Alaminos City 2007c)*

Based on Figure 4-2, there are 11 proposed land use types in the City. These are: Tourism; Special Area Development; Commercial Mixed Use; Residential Mixed Use; Agro-Industrial; Ecological Conservation; Timberland/Forest Protection; Industrial; Aquaculture Development; Cemetery/Memorial Parks; and Materials Recovery Facility.

Major tourism areas are concentrated along the beachfront of coastal barangays, namely, Victoria, Telbang, Pandan, Bued, Baleyadaan and Cayucay. The proposed tourism area is 1.71% of the total land area of Alaminos City which corresponds to 315 hectares. Aside from using these areas for tourist related activities, they shall also be utilized for conserving the existing tourism resources of the city.

Special area development zones are the identified priority areas for development. These areas have the potential to absorb local and foreign investments. These areas include presently classified tourism areas such as the HINP, the Lucap Wharf and Bolo Beach in Barangay Telbang. HINP, as a special area development zone, will be developed into a major tourism destination of the city. Lucap Wharf and Bolo Beach will serve as take-off points to the HINP. Also included in the special area development zones is a heritage conservation area along the San Jose heritage district along the road leading to the Lucap Wharf. The special area development zones have a total land area of 2,017.40 hectares or 10.92% of the Alaminos City's total land area.

Commercial mixed use areas are primarily for commercial activities, with residential uses as secondary facilities. Commercial mixed use areas are categorized into two, the low intensity mixed use and the medium intensity mixed use. The difference between the two is the degree of impact of the activities on the land and its environment (Alaminos City 2007c). Low intensity mixed use areas can be found at the center of the city which is in Barangay Poblacion while medium intensity mixed use areas are found along the major roads of the city. These areas have a combined size of 593.15 hectares.

The residential mixed use zones, with total land area of 1,905.66 hectares, will be used primarily for housing/dwelling units with commercial activities as secondary support facilities. These areas are divided into three zones (i.e., low, medium, and high density residential mixed use zones) with distinctions on the prescribed densities of dwelling units, scale of services and the permitted land use activities (Alaminos City 2007c). High density residential mixed use zone is located along the urban areas of Barangays Poblacion, Tanaytay, Magsaysay and Lucap and will be used to support tourism activities in the Lucap Wharf. Medium residential mixed use zone on the other hand is located along the city's major roads.

Agro-Industrial use remains the dominant land use type, from the existing general land use up to the proposed general land use plan of the city. It covers 58.39% of the total land area of Alaminos City or 10,784 hectares and shall be primarily used for agricultural and agricultural processing activities (Alaminos City 2007c). Rice production remains to be the major agriculture activity of the City. The proposed agro-industrial land use took into consideration the City's increasing population and thus it aims to conserve prime agricultural lands which means maintaining irrigated and potentially irrigable agriculture areas of the city.

Area devoted to ecological conservation use can be found on the eastern part of the City. This area will enhance the environmental quality of timberland/forest area of the City. Ecological conservation will utilize the eastern side of the timberland/forest area and thus will preserve its aesthetic and scenic quality. It is aimed that ecological conservation area will promote eco-tourism in Alaminos City through the development of hillside parks and forest treks. Area devoted for this land use type is 235.58 hectares.

Timberland/Forest protection areas are located in Barangays Sabangan and Linmasangan. A portion of timberland/forest protection area in Barangay Sabangan spreads across Barangay San Vicente. In total, this land use type has an area of 826.40 hectares. These identified areas rise 100-200 meters above sea level and shall be used for forest activities guided by existing and applicable laws (Alaminos City 2007c).

Industrial area is concentrated in Barangays Quibuar and Alos in the southern part of the City. It covers an area of 176.09 hectares which have been proposed to be an economic zone of the City. Industrial area is divided into two categories, light industrial zone and medium industrial zone. Light industrial zone will be used for non-pollutive/non-hazardous and non-pollutive/hazardous manufacturing and processing establishments while medium industrial zone will be for pollutive/non-hazardous and pollutive/hazardous manufacturing and processing establishments (Alaminos City 2007c).

Aquaculture development areas are distributed in Barangays Pangapisan, Mona, Pandan and Polo. It can be observed somehow that majority of aquaculture development is concentrated in Barangay Pangapisan. Aside from development of aquaculture activities, aquaculture processing industries will also be included in the aquaculture development areas. Fishponds are the majority of aquaculture activities. This proposed land use type covers an area of 1,572.70 hectares.

The City's proposed general land use plan has more land use type classifications than the existing general land use (see Table4-1). Areas for special area development, ecological conservation and materials recovery facility were added in the proposed general land use plan of the City. Existing commercial and residential areas were modified by the planned land use and were mixed together in different densities and intensities. The HINP and other tourism areas were separated and prioritized into special development areas. The existing portion of the timberland/forest protection area in Barangay Sabangan is planned as an ecological conservation area.

Changes in the areas devoted for each land use type can be observed from the existing general land use into the proposed general land use plan. Due to reclassification of the HINP into a special area development, areas classified for tourism dropped dramatically from 1,844 hectares to 315 hectares. An increase on the proposed mixed uses in commercial and residential areas can be noted. From 59.71 hectares it increased to 593.15 for the proposed commercial mixed use while residential mixed use increased from 971.44 hectares to 1,905.66 hectares. Area devoted for agro-industrial use decreased from 63.71% of the City's total land area to 58.39%. Based on the proposed ecological conservation area, timberland/forest protection area will decrease from 1,962.63 hectares to 826.40 hectares. Industrial areas increased from 160.55 hectares to 176.09 hectares. On the other hand, aquaculture

development areas decreased from 1,627.29 hectares to 1,572.70 hectares although with more concentration on certain barangays.

Table 4-1. *Comparison between the Existing General Land Use and the Proposed General Land Use Plan of Alaminos City. Source: (Alaminos City 2007c).*

Land Use Type		Area (Hectares)		Distribution (%)	
Existing (2006)	**Proposed (2007-2020)**	**Existing**	**Proposed**	**Existing**	**Proposed**
Tourism Use (HINP)	Tourism	1,844.00	315.00	9.98	1.71
Tourism Use (Lucap Wharf)		56.81	--	0.30	--
	Special Area Development	--	2,017.40	--	10.92
Commercial Use	Commercial Mixed Use	59.71	593.15	0.32	3.20
Residential Use	Residential Mixed Use	971.44	1,905.66	5.25	10.30
Agro-Industrial Use	Agro-Industrial Use	11,767.31	10,784.00	63.71	58.39
	Ecological Conservation	--	235.58	--	1.27
Timberland/Forest Protection	Timberland/Forest Protection	1,962.63	826.40	10.62	4.47
Industrial Use	Industrial Use	160.55	176.09	0.87	0.95
Aquaculture Development	Aquaculture Development	1,627.29	1,572.70	8.81	8.51
Cemeteries/ Memorial Park	Cemeteries/Memorial Park	17.56	17.56	0.09	0.09
	Materials Recovery Facility	--	23.41	--	0.12
	Total	**18,467.30**	**18,467.30**	**100.00**	**100.00**

Source Note: Total area and breakdown of land use were based from computer generated table survey and are subject to change pending verification from a geodetic engineer or surveyor (Alaminos City 2007c).

4.3. Legal Instruments and Institutional Arrangements

For the purpose of this research, both national and local legal instruments were used. National legal instruments are those laws and executive order that have been initiated and approved outside the local government of City of Alaminos and/or generally apply to other areas in the country, which have implications in conserving the HINP. Local legal instruments are legislations that have been initiated and/or approved/implemented by the city government of Alaminos City and apply specifically for the conservation of the HINP.

Institutional arrangements refer to the existing organizational structures and partnerships that affect the conservation of the HINP. These include Memorandum of Agreements (MOA), conservation agreements and organizational structures involved in and affected the conservation of the HINP.

4.3.1. National Legal Instruments

National legal instruments examined for this research include: the present Philippine Constitution; the Philippine Local Government Code; Agriculture and Fisheries Modernization Act; Philippine Fisheries Code; National Integrated Protected Areas System (NIPAS) Act; Wildlife Resources Conservation and Protection Act; and Executive Order 436. These national legal instruments were examined and presented based on their salient features relevant to the management and ecological conservation of the HINP as well as their effects on the local fisherfolks of Alaminos City.

Philippine Constitution. The Philippines as a democratic and independent country is guided by its own constitution which binds all the existing laws and affairs within its national territory. Part of the constitutional provisions centered on the development of the people to live in balance with nature. As means to achieve these provisions, the constitution provides the venue for different groups to work together. Private sector and private enterprises are recognized as partners and thus the state should provide incentives to facilitate participation from them. Non-governmental, community-based, or sectoral organizations that promote the welfare of the nation are encouraged. These constitutional provisions on the roles and rights of organizations other than the government, speak clearly of the possibilities of different partnerships that the government can do together with other organizations. In particular, partnership that promotes the welfare of the people.

One of the specific groups of people mentioned in the constitution that needs protection of their rights and promotion of their welfare are the fisherfolks of local communities. These local fisherfolks shall be given the preferential use of communal marine and fishing resources, both inland and offshore and that they should be provided with appropriate technology and research, adequate financial, production, and marketing assistance, and other services (Republic of the Philippines 1987). It is also provided in the constitution that the State shall protect, develop, and conserve the communal marine and fishing resources and that the fisherfolks shall receive a just share from their labor for the utilization of these resources.

Another recognized partner in promoting the welfare of the people is the local government. The constitution provides that the State shall ensure the autonomy of the local governments. Local governments are empowered to create their sources of revenues and to levy taxes, fees and charges which should be subject to guidelines and limitations. These taxes, fees, and charges shall then accrue exclusively to the local governments (Republic of the Philippines 1987). Local governments are likewise entitled to an equitable share in the proceeds of the utilization and development of the national wealth within their respective areas, in the manner provided by law, including sharing the same with the inhabitants by way of direct benefits.

Local Government Code of 1991. In response to the constitutional provision of giving autonomy to the local governments, the Local Government Code was enacted in 1991. The Code was enacted based on the policy that the territorial and political subdivisions of the State shall enjoy genuine and meaningful local autonomy to enable them to attain their fullest development as self-reliant

communities and make them more effective partners in the attainment of national goals (Republic of the Philippines 1991). The structure of local governments is based on decentralization wherein local government units (LGUs) shall be given more powers, authority, responsibilities, and resources to run their respective affairs. Alaminos City, being a component city of the province of Pangasinan, is under the mandate of this law as well.

Decentralization process starts from the national government to the LGUs. As such, the law requires the State to have periodic consultations with appropriate local government units, non-governmental and people's organizations, and other concerned sectors of the community before any project or program is implemented in their respective jurisdictions (Republic of the Philippines 1991). In terms of maintaining ecological balance, the law recognizes the shared responsibility between the LGUs and the national government in managing and maintaining the ecological balance within their territorial jurisdiction. The principle of decentralization clearly established, among others, mechanisms for Alaminos City to enter into meaningful partnerships with other organizations and ensuring shared responsibility in providing basic services and maintaining ecological balance in the HINP.

Aside from encouraging participation from the private sector, the local government code also provides cooperative undertakings among LGUs and establishing relationships with people's and nongovernmental organizations. Guided with appropriate ordinances, Alaminos City may form a group with other LGUs, consolidate, or coordinate their efforts, services, and resources for purposes commonly beneficial to them such as protection of shared water boundaries. Involved LGUs may contribute funds, real state, equipment, and other kinds of property and appoint or assign personnel under such terms and conditions as may be agreed upon by the participating local units through Memoranda of Agreement (Republic of the Philippines 1991). Regarding its relationship with people's and nongovernmental organizations, LGUs shall promote their establishment and operation, through assistance, in order to become active partners in the pursuit of local autonomy. Alaminos City may then enter into joint ventures and such other cooperative arrangements with people's and nongovernmental organizations to engage in the delivery of certain basic services, capability-building and livelihood projects, and to develop local enterprises designed to improve productivity and income, diversify agriculture, spur rural industrialization, promote ecological balance, and enhance the economic and social well-being of the people (Republic of the Philippines 1991).

Alaminos City is responsible for the efficient and effective provision of basic services and facilities in their respective jurisdictions. Part of basic services and facilities are extension and on-site research services and facilities related to agriculture and fishery activities as well as enforcement of fishery laws in municipal/city waters including the conservation of mangroves. Tourism facilities and other tourist attractions, including the acquisition of equipment, regulation and supervision of business concessions, and security services for such facilities are also part of basic services and facilities that a local government should provide. To enhance the participation of private enterprises in providing basic services and facilities, Alaminos City may, by ordinance, sell, lease, encumber, or otherwise dispose of public economic enterprises owned by them in their proprietary capacity (Republic of the Philippines 1991).

Every LGU is considered as a corporation by the Local Government Code of 1991. As such, Alaminos City has the power to generate and apply resources, enter into a contract through the local chief

executive, and enjoy full autonomy in the exercise of their proprietary functions and in the management of their economic enterprises. Also, local chief executives may, upon due authorization of the local legislative body, negotiate and secure financial grants or donations in kind to support the provision of basic services and facilities from local and foreign assistance agencies. Alaminos City is also entitled to exercise its power to create its own sources of revenue and to levy taxes, fees, and charges subject to certain legal provisions and consistent with the basic policy of local autonomy. These taxes, fees, and charges accrue exclusively to the LGUs.

To implement the functions of the City government of Alaminos, specifically on areas that involve environment conservation and livelihood of the fisherfolks on a city level, there are appointed officials such as the Environment and Natural Resources Officer, the City Agriculturist, and the City Cooperatives Officer (see Appendix D for specific functions and responsibilities). These officers are selected based on specific qualifications and criteria.

Agriculture and Fisheries Modernization Act (AFMA) of 1997. This national legislation aims to enable those who belong to the agriculture and fisheries sector to participate and share in the fruits of development and growth by establishing a more equitable access to assets, income, basic and support services and infrastructures. Through this legislation, the State shall adopt the market approach in assisting the agriculture and fisheries sectors while also recognizing their contribution to food security, environmental protection, and balanced urban and rural development. With this legislation, the State aims to empower the agricultural and fisheries sectors to develop and sustain themselves based on the principles of poverty alleviation and social equity, food security, rational use of resources, global competitiveness, sustainable development, people empowerment, and protection from unfair competition.

AFMA mandates the accessibility of credit for small scale farmers and fisherfolks as well as for small and medium enterprises and industries engaged in agriculture and fisheries (Republic of the Philippines 1997). In this regard, the government encourages the participation of the banking sector and government financial institutions in Agro-Industry Modernization and Financing Program (AMCFP).

AFMA recognizes the reality that as an economy modernizes, the number of workers employed in its agricultural sector declines. To address this, AFMA promotes rural non-farm employment in order to improve their standard of living and reduce their propensity to migrate in the urban areas (Republic of the Philippines 1997). The rural non-farm employment aims to promote a basic needs approach to rural development; make rural workers more adaptable and flexible through education and training; promote rural industrialization and the establishment of agro-processing enterprises in rural communities; and increase the income of rural workers (Republic of the Philippines 1997). To this end, the establishment and growth of associations and cooperatives as vehicles for rural non-farm employment are encouraged.

The Philippine Fisheries Code of 1998. The Philippine Fisheries Code was founded on several policies of the state that guided its formulation. Specifically, the mandate of the Philippine Fisheries Code provide that the State shall ensure the attainment of the following objectives for the fishery

sector: conservation, protection and sustained management of the country's fishery and aquatic resources; poverty alleviation and the provision of supplementary livelihood among municipal fisherfolk; improvement of productivity of aquaculture within ecological limits; optimal utilization of offshore and deep-sea resources; and upgrading of post-harvest technology (Republic of the Philippines 1998). These objectives apply to all Philippine waters within the country's jurisdiction including all aquatic and fishery resources whether inland, coastal or offshore fishing areas and all lands devoted to aquaculture, or business and activities relating to fishery whether private or public lands (Republic of the Philippines 1998).

At the local level, the city government of Alaminos is tasked by the fisheries code to have jurisdiction over its city waters and to enact appropriate ordinances for the purpose of the code. The city government is also tasked to maintain a registry of city fisherfolks, who are fishing or may desire to fish in the city waters. The purpose of the registry is to determine priorities among the fisherfolks, of limiting entry into the city waters, and of monitoring fishing activities and/or other related purposes (Republic of the Philippines 1998). The fisheries code also provides the limitations of the power of the city government that public lands such as tidal swamps, mangroves, marshes, foreshore lands and ponds suitable for fishery operations shall not be disposed or alienated.

The Fisheries and Aquatic Resources Management Council (FARMC) is also established by the fisheries code. FARMCs are to be established at the national and local (municipalities/cities) level, which shall be formed by local government officials, private sector representative, fisherfolk organizations/cooperatives and nongovernment organizations in the locality. FARMCs in the municipal/city level shall assist in the formulation of Fishery Development Plan, serve as recommending body to the local legislation and assist in the enforcement of fishery laws, rules and regulations municipal/city waters. It is the prerogative of the LGU to create Barangay FARMC or Lake-wide FARMC which shall serve in an advisory capacity to the LGUs. The FARMC serves as a vehicle for local fisherfolks to participate in charting the course of their own sector. The mandated partnership can be a tool for other initiatives that involve the fishery sector, particularly the local fisherfolks.

Wildlife Resources Conservation and Protection Act. The HINP being a protected and biodiversity area is under the provisions of the Wildlife Resources Conservation and Protection Act. This legislation was enacted through Republic Act 9147 in 2001. Conservation of the Philippines' wildlife and their habitats for sustainability is the main aim of this legislation. In order to do so, there is a need to conserve and protect wildlife species and their habitats to promote ecological balance and enhance biological diversity; to regulate the collection and trade of wildlife; to pursue, with due regard to national interest, the Philippines' commitment to international conventions, protection of wildlife and their habitats; and to initiate or support scientific studies on the conservation of biological diversity (Republic of the Philippines 2001).

The coverage of this act includes wildlife species found in all areas of the Philippines, including protected areas under the NIPAS Act, and critical habitats. Indigenous wildlife species, as provided by this legislation, can be introduce or reintroduce for purposes of population enhancement and population recovery. The HINP, being a protected area and an initial component of the NIPAS Act, has been involved with the reintroduction and restocking of indigenous wildlife such as the giant

clams and coral propagation (Alaminos City 2007b). The reintroduction of the giant clams and propagation of the corals have been one of the tourist attractions promoted by the city government of Alaminos.

The protection and restoration or rehabilitation of wildlife habitats lie on the enforcement of this law and financing its programs. The law mandates that there shall be deputize wildlife enforcement officers from non-government organizations, citizens groups, community organizations and other volunteers who have undergone training for this purpose. Wildlife enforcement officers have the full authority to seize illegally traded wildlife and to arrest violators of this law. In the case of the HINP, Alaminos City has organized and deputized law enforcement officers called Bantay Dagat to monitor and implement fishery rules and regulations.

National Integrated Protected Areas System (NIPAS) Act of 1992. The NIPAS Act of 1992 was founded on the policy of the State to secure for the Filipino people of present and future generations the perpetual existence of all native plants and animals through the establishment of a comprehensive system of integrated protected areas within the classification of national park as provided for in the Constitution (Republic of the Philippines 1992). In order to do so, Republic Act 7586 established a National Integrated Protected Areas System (NIPAS), which shall encompass outstandingly remarkable areas and biologically important public lands that are habitats of rare and endangered species of plants and animals, biogeographic zones and related ecosystems, whether terrestrial, wetland or marine, all of which shall be designated as "protected areas" (Republic of the Philippines 1992). The law established categories for the protected areas such as: strict nature reserve; natural park; natural monument; wildlife sanctuary; protected landscapes and seascapes; resource reserve; natural biotic areas; and other categories established by law, conventions or international agreements which the Philippine Government is a signatory. The HINP being a natural park, a wildlife sanctuary, protected landscape and seascape and a resources reserve is one of the important protected areas in the country. As such, that it was included in the initial component of the NIPAS Act.

The law requires the formulation of protected area management plan for each protected area. At the minimum, the plan should include the concept of zoning, buffer zone management for multiple use and protection, habitat conservation and rehabilitation, diversity management, community organizing, socioeconomic and scientific researches, site-specific policy development, pest management, and fire control (Republic of the Philippines 1992). The establishments of buffer zones along the peripheries of the protected area are mandated if deemed necessary.

The administration and management of the entire system is placed under the control and administration of the Department of Environment and Natural Resources (DENR) and the established Integrated Protected Areas Fund (IPAF) is for financing projects of the system. The Secretary of the DENR is empowered to carry out the mandates of the law. The IPAF, as discussed in Chapter 1, is managed by the national government and can be in the form of contributions or endowments are exempted from income or gift taxes and all other taxes, charges or fees imposed by the government.

Executive Order (EO) 436. In the case of the HINP, the management and financing aspect was transferred to the city government of Alaminos through EO 436. The EO 436, executed by the

President of the Republic of the Philippines, transferred the administration, management, and maintenance of the HINP from the Philippine Tourism Authority to the city government of Alaminos. The transfer gives full control to Alaminos City in the administration, supervision and discretion in HINP's management, including the award and regulations of all activities and concessions in the HINP as the Lucap Bay and its foreshore areas (Republic of the Philippines 2005).

Even with this transfer, HINP is still included in the NIPAS and the other provisions of the NIPAS Act still apply within the area. As such, EO 436 mandates the city government of Alaminos to coordinate with the DENR in the preparation of its management plans. Other national government agencies are also mandated to provide promotional support and technical assistance for the operation and further development of the HINP and its foreshore area.

EO 436 likewise provided the restriction and financial guidelines for the management of HINP. It was provided in the EO that the city government of Alaminos shall not encumber, mortgage, or alienate any portion of the HINP and its use shall be limited only to recreation and tourism-related activities. All revenues and collections generated from the operation of the HINP shall accrue directly to the treasury of the City Government of Alaminos and shall be used solely for the management, maintenance, operation and development of the HINP (Republic of the Philippines 2005). This is in contrast with the mandate of NIPAS with regards to incomes generated from protected areas going into the IPAF.

4.3.2. Local Legal Instrument

The local legal instrument examined in this research is the proposed Comprehensive Fisheries Code of the City of Alaminos 2009. This proposed legislation harmonized and integrated the two existing city ordinances: the Fishery Code of Alaminos City and the Coastal Resources Management and Fisheries of Alaminos City. These two ordinances were formulated in 1997 when Alaminos is not yet a component city and classified as a municipality. Most of the provisions of the two existing ordinances are integrated into the proposed legislation. Aside from the two existing ordinances, this proposed Comprehensive Fisheries Code emanates from the provisions of national legal instruments such as the Philippine Constitution, the Local Government Code of 1991 and the Philippine Fisheries Code of 1998.

This proposed local legislation provides for the regulation, utilization, protection, conservation, sustainable management and development of the fisheries, aquatic and coastal resources of the City of Alaminos. Among its objectives are to reduce poverty through the provision of supplemental eco-livelihood among the city's fisherfolks, to improve productivity of aquaculture within the ecological limits, and to optimize the utilization of coastal resources through equity (Alaminos City 2009a).

Residents of Alaminos City are entitled to the use of the aquatic and coastal resources of the City with the local and marginal fisherfolks having the preferential rights. Utilization of these resources is subject to the regulations of the city government. Local fisherfolks, as users of the costal and fishery resources of the city, are required to be registered in the city government. The registry of the city's fisherfolks will be used for the purpose of determining priorities among them, of regulating and limiting entry into the city waters, and of monitoring fishing activities and/or other related purposes (Alaminos City 2009a). Local fisherfolks are to pay for the registration of their fishing gears, fishery

structures, or for their boat registration. The registry of the city's fisherfolk also helps in identifying the beneficiaries for the support from the city government. The proposed code mandates the City government of Alaminos in coordination with other agencies and institutions, to provide support to city fisherfolk and their organization through appropriate technology and research, credit, production and marketing assistance and other services such as, but not limited to training and technical assistance for additional/supplementary livelihood (Alaminos City 2009a).

Involvement of other stakeholders, other than the city government of Alaminos, is enlisted in the provisions of the proposed code. The Barangays, the Barangay FARMCs, the Bantay Dagat, and other duly accredited non-government organizations are all identified as being responsible for the achievement of the objectives of the proposed fisheries code as well as in enforcing the rules and regulations mandated in the code. Bantay Dagat refers to the personnel of the Public Order and Safety Office (POSO) who have undergone law enforcement training and duly deputized as Fish Wardens, constituted in accordance with law and authorized to enforce fishery laws, rules and regulation (Alaminos City 2009a). In terms of intergovernmental relations, Alaminos City can likewise enlist and promote the coordination among the national government agencies and other adjoining LGUs in the enforcement of all laws relating to coastal management of the City waters and to the environmental protection of the foreshore areas and marine resources to the development of tourism along the shorelines and coastal areas of the City. Monitoring, control and surveillance system of the city waters of Alaminos are to be performed by the identified stakeholders as well.

The proposed Comprehensive Fisheries Code divided and classified into major zones the city waters of Alaminos. There are three major zones identified in the proposed code namely: conservation, protection and rehabilitation zone; mariculture enterprise development zone; and eco-tourism zone. Under the conservation, protection and rehabilitation zone is the marine protected area management program such as mangrove rehabilitation project in the eight coastal barangays (Pangapisan, Mona, Baley-adaan, Lucap, Bued, Sabangan, Pandan, and Telbang) and seagrass conservation and protection project in Barangay Lucap. Also included in the marine protected area management program are the fish sanctuary management program in Barangay Telbang and water quality monitoring program in mariculture site (Barangays Pangapisan, Mona, Cayucay, Baley-adaan, and Victoria) and beach tourism site in Barangays Lucap and Pandan. All the ten coastal barangays are included in the conservation, protection and rehabilitation zone whether in one or more of the programs or projects.

Under the mariculture enterprise development zone are aquaculture/sea farming and pasabing (fish trap) operations. Aquaculture/Sea farming includes fishpens in Barangays Cayucay, Baley-adaan, Pangapisan, and Mona; fish cage in Barangay Victoria; seaweeds culture production in Barangays Telbang and Victoria; oyster culture production in Barangays Pangapisan, Mona, Cayucay, and Baley-adaan; and sea urchin culture production in Barangays Telbang and Victoria. For the fish trap operation, the identified barangays are Pangapisan, Mona, Cayucay, Baley-adaan, and Lucap. Noticeably, Barangays Bued, Pandan, and Sabangan are not zoned under the mariculture enterprise development.

The eco-tourism zone includes the HINP, mangrove tourist destination, and beach front development. The HINP in itself is considered as one eco-tourism zone while for the mangrove tourist destination includes Barangays Pandan, Sabangan, Bued, Lucap, Baley-adaan, Mona, and Pangapisan. The beach

front development covers the area of Barangays Pandan, Telbang, and Victoria. Of the ten coastal barangays, only the area of Barangay Cayucay was not included in any programs or projects for the eco-tourism zone.

The proposed legislation identified several measures to manage, develop and conserve the coastal and fisheries resources of the City of Alaminos. The proposed legislation established closed seasons and fishing bans on particular species of fish in order to allow their growth and regeneration. It also limits the entry into the overfished areas, which will be determined and declared by the City government of Alaminos in coordination with Barangay and City FARMCs and other institutions. The law also provides for the regulation on the establishment and operation of fishpen, fish cages, fish traps, and other fishery structures as well as the use of fishing gears.

To help implement the provisions of this proposed local legislation, institutional supports were identified. The proposed legislation provides for the creation of City FARMC and Barangay FARMC. Aside from the members from city government offices, the City FARMC is composed of representatives from accredited non-government organizations in the city, private sector, and the fisherfolks. The powers and functions of the City FARMC range from assisting and advising the City government, monitoring and evaluation and coordination of all activities related to fishing and fishery resources up to maintaining an updated registry of city fisherfolks.

4.3.3. Institutional Arrangements

Conservation Partnership Agreement (CPA). The Conservation Partnership Agreement (CPA) is entered into by and between the City Government of Alaminos, through the City Mayor, and the Marine Environment and Resources Foundation, Inc. (MERF), through its President. The MERF represents the Sustaining Management of Coastal Resources in Selected Municipalities of Lingayen Gulf Project (SAGIP Lingayen Gulf Project). The SAGIP Lingayen Gulf Project had a funding support from the State of the Netherlands and implemented by the MERF from December 2002 until November 2007 (Marine Environment and Resources Foundation Inc. and Alaminos City 2006). The CPA was signed by both parties on May 2006 and remained effective during the remaining lifetime of the SAGIP Lingayen Gulf Project.

Sagip Lingayen Gulf Project's primary objective is to enhance the capability of the selected LGUs along the Lingayen Gulf, Alaminos City included, in managing their coastal resources. In view of this main objective, the CPA recognized the importance of a multi-stakeholder collaboration and business like partnerships. The partnership aims to harmonize the programs, projects and efforts on sustainable coastal resources management. Specifically, Alaminos City and MERF agreed to jointly undertake the activities, and/or to perform their specific roles in the activities, and or to provide the counterparts detailed in the Alaminos Joint Coastal Resources Management Action Plan (J-CRMAP) (Marine Environment and Resources Foundation Inc. and Alaminos City 2006).

Components of the J-CRMAP include improvement of mangroves and marine protected areas; capability building (i.e., trainings, workshops and conferences); curriculum development; enforcement; field works/meetings; financial management; fisheries registration; information and education campaign (IEC) support; monitoring and evaluation; planning; procurement/logistics and stewardship; reporting; and water quality and mariculture structures (Marine Environment and

Resources Foundation Inc. and Alaminos City 2006). These components can be divided into four groups which address the objectives of the CPA. The first group deals with the improvement of the aquatic resources of Alaminos City. It is composed of improvement of mangroves and marine protected areas and monitoring of water quality and mariculture structures. The second group of components deals with enhancing the capability of the officials and employees of the city government of Alaminos for implementing the coastal resources management plan and informing and educating the other stakeholders. The third group consists mainly of on-site activities and meetings such as enforcement, fieldworks, and fisheries registration and licensing. The last group of components deals with the process of planning, procuring, monitoring, and reporting.

Coastal Resources Management Technical Working Group (CRM-TWG). In relation to the CPA, Alaminos City has created its own Coastal Resources Management Technical Working Group (CRM-TWG). The CRM TWG is the overall in charge for the implementation of the integrated coastal resources management program of Alaminos City. It is headed by the Alaminos City Mayor as the Chairman, with the City Agriculturist as the Vice Chairman and the City Agriculture Office (CAO) and City Planning and Development Office (CPDO) as the Secretariat (see Figure 4-3).

The CRM-TWG is composed of several working committees. These committees include law enforcement committee, environmental committee, tourism committee, enterprise development committee, and information and education campaign committee. Each committee performs the respective functions in the total implementation of a comprehensive coastal resource management practice of the City. The committees can be convened in a general meeting or can be called separately depending on the concerned issues or subjects to be discussed.

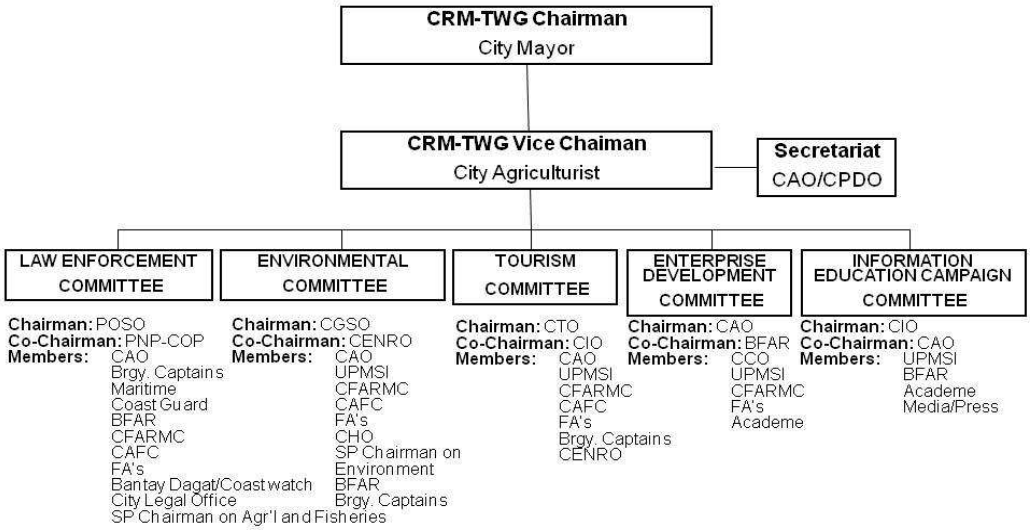

Figure 4-3. *Organizational Structure of Coastal Resources Management Technical Working Group of Alaminos City. Source: (Alaminos City 2009b)*

City Agriculture Office (CAO). The CAO of Alaminos City is headed by the City Agriculturist and has four sections: fishery, crop production, research, and crop protection (see Figure 4-4). All of these four sections are under the direct supervision of the City Agriculturist. The staff members under the CAO are distributed on the four sections based on their knowledge, expertise and experiences. Under

the fishery section is one Agriculturist and one Agricultural Technologist and one Agricultural Technician. The crop production section is further subdivided into two which include the high value crop and rice and corn. There are proposed positions to be created on the organizational structure of CAO. These proposed positions are to be found in the Marketing, Research, and Crop Protection sections. As mandated in the Local Government Code, the City Agriculturist , is mainly charged with overseeing the implementation of agricultural services (see Appendix D for specific functions and responsibilities of the City Agriculturist).

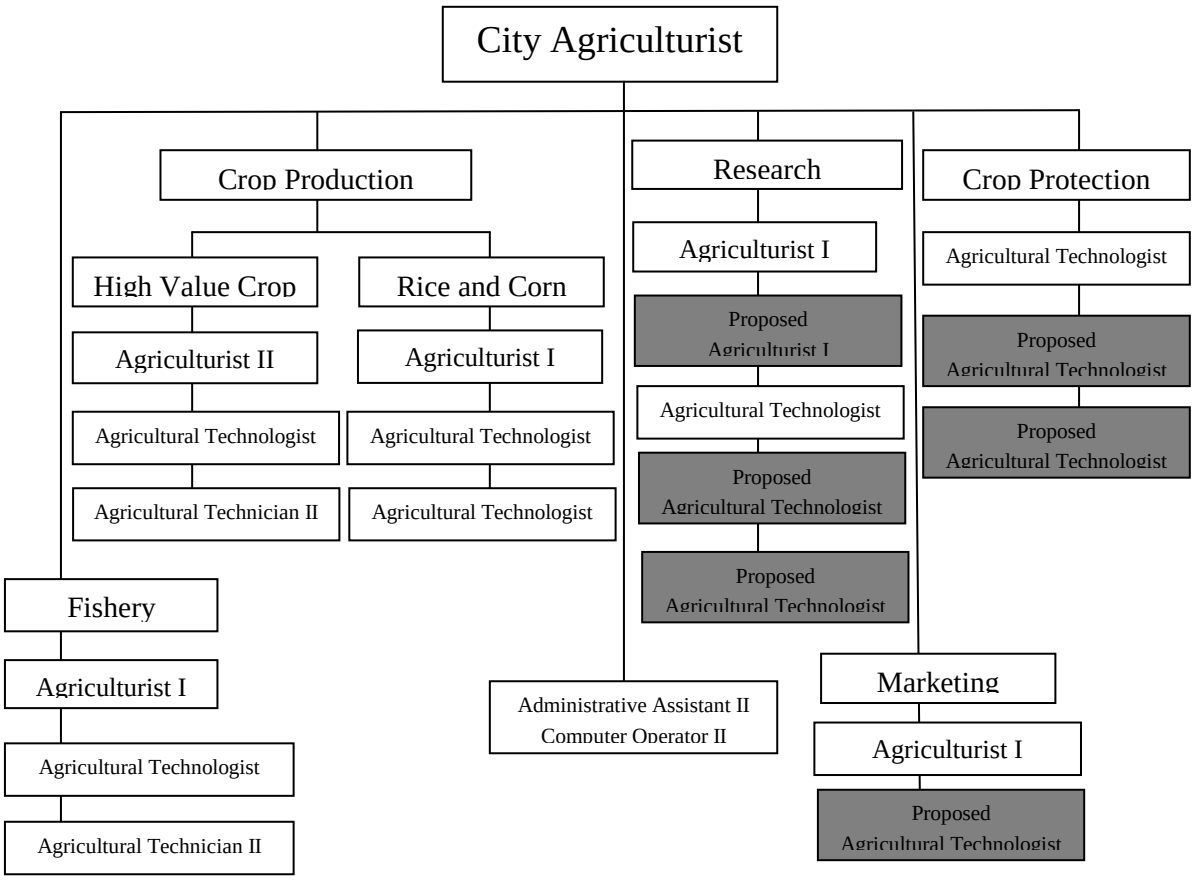

Figure 4-4. *Organizational Structure of Alaminos City Agriculture Office. Source: (Alaminos City Agriculture Office 2009)*

The CAO, particularly the fishery section, deals directly with the local fisherfolks. The fishery sector of the CAO is the frontline agency in terms of developing and implementing programs and projects for the City's coastal resources management. As such, the fishery sector developed the Integrated Coastal Resources Management (ICRM) plan of Alaminos City (Ferrer 2009). The ICRM plan is based on the participatory coastal resource assessment done by the fishery section in partnership with other agencies and local fisherfolks. The fishery section is also tasked with establishing and maintaining partnerships with other stakeholders for the development and maintenance of coastal resources of the Alaminos City.

City Cooperatives Office (CCO). The Alaminos City Cooperatives Office is the frontline agency for cooperative development in the city. The office started operating in 2004 and takes care also of the associations, people and other sectoral organizations in the City. In doing so, the CCO started its main

job by organizing the local people in preparation for any program implementation of Alaminos City government. Most of the recent programs implemented at the local communities started with the assessment that was done in 2005 by the CCO. It was revealed in the assessment that there is a need to strengthen and develop the cooperatives to sustain the implementation of programs and projects (Duey 2009). The CCO, as a city government office, functions for the improvement of livelihood through provisions of assistance in terms of financial capital, technology and marketing of produce. These services are geared towards helping the different sectors in the City such as women, transport, farmers, and fisherfolks.

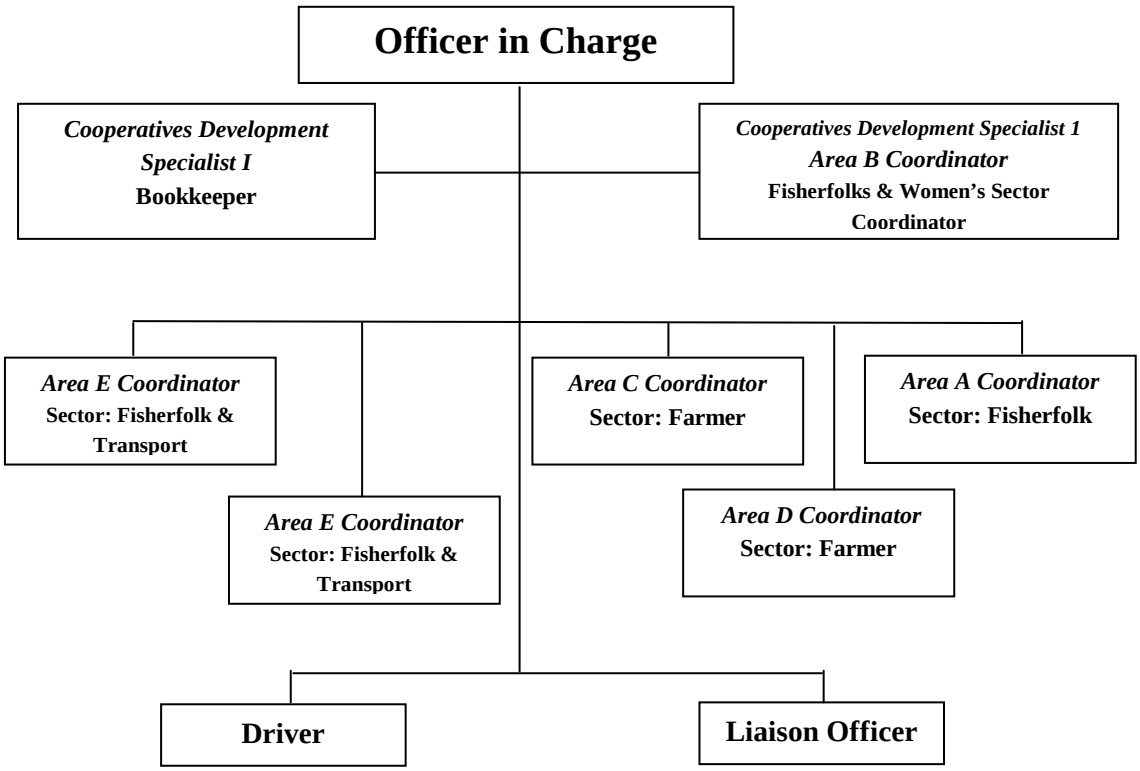

Figure 4-5. *Organizational Structure of Alaminos City Cooperative Office. Source: (Alaminos City Cooperative Office 2009)*

At the moment, the CCO is headed by an Officer in Charge acting as the City Cooperatives Officer (see Figure 4-5). Under the direct supervision of the Officer in Charge are Cooperatives Development Specialists and sector and area coordinators (see Appendix D for specific functions and responsibilities of the City Cooperative Officer). The staffs are assigned with their respective areas which correspond to the different clusters of barangays in the city. Currently the barangays of Alaminos City is divided into five area clusters (Area A-E). Clustering of barangays into areas facilitates response to different concerns and promotes monitoring of activities and local concerns. These Area Coordinators also serve as Sector Coordinators for fisherfolk, farmer, women and transport sectors. The staff members are also mostly involved in the ground monitoring and assessment for livelihood programs of the city.

In the implementation of the livelihood programs for farmers and fisherfolks, the CCO initiated the formation of the Alaminos City-Integrated Multi-Purpose Cooperative (IMPUC) mainly for the provision of loans. IMPUC is composed of multi-sector members which include farmers, fisherfolks and women sectors among its members. A Memorandum of Agreement (MOA) between the City

government of Alaminos and IMPUC in 2006 paved the way for the partnership to avail of financial assistance from Land Bank of the Philippines in order to expand the livelihood projects (Alaminos City Integrated Multi-Purpose Cooperative and Alaminos City 2006). The main objectives of these livelihood projects are to create jobs and business opportunities, develop entrepreneurs, and improve the quality of life of local people particularly the farmers and the fisherfolks sectors (Alaminos City Integrated Multi-Purpose Cooperative and Alaminos City 2006).

4.4. Conservation and Other Related Programs

4.4.1. Coastal Resources Management Program (CRMP)

The Alaminos City's program on coastal resources management aims to have a holistic approach in addressing different issues in the City's coastal resources. Its objectives considered the different uses of the City's coastal resources as well as the users and it acknowledged the fact that resource use conflict arises in the utilization of coastal resources (Alaminos City 2007a). CRMP promotes utilization of coastal and marine resources in equitable and sustainable way. It serves as an anchor program for different projects which include rehabilitation, conservation, continuing protection, development and management of coastal areas of Alaminos City and the corresponding resources and ecosystem. The CRMP involves the partnership between the City government of Alaminos and the ten coastal barangays of the city including the HINP. The City Agriculture Office serves as the office in charge for implementing the CRMP.

The CRMP hopes to achieve several specific objectives for its implementation. First is to restore and increase marine habitats and quality of their ecosystem; second is to lessen the poverty incidence in coastal communities by promoting the development of mariculture enterprises; third is to ensure equal access and legal utilization of the City's coastal marine resources; fourth is to involve the people and develop a sense of stewardship and responsibility for the use of coastal and marine resources; and finally is to reduce unlawful and destructive activities within the coastal areas (Alaminos City 2007c).

In order to put into operation these objectives, the CRMP has several components that will be implemented in order to benefit the fisherfolks and their families. These components include:

1. Resource enhancement which includes mangrove reforestation, establishment of a marine sanctuary, reseeding of commercial marine species, coral transplantation and sea grass development;
2. Community-based mariculture enterprise development is a family-based enterprise which involves cultivating high commercial value species as well as the establishment of common-post harvest and marketing facilities;
3. Social marketing, information and education campaign deals with developing information and educational materials and conducting social marketing and mobilizing campaigns to build stewardship and responsible use of coastal resources;
4. Fisheries legislation and regulation includes the advocacy for the enactment of the proposed comprehensive fisheries code of the City as well as continuous registration of fisherfolks, licensing of their fishing gears, boats and structures;
5. Fishery law enforcement means regular patrolling, market monitoring and denials, establishment of checkpoint, formation of community based protection and enforcement brigades and acquisition of patrolling, protection and monitoring equipment; and

6. Coastal wastes and water quality management is for the purpose of regular coastal clean-up, establishment of water quality monitoring station and laboratory and conduct of promotional activities (Alaminos City 2007a).

Of these components, the one that affects most the livelihood of the marginal local fisherfolks is the development and promotion of mariculture enterprises. It aims to uplift the economic condition of marginal fisherfolks in the coastal barangays that will go hand in hand with sustainable management, protection, and conservation of marine resources. Mariculture enterprise will provide an alternative and/or additional income to local fisherfolks which in return will alleviate the pressure on fishing areas and other marine resources of the city. In doing so, environment friendly and sustainable alternative sea and land based livelihood will be implemented. Livelihood options include oyster culture production, seaweeds culture production, and culture of fin fishes in fish pens. Also part of the mariculture enterprises are the establishments of smoked oyster sardines production and fish processing enterprises in the ten coastal barangays (Alaminos City 2009b).

Other livelihood projects, which are not part of the mariculture enterprise development, are being implemented by the City government of Alaminos to benefit the local fisherfolks. These livelihood projects include mushroom production, formation of reef rangers, and “Sako mo, Kabuhayan ko” (Your sack, My Livelihood). The mushroom production started in 2007 for the wives of the fisherfolks. It aims to provide additional income for the families of the fisherfolks. The CCO provides capital assistance, technical trainings, and marketing linkages in selling the produce. The formation of reef rangers involves 20 former fisherfolks in the coastal barangays and was just recently implemented by the city government through the Fishery Section of the CAO. The formation of reef rangers provides an alternative livelihood for the fisherfolks which is also part of the objective of lessening the pressure on the city’s coastal resources. The city government provided the initial diving gears (e.g., snorkeling and life jacket) and training for the reef rangers. These reef rangers serve as tourist guides in the diving sites within the HINP and are being paid for their service by the tourists (Ferrer 2009). The “Sako mo, Kabuhayan ko” project on the other hand is similar to the mushroom production but it involves other types of vegetables. The project aims to provide additional income for the fisherfolks by planting local vegetables in the sacks. Most of the families of fisherfolks do not have suitable soil type to plant vegetables so the CCO provided them with sacks, vegetable seeds, organic fertilizer, and technical assistance on proper care of vegetable plants (Duey 2009). The marketing of their produce is also assisted by the city government by buying directly from them for the city government’s own feeding program for elementary students.

Fisheries regulations imposed are part of fisheries management strategy in the implementation of the CRMP. These regulations should discourage the over-exploitation and inappropriate utilization of marine fishery resources, and reduce conflicts among different fisheries practices to better utilize the City waters of Alaminos as fishing ground, aquaculture area and recreational spot (Alaminos City 2007a). Appendix E presents the specific fishery regulations based on the CRMP.

4.4.2. Alaminos Coco-Zone Project and Adopt-a-Mountain Program

Alaminos City implements programs that complement the coastal resources management program as well as the conservation efforts for HINP. The Alaminos City Coco-Zone project and Adopt-a-Mountain program shared common objectives to enhance environmental quality, improve tourism

potentials and prevent soil erosion and eventually siltation in the HINP and the coastal areas. While the Coco-zone project involves the entire coastal barangays for the coverage of its project, the Adopt-a-Mountain program is situated mainly in the mountainous area of Barangay Sabangan.

In general, the Coco-Zone project's objective is to develop a coconut industry in the coastal communities, enhance the scenic view for tourism and serve as an alternative source of income for the city's fisherfolks. By planting and developing the coconut trees along coastal barangays, it will eventually be part of the emerging industries in the city which will include production of coconut fruits and other produce coming from coconut trees. Coconut trees lining along coastal areas facing the HINP serves as a good scenic view for tourists who visit the HINP thus enhancing the tourism potentials of the city. The capability of coconut trees to avoid soil erosion and eventually lessen the siltation on coastal areas including the HINP will greatly contribute in maintaining the healthy ecosystem of coastal and marine resources (Tolentino 2009). It is hope that with the development of coconut industry, local fisherfolks will eventually have an alternative source of livelihood which will reduce the pressure on extractive activities on the coastal and marine resources of the city.

Coco-zone project which started in 2004 have several components and strategies for its implementation. The project involves the Philippine Coconut Authority provincial office, which provides the technical and funding assistance. The CAO serves as the office in charge, on the part of the city government, in implementing the project and also appointing a point person for being directly responsible on the program(De Leon 2004). The city government likewise provided the site for coconut seedlings nursery and financial appropriation from the city fund. The barangay leaders of the coastal barangays were also part of the implementation through their coordination with their respective constituents and the city government. Local fisherfolks, who are the main beneficiaries of this program, are expected to be responsible in terms of taking care and monitoring the development of the coconut seedlings given to them.

On the part of the Adopt-a-Mountain Program of Alaminos City, its objectives revolve around the concept of environmental protection and tourism development. Through this program, the city government aims to rehabilitate its denuded watershed, through tree planting, in order to enhance the water supply for the city. Aside from reducing soil erosion and siltation towards HINP and coastal areas, the program aims to complement the tourism enhancement program by developing tree parks, camping sites and mountain trek paths. With the development of this area into tourism zone, it is hoped that it can provide livelihood to the local people. The rehabilitation and re-vegetation of the area will also improve the biodiversity which in return be a potential site for research and educational activities.

The program's name encourages the participation of different sectors to join in taking care and "adopting" the mountain. Different sectors were involved in the tree planting activity initiated by the city government. The city government took charge in developing the site (16 hectares), fencing the perimeter, constructing the access road and establishing the nursery. At present, the city government through the CAO continuously maintains and develops the area with the help of caretakers being hired to monitor and guard the area (Tolentino 2009).

4.4.3. Issues and Challenges in Implementation

In the course of implementing these programs and projects there are issues and challenges encountered by the implementers. These issues and challenges are based on the personal interviews and can be categorized based on the involved stakeholders and natural factors. First among these stakeholders is the local community which includes the local people. Sustaining the participation of local people for the program implementation has been identified to be the main challenge. Local people seem to be eager during the initial implementation of projects but their eagerness wanes as the projects go on. This can be explained by the fact that most of the involved local people are economically poor. Instead of investing their time for meetings, consultations and other organizing activities, local fisherfolks would rather go to the sea to fish or spend their time on other livelihood activities. Overcoming the initial pessimism of local people when introducing a new project is another obstacle for program implementation. This pessimism results into lukewarm reception and participation of local people, which can greatly affect the sustainability and maintenance of projects given to them. Proper information for local people is vital for project implementation. As an example, some of the local fisherfolks complain about the strict rules and regulations but they are not aware that laws and programs have been there that they are just being implemented.

The second group of stakeholders is the local leaders in the communities. The support and initiative of the local leaders go a long way in implementing the projects at the field level. These local leaders serve as a connector between the city government and the local people. They also serve as the entry point for any project implementation. The problem arises when the local leader has different political agenda or being indifferent with the existing city administration. These differences affect the level of commitment that the local leader has on implementing the projects. Aside from the local leaders, the selection of leaders of the local organizations has also affected the implementation. Some local organization leaders are passive and sometimes lack the proper qualifications in terms of collaborative project implementation and thus their organization and their entire members are left in the dark.

The third group of stakeholders involves the city government and other agencies. For the city government, the first concern is the availability of resources. On the aspects of monitoring and addressing immediate concerns of the projects, the city government lacks the manpower especially on the above-mentioned programs and projects. Lack of transportation or vehicles also hinders the monitoring of project implementation especially on far flung areas. The coordination with other government agencies serves also as a challenge which is related to the bureaucratic process. These bureaucratic processes (i.e., bidding) can definitely delay the implementation of any project when there is a failure of bidding for example.

The last factor that also affects the implementation of the programs and projects are the natural phenomena. Events such as typhoons and floods can devastate an area as well as the structures being built for the programs and projects. Structures for and produce of mariculture development can be totally wiped out when a strong typhoon sweeps the area. Planted trees, especially the young ones, are vulnerable to natural calamities like typhoons and floods. Effects of natural calamities entail restoration of affected structures and areas and thus affect the available resources for the program implementation.

4.5. Fisherfolks and Elicitation of their Willingness to Accept

The questionnaire used for eliciting the fisherfolks willingness to accept alternative employment is divided into three main parts. The first part profiles the household head, which is the fisherfolk, as well as the household. The second part deals with the respondent's awareness of conservation efforts towards HINP and how they perceived these activities in relation to their means fishing activities. The last part is mainly on fishing as their occupation and eliciting their willingness to accept other employment other than fishing and how much it would take for them to leave their fishing activities. On the course of these questions, there are some probing questions to explain their choices.

4.5.1. Profile of the Fisherfolks and their Households

All of the respondents in the household survey are local fisherfolks of Alaminos City, particularly, they are from the ten coastal barangays. Of these 60 respondents, 46 of them are willing to accept alternative employment while the remaining 14 are not willing to forego their current job as a fisherfolk (see Table 4-2). All of the 60 respondents are male and they are the household heads of their respective families. Being the household heads, they are the main economic provider in their respective households. The age of the respondents ranges from 25-70 with an average age of 44 years. Half of the respondents (30) are within the age range of 40-54, followed by those who are in the age range of 25-39 with 35% (21) and those who are 55 years or older with 15% (9). The educational levels attained by the fisherfolks are categorized into seven, namely: those who are able to finish some years in the elementary (27%); those who are able to finish elementary level (23%); those who are able to attend some years in high school (12%); those who are able to finish high school level (27%); those who are able to attend some college level (7%); those who are able to finish vocational school (1%); and those who are able to finish college level (3%). Interestingly, the respondents who finished college level are not willing to leave fishing.

Table 4-2. *Demographic Profile of Fisherfolks and their Households. Source: Household Survey*

Variables	All Respondents (n=60)	Willing to Accept alternative employment (n=46)*	Not Willing to Accept alternative employment (n=14)
Age:			
25-39	21 (35%)	20 (43%)	1 (7%)
40-54	30 (50%)	21 (46%)	9 (64%)
Over 54	9 (15%)	5 (11%)	4 (29%)
Educational Attainment:			
Some Elementary	16 (27%)	12 (26%)	4 (28%)
Elementary Graduate	14 (23%)	9 (20%)	5 (36%)
Some High school	7 (12%)	7 (15%)	0 (0%)
High school graduate	16 (27%)	13 (28%)	3 (21%)
Some college	4 (7%)	4 (9%)	0 (0%)
Vocational graduate	1 (1%)	1 (2%)	0 (0%)
College graduate	2 (3%)	0 (0%)	2 (15%)
Household size:			
2-5	34 (57%)	26 (57%)	8 (57%)
6-9	24 (40%)	18 (39%)	6 (43%)
Over 9	2 (3%)	2 (4%)	0 (0%)
Household dependents:			
0-4	37 (62%)	29 (63%)	8 (57%)
5-9	23 (38%)	17 (37%)	6 (43%)

Access to electricity:			
Yes	50 (83%)	37 (80%)	13 (93%)
No	10 (17%)	9 (20%)	1 (7%)
Access to private water service:			
Yes	34 (57%)	25 (54%)	9 (64%)
No	26 (43%)	21 (46%)	5 (36%)
Membership in any organization:			
Yes	37 (62%)	28 (61%)	9 (64%)
No	23 (38%)	18 (39%)	5 (36%)
Fishing Method:			
Dive and spear	1 (2%)	1 (2%)	0 (0%)
Fishing net	24 (40%)	21 (46%)	3 (22%)
Fish trap	24 (40%)	14 (30%)	10 (71%)
Hook and line	11 (18%)	10 (22%)	1 (7%)
Years as fisherfolk:			
5-10	6 (10%)	4 (9%)	2 (14%)
11-20	20 (33%)	17 (37%)	3 (21%)
21-30	20 (33%)	15 (33%)	5 (36%)
31-40	10 (17%)	9 (19%)	1 (7%)
41-50	4 (7%)	1 (2%)	3 (21%)
With previous working experience other than fishing:			
Yes	43 (72%)	31 (68%)	12 (86%)
No	17 (28%)	15 (32%)	2 (14%)
Frequency of fishing activity per week:			
3	7 (11%)	6 (13%)	1 (7%)
4	3 (5%)	2 (4%)	1 (7%)
5	1 (2%)	1 (2%)	0 (0%)
6	1 (2%)	1 (2%)	0 (0%)
7	48 (80%)	36 (79%)	12 (86%)
No. of hours per day devoted to fishing :			
2-5	24 (40%)	14 (30%)	10 (72%)
6-9	20 (33%)	17 (37%)	3 (21%)
10-12	16 (27%)	15 (33%)	1 (7%)
Sufficiency of fish catch for everyday living:			
Yes	14 (23%)	9 (20%)	5 (36%)
No	46 (77%)	37 (80%)	9 (64%)
Other sources of livelihood:			
Yes	49 (82%)	37 (80%)	12 (86%)
No	11 (18%)	9 (20%)	2 (14%)
Owning Implements:			
Yes	53 (88%)	40 (87%)	13 (93%)
No	7 (12%)	6 (13%)	1 (7%)
Household Daily Income (PhP):			
100-200	38 (63%)	30 (65%)	8 (58%)
201-300	13 (22%)	10 (22%)	3 (21%)
301-400	8 (13%)	5 (11%)	3 (21%)
401-500	1 (2%)	1 (2%)	0 (0%)

**also includes fisherfolks who answered maybe/not sure if they would accept alternative employment*

As part of the household survey, fisherfolks' households were also profiled. The household size of the respondents ranges from 2-11 members with an average of 5 members per household. Majority of the household size (57%) is within the range of 2-5 members per household. Extreme cases are those households (2) with 10 and 11 members each. The household dependents are people who are not able to economically work or produce for their own or for the household. Majority of the respondents were households with 0-4 dependents at 62%. Respondents have greater access to electricity (83%) than access to privately provided water service (57%). Nine out of the ten households who do not have access to electricity are those who are willing to accept alternative employment while almost all (13 out of 14) of those who are not willing to accept alternative employment have access to electricity. The household daily income of the respondents ranges from 100-500 Philippine Peso (PhP) with an average of PhP 210. Dividing this income range into smaller ranges results to 63% of the respondents having a household income ranging from PhP 100-200, which is way below the average. In determining the household income, most of the fisherfolks based their responses by estimating their average daily income from fishing activities. By estimating their average daily income, the fisherfolks said that fishing is very seasonal occupation and there are times that their catch is not enough to finance their daily fishing operation (e.g. money for buying fuel and food). This claim of some of the respondents can be supported by the country's official poverty statistics that the fisherfolk is the poorest sector in 2006 with 50% poverty incidence (Philippines National Statistical Coordination Board website 2010). This means that in national scale, for every two fisherfolks, one of them is experiencing poverty. This national statistics also reflects at the regional level in Region I, where HINP is located, with 51% poverty incidence for fisherfolks in 2006 (Philippines National Statistical Coordination Board website 2010). In terms of their expenses, most of the respondents (81%) identified food as their first priority for expenses followed by expenses for their children's education as the second priority.

The third part of profiling the fisherfolk respondents deals with their fishing activities as well as their economic activities aside from fishing. There are four fishing methods identified by the respondents. The most common are the use of fishing nets and fish traps with 40% each followed by those who use hook and line with 18% and lastly, there is only one respondent who uses dive and spear method. Looking at Table 4-3, some coastal barangays have predominating fishing method used based on the survey. Fish traps are commonly used in Barangays Baleyadaan, Mona and Pangapisan. The use of fishing net method can be observed in Barangays Pandan and Sabangan, with all the respondents from these barangays using the said method. For hook and line, all but one of the 11 respondents that used this method comes from Barangay Lucap. In terms of those who are willing to accept alternative employment, 46% of them are using fishing net while for those who are not willing to accept alternative employment, majority (71%) of them are using fish trap method. The number of years the respondents are involved in fishing activities ranges from 5-49 years. Fisherfolks who have been fishing within the year ranges from 11-20 and 21-30 composed the 66% of the entire respondents. Quite considerably, most of the respondents have been fishing for a long time with only 10% of them being engaged with fishing from 5-10 years. The frequency of the fishing activity per week for these fisherfolks range from three times a week up to seven times a week, which is daily for most (80%) of them as long as the weather permits as the fisherfolks would say. In terms of working hours devoted to fishing activities, they range from 2 hours up to 12 hours in a day. The majority of the fisherfolks, regardless of whether they are willing or not willing to accept alternative employment, perceived that their daily catch is not sufficient for their everyday living needs. Most of the fisherfolks used their

own implements for fishing, although it is quite high, percentage-wise, for those who are not willing to accept alternative employment with only one who does not own any fishing implements. The fishing implements identified include fishing nets, small boats (motorized and non-motorized), fishing lines and hooks, and different types of fish traps among others. Most of the respondents also engage themselves with other livelihood activities other than fishing with 82% of the respondents saying they do other works aside from fishing once in a while. Some of these livelihood activities identified are rice farming, aquaculture, and construction/laborer among others. In terms of previous experiences with other jobs before they became fisherfolks, 72% of the respondents have previous working experiences other than fishing. Those who have previous working experiences other than fishing identified factory work, construction and rice farming as some of their previous occupations. Lastly, as members of their respective local communities, some of the respondents are also members of local civic organizations with 62% having membership with organizations like fisherfolk associations, local cooperatives and other civic organizations.

Table 4-3. *Coastal Barangays and Fishing Methods Used. Source: Household Survey*

Barangay	Fishing Method				
	Dive and Spear	**Fish Trap**	**Fishing Net**	**Hook and line**	**Total**
Baleyadaan	0	4	0	0	**4**
Bued	0	0	2	0	**2**
Cayucay	0	2	8	0	**10**
Lucap	0	0	0	10	**10**
Mona	0	10	0	0	**10**
Pandan	0	0	5	0	**5**
Pangapisan	0	8	0	0	**8**
Sabangan	0	0	4	0	**4**
Telbang	0	0	2	0	**2**
Victoria	1	0	3	1	**5**
Total	**1**	**24**	**24**	**11**	**60**

4.5.2. Awareness and Attitude Toward HINP Conservation

The household survey included questions to find out how the fisherfolks view and feel about the conservation of HINP. The fisherfolks were asked to rate on a scale of 0-10, with 0 being the lowest and 10 as the highest, the validity of or how much they believe the statements being read to them. The first statement deals with the improvement of the quality of the natural environment of HINP. The responses gathered range from 0-10 with an average of 7.20. The 0 ratings are due to the responses of the fisherfolks such as they have no comment or they refuse to answer. The second statement is about the alarm/affect of the quality of HINP on the fisherfolks. Just like the first statement, the responses gathered range from 0-10 but with slightly lower average of 6.77. The third and the last statement deals with the trust of the fisherfolks on the government (both local and national) to implement conservation programs and to address the quality of the environment. Based on the survey, the trust of the fisherfolks with their government is higher, with 8.37 average rating, than the first two statements.

Table 4-4. *Results of Fisherfolks' Awareness on the HINP Conservation. Source: Household Survey*

Variables	Frequency (Percentage) of Response	
	Yes	**No**
Awareness on activities affecting HINP conservation	35 (58%)	25 (42%)
Awareness of implemented programs for HINP conservation	32 (53%)	28 (47%)
Awareness of the importance of conserving the HINP	48 (80%)	12 (20%)
Conservation programs affecting means of making a living	50 (83%)	10 (17%)

The specific awareness of the respondents in terms of activities that affect programs implemented for and the significance of the HINP was asked in the survey. Fisherfolks were also asked if the conservation efforts being implemented affect their means of making a living. As can be seen in Table 4-4, the difference between fisherfolks' who are aware of activities that affect the conservation of the HINP and those who are not aware are not so significant with 58% and 42%, respectively. Those who said that they are aware of activities that affect conservation of HINP mostly identified activities such as dynamite and other illegal fishing activities. The second question in terms of the fisherfolks awareness on HINP conservation relates with their awareness of implemented programs being implemented for HINP conservation. Just like the first question, there is no great difference between those who are aware (53%) and those who are not aware (47%) of implemented programs. Conservation programs being observed by those who are aware include patrolling of Bantay Dagat, establishment of fish sanctuaries, and replanting of mangroves, corals and giant clams. These identified programs are components of the integrated coastal resources management program of Alaminos city as discussed earlier. The third question for fisherfolks' awareness on HINP conservation is on the importance or benefits of conserving the HINP. The response for this question is different from the first two questions wherein a significance difference can be observed between those who are aware (80%) and those who are not aware (20%) of the importance of conserving HINP. Most of the identified benefits/advantages of conserving the HINP as identified by the respondents include the increase in the number of tourist in the HINP, for the benefit of future generations, serve as a fish breeding ground, the islands serve as shield for the coastal areas from strong winds and water current, and improve condition of the corals. The last question deals with the effect of conservation programs on the fisherfolks' means of making a living. Most of the respondent, 80%, agreed that the conservation program has somehow affected their livelihood with only 10 responding that they are not affected. The most identified effect is that the conservation program has restricted their fishing areas, while some respondents claimed that there are less fish catch. Some of the respondents, especially those using hook and line fishing method, claimed that they can no longer fish when there are weather disturbances like typhoons unlike before when they can still go out fishing even with a typhoon with the islands serving as their shields from strong winds. On the other hand, some respondents recognized that conservation programs have also limited the occurrence of illegal fishing activities like dynamite and cyanide fishing in the city waters of Alaminos. As a result, most of the fisherfolks changed their fishing areas while others changed their fishing method as coping mechanisms to the restricted fishing areas brought about by the conservation activities. These

changes in fishing areas and fishing methods sometimes entail increase in the needed resources for fishing such as increase in fuel and fishing time for those who change their fishing grounds farther than they used to be.

4.5.3. Elicitation of Willingness to Accept

Before eliciting the fisherfolks willingness to accept alternative employment, the respondents were first asked if they are satisfied with their current occupation as fisherfolks. Sixty-three percent (63%) said yes, while 37% said otherwise. The reasons for those who are satisfied vary but the most common are the lack of education, having no other choice for a job, old age, and being familiar with fishing. The respondents view that the lack of education is hindrance for having other choice of making a living thus it is related to the other reason of having no other choice. For those who are not satisfied, the most common reasons include: income from fishing as not enough to provide for family needs and that fishing is very unpredictable and seasonal which depends mainly on weather conditions and natural phenomena.

The respondents were then asked if they were willing to accept alternative employment other than fishing. As presented in Table 4-2, there were 46 respondents who answered either yes or maybe/not sure and 14 respondents who categorically answered that they are not willing to abandon their fishing activities. The reasons of those who are willing to accept alternative livelihood include that the alternative employment can provide regular source of income which is related to the other reasons such as fishing is an unstable source of income thus it is not enough to provide for family needs and children's education. Others reasoned out that fishing is a very hard and dangerous job. For those who were not willing to accept alternative employment, they said that fishing is their main source of food and they believe that the sea can and will provide. Other reasons included their familiarity with fishing activities and it would be hard for them to shift into other means of making a living and they enjoy working for themselves, on their own time, with no boss to report to.

Table 4-5. *Result of Regression Analysis on Willingness to Accept Alternative Employment. Source: Household Survey*

Variables	Coefficient (B)	S.E.	df	Sig.	Exp(B)
Education Level	0.167	0.268	1	0.534	1.181
No. of Dependents	-0.146	0.229	1	0.524	0.864
Frequency of fishing activities per week	0.050	0.311	1	0.873	1.051
Daily Income	0.005	0.005	1	0.292	1.005
Trust in the government	-0.119	0.157	1	0.446	0.888
Age of respondents	-0.101	0.052	1	0.053	0.904
Years as fisherfolk	0.022	0.047	1	0.642	1.022
Hours devoted for fishing in a day	0.394	0.167	1	0.018	1.483
Constant	2.899	3.789	1	0.444	18.150

Relating the responses of the fisherfolks' WTA alternative employment with other independent variables from the questionnaire revealed statistical results. Their WTA responses were coded 0 (no) and 1 (yes, maybe/not sure) for the binary logistic regression analysis using the SPSS software. This

kind of regression analysis is done in order to predict a categorical dichotomous (yes or no) variable from a set of independent variables. Among the independent variables in Table 4-5, only the variable of number of hours devoted for fishing in a day is a significant positive determinant of the willingness to accept alternative employment with 1.8% at 5% level of significance. The number of fishing hours in a day spent by the fisherfolks, statistically affects their decision to accept alternative employment. This variable can explain the fishing experiences of the fisherfolks in terms of the productivity of hours spent in fishing, wherein it might be possible that the increased amount of time spent is not correspondingly equal to the fish produce thus they are more willing to shift into other means of livelihood if given a choice. This statistical result somehow affirms the earlier reasons of the fisherfolks who are willing to accept alternative employment that fishing is a very hard labor and unpredictable. Interestingly, the number of dependents did not come out as positive determinants in the fisherfolks willingness to accept alternative employment. This is perhaps due to the fisherfolks are more concern with the nature and productivity of their occupation and that as long as they have a productive occupation, therefore they can provide for their dependents. Correlation between the number of dependents and household size was found to be particularly strong (r=0.926). In this correlation, the researcher decided to select the number of dependents to be included in the independent variables over the household size since the number of dependents speaks more of the number of people that the household head needs to provide for.

Table 4-6. *Identified Amounts Required to Accept Alternative Employment. Source: Household Survey*

Amount (PhP) Required to Accept Alternative Employment	Frequency	Percentage	Cumulative Percent
150	3	6.5%	6.5%
200	11	24.0%	30.5%
250	4	9.0%	39.5%
280	1	2.0%	41.5%
300	15	33.0%	74.5%
350	2	4.0%	78.5%
380	1	2.0%	80.5%
400	3	6.5%	87.0%
500	5	11.0%	98.0%
800	1	2.0%	100.0%
Total	46	100.0%	

For the fisherfolks who are willing to accept alternative employment, they are asked how much income is required in order to abandon their fishing activities and accept alternative employment. As can be seen in Table 4-6, the range of responses starts with PhP 150 and went as high as PhP 800 with an average of PhP 304. This average amount of PhP 304 is way above the government-required regional minimum wage rates in any industry/sector such as construction (PhP 240), small manufacturing (PhP 220), hotel and restaurants (PhP 220), plantation (PhP 220), and small municipal fishing (PhP 195) (Philippines Department of Labor and Employment website 2009). The amount of PhP 800 can be considered as an outlier or an extreme case since it was identified by only one respondent and has a wide difference from the next smaller value stated which is PhP 500. Majority of

the respondents' preferences fall within the range of PhP 150-300 with almost 75% or 34 out of the 46 respondents who are willing to accept alternative occupation.

The preferred amounts identified by the respondents were tested with several independent variables in order to determine which of these independent variables influence the amounts required by the fisherfolks to leave the fishing sector. The independent variables can be seen as part of the data model, which resulted from the regression analysis, in Table 4-7. Among the variables, only the daily income of the household is the positive determinant for the amount required for fisherfolks to accept alternative occupation. Based on these statistics, the higher the household daily income of the fisherfolks, the higher the amount they expect to receive in order to leave the fishing sector. The education level is interestingly not a determinant for the amount required to accept alternative employment. This can be explained by the fact that only 2 of the respondents were able to finish college and also most of the respondents (89%) did not go beyond high school and thus little variation on this variable. It is also interesting that the age of the respondents and years as fisherfolk are not determinants on the amount for WTA. This is perhaps due to the view of fisherfolks that they do not consider their years of experience in fishing as a relevant experience that will increase their market value in the job market.

Table 4-7. *Result of Regression Analysis on the Amount Required to Accept Alternative Employment. Source: Household Survey*

Variables	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	150.849	198.367		0.760	0.453
Age of respondents	-0.292	2.923	-0.021	-0.100	0.921
Education Level	23.195	14.900	0.262	1.557	0.130
No. of Dependents	-8.667	13.815	-0.122	-0.627	0.535
Years as fisherfolk	2.320	2.866	0.185	0.809	0.425
Hours devoted for fishing in a day	3.917	8.908	0.092	0.440	0.663
Frequency of fishing activities per week	12.988	13.680	0.153	0.949	0.350
Household Daily Income	0.601	0.242	0.471	2.479	0.019
Awareness of Quality of HINP Environment	-6.447	5.723	-0.190	-1.126	0.269
Trust in the government for program implementation	-6.549	7.504	-0.142	-0.873	0.390

Dependent Variable: Amount of income required to accept alternative employment

5. ASSESSING THE LOCAL SITUATION AND THE FEASIBILITY OF ADOPTING PES FRAMEWORK: AN ANALYSIS

5.1. Introduction

This chapter presents the analysis of the research findings and gathered data. This section is divided into two segments with the first part dealing with the assessment of the local situation of Alaminos City in relation to HINP conservation and the implications to the local fisherfolks. The second part tackles the applicability of PES framework as a policy intervention for conserving the HINP by using the identified criteria (presence of ES, ES buyers and ES sellers, voluntary transaction, and conditionality of agreement) in the literature survey.

5.2. Assessing the Local Situation of Alaminos City

Assessment of the local situation in Alaminos City in relation to conserving the HINP will be based on the interactions of the three interest groups: the City government of Alaminos; the local fisherfolks and the tourists (see Figure 5-1). These interest groups have their own respective objectives toward the coastal and marine resources of the City. For the city government, the aim is to protect and conserve the City's coastal and marine resources by increasing its environmental quality. For the local fisherfolks, they view the coastal and marine resources as their source of livelihood thus their consumptive use of the resources. Although less attention will be mentioned about the tourists as compared with the other two interest groups, they are still part since they are consuming space, through related tourism facilities and activities, within the coastal and marine resources for their enjoyment of landscape/seascape beauty. Also the tourists are included since they are one of the important underlying factors in the shift of using the coastal and marine resources of the City. The areas for intervention therefore aim to harmonize these different objectives towards the City's coastal and marine resources. The existing local situation in Alaminos City as well as the respective objectives of the interests groups are shaped and will be continuously shaped in the future by the different factors discussed in Chapter 4.

The City government of Alaminos has been consistent in its objectives to utilize its land area and resources. The City has always included in its priority the protection, conservation and enhancement of its natural environment which includes the coastal and marine resources. This objective leads to the formulation of the existing and proposed land use of the city as well as the local laws and programs being implemented. This consistency recognizes the importance being given by the City government into its natural resources. These natural resources, in particular the coastal and marine resources, have been the major lifelines for the City government as well as for its inhabitants through different uses such as tourism and livelihood.

The existing land use of the city and the geographic location of the coastal barangays have led the local fisherfolks to utilize in a consumptive manner the coastal and marine resources of Alaminos City. The City's coastal and marine resources serve as the source of livelihood for the local fisherfolks. The land capability of coastal barangays, especially on areas near the coastline, dictates the livelihood activities that can be done by the local fisherfolks. Hence, most of the aquaculture and coastal livelihood activities oftentimes happen on hydrosol Class X land classification, which is moist most of the time and can be found on most coastal barangays. On the other hand, moving inward and away from the coastline of the coastal barangays provides an opportunity for other type of livelihood activity which is agricultural crop farming. Rice farming, being the most dominant agricultural activity, thrives in the majority of the City's land area mainly because Class A, which is suitable for rice production, is the dominant land type in the City. This implies that the land areas of coastal barangays have the capacity to support other means of livelihood aside from fishing.

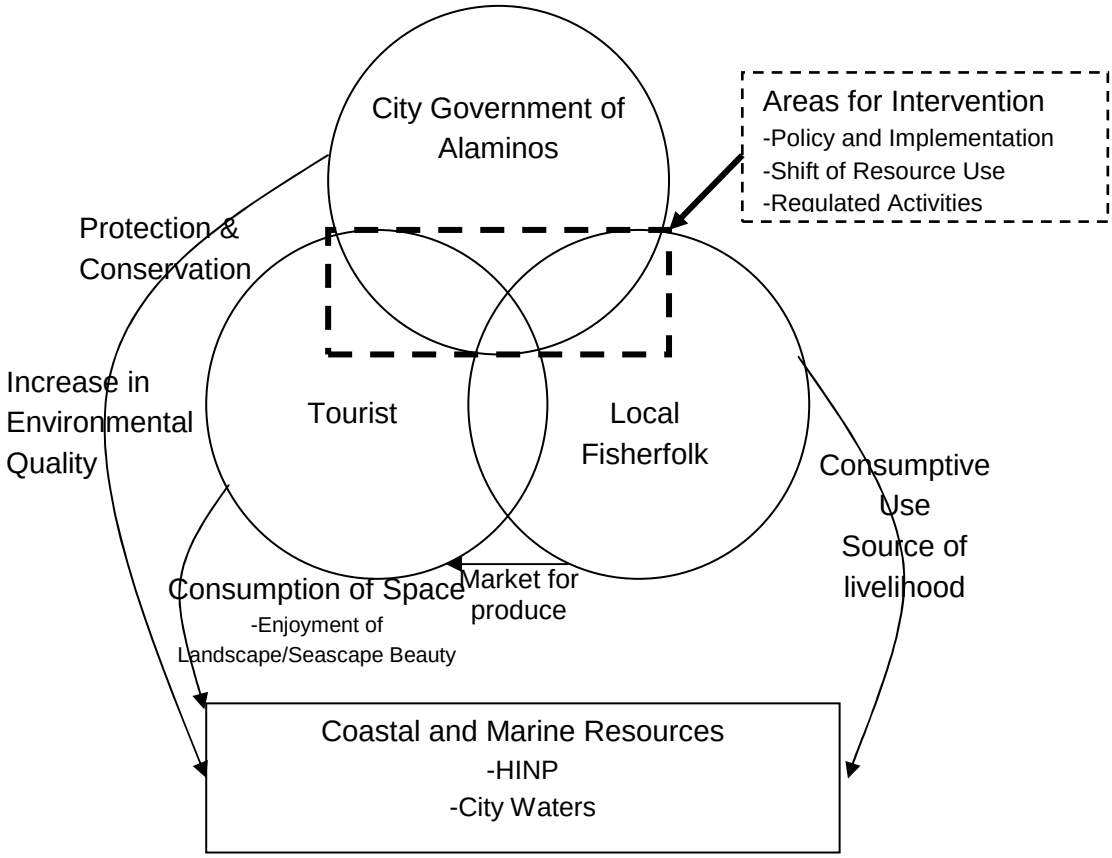

Figure 5-1. *Model of the Existing Local Situation in Alaminos City. Adopted from (de Meijere 2010)*

The observed shift from the existing general land use of the city into the proposed general land use plan has emphasized on using the coastal and marine resources of the City including some of the coastal barangays into development areas. These development areas have the potential to absorb investments for tourism and ecological conservation as well as potential to put more pressure on the fishing activities of the local fisherfolks. Limiting the fishing activities of the fisherfolks might drive them away farther in terms of fishing areas and some might result in shifting their fishing methods. These, in return, will greatly affect small scale fisherfolks who do not have implements such as motorized boat and other implements needed for new fishing method, as well as additional operational expenses for fishing such as fuel and food while on the sea.

The City's proposed general land use plan provides for more mixed uses and interaction between tourism and other economic activities. The proposed mixed uses between residential and commercial areas can provide market accessibility for agricultural produce such as rice and fish. These mixed uses may diffuse the concentration of some of the economic activities from the City's urban center into the nearby rural areas. This diffusion can benefit the local fisherfolks and farmers by marketing their produce directly to their consumers and thus reducing their transaction costs. Bringing together tourism and other economic activities such as hotels and other related industries encourages consumption of local produce. The provision of local produce for these industries however lies in the ability of local farmers and fisherfolks to sustain their outputs and maintain a good quality of their products.

Promoting the development and welfare of the fisherfolks has been embedded in some of the existing laws (i.e., local and national) of the Philippines. The development and welfare of the fisherfolks puts emphasis on living in balance with nature and considering the limitations of natural resources. At the national level, the Philippine Constitution, which binds all the existing laws of the country, gives specific provision on protecting the rights and promoting the welfare of the fisherfolks. Laws acknowledging the roles of other sectors, especially the civil societies and private sectors, provide the arena for their participation in promoting the welfare of fishery sector. The autonomy given to the LGUs provides for the possibilities of working through their own resources and setting their own mechanisms in developing a balance between protection and conservation of natural resources (coastal and marine resources) and utilization of other interest groups (tourists and local fisherfolks). The existing local situation of Alaminos City encapsulates the effects of these two national legal instruments (Philippine Constitution and Local Government Code) on the dynamics of relationships between different interest groups in a locality.

National legal instruments, which deal specifically on concerns about fishery as an agricultural activity and conserving the involved natural resources, are in unison in developing fishery sector in tandem with the concerns for protecting the marine and coastal resources. The AFMA's aim of modernizing the fishery sector bodes well in making the fishery sector more productive. The improved production lies in the provision of infrastructures and facilities. The move for modernization provides alternative employment for fisherfolks like establishing agro-processing enterprises. The Philippine Fisheries Code supports the improvement of fishery sector through aquaculture development, technology upgrade and provision of supplemental or alternative livelihood for local fisherfolks. The provision of alternative or supplemental livelihood for the local fisherfolks acknowledges the fact that coastal and marine resources are under pressure with the growth in the number of fisherfolks utilizing the said resources. One common provision of these national legal instruments recognizes the rights of the fisherfolks to organize themselves into associations and/or cooperatives. These organizations can serve as the instruments for local fisherfolks to air their collective concerns on issues affecting their fishing activities. These fisherfolk organizations will also serve as the main link to other interest groups.

The protection and conservation objective of the City government of Alaminos for the HINP as part of its coastal and marine resources of Alaminos City is reinforced by the Wildlife Resources Conservation and Protection Act and NIPAS Act. These laws provide the framework in conserving

the HINP as a protected area and as a biodiversity area. Marine and other species found inside the HINP are considered off-limits for extractive and other uses except for viewing purposes of the tourists. These laws reinforce the resolve of the City government to enrich the marine resources and introduce indigenous species in order to develop the City's tourism industry.

The HINP has shifted not just into a protected area but more and more into tourism use; this affects its surrounding areas, including the fishing areas and inland areas of the coastal barangays. These affected areas are the ones mostly used by the local fisherfolks, thus the shift for the usage of these areas primarily affects them. The city government for its part has chosen the shift into tourism use on these areas in the hope that with the programs implemented in conserving and protecting the HINP, it will benefit not just the tourists and the city government but the local fisherfolks in the future. The expected future benefits for the fisherfolks include the propagation of fishes due to the presence of corals and fish sanctuaries within the HINP and other livelihood opportunities brought about by the development of tourism industry. Although these future benefits look enticing, the dilemma still persists in terms of competition for space between tourism and fishing use especially in the immediate surroundings of the HINP. The tourism development not only entails an influx of tourists but it also entails development of support facilities and services needed by the tourists. Establishing these support facilities such as hotels, port areas and other commercial establishments will result in the displacement of inland and coastal activities for some of the fisherfolks. Inland and coastal activities of the fisherfolks include the repair of their implements such as boats and nets and coastal fishing with methods such as fish traps, fish nets and hook and line.

The mandate guiding the management of the HINP is quite unique as compared with other protected areas. While the other protected areas in the country are under the management of the national government through the NIPAS Act, the HINP enjoys the framework and protected area status based on the NIPAS Act while its management is under the responsibility of the City government of Alaminos. This local autonomy provided by the EO 436 of the Philippine president has given the leeway to Alaminos City to develop the HINP into a major tourism area in accordance with the law. The interesting portion of this autonomy is that all resources generated through the operation of the HINP can be used to finance conservation efforts. This is because these resources go directly into the treasury of the city government unlike the other protected areas under the management of the national government. The city government can likewise generate resources for conservation efforts by collection of fees, tapping their networks and creating partnerships. This flexibility in the local situation of Alaminos City presents the possibilities of designing diverse options and mechanisms for conserving and protecting the HINP.

The impending approval of the City's proposed Comprehensive Fisheries Code signals the formal implementation of zoning of the coastal and marine resources of Alaminos City. The zones, which include conservation, protection and rehabilitation zone, mariculture enterprise development zone, and eco-tourism zone, involve all the coastal barangays. Implementing the zones means that some of the local fisherfolks who utilized a particular area for their fishing activities either need to shift into other fishing method, move into inland aquaculture activities or totally give up their fishing activities. To counter this effect, the City government integrated provisions in the proposed code to provide alternative livelihood for the fisherfolks and their families. However, the issue of identifying the affected fisherfolks that will benefit remains and in this case, Barangays Bued, Pandan and Sabangan

are not zoned under the mariculture development and therefore fisherfolks from these barangays have to be included in other types of alternative livelihood.

This proposed code is also one of the instruments of the City government in monitoring the environmental quality of the HINP and other marine and coastal resources and implementing fishery rules and regulations. Monitoring the environmental quality of the HINP through partnerships with research institutions provides for the scientific and quantifiable results which then can be related on the effects of the different uses and activities from the fisherfolks and tourists in the HINP. The required registration of the fisherfolks and their implements is one of the most important provisions of the existing and proposed local legislations. Through this system, unregistered fisherfolks and those doing illegal fishing activities can be identified which in return helps in implementing fishery rules and regulations. This registration system can also be used to profile the fisherfolks' consumptive use of the City's coastal and marine resources.

The City government of Alaminos is equipped with institutions and human resources that implements protection and conservation activities for its coastal and marine resources. It can be said that the City government has established a linkage with the local communities, especially with the local fisherfolks, due to the organizing activities and constant monitoring and field visits done by CCO and CAO. The partnership agreements entered upon by Alaminos City have enhanced its capability to manage its coastal and marine resources based on existing local situation, knowledge and information (i.e., water quality monitoring, fisherfolks and fishing gears registrations, and mariculture monitoring). The experiences of Alaminos City show that the executive body of the city government is supported by its legislative body through formulation of local ordinances and legislations in support of protecting and conserving its coastal and marine resources.

The integrated approach and linking with people in implementing programs are strategies that suit well for the local situation of Alaminos City. Putting a balance between fishing and tourism use should involve stakeholders from both the government and the people. Involving the other agencies of the city government and tapping their expertise, like the CRM Technical Working Group, can help in addressing the issues and concerns involved in utilizing the coastal and marine resources of the City. This approach is in stark contrast with sector approach or individually addressing sector issues. This integrated approach is likewise applied in terms of designing and implementing programs like the ones being done in other livelihood projects (e.g., mushroom and vegetable production) and linking them with other city government's project (e.g., feeding program for elementary students). Linking these programs and projects ensures their sustainability. Linking the intended beneficiaries and other interest groups can also help in sustaining the implementation of programs and projects. Involving the local fisherfolks and utilizing their inputs and local knowledge in designing and implementing programs and projects will give them a sense of ownership. This sense of ownership will encourage the local fisherfolks to care and work for the sustainability of the programs and projects.

5.3. Assessing the Feasibility of Adopting PES as a Policy Intervention for Conserving and Protecting the HINP

Using the earlier figure (Figure 5-1) reflecting Alaminos City's existing situation, the identified areas for intervention serve as the take-off point for assessing the feasibility of adopting PES framework as a policy intervention for conserving and protecting the HINP. Reviewing and using the definition of

PES below as provided by Wunder (2005), the identified areas for intervention can be discussed within a PES framework.

> *"(1) a voluntary transaction where (2) a well-defined environmental service (ES) (or a land-use likely to secure that service) (3) is being 'bought' by a (minimum one) ES buyer (4) from a (minimum one) ES provider (5) if and only if the ES provider secures ES provision (conditionality)",*

The policy and implementation aspect, which is the main responsibility of the City government of Alaminos, can be fitted into the overarching design and use of PES as a policy intervention. The implementation aspect, in particular, lies in the design and fitting of schemes based on the PES criteria. The shift in resource use as another area for intervention is particularly related to the fisherfolks, who can be considered as the ES providers. The shift can be brought about by the provisions of alternative livelihood for the fisherfolks (non-cash ES payment). The regulated activities involve both the local fisherfolks and the tourists. The fisherfolks' regulated and restricted fishing activities are brought about by the conservation and protection objective of the city government. These regulations and restrictions, which comprise the opportunity cost for the local fisherfolks, are aimed towards improving the environmental quality of the HINP. The improved environmental quality serves as the ES being paid by the tourists. On the part of the tourists, the payments they made in order to access the landscape/seascape beauty of the HINP do not exclude them on the rules being implemented in the coastal and marine resources of the City including those specifically implemented in the HINP, thus their regulated activities as well. The payments they made can be considered as forms of ES payments. The regulated activities entail perpetual monitoring on the part of the City government as policy implementer. Within the PES framework, monitoring forms part of the conditionality which is one of the criteria in PES.

Looking at Figure 5-2, the process flow of activities involved in conserving the HINP is fitted together with the different criteria of a PES framework. In this model, the conservation efforts start with limiting the fishing activity of the local fisherfolks. By limiting the fishing activities, it is hoped that it will improve the environmental quality of the HINP. The opportunity cost incurred by the local fisherfolks identifies them as the ES providers and the result would be the ES of an improved landscape/seascape beauty of the HINP. The ES buyers, the tourists, in return pay for the rights to access and enjoy this improvement. The tourists' mode of payment is through fees and other charges applicable in accessing the park. At present, these payments do not go directly to the fisherfolks but into the treasury of the city government. Based on the existing laws, these payments can only be used by the city government for conserving the HINP. This set-up then brings the City government as an ES buyer through its interest in protecting and conserving the HINP and other coastal and marine resources. The improved environmental condition of the HINP and related development for tourism would benefit the city government through the influx of tourists and other economic activities in the city. As a form of payment scheme for the opportunity cost incurred by the local fisherfolks, the city government provides alternative livelihood programs. The provision of alternative livelihoods serves as a payment scheme due to the availability of existing alternative livelihood programs and projects being implemented by the City government. Due to non-availability of data, especially on the willingness to pay of the tourists and city government, the possibility of payment scheme for this study is limited only on non-cash payment which in this model is the provision of alternative livelihood for the local fisherfolks.

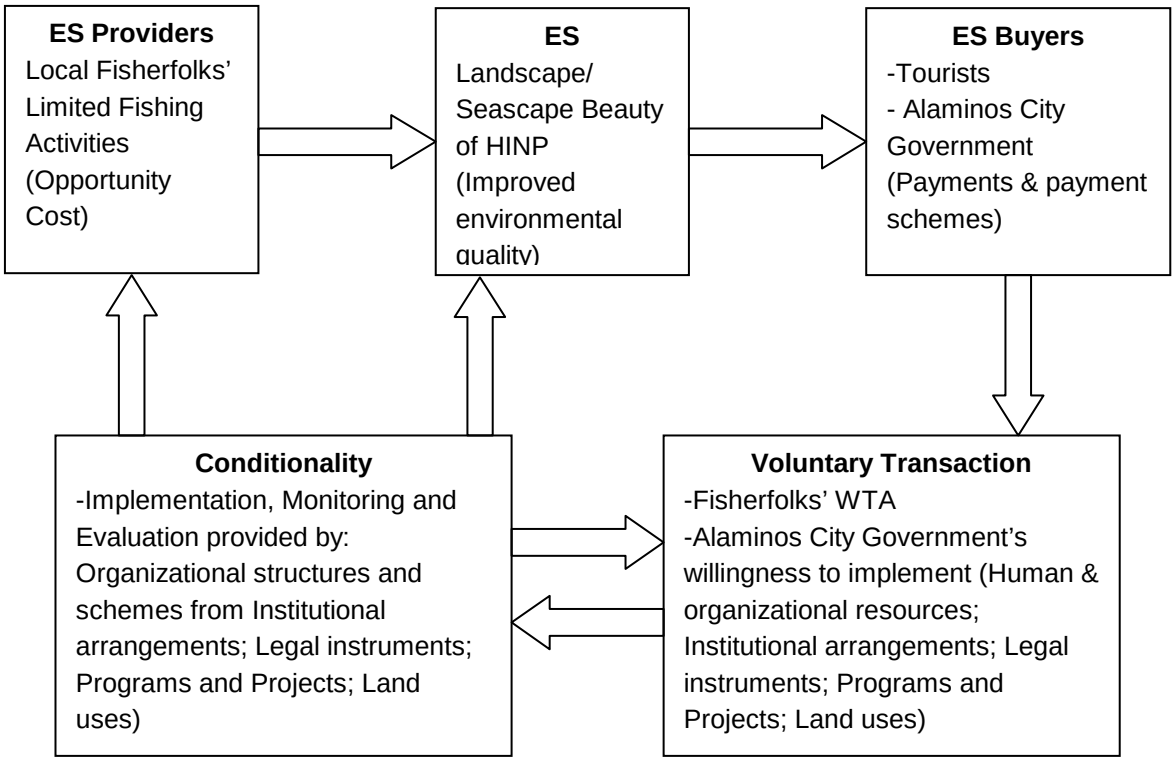

Figure 5-2. *Combination of HINP Conservation Process Flow and Criteria for PES. Source: Author's own construction based on (Bennagen and Beukering 2005) and (Wunder 2005).*

Considering the discussions for the first three criteria of a PES mechanism, the next criteria based on Figure 5-2 is the presence of a voluntary transaction and conditionality. Voluntary transaction determines the willingness to accept payment (non-cash payment) of the local fisherfolks and the willingness to implement or go into a voluntary transaction of the City government. After determining the willingness to go into a voluntary transaction of both of the ES providers (local fisherfolks) and ES buyer (City government of Alaminos), the next step is to implement the transaction or agreement based on conditionality. The conditionality includes monitoring the performance or non-performance of both the ES providers and ES buyer based on the agreed upon transaction, continuous monitoring of fishing activities, and monitoring and evaluating the environmental quality of the HINP.

The details of the PES criteria involved in Figure 5-2 are discussed individually. The discussion of each criterion is based on the local situation of Alaminos City. The discussion follows the flow of the model, thus, it starts with ES provider followed by the discussion on ES, the ES buyers, voluntary transaction, and finally the discussion on conditionality.

5.3.1. Environmental Service Provider

The local fisherfolks are the identified ES providers since their livelihood has been affected by the shift on coastal and marine resources use. Based on the household survey results, 80% of the respondents claimed that their fishing activities are affected by the implemented conservation programs with restricted fishing areas as the most identified effect. The selection of the local fisherfolks as ES providers is supported by Francisco (2005) and Wunder (2005) that restriction of extractive practices and foregoing income opportunities over an area constitute a form of ES provision.

The initial step in the case of Alaminos City is identifying the ES providers. Those who do not have other source of livelihood aside from fishing and can be classified as economically poor should be the primary target to be classified as ES providers. There is a need for targeting since, based on the statistical results of the household survey, 63% of the respondents have a daily household income ranging from PhP 100-200 (approximately $2.17-$4.35 based on exchange rate of PhP 46 = $1) which is below the regional required minimum wage for most of the industries/sectors. The type of fishing method can be another indicator for assessing those who are greatly affected by the conservation effort. Fishing methods in relation to location where they are commonly used can be an indicator in targeting the most affected (negatively), in terms of restricted livelihood activities, by the conservation program and tourism activities. The implements owned by the fisherfolk can also be an indicator for targeting those who are greatly affected and immediately need ES payments in the form of alternative livelihood. The registry of the City's fisherfolks can be the baseline data on who are the most affected and vulnerable fisherfolks, their methods of fishing, fishing areas and implements they own. This initial step of identifying the ES providers and the most vulnerable fisherfolks will be a challenge.

However, properly identifying and targeting the ES providers can be an instrument in overcoming a couple of the identified issues in program implementation. The different political agenda of local community leaders and being indifferent with the existing city administration, which affect the level of commitment towards and implementation of a program, can be addressed by directly targeting the local fisherfolks. Within the PES framework, there is a direct interaction between the ES providers (local fisherfolks) and ES buyer (City government of Alaminos) which lessens the effects of political relationships in program implementation. In the PES framework, it is the action or inaction of both the local fisherfolks and City government that matters. This direct interaction also addresses the lack of proper information for the local fisherfolks about the programs and project being implemented.

The provisions from the existing national and local legal instruments on organizing the local fisherfolks can facilitate the identifying and targeting the ES providers. Forming the fisherfolks into organized ES providers can help avoid free-riders since they can monitor and control their own ranks on who are the genuine members from those pretending to be members just to avail of the ES payments. Organizing the fisherfolks can facilitate their recognition into ES providers and be able to avail of the provisions from national and legal instruments of technical and financial assistance. Organized ES providers are much easier to deal with in a PES framework.

5.3.2. Identified Environmental Service

The improved environmental quality of the landscape/seascape beauty of the HINP is the identified ES in this framework. Achieving this improvement means establishing areas for protection and conservation as well as areas where this ES will be used, such as, tourism and special development purposes. The existing and proposed land use of the City defined these areas for tourism and special development. The identified coastal subsystems of the coastal barangays also contribute to the improvement of environmental quality of the landscape/seascape beauty of the HINP. As provided in the earlier data, these coastal subsystems have great importance for the local fisherfolks in terms of their livelihood activities and therefore the connection between the identified ES and the ES providers

The interaction between the ES and ES providers and their effects on each other can be magnified in the land use practices in the City. As provided by Metzger et al. (2006), land use changes, from the interaction between ES and ES providers, is one of the human-induced activities that has most effect on the ecosystem. It is also the land use changes that humans have the major control in terms of protection and conservation of coastal and marine resources. In the situation of Alaminos City, the trend of increasing tourism use especially in the coastal areas and promotion of non-extractive use constitute the opportunity cost for the local fisherfolks through limiting or foregoing their fishing activities. With this existing situation, it is important to note the idea of Francisco (2005) that the link between land use practices of the City government and local fisherfolks in the coastal and marine resources area of the HINP and the supply of the ES (improved environmental quality of landscape/seascape beauty) should be made clear to the parties involved before any interest in the PES scheme can be generated.

Establishing the link between the ES and ES providers starts with understanding the flow of activities involved in protecting and conserving the HINP. Although this scheme may not strictly constitute and adhere into pure PES scheme, it is important for the local fisherfolks to understand their roles in terms of protecting and conserving the HINP. The City government of Alaminos, through its local government agencies, had been implementing information and education campaign as well as field visits particularly in the coastal barangays on conserving the HINP. These activities are great opportunities to introduce the concept of linking between the fisherfolks activities (limited or foregone) and HINP conservation. Introducing the concept of alternative livelihood, as means of compensation for their limited or foregone fishing activities, can facilitate the establishment of the link between the ES and ES providers.

5.3.3. Environmental Service Buyers

The tourists and the Alaminos City government are the ES buyers in this model. However, the City government as an ES buyer and the payment scheme are the centers of discussion. Although the cash payments made by the tourists for enjoying the landscape/seascape beauty of the HINP can be considered as an ES payment, the link for the proposed payment scheme (alternative livelihood) in this model only involves the City government and the ES providers. This link is brought about by the existing situation of Alaminos City wherein the relationships exist between the City government and the tourists and between the City government and the local fisherfolks. In this sense, the City government can both be considered as an intermediary and direct ES buyer. The City government acts as an intermediary between the interest of the tourists and the local fisherfolks and a direct ES buyer from the local fisherfolks for its own interest in promoting tourism and other related development activities.

In the PES framework, the relationship between the City government as the ES buyer and the local fisherfolks as ES providers can be considered as a government-financed or public scheme as defined by Wunder and Albán (2008). The government-financed scheme is different from user-financed in a sense that the funding of the former comes from a third party while the latter's funding comes directly from the users of the ES being provided (Wunder and Albán 2008). This differentiation does not strictly apply with the case of the HINP. The City government of Alaminos serves as a direct buyer in a sense that the ES being provided is enjoyed by the city government with the improvement of City's tourism and other related activities. Also, the proposed payment scheme of alternative livelihood

comes from the programs and projects being implemented which are funded from the City government's own budget. Still, it is worth considering to include the critique of Wunder et al., (2008) about government-financed scheme as having more confounding side objectives than user-financed. In the case of Alaminos City, it is almost impossible to separate the provision of alternative livelihoods to fisherfolks as payment scheme with the other objective of poverty alleviation by the City government. These alternative livelihood activities are originally aimed at providing additional income or alternative income source for the local fisherfolks especially those considered by the City government as economically poor. In this sense, the objective of poverty alleviation will not weaken the objective of providing payments for the ES providers since the PES framework can harmonize the two objectives with the payment scheme fueling the objective of poverty alleviation.

Land use not only provided the trend or shift in resource use but also the potentials of the area where the shift takes place and the available options for the local fisherfolks. These available options of different areas can help in identifying the appropriate and applicable alternative livelihood that can be provided for the local fisherfolks. The data on coastal subsystem can provide the understanding on the possible alternative livelihood activities applicable to each coastal barangay. An updated coastal subsystem situation is important for this purpose. Some of the specific examples are the cases of Barangays Pangapisan, Pandan and Sabangan. The land capability classification and land uses within Barangay Pangapisan make the area suitable for aquaculture development as an alternative livelihood for the identified ES providers. The mountainous and mostly timberland/forest protection areas of Barangays Pandan and Sabangan limit the possibility of providing rice farming as an alternative livelihood. However, the proposed ecological conservation areas on these barangays has the potential for area development, thus the provision for alternative employment. With these limitations and potentials, as well as on other coastal barangays, it is appropriate that other forms of alternative livelihood or employment are designed.

The commonly identified immediate need of the local fisherfolks is food. Most of the respondents in the household survey identified food as their priority on their household expenses. Having this information, it will be appropriate to consider this need in designing an alternative livelihood like farming, which can provide a source of food and income for the beneficiaries. It is important that the alternative livelihood can approximate or surpass the benefits of fishing activities, such as daily food and income, in order for the alternative livelihood to be acceptable to the local fisherfolks. The fact that some of the respondents in the household survey already mentioned that they are already engaged in farming as their other source of income and the prevalence of soil type suitable for farming in the City make this proposal more feasible. Still, the shift from fishing into farming would entail challenges like provision of land area for farming and additional training or building the capacity of the local fisherfolks to venture into another livelihood activity.

Provisions from the local and national legal instruments can be utilized in providing alternative livelihood as a payment scheme. Financial loans as provided by national legal instrument like AFMA can support the shift from fishery to farming or other agriculture related activities (e.g., processing of agriculture produce and aquaculture development). Facilitating the processing of permits and other documents needed, and if possible waiving the required payments, in registering aquaculture activities for the ES providers would jumpstart their venture into alternative livelihood. The proposed open and close seasons based on the Fisheries Code of the City can dictate the scheduling and design of

payment scheme on the affected coastal barangays. Provision of alternative livelihood like rice farming during closed season can provide the affected local fisherfolks with the needed source of livelihood while waiting for the open season to come.

Properly designing the payment scheme of alternative livelihood based on limitations and possibilities of each coastal barangays can tackle one of the identified issues and challenges in the City's program implementation. Participation of local fisherfolks in program implementation can be nourished with the presence of an alternative livelihood applicable to their situation. An assurance of provision of applicable alternative livelihood for the identified ES providers can capture their interests and participation as well as their commitment. In the PES framework, the ES providers' commitment serves as the main conditionality in continuously implementing the transaction or agreement. Applicable alternative livelihood depends on understanding the local fisherfolks' situations (e.g., age, educational attainment, fishing method, previous working experience, other source of livelihood, household income, etc.) and the effects of the conservation programs in their fishing activities.

5.3.4. Voluntary Transaction

After identifying the ES providers and the ES buyers and the relationship between them, putting the relation and the payment scheme into an agreement is the next stage. In the PES framework, the transaction should be voluntary and be agreed upon by both parties, the ES providers and ES buyers. In this model, the voluntary transaction involves the willingness to accept (WTA) alternative employment by the local fisherfolks based on the household survey and the willingness to implement the payment scheme and agreement by the City government of Alaminos based on its existing capacity and situation (human and organizational resources, institutional arrangements, legal instruments, programs and projects, and land uses). At this stage of this model, the specific provisions and the conditionality of the transaction should be agreed upon. The agreed responsibilities and activities for each party should be clear.

The voluntary aspect of the transaction revolves both ways for ES buyer and ES providers. Either of the party can demand performance of agreed activities from the other party and can void the transaction if there is any inaction or failure in the agreed performance or provisions. In this case, the WTA alternative employment of the local fisherfolks is the initial step of plunging into a voluntary transaction. On the part of the City government, they have existing programs and activities as well as resources, and it is a matter of channeling them into the voluntary transaction with the local fisherfolks. Local fisherfolks - who are ES providers, are willing to accept alternative employment and agreed to go into voluntary transaction with the City government as ES buyer - are on bind to follow the provisions of the transaction. Specific provisions of the transaction might include limiting or foregoing fishing activities in exchange for the payment which is an alternative livelihood from the City government. The city government in return is expected to provide the system and mechanics of providing applicable alternative livelihood that is acceptable to the identified ES providers.

The system and mechanics of the transaction mainly depend on the existing organizational structures within the City government. The data presented that there are existing organizations (i.e., CAO and CCO) implementing the programs and projects related to the local fisherfolks. The facilities that provide technical and financial assistance are also present based on the legal instruments and institutional arrangements which facilitate the implementation of providing alternative livelihood. The

challenge now is on the part of following or modifying the proposed land uses in the city in order to provide alternative livelihood for the identified ES providers. The proposed land use can dictate the direction on the resource use of the city and therefore dictates also the options for alternative livelihoods.

To better understand the local fisherfolks' WTA alternative livelihood, it is valuable to relate their decision with other variables used in the household survey. Based on the household survey, most of the local fisherfolks (46 out 60) are willing to forego their fishing activities and go into an alternative livelihood; this constitutes their willingness to go into voluntary transaction. The amounts and variables identified in the household survey should be considered in designing an acceptable alternative livelihood as part of the transaction. Meanwhile, the WTA of fisherfolks who are using particular fishing method should be considered in understanding their decision. As provided in the household survey (see Table 4-2), fisherfolks who are using fish trap method comprise the majority of those who are not willing to accept alternative livelihood and forego their fishing activities. The reasons of the fisherfolks who are willing to accept alternative livelihood (i.e., fishing as unstable source of income and a very hard and dangerous job) should also be considered in designing the provisions of the agreements. In terms of the respondents' satisfaction with their current occupation as fisherfolk, their reasons for their satisfaction with current occupation is more of a personal capability (i.e., lack of education, old age, and familiarity with fishing activity). This does not apply to those who are not satisfied; their reasons mainly deal on the nature of fishing as an occupation (i.e., unpredictable and affected mainly by weather conditions).

Although the local fisherfolks believed that conservation efforts negatively affected their livelihood, they also recognized its positive effect in reducing the illegal fishing activities. The awareness of the local fisherfolks on the uses of the HINP relates to how they value the national park. This awareness can be best utilized in encouraging them to work within the provisions of the agreement in order to protect and conserve the HINP. This trend of beliefs and awareness from the fisherfolks implies the initial challenges in implementing a conservation program. However, these initial challenges take time to be addressed, leaving the local fisherfolks affected. At this stage, local fisherfolks can not wait since they have hungry mouths to feed in their household, highlighting the need for interventions. These kind of information and analysis would help in understanding the local fisherfolks' WTA alternative livelihood and go into a voluntary transaction.

5.3.5. Conditionality

The last stage in this model is the presence of conditionality in the context of PES framework, but more of implementation, monitoring and evaluation in the context of conservation and protection of the HINP. In this model, these activities are interrelated. The conditionality depends on the results of implementation, monitoring and evaluation. Conditionality functions in monitoring the implementation of the agreed upon activities in the transaction between the ES buyer and ES providers. Implementation deals with the ES providers in terms of actually providing them with the alternative livelihood.

Monitoring and evaluation apply to the three criteria in the model (i.e., ES providers, ES, and voluntary transaction). Monitoring the ES providers ensures that their activities are within the provisions of the transaction. Evaluating the ES providers' situation provides the realistic potentials of

market mechanisms for ES provision and should ensure that the poor are not worse off than before, and should in fact be better off with such mechanism (Padilla, Bennagen et al. 2005). The ES buyer is likewise monitored and evaluated. City government's action or inaction based on provisions of the voluntary transaction is the ground for the monitoring activity. The third criterion that needs critical monitoring is the quality of the ES which is the landscape/seascape condition of the HINP. Monitoring and evaluating the environmental quality of the HINP are crucial in determining if the conservation efforts are working and if the provision of ES (limited or foregone fishing activities) by the local fisherfolks is actually producing the expected result. Monitoring the environmental quality of the HINP serves as a concrete evidence and measurement to base what the ES buyers are paying for. It is provided by Wunder (2005) that without a realistic and scientific basis to measure the ES, in this case the improvement of quality of the environment of the HINP, the more it is for ES buyers to question the rational and abandon payments.

Monitoring the implementation of the PES framework can utilize the existing set up used in the conservation and protection efforts within the Alaminos City. Existing partnerships between the city government, NGOs, local community organizations, other government agencies and academic institutions are essential in monitoring. Local community organizations and nongovernment organizations can act as independent monitors if the agreement from the transactions between the ES buyer and ES providers are followed and implemented properly. On the part of the city government, the local government agencies and affiliated organizations (i.e., CCO, CAO, and Bantay Dagat) can act as monitors in the field and making sure if the ES providers are performing their part in the agreement (e.g., sustaining the provided alternative livelihood and no longer engaged in fishing activities). Academic institutions can take the lead in monitoring the quality of the environment of the coastal and marine resources of the City.

Monitoring in a PES framework can tackle the commonly identified issue of lack of supervision in program implementation. Tapping the existing partnerships for the HINP conservation efforts to augment the existing capacity of the City government can address the problem of lack of monitoring in the field. Proper monitoring can also overcome the initial pessimism of the local fisherfolks in terms of implementing new programs. With proper monitoring of program implementation, local fisherfolks can see the earnest effort of implementing the program and with the presence of conditionality of the transaction between the ES providers and ES buyer, local fisherfolks as ES providers can demand or opt out from the transaction if there is non-performance from the City government as ES buyer and vice-versa. This set up tightens the involvement of the local fisherfolks in the program implementation.

6. CONCLUSION AND RECOMMENDATION FOR FURTHER RESEARCH

This study was about assessing the feasibility of adopting the PES framework in conserving the HINP as a protected area. Different data (i.e. land use, programs and projects, legal instruments and institutional arrangements) related to conserving the national park were examined and evaluated against the PES criteria. In addition, WTA survey was conducted to contextualize the local situation of the fisherfolks as an interest group in the conservation program. The literature survey (Chapter 2) provided the general concepts that were explored in adopting PES framework as applied in the local situation of Alaminos City (Chapter 4). The analysis (Chapter 5) presented the constructed models of assessing the local situation of Alaminos City and adopting the PES framework based on the data and the existing literatures. These models provided an overview on how the existing situations of conserving the HINP could be fitted within a model using the PES framework.

6.1. PES as an Overarching Framework for Protected Area Conservation

Adopting PES as an overarching framework for protected area conservation serves as a good complement and enhancement to the existing policy and programs on conservation and protection of the HINP. The PES framework promotes a good model for understanding the conservation process and focusing on the affected interest groups. Utilizing the criteria involved in a PES framework pinpoints the crucial interventions (i.e. regulated activities of the fisherfolks and provision of alternative livelihood) and interactions (i.e., transactions and agreements between the City government and local fisherfolks) needed in implementing conservation programs. The feasibility of adopting PES as a framework is guided by its criteria. PES criteria can be filled-in by utilizing the existing data describing the local situation, such as that of Alaminos City, and channelling them into a PES framework. Fitting these data within the PES framework, it can be further concluded that:

- *Local land use (existing and proposed) information, which helps determine the trend and shift in resource use, is an important input in conservation efforts and PES framework.*

Land use information, which include existing activities and proposed changes as well as the capability and potentials of an area, provide an essential overview on the effects of the different types of land uses (i.e., tourism, agro-industrial, aquaculture development, special area development, and ecological conservation) to the different user groups. In terms of conservation, the importance given by and activities of each user group to the coastal and marine areas speak about their stakes or interests. Consideration of these stakes is an essential step in balancing the different uses of the coastal and marine resources, as well as, crafting policies for its conservation. A conservation policy often leads to enriching the coastal and marine resources and restricting the consumptive use. In this sense, the land use information provide the capacities of an area to absorb land use activities from those whose consumptive activities are restricted, in this case the local fisherfolks.

- *Implementation of provisions and components from the existing programs, legal instruments, and institutional arrangements that deal with the HINP conservation can be polished and focused further through the use of PES framework.*

Implementing programs and projects (i.e., coastal resources management program (CRMP), aquaculture development and other livelihood programs) with the use of PES framework puts into perspective the interest groups involved in the HINP conservation, their different interests, their activities that affect the conservation, and how they interact with and affect each other. Putting these all into perspective can help in directing specific components or activities of a program to the target groups. As a specific example, the alternative livelihood that is currently implemented by the City government as part of the provisions of the CRMP can be targeted towards the local fisherfolks whose livelihoods are economically affected by the conservation programs. The technical and financial assistance identified by the legal instruments and institutional arrangements (i.e., AFMA, Alaminos City's Fisheries Code and MOAs) can be best implemented if the intended beneficiaries are properly identified and situated within the conservation efforts. Proper identification of interest groups (e.g., ES buyers and providers) and activities involved (e.g., provision of ES and going into transactions) are two of the PES framework's prerequisites.

- *Identified issues and challenges in implementing programs for the HINP conservation can be potentially addressed within the PES framework.*

Monitoring and evaluation can be considered as the strong suits of the PES framework. As part of PES framework's criteria, conditionality requires monitoring and evaluation to ensure that provision of ES and payments from the ES buyers are well within the agreed transaction. On the other hand, issues and challenges in program implementation often include proper monitoring and evaluation that often affect sustainability of the initiatives. Within the PES framework, monitoring includes examining the actions of the interest groups (i.e., ES providers and ES buyers) as well as the transaction and the equivalent result of the transaction (i.e., improved environmental quality). The evaluation in return provides the feedback, based on monitoring activities, if the objectives are met. Monitoring and evaluation through the PES framework ensures that conditionality is observed and that provisions and activities involved in a program are properly implemented.

- *The willingness to accept (WTA) alternative livelihood of the fisherfolks and the amount needed to accept alternative livelihood statistically depend on other variables and reasons.*

Putting into statistical analysis the responses of the local fisherfolks from the household survey, particularly their WTA alternative livelihood and the amount needed to accept alternative livelihood, gives the result that these two variables can be determined by two other variables. Most of the respondents (46 out of 60) from the household survey are willing to accept alternative employment. The number of hours spent in a day for fishing is a positive determinant for the fisherfolk's WTA alternative livelihood. On the other hand, the household's daily income came out statistically as a positive determinant of the required amount in order for a fisherfolk to leave the fishing activity. The higher the household's daily income, the higher the amount expected to receive in order to forego fishing activity. Taking into consideration the reasons behind the fisherfolks' decision (i.e., WTA alternative livelihood and the required amount) provides understanding on their current situation and how they view the nature of their occupation.

- *Targeting the local fisherfolks as ES providers, based on their vulnerability to the shift in coastal and marine resources use and their economic conditions, with the City government as ES buyer can complement the City government's other objectives such as poverty alleviation and promotion of tourism industry.*

The City government of Alaminos as an ES buyer can simultaneously address its objectives of protecting and conserving the HINP, promoting its tourism industry, and lessening poverty incidence among its constituents with the use of PES framework. The achievement of an objective fuels the achievement of other objectives. The challenges lie on properly identifying the most vulnerable local fisherfolks and channelling the existing programs towards them so as to give them alternative livelihoods other than fishing. Giving the local fisherfolks alternative livelihoods would alleviate the pressure on the coastal and marine resources including the HINP which in return will improve the quality of its landscape/seascape beauty. Improved landscape/seascape beauty of the HINP will draw more tourists in the area as well as develop the City's tourism industry. Understanding the interconnections among these objectives and how they relate with each other is crucial in the overall context of conserving the HINP and targeting the most vulnerable groups among the fisherfolks.

6.2. Recommendation for Further Research

This research has just tapped the surface of understanding the utilization of PES framework in protecting and conserving the coastal and marine resources of a protected area. In-depth studies can be done on the following areas in order to promote further understanding of similar or other situations. They can constitute topics for further research.

- Willingness to pay (WTP) for tourists in a landscape/seascape beauty as an ES
- Capability and willingness of local government to act as broker or mediator in the payment scheme
- Development of tools (e.g., profiling of fisherfolks, fishing activities and fishing methods) for identifying and targeting the most affected within the sector as ES providers.
- Development of design for non-cash payment schemes for conserving and protecting coastal and marine resources.

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APPENDICES

APPENDIX A: Questionnaire for Willingness To Accept (WTA) Household Survey

General Information

1. Household No.: _____
2. Village/Location:_____
3. Date: _____

Household (HH) Information

4. HH Head Gender: _____ (M/F)
5. HH Head Age: _____
6. HH Head Educational Attainment: _____
7. HH size: _____
8. Number of Dependent/s in the HH: _____
   (not able to work or economically produce)
9. Access to electricity (__Yes __No) and water services (__Yes __No)
10. Membership in any organization in the community: _____
11. HH Head Occupation: _____
12. Year/s as in the above-mentioned occupation: _____
13. HH Head Previous Occupation: _____
14. How much do you produce? _____
    (__Daily; __Weekly; __Monthly; __Annually)
15. How sufficient are your produce for everyday living? _____
16. How about the quality of your produce? _____
17. How much of your own produce does your household consume (%)? _____
18. How much of your own produce go to the market (%)? _____
19. Other Source/s of Livelihood or Income: _____
20. HH Income: _____
    (__Daily; __Weekly; __Monthly; __Annually)
21. What are the major items that you spend for with your income?
    _____
22. On the average, how would you rank the expenses based on your priority?
    _____
    _____
23. Do you own any implements (for farming or fishing): ___ Yes __ No
24. If owning implements, list of implements:
    _____
    _____

Attitude Towards Conservation

25. On a scale of 0-10 (0 being the lowest and 10 being the highest), rate the validity of the following statements on the conservation of the environment:
    A. The quality of the natural environment of HINP have been improving.: _____
    B. The quality of the natural environment of HINP will alarm/affect me.: _____
    C. The government (local, national, or both) can do something to effectively address the quality of the natural environment of the HINP.: _____
26. Are you aware of any activity/ies that affect/s the conservation of the Hundred Islands National Park (HINP)? ___Yes ___No

If yes, can you mention any activity/ies?

_____
_____

27. Are you aware of the programs implemented for the conservation of the HINP? ___Yes ___No
28. Does conservation program affect your means of making a living? ___Yes ___No

If yes, how?

_____
_____

29. How do you cope with changes in your means of making a living brought by the conservation program/s for HINP?
    _____
    _____
30. Are you aware of the importance of conserving the HINP? ___Yes ___No

If yes, what is/are the benefit/s or advantage/s of conserving the HINP?

_____
_____

Willingness to Accept Elicitation

31. Are you satisfied with your current occupation? ___ Yes ___ No

Why? _____
_____

32. Are you willing to accept alternative employment? ___ Yes ___ No ___Not sure
33. If Yes or Not Sure, how much is the minimum required income to maintain your current standard of living? _____
34. Is this amount sufficient to accept alternative occupation? ___ Yes ___ No
35. If No, how much extra would be required to accept an alternative occupation? _____
36. What will be your reason/s for accepting alternative occupation?
    _____
    _____
37. Do you think you will be content in a new occupation? ___ Yes ___ No

APPENDIX B. Land Capability by Location, Area and Description of Alaminos City. Source: (Alaminos City 2007c)

Land Capability Classification	Location	Area		Description/Suitability
		Hectares	%	
CLASS A				
(Alaminos Series, Pangasinan Series)	Poblacion, Palamis, Tanaytay, Lucap, Bued, Pocalpocal, San Vicente, Inerangan, Tawintawin, Telbang, Victoria, Pogo, Pangapisan, San Antonio, San Jose, Baleyadaan, Polo, Macatiw, Cabatuan, Amandiego	7,334	44.12	Level or nearly level, easily worked soils, well drained and subjected to frequent damaging overflows; can be cultivated safely and extensively with ordinary farming practices; most widely adaptable to uses and is farmed easily. Suitable for rice production
CLASS C				
(Bani Series)	Cayucay, Mona, Tawintawin, Inerangan, Landoc, Amangbangan, Sta. Maria, San Roque, Dulacac, Bisocol, Bolaney, Maawi, Alos, Quibuar, Tangcarang, Magsaysay, Amandiego	5,458	32.83	Moderately good land that can be used regularly for cultivated crop in good rotation but needs intensive conservation treatment. The land is prone to erosion.
CLASS Y				
(Bolinao)	Pocalpocal, Sabangan, Hundred Islands	1,540	9.26	Hilly and mountains; barren and rugged; should be reserved for recreation and wildlife or for reforestation.
CLASS X				
(Hydrosol)	Pangapisan, Lucap, Telbang, Pandan, Baleyadaan, Polo, San Antonio, Cayucay, Mona, Inerangan, Sabangan	1,519.39	9.14	Level land; moist most of the time and cannot economically drain. Suited for fishpond or recreation.
CLASS M				
(Alaminos series)	Sabangan, Pandan, Linmansangan	722	4.65	Land is too steep, eroded for cultivation but suited for grazing or forestry, if well managed.

APPENDIX C. Existing Coastal Subsystem of Alaminos City. Source: (Alaminos City 1999)

Subsystem	Location (Barangay)	Area (estimate)	Present Utilization	Remarks (Use of the subsystem to the local people)
Woodlands	Sabangan Bued	1 hectare 1 hectare	Water sip/prevent soil erosion	Use as firewood Coastal fisherfolk gathers seashells in these areas
Agricultural Lands	Pangapisan Pangapisan Mona	2 hectares 30 hectares 5 hectares	Birds sanctuary Riceland Riceland	Considering their present use it adds income to the coastal people.
	Bued, Sabangan Telbang	30 hectares 20 hectares	Riceland Riceland	Gives additional income to coastal fisherfolk and farmers.
Sand Dunes	Victoria Telbang Pandan	500 sq.m. 600 sq.m. 400 sq.m.	Beach resort Beach resort Beach resort	Tourist attraction
Pastural Lands	Sabangan Telbang	5 hectares 2 hectares	Pastural land Agriculture	It helps the farmers in these areas economically as these are used as pastural and for other agricultural activities.
Tidal Flat	Telbang Victoria	1 hectare 2 hectares	Fishing ground Fishing ground	It serves as communal fishing ground.
	Lucap (Cabatugan) Pangapisan	10 hectares 5 hectares	Fishing ground Fishing ground	Fishing area of the coastal people.
Sea Bed Coral Reef	Coastal zone of the municipality Hundred Islands, Pandan, Victoria and Telbang	30,000 hectares 10 hectares	Fish habitat where sea grasses/coral grow Fish Habitat	Sustains the growth of marine life in the area.
Brackish water Ecologically important /significant Islands	Pangapisan and Mona Hundred Islands	2 hectares 185 hectares	Fishing ground Tourist spot	Gives additional income to the fisherfolks. Tourist attraction. Enhance tourism development to the municipality.

APPENDIX D. Specific Functions and Responsibilities of City Agriculturist, City Environment and Natural Resources Officer, and City Cooperative Officer Based on the Philippines' Local Government Code of 1991.

City Agriculturists

1. Formulate measures for the approval of the sanggunian and provide technical assistance and support to the governor or mayor, as the case may be, in carrying out said measures to ensure the delivery of basic services and provision of adequate facilities relative to agricultural services;
2. Develop plans and strategies and upon approval thereof by the governor or mayor, as the case may be, implement the same, particularly those which have to do with agricultural programs and projects which the governor or mayor is empowered to implement and which the sanggunian us empowered to provide for under this Code;
3. In addition to the foregoing duties and functions, the agriculturist shall:
    - Ensure that maximum assistance and access to resources in the production, processing and marketing of agricultural and aqua-cultural and marine products are extended to farmers, fishermen and local entrepreneurs;
    - Conduct or cause to be conducted location-specific agricultural researches and assist in making available the appropriate technology arising out of and disseminating information on basic research on crops, preventive and control of plant diseases and pests, and other agricultural matters which will maximize productivity;
    - Assist the governor or mayor, as the case may be, in the establishment and extension services of demonstration farms or aqua-culture and marine products;
    - Enforce rules and regulations relating to agriculture and aquaculture;
    - Coordinate with government agencies and non- governmental organizations which promote agricultural productivity through appropriate technology compatible with environmental integrity;
4. Be in the frontline of delivery of basic agricultural services, particularly those needed for the survival of the inhabitants during and in the aftermath of man-made and natural disasters; (5) Recommend to the sanggunian and advise the governor or mayor, as the case may be, on all other matters related to agriculture and aqua-culture which will improve the livelihood and living conditions of the inhabitants; and
5. Exercise such other powers and perform such other duties and functions as may be prescribed by law or ordinance.

The Environment and Natural Resources Officer

1. The environment and natural resources management officer shall take charge of the office on environment and natural resources;
2. Formulate measures for the consideration of the sanggunian and provide technical assistance and support to the governor or mayor, as the case may be, in carrying out measures to ensure the delivery of basic services and provision of adequate facilities relative to environment and natural resources services;
3. Develop plans and strategies and upon approval thereof by the governor or mayor, as the case may be, implement the same, particularly those which have to do with environment and natural resources programs and projects which the governor or mayor is empowered to implement and which the sanggunian is empowered to provide for under this Code;
4. In addition to the foregoing duties and functions, the environment and natural resources officer shall:
    - Establish, maintain, protect and preserve communal forests, watersheds, tree parks, mangroves, greenbelts and similar forest projects and commercial forest, like industrial tree farms and agro-forestry projects;

- Provide extension services to beneficiaries of forest development projects and technical, financial and infrastructure assistance;
- Manage and maintain seed banks and produce seedlings for forests and tree parks;
- Provide extension services to beneficiaries of forest development projects and render assistance for natural resources-related conservation and utilization activities consistent with ecological balance;
- Promote the small-scale mining and utilization of mineral resources, particularly mining of gold;
- Coordinate with government agencies and non- governmental organizations in the implementation of measures to prevent and control land, air and water pollution with the assistance of the Department of Environment and Natural Resources;

5. Be in the frontline of the delivery of services concerning the environment and natural resources, particularly in the renewal and rehabilitation of the environment during and in the aftermath of man-made and natural calamities and disasters;
6. Recommend to the sanggunian and advise the governor or mayor, as the case may be, on all matters relative to the protection, conservation, maximum utilization, application of appropriate technology and other matters related to the environment and natural resources; and
7. Exercise such other powers and perform such other duties and functions as may be prescribed by law or ordinance.

The City Cooperatives Officer

1. The cooperatives officer shall take charge of the office for the development of cooperatives;
2. Formulate measures for the consideration of the sanggunian, and provide technical assistance and support to the governor or mayor, as the case may be, in carrying out measures to ensure the delivery of basic services and provision of facilities through the development of cooperatives, and in providing access to such services and facilities;
3. Develop plans and strategies and, upon approval thereof by the governor or mayor, as the case may be, implement the same, particularly those which have to do with the integration of cooperatives principles and methods in programs and projects which the governor or mayor is empowered to implement and which the sanggunian is empowered to provide for under this Code;
4. In addition to the foregoing duties and functions, the cooperatives officer shall:
   - Assist in the organization of cooperatives;
   - Provide technical and other forms of assistance to existing cooperatives to enhance their viability as an economic enterprise and social organization;
   - Assist cooperatives in establishing linkages with government agencies and non-government organizations involved in the promotion and integration of the concept of cooperatives in the livelihood of the people and other community activities;
5. Be in the frontline of cooperatives organization, rehabilitation or viability-enhancement, particularly during and in the aftermath of man-made and natural calamities and disasters, to aid in their survival and, if necessary subsequent rehabilitation;
6. Recommend to the sanggunian, and advise the governor or mayor, as the case may be, on all other matters relative to cooperatives development and viability- enhancement which will improve the livelihood and quality of life of the inhabitants; and
7. Exercise such other powers and perform such other duties and functions as may be prescribed by law or ordinance.

APPENDIX E. Alaminos City's Specific Fishery Regulations Based on Coastal Resources Management Program

1. Strict compliance with coastal zonation and water-use plan.
2. Registration of all City fisherfolk and issuance of Fisher's ID.
3. No fishing activity, fishery business or structure shall be established and operated without first securing mayor's permit and license to operate from the City Government of Alaminos.
4. Registration and Licensing of motorized and non-motorized fishing boats, three (3) gross tonnage and below. All motorized fishing boat and cargo vessel used in hauling and or profit purposes are hereby required to secure and pay to the City Government the corresponding Permit and Licensing Fee based on the computed tonnage. Non-motorized and Service motorboat used for personal (not for business, profit or commercial) or family service will be required to register to the City Government. License to operate of this watercraft is therefore is free of charge.
5. Registration of fishing gear for sustenance municipal fisherfolk and licensing of gears for those engaged in municipal commercial scale fishing.
6. Payment of Auxiliary Invoice on all fish, fishery and fishery by-products prior to transport from point of origin to the point of destination, shall strictly be enforced and implemented.
7. Any individual, organization and or any juridical entity who wish to engage in the transport of fish and fishery products either live or lifeless shall secure a buy and sell permit from the Business Permit and Licensing Office to be accompanied by an Auxiliary Invoice. Provided however, that the fish and fishery product have undergone examination duly conducted and certified by Licensed Fishery Examiner of the City that such is not caught illegally and is fit for human consumption. However for salt product, it should be certified by the City Health Office.
8. Payment of Fishers' Fee for fisherfolk from neighboring municipalities who wish to conduct fishing activities within the city waters of Alaminos. Fishers' fee will be on annual basis and will be determined based on the permit fees collected by the Business Permit and Licensing Office and duly noted by the City Agriculture Office through the Coastal Resource and Fishery Management Unit / Section.
9. Lifting of cod-end (Bubo) of fishtrap (pasabing) for three (3) days every New Moon of the month of each year.
10. Enforcement of closed and open season regulation within the City waters of Alaminos.
11. Possession, collection, catching and hunting of endangered, rare and threatened marine flora and fauna shall be strictly prohibited.
12. Banning the use of compressor in any fishing activity within the City waters of Alaminos.
13. Promote the use of traditional legal fishing methods such as gill net (with three (3) centimeter mesh size or mesh-eye number 10 below), fish pots, hook and line, crab lift net and cast net.