# Developing pro-poor markets for environmental services in the Philippines

Rina Maria P Rosales

Resources, Environment and Economics
Center for Studies (REECS), Inc.

**ENVIRONMENTAL ECONOMICS PROGRAMME**
**IIED**

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## Acronyms and abbreviations

| | |
|---|---|
| AICBGR | Inter-Agency on the Collection of Biological and Genetic Resources |
| AIPLAS | Apo Island Protected Landscape and Seascape |
| ARED | Assistant Regional Director |
| ARMM | Autonomous Region of Muslim Mindanao |
| ATCRD | Appropriate Technology Center for Rural Development |
| CBA | Cost-benefit analysis |
| CA | Commonwealth Act |
| CAR | Cordillera Administrative Region |
| CBP | Community-based Programme |
| CENRO | Community Environment and Natural Resources Officer |
| CPPAP | Conservation for Priority Protected Areas Program |
| CRA | Commercial Research Agreement |
| CRM | Community Resource Management |
| CSD | Comprehensive Site Development |
| EI | Economic Instruments |
| EIAB | Energy Industry Administration Bureau |
| EF | Electrification Fund |
| EMS | Environment Management Specialist |
| ENR | Environment and Natural Resources |
| ENRAP | Environmental and Natural Resources Accounting Project |
| EO | Executive Order |
| EPIRA | Electric Power Industry Reform Act |
| ER | Energy Regulation |
| ERC | Energy Regulatory Commission |
| ERMP | Environmental Resource Management Project |
| ES | Environmental Service |
| DAO | DENR Administrative Order |
| DBM | Department of Budget and Management |
| DENR | Department of Environment and Natural Resources |
| DLF | Development and Livelihood Fund |
| DOE | Department of Energy |
| DOH | Department of Health |
| GEF | Global Environmental Facility |
| HEA | Head Executive Assistant |
| IACBGR | Inter-Agency on the Collection of Biological and Genetic Resources |
| ICC | Indigenous Cultural Community |
| IEC | Information and Education Campaign |
| IP | Indigenous People |
| IPAF | Integrated Protected Area Fund |
| IPAS | Integrated Protected Areas |
| IPP | Independent Power Producer |
| IRR | Implementing Rules and Regulations |
| KKP | Kabang Kalikasan ng Pilipinas (World Wildlife Fund) |
| LGC | Local Government Code |
| LGU | Local Government Unit |
| LK | Lingap Kalikasan |
| LLDA | Laguna Lake Development Authority |
| MCDP | Marine Conservation Development Program |

| | |
|---|---|
| MES | Markets for Environmental Services |
| MFR | Makiling Forest Reserve |
| MKRNP | Mt. Kitanglad Range Natural Park |
| MMC | Marine Management Committee |
| MOA | Memorandum of Agreement |
| MS | Master of Science |
| MSFR | Mangrove Swamp Forest Reserve |
| NAPWNC | Ninoy Aquino Parks and Wildlife Nature Center |
| NCA | Notice of Cash Allocation |
| NCIP | National Commission of Indigenous People |
| NGO | Non-Governmental Organisation |
| NIPA | NGOs for Integrated Protected Area, Inc. |
| NIPAS | National Integrated Protected Areas System |
| NP | National Park |
| NPA | New People's Army |
| NPC | National Power Corporation |
| NWRB | National Water Resources Board |
| OIC | Officer in Charge |
| OGA | Other Government Agencies |
| OGF | Old Growth Forest |
| OVI | Objectively Verifiable Indicators |
| PA | Protected Area |
| PAMB | Protected Area Management Board |
| PAWB | Protected Areas and Wildlife Bureau |
| PCSD | Philippine Council for Sustainable Development |
| PCU | Program Coordinating Unit |
| PENRO | Provincial Environment and Natural Resources Officer |
| PhD | Doctor of Philosophy |
| PL | Protected Landscapes |
| PLS | Protected Landscapes and Seascapes |
| PG | Pressure Groups |
| PRRM | Philippine Rural Reconstruction Movement |
| PS | Protected Seascapes |
| PTA | Philippine Tourism Authority |
| QC | Quezon City |
| RA | Republic Act |
| RED | Regional Executive Director |
| REECS | Resources, Environment and Economics Center for Studies, Inc. |
| RUPES | Rewarding Upland Poor as Payment for Environmental Services |
| RWMHEEF | Reforestation, Watershed Management, Health and/or Environment Enhancement Fund |
| SARO | Special Allotment Release Order |
| SBPTI | Samahan ng Bailan Para Sa Pagpapauwi ng Tubig Inumin |
| SESAM | School of Environmental Science and Management |
| SME | Small and Medium Enterprises |
| SRS | Senior Research Specialist |
| TLA | Timber License Agreement |
| TOR | Terms of Reference |
| UPLB | University of the Philippines Los Baños |
| USAID | United States Agency for International Development |

| | |
|---|---|
| WAC | World Agroforestry Center |
| WB | World Bank |
| WFR | Watershed forest reserve |
| WTP | Willingness to pay |
| WFP | Work and Financial Plan |
| WS | Wildlife sanctuary |

# Contents

**Appendixes** (available at http://www.iied.org/eep/pubs/pie.html)



**List of boxes**

**List of tables**



**List of figures**

# 1 Introduction

## 1.1 Background

The term 'markets for environmental services', or MES, may sound new to most people, including those who have been working in the environmental sector. Yet the concept is not entirely alien, particularly to stakeholders directly affected by environmental and natural resource management. The literature defines market development for environmental services as the creation of incentive systems, mainly through the price system, that provide the link between providers of the environmental service and beneficiaries of the service.[1] In this sense, markets for environmental services are distinguished from traditional markets, the latter referring more to hierarchical and cooperative systems of organising production and consumption. Environmental services, alternatively, refer to services provided by the natural environment that ultimately benefit people. Examples of such services include landscape and seascape beauty, watershed protection, carbon sequestration, and biodiversity conservation (Landell-Mills and Porras 2002). These services were traditionally enjoyed free of charge. However, current conditions of scarcity have led to the development of markets for environmental services in various forms and mechanisms.

The role of the government is further distinguished in the MES arena. Because of the public nature of most of these services, the government becomes a very active player in market development. In the case of national parks, for instance, government becomes the seller of such services by ensuring their provision through protection and conservation efforts. Payments come in the form of economic instruments instituted in these protected areas, with the assumption that revenues from these instruments will sustain protection activities, and consequently environmental services.

The Philippines is one of several developing countries that have begun developing markets for environmental services. Pioneering efforts in environmental and natural resources valuation were undertaken, which became the bases of economic instruments that aim to promote wise use of the environment and natural resources. In the course of introducing these economic instruments, there have been parallel efforts to address livelihood and income concerns for communities living in affected areas. Both efforts directly address different objectives, with economic instruments mainly targeting efficiency and alternative livelihood projects trying to address equity concerns. Sometimes, there is a dovetailing effect in implementing these efforts simultaneously. Still, at other times, they seem to be implemented in a dichotomous manner.

An assessment is therefore in order to be able to characterise the development of markets for environmental services in the Philippines. The nascent character of MES in the developing world makes it difficult to establish scientific linkages between improvements in biodiversity and economic instruments. What is feasible is to make an initial assessment on the impacts of these markets on the poor residing in the area, both in terms of potential income effects and whether they are slowly empowered in making decisions as providers of these environmental services.

[1] Landell-Mills, N. and Porras, I. (2002), *Silver Bullet or Fools' Gold?*

## 1.2 Purpose and objectives of research

This study aims to conduct a preliminary assessment of the development of markets for environmental services (ES) in the Philippines. The assessment will pay particular attention to the distribution of costs and benefits among different stakeholder groups, in light of widespread public concern about the impact of market-based instruments on the poor. It further aims to include an assessment of the process by which such instruments were introduced (e.g., the extent of public participation in decision-making).

Ideally, the assessment would address the full social, economic, and environmental impacts of market-based instruments at every stage, from initial development through to monitoring and enforcement. In practice though, most instruments are still in the early stages of development or implementation. Hence this assessment will be limited to the design, introduction, and preliminary impact of economic instruments. This will include impact on people's livelihoods and revenue generation for sustainable management of the resource or the area.

There are three major objectives of this study. The first involves a documentation of all efforts undertaken with respect to developing markets for environmental services in the Philippines. Part of this objective is a brief description of the current environmental services being provided, and a literature review of some initiatives towards development of MES in each of these services. The second objective is to conduct a rapid assessment of institutional mechanisms that have evolved in the development of markets for environmental services. This would include an analysis of current issues and problems associated with MES development, as well as recommendations on the necessary elements of institutional mechanisms based on actual field experiences. Finally, the third objective is to develop and test a robust framework for monitoring and evaluating the efficacy of markets for environmental services in three respects:

- Environmental: are market-based approaches effective at protecting and providing the desired quantity and quality of environmental services, without adverse environmental impacts?

- Economic: are they more cost-effective than previous or alternative instruments? Do they create positive incentives for continuous environmental improvement? Do they create alternative or improved livelihood opportunities for resident community members, especially the poor?

- Social: are the costs and benefits of MES shared equitably? Are the processes of design and implementation of MES inclusive, transparent, and flexible, to allow learning and adaptation while fostering support from key stakeholder groups?

## 1.3 Methodology

- In developing a socio-economic framework to evaluate MES and assessing the institutional mechanisms involved, five main questions should be asked:What are the forms of markets that exist?

- What are the economic instruments used?

- Do these markets target conservation and development objectives simultaneously, or are they exclusive to the environment? If the former is true, what mechanisms are involved to ensure this?

- Are there actual or potential social costs involved in the creation of these markets? Or are there social benefits that may or have inadvertently arisen out of the creation of these markets?

- What are the various institutional mechanisms that exist in providing for markets for environmental services? Are these mechanisms effective or not? In cases of government-controlled mechanisms, is there transparency and widespread participation of other stakeholders in their creation and implementation?

- Are the current institutional mechanisms cost-effective, or are they more costly compared to previous arrangements prior to their creation?

Some questions are descriptive in nature, as there has not yet been any attempt to document MES development in the country before this study. Meanwhile, other questions deal with the economic and social benefits and costs of such markets, and the accompanying institutional mechanisms for their implementation.

Two case studies were used for the assessment of institutional mechanisms, while two other case studies were used for testing the framework of assessing the efficacy of markets. Key-informant interviews and secondary data gathering were the main methods used to gather data. The interviews were conducted intermittently between May and September of 2002. Some data gaps were likewise filled in during January of 2003. Secondary data was mainly from published and grey literature and outputs of previously conducted projects in the country.

### 1.4 Structure of the report

The report is divided into five parts. Section 1 gives a brief introduction of the study, with a short discussion of the objectives and the methodologies employed for data gathering. Section 2 lists the various environmental services for which markets have been created in the Philippines, along with a literature review of studies conducted for each type of service. Section 3 talks about the institutional support mechanisms for environmental service markets. Two case studies are presented here. The first deals with the national government as the institutional mechanism for market development in protected areas (PAs) under the National Integrated Protected Areas System (NIPAS). The second talks about a community-based organisation that provides watershed-protection services to its constituents and residents of the village where the watershed is located. Section 4 contains the proposed framework for evaluating and monitoring markets for environmental services. The framework is tested in two cases. The first is a PA under the NIPAS system, which is considered to be one of the most successful in terms of reef enhancement and revenue generation. The second case study deals with a fund established under the Department of Energy, which is meant to encourage reforestation, watershed management, and health or environment enhancement in areas where energy projects are located. Finally, Section 5 contains proposals for further research. Section 6 contains the references.

# 2 Markets for environmental services in the Philippines – some existing initiatives

The environment is replete with resources that humans have exploited and used in improving standards of living. Not only has it provided for food, water, and shelter needs, it has also provided for protection and security against harsh conditions brought about by natural occurrences. Sometimes, benefits from the environment come in intangible forms, such as cultural heritage. Many of these services and benefits have traditionally been enjoyed for free by beneficiaries, due to the lack of corresponding market prices. However, ensuring their continued supply now involves costs on the part of the providers. Economic theory shows that in situations where scarcity occurs, prices are the regulatory mechanism that can clear the market between demand and supply. The environment is no exception to this. Evidence of such markets around the world has been documented in the book entitled *Silver Bullet or Fools' Gold?* by Landell-Mills and Porras, 2002.

The Philippines has its own experience in the development of markets for environmental services. Most of these initiatives are documented below according to the type of service being provided. Basically, there are four typical environmental services where market development has been initiated in the country: landscape and seascape beauty, watershed protection, biodiversity conservation, and carbon sequestration. There are two additional types of environmental service where markets are starting to develop as well, namely elevation and environmental waste disposal. Elevation refers to the use of mountain ranges for commercial operations of private companies. On the other hand, environmental waste disposal refers to the use of the natural environment as a sink for wastes. Markets are developing in such a way that users of this service are being made to pay, the amounts of which are determined by the economic value of that service. Following is a cursory review of economic valuation studies conducted for each type of service. Many of these studies were translated into economic instruments through legal ordinances issued by the government body in charge of managing and protecting the area concerned. Table 2.1 contains a summary list of these studies, including action taken whenever relevant.

**Table 2.1 List of environmental valuation studies conducted in the Philippines, 1988–2002**

| *Environmental service* | *Title* | *Location* | *Management body* | *Action taken* |
|---|---|---|---|---|
| Landscape and seascape beauty | A Report on the Survey of Tourists at Mt Pulag National Park | Cordillera Region, covering provinces of Benguet, Ifugao and Nueva Vizcaya | PAMB | PAMB Resolution on Entrance Fees (MPNP-PAMB Resolution No. 3, s.2000) |
| | Determination of Development Fees for Tourism Establishment Located in El Nido Marine Reserve | El Nido, Palawan | PCSD | PCSD Ordinance (pending) |
| | A Report on the Survey of Tourists and Resorts at Hundred Islands National Park | Alaminos, Pangasinan | PAMB | PAMB Resolution on Entrance Fees (HINP PAMB Resolution No. 99-6) |
| | Estimating Recreational | Basey, Samar | PAMB | PAMB |

| *Environmental service* | *Title* | *Location* | *Management body* | *Action taken* |
|---|---|---|---|---|
| | Values of the Sohoton Natural Bridge National Park | | | Ordinance on Entrance Fees (pending) |
| | Estimating Appropriate Entrance Fees for Scuba Divers at Apo Reef Nature Park | Sablayan, Occidental Mindoro | PAMB | PAMB Ordinace on Diving Fees |
| | Estimating Entrance Fees for Recreating at the Waterfalls of Mt Kanla-on Nature Park | Sitio Guintubdan, *Brgy* Ara-al, La Carlota City | PAMB | Under PAMB review |
| | Market-Based Instrument for Forest Recreation and Eco-Tourism in the Makiling Forest Reserve | Makiling Forest Reserve, Laguna and Batangas | UPLB | Under review by UPLB |
| | Non-Market Valuation of the Benefits of Protecting Lake Danao National Park in Ormoc, Philippines | Ormoc City, Leyte | PAMB | |
| | Willingness to Pay Survey, Mt Isarog National Park (Dec 1998–July 1999): Recommendations for the Establishment of Appropriate Entrance Fees | Naga, Calabnaga, Tinumbac, Goa, Tigaon and Pili, Camarines Sur | PAMB | PAMB Ordinance on Entrance Fees |
| | Results of the Willingness-to-Pay in El Nido-Taytay Managed Resource Protected Area: Recommendations for the Establishment of Appropriate Entrance Fees | El Nido, Palawan | PCSD | PCSD Ordinance on Entrance Fees |
| | Visitors' Assessment of the Recreational and Environmental Qualities of Ninoy Aquino Park and their Willingness to Pay | Quezon City | PAWB | |
| | Estimating the Recreation and Preservation Benefits of Lake Danao National Park | Ormoc City, Leyte | PAMB | |
| | Estimating Appropriate Entrance Fees for Divers at Mabini-Tingloy Dive Sites | Balayan Bay, Mabini and Tingloy, Batangas | Mabini-Tingloy Coastal Area Development Council (MATINGCAD-C) | LGU Ordinance on Diving Fees (pending) |
| | Estimating Entrance Fees for Moalboal, Cebu Diving Spots | Moalboal, Cebu | | LGU Ordinance on Diving Fees (pending) |
| | Estimating Scuba Diving Fees for Siquijor Diving | Siquijor | | LGU Ordinance on Diving Fees |

| *Environmental service* | *Title* | *Location* | *Management body* | *Action taken* |
|---|---|---|---|---|
| | Spots | | | (pending) |
| | Estimating Entrance Fees for Moalboal, Cebu Visitors | Moalboal, Cebu | | LGU Ordinance on Entrance Fees (pending) |
| | Estimating Entrance Fees for Pamilacan Island, Bohol Whale and Dolphin Watchers | Pamilacan Island, Bohol | | LGU Ordinance on Entrance Fees (pending) |
| | Estimating Development Fees for Tourism Establishments Located at Siargao Island Protected Landscape and Seascape | Siargao, Surigao del Norte | PAMB | Under PAMB review |
| | Survey of Tourists at Mt Arayat National Park (not completed) | Magalang, Pampanga | PAMB | |
| | Survey of Climbers at Mt Arayat National Park (not completed) | Magalang, Pampanga | PAMB | |
| | Survey of Tourists at Hinulugang Taktak National Park (not completed) | Antipolo, Rizal | PAMB | Under PAMB review |
| Watershed protection | Estimating Irrigation Fees from Farmers Drawing Water Coming from Bataan Nature Park | Hermosa, Orani, Samal, Abucay, Pilar, Balanga, Bagac and Morong, Bataan | PAMB | Under PAMB review |
| | Estimating Resource User Fees for Agricultural Production in Mt Apo Nature Park | Kidapawan, Makilala, Magpet, Cotabato and Bansala, Digos, Sta Cruz in Davao City, Davao del Sur | PAMB | Under PAMB review |
| | Estimating Development Fees for Gamefowl Farms Operating in Mt Kanla-on Nature Park | Sitio Guintubdan, *Brgy* Ara-al, La Carlota City | PAMB | Under PAMB review |
| | Estimating Development Fees for Geothermal Extraction by PNOC at Mt Kanla-on Nature Park | *Brgy* Mailum, Bago City, Negros Occidental | PAMB | Under PAMB review |
| | Derivation of Government Share from Energy Resource Extraction Project | Philippine National Oil Company: Southern Negros Geothermal Project (PNOC-SNGP), covering municipalities of Sta Catalina, Siaton, Zamboanguita, Dauin, Bacong, Valencia, Sibulan, San Jose, Amlan, Tanjay and Pamplona, Negros Oriental | LGU | DAO on Forest Charges (DAO No. 2000-30) |
| | Estimating Resource User Fees for Agricultral Production in Mt Kanla- | Murcia and La Castellana, Bago, La Carlota, Canlaon and | PAMB | Under PAMB review |

| *Environmental service* | *Title* | *Location* | *Management body* | *Action taken* |
|---|---|---|---|---|
| | on Nature Park, Negros Island, Phils | San Carlos, Negros Island | | |
| | Pricing of Grassland Resources in the Philippines: Rent, Grassland Degradation and Rehabilitation and Alternative Land Uses | | | DAO No. 99-36. |
| | Estimaton of Watershed Protection Fees for Extraction of Spring Water Coming from Mt Kanla-on Nature Park | Bago City, Negros Occidental | PAMB | Under PAMB review |
| | Water Consumption of Various Water Users and Watershed Protection and Conservation Fee Based on a Cost Recovery Principle | Makiling Forest Reserve, Laguna and Batangas | UPLB | |
| | Watershed and Groundwater Depletion in the Philippines: The Cagayan de Oro Experience | Cagayan de Oro | PAMB | Under PAMB review |
| | Economic Valuation of the Protection of Maasin Watershed Reservation in Iloilo, Philippines | Maasin, Iloilo | PAMB | LGU Ordinace |
| | Watershed Restoration and Protection in the Bais Bay Basin, Philippines | Bais Bay Basin, Negros Oriental | | |
| | Estimating Erosion Costs: A Philippine Case Study in the Lower Agno River Watershed | Itogon, Benguet and Baguio City | PAMB | |
| | The On-site and Downstream Costs of Soil Erosion: Valuation Results for Two Philippine Watesheds and Implications for Conservation Policy | Magat Watershed and Pantabangan Watershed, Nueva Ecija | | |
| | Six Case Studies of Community-Based Forest Resource Management in the Philippines (Site Six: Kalahan Forest Reserve, Sta Fe, Nueva Vizcaya) | Sta Fe, Nueva Vizcaya | Kalahan Educational Foundation (KEF) | DAO on CBFMA charges |
| Biodiversity conservation | Economic Implications of Biodiversity Preservation in Mt Pangasugan, Philippines | Baybay, Leyte | | |

| *Environmental service* | *Title* | *Location* | *Management body* | *Action taken* |
|---|---|---|---|---|
| | Draft DENR Administrative Order on Benefit-Sharing Schemes in the Implementation of EO 247 otherwise known as 'Prescribing Guidelines and Establishing a Regulatory Framework for the Prospecting of Biological and Genetic Resources, Their By-Products and Derivatives, For Scientific and Commercial Purposes, and for Other Purposes' | | | Draft DAO – under DENR review |
| Carbon sequestration | Carbon Uptake of Samar Island's Forest/Biomass: A Preliminary Estimation | Samar Island | PAMB | Used in CBA of management options for SIFR |
| | An Estimation and Valuation of Carbon Storage Function of Angat River Watershed and Forest Area | Norzagaray, San Jose, Bulacan and Montalban, Nueva Vizcaya | | |
| | Economic Analysis of Land-Use Options | | | Used by WAC |
| Environmental waste disposal services | Framework for the Application of an Environmental User Fee System for Water Pollution Management in the Philippines | | | Draft DAO – under DENR review |
| | Analysis of a Wastewater Discharge Permit Fee for Industrial Waste Water Pollution: The Case of Marilao River, Bulacan | Marilao, Bulacan | | Draft DAO – under DENR review |
| | Value of Direct Environmental Waste Disposal Services: 1995 Update | | | Used in ENR Accounting |
| | Environmental Waste Disposal Services: General Santos City (Main Report) | General Santos City | | Used in ENR Accounting |
| | Environmental Waste Disposal Services: Sarangani Province (Main Report) | Sarangani Province | | Used in ENR Accounting |
| | Environmental Waste Disposal Services: South Cotabato (Main Report) | South Cotabato | | Used in ENR Accounting |
| | Economic Instruments for Laguna Lake | Laguna Lake (Laguna, Rizal, Batangas, Cavite, Quezon, Metro Manila) | LLDA | Under LLDA review |

| *Environmental service* | *Title* | *Location* | *Management body* | *Action taken* |
|---|---|---|---|---|
| Elevation | Determination of Development Fees for Telecom/Broadcast Companies Operating on Mt Kitanglad Range Nature Park | Talakag, Baungon, Libona, Manol Fortich, Sumilao, Impasug-ong, Malaybalay and Lantapan Province of Bukidnon | PAMB | PAMB Resolution on Development Fees (MKRNP PAMB Resolution No. 91, s.1999) |

*Sources:* As of December 2002, materials gathered from: REECS, Inc. (ENRAP, SAMBIO, CPPAP-RUF Studies), Institute of Philippine Culture, ADMU National Integrated Protected Area Programme (NIPAP), University of the Philippines Los Baños, College of Forestry and Natural Resources, College of Economics and Management, School of Environmental Science and Management, Main Library, SEARCA, University of the Philippines Diliman – Main Library, ADB Library, World Wildlife Fund (WWF).

## 2.1 Landscape and seascape beauty

Landscape beauty markets are mostly through the form of entrance fees being imposed by government bodies for recreational purposes. For some areas, other types of recreational permit fees are imposed, such as for photography, filming for movies or videoclips, scuba diving, boating, and recreational fishing. Up until the late 1990s, entrance fees for protected areas being managed by the Department of Environment and Natural Resources were fixed at a rate of PhP8 or US$0.15[2] per local adult per visit, and US$2 per foreigner per visit.[3] To date, there have been 20 economic-valuation studies that attempt to estimate the recreational value of specific recreational sites, some of which are under the jurisdiction of the DENR, and some being managed locally by their respective municipal government offices. Among these, five were used as basis for entrance fees currently being imposed by the management bodies, while nine are still being reviewed for the potential imposition of user fees. Two particular studies[4] recommended fees to be charged against other beneficiaries in the tourism sector, such as resort owners, through what is called a development fee. The concept of this fee is that the owners are made to pay for the premium they enjoy because of the location of their establishments. Such a premium is hypothesised to be maintained because of the protection efforts being accorded the area.

**Box 2.1 Case study of the estimation of park entrance fees at Mt Pulag National Park**

**Facts**
*Location*:Cordillera Region, covering the provinces of Benguet, Ifugao, and Nueva Vizcaya
*Area*: 11,550 hectares
*Unique features*: Highest peak in Luzon, third-highest in Philippines
Flora, a succession of pine, mossy and natural grassland at highest level
Consists of three mountains: Mt Pulag, Mt Tabayoc, and Mt Panatoan
Accessed through Baguio City via paved and dirt roads and trails
*No. of visitors (9/97 to 8/98)*: approximately 1,000
*Peak months*: November to May
*Management*: Protected Area Management Board (PAMB)
*Current entrance fee structure*:
PhP50 entrance for PAMB
PhP25 green fee for municipality of Kabayan

[2] Current exchange rate used is PhP54 to US$1.
[3] DENR Administrative Order 47 series of 1993 entitled 'Revised Rates of Fees for the Entrance to and Use of Facilities Inside Protected Areas'.
[4] Studies on estimating development fees for El Nido and Siargao tourism establishments.

**Chronology of activities**

- Presented pilot-testing activity to DENR-CAR on 2 April 1998
- Developed survey questionnaire
- Hired and trained PAWB and park rangers as enumerators
- On-site survey from April 3 to 11, 1998 (by team) continued by PA staff thereafter, covering a total of 130 visitors
- Mail-in survey from May to September 1998, covering 200 questionnaires. This was necessary due to insufficient number of visitors covered on-site

Data encoded between August to November 12998

- Data analyzed and report written between November 11998 and February 1999
- PAMB action: formation of a committee to study the recommendations for future implementation

**Results**

*Willingness to Pay (WTP) to enter MPNP*: *Contingent Valuation Method (CVM)*

| | With 0 bids | W/o 0 bids |
|---|---|---|
| Incremental WTP at current level | PhP 30.69 | PhP 39.04 |
| Incremental WTP with improved services: | With 0 bids | W/o 0 bids |
| Road/trail conditions | PhP 9.99 | PhP13.53 |
| Maps and information | PhP 9.35 | PhP11.58 |
| Enforcement of environmental laws | PhP12.71 | PhP14.66 |

*Frequency of incremental WTP at current level of services*:

| Amount | Frequency |
|---|---|
| 0 | 71 |
| 10 | 7 |
| 25 | 75 |
| 50 | 92 |
| 100 | 27 |

*Travel cost model (TCM)*

Breakdown of travel costs/visitor

| | Amount | % of total |
|---|---|---|
| Trip expenses (petrol, toll, fare, food, etc.) | PhP2,075 | 83% |
| On-site expenses (food, film, etc.) | 378 | 15% |
| Entrance fee* | 46 | 2% |
| Total expenses | 2,499 | 100% |

*Note: Not all visitors paid the entrance fee.

**Results of the contingent valuation model, Mt Pulag National Park**

| *Independent variable* | *Estimated coefficient* | *T-ratio* |
|---|---|---|
| Constant | -23.64 | 19.32 |
| No. of years of education ($E_{i1}$ ) | 0.14 | 1.12 |
| Membership in an environmental organisation ($E_{i2}$) | 2.45 | 3.89 |
| Dummy variable for camping ($B_{i1}$) | 1.83 | 4.25 |
| Dummy variable for picnicking ($B_{i2}$) | -9.73 | 8.07 |
| Satisfaction with MPNP services ($A_{i1}$) | * 0.181 | 0.12 |
| Degree of satisfaction with park services ($A_{i2}$) | 0.07 | 0.15 |
| No. of visits to MPNP ($A_{i3}$) | -0.72 | 0.80 |
| Length of stay ($A_{i4}$) | 1.13 | 1.57 |
| No. of intended visits to MPNP ($A_{i5}$) | **** 4.39 | 1.49 |
| Annual household income ($P_{i1}$) | **** 1.5E-05 | 0.00 |
| Household size ($P_{i2}$) | * -1.268 | 0.81 |
| Employment status ($P_{i3}$) | ** 10.56 | 5.42 |
| Age ($D_{i1}$) | * 0.47 | 0.29 |
| Gender ($D_{i2}$) | 1.29 | 4.30 |
| Civil status ($D_{i3}$) | 3.84 | 5.48 |

Level of significance:

**** significant at 99% confidence level
*** significant at 95% confidence level
** significant at 90% confidence level
* significant at 85% confidence level

Estimated Equation:

$$WTP_{il} = f(E_{ij}, B_{ik}, A_{ia}, P_{ip}, D_{iq}) + \varepsilon_i$$

**Results of the travel cost model, Mt Pulag National Park**

| *Independent variable* | *Estimated coefficient* | *T-ratio* |
|---|---|---|
| Total expenses per person ($C_I$) | ** -3.74E-04 | -1.937 |
| Annual household income ($S_{I1}$) | ** -2.91E-07 | -1.913 |
| Employment Status ($S_{i2}$) | 0.0413 | 0.25 |
| No. of years of education ($S_{i3}$) | 0.0356 | 1.217 |
| Age ($S_{i4}$) | **** 0.0222 | 2.968 |
| Civil status ($S_{i5}$) | *** -0.2903 | -2.256 |
| Gender ($S_{i6}$) | **** 0.4799 | 3.281 |
| Importance of camping in visiting MPNP ($H_I$) | **** 0.6504 | 2.816 |
| Index of rating of facilities in MPNP ($R_I$) | 0.0038 | 1.115 |

Level of significance:

**** - significant at 99% confidence level
*** - significant at 95% confidence level
** - significant at 90% confidence level
* - significant at 85% confidence level

Estimated equation: $V_i = V(C_i, S_i, H_i, R_i) + \varepsilon_i$

**Recommendations**

The study recommends that entrance fees be increased to PhP125, with PhP25 going to the LGU and PhP100 to the PAMB. MPNP visitors are relatively well-off and have both the ability and willingness to pay higher entrance fees. Moreover, entrance fees are a small part of their total budget when visiting MPNP. Thus, increasing entrance fees will not adversely affect decisions to visit the park.

The suggested improvements in park management and services may merit serious consideration by the PAMB as visitors are willing to pay for these services.

**Other relevant results**

- Socio-economic and demographic profile
- Most respondents were male, single and young, with average age of 28 years.
- Average gross own income was PhP15,125 per month, while average gross household income reaches PhP36,315 per month .
- One-fourth were still enrolled in school, most of whom were in college.
- For those who had graduated, most had college degrees mostly in engineering and accounting while 10% had postgraduate degrees.
- For those employed, many were employees, followed by licensed professionals.
- Most respondents (62%) currently reside in Metro Manila, while 12% were from Benguet.
- 88% of respondents belonged to one or more organisations mostly to sports-related groups and environmental groups.

**Travel profile**

- 82.2% of respondents first heard about MPNP from their friends and/or relatives.
- Respondents were second-time visitors on the average, who had intentions of going back at least twice within the next two years.
- Average stay of visitor at the park is three days, with one day for travel time.
- Most came from their residence (79.8%), travelling an average of 376km using bus and hired vehicles after a one-day layover at Baguio City.

- Average number of people in a group is 15, most of whom were friends.

**Primary reasons for choosing MPNP**
- Scenery
- Climate
- Challenge of climb

**Most-cited substitute sites**
Mt Banahaw, Quezon; Mt Makulot, Batangas; Mt Makiling; Mt Fami, Laguna; Mt Cristobal, Quezon

**Activities conducted at the site, in order of frequency**
Mountain climbing, sightseeing, camping, photography, picnicking, research

**Satisfaction level with services**
Excellent: Peace and quiet
Good: Access to the park, Availability of water for drinking/ refill, Personal safety
Fair: Road/trail conditions, cleanliness, comfort rooms, camping areas, park amenities

**Preferred types of development**
One-third of respondents did not want any further development in the area
For those who preferred development, the following types were stated:
Comfort rooms, first aid stations, campsites, hikers' rest areas, signal stations, and better roads to rangers' station

*Source*: Padilla, J.E. et al. (2000), Manual for the Implementation of the Fee System Guidelines in Protected Areas. ENRAP IV Technical Paper, USAID and DENR.

**Box 2.2 Case study of development fees for El Nido Marine Reserve**

**Facts**
Location: Palawan
Area: 89,140ha
Unique features: Comprises a substantial representation of the most species-rich habitats in the province. Fine sand beaches are nesting areas for four species of marine turtles while sea-grass meadows are the habitats of dugong. It has some of the most diverse coral species in the world.
Users: Resorts and tourist establishments, tourists
Current fee structure: None
Management: Palawan Council for Sustainable Development (PCSD)

**Chronology of activities**
- Consulted with the Multi-Sectoral Tourism Council
- Presented the pilot testing activity to PCSD in April 1999
- Interviewed resort owners and operators in May 1999; reference year is 1998
- Gathered data from the Manila liaison offices of the large-scale island resorts
- Gathered data on visitor arrivals from the Department of Tourism (DOT) central office in Manila and from the Provincial Tourism Office of Puerto Princesa, Palawan
- Data analysed and report written

**Study results and recommendations**
- Targeting a 25% share in excess profits: potential annual revenues = PhP 400,000 in development fees
- Partial expropriation of excess profits to maintain incentives for efficient operations of the resort owners.
- Alternative basis: CA141 of 1936
- Rental of government land = 3% of reappraised value of land, plus 1% value of land improvements
- Based on value of improvements: potential development fee = PhP2.4 million per year

*Source:* Padilla, J.E. et al. (1999), Determination of Development Fees for Tourism Establishments Located in El Nido Marine Reserve. ENRAP IV Technical Paper, USAID and DENR.

## 2.2 Watershed protection

Watershed-protection markets are the most diverse among all types of MES in the Philippines. The diversity comes not in the form of payments, which are usually user-fee systems set up in a number of watersheds in the country. Rather, payments are made for varying uses within the watershed. Nevertheless, all these payment schemes were set up basically with watershed protection as the end goal. Fifteen studies related to the development of markets for watershed protection have been conducted (see Table 2.1). Among these, seven concern estimating values of the watershed relating to water quality, while two deal with erosion-control functions of the watershed. Meanwhile, eight further studies relate to estimating values for the use of resources within the watershed. Although not directly measuring watershed protection as a service, these eight studies are included here because of the fact that the user fees form part of a fund, namely the Integrated Protected Area Fund (IPAF), which is used for watershed-protection activities by the management bodies involved (see Section 3 for a broader discussion of IPAF). Seven out of the 15 studies are now under review by the respective PAMBs, for possibly setting up user fee systems. Three studies have led to the drafting of DENR Administrative Orders regulating the particular use through appropriate charges. Finally, one study has been translated into an ordinance issued by the concerned local government unit in raising revenues for watershed-protection activities in the area.

**Box 2.3 Maasin Watershed: management spearheaded by LGU with multiple funding sources**[5]

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

**The problem**

About 64% of the watershed is already open or cultivated. The loss of forest cover resulted in the reduction of the watershed resource potential of the area. As a consequence, only 35% of the household water requirements of Iloilo City can be met by the resource, with the remaining water requirements being sourced from Guimaras Island and nearby districts. There is also shortage of irrigation water during the dry season, thus, reducing cropping intensity in the place. Furthermore, water users are already beginning to notice poor water quality and intermittent faucet flow from service pipes of the Metro Iloilo water district. These situations led to strong clamour for watershed rehabilitation in the area.

**The solution and LGU role**

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

**Financing**

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

- P0.5M donations from various groups of civil societies. The provincial government has provided a counterpart fund of P0.5M as well.
- DENR has allocated the following funds from various sources:
  --ADB Fund of P1,778,450 for survey, mapping and planning
  --OECF fund of P44,269,143 for community-site-development activities in 2,685ha and P4,833,000 for community organising, and P2,610,635 for monitoring and evaluation
  --National government provided P9,473,936 for rehabilitation of 1,070 hectares and P2,479,000 for community organising
  --OECF loan of P1,884,294 covering 100 hectares and P41,000 for the establishment of 20,0000$m^2$ of vegetative strips
  - Metro Iloilo Water District provided P1M contribution for watershed-protection activities.

  The National Economic Development Authority (NEDA) has also allocated P3.7M for the construction of 2,850$m^3$ of structural measures (gabions) and provided P1.4M to undertake three research studies. It has also provided P573,000 for the establishment of 53,900$m^2$ of vegetative erosion-control measures.

**Environmental service provision and reward of/to upland communities**

The communities are tapped into the project as partners in this massive watershed rehabilitation. The organised communities were contracted to undertake comprehensive site development (CSD) with full funding for various activities such as reforestation, assisted natural regeneration, timber-stand improvement, agroforestry, rattan and bamboo enhancement, and others. To carry out this enormous task, technical assistance was also provided through the assisting organisation and the DENR. The upland communities are also provided training in various aspects of forest management, both technical and organisational/management. One big problem with working with recognised PGs is that membership oftentimes represents only a small segment of upland population. In which case, a few families, often the more vocal and influential members of the community, largely appropriate the 'rewards' of participation in watershed-protection endeavours. This is a major reason why activities initiated by the project are not sustained once the project comes to an end.

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

**Accomplishments**
With ample resources[6] allocated to the project over the last three years, significant results were achieved in terms of both physical and social targets. These are summarised below.

**Summary of major accomplishments in the Maasin Watershed**

- CO organising works in 16 pressure groups (PG) organised into a federation.
- Completion of socio-economic baseline surveys in upland communities.
- Assistance provided to PGs who were contracted to do site development.
- Conducted series of IEC.
- Provided numerous training for team building, leadership, preparation of feasibility studies, and others.
- Tenure security embodied in the community-based forest management agreement (CB4FMA)[7] that allows 25 years of stewardship renewable for another 25 years.
- Assisted PG in establishment of 17 livelihood projects.
- Physical accomplishments of the OECF loan as of December 1999 comprise of: reafforested 1,050ha; agroforestry (749 out of 884 ha target); bamboo (249 ha) and riverbank stabilisation (60ha) and rattan (94 of the 111ha target).
- The GOP funding accomplished the following: riverbank rehabilitation of 270ha, agroforestry development in 300ha, ANR in 300ha, and vegetative measures in 20,000$m^2$.
- The following protective infrastructures were also put in place: 85km trails, 700m fire lines, 77 units of nursery, look-out tower of seven units, 14 gabions, and six units of concrete dam.

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

To this end, the Ford Foundation immediately responded with the funding of 'Watersheds' Learning Communities' in mid-1999 to 2001. This project basically adopts an IEC and networking approach to mobilise community participation in environmental protection projects within the watershed, including solid-waste management. The project supported the school-on-air: 'Ugat Sang Tubig' that was launched in 1998 and has formed 70 *barangay* information centres. These centres become institutionalized in the local government and serve as venues for initiating community actions that benefit the environment – termed 'People's Initiatives'. In these initiatives, the roles of young people, children, and women are encouraged. Equally important is the success of the project in facilitating the creation of the Iloilo Watershed Management Council through a Provincial Ordinance. This social infrastructure is very important in sustaining and operationalising the watershed approach of managing forest resources in this important area – something that is expected to be a tremendous learning experience.

Source: Francisco, HA (February 2002), Environmental Service 'Payments': Experiences, Constraints and Potential in the Philippines. Regional Inception/Planning Workshop: Developing Mechanisms for Rewarding the Upland Poor in Asia for the Environmental Services They Provide, Puncak, Indonesia.

[6] The Kahublagan Sang Panimalay Foundation, Inc. (2001) termed this 'investment overkill'.

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

**Box 2.4 The Makiling Forest Reserve (MFR): managed by the University of the Philippines**

The Mt Makiling Forest Reserve (MFR) is a 4,244ha forestland whose administration and management are vested in the University of the Philippines Los Baños (UPLB). It is an important resource because of its biological diversity, watershed, recreation, geo-thermal and scientific functions.[8] It is also a major source of livelihood to some 300 households living within the watershed and is being farmed by another 700 farmer-claimants who reside outside of the watershed in adjoining communities.

**The problem**

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

**The solution**

The university has shifted the focus from punitive (eviction policy) measures in the late 1970s to an open policy of partnership with communities in protection efforts in the 1990s. The 1980s was characterised by a period of inaction by the university, at which time groups of people, with assistance from a project funded by CIDA through the School of Environmental Science and Management (SESAM) and from some NGOs, gained strength in numbers and organisational and bargaining skills. By the mid-1990s, there was renewed concern by the university, specifically the College of Forestry and Natural Resources (CFNR) for improved management of MFR. Towards this end, it has developed a master plan for the MFR area, which was signed as an Executive Order by the president of the Philippines in 1996. One of the key elements of this plan is to set up an accreditation system to recognise formally the bona fide residents of the area through some form of tenure in exchange for the people's commitment to conserve and protect the forest.[9] The master plan also puts strong emphasis in the involvement of various stakeholders in MFR management. It has also identified several projects for the maintenance of biodiversity in the area and the rehabilitation of the degraded areas, as well as the continuing promotion of sustainable farming practices in the uplands. The major constraint the University faces is the inadequacy of funds to generate the resources it needs to support the various programmes and initiatives embodied in the Plan.

**Environmental service provision by upland communities**

In the 1990s, the upland communities in MFR have begun to demonstrate their eagerness to be considered as key players in issues concerning MFR. This interest has resulted largely from the community organising (CO) efforts made by certain NGO and through the university project in the community early part of the 1990s. For instance, the upland farmers through the PGs have collaborated with the university in boundary delineation efforts that entail the planting of tree species along MFR boundary. They also helped put signs that mark the area as a protected zone. Some of the farmers also participate in reforestation activities, funded through the university, largely as labour. They have also been involved in protecting the water sources of the area in exchange for a pump donated to the community by an NGO. Most importantly, majority of the upland farmers are adopting agroforestry systems in their occupied areas. In addition, the PGs themselves have made a commitment to prevent new entrants into the place and also to prevent further expansion by members into the remaining forest zones. Despite attempts to police this, one travelling to the site can easily spot new land clearings and additional houses being built along the forest boundary.

Prior to the 1990s, the involvement of the upland farmers were limited to their engagement as hired

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

[9] Not much success on this instrument has been achieved, however, because of the resistance of certain groups to acknowledge the authority of the university in the MFR. The community-organising efforts have succeeded in dividing into two groups: the more vocal – 'anti'-university one whose members have been taught of the power of an organised group in getting what they want – and the other, more pro-institution, but less vocal group who are willing to cooperate with the university's programmes in MFR.

workers in some reforestation activities by the university.

**Environmental 'payments' or rewards to upland communities**

In return for the cooperation of the upland communities in forest protection, the university has provided various forms of rewards to the upland communities. A few years ago, it offered to accredit bona fide farmers through some form of memorandum of understanding between the farmer and the university. However, some of the more active vocal farmer groups want more secure tenure than this arrangement; something that the university felt it was in no position to provide. Since, there is no consensus on this aspect among the PGs, the efforts by the university to push this has been halted. The PGs who participated in forest boundary delineation were given some cash incentives for the services they rendered. Those who participate in reforestation efforts were also paid for their labour. The university has also sponsored a number of training days on sustainable land uses and practices and also on livelihood development. There are also limited scholarships awarded to high-school students in the university's efforts to provide young people better employment opportunities. Lately, the university has also given upland farmers medical discounts for the use of the university infirmary. It has also provided skills training to those who would like to be employed in the resorts in the Los Baños-Calamba area, as a commitment made by these resort operators as a form of their in-kind contribution or 'payment' for watershed-protection services of the upland communities. Some businesses have also sponsored reforestation/tree-planting projects, which were contracted to the PG. There was also an NGO, which provided a water pump in return for the PGs efforts to protect the water sources.

Currently, no payments are made to the farmers who adopt agroforestry systems and other sustainable practices and this situation is likely to continue. There is an unwritten understanding that upland farmers may cultivate the land in MFR, in exchange for the environmental services that they provide. In a way, the environmental service becomes a 'payment' by the farmers for their continued use of the land resource or, vice versa, the use of the land becomes the 'payment' by society for the environmental service – similar to a barter transaction.

**Potential for ESP payments (RUPES)**

To address the concern regarding inadequacy of funds required to implement the projects embodied in the MFR master plan and at the same time, to achieve the desired attitude towards the use of the environment and natural resources in the area and in the downstream communities, the university has initiated efforts to use economic instruments for MFR resources.[10] The development of economic instruments, particularly, a watershed-protection fee to be imposed on water users (industrial and household), recreational users, and other off-site beneficiaries of watershed protection was studied. Various public consultations and meetings with concerned agencies were held and the decision was reached that there *is* a need for a multi-sectoral group to be formed to managed the fund into which the revenues from the watershed protection fees would be paid.

The major bottleneck to this effort of imposing a watershed-protection fee is the legal basis for such a collection. Although the university claims that it has the legal authority to do so by virtue of the Republic Act 6967 that vests control over MFR in the university, which was supplemented by Executive Order 349 that approves the MFR master plan, it is unclear whether these bases will hold water in a court. It was nonetheless established that there seem to be general acceptance of the principle that 'beneficiaries of the forest should contribute financially to efforts of managing the resource' among the different stakeholders. Still, the legality of such a collection by the university needs to be resolved. Alternative possibilities under discussion are collaboration with the National Water Resources Board or the Local Government Unit (LGU). Discussions on this matter point to the strength of the Local Government Code (see summary of major accomplishments in the Maasin Watershed in Box 2.3) as the best alternative to impose the fee. The recent experience of the Maasin watershed sets a precedent that may be adopted by other LGUs.

The only complication is that the reliance by the university on the LGU would mean the transfer (or sharing) of control of MFR management to the LGU. There is still a general apprehension in certain sectors of the university that bringing the LGU into the picture may jeopardise the function of MFR as a social

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

laboratory. This is especially so since some LGUs have already expressed the desire to gain control over the resource, knowing its huge revenue potential. Some of their constituents are also residents of the MFR, and therefore it would give them political mileage to have the controlling force over the resource. Where the situation will end is anybody's guess but is something that can be influenced after careful design of the strategy that the university must take. To this end, the MFR seems to offer a good potential for RUPES application in the Philippines since some initiatives have already been made in this direction.

*Source:* Francisco, H.A. (2002), Environmental Service 'Payments': Experiences, Constraints and Potential in the Philppines. Regional Inception/Planning Workshop: Developing Mechanisms for Rewarding the Upland Poor in Asia for the Environmental Services They Provide, Puncak, Indonesia.

## 2.3 Biodiversity conservation

Biodiversity conservation markets in the Philippines are still in their infancy. So far, there have only been two studies in this field. The first attempts to measure the economic implications of biodiversity preservation in a particular forest in the country. The second study was translated into a draft administrative order that regulates bioprospecting activities in the Philippines. In particular, it prescribes a scheme whereby benefits from bioprospecting are shared among the various stakeholders involved. The administrative order has yet to be signed officially, and is still being harmonised with the newly passed Wildlife Act[11] which contains provisions on commercial bioprospecting.

**Box 2.5 Guidelines on he Collection and Monitoring of the Prospecting of Biological and Genetic Materials and Prescribing the Royalties and Benefit-Sharing Scheme**

Pursuant to the provisions of Executive Order No. 247 (Bioprospecting Law) and R.A. 9147 (Wildlife Act), this document provides the guidelines in the determination of bioprospecting fees and rehabilitation/performance bond, the payment/transfer of royalties and benefit-sharing, the collection of biological and genetic materials, and the standard monitoring scheme for use by the Inter-Agency on the Collection of Biological and Genetic Resources (IACBGR).

The relevant provisions relating to bioprospecting fees are as follows:

**Section 7**
Determination of the Bioprospecting Fee through Negotiation - The IACBGR shall negotiate bioprospecting fees to be charged for an area, whether marine or terrestrial, applied for under E.O. 247 at the initial review and evaluation of the commercial research proposal, taking into consideration, among others, the following:

- the nature of the applicant, whether individual or corporation;
- the diversity of biological resources in the area of collection;
- the budget of the research;
- the quantity of specimen to be collected;
- the nature of the specimen to be collected;
- the method of collection; and,
- the duration of the collection phase.

**Section 8**
Bioprospecting fee – as a guideline, the minimum bioprospecting fee shall be set at such amount specified under this section, or computed on a per unit area basis provided herein, whichever is higher.

Subject to the foregoing, the minimum bioprospecting fee shall be US$3,000.00 or $3.00 per hectare of area over which the applicant shall have commercial bioprospecting rights. Should the applicant desire to

[11] Republic Act No. 9147. (July 2001), An Act Providing for the Conservation and Protection of Wildlife Resources and their Habitats, Appropriating Funds therefore and for Other Purposes.

have sole commercial bioprospecting rights in a specific area, the minimum bioprospecting fee shall be $5,000 or $5.00 per hectare.

**Section 9**
Rehabilitation/Performance Bond – the applicant shall post a rehabilitation/per-formance bond in an amount equivalent to 25% of the negotiated bioprospecting fee.

Benefits from bioprospecting that are to be shared with local stakeholders are as follows:

**Section 16**
Fees and Royalties – subject to the rules on prior informed consent from the concerned local community, and where applicable, from the concerned Protected Area Management Board and Indigenous Peoples, any CRA holder shall pay to the foregoing the following milestone payments:

Annual User's Fee – upon signing of the research agreement, the CRA hold shall pay the amount of $100 for every hectare under its use for sourcing genetic materials each year during the term of the CRA. However, if the area covered shall be for the exclusive bioprospecting use barring other commercial researchers of whatever purpose, the CRA-holder shall pay the amount of $1,000 annually for every hectare under its exclusive access.

Patent Application Payment – upon filing of and for each application for patent for any product derived from or by reason of any biological or genetic resources from any area under the research agreement, the CRA holder shall pay the amount of Fifteen Thousand US Dollars ($15,000). This shall include applications filed in the Philippines or in any other country and regardless of whether such shall fall within the exclusive bioprospecting period or beyond.

Provided that any Filipino individual or local organisation shall pay the amount of only $1,500, while local SMEs and local non-profit organisations shall pay an amount of only $150 for each application for patent.

Patent Processing Payment – during the pendency of each patent application, the CRA holder shall pay the amount of $100,000 every year until patent is approved, with the remaining balance from $485,000 to be settled upon patent approval. Payments of $100,000 will commence a year after the patent application is filed. If payments for this milestone exceed $485,000, the difference will not be refunded to the CRA holder. If, at any point in time thereafter, the CRA holder decides to discontinue the patent application, then the payment of $100,000 every year shall cease. Any amount paid prior to the discontinuation of the patent application shall be non-refundable.

Provided during the pendency of each patent application, any Filipino individual or local organisation applicant shall pay only the non-refundable amount of $10,000 every year until the approval of the patent, with the remaining balance from $48,500 to be settled upon patent approval.

Provided further that for local SMEs and local non-profit organisations, during the pendency of each patent application, they shall only pay the non-refundable amount of $1,000 every year until the approval of the patent, with the remaining balance from $4,850 to be settled upon patent approval.

Royalties – the amount of 1% of Gross Sales earned from the product by the CRA holder, parent company, or subsidiary, throughout the duration of the patent, in the event of any commercial use shall be paid. All earlier payments referred to in the preceding section shall be credited against the computed royalties determined in this Section to each appropriate stakeholder group.

**Section 18**
Forms of Payment – payments may be made in cash or in kind. The CRA holder may enter into special written agreements with the concerned stakeholder for the payment of the latter's share in non-monetary forms. However, for this purpose, the amount to be credited against royalties and fees due from the CRA holder shall be limited to the proportionate share of the actual recipient-payee. The in-kind payments may be given earlier but not later than the period specified for each milestone payment in the preceding Article.

**Section 19**.
Forms of In-kind Payments – in-kind payments may include:

equipment for inventory and monitoring;
supplies and equipment for resource-conservation activities;
technology transfer;
formal training including educational facilities;
infrastructure directly related to the management of the area; and
health care.

**Section 20**.
Valuation of In-kind Payments. The proper valuation for in-kind payments shall be upon the prior approval of the IACBGR and the recipients. Valuation of in-kind payments shall be based on:

acquisition cost of equipment/ infrastructure/ supplies;
cost of training for formal training;
cost of training in host country of trainer in case of technology transfer; and
actual costs incurred (labour, infrastructure, IEC materials and similar expenses) for conservation and protection activities.

Other non-monetary benefits such as sharing and transfer of knowledge, capacity building, support for conservation, and in-situ development are likewise recognised within the Administrative Order.

*Source:* Agsaoay et al. (2002), Draft DENR Administrative Order. Benefit Sharing Schemes in the Implementation of EO 247 otherwise known as Prescribing Guidelines and Establishing a Regulatory Framework for the Prospecting of Biological and Genetic Resources, Their By-Products and Derivatives, For Scientific and Commercial Purposes, and for Other Purposes. Unpublished report.

## 2.4 Carbon sequestration

Despite the fact that carbon sequestration is a widely recognised environmental service where developing countries have a comparative advantage, markets have yet to take off in the Philippines. There have been three studies documented, each of which attempts to estimate the carbon uptake of forests in the country. The first study was done for the Samar Forest Reserve, and the second for the Angat River Watershed. The results of the study for the Samar Forest Reserve were used to compute the net present values of the various management options being considered by government. The third study is a paper lifted from a dissertation on the economics of land-use options, one component of which is estimating carbon sequestration functions of agroforestry activities. The paper is currently being presented in various international fora and is part of the ongoing work of the World Agroforestry Center (WAC).

## 2.5 Environmental waste disposal services

As mentioned earlier, this type of service refers to the use of the natural environment as a sink for human and industrial wastes. Seven studies have estimated the value of this service in chosen sites, which were eventually used for inclusion of the environment and natural resources in national income accounts. All seven studies were part of the USAID-funded project entitled Environmental and Natural Accounting Project (ENRAP), which was implemented between 1991 and 2000. The framework for an environmental-user-fee system for wastewater discharges into river systems is still being processed by the DENR for possible national implementation. The revenues derived would eventually be used for river rehabilitation programmes of the DENR.

## 2.6 Elevation services

This last type of environmental service relates to the use of elevation by certain private companies to support their operations. Broadcast and telecom companies are the users of elevation, whereby the locational advantage of their infrastructure allows them to increase the reach of their operations. A valuation study was conducted for Mt Kitanglad Range Natural Park (MKRNP) in Mindanao, which became the basis for imposing user fees against companies with towers located at the top of the mountain range. MKRNP is part of the NIPAS System, and there is a Protected Area Management Board (PAMB) that oversees conservation activities in the area (see Section 3). The user fees were implemented through the issuance of a PAMB ordinance,[12] setting the rationale and amounts of the fees. As of 2002, the PAMB has started collecting revenues from most of the companies located within the PA. For one particular government-controlled company, corporation, payments are made in kind through reforestation activities in areas specified in the PAMB's management plan.

**Box 2.6 Case Study of Development Fees for Mt Kitanglad Range Natural Park**

**Facts**
Location: Bukidnon, Mindanao
Area: 30,642ha
Unique features: second-highest peak in the country, making it an ideal location for telecom/broadcast towers as their gateway to Mindanao
Users: telecommunication and broadcast companies
Current fee structure: individual MOAs between PAMB and the companies with one-time payment of administrative fee of PhP5,000 and other non-cash terms and conditions, e.g. reforestation
Management: Protected Area Management Board (PAMB)

**Chronology of activities**
Presented the pilot-testing activity to PAMB in May 1998.
Interviewed seven companies at Malaybalay and Cagayan de Oro; reference year is 1997.
Interviewed companies at their Manila offices.
Procured copies of the individual MOAs from the PAMB.
Gathered secondary data from relevant government offices.
Data analysed and report written between March and July 1999.
Presented the results to PAMB in August 1999.
Presented the results to the stakeholders in October 1999.
Final negotiations between PAMB and the stakeholders held in November 1999.

**Study results**
Valuation of the terms and conditions of the MOA.
Five out of seven private companies have MOAs with PAMB, one with DENR.
Five out of six MOAs require reforestation, one requires rehabilitation of visitors' quarters.
Five companies were required to pay administrative fees of PhP5,000 for duration of MOA.
Average value of MOAs is PhP6,872 per firm per year.
None of the companies has complied with all the requirements.

**Computation of rent using CA 141 or land code as basis**
CA 141 states that rent can be computed based on 3% of re-appraised value of land plus 1% value of improvements.
Average value of improvements was PhP3,023,929 per firm.
Based on 1% value of improvements, average annual rent that can be collected is PhP30,239 per firm.

[12] MKRNP/PAMB(1999), PAMB-Execom Resolution No. 91. A Resolution Setting the Rate of Fees for the Use of Land and Any Form of Improvements within the Mt Kitanglad Protected Area.

**Estimates of excess profit**

Except for one, companies could not provide data on revenues directly generated by the facility.

To compute for excess profit, two scenarios were used:

Scenario 1: Shares of company A (company that provided complete set of data) were used to apportion nationwide revenues of other firms

Scenario 2: Manila technical personnel interviewed via telephone provided rough estimates of MKRNP facility's share to nationwide revenues.

Estimates of net income were the following:

Scenario 1=PhP1,832,375

Scenario 2=PhP1,942,849

Estimates of excess profit were the following:

Scenario 1=PhP903,556

Scenario 2=PhP1,036,124

**Recommendations**

MOA contributions at PhP6,872 per firm are minimal.

PAMB can charge at least PhP30,239 per firm per year based on CA 141, or PhP90,356 per firm per year based on 10% of excess profit.

Foregone revenues amount to:

PhP23,367 to PhP83,483 per firm per year.

PhP116,836 to PhP417,417 per firm for duration of MOA.

PhP701,014 to PhP2,504,503 for all firms for duration of MOAs.

*Source:* Padilla, J.E. et al. (2000), Manual for the Implementation of the Fee System Guidelines in Protected Areas. ENRAP IV Technical Paper, USAID and DENR.

# 3 Institutional support mechanisms for environmental service markets – current issues and problems

While existing markets for environmental services in the Philippines are not widespread and largely nascent affairs, a number of preliminary lessons may be highlighted relating to the necessary institutional backdrop for these markets. Government involvement has been key in cases that do exist. There are more or less two types of markets: the first is made up of arrangements that were created through national government policies or initiatives; while the second type involves local government efforts. These are not markets in the widely understood sense of the word, because private-property rights have not been established, and government is still at the helm of the 'market exchange' (see Section 1). Nevertheless, it is through the establishment of economic instruments, in which government influences supply and demand through the pricing mechanism, whereby such quasi-markets for environmental services come into being. This is further illustrated in the discussion on Protected Area Management Boards (PAMBs) below.

There is, however, a third type of market which is evolving in the country. These are less dependent on government intervention and more rooted in community-based management of protected areas. One case study is examined in this report: that of a local organisation that has managed its watershed, particularly its natural springs and forest lands, for decades, long before environmental issues became important (details are contained in the second case study of this section).

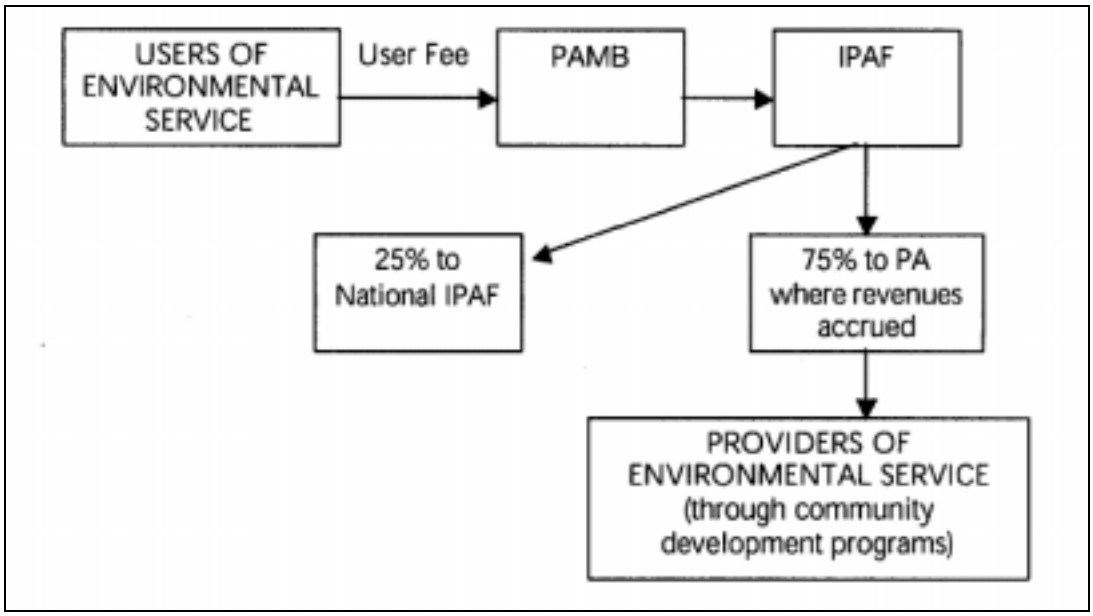
In what follows, we examine in more detail examples of two types of markets. We look first at the national government's system of integrated protected areas, which includes the Integrated Protected Area Fund (IPAF), and how this works as a centralised system for channelling payments for environmental services to providers. Then we consider community-based efforts to set up payment systems at the local level, focusing on the particular case of watershed-protection financing in Balian, Laguna. For both case studies the stakeholders involved in the provision of the relevant environmental services are outlined. Also mentioned is the policy and legal framework which helped create the market in question. Finally, the institutional mechanisms developed to support the relevant initiatives will be discussed, including some lessons learned on how such mechanisms affect the development of markets for environmental services.

## 3.1 National Integrated Protected Areas System (NIPAS)

### *3.1.1 NIPAS Act*

In 1992, the Philippine Congress enacted Republic Act No. 7586 establishing the National Integrated Protected Areas System (NIPAS) for the Philippines. The NIPAS law mandates the creation of protected areas to conserve biodiversity. It further provides the basic framework for the conservation and management of protected areas in general. One of the features of the Act is the establishment of an Integrated Protected Area Fund (IPAF) to finance projects of the system. All funds generated from the protected areas shall accrue to the IPAF, 75 per cent of which will be retained by the area where the funds were generated, and 25 per cent going to a central IPAF to finance other non-revenue-generating PAs and the operations of the IPAF governing board. Figure 3.1 illustrates how funds flow through the IPAF to and from the protected areas (PAs) under the NIPAS system.

**Figure 3.1 IPAF flow of funds**




Revenues are generated through users of the PA's various goods, such as sustainable extraction of natural resources, and environmental services, such as recreation. Financial donations, endowments and grants likewise form part of the IPAF. The PAMB deposits the revenues into a bank account, which then forms part of a centralised IPAF account at the national level. To obtain of their 75 per cent share, the PAMB formulates a work and financial plan containing programmes and projects complementary to protection efforts. These may include community development projects for local residents within the PA. Through this manner, there is a mechanism created by which residents are "paid" for their efforts to contribute to protection, through programs and projects that are designed to improve their standard of living. There are, however, problems that are being encountered in the implementation of this mechanism. Later in Section 3 there is discussion of these problems in more detail.

### *3.1.2 User fees for NIPAS sites*

The NIPAS Act empowers the secretary of the DENR to '… fix and prescribe reasonable NIPAS fees to be collected from government agencies or any person, firm or corporation deriving benefits from the protected areas'.

Furthermore, the secretary '… can accept in the name of the Philippine Government and in behalf of NIPAS funds, gifts or bequests of money for immediate disbursement or other property in the interest of the NIPAS, its activities, or its services'.

To implement these provisions in the NIPAS Act, DENR Administrative Order 2000-51, entitled Guidelines and Principles for Determining Fees for Access to and Sustainable Use of Resources in Protected Areas was formulated (see Appendix A).[13] The guidelines were based on a review of the current uses and users of resources in PAs based on available information

[13] Available at http://www.iied.org/eep/

from the PA Profiles and from the Protected Areas and Wildlife Bureau (PAWB). The identified types of fees also followed from the same review.

As shown in the literature review, there have been a number of these NIPAS sites that have had the benefit of Willingness-to-pay (WTP) studies as bases for their respective user-fee systems. Out of the total number of PAs, there have been around 17 studies for estimating the recreational value of various tourist spots. These have been put into law through the passage of resolutions by the respective management boards, and around ten are already collecting the fees from tourists.

For other types of environmental services, there have been a number of national parks that are likewise collecting some form of user fee, many of which have had the benefit of economic surveys, as listed in Table 3.1. There are, however, a number of PAs that are charging various user fees but not based on economic studies. Nevertheless, there is some form of monetary payment being made for whatever environmental service the fee is charged.

### *3.1.3 Protected Area Management Boards (PAMBs)*

The NIPAS Act also created Protected Area Management Boards (PAMBs) for each site. The composition of the PAMB includes the DENR, the local government unit concerned, indigenous peoples' groups (where relevant), and representatives from concerned NGOs and local community organisations. Of the 209 presidentially proclaimed PAs and 182 additional proposed PAs (by the DENR), 88 have been included under the NIPAS system (see Table 3.1). All the rest are still being processed for inclusion under NIPAS (see Table 3.2). Furthermore, of the total proclaimed and proposed PAs, 140 have established their PAMBs. Note that there are some areas with existing PAMBs despite the fact that they have not yet been proclaimed under NIPAS due to pending legal and technical requirements.[14] In sum, around 36 per cent of existing and proposed PAs have established their PAMBs to date. The Protected Area and Wildlife Bureau (PAWB) is tasked to coordinate and monitor the activities of each PAMB.

[14] *Source:* Protected Areas and Wildlife Bureau (Biodiversity Division), DENR. December 2002.

**Table 3.1 Protected Areas proclaimed under NIPAS area and PAMB structure by region and PA, as of December 2002**

| *Region* | *Protected area* | *Area (in ha)* | *PAMB structure* | | |
|---|---|---|---|---|---|
| | | | *Govt* | *Non-govt* | *Total* |
| CAR | Upper Agno River Basin Resource Reserve | 77,561.00 | 32 | 2 | 34 |
| 1 | Lidlidda PL | 2,266.49 | 9 | 4 | 13 |
| | Agoo-Damortis PLS | 10,513.30 | 26 | 2 | 28 |
| | Libunao PL | 46.70 | 4 | 3 | 7 |
| | Bigbiga PL | 135.71 | 5 | 3 | 8 |
| | Sta. Lucia PL | 174.16 | 7 | 6 | 13 |
| | Bessang Pass Natural Monument/ Landmark | 693.32 | | No rec | |
| 2 | Peñablanca PL | 4,136.00 | 16 | 1 | 17 |
| | Magapit PL | 3,403.62 | 10 | 2 | 12 |
| | Casecnan PL | 88,846.80 | | No rec | |
| | Batanes PL | 213,578.00 | 47 | 8 | 55 |
| | Northern Sierra Madre Nature Park | 359,486.00 | 14 | 23 | 37 |
| | Salinas Natural Monument | 6,675.56 | | No rec | |
| | Palaui Island Marine Reserve | 7,415.48 | | No rec | |
| 3 | Roosevelt PL | 786.04 | | Expired | |
| | Masinloc and Oyon Bays Marine Reserve | 7,568.00 | 13 | 3 | 16 |
| 4A | Taal Volcano PL | 62,292.14 | 23 | 4 | 27 |
| | Simbahan-Talagas PL | 1,157.44 | 6 | 2 | 8 |
| | Amro River PL | 6,471.08 | 8 | 3 | 11 |
| | Dinadiawan River PL | 3,371.33 | | None | |
| | Talaytay PL | 3,526.29 | 9 | 4 | 13 |
| | Buenavista PL | 284.27 | | None | |
| | Maulawin Spring PL | 149.01 | | No rec | |
| | Pamitinan PL | 600.00 | | No rec | |
| | Hinulugang Taktak PL | 3.20 | | None | |
| 4B | Puerto Princesa Subterranean River Nature Park | 22,202.00 | | No rec | |
| | Mt Guiting-Guiting Natural Park | 15,265.48 | | No rec | |
| | Apo Reef Nature Park | 15,792.00 | | No rec | |
| | El Nido Managed Resource PA | 89,134.76 | 17 | 7 | 24 |
| | MtCalavite Wildlife Sanctuary | 18,016.19 | 4 | 8 | 12 |
| | Malampaya Sound PLS | 200,115.00 | 35 | 10 | 45 |
| 5 | Chico Island Wildlife Sanctuary | 7.77 | | None | |
| | Naro Island Wildlife Sanctuary | 109.98 | | None | |
| | Malabungot PLS | 120.62 | | None | |
| | Lagonoy Natural Biotic Area | 444.60 | | Expired | |
| | Abasig-Matogdon Mananap Nature Biotic Area | 5,420.12 | | Expired | |
| | Mt Isarog Nature Park | 10,112.35 | | No rec | |
| | Bongsalay Nature Park | 244.72 | | None | |
| | Bicol Nature Park | 5,201.00 | | No rec | |
| | Mayon Volcano Nature Park | 5,775.70 | | No rec | |
| | Bulusan Volcano Nature Park | 3,672.00 | | No rec | |
| 6 | Canlaon Nature Park | 24,388.00 | 27 | 14 | 41 |
| | Sibalom Nature Park | 5,511.47 | | No rec | |
| | Sagay PLS | 32,000.00 | | No rec | |

| Region | Protected area | Area (in ha) | PAMB structure | | |
|---|---|---|---|---|---|
| | | | Govt | Non-govt | Total |
| | Northwest Panay Peninsula Nature Park | 12,009.29 | | None | |
| 7 | Talibon Group of Islands PLS | 6,456.87 | 6 | 1 | 7 |
| | Rajah Sikatuna PL | 10,452.60 | | None | |
| | Alburquerque-Loay-Loboc PLS | 1,164.16 | | No rec | |
| | Apo Island PLS | 691.45 | | No rec | |
| | Tañon Strait PS | 450.00 | 47 | 2 | 49 |
| | Chocolate Hills Natural Monument | 14,145.00 | | No rec | |
| | Balinsasayao Twin Lakes Nature Park | 8,016.05 | 12 | 9 | 21 |
| 8 | Jicontol Natural Park | 6,483.00 | | Recent election | |
| | Mahagnao Volcano Nature Park | 635.00 | | No rec | |
| | Lake Danao Nature Park | 2,193.00 | | No rec | |
| | Taft-Forest Philippine Eagles Wildlife Sanctuary | 3,728.98 | | None | |
| | Calbayog Pan-As Hayiban PL | 7,832.00 | | Recent election | |
| | Biri Larosa PLS | 33,492.00 | 28 | 5 | 33 |
| | Guiuan PLS | 60,448.00 | | Recent election | |
| | Calbiga Caves PL | 2,968.00 | | Recent election | |
| | Cuatro PLS | 12,500.00 | | None | |
| 9 | Buug Natural Biotic Park | 1,095.00 | | No rec | |
| | Basilan Natural Biotic Area | 4,497.00 | | No rec | |
| | Siocon Resource Reserve | 793.74 | | No rec | |
| | Pasonanca Nature Park | 12,107.00 | | No rec | |
| | Aliguay Island PLS | 1,187.51 | | No rec | |
| | Dumanquilas PLS | 25,948.00 | | None | |
| | Turtle Island Wildlife Sanctuary | 242,967.00 | 6 | 8 | 14 |
| | Jose Rizal Memorial PL | 439.00 | | No rec | |
| | Great and Little Sta Cruz Islands PLS | 1,877.00 | | No rec | |
| | Selinog Island PLS | 960.27 | | None | |
| | Murcielagos Island PLS | 100.00 | | None | |
| | Mt Timolan PS | 1,994.80 | | None | |
| 10 | Mt Kitanglad Range Nature Park | 31,235.19 | 8 | 1 | 9 |
| | Mt Kalatungan Range Nature Park | 21,247.73 | | In process | |
| | Mimbilisan PL | 66.00 | | No rec | |
| | Baliangao PLS | 295.00 | | In process | |
| | Mt Malindang Nature Park | 34,694.00 | | No rec | |
| | Initao-Libertad PLS | 1,300.78 | | In process | |
| 11 | Mt Apo Nature Park | 72,113.00 | 43 | 10 | 53 |
| | Baganga PL | 114.88 | | Being updated | |
| | Mabini PLS | 6,106.00 | | Being updated | |
| | Mainit Hotspring PL | 1,374.00 | | No rec | |
| | Pujada Bay PLS | 21,200.00 | | Being updated | |
| 12 | Sarangani Bay PS | 215,950.00 | | None | |
| | Mt Matutum PL | 15,600.00 | | None | |
| 13 | Agusan Marsh Wildlife Sanctuary | 14,835.99 | 60 | 7 | 67 |
| | Siargao PLS | 278,914.13 | 5 | 6 | 11 |
| Total number | | 88 | | | |

*Source:* PAWB-Biodiversity Division.

Notes: No rec=no record of PAMB members submitted. None=PAMB has not been established yet. Expired=terms of PAMB members have expired.

**Table 3.2 Proposed additional NIPAS areas, as of September 2002**

| *Region* | *Protected area* | *Location* | *Area** |
|---|---|---|---|
| CAR | Wildlife Sanctuaries and PL | Malacadio, Paracelis | |
| | Agora Wildlife Sanctuary | | |
| | Mt Poswey | Boliney, Abra | |
| | Tanudan-Tinglayan Resource Reserve | | |
| | Aran Caves PL | | |
| | Ambongdolan Caves PL | | |
| | Mt Kalawitan Nature Park | | |
| | Proposed Roces Caves | | |
| | Purag Cave | | |
| | Quiling Crystal Cave | | |
| 1 | Kalbario-Patapat Nature Park | Pagudpud and Adami, Ilocos Norte | 693.31 |
| | Telbang PS | Telbang, Alaminos, Pangasinan | 533.33 |
| | Mabini PL | Villacorta, Tagudin and de Guzman, Mabini, Pangasinan | 800.16 |
| | San Nicolas-San Manuel PL | | |
| | Pugo-Tubao Aringay PL | | |
| | Northern Ilocos Norte Nature Park | | |
| 2 | Calayan PLS | | |
| | Bangan Hill NP | Bayombong, Nueva Vizcaya | 50m |
| | Tumauini WFR | | |
| | Diaat River WFR | Dupax, Nueva Vizcaya | 3,219.14 |
| | Alsung Cave PL | | |
| | Claveria-Sta Praxedes PLS | | |
| | Monte Alto Wilderness Area (Parcels 1&2) | | 1,095 |
| 3 | Peñaranda Watershed | | |
| | Subic WFR | | |
| | Umiray River WFR | | |
| | Mariveles WFR | | |
| | Mt Tapulao | | |
| | Pinagrealan | | |
| | Sto Niño Cave | | |
| | Bagsit Watershed | | |
| | Sta Cruz Watershed | | |
| | Old Growth Forest | Within Mariveles, Bagac, Limay, Bataan | |
| 4A | Diteki River WFR | San Luis, Ma Aurora, Aurora | 12,970.00 |
| | Dingalan River WFR | | |
| | Pacugao WFR | Ma Aurora, Aurora, Dupax, Nueva Vizcaya | 3,247 |
| | San Luis WFR | San Luis, Aurora | 2,789.37 |
| | Masungit Rock | *Brgy*. Cuyambay and Illong Tubig, Tanay, Rizal | 1,161.84 |
| | Kanan River | General Nakar, Quezon | 480km$^2$ |
| | Bazal River WFR | Ma Aurora, Aurora | 4,403 |
| | Maricaban Strait and adjacent waters of Balsuran and Batangas Bays | | |
| | Mapanghi Cave PL | | |
| | Pinamacan River WFR | Dilasag, Aurora | 2,904.90 |
| | Minasawa | | |
| | Ragay Gulf | | |
| | Macaca Coral Reefs Natural Marine PA | | |
| | Sumuot Cave PL | | |

| *Region* | *Protected area* | *Location* | *Area** |
|---|---|---|---|
| | Acha Reefs | | |
| 4B | Ursula Island | | |
| | Honday Bay Marine Wildlife Sanctuary | | |
| | Panuyon Maliit PLS | | |
| | Green Island Bay | | |
| | *Brgy* Milagrosa Bulalacao PA | | |
| | *Brgy* Bantulan, Talaytay | | |
| | Tres Reyes Marine Reserve | | |
| | Sambanon Caves PLS | | |
| | Lake Manguao | | |
| | Naampias River | | |
| | Tagbunsaing Cave | | |
| | Ambil Island | | |
| | Estrella Falls PLS | | |
| | Mt Kadangsayan | | |
| | Raza Island | | |
| | Calsanag PL | | |
| | Coron Island Natural Biotic Area | | |
| 5 | Mt Masaraga WFR | Tobaco, Ligao, Oas, Albay | 810 |
| | Magallanes and Juban Watershed | Juban, Magallanes, Sorsogon | 1,667.53 |
| | Tugbo WFR | Mobo, Masbate | 246.60 |
| | Canimog Wildlife Sanctuary | | |
| | Matang-tubig WFR | Real, Monreal, Masbate | 1,305 |
| | Patag-Gabas WFR | | |
| 6 | Mt Pan de Azucar Seascape | Concepcion, Iloilo | 2,438.76 |
| | Northern Negros NP | | |
| | Hulao-Hulao PLS | | |
| | Sampunong-Bolo Bird Sanctuary | | |
| | Identified Virgin Forest (7 areas) | | |
| | Northwestern Panay Peninsula | Nabas, Malay, Burwanga, Libertad and Pandan, Aklan and Antique | 12,040.16 |
| | Sapian Bay Marine Reserve | | |
| | Jauili Campo Verde PLS | Tangalan and Ibajay, Aklan | 1,092.00 |
| 7 | Mahanay Island Natural Biotic Area/PLS | | |
| | Wild Duck Sanctuary | Negros Oriental | |
| | Game Refuge and Wildlife Sanctuary | Cabauatan, Basay, Negros Oriental | 25 |
| | Capitancillo Islet Natural Biotic Area | | |
| | Bandilaan Nature Park | Municipality of Lazi, Siquijor | 244 |
| | Lake Danao | | |
| | Kotkot and Lusaran River WFR | Municipality of Balauban, Compostela, Consolacion and Lilo-an, Cebu | 14,072.545 |
| | Proposed Bulwang Mabinay | Mabinay, Negros Oriental | 168 |
| | Proposed Mainit Monument | | |
| | Proposed Siquijor PS | *Brgy* Dumanhug, Caticugan, Tinag, Municipality of Siquijor | |
| | Taculing-Cangmaladog PS | | |
| | Bogo Olang PLS | *Brgys* Bogo and Olang, Municipality of Maria, Province of Siquijor | 202.15 |
| | Basak River Watershed Reserve | Municipality of Badian, | 1,726 |

| *Region* | *Protected area* | *Location* | *Area** |
|---|---|---|---|
| | | Cebu | |
| | Sibonga River Watershed | Municipality of Sibonga, Cebu | 2,340 |
| | Argao River Watershed Reserve | Municipality of Delaguete | 7,250 |
| | Jandayan | | |
| | Calbayo Forest Reserve | | |
| | Higatangan Island PLS | | |
| | Looy | | |
| 8 | Tikling Islands PLS | *Brgy* Tikling, Dolores, Eastern Samar | 57.5 |
| | Catubig-Palapag Forest Reserve | Catubig and Palapag, Northern Samar | 2,771.11 |
| | San Isidro Forest Reserve | San Isidro, Northern Samar | 6,897 |
| | Carigara Bay Wetland | | |
| | Lake Bito | *Brgy* Ville Imelda, MacArthur, Leyte | 525 |
| | Mt Cabalian | | |
| | Buac WFR | Logod, Southern Leyte | 6,408 |
| | Bulosao WFR | *Brgy* Guinod-an, Bulusao, Lawaan, Eastern Samar | 3,386 |
| | Asug Forest Reserve | *Brgy* Asug, Caibiran, Biliran | 1,286 |
| | Locsoon Cave | | |
| | Biri-Balicuatro | Biri, Lanezares, Rosario, San Jose, Northern Samar | 35,000 |
| | Hinabian-Lawigan Watershed- | St Bernard, Southern Leyte | 4,536 |
| | Loog WFR | Basey, Western Samar | 1,866 |
| | Paranas | Western Samar | |
| | Limasawa Island PLS | | |
| | Samar Island WFR | | |
| | Mangkono Genetic Reserve | Homonhon Island, Guiun, Eastern Samar | 454 |
| | Higatangan Island PLS | Higatangan Island, Naval, Biliran | |
| | Anas Natural Biotic Area | Almeria, Naval, Culaba, Biliran Province | 1,286 |
| | Liloan PL | Liloan, San Francisco and St Bernard, Southern Leyte | 3,386 |
| | Linal-an WFR | Can-abong, *Brgy* Sinham Sitio Canyupay, Borongan, Eastern Samar | 5,936.84 |
| | Tres Marias Island | Tabuh, Gumalak, Cabgar Island, Palompon, Leyte | 10,427 |
| | San Miguel Babatugon Forest Reserve | | |
| | Rawis Caves | | |
| | San Pedro, San Pablo PLS | Hinunungan, Southern Leyte | 4,340 |
| | RM Tan Cave | | |
| | Baybay PL | | |
| | Southern Leyte PLS | | |
| | Bito Watershed PL | | |
| | Mt Huraw | | |
| | San Vicente Group Islanda MPS | Northern Samar | |
| | Old Growth/Mossy Forest | | |
| | Borongan-Basey OGF | | |
| | Hinabangan OGF | | |
| | Matuguinao Cave | | |

| *Region* | *Protected area* | *Location* | *Area** |
|---|---|---|---|
| | Homonhon Mangkono Nature Reserve | | |
| | Guinunguan Cave | | |
| | Tunga WFR | | |
| | Basey Residual Forest Reserve | | |
| | Maqueda Bay | | |
| | San Policarpio-Arteche PS | | |
| 9 | Mt Pinukis Mountain Ranges | | |
| | Mt Paraya Mountain Ranges | | |
| | Libuton PL | | |
| | Ocapan PL | | |
| | Putting Bato PL | | |
| | Baluboan Cave PL | | |
| | Dumingag Natural Biotic Area | | |
| 10 | Hibok-Hibok-Timpoong Natural Monument | Municipality of Mambajao, Mahinog, Sagay and Catarman, Province of Camiguin | 2,227 |
| | Mt Balatukan NP | Misamis Oriental, Municipality of Claveria, Balingasag, Medina and City of Gingoog | 11,270 |
| | Mt Lumot | Southeastern part of Misamis Oriental, Municipality of Claricia and City of Gingoog | 17,222.695 |
| | Mt Tago OGF | Municipality of Tago, Tandag, San Miguel, Marihatag, Lanuza, Carmen, and Madrid, Surigao del Sur | 29,063 |
| | Mt Kimangkil | Malitbog and Manolo Fortich, Bukidnon | 8,079 |
| | Mt Tangkulang OGF buhay Range NP | Quezon, Valencia and San Fernando, Southern Bukidnon | |
| | Impalutao Forest Reserve | Impasugong, Bukidnon | 1,782.20 |
| | Balingoan-Talisayan PLS | Municipality of Balingoan and Talisayan, Misamis Oriental | 646 |
| | Batinay OGF | | |
| | Mindulian and Mimbanano OGF | | |
| | Mantigue OGF | | |
| | Mt Kalatungan OGF-Mt. Range | | |
| | Mt Inayawan PA | Nununga; Lanao del Norte | |
| | Sultan Naga Dimapore PLS | | |
| 11 | Aliwagwag PL | | |
| | Mt Haguimitan Range WS | | |
| | San Isidro | | |
| | Lake Leonard | New Leyte, Maco, Davao del Norte | |
| | Mt Tagub – Kampalili Ranges PL | | |
| 12 | Mt Sinaka Watershed | | |
| | Daguma Ranges | Sultan Kudarat | |
| | Kabulnan Watershed | | |
| | Salaman Watershed | | |
| | Paril-Sangay PS | | |

| *Region* | *Protected area* | *Location* | *Area** |
|---|---|---|---|
| 13 | General Island PL | | |
| | Lingig PLS | | |
| | Mancangi PLS | | |
| | Pinagdayuhan and Buyuan NP | | |
| | Britanica-Gata PLS | | |
| | Adlay Watershed | | |
| | Tago River Watershed | | |
| | Tubay Wildlife Sanctuary | | |
| | Kinablangan Watershed | | |
| | Lake Mainit Wildlife Sanctuary | | |
| ARMM | Liguasan Marsh | | |
| | Wilderness Area | Nunungan, Lanao del Sur | |
| Total number | | 182 | |

*In hectares unless otherwise specified.
*Source:* PAWB-Biodiversity Division.

From the composition of the PAMB, it is evident that government realises the value of having representation from all stakeholders directly connected with environmental management. For one thing, the characteristics of PAs in the Philippines is such that most of these remote areas are already inhabited by people, and the concept of 'strictly no use' is politically unfeasible. Hence, government has accepted the fact that comprehensive and sustainable management of protected areas will need to include all stakeholders in decision-making. Tenurial instruments are being issued to migrants who have occupied the area for more than five years prior to the passage of the NIPAS Act (see Appendix B).[15] In a way, property rights have been issued to them, which in turn provides a greater incentive for these people to manage the resources properly.

Interviews with two former programme managers of the World-Bank funded Conservation of Priority Protected Areas Program (CPPAP), a project that helped establish and implement ten PAs in the country for eight years, were conducted.[16] According to them, one of the most important contributions of the NIPAS Act was the democratic composition of the PAMBs, whereby civil society (or simply NGOs) were given a role in directly managing PAs. Prior to the NIPAS Act, PA management was solely entrusted to the state, through DENR personnel and elected government officials. But because of the nature of the political process in the Philippines, whereby officials are elected every three years, coupled with the usual problems of inefficient bureaucracy due to overburdened staff, PA management left much to be desired. Officials hardly undertook long-term planning, and only rarely invested in programmes that would result into long-term benefits. With the introduction of non-government personnel in PAMBs, there was more room for sustainability and continuity, and consequently long-term planning. Furthermore, because community representatives were given a chance to participate in PA planning and implementation, their priorities were given more attention and had a higher chance of being met. There is thus a clearer link between suppliers and beneficiaries of environmental services.

[15] Available at http://www.iied.org/eep/
[16] Personal interviews with Randy Dacanay of the Philippine Rural Reconstruction Movement (PRRM) and Angelita Meniado of PAWB-DENR.

**Box 3.1 'Establishment and Management of Community-based Programs in PAs': issuing property rights to local communities living inside PAs**

On 3 January 2002, the Department of Environment and Natural Resources (DENR) issued an Administrative Order (DAO) entitled 'Establishment and Management of Community-Based Programs in Protected Areas'. The order was meant to provide qualified migrant communities and interested indigenous people tenure over established community-based programme (CBP) areas located within PAs under the NIPAS system. CBPs should be consistent with the Protected Area Management Plans formulated by the PAMB. Migrants should be certified by the PAMB as qualified tenured migrants (that is, living in the area five or more years before the enactment of the NIPAS Act), while IPs should be certified by the National Commission of Indigenous People (NCIP) as recognised IPs staying in the PA.

The CBP should describe the communities' long-term vision, aspirations, commitment, and strategies for protection, rehabilitation, development, and sustainable use of the resources within the PA. Procedures in preparing the plan are contained in the 'Manual on the Establishment and Management of Community-Based Program in Protected Areas', which in turn was drafted by the PAWB-DENR.

All fees collected from the implementation of the CBP will likewise revert back to the IPAF, and will be subjected to the same procedure of disbursement of IPAF funds.

*Source:* DENR Administrative Order 2002-02 (January 2002), 'Establishment and Management of Community-Based Programs in Protected Areas'. DENR

Even among government personnel, the PAMB served as a venue for rationalising government programmes in the area. Because all relevant levels of government were members of the PAMB, it became a venue for coordinating their own development programmes and projects among themselves, something that was not a common practice prior to the NIPAS Act. Not only are they able to detect gaps and overlaps and resolve conflicts, they are also able to complement their programmes through the IPAF funds generated by the PA.

As in all pioneering efforts, birth pains are to be expected. The composition and rationale of the PAMB are to be lauded. But in order for the whole system to work, there is the premise that every member is equipped with the same level of negotiating skills. Unfortunately, this is not the case. In particular, representatives of Indigenous Peoples' (IP) groups and local people's groups sometimes get marginalised when discussions ensue. In the end, they are not able to articulate their positions, and they sometimes feel that their views become misrepresented. Nevertheless, these are problems of capacity building, rather than problems inherent in creating the PAMB per se. They are not seen as justification for changing the PAMB and its role in PA management.

**Box 3.2 Conservation of Priority Protected Areas Project (CPPAP)**

The Conservation of Priority Protected Areas Project or CPPAP, a biodiversity conservation project funded by the World Bank, was implemented in the Philippines from 1994 to 2002. Its main objective was to pilot-test the NIPAS Act in chosen areas. Ten priority sites were chosen on the basis of their bio-geographical location, peace and order condition, legal status, size of area, and financing needs, among other criteria.

The ten priority sites identified for CPPAP intervention are the following:

- Mt Kanlaon Nature Park
- Mt Kitanglad Range Nature Park
- Apo Reef Nature Park

- Siargao Protected Landscape and Seascape
- Mt Apo Nature Park
- Bataan Nature Park
- Sierra Madre Nature Park
- Batanes Protected Landscape and Seascape
- Agusan Marsh Wildlife Sanctuary
- Turtle Islands Protected Landscape and Seascape

Its eight years of implementation was conducted with a budget of $20 million financed by the Global Environmental Facility through the World Bank, with a government counterpart fund of 10% of the WB-GEF grant. Out of the total GEF amount, $17.13 million was provided to NIPA and the rest to DENR.

CPPAP's five major components include:

- Protected area planning and management
- Biodiversity conservation
- Tenurial security
- Livelihood systems
- Project management and coordination

A sustainable development paradigm was adopted by the CPPAP as its overall framework. A set of objectively verifiable indicators (OVI) was developed for indicating milestones for the five components, and as indicators for achievement of the overall goal and purpose of the project.

*Source:* Department of Environment and Natural Resources. Conservation of Priority Protected Areas Project. CPPAP-PCU, NAPWNC, Diliman, Quezon City.

### *3.1.4 Implementation of user fees – some emerging difficulties*

After arriving at a decision on how much to charge for user fees, the PAMB comes up with a resolution indicating the amount and the mechanism for collecting such fees. The advantage of this arrangement is that PAMBs are legally mandated to charge fees, and can come up with the fee system they deem suitable for their own resources and users. Since the PAMB is theoretically well represented by all the major stakeholders in the area, there is a quick acceptance by the community once the board reaches its decision.

Inefficiencies arise when the PAMB includes a large number of stakeholders, making it difficult to come up with a quorum during quarterly meetings. For instance, in Mt Apo National Park, the PAMB is composed of 250 members because the PA is so large. It sometimes takes years before major decisions can be resolved because of the difficulty of gathering sufficient numbers of representatives during their regular meetings.

Still, there are also certain legal issues that need to be resolved between the NIPAS Act and other conflicting laws. For instance, the Local Government Code (LGC) provides for local governments to share as much as 30 per cent in the national wealth for all types of resources found within their jurisdiction. Although the LGC was drafted earlier, the NIPAS Act did not specifically override the revenue-generating functions of Local Government Units (LGUs) in the environment and natural resources sector. In some areas, this pits the local government against the PAMB in generating revenues, creating considerable confusion and consequently delaying the implementation of plans and programmes for the PA. Then there is the conflict with the National Water Resources Board that claims that they are the sole government entity that can issue water rights and distribute them. Accompanying such rights is the payment of fixed fees. Watershed-protection fees are being interpreted to fall under this category. Finally, the forestry sector has its own set of user fees and charges, which sometimes overlap with resource user fees that some PAMBs are implementing.

In some areas, such issues are resolved by giving the LGU greater powers within the PAMB itself. This is true in areas where the mayor or governor has a very strong hold on his/her constituents, and the PAMB, which is led by the national government, has no choice but to work within the LGU's framework. Still, in some areas, there is an equal sharing scheme of leadership within the PAMB. This likewise translates into a substantial proportion of the revenues being given to the LGU, instead of the whole amount being deposited in the IPAF's account. Finally, there are also areas where the LGU is totally left out of the PAMB when the mayor refuses to recognise the all-encompassing powers of the PAMB over the PA. It thus becomes a case-to-case basis whether the inclusion of all stakeholders will ensure that the PAMB is successful in managing the PA or not. But in principle, there are still advantages to this democratic way of building institutional mechanisms for PA management, since programmes and plans of the management board will consequently reflect the interests of the stakeholders themselves.

### *3.1.5 Integrated Protected Area Fund (IPAF)*

As mentioned earlier, IPAF was created under Republic Act 7586 otherwise known as the NIPAS Act. In particular, Section 16 states:

> There is hereby established a trust fund to be known as Integrated Protected Areas (IPAS) Fund for purposes of financing projects of the System. The IPAS may solicit and receive donations, endowments, and grants in the form of contributions, and such endowments shall be exempted from income or gift taxes and all other taxes, charges or fees imposed by the Government or any political subdivision or instrumentality thereof.

It further states that:

> All incomes generated from the operation of the System or management of wild flora and fauna shall accrue to the Fund and may be utilized directly by the DENR for the above purpose. These incomes shall be derived from: taxes from the permitted sale and export of flora and fauna and other resources from protected areas; proceeds from lease of multiple-use areas; contributions from industries and facilities directly benefiting from the protected area; and such other fees and incomes derived from the operation of the protected area.
>
> Disbursements from the Fund shall be made solely for the protection, maintenance, administration, and management of the System, and duly approved projects endorsed by the PAMBs, in the amounts authorized by the DENR.

In the Implementing Rules and Regulations, it specifies that:

> at least 75% of the revenues generated by a protected area shall be retained for the development and maintenance of that area and utilized subject to the IPAF Board guidelines … with the balance being remitted to the Central IPAF Fund.

Such guidelines contain general provisions on the approval process, which in turn are made consistent with the Manual of Operations of the DENR.

*Current flow of IPAF disbursements*

Interviews were conducted with personnel from the DENR as well as from the Department of Budget and Management (DBM). Appendix C-1[17] contains the complete schedule of interviews conducted for this particular study component. From the interviews, the following flow of documents was derived.

Step 1: The PAMB issues a resolution requesting that their IPAF funds be released, based on an attached Work and Financial Plan (WFP) approved by its members. Along with the WFP are the other budgetary statements as required by DBM and DENR.

Step 2: The documents are submitted first to the respective Community Environment and Natural Resources Officer (CENRO), then to the Provincial Environment and Natural Resources Officer (PENRO) concerned.

Step 3: Upon checking whether the WFP is in line with what was agreed upon, and upon checking the budgetary statements and reconciling it with the province's total budgetary statements, the documents are submitted to the DENR Regional Office.

Step 4: Within the DENR regional office, the documents pass several offices. First, they go to the Protected Areas and Wildlife Service Division, which checks the WFP's technical aspects and sees whether they are within the priorities and plans for the region. They also go to the budget and accounting division, which reconciles the figures with the regional budget figures. Upon recommendation of the respective division chiefs, the documents are submitted to the assistant regional director, who then recommends endorsement by the regional executive director (RED). The RED then endorses the request to the Protected Areas and Wildlife Bureau of the DENR in Manila.

Step 5: At the PAWB, the request goes through two divisions: the Biodiversity Division and the Administrative Division. Both check for the completeness of the documents. Upon approval of both division chiefs, the request is endorsed to the assistant director of PAWB, who recommends the endorsement of the director to the DENR central office.

Step 6: When it reaches the DENR Central Office, the request is processed by two more offices. First, it goes through the Financial and Management Service Bureau, which checks whether the attachments to the budget request are complete or not. It then forwards the request to the Office of the Assistant Secretary (Asec) for Operations, who either signs it him/herself or forwards it to the head executive assistant (HEA) of the department secretary (Sec), for the latter's signature. Upon signing by either the Asec, the HEA or the Sec., the documents get endorsed to the DBM.

Step 7: At the DBM, the documents are processed by the division handling DENR requests. An analyst checks the financial attachments of the request, and verifies whether the amounts stated are accurate. The division chief then endorses the request to the director, who then recommends approval by the secretary, through the assistant secretary. After approval, the secretary issues the Notice of Cash Allocation (NCA), and the Special Allotment Release Order (SARO). The NCA is issued as proof that the cash has indeed been deposited in the bank account of the agency concerned, while the SARO is the authority of the agency to withdraw the cash for whatever purpose is stated in the WFP. Only then is the process complete.

[17] Available at http://www.iied.org/eep/.

Figure 3.2 shows the flowchart summarising all the steps involved in the process of requesting releases from the IPAF.

**Figure 3.2 Administrative flowchart of current IPAF process**

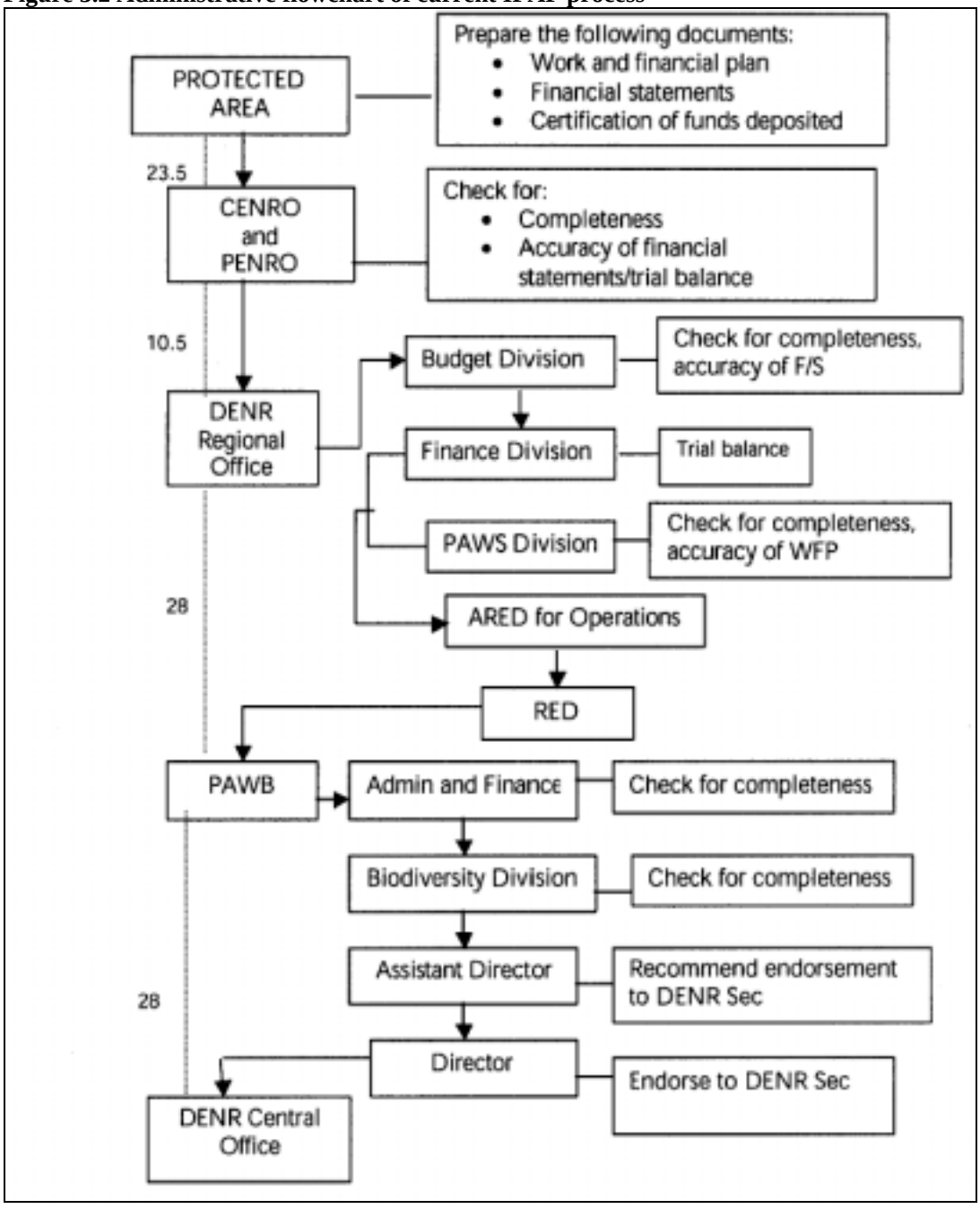
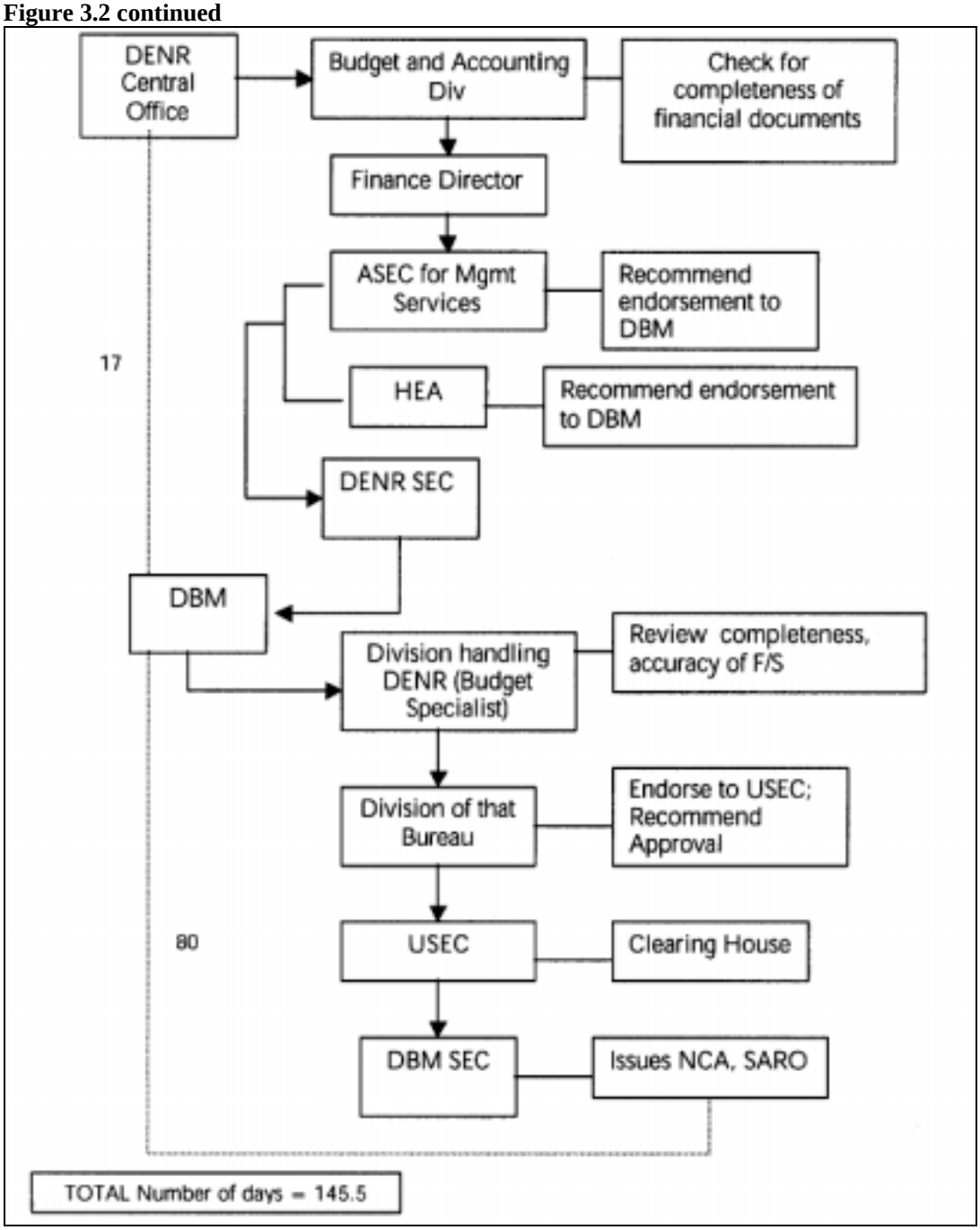


**Figure 3.2 continued**




*Note*: numbers beside the broken lines represent the number of days it takes before received by the next agency.

*Problems with IPAF disbursements*

Table 3.3 shows the average number of days it takes for each office to process IPAF requests. So far, there have been only nine out of 71 PAs with IPAF revenues that have made requests for IPAF releases:

- Mt Isarog National Park
- Manleluag Spring National Park
- El Nido Marine Reserve
- Apo Reef Nature Park

- Initao National Park
- Biak na Bato National Park
- Apo Island Protected Landscape and Seascape
- Hinulugang Taktak National Park
- Mt Pulag National Park

**Table 3.3 Protected Areas with IPAF disbursements, December 2002**

| *Protected area* | *Average total number of days* | *Total income* | *Total IPAF disbursement* | *NIPAS status* |
|---|---|---|---|---|
| Mt Isarog NP | 48 | 135,024 | 85,768 | proc |
| Manleluag Spring NP | 120 | 1,930,256 | 489,220 | not yet proc |
| El Nido Marine Reserve | 196 | 247,537 | 120,772 | proc |
| Apo Reef NP | 255 | 787,630 | 370,000 | proc |
| Initao NP | 222 | 227,601 | 160,838 | proc |
| Biak na Bato NP | 148 | 2,139,850 | 882,080 | not yet proc |
| Apo Island | 165 | 3,213,655 | 1,251,314 | proc |
| Hinulugang Taktak NP | Inc | 5,259,821 | 2,734,257 | proc |
| Mt Pulag NP | 158 | 1,086,988 | 375,396 | no yet proc |
| Average | 163.9 | | | |
| Total | | 15,028,361 | 6,469,645 | |

*Source:* PAWB-Biodiversity Divison
*Notes*: inc = cannot be estimated because of insufficient information; proc = proclaimed under NIPAS; not yet proc = not yet proclaimed under NIPAS.

Basically, these are the PAs that have established user fees and have generated substantial amount of revenues for the use of the area's resources. Most of these revenues are tourism-related, whereby entrance fees are charged against visitors entering the area for recreational purposes. Table 3.4 contains the list of PAs that have been able to raise IPAF revenues on their own.

**Table 3.4 Protected Areas with IPAF revenues, area and total income by region and PA, December 2002**

| *Region* | *Protected area* | *Area (in hectares)* | *Total income* |
|---|---|---|---|
| PAWB | NAPWNC | 2,400 | 37,429,043 |
| | Hinulugang Taktak NP | 3,200 | 5,259,821 |
| CAR | Mt Pulag NP | 11,550 | 1,086,988 |
| 1 | Paoay Lake NP | 340 | 307,194 |
| | Agoo-Damortis PLS | 10,513 | 400 |
| | Bessang Pass Natural Monument/Landmark | 693 | 23,416 |
| | Manleluag Hot Spring NP | 91 | 1,930,256 |
| 2 | Batanes PLS | 213,578 | 417,976 |
| | Magapit PL | 3,404 | 10,000 |
| | Peñablanca PL | 4,136 | 12,840 |
| | Northern Sierra Madre Nature Park | 359,486 | 41,120 |
| | Salinas Nature Monument | 6,676 | 1,000 |
| | Dupax WFR | 425 | 1,000 |
| | Bangan Hill NP | 425 | 11,500 |
| 3 | Mt Arayat NP | 3,715 | 73,230 |
| | Biak-na-Bato NP | 659 | 2,139,850 |
| | Minalungao NP | 2,018 | 6,400 |
| | Bataan NP | 23,688 | 16,822 |
| | Roosevelt NP | 786 | 12,000 |
| 4A | Mt Palay-Palay Mataas-na Gulod NP | 4,000 | 15,477 |
| | Quezon NP | 983 | 32,650 |
| | Taal Volcano PL | 4,537 | 4,760 |
| 4B | Naujan Lake NP | 21,655 | 3,047 |
| | Puerto Princesa Subterranean River Nature Park | 22,202 | 2,085,503 |
| | Ursula Islands | 20 | 10,000 |
| | Mt Guiting-Guiting Nature Park | 15,265 | 40,200 |
| | Tubbataha Reef National Marine Park | 33,200 | 104,000 |
| | El Nido Managed Resource Protected Area | 89,135 | 247,537 |
| | Apo Reef Nature Park | 15,792 | 787,630 |
| 5 | Libmanan Caves NP | 19 | 3,780 |
| | Bicol Natural Park | 5,201 | 168,467 |
| | Bulusan Volcano Nature Park | 3,672 | 80,523 |
| | Mayon Volcano Nature Park | 5,776 | 56,000 |
| | Caramoan NP | 347 | 3,202 |
| | Mt Isarog Nature Park | 10,112 | 135,024 |
| 6 | Taklong Island National Marine Reserve | 1,143 | 5,000 |
| | Canlaon Nature Park | 24,388 | 101,205 |
| 7 | Central Cebu NP | 11,894 | 7,945 |
| | Rajah Sikatuna PL | 10,453 | 162,998 |
| | Olango Island WS | 920 | 414,478 |
| | Guadalupe Mahugnao Hot Spring NP | 57 | 14,660 |
| | Loboc WFR | 19,410 | 100 |
| | Buhisan WFR | 631 | 2,471 |
| | Chocolate Hills Natural Monument | 14,145 | 200 |
| | Getafe Group of Islands Wilderness Area | 7,244 | 1,000 |
| | Apo Island PLS | 691 | 3,213,655 |

| *Region* | *Protected area* | *Area (in hectares)* | *Total income* |
|---|---|---|---|
| | Camotes Island MSFR | - | 83,345 |
| | Calape Group of Island Landscape/Seascape | 630 | 100 |
| | Talibon Group of Islands PLS | 6,457 | 4,028 |
| | Inabanga PLS | - | 1,000 |
| | Pres Carlos P Garcia PLS | - | 4,700 |
| | Ubay MSFR | - | 1,000 |
| | Wahig Inabanga River WFR | - | 181,526 |
| 8 | Calbayog-Pan-As Hayiban PL | 7,832 | 900 |
| | Guiuan PLS | 60,448 | 10,000 |
| | Sohoton Natural Bridge NP | 840 | 167,394 |
| | Lake Danao Nature Park | 2,193 | 30,773 |
| | Taft Forest Philippine Eagle Wildlife Sanctuary | 3,729 | 2,000 |
| | Jicontol Nature Park | 6,483 | 6,042 |
| | McArthur Landing Memorial Park | 7 | 3,006 |
| | Bulusao WFR | 4,055 | 1,000 |
| | Palompon WFR | 2,392 | 1,400 |
| | Calbiga Caves PL | 2,968 | 6,726 |
| | Mahagnao Volcano Nature Park | 635 | 2,000 |
| | Hinabian-Lawigan Watershed PL | 4,536 | 1,000 |
| 9 | Jose Rizal Memorial PL | 439 | 18,964 |
| 10 | Initao-Libertad PLS | 1,301 | 227,601 |
| | Mt. Kitanglad Range Natural Park | 31,235 | 619,083 |
| | Mt. Malindang Natural Park | 34,694 | 8,910 |
| 13 | Agusan Marsh WS | 278,914 | 2,618 |
| | Siargao PLS | 14,836 | 32,835 |
| Total | | | 57,900,320 |

*Source:* PAWB-Biodiversity Division

As can be seen from Table 3.3, it takes an average of about five months for the whole process to be completed. DBM takes up the most number of days, whereby the documents stay with them for a little under three months. The central DENR office takes up to a month, as does the PAWB. The PENRO and CENRO offices combined take around three weeks. The fastest process occurs at the DENR regional office level, whereby it takes less than two weeks for the papers to be endorsed by Manila.

Needless to say, the process takes too long before budgets for protected-area management are released. For instance, in Apo Island, despite the fact that millions of pesos have been generated from their user-fee system through the years, projects could not be implemented right away because of the long process involved in releasing their funds. Local residents started to doubt the effectivity of proclaiming their PA under the NIPAS System, and some believe that they should disestablish Apo Island as a NIPAS site (see Section IV.A for a more detailed discussion of Apo Island). The planning process for the WFP is not even taken into consideration here. Meanwhile, most of these plans involve providing alternative livelihood opportunities to local residents, primarily to steer them away from further resource extraction and other environmentally degrading activities. The longer it takes for the budgets to be released, the longer it will take for these projects to be implemented. Sad to say, the environment and local people are the big losers in the end. Until poverty-alleviation problems are addressed, unsustainable resource extraction and environmentally degrading activities

will increase, as populations climb and resources become more scarce. The problem gets bigger, so will bigger budgets be required, and the vicious cycle continues until it becomes too late to save both the human and natural resources for which these budgets were earmarked in the first place.

A major problem is the centralised nature of the system. The process calls for a multi-layered process of approval for funds raised locally, to be disbursed at the local level eventually. Even at the local level, i.e. the PAMB, the provincial and community officials of the DENR, and the regional officials of the DENR, there are enough checks and balances to ensure that the funds will indeed be used for the purpose for which they were raised, and to ensure financial and accounting consistencies. There is really no need for all requests to pass through national offices anymore. Besides, it defeats the purpose of creating local-level management bodies if they are not to be equipped financially anyway. In the end, the process becomes inefficient, and more costly to maintain.

### *3.1.6 Potential solutions on issues regarding NIPAS Act implementation*

Based on the current situation and the clamour of protected areas under the NIPAS System for a more efficient process to be put in place, the following options are presented for consideration of the DENR and the DBM.

An obvious option is to remove the DENR central office from the entire approval process. Within the whole DENR system, there are more than enough checks and balances to ensure that the WFP is well within the framework for sustainable development, and that the budget requests are consistent with those of the various levels of government, i.e. from municipal to provincial to regional to national. It is thus suggested that the first level to be removed should be the central DENR office in Manila. An interview with Dir Erlinda Meram of the Financial and Management Service Bureau was conducted last 16 August 2002. She was in fact of the opinion that such budget requests should not go through her office anymore, and that the DENR secretary's office should not be involved either as well. On average, this can shorten the process by a month.

This step, however, can be fulfilled only upon the reversal of a memorandum issued by the DBM on 23 August 1999, which states that all budget requests from special allotment funds should be made directly by the secretary of the department concerned (see Appendix D[18]). Given that the DBM issued the memo, it will need the DBM itself to reverse it.

An additional step could be to remove the PAWB from the approval process, and leave the DENR regional office to transmit the requests to DBM. However, PAWB should still be furnished copies of all requests, along with attachments, for monitoring purposes. They could strengthen their role in the monitoring process, while delegating their endorsement function to the regional offices. This should not prove to be difficult, given that the regional offices are already involved in any case. Again, this can shorten the process by another month, on average.

During the interview with PAWB personnel, the chief of the administrative division expressed apprehension on removing the PAWB from the IPAF approval process. This is understandable, given that there is really a need for a body that can oversee the whole process

[18] Available at http://www.iied.org/eep/.

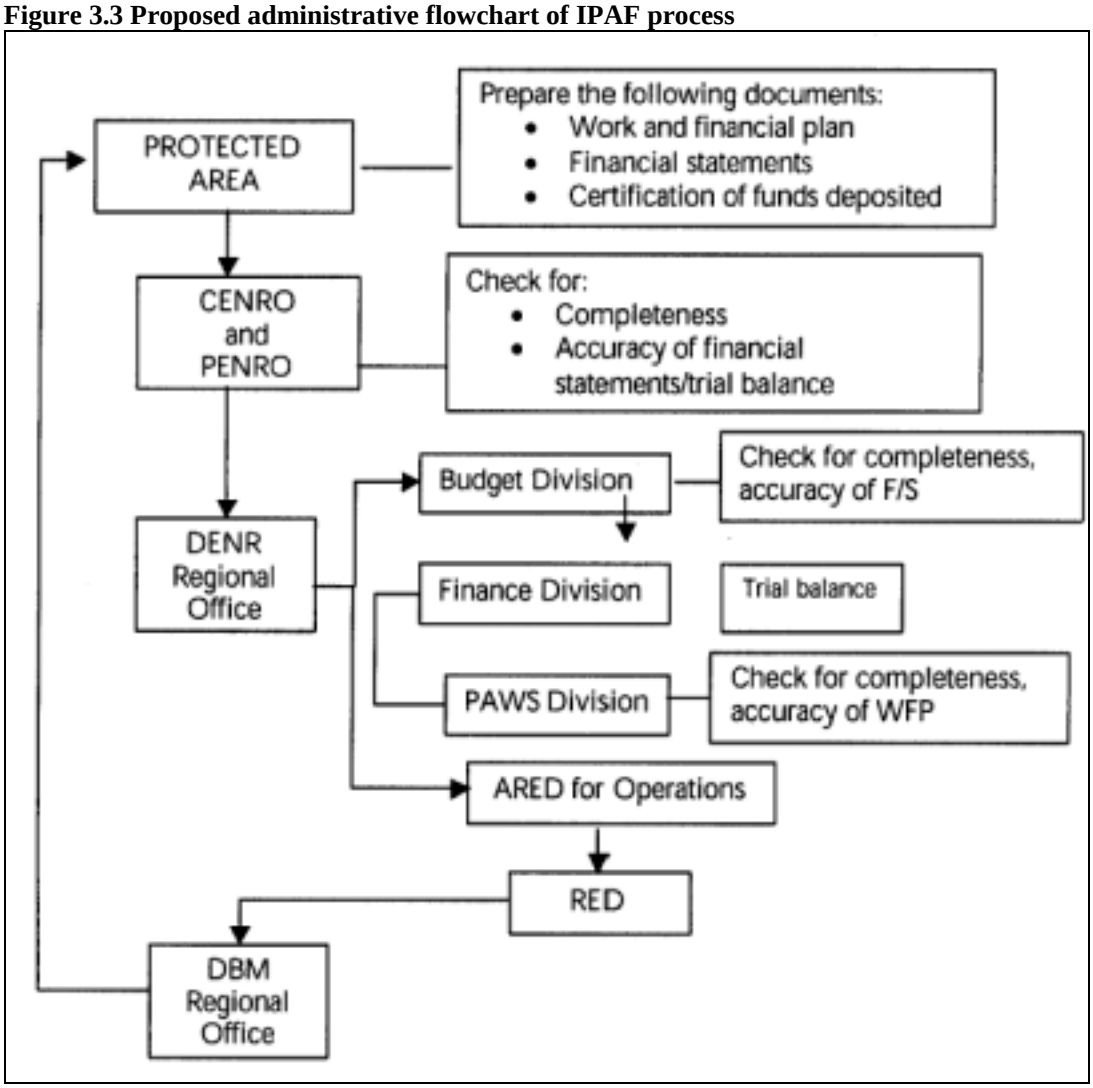
in its entirety. To do so, a nationally based office is needed. However, such an objective can be served through stricter monitoring, not necessarily by the office getting involved in the approval process. In this case, the PAWB is in the best position to act as an overseeing body for the whole IPAF process. As such, it should continue its tight coordination with all PAs under its jurisdiction. However, it should transform its functions that are geared more towards monitoring of the implementation of plans and programs, particularly those specified in the WFPs, rather than being part of the approval process. Hence, it should still be furnished copies of whatever documents are being submitted for endorsement and approval. This option will also save time and personnel, both of which can be used for monitoring purposes.

During the interview with the chief of the PAWS Division of DENR Region III, that individual expressed the need to lessen the involvement of Manila-based offices in the process. For one thing, the claim was that these offices were in the best position to review WFPs, given their familiarity and tighter coordination with the PAs under their jurisdiction. Furthermore, the transport of documents from far-flung areas to Manila can eat up a lot of time, further delaying the process of budget releases. They, however, subscribe to the idea that PAWB should still play a major role, albeit more as a monitoring body rather than as one from which approval shouild be sought.

Another major step that can be taken to shorten the process is to delegate the actual release of the funds to the respective DBM regional offices. In this case, the DENR regional office can go straight to the DBM regional office, thus shortening not only the travel time of documents but also the accounting component of the process. According to the interview conducted with DBM personnel, central office staff are overloaded with work, thus explaining the length of time the documents take at their department. It would well be within the jurisdiction of central office to delegate to their regional offices, given the decentralisation and devolution aspirations of the Philippine government. Again, central office would still be involved through monitoring schemes, but not necessarily through the approval process. This will ease up the delays in release of funds, but will not sacrifice the oversight function of the national offices through stricter monitoring activities. In doing so, the process can probably be shortened by another month or so, depending on the speed of the Regional Offices in acting on IPAF requests.

Figure 3.3 contains the proposed process of flow of documents and the potential decrease in the number of days for the whole process to be completed.

**Figure 3.3 Proposed administrative flowchart of IPAF process**




The presence of so many laws regulating the environment and natural resources has caused inefficiencies in the process of implementing the NIPAS Act. As mentioned earlier, conflicting provisions exist among the LGCs, the NIPAS Act, the Water Code (which contains the claim that the National Water Resources Board is the sole agency that can issue water use rights), and the Forestry Code (which allows DENR to collect forest charges). Rationalising all these laws through legal amendments is ideal; yet it may take some time before they can take effect. In the meantime, one possible solution is for PAMBs and national government agencies to come up with tentative agreements on how to delineate roles and responsibilities on a per site basis. In other words, it might be difficult to come up with specific agreements at the national level that will apply to all sites. Rather, each site, depending on the various stages of organisation of the PAMBs, can come up with their own set of agreements, delineating each stakeholder's role for all resources found within their area. For instance, in some areas where the LGU has a strong presence and is very active in protection activities, the local government head can be given a co-chairperson position in the

PAMB.[19] A broad set of guidelines can be issued by each national government agency involved, which should be coordinated among themselves first.

The delineation of an area into a PA depends mainly on the natural configuration of its resources. Geological and ecological factors will come into play. Hence, it is difficult to pin down a specific number of members that can truly represent all stakeholders involved in PA management. Some areas such as Mt Apo in Davao have demonstrated that PAMB membership can grow as big as 250 members. But because of the sheer size, it is very difficult for them to meet regularly, further delaying discussions and agreements on pending issues. For areas such as Mt Apo, the PAMB should be flexible enough to create smaller groups that can be given jurisdiction on smaller areas within the PA. The extent of autonomy for these smaller groups will be on a case-by-case basis, depending on the nature of the issues to be resolved, and the capacity of the groups to act on them.

### *3.1.7 Conclusion*

The whole concept of the IPAF is new, although the law was passed ten years ago. It took time for protected areas under the system to be able to generate revenues on their own, a critical occurrence because of the traditional dependence on the national government for local budgets and funds. On the other hand, national government offices are still grappling with the idea of letting go of major functions to local government entities, functions that have been traditionally and solely performed at the national level. The Philippines has been undergoing birth pains with respect to devolution and decentralisation for the past decade, and as expected, there were problems along the way. Some departments have responded by reclaiming control of certain functions, while some have increased the layers in the bureaucracy for ensuring checks and balances.

The IPAF is no exception to this. The concept is groundbreaking for the country in any case: now 75 per cent of revenues generated from PAs will go directly into the area's own management and protection. Experiences on IPAF requests have been new and far too few. Only those that have actually been able to generate their own revenues have had such experience. It can be inferred that such PAs are the more advanced ones at least in terms of management, thus one would expect them to be able to implement their programmes and projects in an efficient manner. There is the hope for sustaining economic development without sacrificing environmental and natural resource management. However, release of budgets have been bogged down by the long process and numerous signatures involved. As such, delays in implementing their WFPs have been long and drawn out.

The options in this report are meant to ensure that such efficiency is not hampered by circumstances not under the control of the PA management bodies. It is hoped that efficiency does not get lost along the way because of fears of unscrupulous local managers getting the better of the national government. If at all, such efficiency should even be rewarded to serve as incentives for others to emulate. The answer lies in stricter monitoring procedures and a stronger penalty system for would-be violators and abusive PA managers.

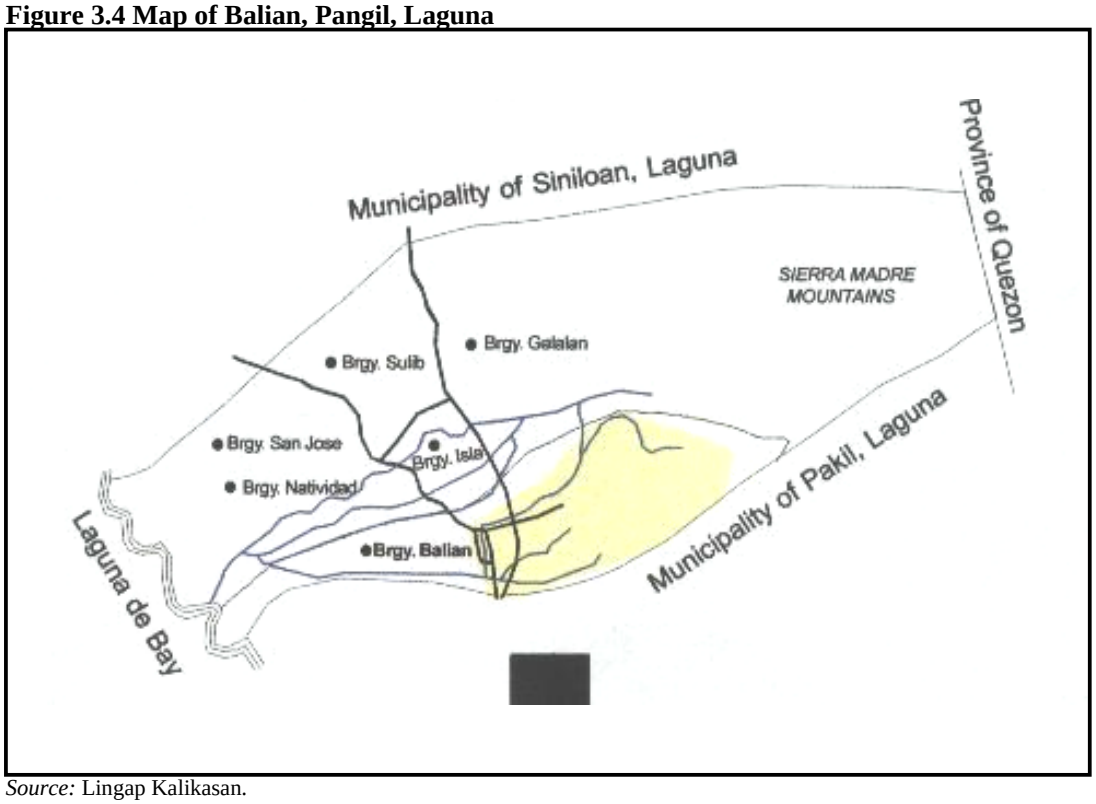
[19] The NIPAS Act specifies the DENR regional director as chairperson of the PAMB.

## 3.2 Balian, Pangil, Laguna: a case study on watershed protection by a community-based organisation

### *3.2.1 The study site*[20]

Balian is a *barangay* (or village) located in the municipality of Pangil, province of Laguna. The area is approximately 90km south of Manila, and Laguna is one of four provinces that are being advertised as alternative industrial centres to Manila. The municipality is located in the north-eastern part of the province, with the Sierra Madre mountain range bordering both the east and the west. Figure 3.4 shows a map of Pangil, Laguna.

**Figure 3.4 Map of Balian, Pangil, Laguna**




*Source:* Lingap Kalikasan.

There are approximately 500 families living in Balian. Farming is their main source of livelihood. Farms owned through inheritance are mostly planted with fruit-bearing trees, while the smaller farms are planted mostly with rice. Labour wages are around $2 per day.

Most of the land can be bought and sold. In the past, these farmlands were subdivided into small lots and were given tax certificates. These in turn were used to issue land titles to the owners.

### *3.2.2 Historical background*[21]

In 1925, long before it became fashionable for people to organise themselves to fight for environmental issues, the people of Balian mobilised themselves to tap water from upland

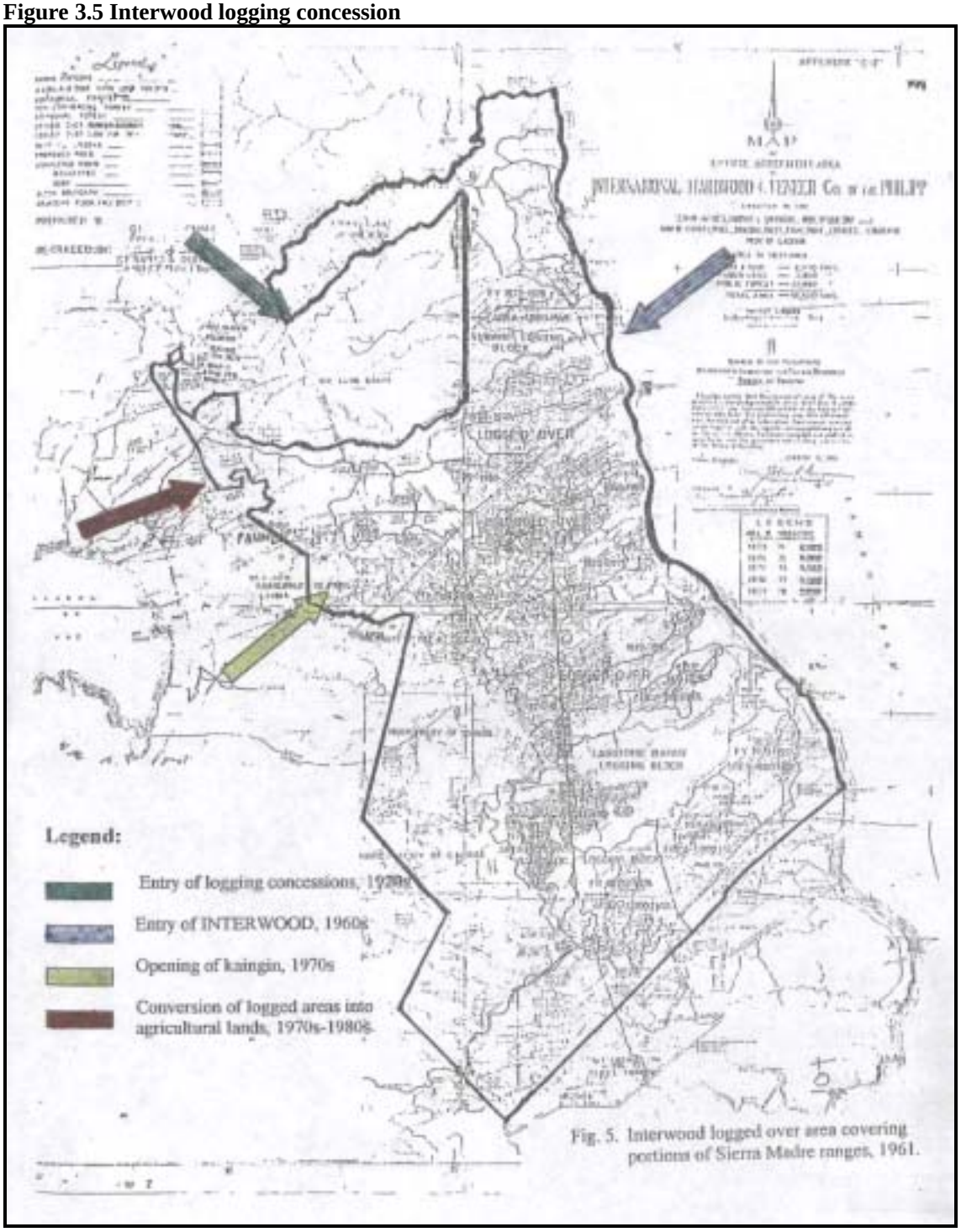
[20] Based on Jacinto, E. Care for Nature Group: A Case Study of a Community Organization for Watershed Rehabilitation. 2001.

[21] Tolentino, L.L. et al. (2002), Creating Space for Local Forest Management in Balian, Pangil, Laguna. Research Report Funded by Center for International Forestry Research, Department of Agricultural Education and Rural Studies, University of the Philippines Los Baños, Laguna, Philippines.

streams and rivers for their domestic water supply. They formed a group called Samahan ng Bailan Para Sa Pagpapauwi ng Tubig Inumin (SBPTI), which literally means Organisation of Balian for Providing Drinking Water. The group took care of building and maintaining their crude water pipes carved out of bamboo poles which ran from an identified water source upstream, and ensured that water reached every household within its jurisdiction. It was based on the principle of self-help, and is purely voluntary. All residents of the community are automatic members, and any project that concerns water should be coordinated with them.

Part of the upstream area surrounding Pangil and Balian was logged in the 1960s and 1970s, and later divided into upland agricultural plots. The logging concession was owned by a company called Interwood, short for International Hardwood and Veneer Company. It was established in Pangil under the administration of an American named Hill. Figure 3.5 shows the total logging concession of Interwood.

**Figure 3.5 Interwood logging concession**




*Source:* Plopino, R.F. (2001), Social Movement for Water Resource Management and Protection in an Upland Community in Laguna, Philippines. Unpublished thesis, University of the Philippines Los Baños, Laguna, Philippines.

During the US occupation (the first half of the twentieth century), forest exploitation was introduced in the country, and logs and lumber were exported until the Americans left. Up until 1975, the country's forest regulations were based totally on the Forest Act of the US. In the 1960s, shortly after the American departure, logging was introduced in the forests of

Pangil. A company there was issued a Timber License Agreement (TLA) in January 1961 by the Philippine government, which allowed it to cut timber in Pangil, as well as in four other municipalities in Laguna province, and three municipalities in Quezon province. The TLA should have expired in 1983, but was suspended in 1978 when martial law was still in place. The company got the suspension lifted in 1985, and continued to operate in the area until its permit expired in 1986. It applied for an extension, however, this did not include Pangil anymore, but rather was limited to two municipalities in Quezon province.

After the logging concession denuded the forest of hardwood trees, small-scale loggers and charcoal-makers continued cutting of secondary-growth trees. Slash-and-burn farmers likewise encroached into the area through the years. Carabao grazers grew in number, contributing to soil erosion and siltation. All of these contributed to the denudation of the Balian watershed.

There was nothing in the literature that suggested that the organisation protested the presence of the logging concessionaire in their area. Most probably, this was because during that time, water supply was constant and water quality did not deteriorate. During the late 1980s, however, local residents started noticing that the water was less abundant. Whereas before this period, water had flowed continuously for 24 hours a day, they started noticing that water would not be available during certain times of the day, particularly during the summer months. Furthermore, during the rainy season, the Dakil River, located in the lower portion of Balian, began to flood more often, and floodwaters were muddier than before. Landslides started to occur, and the climate was not as cool as before the time that the watershed began to lose its trees. Finally, the waterfalls in the area were not as large as they had been previously.

Thus, in the late 1980s there was a resurgence of initiative among the SBPTI members. Along with some local and national government officials, SBPTI started discussing how they could solve their dwindling water-supply problem. They then took matters into their own hands and passed a resolution asking the municipal government to declare a 50-metre radius from all water sources as protected. DENR went further and suggested that they increase the boundary to a 100m radius around the water source. The provincial government finally declared a 100m radius around all water sources as protected (see Appendix E).[22]

Soon after the declaration of the protected area, the residents discovered that SBPTI had no mandate to protect the watershed. The remit for the organisation was only the management of the water system of its residents. Upon consultations with all stakeholders involved, they decided to form an umbrella group that could work for an extended mandate. It was later called Lingap Kalikasan (LK), or Care for Nature. LK developed a conservation plan which led to reforestation activities in the area.

### *3.2.3 Current operations*

*Protection activities for water sources*

A major activity of LK is to look for water sources within the watershed that can be connected to their water-supply system. In addition to the existing source which was discovered as long ago as 1925 when SBPTI was founded, they were able to identify an additional source, which was automatically covered within the municipal ordinance

[22] Available at http://www.iied.org/eep/.

proclaiming all water sources as protected (see Appendix E).[23] In establishing the 100m radius around these sources, LK discovered that all the surrounding land lots were privately owned, including the areas where the water sources were located. However, these landowners did not live locally, and thus were considered to be absentee landlords. Many of them rarely visited nor did they use their land for their own productive purposes. This posed a real problem both for LK and the landowners, particularly in protecting these areas against environmentally damaging activities such as small-scale logging, slash-and-burn farming, illegal encroachment, and carabao grazing.

In response to this situation, LK came up with a plan that required an agreement with the landowners to establish boundaries around their lots by planting trees,[24] which could serve as communal fences. They identified the landowners and have approached some of them individually. Funds for the seedlings and monitoring activities were either provided by LK members themselves or from donations from local government, thus the landowners did not have to spend for the programme. The boundaries further served the latter's interests because, before the programme, there was no systematic method of delineating their land, except for what is termed as 'living boundaries', i.e. the existing trees, which were few and far between and served as boundaries. The LK-planted trees were closer to each other, and uniformly planted so that the boundaries were obvious. The trees were also part of an agroforestry scheme, part of the proceeds of which went to the landowners. Finally, because LK conducted periodic monitoring, the boundaries were able to serve as deterrents against illegal migrants from neighbouring areas.

To get the upland residents to participate in the programme, the trees were pruned vertically and the branches served both as fuelwood for the residents and as erosion-control devices. The agroforestry scheme also provided alternative livelihood opportunities to the residents. For the carabao grazers, LK was able to get their participation in the scheme – both the labour of the beasts and their owners. In exchange for these, the LK promised not to report them to the municipal government for violating an existing ordinance preventing carabao grazing in the upland areas.[25]

Meanwhile, the municipal local government of Pangil has been very supportive of the programme, mainly because LK took care of the monitoring and enforcement components of their ordinance, activities which the municipal LGU itself should be conducting. In fact, part of the penalty system of the LGU is to have those who commit certain crimes pay by participating in tree-planting activities of LK. Hence, the LK turned out to be the de facto management body of the watershed of Balian. The municipal LGU has recognised this in periodic discussions and meetings regarding the watershed, and has consistently awarded LK annually with trophies in recognition of their watershed-protection activities. The LK is still working on a municipal resolution to be passed, stating that LK is the designated body assigned to protect the Balian watershed. This will strengthen their role as the managers of the watershed, and give them legal teeth in conducting their programmes and projects.

[23] Available at http://www.iied.org/eep/.

[24] The choice of trees to plant was made in consultation with agroforestry, forestry, and hydrology experts working at the University of the Philippines in Los Baños, Laguna.

[25] The municipal LGU of Pangil, Laguna has an existing ordinance declaring carabao grazing in upland areas as illegal. This is because most land in the upland areas is privately owned. Furthermore, there is the implicit recognition of the environmentally damaging effects of carabao grazing such as soil erosion. There is no exception to this ordinance, even if private landowners agree to carabao grazing within their lands.

Much remains to be done. The LK claims they have only covered roughly 40 per cent of the total land area surrounding their two existing water sources. They must negotiate with the other landowners to complete their programme to establish buffer zones and reafforest their watershed. To facilitate this, the LK is working hand in hand with the municipal LGU to get these landowners to sit down at the negotiating table. One of the identified landowners has even expressed his desire to change the existing land use, which is agricultural and develop the area for industrial purposes (see Section 4.2). There is also the concern that there could be a change in government priorities;[26] watershed protection might be accorded less priority by potentially unsupportive local officials in the future. At present the LK relies on its good relations with the incumbent officials and on its own track record. It has no legal mandate to serve as the manager of the watershed, which its members intend to correct with the pending resolution declaring LK as the legal management body of the watershed (see above discussion).

*Organisational meetings*
The people of Balian recognise the importance of the watershed as a planning unit. Because the watershed is the basis of unity, they are able to tackle other downstream issues, such as soil erosion, sedimentation, flooding, irrigation, and solid waste and connect such issues to watershed management and protection. Organisational meetings thus serve as a venue for comprehensive planning and management of the area.

Conflict resolution is done through constant dialogue and discussions among community members. Furthermore, they conduct major discussions during the Easter Holy Week. Not only does the season set the tone for reconciliation, also community members are at rest during that day and the following day as well.

*Maintenance of the water supply system*
The SBPTI continues to exist as part of the LK, with its main responsibility limited to maintaining the water supply system of Balian. Some of the bamboo pipes have been replaced with rubber ones over the years. However, there are still portions of the water-supply system that rely on bamboo. Carabao grazing and increased population in the upland areas have periodically caused these pipes to break, thus affecting the water supply of residents below. In order to ensure the continuous supply for all residents, SBPTI continually conducts monitoring and rehabilitation activities, the latter usually involving replacement of cracked or worn-out water pipes. Furthermore, SBPTI regularly conducts cleaning activities for the intake tanks, which are located near the water source. Such activities necessarily entail raw material costs. To pay for the material used to maintain the system, the SBPTI now charges PhP15 per household per month as water-supply fees. Fees were brought in only in the 1990s, at a low rate of PhP5 per household per month. The fee, however, is only to cover the cost of raw materials, not a payment for the water per se. Still, the revenue generated is insufficient to cover all material expenses. Rather, the organisation depends on donations from the municipal and *barangay* government units and from wealthy landowners in the area. Labour for planting, water-system repairs and maintenance is free, as members of the SBPTI maintain the water system themselves.

### *3.2.4 Institutional and resource use conflicts*
The passage of the Local Government Code of 1991 provided local governments with the power to raise revenues over all resources within its jurisdiction. Water became a point of

[26] Local elections occur every three years, and elected officials can only serve a maximum of three consecutive terms.

interest, and the *Barangay* Council of Balian started intervening in domestic water supply provision. Projects were being implemented without consulting the local organisation, and worse, some of these projects were redundant. For instance, a national government initiative built a reservoir in exactly the same location where one already existed, courtesy of SBPTI. The new system could not be operated after construction, and the council wanted to turn the management over to SBPTI. When the latter refused, the council tried to take over the leadership of the organisation. It failed to do this, so the community is still relying on the old system they themselves set up. More importantly, the SBPTI has maintained control over its watershed and water-supply system. Because the organisation has such deep roots in the way of life of the people in the area, local governments end up deferring to it.

A Taiwanese company is interested in putting up a mineral water-processing plant in the upland portion of Balian. The spring source is located within private land, which the LK has identified as a major source for its water supply. If the landowner decides to sell to the Taiwanese company, the LK's activities will be greatly affected. Not only will they have wasted time and effort since they have already identified this as one of their water sources and have started work in establishing the necessary boundaries. More importantly, there is the threat that the increased demand for water for industrial purposes will have negative impact on the whole community's water supply. To resolve this, members of the LK, together with the municipal LGU, have been lobbying hard to claim ownership over the rights to use the water, based on constitutional provisions on the ownership of water by the state. If they are able to convince the landowner that they do possess these rights and that they intend to exercise them, the landowner will eventually stop entertaining the idea of selling to the mineral water company. The landowner has not made any decision yet on whether to deal with the company or with the LK. Another tact they are looking at is to buy the land from the owner, so that the LK – i.e. the whole community – can own the spring source as well. They are negotiating a lower price, however, and the owner is still thinking things over on this issue as well. If the deal goes through, they will declare the area as a watershed sanctuary, and commercial interests will not be prohibited in the area.

Another source of conflict is the presence of carabao grazers in the grasslands of the watershed. In searching for grassy areas, carabaos sometimes accidentally tread on pipelines, thereby breaking the supply of water to some households. SBPTI has tried to investigate the identity of the carabao owners. In some cases these carabao owners belong to neighbouring municipalities, and are difficult to control. The best that the organisation can do is to reach out to residents living in the uplands, and train them to be more vigilant in watching out for these carabao grazers.

The LK has likewise identified grazing carabao in the uplands as a source of soil erosion, and they are constantly trying to convince the grazers they have identified not to do so in the upland areas. One disincentive for these grazers is a municipal ordinance declaring illegal carabao grazing in the uplands. The LK has promised not to squeal on the identified grazers provided they stop their activities in the uplands, and that they participate in the establishment of the 100-meter radius around the water sources of Balian.

A fourth source of conflict is with the Laguna Lake Development Authority (LLDA) which manages the lake located beside Pangil, along with 26 other lakeshore municipalities, 22 non-lakeshore municipalities, and 12 cities. Laguna Lake catches all the tributaries from the provinces of Rizal and Laguna, as well as some from Cavite, Quezon, Batangas, and Metro Manila. After delineating boundaries to indicate their total area of jurisdiction, the LLDA has

placed some boundary markers in the middle of ricefields, some of which are being tilled by SBPTI members. The LLDA has further drafted development plans that will affect around 66 per cent of agricultural areas in Balian, most of whose farmers are members of the SBPTI. Meanwhile, these farmers are using watershed water for irrigation purposes, through the construction of man-made canals. Water from the river system is diverted from the main canal that goes to the lake. Every six months, these farmers are required to maintain their irrigation canals themselves. Although the identified protected areas for the water sources of Balian do not overlap with the LLDA jurisdictional area, there is still some concern among the SBPTI members because they consider these affected farmlands as part of their watershed. The organisation is currently working on marking the boundaries of their watershed and will consequently have to negotiate with LLDA on how to resolve border conflicts.

The National Power Corporation (NPC) had expressed interest in building a dam for a hydro-electric power plant project in the area. It was supposed to tap into some of Balian's water sources, and some *barangays* were going to be 'flushed out' or flooded. This did not get approved, however, because when the residents demanded that the social-amelioration package be based on present and future agricultural earnings of areas to be flooded, the government decided to back out.

Another issue the LK has had to contend with is the presence of the New People's Army (NPA), the armed component of the Communist Party of the Philippines. The NPA has been waging its own revolutionary struggle in the country for the past four decades. Pangil, Laguna is one of the areas they operate in. For years, they have been trying to recruit members from the LK to increase their membership. However, the LK refuses to make it their policy to provide them members, and has always left it to the individual members to join if they wish to. Because of this, the NPA has tried to sabotage the activities of the LK, and has been convincing upland residents not to support the LK's programmes and projects. Fortunately, the LK has its track record to speak for itself, and so far, most upland residents have been supportive of its activities for the watershed.

### *3.2.5 Potential for developing markets for watershed protection service*

The events that have transpired through the years show that resource-use conflicts in the Balian watershed have posed threats to the sustainability of the watershed. As economic theory puts it, resource-use conflict can be minimised through the play of market forces and pricing mechanisms. Although there is no 'financial exchange' to speak of yet, there is a quasi-market existing, to the extent that landowners upstream have negotiated with the LK to adopt improved land-management practices. In return, their land is protected from migrants and illegal economic activities. The provision of alternative livelihood schemes has likewise taken place through the agroforestry scheme of the LK, the economic benefits from which are shared between the landowners and residents.

There is room for this market to develop further. If the private landowner with the spring source decides to lease this land to the Taiwanese mineral water company, then the value of watershed-protection services could be charged by the LK to the company, once they are legally mandated to maintain and rehabilitate the watershed. The owner could likewise internalise the cost in the rent, but this can be passed on to whomever is maintaining the watershed. The LK can agree with the landowner on this issue. It is critical, though, that the community gains formal rights to the use of water in the natural spring source. This will strengthen their management of their water supply even if they do not own the land where the

spring source is located, and will give them legal clout to run their programmes and projects for their watershed.

A second potential source would be the provision of water supply to neighbouring villages. The LK can actually charge watershed-protection service fees along with the cost of providing water to the *barangays* concerned. If they are able to delineate the watershed boundaries and negotiate successfully with LLDA, they can charge LLDA for water supply that comes from their tributaries. Should the NPC hydropower plant be built in the future, the LK can also tap them as a potential buyer of water from the Balian watershed.

The point of including this case study is to hypothesise that markets can easily be established if there are institutional mechanisms such as the LK and the SBPTI that are not only community based, but are very much part of the culture of the population. Property rights, in a way, have been established because of the legal mandate of the LK to maintain and rehabilitate the watershed. Meanwhile, the SBPTI is in charge of maintaining the water-supply system. And because all other problems downstream are seen to be directly connected with the watershed, the LK inadvertently applies a comprehensive and integrated approach in managing the watershed. Social acceptability will potentially be high, given that there is 'ownership' of the organisation by the community residents themselves. The only challenge remaining is to convince the residents to 'sell' such services, which may prove to be a worthwhile task. Not only will it raise money for their organisation, it may even serve as an alternative livelihood scheme for slash-and-burn farmers still operating in the area.

### *3.2.6 Lessons learned*

The following points highlight the lessons learned from the continuing success of the institutional set-up of the LK and the SBPTI in protecting their watershed.

One of these is communal ownership of the managing institution. The formation of both the SBPTI and the LK was initiated by the community residents themselves. Government had nothing to do with setting them up. NGOs who have worked in the area likewise attest to the pure or unadulterated characteristic of these organisations, such that their growth was purely determined by internal dynamics, and was not forced upon them by outside influence. Thus, residents have always 'owned' the organisations, and have always felt they had a major stake in the organisations' programmes and projects. Because of this sense of ownership, commitment to their activities is very high, further ensuring the success and growth of the organisations.

Another lesson is the importance of the use of cultural traditions in the organisations' operations. In relation to the above, because the residents themselves were running the organisations, it was natural for them to use their own traditions in ensuring smooth operations. The *bayanihan* tradition is still very strong, which requires that free labour be given willingly to help neighbours. Hence, in planning for and implementing their watershed-protection activities, it was natural for the members to give their time and labour for free, without letting their individual opportunity costs get in the way. This can be interpreted to mean that the value they attach to the watershed is higher than their individual opportunity costs. Also, the intense religiosity of Filipinos was taken advantage of. Conflict resolutions were done during Holy Week, a time when Filipinos seriously take stock of themselves and become very humble and willing to change for the better.

Another lesson learned is it is necessary to have high environmental awareness in the community. The continuing success of the LK may be rooted in the recognition of the members themselves of the watershed's environmental services. One of the LK's major tasks is to implement a continuing information and education campaign on the benefits of protecting the watershed among the residents of Balian. These have always emphasised that constant dialogues and lectures with their constituents cannot be compromised, and even the lack of funds for meetings and transport has not deterred them from this self-imposed duty. They raise the money themselves, or sometimes request the attendees to provide counterpart funds for their transport and food. Residents usually respond positively, because of the importance they put on ensuring constant water supply and acceptable water quality for their households and their farms.

Another important ingredient for success is the mobilisation of stakeholders to implement protection activities. The LK does not limit its workforce to its membership. Rather, it mobilises other residents who are non-LK members to participate, such as getting the carabao grazers to assist in the establishment of tree boundaries for their water sources, or using other residents to participate in periodic monitoring activities. They assign monitoring schedules to the various geographical sub-units within Balian. This helps to ensure the success of such projects because the residents gain a sense of ownership of the project once they participate in it, and will help prevent the project's failure. Even petty criminals are mobilised through the penalty system established by the LGU, whereby would-be offenders of certain crimes are required to participate in the LK's tree planting as payment for their crimes.

The LK recognises that in order to attract possibly conflicting stakeholders to negotiate, they will have to provide incentives for them to do so. Thus, it is very clear in their programmes that each stakeholder involved will have a share of the benefits that come from the project. Landowners, farmers, upland, and lowland residents alike are made aware of what benefits they can reap from the programme, which are not limited to provision of water supply and improved water quality. Rather, there are direct financial benefits for those whose livelihoods are affected, and there are protection benefits for landowners whose security of land ownership are threatened.

Because the LK members do not themselves benefit individually, they have established a good track record whereby their one and only concern is the protection of the watershed. As a consequence, they continue to enjoy the high moral ground which allows them to implement their projects with the acceptance and approval of the community. The municipal government has recognised this and has been very appreciative of the LK's initiatives, as evidenced by the annual trophy the LGU awards to the LK for watershed protection, and its direct participation in some of LK's activities such as negotiating with landowners in the PAs. It is stated in numerous laws that watershed protection is government's responsibility. Due to the initiatives of the LK, the LGU is actually relieved of some of its functions, which allows them to focus on other areas. This has led to smooth relations between the LK and the municipal government. There is, of course, the concern mentioned earlier that a change in leadership might cause watershed protection to be less of a priority, depending on the agenda of the new leadership. Nevertheless, the LK has a long history as proof of itself and its objectives, and this cannot be discounted easily by any 'unfriendly' official that might take over.

Additional evidence of the LK's success is the fact that neighbouring *barangays* have been clamouring for the LK to expand their operations to cover the whole municipality. The municipal government has likewise hinted for other *barangays* to come up with their own

organisations similar to the set-up of the LK. This is ample proof that the LK indeed enjoys a high credibility rating among its residents and neighbours.

One of the main criticisms of programme implementation in the Philippines is the lack of emphasis given to monitoring and evaluation activities. The LK has deviated from this trend, and has proven their worth by constantly monitoring their watershed. Even without any breakages in their pipe system, LK and SBPTI members stick to a schedule of visiting their project sites, and reporting any anomalies found therein. They are thus constantly informed of any potential or actual problem within the watershed, allowing them to troubleshoot right away and prevent any problem getting worse.

# 4 Socio-economic framework for evaluating and monitoring markets for environmental services

The characteristic of the Environment and Natural Resources (ENR) sector in the Philippines is that most of these critical and significant areas are owned or managed by the government. As such, the emergence of markets for environmental services necessitates that government plays a major role. As discussed in Section 3, protected areas are numerous, and most of them fall under the purview of the national and local governments. It is thus not surprising that many of these markets are directly created by law, through the introduction of varying economic instruments.

The socio-economic framework used for evaluating markets for environmental services hinges on the following main questions:

- What are the forms of markets that exist? What are the economic instruments used?
- Do these markets target conservation and development objectives simultaneously, or are they exclusive to the environment? If the former is true, what mechanisms are involved to ensure this?
- Are there actual or potential social costs involved in the creation of these markets? Or are there social benefits that may or have inadvertently arisen out of the creation of these markets?

Because of the nascent feature of markets for environmental services in the Philippines, quantitative measurement of their impacts is difficult to pursue at this point. Most economic instruments have been introduced only during the past three years, including setting-up the institutional mechanisms for these instruments. For others that were introduced earlier, such as the second case study presented here, there has not been sufficient experience for socio-economic impacts to have taken place and be quantified. Analysis is thus limited to potential impacts, particularly with respect to strategies and programmes for which the economic instruments were created.

In testing the framework, the study relied mainly on key-informant interviews. Most of these were the main actors involved in the creation and implementation of the economic instruments, thus have a good grasp of the historical events and the issues at hand. Survey questions dealt with economic, social, legal, institutional, and biophysical factors, where applicable. Economic questions focused on the economic instruments being employed, revenues generated from the scheme, types of programmes for which the revenues were intended for, and employment and income-generation potentials from both the instrument and the programmes. The survey tried to establish if revenues generated were being used for social-development goals, aside from trying to meet environmental objectives. Biophysical questions dealt more on the potential or realised effects of the instrument on biodiversity, albeit in a qualitative manner. Social questions attempted to determine whether or not there were social displacements, including those relating to traditions and norms that may have occurred due to the application of the instrument; or in the first case study, even from the general set-up of how the PA is being managed. Legal and institutional factors were more descriptive in nature, whereby questions focused on the legal environment, which allowed for the instrument to be created, and the corresponding institutional set-up for its implementation. Two case studies are presented here. The first deals with a PA under the NIPAS system, the Apo Island Protected Landscape and Seascape (AIPLAS), a marine sanctuary that was

formerly managed by the local government, and is now under PAMB management. It is considered to be one of the most successful PAs in the country by far, both in terms of biodiversity conservation and revenue generation. Various ecological studies have cited its success in preserving the ecological balance and natural beauty of the sanctuary. Zones have been created to accommodate various economic activities, such as scuba diving and fishing. The management board collects entrance fees from scuba divers, generating a substantial amount of revenue over the years. The case study looks at whether such revenues are being properly ploughed back to the community, either for improving standard of living, or for ecological enhancement of the reef and its resources.

The second case study looks at the Reforestation, Watershed Management, Health and/or Environment Enhancement Fund (RWMHEEF) being managed by the Department of Energy (DOE). The fund was set up as part of the 'social responsibility' mandate of the DOE, whereby communities hosting energy projects are somehow compensated. From the very name of the fund, environmental and social objectives seem to underlie the rationale for its creation. Since the fee's imposition in the mid-1990s, there has been no documentation on whether the funds have indeed been used for watershed rehabilitation in areas affected by energy projects. The study attempts to determine whether this scheme constitutes a market for watershed-protection services, and whether an interplay between environment and development objectives exists.

## 4.1 Apo Island Protected Landscape and Seascape (AIPLAS)

Apo Island Protected Landscape and Seascape (AIPLAS) is located in the municipality of Dauin, province of Negros Oriental. It was declared a protected area in 1994 through a Presidential Proclamation by then-president Fidel Ramos (see Appendix F).[27] Shortly thereafter, it was declared as a NIPAS site and a Protected Area Management Board (PAMB) was formed for managing the area (see Section 3 of this paper).

### *4.1.1 Description of the study area*

Apo Island lies in the middle of the Mindanao Sea, off the south-eastern coast of Negros Island, central Philippines.[28] The island itself is very small: only 74ha. The highest peak is 200m high, on the northern side, while the southern side is characterised by low-lying hills. The rest of the island is generally flat to sloping. The coastline is made up of steep, rocky cliffs and five small white-sand beaches. There are two small shallow lagoons with mangroves on the south-eastern side. A narrow but highly diverse fringing coral reef surrounds the island. It is dominated by steep drop-offs and gradually sloping drops of 20 to 40-degree declines. The most extensive live corals are located in the eastern and south-eastern portions of the reef, with much of its growth supported by volcanic rock boulders.[29]

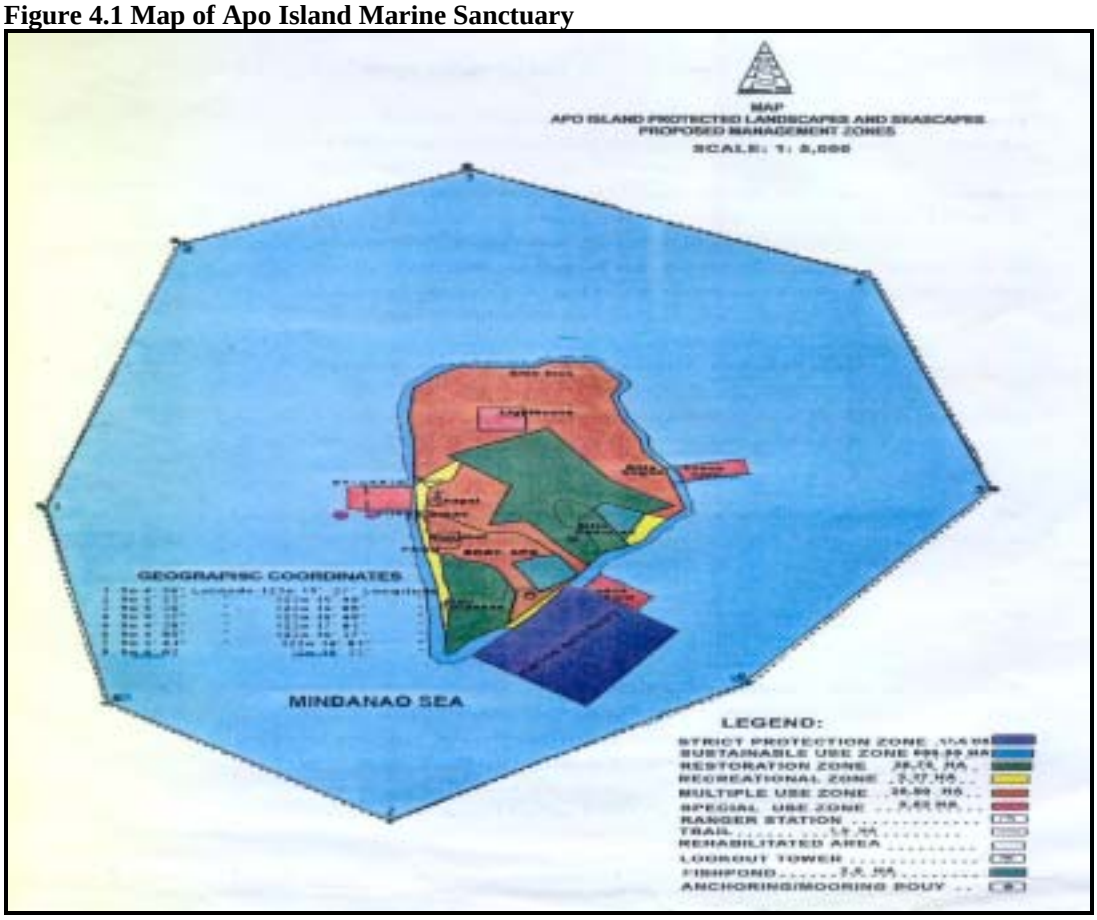
Monsoon winds affect wave action as well as fishing activities around the island.[30] The north-east monsoon occurs during November to March or April, which makes fishing difficult at the north-east reef, but at the same time provides ideal yet challenging conditions for scuba diving. On the other hand, the south-west monsoon during July to September or October reverses the trend, whereby fishing conditions become favourable. Scuba diving is at its low

[27] Available at http://www.iied.org/eep/.
[28] Reboton (undated).
[29] Reboton (undated).
[30] Reboton (undated).

during this period because of the rainy season and occasional typhoons, making access to the island difficult.

As expected, the marine sanctuary is located in the south-eastern portion of the reef (see Figure 4.1). It extends about 93 to 100m from the shoreline to the crest 6–7m depth. The slope is estimated at 50–60 degrees at 17m deep (Reboton and Divinagracia, 1997; Russ and Alcala, 1996). Soft corals are found in the shallow portion, while the reef crest and slope have a high cover of live hard corals.[31] Figure 4.1 shows a comparison of coral cover from 1981 to 2002.

**Figure 4.1 Map of Apo Island Marine Sanctuary**




*Source:* PAMB Board Resolution No. 1 (1999), 'A Resolution Prohibiting, Regulating and Prescribing Fees for Access to and Sustainable Use of Resources in Apo Island Protected Landscape/Seascape'. AIPLAS, Municipality of Dauin, Negros Oriental.

[31] Reboton (undated).

**Table 4.1 Mean percentage of living and dead substrate cover in Apo Island Fish Sanctuary, Negros Oriental, various years**

| Type of Substrate | Sanctuary | | | | | | | South-West: Non-Sanctuary | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | SCUBA | | | | Snorkel[c] | | | SCUBA | | | | | | Snorkel[c] | |
| | 1981[a] | 1982[a] | 1992[b] | 2002[b] | 1983 | 1992 | 2002 | 1981[a] | 1982[a] | 1983[a] | 1985[a] | 1992[b] | 2002[b] | 1992 | 2002 |
| **Non-living substrate** | | | | | | | | | | | | | | | |
| Sand and silt | 9.3 | 24.0 | 9.5 | 13.5 | 8.8 | 11.8 | 11.7 | 18.6 | 19.1 | 16.6 | 15.9 | 11.7 | 14.6 | 6.3 | 1.7 |
| Coral rubble | 10.8 | 8.8 | 13.6 | 4.2 | 9.4 | 6.5 | 4.0 | 2.8 | 2.7 | 9.5 | 10.9 | 17.6 | 7.3 | 7.1 | 0.0 |
| Rock and block | 4.9 | 1.5 | 11.9 | 6.3 | 1.9 | 9.3 | 8.5 | 17.2 | 13.4 | 19.1 | 2.7 | 12.9 | 7.2 | 14.7 | 19.3 |
| White dead standing coral | 8.2 | 8.3 | 1.9 | 0.2 | 16.1 | 2.6 | 0.2 | 2.7 | 4.2 | 5.4 | 4.9 | 3.7 | 0.1 | 3.2 | 0.0 |
| Dead coral with algae | 0.0 | 0.0 | 0.0 | 7.3 | 0.0 | 0.0 | 4.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 5.4 | 0.0 | 0.0 |
| **SUBTOTAL non-living substrate** | **33.2** | **42.6** | **36.9** | **31.5** | **36.2** | **30.2** | **28.8** | **41.3** | **39.4** | **50.6** | **34.4** | **45.9** | **34.6** | **31.3** | **21.0** |
| **Corals:** | | | | | | | | | | | | | | | |
| Hard coral: | | | | | | | | | | | | | | | |
| Branching | 13.7 | 16.0 | 13.1 | 22.1 | 18.8 | 15.4 | 22.7 | 12.6 | 12.4 | 13.1 | 8.5 | 7.1 | 14.2 | 14.4 | 14.0 |
| Massive | 17.7 | 16.6 | 18.8 | 23.8 | 16.9 | 15.8 | 10.6 | 14.7 | 14.2 | 11.6 | 4.7 | 12.9 | 9.6 | 13.2 | 1.3 |
| Flat/encrusting | 2.0 | 2.1 | 13.5 | 6.0 | 0.0 | 3.1 | 1.9 | 0.6 | 0.0 | 1.6 | 2.8 | 4.4 | 4.9 | 5.8 | 0.0 |
| Foliose/cup | 3.0 | 0.0 | 2.5 | 4.7 | 8.1 | 3.8 | 2.3 | 0.0 | 0.0 | 1.1 | 4.0 | 3.9 | 1.4 | 6.0 | 2.7 |
| **Subtotal hard coral** | **36.4** | **34.7** | **47.9** | **56.6** | **43.8** | **38.1** | **37.6** | **27.9** | **26.6** | **27.4** | **20.0** | **28.3** | **30.1** | **39.4** | **18.0** |
| Soft coral | 30.4 | 22.7 | 15.3 | 9.4 | 20.0 | 31.7 | 31.5 | 30.8 | 34.0 | 22.1 | 45.5 | 25.9 | 32.6 | 29.3 | 60.0 |
| **SUBTOTAL corals** | **66.8** | **57.4** | **63.2** | **66.1** | **63.8** | **69.8** | **69.1** | **58.7** | **60.6** | **49.5** | **65.5** | **54.2** | **62.7** | **68.7** | **78.0** |
| **Others** | | | | | | | | | | | | | | | |
| Other animals | ~ | (0.4) | ~ | 0.1 | ~ | ~ | 0.0 | ~ | (1.5) | (1.2) | ~ | ~ | 0.0 | ~ | 0.0 |
| Seagrasses | ~ | ~ | ~ | 0.0 | ~ | ~ | 0.4 | ~ | ~ | ~ | ~ | ~ | 0.0 | ~ | 0.0 |
| Algae | | | | | | | | | | | | | | | |
| Fleshy | ~ | ~ | ~ | 1.0 | ~ | ~ | 0.4 | ~ | ~ | ~ | ~ | ~ | 0.3 | ~ | 0.7 |
| Turf | ~ | ~ | ~ | 0.7 | ~ | ~ | 0.9 | ~ | ~ | ~ | ~ | ~ | 0.2 | ~ | 0.0 |
| Coralline | ~ | ~ | ~ | 0.3 | ~ | ~ | 0.2 | ~ | ~ | (0.3) | ~ | ~ | 0.2 | ~ | 0.0 |
| Sponges | ~ | ~ | ~ | 0.4 | ~ | ~ | 0.2 | ~ | ~ | ~ | ~ | ~ | 2.1 | ~ | 0.3 |
| **SUBTOTAL others** | **~** | **(0.4)** | **~** | **2.4** | **~** | **~** | **2.1** | **~** | **(1.5)** | **(1.5)** | **~** | **~** | **2.7** | **~** | **1.0** |
| **GRAND TOTAL** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** |
| **Other relevant information** | | | | | | | | | | | | | | | |
| Slope (degrees) | ~ | ~ | ~ | 11.7° | ~ | ~ | 3.8° | ~ | ~ | ~ | ~ | ~ | 7.7° | ~ | 30.0° |
| Topography* (m) | 2.2 | 2.0 | 3.0 | 2.1 | 3.3 | 2.0 | 1.6 | 1.9 | 1.7 | 2.4 | 2.0 | 2.3 | 1.8 | 2.2 | ~ |
| Depth range/average (m) | 0.7-15 | 1.1-20.7 | 4-8 | 7.0 | ~ | 4-7 | 3.1 | 0.8-6 | 0.4-6 | 0.3-15 | 3-14 | 6-7 | 7.7 | ~ | ~ |
| Visibility (m) | ~ | ~ | ~ | 23.2 | ~ | ~ | 20.9 | ~ | ~ | ~ | 18.7 | ~ | 18.5 | ~ | ~ |
| Sample size (transects/stations) | ~ | 5 | ~ | 15 | 11 | 1 | 450 | ~ | ~ | 3 | 3 | 7 | 9 | 12 | 225 |

*Mean distance between lowest and highest point on the horizontal transect line
~ No data

a - 50 m transects placed randomly and perpendicular to shore
b - 50 m transects placed randomly and parallel to shore
c - Random stations by each observer at 2 to 4-meter depth

Source: Summary Field Report: Saving Philippine Reefs. Coral Reef Monitoring Surveys for Conservation In Cebu, Negros Oriental and Siquijor, Philippines. March 23-31, 2002. The Coastal Conseration and Education Foundation, Inc. and the Coastal Resource Management Project.

Various reports over the years indicate healthy coral cover for Apo Island. In 1977, the Marine Science College of the University of the Philippines reported an excellent coral cover of 70 per cent for Apo Island. In 1983, coral cover was down to 64.3 per cent, but increased to 65.4 per cent in 1995. Also, in 1981 and 1991, a leading Philippine marine scientist proclaimed in a report that 100 per cent of Apo Island's coral cover was in good condition. Likewise, various fish censuses conducted at different periods reveal an increase in the mean number of individuals for most types of species found in the area. Since the area was proclaimed protected in 1982, there has been a decrease in fishing pressure in the area. A visual fish count conducted by Russ and Alcala in 1996 showed strong positive correlations with mean density, mean species richness, and protection – both in the reserve and non-reserve areas.

### *4.1.2 Economic profile*

The population census[32] of 2000 reports 684 or 129 households living on the island. The majority of households depend on fishing as their primary source of income. In 1985, about 91 per cent of households were engaged in fishing (MCDP, 1985). Fishing is done with the use of outrigger canoes or motorised pumpboats. Hook and line, gill nets and spearfishing are the methods used, with a few using fish traps and beach seines. Fishermen have revealed that since the establishment of the marine sanctuary in 1985, fish catch has increased threefold even with the use of the same type of gear.[33]

There is some farming and agroforestry practised in the area. Livestock, like chickens, hogs, goats, and cattle, are also raised. In fact, in 1995, 95 per cent owned no agricultural land but 82 per cent owned livestock and poultry (Fabro and Luchavez, 1997). Women on the other hand are engaged in mat weaving and selling, t-shirt vending, and small store enterprises.

The biggest industry on the island is tourism. Apo Island is considered as one of the prime destinations for scuba diving in the country. Its excellent coral cover and diversity of marine life serve as major attractions not only to Filipino scuba divers but to foreign tourists as well. As such, the diving industry is the major source of revenues of the protected area and its resources.

### *4.1.3 Protection efforts*

Protection efforts on Apo Island began as early as 1979 when Silliman University extension workers held informal marine conservation and education programmes for local members of the community. Focus was given on how to ensure sustainable use of their marine resources. In 1982, an agreement was reached between the villagers, Silliman University and the municipal government council on the content of the guidelines for the marine reserve. In 1984, the Marine Conservation and Development Program of Silliman University implemented a comprehensive reserve programme together with the local government and the community. This led to the formation of the Marine Management Committee (MMC), a core group composed of fisherfolk, with the assistance of the Philippine Constabulary-Integrated national police and the Philippine coastguard (MCDP, 1986). The MMC collected donations for the upkeep of the marine reserve, which led to the construction of a community centre in front of the marine sanctuary. At the same time, a women's weaving group called Apo Weaving Association was formed, together with a consumers' cooperative. The latter started with 46 members which rose to 80 by 1997.

Formal protection of Apo Island began in 1985 when the municipality of Dauin, Negros Oriental passed a resolution declaring the entire marine habitat of the island as a municipal reserve. On the south-east side, the area covering 11.2ha to 250m offshore was declared a marine sanctuary (see Figure 4.1). It was further declared as a Tourist Zone by Proclamation No. 1801 and was under the administration of the Philippine Tourism Authority.[34]

Agroforestry and farming projects were introduced to serve as alternative means of livelihood among the fisherfolk. The municipal council and the Bureau of Fisheries and Aquatic Resources provided various forms of support while Silliman University continued to provide technical assistance.

[32] From http://www.census.gov.ph/census2000/index.html, sccessed on 13 September 2002.
[33] Reboton (undated).
[34] Reboton (undated)

In 1994, its legal name was changed to Apo Island Protected Landscape and Seascape (AIPLAS) by Proclamation No. 438 (see Appendix F),[35] as one of the initial components of the NIPAS Act. The Protected Area Management Board (PAMB) of AIPLAS is composed of the Department of Environment and Natural Resources (DENR), the municipal mayor's office, members of the university, the *barangay* office, and representatives from NGOs and other groups. After some time, the MMC was abolished, and some of its members were absorbed by the PAMB.

### *4.1.4 Resource use conflicts*

Up until the late 1970s, dynamite and muro-ami fishing used to be rampant in the area. After the area was declared protected in the early 1980s, dynamite fishing stopped. Affected reefs have regenerated since then. Muro-ami continued occasionally but eventually stopped as well. Although there was initial resistance from the fishing community, continuous information and education campaign (IEC) efforts by Silliman University and the local government convinced the fisherfolk to abandon destructive methods of fishing. Hence, in the beginning, the cost of protection was borne not by the affected community but by outside groups that initiated protection efforts in the area.

Current threats have more to do with the increasing tourist traffic during the diving season, which starts in November or December and ends in May or June. In fact, the very first resolution of the PAMB was to regulate scuba diving by limiting the number of divers at any point in time and by prescribing entrance fees to visitors (see Appendix G).[36]

### *4.1.5 Revenue generated*

To date, Apo Island is the highest income-generating protected area in the country, as far as revenues from user fees are concerned. Table 4.2 contains the schedule of fees currently being implemented in the area. Within four months of the user fee being fully implemented (i.e. December 1999 to March 2000), the PAMB was able to raise half a million pesos (around $10,000) from the fees alone.[37] This amount is budgeted for programmes planned for 2000, of which 41 per cent are for protection and maintenance, 44 per cent for administration and management, and 15 per cent for livelihood projects. However, due to the tedious process of accessing IPAF funds, the PAMB has yet to disburse revenues earned since the year 2000 (see earlier discussion on IPAF, Section 2).

During the same period, incomes likewise benefited from the promotion of the area as a major scuba-diving destination. Boat income was estimated to be around PhP4 million, or $80,000, 25 per cent of which went to Apo Island residents themselves. The biggest beneficiary was the diving industry, which received income as much as PhP5.7 million, or $114,000 during the same period. Revenues from lodging at the only two resorts on the island increased to PhP643,000, or roughly $13,000. These resorts are owned by foreigners, but are being managed and maintained by locals. Finally, sale of souvenir items was given a boost, with island residents benefiting from selling t-shirts, native mats, and other souvenir items to tourists. On the whole, it is estimated that 20 per cent of the total increase in income is enjoyed by the residents themselves.[38]

[35] Available at http://www.iied.org/eep/.
[36] Available at http://www.iied.org/eep/.
[37] Cadiz, P.L. and H.P. Calumpong (2001), Analysis of Revenues from Ecotourism in Apo Island, Negros Oriental.
[38] Ibid.

**Table 4.2 Schedule of fees and charges, Apo Island Protected Landscape and Seascape**

| Type of Fee | Amount |
|---|---|
| Entrance Fee | |
| Locals | |
| Adults | 10 |
| Students | 5 |
| Foreign nationals | 20 |
| Additional charges | |
| Scuba diving[a] | |
| Within Marine Sanctuary | 150 |
| Outside Marine Sanctuary | 75 |
| With camera (still picture) | 50 |
| Snorkelling[b] | |
| Within Marine Sanctuary | 25 |
| Outside Marine Sanctuary | 10 |
| Camping[b] | |
| Adults | 20 |
| Students | 10 |
| Filming for Movie Production, TV and Commercials[b] | |
| Landscape Area | 500 |
| Seascape (within marine sanctuary) | 1,000 |
| Seascape (outside marine sanctuary) | 750 |
| Lodging at DENR/PAMB Cottages[a] | 50 |
| Picnic Shed[c] | 50 |
| Mooring[d] | |
| Less than 1.5 tons | 50 |
| 1.5 tons or more but not to reach 5.0 tons | 100 |
| 5.0 tons or more | 500 |
| Anchoring[e] | |
| Less than 1.5 tons | 50 |
| 1.5 tons or more but not to reach 5.0 tons | 100 |

*Source:* PAMB Resolution No. 1, 1999.
a/ per day/per person/diver or fraction thereof
b/ per day or fraction thereof
c/ per unit/day or fraction thereof
d/ per boat/day or fraction thereof (1 day=24 hours)
e/ per boat/day or fraction thereof at designated areas (1 day=24 hours)

The PAMB of AIPLAS has also earned a significant amount of revenues from user fees. Table 4.3 shows the yearly breakdown of revenues and number of tourists on the Island. Over the past three years, revenues for the first quarter averaged at PhP336,000, from an average of 1,561 foreign tourists and 818 local tourists. On a yearly average, revenues have reached PhP1.2 million annually, from 5,200 foreign and 2,900 local tourists.

**Table 4.3 Revenue and number of visitors by quarter Apo Island Protected Landscape and Seascape, 2000–April 2002**

| *Year/quarter* | *Amount (in PhP)* | *No. of visitors* | |
|---|---|---|---|
| | | *Foreign* | *Local* |
| 2000 | | | |
| 1st Quarter[a] | 407,560 | 1,263 | 960 |
| 2nd Quarter[a] | 407,560 | 1,263 | 960 |
| 3rd Quarter | 309,715 | 1,667 | 1,232 |
| 4th Quarter | 214,055 | 830 | 390 |
| Total | 1,338,889 | 5,022 | 3,541 |
| 2001 | | | |
| 1st Quarter | 335,630 | 1,827 | 486 |
| 2nd Quarter | 298,920 | 1,342 | 900 |
| 3rd Quarter | 196,750 | 1,290 | 275 |
| 4th Quarter | 165,130 | 981 | 590 |
| Total | 996,430 | 5,440 | 2,251 |
| 2002 | | | |
| 1st Quarter | 266,215 | 1,594 | 1,008 |
| April | 95,170 | 447 | 534 |
| Sub-total | 361,385 | 2,041 | 1,542 |
| Total | 2,696,704 | 12,503 | 7,334 |
| 1st-quarter ave | 336,468 | 1,561 | 818 |
| Annual ave[b] | 1,167,660 | 5,231 | 2,896 |

a/ Data available was for 1st sem of 2000. To obtain quarter figures, sem figure was divided into two.

b/ For 2000 and 2001.

The funds have been earmarked for the work and financial plan drafted by the PAMB. Programmes include the purchase of a generator for the island, hiring of a security guard particularly for depositing PA funds, regular coral reef monitoring, agroforestry programmes, tour guide and homestay training sessions for potential tourists that would opt to stay overnight, salt-making training as an alternative means of livelihood, purchase of a pumpboat for law enforcement and transport of schoolchildren, construction of an eco-information centre, purchase of a computer, purchase of an additional water tank for the community, and hiring of more utility workers for the PA. In addition, they also have a programme for community members to capture crown-of-thorn fish,[39] for which they will be paid PhP2 (less than $0.05) for every piece they capture. All revenues generated during the last three years are earmarked for these activities, all of which are planned to be conducted within the year 2002.

The plans have a major focus on the provision of livelihood alternatives through programs such as salt-making, agroforestry and the homestay programme. There are a number of programs that focus on the provision of basic services such as the generator, water tank, and pumpboat. Finally, there are direct employment opportunities that are made available to the residents, such as the hiring of utility workers and security guards. According to the PAMB members interviewed, these programmes were based on what the community members themselves identified as their most basic needs, and on what they would like the revenues to be spent.

### *4.1.6 Key-informant interviews – testing the methodology*

To test the methodology on assessing market impact on poverty alleviation, key-informant interviews were conducted. Five households, an NGO representative to the PAMB, a pressure

[39] Crown of thorns is a type of fish that kills corals, particularly staghorn and other table corals.

group representative, the mayor of Dauin, the *barangay* captain of Apo Island, the PA Superintendent, and the PAMB collection officer were each interviewed regarding the economic and ecological impacts of PA management on the island and its residents. Appendix H[40] contains a matrix of guide questions used, and the relevant set of respondents for each question. Meanwhile, Appendix C-1[41] shows the interview schedule conducted on the island.

Households were randomly selected on the island. The survey covered both male and female respondents, to make an adequate representation with respect to gender. Furthermore, males were usually the main income earners in the household, while females usually worked in the home. The mayor and the PG representative were members of the former management body of the PA prior to its being declared as a NIPAS site. The NGO, *barangay* captain and the PAMB officials represented the present management body of the PA. For purposes of tallying the survey results, the PAMB superintendent and collection officer were considered as only one vote. They gave exactly the same answers to the survey questions, and they represented the same office, both coming from the Department of Environment and Natural Resources (DENR) Region VII office.

From the questions and survey responses, the following indicators were derived:

Institutional/process indicators:

- Proper consultation with, and approval sought from the community on: implementation of the economic instrument (EI) revenue disbursements, i.e. programmes and projects change in PA management from MMC to PAMB.
- Transparency with respect to: hiring for employment opportunities created by the EI amount of revenues collected; effective enforcement of PA laws and regulations; fair representation of all stakeholders in the PAMB.

Impact indicators – economic:

- employment generated;
- increase in incomes;
- increase in revenues for government programme;
- increase in the number of community development programmes;
- increase in the number of environmental programmes
- increase in population due to in-migration;
- change in local exports;
- change in local imports; and
- increased fish catch.

Impact indicators – social and biophysical:

- coral reef enhancement/ increase in fish yield;
- cultural traditions preserved; and
- conservation practices adopted.

Results of the survey are summarised in Table 4.4. On the one hand, as far as the process indicators are concerned, key informants seem to be dissatisfied with how PAMB is handling

[40] Available at http://www.iied.org/eep/.
[41] Available at http://www.iied.org/eep/.

its operations. Households, government personnel, and NGOs seem to think there is a lack of transparency in certain aspects, such as in employment opportunities created by the PA and in the decision to change its management from being community-based to operating under the NIPAS system. For instance, the NGO representative in PAMB, who represents a women's organisation, complained of the PAMB's seeming preference for men to be employed in law-enforcement activities, while women were usually given housekeeping jobs. In effect, men were being given more lucrative jobs than women. There was also disappointment in terms of having fair representation in the PAMB. Although government and non-government representatives believe the PAMB had adequate consultations about how to disburse the revenues, households did not concur. There was almost a consensus, though, on having transparency in creating the economic instrument, i.e. the user fees. Understandably, those that believed otherwise were those displaced by the PAMB, namely the mayor and the PG representative. For those who were not satisfied with law-enforcement activities, the complaints were usually about the penalties imposed on would-be violators.

**Table 4.4 Results of the key-informant interviews on Apo Island Dauin, Negros Oriental, September 2002, frequencies per cent**

| *Indicator* | *Household respondents* | *Non-household respondents** | *All respondents* |
|---|---|---|---|
| Process indicators: | | | |
| Consultation/community involvement on establishment of EI | 100% | 60% | 80% |
| Consultation on revenue disbursements | 40% | 100% | 70% |
| Transparency in employment for jobs created by revenues | 20% | 40% | 30% |
| Transparency in revenue collection | 60% | 60% | 60% |
| Fair representation in PAMB membership | 40% | 40% | 40% |
| Consultation on change of PA management | 40% | 20% | 30% |
| Effective enforcement of PA laws | 80% | 20% | 50% |
| | | | |
| Economic impact indicators: | | | |
| Employment generation | 80% | 80% | 80% |
| Higher incomes for local residents | 80% | 100% | 90% |
| Higher revenues for government programmes | 100% | 100% | 100% |
| Increase in programmes for community development | 80% | 80% | 80% |
| Increase in environmental programmes | 60% | 60% | 60% |
| Increase in population due to in-migration | 0% | 0% | 0% |
| Change in local exports | 0% | 60% | 30% |
| Change in local imports | 0% | 0% | 0% |
| Increased fish catch | 40% | 60% | 50% |
| | | | |
| Social and biophysical impact indicators: | | | |
| Coral reef enhancement/increased fish yield | 100% | 100% | 100% |
| Preservation of cultural traditions | 100% | 0% | 50% |
| Introduction of conservation practices | 100% | 100% | 100% |
| | | | |
| Overall satisfaction with PA management | 40% | 40% | 40% |

**Note*: includes the following: PAMB officials; municipal mayor of Dauin, Negros Oriental; NGO representative in PAMB; PG representative not in PAMB; *barangay* captain.

On the other hand, impact indicators revealed a high level of satisfaction among the respondents. Economic indicators were mostly positive, such as increased revenue for the PA, higher incomes for people and greater employment opportunities. However, some respondents qualified that although there were greater employment opportunities, the choice of who eventually did get employed was purely discretionary, and not based on a merit system. Most believed that community development was being given adequate attention, even more than environmental programmes. The latter had to do more with weak enforcement of environmental rules. The PAMB planned to undertake the following community-development programmes:

- improved water supply;
- provision of land and sea public transport for residents;
- scholarship programmes;
- livelihood training seminars;
- provision of electricity;
- mooring buoys;
- hiring of *Bantay Dagat* (sea guards);
- solid-waste management;
- concreting of walkways; and

- collecting the crown-of-thorns fish.

There were no negative effects with respect to population increases, and introduction of new imports to the island. As to the effects on the fisherfolk, half of them seemed to think there was an increase in fish catch, although two of the fishermen interviewed thought otherwise. They largely attributed this to the presence of too many divers, which scared the fish away from the fishing grounds. Nevertheless, they acknowledged that there was an increase in fish yield due to protection efforts. The presence of the PA likewise had positive effects in introducing conservation practices among the local residents in the area. There seemed to be a very high level of environmental awareness, which is to be expected given the long history of the island in protection and conservation efforts.

Despite all this positive impact of the PA on the lives of the local residents, there is still a low level of overall satisfaction with its management. Crucial to this is the fact that the PA was already being managed locally, and their efforts paved the way towards improvement of the area and its resources. When management was community-based, there was a sense of ownership of the PA. Income and revenue were lower, but most respondents preferred that arrangement to the current one. When Apo Island was subsumed under the NIPAS system, the original management body was dissolved, and the PAMB created in its place. The local residents and local government then lost control over the management of their protected area.

In a way, it can be said that the institutional development on Apo Island regressed. The ideal situation is for the residents themselves to take responsibility over ensuring protection and conservation of their natural resources. National government should step in only if there is a perceived lack of capability at the local level. But if there exists a credible and viable institutional mechanism at the local level, the most that national government should do is to assist, ensuring that the assistance is within the established management framework of the community. Despite the sincerity and successes of the PAMB, respondents did not seem to approve of the way they were handling the PA.

### *4.1.7 Conclusion*

The case of Apo Island is unique in the sense that its institutional development for environmental management is not characteristic of how other protected areas have evolved in the country. Successful market development for environmental services, increased protection of natural resources, high levels of environmental awareness, and increased incomes for the people – all suggest that environmental protection can be compatible with economic development, and the former can be successful if community development is addressed as well. This case study has demonstrated this, albeit the rudimentary methods employed in data gathering.

Unfortunately, the story does not end there. ‘Ownership’ of decisions on management is as important as economic implications. In areas where there have been local efforts in environmental protection, such efforts should be respected. Interventions by national government, despite increasing efficiency, will not be welfare maximising if social costs are increased in the process. Two recommendations, therefore, are for the PAMB to increase its efforts in being more transparent in its operations, and for its officials to work towards greater acceptance by the community. The latter can be achieved by increasing local residents’ participation in the decision-making process and conducting their information and education campaigns on a more inclusive scale.

## 4.2 Reforestation, Watershed Management, Health and/or Environment Enhancement Fund (RWMHEEF) of the Department of Energy

### *4.2.1 Definition*

The RWMHEEF of the Department of Energy (DOE) was first established through Republic Act No. 7638,[42] otherwise known as the Department of Energy Act of 1992. In its Implementing Rules and Regulations (IRR), as contained in Energy Regulations (ER) 1-94[43], Section 6(f) entitled 'Reforestation, Watershed Management, Health and/or Environment Enhancement Fund', states that:

> One-half of one centavo (PhP0.005) per kilowatt hour of the total electricity sales of the energy-generating facility shall be set aside by the power producer to be used for reforestation, watershed management, health and/or environment enhancement. The power producer and the energy resource developer, to the extent of their respective contribution to the fund, shall each submit work programs for reforestation, watershed management, health and/or environment enhancement which would have to be approved by the DOE in consultation and close coordination with the DENR, the DOH, the relevant water districts, local government units, regional development councils, non-governmental organizations, and other affected parties…

The guidelines and procedures for the administration of the fund are contained in Department Circular No. 95-11-009[44] of the DOE. Basically, the guidelines contain general provisions on the effectivity of the grant of financial benefits, the establishment of trust accounts through a Memorandum of Agreement (MOA) between DOE and the energy-resource developer or power producer, the administration of the fund, and some guidelines on project implementation.

Department Circular No. 2000-03-003[45] of the DOE amended Section 6 of ER 1-94, whereby the electrification fund this time would get 50 per cent of one centavo for every kilowatt-hour generated, while the remaining 50 per cent would be shared equally between the Development and Livelihood Fund and the Reforestation, Watershed Management, Health and/or Environment Enhancement Fund.

Republic Act No. 9136 entitled Electric Power Industry Reform Act of 2001 (EPIRA) adopted these amendments to ER 1-94. Of particular interest is Rule 29 of the EPIRA Implementing Rules and Regulations[46] which states that: 'one centavo per kilowatt-hour of the total electricity sales' of a generation company shall be applied as 'financial benefit of the host communities of such generation facility…' (see Appendix I).[47]

This one centavo per kilowatt-hour allocation is divided into three types of funds, namely:

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[42] Republic Act No. 7638 entitled 'An Act Creating the Department of Energy, Rationalizing the Organization and Functions of Government Agencies Related to Energy, and for Other Purposes'.

[43] ER 1-94 entitled 'Rules and Regulations Implementing Sections 5(i) of Republic Act No. 7638, Otherwise known as the Department of Energy Act of 1992'.

[44] Department of Energy Circular No. 95-11-009 entitled 'Guidelines and Procedures for the Granting of Financial Benefits under Energy Regulations 1-94'.

[45] Department Circular No. 2000-03-003 entitled 'Further Amending the Provisions of Energy Regulations 1-94', and 'Rules and Regulations Implementing Section 5(i) of Republic Act No. 7638, otherwise known as the Department of Energy Act of 1992 and its Attendant Rules and Procedures'.

[46] Republic Act No. 9136 entitled 'Electric Power Industry Reform Act of 2001, Implementing Rules and Regulations'.

[47] Available at http://www.iied.org/eep/.

| *Location/ type of fund* | *Allocation in highly urbanised city* | *Allocation in non-highly urbanised city* |
|---|---|---|
| Electrification Fund (EF) | 75% | 50% |
| Development and Livelihood Fund (DLF) | 12.5% | 25% |
| Reforestation, Watershed Management, Health and/or Environment Enhancement Fund (RWMHEEF) | 12.5% | 25% |

A hierarchy of geographical areas for application of each type of fund is listed in the IRR.

In general, the three types of fund are meant to supplement the provision of basic needs in communities hosting energy projects. In reviewing what would constitute basic needs, the DOE came up with electrification, livelihood, health, and environmental enhancement (which pertains more to waste disposal) as the main types of development projects that would be allowed under ER 1-94. With regard to reforestation and watershed protection, it is not clear whether these were considered as basic needs, or whether these were objectives that would primarily serve the interests of the energy projects. Interestingly, the NPC has its own list of obligations for energy-generating companies to invest in environment-related projects in their area of operations, which would answer for the sustainability of the energy project. The environment-related projects under the RWMHEEF are over and above the NPC list. Hence, the intended beneficiaries of the fund extend beyond the private energy companies.

The EF is solely meant for electrification projects in host communities. The main objective is to provide electricity to host rural areas with growing populations. The DLF is mainly for livelihood projects, including infrastructure projects that are meant to increase productivity. Finally, the RWMHEEF is meant to serve a mix of objectives, which includes environmental and health-related goals alike. It is more of a catch-all fund that was created to supplement the provision of basic needs of communities (other than electrification and livelihood), as well as improve environmental conditions where deemed necessary.

### *4.2.2 Institutional set-up*

DOE is the sole agency that administers all types of funds. The actual money is held in special accounts for each type of fund which does not have to be deposited into the national treasury, thus making disbursements more efficient.

The IRR further states that annual work plans should be prepared jointly by the generation company and the LGU concerned, to be submitted to DOE not later than March 15 every year. For watershed-management and reforestation projects, such work programs should be coordinated and endorsed by the concerned DENR Regional Office or watershed management administrator in the area. However, the LGU is solely responsible for implementation, supervision, and administration of all projects approved. Local participation in project selection is not explicitly required, and it will depend on the LGU officials on whether or not they get local residents involved in selecting the project/s. All DLF and RWMHEEF projects should be implemented within one year of receiving their funds.

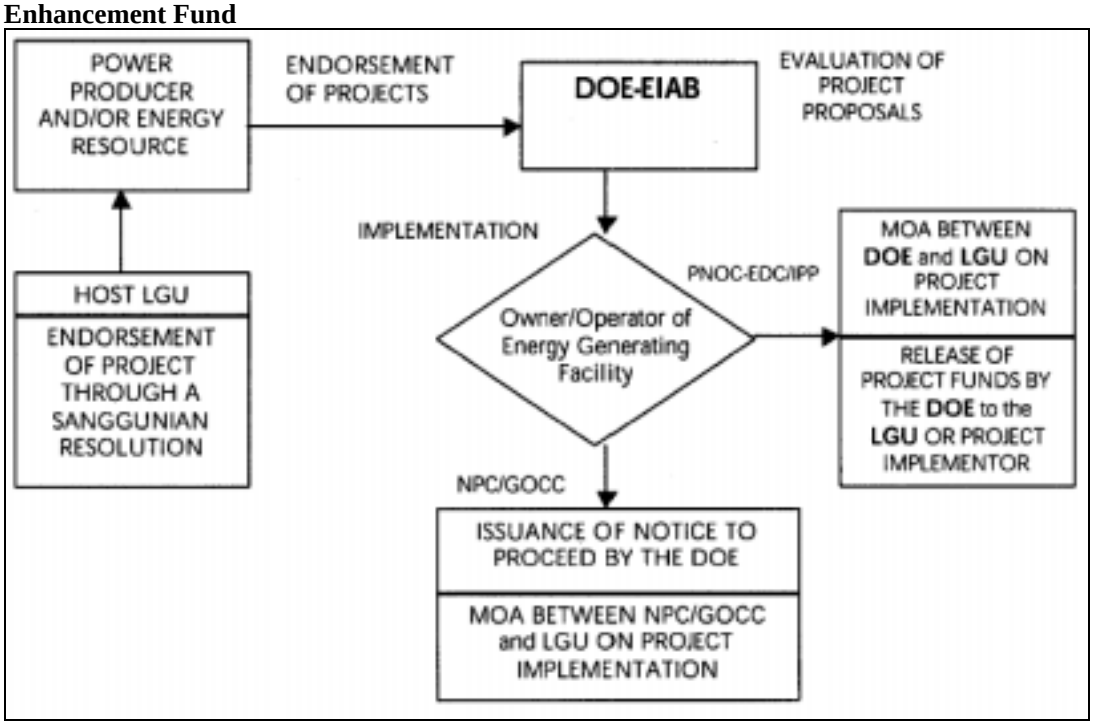
Upon completion of the documents, a MOA is entered into by the DOE, the generating company, and the concerned LGU. Release of project funds is made directly to the LGU

within 15 days of submission of the necessary documents. Appendix K[48] contains a sample MOA between the DOE and the province of Bataan for the construction of a water-supply system in the host *barangay*.

Figure 4.2 shows the process by which LGUs can get funding from the DLF and the RWMHEEF,[49] while Figure 4.3[50] contains a flowchart of activities within DOE including number of days and approving bodies for each step. In sum, it takes anywhere between 13 to 42 working days for the whole process within DOE before the actual release of funds.

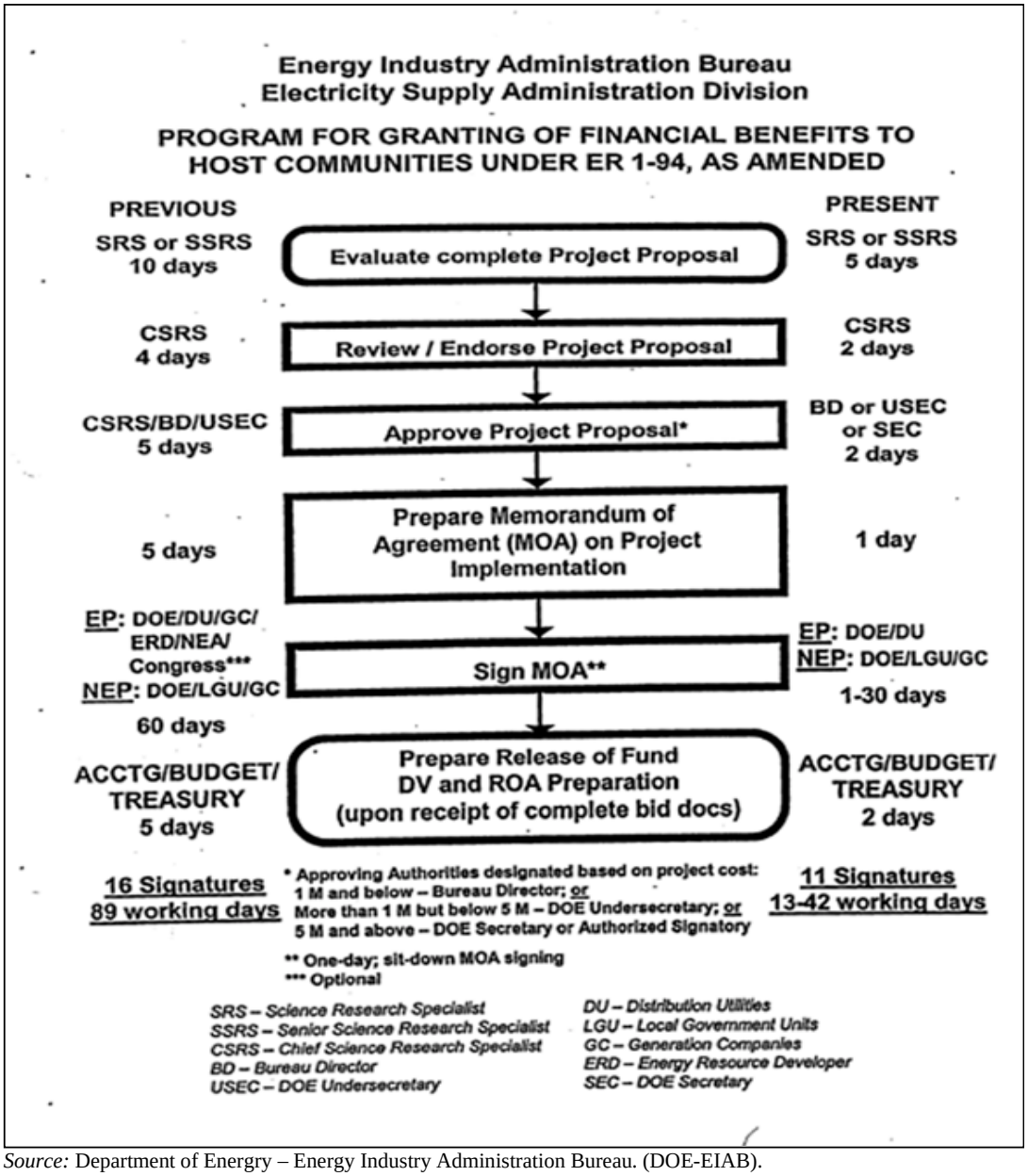
[48] Available at http://www.iied.org/eep/.
[49] From the Department of Energy (1998), Primer on Benefits to Local Government Units Hosting Energy Resources and/or Energy-Generating Facilities.
[50] From ESAB, Electricity Supply Administration Division, DOE.

**Figure 4.2 Flowchart of how to gain access to the Development and Livelihood Fund, the Reforestation and Watershed Management Fund, and the Health and Environmental-Enhancement Fund**




*Source:* Department of Energy (1998), Primer on Benefits to Local Government Units Hosting Energy Resources and/or Energy-Generating Facilities.

**Figure 4.3 Program for Granting Financial Benefits to Host Communities Under ER 1-94, as amended**




*Source:* Department of Energry – Energy Industry Administration Bureau. (DOE-EIAB).

### *4.2.3 The Universal Charge*

Aside from the fund mentioned above, there is a separate charge that is mandated by law, which is called the Universal Charge, the amount of which has yet to be determined by the ERC. It shall be imposed upon all end-users of electricity, including all self-generation entities. Rule 18, Section 4(ii) of EPIRA states that the charge will be used partly for the rehabilitation and maintenance of watershed areas. In particular, the law specifies that PhP0.0025 per kilowatt-hour sales shall be dedicated for such purposes. However, the DOE has yet to implement this particular portion of the law, hence no assessment can be made as to its effectiveness in promoting environmental protection.

### *4.2.4 Guidelines in approving project proposals*

For projects to be eligible under the RWMHEEF, they should be classified under any of the following programmes:

- Reforestation and watershed management, with the objective of improving either forest cover or resource management.
- Health-related projects.
- Environment enhancement-related projects, e.g. waste disposal.

In prioritising the types of projects in an area, the guidelines are specific on the ranking for areas that host either hydro- and geo-thermal power plants. For areas with other types of power plants, the concerned LGU will decide on how to prioritise project proposals for its area. As far as the maximum amount per area is concerned, LGUs can propose projects that do not exceed the amount generated by the power plant they host. However, this is not being followed strictly, given that only 38 host communities, or roughly 25 per cent of total power plants in the country, have availed of the fund. Appendix K[51] contains the full set of guidelines for RWMHEEF and DLF, as well as the list of requirements per type of allowable project under each fund.

Interviews with Gregory Paredes,[52] head of the Watershed Management Department of the National Power Corporation and Noel Umali,[53] his deputy, revealed that the drafting of the IRR, particularly in coming up with the list of allowable projects as contained in Annex K, was done through consultations with the LGUs themselves. Noel Binag of the DOE[54] added that the list of allowable projects was based on the 'wish list' of local government offices.[55] When asked why the RWMHEEF was set up, they admitted that a huge factor being considered was the political acceptability of energy projects to the host communities. The same response was elicited from Yolanda Villaseñor,[56] the assistant director of the EIAB of the DOE. She claimed that the fund is being used by the DOE as bargaining leverage with the LGUs to get their energy projects endorsed by the host community. Hence, the types of projects they want to be funded are those with highly visible impact and could be implemented and made tangible in the short-run, mostly social-development projects. Given the political cycle in the country, with three-years ontervals between elections, it is expected that LGUs would want to implement projects that could be completed within this three-year period.

For projects in the DLF category, the list of preferred development projects and preferred livelihood projects are contained in Table 4.5. A noteworthy emphasis of the fund is on projects that are aimed to improve productivity and provide livelihood opportunities to host communities. Thus, DLF projects are expected to translate into higher incomes, while RWMHEEF projects are expected to translate into improved standards of living through provision of basic necessities and environmental enhancement.

[51] Available at http://www.iied.org/eep/.
[52] Interview conducted on 26 July 2002 at NPC, Quezon City.
[53] Interview conducted on 10 July 2002 at NPC, Quezon City.
[54] Interview conducted on 29 January 2003 at DOE, Fort Bonifacio, Makati City.
[55] LGUs are required to come up with a priority listing of development projects for their area every year.
[56] Interview conducted on 30 July 2002 at DOE, Fort Bonifacio, Makati City.

**Table 4.5 Preferred development and livelihood projects to be funded under Development and Livelihood Fund**

| *Development projects* | *Livelihood projects* |
|---|---|
| Street-lighting projects | Food production/processing |
| Farm-to-market road | Ice plant |
| Multi-purpose pavement | Livestock and poultry production |
| Farm-produce collection and buying station | Handicraft production |
| Rice/corn milling | Aquaculture |
| Communal irrigation system | Skills training for LGU livelihood projects |
| Small water impounding projects | Vegetable seed farm |
| Fish ports | Small-scale services livelihood projects: |
| Seawalls | Corn/rice milling |
| Day-care centre | Carpentry/furniture shop |
| School building | Radio, refrigerator and servicing |
| Public market | Garment weaving |
| Slaughterhouse | Engine mechanical services |
| Public drainage/sewerage system | Electrical wiring and design |
| Bridge/flood-control measures | Dressmaking |
| | Gold and silver trading and jewellery making |
| | Blacksmith shop |
| | Welding shop |

*Source:* EIAB, DOE, 2002.

### *4.2.5 Funds accrued, funds disbursed*

Table 4.6 contains the total accruals and disbursements made for each of the funds handled by DOE. Funds started accruing since 1994, but disbursements began only in the next year. This is to be expected, given the lead time needed for project development and approval. For the RWMHEEF, disbursements have only been 45 per cent of the total accrued fund. Looking at the trend, for the first three years, the fund was hardly used for LGU projects. During three out of the most recent four years, disbursements were bigger than the accruals. LGUs are thus starting to make use of the fund at a faster rate, absolutely and relative to the use of the other funds. Only 38 energy projects have used the fund, representing 38 per cent of around 100 power plants located in the country. Nevertheless, relative to their contribution to total generating capacity, these power plants that availed of funding were generating 59 per cent of the total generating capacity of all existing power plants in the country (see Table 4.7). Hence, in the overall picture, they contribute more to energy generation relative to the 45 per cent of the fund they have received.

**Table 4.6 Accruals and disbursements, benefits under Republic Act 9136, 1994–2002**

| *Year* | *Type of Fund* | *Accruals* | *Obligated* | *Available* | *Rate of Disbursement* |
|---|---|---|---|---|---|
| 1994 | EF | 24,173,178 | | 24,173,178 | |
| | DLF | 24,173,178 | | 24,173,178 | |
| | RWMHEEF | 48,346,355 | | 48,346,355 | |
| 1995 | EF | 54,822,077 | 6,965,864 | 47,856,213 | 13% |
| | DLF | 54,822,077 | 5,756,700 | 49,065,377 | 11% |
| | RWMHEEF | 109,644,154 | 7,155,000 | 102,489,154 | 7% |
| 1996 | EF | 62,065,079 | 9,101,082 | 52,963,997 | 15% |
| | DLF | 62,065,079 | 6,472,866 | 55,592,213 | 10% |
| | RWMHEEF | 124,130,158 | 6,841,322 | 117,288,836 | 6% |
| 1997 | EF | 69,377,779 | 7,134,067 | 62,243,712 | 10% |
| | DLF | 69,091,462 | 6,875,058 | 62,216,404 | 10% |
| | RWMHEEF | 137,904,276 | 6,417,250 | 131,487,026 | 5% |
| 1998 | EF | 73,594,421 | 22,993,474 | 50,600,946 | 31% |
| | DLF | 73,197,601 | 13,774,844 | 59,422,757 | 19% |
| | RWMHEEF | 146,009,012 | 66,065,102 | 79,943,911 | 45% |
| 1999 | EF | 178,597,074 | 82,960,379 | 95,636,695 | 46% |
| | DLF | 90,314,991 | 22,880,275 | 67,434,716 | 25% |
| | RWMHEEF | 90,482,006 | 92,521,710 | (2,039,703) | 102% |
| 2000 | EF | 155,513,144 | 126,394,469 | 29,118,675 | 81% |
| | DLF | 113,251,524 | 53,543,864 | 59,707,659 | 47% |
| | RWMHEEF | 113,468,964 | 131,391,655 | (17,922,691) | 116% |
| 2001 | EF | 139,899,186 | 83,495,796 | 56,403,390 | 60% |
| | DLF | 128,178,140 | 36,262,028 | 91,916,112 | 28% |
| | RWMHEEF | 128,393,685 | 68,727,248 | 59,666,437 | 54% |
| 2002 | EF | 26,254,450 | 41,285,053 | (15,030,603) | 157% |
| | DLF | 25,042,137 | 8,452,015 | 16,590,122 | 34% |
| | RWMHEEF | 25,009,527 | 34,815,883 | (9,716,356) | 139% |
| TOTALS | EF | 784,296,388 | 380,330,184 | 403,966,204 | 48% |
| | DLF | 640,136,189 | 154,017,651 | 486,118,538 | 24% |
| | RWMHEEF | 923,478,137 | 413,935,169 | 509,542,968 | 45% |
| Grand totals | | 2,347,910,714 | 948,283,003 | 1,399,627,711 | 40% |

*Source:* EIAB, DOE, 2002.

**Table 4.7 Total generating capacity of power plants gaining funding from RWMHEEF under ER 1-94, as of 24 July 2002**

| *Power plant* | *Generating capacity (MW)* |
|---|---|
| Angat HEP | 246 |
| Magat HEP | 360 |
| Pantabangan/Masiway HEP | 100 |
| Masinloc CFTPP | 600 |
| Binga HEP | 100 |
| Ambuklao HEP | 75 |
| Bauang DPP | 235 |
| Sual CFTPP | 1,294 |
| Total Northern Luzon Regional Center | 3,010 |
| | |
| Bataan CCPP | 620 |
| Bataan TPP | 64 |
| Bataan GT | - |
| Batangas CFTPP | 600 |
| Fels PB 1 | - |
| Malaya TPP-NPC | 650 |
| Malaya TPP-IPP | |
| Malaya GT-NPC | - |
| TOTAL MMla Regional Center | 1,934 |
| | |
| BacMan 1 GPP | 150 |
| BacMan 2 GPP | |
| Kalayaan PSPP and Caliraya HEP | 387 |
| Mak-Ban GPP | 410 |
| Pagbilao CFTPP | 764 |
| Mauban CFTPP | 440 |
| Tiwi GPP | 275 |
| Pinamucan DPP | 111 |
| TOTAL South Luzon Regional Center | 2,537 |
| | |
| Bohol DPP | 22 |
| Cebu DPP 2 | 58 |
| Cebu TPP 2 | 109 |
| Leyte GPP 1 – Tongonan | 112 |
| Palinpinon 1 GPP | 112 |
| Palinpinon 2 GPP | 80 |
| PB 105 | - |
| PB 102 | 8 |
| TOTAL Visayas Regional Center | 502 |
| | |
| Agus 1 HEP | 80 |
| Agus 2 HEP | 180 |
| Agus 4 HEP | 158 |
| Pulangi 4 HEP | 255 |
| PB 117 | 100 |
| GT 201 & 202 | - |
| TOTAL Mindanao Regional Center | 773 |
| Total | 8,756 |
| Total Philippines | 14,905 |
| % to Total Philippines | 59% |

*Source:* Existing NPC Power Plants in the Philippines, as of 3 May 2002, DOE. Existing IPP Power Plants in the Philippines, as of 24 July 2002, DOE.

The DLF, on the other hand, has yet to be tapped as much as the Watershed Rehabilitation Fund. It has been underutilised, notwithstanding the fact that infrastructure projects are

allowed under this fund. The reason given by Mr Binag of DOE was that there were more rules to follow in availing of the DLF, thus LGUs preferred to submit project proposals under the RWMHEEF. For one, the appropriation of funds from one energy project among the host *barangay*, host municipality and host province was very specific for the DLF.[57] There was no appropriation required under the RWMHEEF, thus LGUs were more flexible in the amounts they could request under this fund. Hence, the choice of LGUs availing more of the RWMHEEF was not necessarily due to the nature of allowable projects.

The interview with Yolanda Villaseñor further revealed that although there is a huge amount of money accrued through the fund, there is actually very little cash that can be disbursed. She claims that at the time of the interview, there was only PhP25,000 cash on hand that could be used for project proposals. When asked how this happened, she declined to give any details. It can only be surmised that money is used for other purposes, because even according to the DOE, the power-generating companies had been remitting funds regularly. Nevertheless, if project proposals are made and approved, they would source the funds from elsewhere, i.e. internally within DOE or NPC. Hence, the current lack of funds would not derail the implementation of project proposals from host communities, according to Villaseñor.

### *4.2.6 Matrix of approved projects*

Under the RWMHEEF fund, there have been a total of 349 projects, with a total disbursement of PhP413,935,169, for 38 power plants, over a period of 8.5 years. There are actually a total of around 100 power plants all over the country, but these power plants that have availed of funding are supplying 59 per cent of total electricity generated nationwide.

Out of the total, the majority of the projects are found in Luzon, with metropolitan Manila enjoying the biggest share, in terms of number of projects and amount. This is, of course, more or less proportional to the number of power plants located per regional centre.

Probably of more interest would be the nature of the projects being implemented under this fund. As shown in Table 4.8, more than half of the projects are either health-related, or water-supply projects of the host communities. This is to be expected, given that most of these communities hosting energy projects are in lower-class municipalities, hence have very backward infrastructure in public services. Since LGUs are involved in the formulation of guidelines for the fund, a bias would be expected towards projects that reflect the more pressing needs of their constituents, most of which are more directly related to people's everyday needs. However, what this translates to is a very low investment – 8 per cent – in watershed-rehabilitation projects in particular, and 22 per cent for enhancement of environmental services in general. The latter would include erosion-control and solid-waste management projects.

[57] The DLF requires that the host *barangay*, municipality and province each get a fixed share from each energy project located therein.

**Table 4.8 Approved reforestation, watershed-management, health and/or environmental-enhancement projects under ER No. 1-94, by type of project, January 1995 to June 2002**

| Year | *Type of project* | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | *Nursery/ reafforest-ation/agro-forestry* | *Erosion/ structural measures*[a] | *Health ctr/med facility/ equipment* | *Water-supply system*[b] | *Com-munal toilets* | *Solid-waste manage-ment* | *Train-ing* | *Unclas-sified*[c] |
| 1995 | 1 | - | 3 | 8 | - | - | - | 1 |
| 1996 | 1 | 1 | 10 | 3 | - | 1 | - | - |
| 1997 | 3 | - | - | 8 | - | 3 | - | 1 |
| 1998 | 2 | 5 | 18 | 27 | 1 | - | - | 1 |
| 1999 | 3 | 4 | 31 | 28 | 2 | 8 | - | 6 |
| 2000 | 10 | 10 | 29 | 36 | 3 | 10 | 2 | 8 |
| 2001 | 4 | 1 | 11 | 5 | 1 | 2 | - | 2 |
| 2002 | 2 | 1 | 8 | 11 | 1 | 2 | - | 4 |
| Total | 26 | 22 | 110 | 126 | 8 | 26 | 2 | 23 |
| % of Total | 8% | 6% | 32% | 37% | 2% | 8% | 1% | 7% |

a/ Includes flood control.
b/ Includes irrigation projects.
c/ ncludes fire trucks, CRM projects, heavy equipment purchase, patrol boat purchase, slaughterhouse construction.
*Source:* Energy Industry Administration Bureau, Department of Energy, 2002.

Moreover, these environmental-enhancement projects are concentrated only in a few areas. For instance, five watershed rehabilitation projects, and six erosion-control ones, were established in Pagbilao, Quezon, all within the same year (2000). Three watershed rehabilitation projects in 2001, and two erosion control projects in 2001 and 2002, were all likewise implemented in the same municipality. It just so happened that the concerned LGU had a proclivity towards environmental investments, relative to the other host communities. Hence, the choice of such projects becomes even more isolated on a per host community basis.

Noticeable is the column of unclassified projects, whereby there were certain projects funded that did not fall under any of the allowed categories. In fact, many of these projects are actually allowed under the DLF, such as slaughterhouses and irrigation projects (see Table 4.8). Flood-control measures were classified with erosion-control measures, albeit such projects are supposed to be funded under the DLF. There may have been honest mistakes in sourcing funds for such project proposals. But a more plausible explanation is the fact the RWMHEEF funds are easier to gain access to, due to more flexibility in the amounts that LGUs can request. For those unclassified projects that could not be included in either fund, these could have been projects that were accompanied by strong political pressure, or had a sense of urgency as far as endorsement of the energy project was concerned.

According to the data gathered from the DOE, there does not seem to be a specific targeting of beneficiaries by type. Each project proposal contains a summary of basic data, including the number of beneficiaries. The proposals simply indicate the total population of the area as the target beneficiaries. Hence, there is no relevant analysis that can be made on this aspect.

### *4.2.7 Socio-economic impact analysis*

In testing the methodology for this case study, data gathering relied mainly on secondary sources – the DOE and the NPC. An attempt was made to visit some of the watershed rehabilitation and reforestation projects approved during the past three years. Unfortunately,

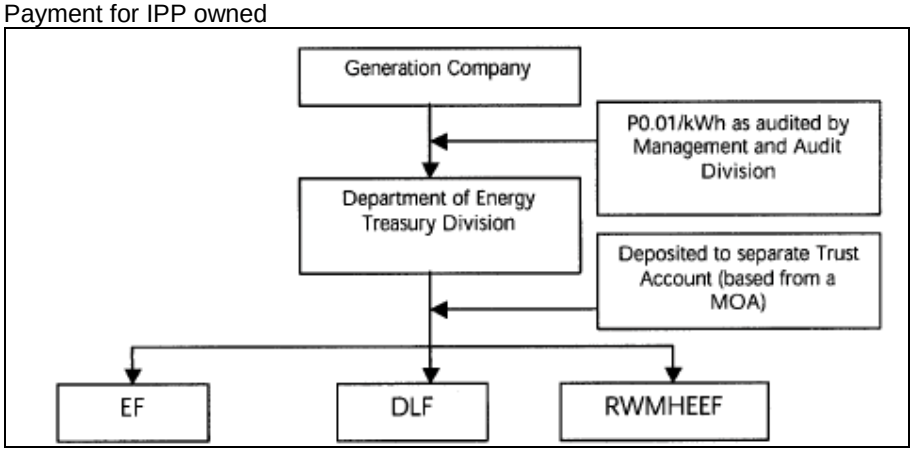
not one of them had yet been implemented. Projects that were in the implementation stage were of other types, such as health infrastructure, waste disposal, and water-supply systems. Hence, socio-economic impact of investments in watershed protection could not be ascertained. What was assessed instead was the distribution of the funds between environmental and social investments, and the potential of the fund to increase welfare among its beneficiaries through more efficient delivery of basic services and environmental investments.

As can be gleaned from the types of projects being funded under RWMHEEF, improvement of the standard of living of people, through the provision of basic necessities, seems to be the main objective of the fund. Environmental protection and conservation do not seem to play a major role, given the very scant projects in this category. Nor is the fund being much used for livelihood- and productivity-enhancement activities, but then again there is a separate fund that addresses directly these objectives. Thus, it appears that in situations where government is remiss in fulfilling its duties of provision of basic infrastructure and services, environmental conservation will not be addressed by poor communities until their basic needs are met. It is thus only logical that environmental-management programmes will have to integrate upliftment of the poor if they are to be successful.

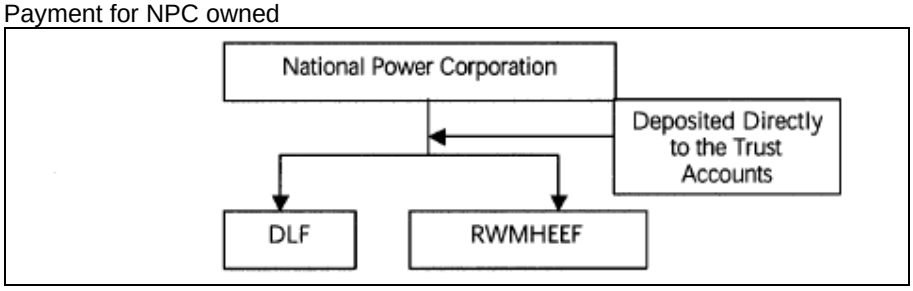
On the other hand, such a scheme allows for a more efficient delivery of basic services by the local governments concerned. Because the local governments themselves determined what could be funded under this mechanism, it paves the way for the most pressing needs of the host communities to be met. Furthermore, since the local government has to deal only with the DOE and the generating company, the approval and implementation process is much shorter relative to projects that source funds from either the national treasury and foreign sources. Based on interviews with DOE personnel, payments for the RWMHEEF, along with the other types of funds, are made directly to the treasury division of the DOE (see Figure 4.4). The money does not have to pass through other accounts of the national government. As a corollary to this, disbursements are made directly from DOE to the LGU concerned, upon the opening of a special account exclusively for ER 1-94 funds.

**Figure 4.4 Flowchart of funds, payment and withdrawal for Development and Livelihood Fund, Reforestation and Watershed-Management Fund, and Health and Environment Enhancement Fund**

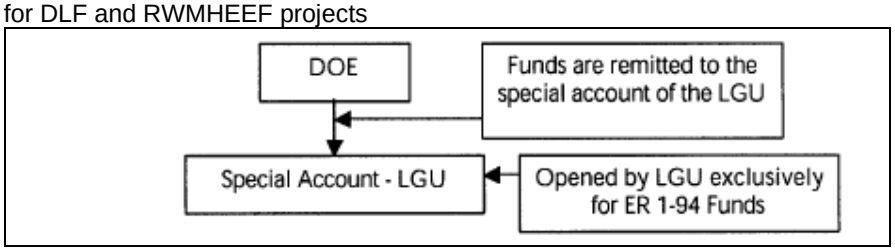
Payment for IPP owned



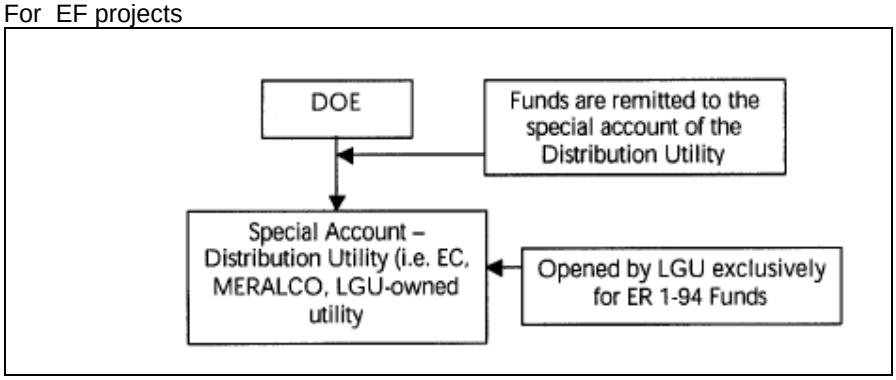

Payment for NPC owned



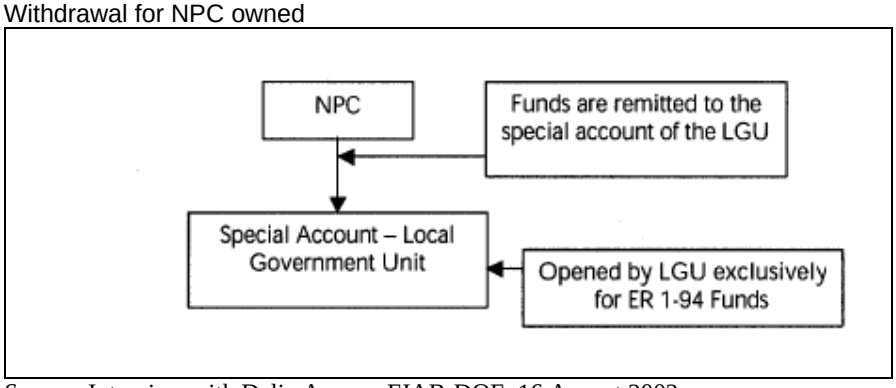

Withdrawal for IPP owned
for DLF and RWMHEEF projects




For EF projects



Withdrawal for NPC owned




*Source:* Interview with Delia Arenos, EIAB-DOE, 16 August 2002.

On the whole, it appears that the RWMHEEF is contributing to an increase in social welfare. It is able to address basic needs of the host communities through health and water-supply projects, both of which tend to serve the majority of the population of the area concerned. One does not need to delve deeper into this subject matter, since provision of basic health and water-supply services would always have positive effects on people's lives. Second, it allows for efficient delivery of LGU services, which could normally take longer to deliver if routed through usual government budget allocations. Be that as it may, such results are borne out of direct investments in projects other than watershed management. The scheme has not yet been used in such a way that a direct connection between enhancement of environmental services, for which the fund was created, and addressing poverty can be established. In a situation where watershed-protection projects compete directly with health-related ones at the same time, the latter will always be addressed first. As to whether this is good or bad should be assessed within the larger picture of economic development and environmental management of this country.

The DOE conducted its own impact study of the implementation of the three funds in March of 2002.[58] The objectives of the study were the following:

- To determine the impact of projects funded under ER 1-94.
- To determine whether the goal of improving communities' living conditions has been achieved.
- To determine the most effective ways of delivering the programmes and services provided under ER 1-94.

There was an attempt made to get a copy of the detailed study. Unfortunately, the interviewees did not want to release the whole report, because it lacked the signatures of the department heads, which would have made the study official and available for the public. Instead, the executive summary was provided, the contents of which are discussed below.

Five host *barangays* were selected as the sample of the survey. All these *barangays* gained access to each of the three types of funds, which was the basis of the selection. They were mainly third-class municipalities, with above average household sizes, relying mostly on farming and fishing. Average family incomes were way below the national average, and did not go beyond the poverty threshold level.

[58] Taken mostly from 'An Impact Evaluation of Projects Funded Under ER No. 1-94', prepared by the EIAB- DOE, March 2002.

Results of the survey of 100 respondents from the five *barangays* showed that the majority found the water-system projects very helpful in providing direct access to potable water, as well as water for gardening and animal production, and reduction of water-borne diseases. An overwhelming number showed great appreciation for the solid-waste management projects because of the improvement in sanitation. The dump trucks likewise served as vehicles for relocating victims during times of calamities, and for construction and repair of infrastructure projects. Hence, there were positive results experienced from such projects. Finally, the health centres were beneficial not only in terms of serving as a venue for curing the sick, but also as venues for improving family health care in general.

In general, the RWMHEEF and DLF programmes of the DOE were deemed helpful by the beneficiaries themselves in terms of providing basic needs and improving their standards of living. However, the study believes that the benefits could be maximised if more people are made aware of the existence of such projects, and if government agencies were more coordinated in their efforts to spread the benefits throughout the widest range of beneficiaries possible. Monitoring plays an important role, and although the MOAs provide for LGUs and the NPC to undertake monitoring activities, compliance has been very poor so far.

### *4.2.8 Conclusion*

The NPC case is illustrative of how markets for watershed services are being introduced in the country, whereby the government acts as an intermediary between the buyers, in this case the energy producers, and the sellers, i.e. the communities hosting the energy projects. Unfortunately, there is still a weak link between the 'payment' to the communities and watershed protection. The mechanism has been set up, but the interplay of market forces is still not as dynamic as it is hoped it would be. The fund is hardly used for watershed-protection projects, rather basic needs are given a much higher priority. Although this has nothing to do with the DOE's management of the fund, it somehow reflects how environmental objectives are not yet given priority in the use of the fund. It is thus difficult to determine now if this particular economic instrument, in meeting its environmental objectives, entails economic and social costs to the affected communities, or if welfare is improved simultaneously with conservation.

Nevertheless, there is reason to believe such markets will develop. Government policies are now geared towards valuing such services and realising these values for community benefits. In a very minimal sense, the small amount of one centavo per kwh represents what can be seen as part of a nascent value of watershed-protection services, which is now being diverted back to the host communities. Direct environmental investment from these power producers would constitute the other portion of the value of watershed protection.

Another insight drawn from this case study is the fact that environmental investments are difficult to come by unless basic social services of communities are met. The RWMHEEF illustrates this point. Although the fund allowed for environment-related projects, most local governments chose to invest in basic services, such as provision of water-supply and health-related infrastructure for their constituents. Some government personnel may perceive this as anomalous, but political reality dictates that projects that are perceived to have greater impact on current generations will always be preferred over those for future generations, especially if the belief is that such projects will affect the quality of life of the communities in question. If host LGUs and communities can be convinced that investments in watershed-protection and other environment-related projects can have direct and immediate impacts on livelihood, there might be a chance that such environment-related investments will increase in the future.

# 5 Proposals for further research

The Philippine case studies presented and the review of existing initiatives for MES development illustrate a certain dynamism that promises the achievement of conservation objectives in that country. There is enough room in the existing legal and policy framework for the creation and implementation of economic instruments. Institutional mechanisms likewise exist, albeit at varying levels of efficiency. Yet much remains to be done for MES development to create a significant impact on the Philippine environmental sector. The following are recommendations for further work.

With respect to the IPAF, economic valuation studies need to be replicated in other parts of the country. There are numerous protected areas listed on paper, but because of various implementation problems such as lack of financial sustainability, some markets cannot seem to take off. One case study that can be replicated is the imposition of watershed-protection fees on a mineral water company benefiting from such protection, even if the company is located outside the protected area. Furthermore, although most revenue-generating PAs have only started to disburse their funds, early interventions – for example establishing a proper monitoring system within the PAWB-DENR – can ensure that such funds are used for programmes that can serve as payments to local communities for continuous provision of environmental services. Finally, assistance can be provided in setting up some sort of a 'payment scheme' for local communities, particularly in areas where revenues have been generated.

The Balian case study can also be extended so that assistance is provided in securing the necessary rights over their water supply. Various forms of trading such rights can ensue, which will necessitate a cost-benefit analysis of the various options open to the community. Numerous lessons were learned from the Balian experience, which could be transferred to other areas where community-based organisations are present. Such organisations need not be currently active in watershed-protection efforts, but there should be an interest in pursuing such objectives.

The implementation of the DOE Fund for Watershed Rehabilitation could be expedited and designed to be more efficient. Intervention can be done on both levels – at the DOE and at local level by providing advice and technical guidance on securing their share for environmental-enhancement projects. Even areas that have had environmental enhancement projects approved can be assisted in implementing their proposals.

Finally, for further development of markets in watershed protection, studies on raw water pricing can be initiated.[59] Groundwater depletion must be addressed, one possibility being the institution of a user-fee policy based on the depletion cost of groundwater, added to the cost incurred by private well owners. This can contribute to groundwater conservation. In the event that the reduction in the volume of groundwater extraction still exceeds sustainable recharge rates, it will be necessary to determine and allocate the safe yield volume among existing users. This in turn will call for the establishment of a system for monitoring and metering groundwater use and the effective enforcement of a penalty system. To pave the way for a market for groundwater rights, the extent of private rights within the public domain will have to be redefined.

[59] Proposal for raw water pricing contained in Bautista, G. and R. Tan (2001), Watersheds and Groundwater Depletion in the Philippines: The Cagayan de Oro Experience. Institute of Philippine Culture, Ateneo de Manila University, Quezon City, Philippines.

In the event that allocations of groundwater shares may not be enough to meet water requirements and the groundwater rights market takes time to fully develop, additional supply from surface water will have to be provided. This in turn will necessitate the estimation of the full economic cost of surface water, which will depend partly on the price of the existing groundwater technology and its depletion cost, and on the condition of the forest, headwaters, and rivers from whence it comes. If forest sources are degraded, and sedimentation levels will require treatment of surface water, rehabilitation and restoration expenditures will have to be allocated for. This will likewise need policies on river-water allocation to be formulated and enforced. Both groundwater and surface water use will have to eventually be linked to natural and ecological processes. Hence, providers of such services will have to be compensated in the process by downstream users. Needless to say, all this will be possible only if management responsibilities of all government bodies involved are rationalised and delineated accordingly.

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