

### DEMONSTRATION SITE SUMMARY SHEET

1. **SITE NAME AND GEOGRAPHICAL COORDINATES:**  
Cape Bolinao is located at 16.36 – 16.46°N and 119.83 – 119.97°E in the northwestern Philippines (Luzon Island)
2. **COUNTRY/IES IN WHICH THE SITE IS LOCATED:**  
The Philippines
3. **PROVINCE [IN WHICH THE SITE IS LOCATED:**  
**Province of Pangasinan**  
Local government approval [yes or no] **yes** if yes then date **December 10, 2003**  
Local government involvement [yes or no]: **yes**  
Local government co financing [yes or no]: **yes** if yes then in cash or in kind?  
**In cash and in kind**
4. **LINKAGE TO NATIONAL PRIORITIES, ACTION PLANS AND PROGRAMMES:**
  - Cape Bolinao is included in the Philippine Biodiversity Conservation Priorities, a national biodiversity strategy and action plan, with high level in the marine category under the South China Sea biogeographic region due to its most extensively developed reef systems and associated habitats.
  - The Municipality of Bolinao is the first local government unit in the Philippines that formulated a municipal fishery ordinance, the Coastal Development Plan (CDP). In this approved and published municipal ordinance, some parts of Cape Bolinao are declared and assigned as: (1) fishery management zone, (2) multiple use zone including aquaculture/mariculture, (3) trade and navigational zone, and (4) eco-tourism zone.
  - Cape Bolinao is one of the sampling sites of the Fisheries Resource Management Project (FRMP) in the Lingayen Gulf that addresses the two critical and interconnected issues of fisheries: (1) resource depletion and (2) persistent poverty among municipal fisherfolk. The Project is designed to foster municipal fisherfolk's participation in resource management and enhance government capability, both at the national and local levels, to fulfil its mandate to manage the resources with legal basis under the Republic Act 8550 (RA 8550). Philippine Fisheries Code of 1998 (RA 8550) aimed to provide the development, management and conservation of the fisheries and aquatic resources, integrating all laws pertinent thereto, and for other purposes.
  - Bolinao is among the municipalities bordering the Lingayen Gulf. In March 25, 1993, the Lingayen Gulf was declared an environmentally critical area under Proclamation 156 signed by the President. The proclamation aimed to unify efforts in protecting and preserving the coastal resources of the gulf.  
  
Central government involvement [yes or no] **yes**  
Central government co-financing [yes or no] **yes** if yes then in cash or in kind? **Both**
5. **DATE OF NATIONAL TECHNICAL WORKING GROUP MEETING, WHICH CONSIDERED THE PROPOSAL AND RECOMMENDATION:**  
June 25<sup>th</sup>, 2003
6. **NATIONAL FOCAL POINT AND/OR NATIONAL TECHNICAL FOCAL POINT ENDORSEMENT AND/OR COMMENTS:**

**Comments:**

**Signature:**

Name and Designation:

Dr. Gil S. Jacinto, Director, Marine Science Institute, University of the Philippines  
National Technical Focal Point for Philippines

Date: 20<sup>th</sup> December 2003

## 7. SITE DESCRIPTION (FULL DESCRIPTION AS APPENDIX 1 )

### AREA

Cape Bolinao, NW Pangasinan covers about 23,320 hectares of land area. It is an integral part of the Lingayen Gulf due to its most extensively developed reef system and associated habitats (McManus et al. 1992; Rivera 1997). The estimated reef flat area is about 50 km<sup>2</sup> wherein half of the area (~25 km<sup>2</sup>) is seagrass meadows.

### ENVIRONMENT

Cape Bolinao (see the map in Appendix 1) is found on the northwestern tip of Pangasinan and is surrounded by the most extensive coral reef in the Lingayen Gulf (Mc Manus et al., 1992). It is on the western edge of Lingayen Gulf facing the South China Sea on the north and west and the Caquiputan Strait on the east. Cape Bolinao has one major island, Santiago Island and several small islands and atolls. Within the coral reef, the seagrass beds are patchy with an approximate area of 25km<sup>2</sup> (Fortes, 1995).

The geology of the mainland part of Bolinao is basically limestone with its topsoil producing only limited crops, thus agriculture provides only a limited contribution to the town's economy. Most of its livelihood has been heavily dependent on the harvest from the marine environment (McManus et al. 1992). Bolinao has a distinct dry and wet season. The rainy period starts about early May and ends in mid-October (Rollon 1998). The marine water (physico-chemical) profiles are: a) water quality – light attenuation coefficients varied from clear to relatively turbid water (0.1 to 2.0 m<sup>-1</sup>), salinity ranges from 30-35 ‰, sedimentation flux 1.5-10 g dry weight (DW) m<sup>-2</sup> hr<sup>-1</sup> (depending on the site), average water flow velocity > 9 cm s<sup>-1</sup>, and b) sediment condition – grain size composed of very coarse sand (~60-75 % DW), fine sand (20-30 % DW), very fine sand (~5-20 % DW), and silt (from negligible to ~5 % DW) and organic matter ~5 % DW (Rollon 1998). The air temperature ranges from 32 to 35°C during summer (April-May) and 26 to 28°C in July to August and January to February (colder, wet months).

### HABITATS

Cape Bolinao is a fringing coral reef system where a significant portion of the reef flat area is occupied by seagrasses. There are seven seagrass species recorded: *Enhalus acoroides*, *Thalassia hemprichii*, *Cymodocea rotundata*, *C. serrulata*, *Halodule uninervis*, *Halophila ovalis*, and *Syringodium isoetifolium*. *T. hemprichii* and *E. acoroides* are the two species dominated the seagrass beds. The seagrass areas are identified as a critical habitat for economically-important rabbitfish (*Siganus fuscescens*) and sea urchin (*Tripneustes gratilla*). *S. fuscescens* juveniles migrate from open sea to the seagrass areas to seek refuge and forage on the leaf blades of the different species of seagrasses while *T. gratilla* remains within the bed to graze for food. Giant clam (Tridacnids) ocean nurseries are also located in the seagrass meadows.

### BIODIVERSITY

Aside from its rich coral reef and diverse species of seagrasses, Cape Bolinao is also home to a wide variety of other marine species. The preliminary surveys have recorded species richness of target groups including: holothurians (10 species), crustaceans (11 species), starfish (1 species) and gastropods (149 species). On the other hand, turtles and giant clams (*Tridacna gigas*) have become endangered in Cape Bolinao. A giant clam nursery was put up in response to this problem.

### PRESENT USE

Based on the present uses, the coastal areas of Cape Bolinao are divided into four zones as embodied in the Coastal Development Plan (CDP). These are: (1) fishery management zone for sustenance fisherfolks, e.g. gleaning, hook and line, fish corral, netting, and push net fishing, (2) multiple use zone including aquaculture/mariculture and fishing, (3) trade and navigational zone, and (4) eco-tourism zone.

Out of the 30 barangays of Bolinao, 20 are found on coastal areas whom 22% of the total population is engaged in fishing (Philreefs, 2005). Milkfish aquaculture in Bolinao has now become the major source of income for its inhabitants. Although this practice has made Bolinao the largest producer of milkfish (*Chanos chanos*), studies showed that major fish kills that happened in the area resulted from the overpopulation of fish in the cages. On the other hand, tourism is also fast becoming popular in Bolinao. A few new resorts have been developed in the coastal areas servicing both tourists and locals throughout the year.

### **MANAGEMENT REGIME:**

The Coastal Development Plan (CDP) of Cape Bolinao also provides protection to sustainably manage the marine resources in addition to the different stakeholders responsible to the preservation and enforcement of laws. These are: national agencies – Bureau of Fisheries and Aquatic Resources through its *Bantay-Dagat* Program; LGU's-attached agencies/offices - Municipal Agriculture Office (MAO) and Coastal Resource Management (CRM) Office; the University of the Philippines Marine Science Institute (UPMSI) through the Phase II of the Community-based Coastal Resource Management (CB-CRM) Project "Sustaining Management of Coastal Resources in Selected Municipalities of Lingayen Gulf (SAGIP Lingayen Gulf)"; and people's organizations (POs) and non-governmental organization (NGO).

### **8. STAKEHOLDERS (SEE APPENDIX 2 FOR STAKEHOLDER INVOLVEMENT PLAN)** Stakeholder groups in Bolinao include:

- Fishers, gleaners, women and youth organizations that have formed themselves into peoples' organizations (POs),
- Non-government organizations who have taken on the commitment to assist sustainable use and development efforts in the locality,
- Local government units which have the mandate to responsibly govern the area and
- Representative offices of national government offices, and
- The Marine Science Institute of the University of the Philippines which maintains a Marine Laboratory in the area.

***Bolinao Municipal or Local Government Unit (LGU).*** The LGU have the responsibility to manage and maintain ecological balance within their territorial jurisdictions. They are authorized to enforce and implement pollution control laws and other laws on the protection of the environment, pursuant to national policies and subject to the control and review of the Department of Environment and Natural Resources. They are also responsible in the supervision and management of Municipal waters within fifteen kilometres of the shoreline under the Philippine Fisheries Code of 1998.

The Municipal Government enforces all laws and ordinances relative to the governance of the municipality, implement all approved policies, programs, projects, services and activities of the municipality and issue such executive orders as are necessary for the proper enforcement and execution of laws and ordinance. The Municipal Council as the Legislative Body of the municipality enacts ordinances, approve resolutions and appropriate funds for the general welfare of the municipality and its inhabitants. It is also responsible for the protection the environment and can impose appropriate penalties for acts that endanger the environment.

***Non-Governmental Organization (NGO).*** *The NGO presently operating in the area is HARIBON which is involved with community organisation, awareness rising, and livelihood development, and has been involved with community-based coastal resource management in Bolinao in the past.*

***People's Organizations (POs).*** The PO membership comprises the group that is the most affected by the methods and extent of local resource exploitation, to which activities of the project should be directed. In Bolinao there are seven organizations under the federation of KAISA-KA (*Kaisahan ng mga Samahan Alay sa Kalikasan* or Federation of Organizations for the Environment) namely SAMMABAL, SAPA, SAUDI, FEDELA in the mainland and SAMMAKA, SAMMABI and SMMV in the island. The most active organizations up to this date are SAMMABAL and SAMMAKA who up to this date are maintaining the management of a marine protected area and mangrove reforestation projects, respectively.

***Fisheries and Aquatic Resources Management Councils (FARMCs).*** *To institutionalise the major role of the fisherfolk and other resource users in the planning and formulation of policies and programs for the management, conservation, protection and sustainable development of fisheries and aquatic resources, FARMCs were established at the National level and in all municipalities/ cities abutting municipal waters.*

At the municipal level, the Municipal Fisheries and Aquatic Resources Management Council are formed by fisher folk organizations/ cooperatives and NGOs in the locality assisted by the Local Government Unit (LGU) and other government entities. MFARMC of Bolinao is therefore composed of members of people's organization, local government officials and other concerned stakeholders. It regularly coordinates with both the executive and the legislative departments of the Municipal Government and is actively involved with the formulation of community development programs and implementing rules and regulations.

**Department of Environment and Natural Resources (DENR).** *DENR has mandates, authorities and responsibilities for the environmental protection and conservation of protected areas. DENR's mandate includes the conservation, management, development and proper use of the country's environment and natural resources (specifically forest and grazing lands, mineral resources, reservations and watershed areas, and lands of public domain), and for the licensing and regulation of all natural resources (as provided for by law) to ensure equitable sharing of benefits derived for the welfare of present and future generations of Filipinos. Mangrove forests and marine protected areas are the only coastal habitats that fall within the jurisdiction of DENR. DENR has been instrumental in providing financial support to various people's organizations in the Lingayen Gulf. An example is the mangrove reforestation under the DENR program "Community-Based Mangrove Forest Stewardship Agreement (CBMFSA)".*

**Bureau of Fisheries and Aquatic Resources (BFAR).** The Bureau of Fisheries and Aquatic Resources (BFAR) has been reconstituted as a line bureau under the Department of Agriculture (DA) pursuant to Republic Act No. 8550 (also known as the Fisheries Code of 1998). The BFAR is tasked to prepare and implement a Comprehensive National Fisheries Industry Plan to ensure the rational and sustainable development, management and conservation of the fishery and aquatic resources in the Philippines waters including the EEZ and adjacent high seas. As a policy making body, BFAR is authorized to enforce laws and regulations (including the issuance of licenses for commercial fishing vessels) and formulate development and management policies on fisheries, except in municipal waters, in consultation with the national and local FARMC and LGUs. The Bureau also leads in the generation and verification of various technologies on fisheries production and processing as well as the transfer of these matured technologies to the clientele.

**Department of Tourism.** *The Department of Tourism (DOT) is the primary government agency charged with the responsibility to encourage, promote, and develop tourism as a major socio-economic activity to generate foreign currency and employment and to spread the benefits of tourism to both the private and public sector. Tourism in Bolinao remains a strong area for further investments.*

**The University of the Philippines Marine Science Institute (UPMSI).** Since the start of its operation in the area in the 80's, the UPMSI has conducted research on the flora, fauna, and coastal oceanography in the area. The results of these research studies have helped improve local and national understanding of the marine biodiversity in the locality and in the country. Since then, the laboratory has become a haven of research interests, which attracted local, national and international funding. With its growing popularity in the scientific circles, its emphasis has expanded from basic marine scientific research to fields dealing with environmental management and protection. With this development came a strong commitment to address marine environmental issues. The UPMSI is now the 'environmental watchdog' especially in the northern part of the Philippines.

## **9. THREATS (CAUSAL CHAIN ANALYSIS AS APPENDIX 3)**

### *Pollution*

At present, the coastal areas of Bolinao have no solid waste management plan. Solid waste is commonly dumped along the coast for reclamation.

Aside from household trash the major pollutants in the sea off Bolinao come from aquaculture production. The semi intensive fishponds development that peaked in the 1980's resulted in rampant cutting of mangrove for fishpond conversion. Destruction of this mangrove buffer opens the bay to runoff water and consequently siltation. Fish cages and pens also contribute much to the pollution because of excessive use of artificial feeds. According to the studies siltation increased about 4 centimeters per year in the area. Other effects of fish farming are discussed below

Following a massive fish kill as a result of red tide, tons and tons of dead fish were dumped in the sea, contributing greatly to the pollution of the water. It took several months of dredging and water splashing to restore reasonable water quality.

#### *Push Net Fishing*

A very common gear used by fishermen in catching *Siganid* juveniles in seagrass beds is the push net. This results in the dredging and cutting of seagrass and eventually fish depletion. Other species caught in the nets are often discarded, as they have no commercial value.

#### *Trampling*

Human activities such as push nets, gleaning, fishing, boat scouring, and anchorage resulted to loss and degradation of seagrass beds, as the seagrass shoots are trampled under foot, pulled out by their roots, or otherwise damaged.

#### *Fish Cage Culture*

Aquaculture through semi-intensive milkfish fishponds started in the Lingayen Gulf in the early 1970s, and then peaked in the 1980s following extensive conversion of mangrove areas into fishponds. With the ban in mangrove cutting enforced in 1995, bangus (milkfish, *Chanos chanos*) culture eventually expanded into the coastal waters and rivers using floating cages.

Although this intensive aquaculture has made Bolinao the biggest producer of *C. chanos* (milkfish) in the province and the third in the country, it has corresponding negative impacts. Studies have supported the findings that the fish kill episodes are mainly due to the overpopulation of fish occupying the cages, causing excessive eutrophication, leading to a decrease in the water's oxygen content, resulting in fish deaths. Scientific reports also show the occurrences of "algal blooms" which coincided with such events. A *Prorocentrum minimum* bloom was discovered by Azanza et al. during the January-February 2002 major fish kill in Bolinao. The most recent fish kill occurring between May 12-20 of this year coincided with an increased cell count of *Chatonella marina* algae. Villanueva reported that dead fish varied from an average of 25,000 to 35,000 bangus for each cage aged 3 months old to harvestable stocks or more than 50% of the stocking density for each cage.

With the advent of higher demand for food due to increasing population, units of fish pens and cages in Bolinao more than doubled the allowable limit of 554 units, which was determined to be the maximum carrying capacity.

The Causal Chain Analysis indicated the interventions to address threats to Bolinao Seagrass as follows:

- Provide resource data and information for the development of Management Plan
- Formulate and implement municipal ordinance on seagrasses as resource and habitat
- Design and disseminate information and education campaign
- Enhance stakeholders' capacity for resource management
- Develop and implement supplemental/alternative livelihood programme

## **10. GOALS AND PURPOSE:**

The project recognizes the ecological and economic roles of seagrasses in Bolinao, and that the maintenance of their ecology and integrity will, in both the long and short term contribute to uplifting the lives of the citizens of this municipality. It also recognizes that sustained efforts in this direction should involve local participation and initiatives. The project aims to establish functional linkages between and among community groups, academic institutions, with local and national government support, so that the seagrass ecosystems that form the resource base of local livelihoods will be enhanced, protected and managed. In addition, it will preserve the biodiversity in the seagrass meadows, marine fauna and flora alike, restore the degraded areas, and reduced threats and provide preventive actions to these threats.

## **11. RATIONALE AND OBJECTIVES:**

The seagrass beds of Cape Bolinao form the base of fishery resources for 35 *barangays* (a Philippine political unit). As apparent in section 9, the seagrass beds of Bolinao are seriously threatened through the direct and indirect effects of human settlement and coastal development leading to intense pressure and anthropogenic disturbances to the said habitat.

There is real need to take initiatives to protect, conserve and maintain the resources. Seagrass beds play a very important role in the community since many of their livelihoods rely heavily on the seagrass beds. At present, most people in the community understand that the existing resource provides their livelihood. But the importance of linkage of seagrass beds with the other two major components of the marine ecosystem, mangroves and coral reefs, is not seriously considered.

Experience from other community-based initiatives shows that self-management of local resources is sustained and effective if user-communities take on ownership of management activities.

The objectives of the project are:

- To enhance resource management, particularly for seagrasses based on comprehensive data and information;
- To intensify and increase public awareness through information, education and communication campaign;
- To strengthen stakeholders' capacity in management of resources; and
- To design and implement alternative/supplemental livelihood program.

## **12. OUTCOMES**

With the implementation of the seagrass demonstration site in Bolinao, the following management outcomes are expected:

- A functional linkage among stakeholders;
- Increased public awareness;
- Strengthened capacity building among stakeholders;
- Improved legislation and enforcement practices from project recommendations
- Community establishment of protected sites;
- Sustained monitoring through the Seagrass Watch;
- Improved seagrass cover and maintenance of biodiversity;
- Developed and improved livelihood skills of coastal communities to protect and manage seagrass and related reef resources.

## **13. PROPOSED ACTIVITIES TO ACHIEVE OUTCOME (MONITORING AND EVALUATION PLAN AS APPENDIX 4)**

### **COMPONENT 1. Development and Implementation of Management Plan Based on Comprehensive Data and Information**

In order to address the first objective, which is the development and implementation of management plan based on comprehensive data and legislation, resource assessment, database establishment, and municipal ordinance preparation must be conducted. Seagrass resources shall be assessed to identify and map seagrass areas by the management board and the stakeholders. Software shall be formulated and designed for the database establishment, wherein the collected data shall be collated and analysed for management purposes. Municipal ordinance shall be prepared based on the participatory processes: review of existing municipal fisheries laws, drafting of the ordinance, consultation, presentation, and validation of the drafted ordinance to the stakeholders, and approval and the publication of the said approved ordinance. After the resource assessment and consultation, a detailed pilot plan shall be outlined and implemented with the different stakeholders. In addition, three permanent areas shall be identified as the pilot plan implementation and SeagrassWatch monitoring sites. Two evaluations on the resource and socio-economic impact of the management plan shall be conducted throughout the duration of the project.

### **COMPONENT 2. Information and Education Campaign**

To minimize the lack of public involvement and absence of environmental education and information, the demo site project shall provide data and materials on the management of seagrass resources. A survey and assessment of the current seagrass knowledge shall be conducted through focus group discussion prior to the determination of appropriate information dissemination strategies. Meeting with the municipal council and other stakeholders shall be held to prepare the general IEC plan approach and implement the said plan. This component of the project will provide information and education campaign materials to the youth, people's organization, legislative bodies and other stakeholders interested with it. Assessment of the influence of the IEC plan to the public awareness and participation shall be conducted in the mid and end of the project.

### **COMPONENT 3. Capacity Building**

Building the capacity of the locals such as people's organization in the area, students, environmental managers, and other through trainings and workshops for the efficient and proper management coastal resources shall be part of the demo site project to increase public participation, enhance management capability, and ensure the continuity of this management approach after the completion of the project via knowledge and skill transfer. Trainings on the seagrass taxonomy and associated marine flora and fauna and measurement of biological parameters for the monitoring will cater to the youth, POs, in- and out-of school youth, environmental managers, and other stakeholders. Legal and paralegal training is for the police, *bantay-dagat*, fisherfolks, legislative bodies, and other interested persons. Solid waste management and SeagrassWatch approach are for resource managers, barangay councils and student. Experts on the different fields as mentioned above shall be invited as consultant and/or resource speaker for these trainings. In addition, group study tour shall be carried out to the newly-operated and successful marine protected areas (MPAs) where the major marine habitats are seagrass areas. Upon completion of the project, the municipality of Bolinao will have trained and well-informed people who will actively involved and participate to decision-making and seagrass protection and conservation.

### **COMPONENT 4. Sustainable Alternative Livelihood Program**

A survey of the extant skills and strategies shall be the pre-implementation activity in designing the necessary livelihood assistance strategies. Consultation with the local people, meetings with the concerned government agencies, and seeking the sustainable alternative livelihood using land- and water-based approach such as seaweed culture, handicrafts and gardening shall be conducted. Initially, the livelihood program will have pilot testing to the 20 families to the three identified sites. In the case of success, this will be duplicated to other seagrass sites, depending on the availability of funds and feasibility to other sites. A consultant and research assistant shall be hired to conduct meeting, training, prepare the needed materials and implement the identified and developed alternative livelihood approach to the pilot sites.

## **14. SUSTAINABILITY ANALYSIS AND RISK ASSESSMENT**

### **Sustainability**

It is very important that prior to project implementation, the stakeholders are well informed of the project's objectives and framework to get their full commitment and support to the project. The roles of the stakeholders must be delineated but complementary for them to work as a team to ensure the successful implementation of the project. The activities to be implemented must be well coordinated and must cater to the needs of the local community. The resources in terms of manpower, facilities, and funds are assumed available, sufficient and properly managed. To sustain the project, complementation and counter-parting schemes must be developed among the various stakeholders in Bolinao.

It is vital that fisher folk or the residents in Bolinao are well organized and involved in the project since they will be given the primary role of protecting their own resources and habitat. The capability-building component of the project is expected to upgrade the capability and knowledge of the stakeholders, particularly the private sector. Continuous upgrading will help increase the private sector's efficiency and effectiveness in performing their community responsibilities. The existing seven people's organizations in Bolinao must take an active role in the project and must work harmoniously to ensure the success of the project. The establishment of seagrass watch composed of volunteers from the local community will be vital in the project since this really focuses on the protection and management of seagrass in Bolinao.

Therefore, for continuity of the project, the operation and management of the project will be turned over to the local government of Bolinao. It will also be responsible for establishing linkages and networking of the various organizations/sectors involved in seagrass undertakings. However, UP-MSI will continue to monitor the progress of the project while the national and local government agencies continuously enforce appropriate laws and render technical assistance when needed

With funding from UNEP/GEF and additional financial support from the stakeholders, there is no doubt that the project can be a successful one and will be financially sustainable.

Based on the memorandum of understanding, the funds of the project will be transferred and managed by the UP MSI. UP MSI will undertake to execute the activities at the Cape Bolinao seagrass demonstration site as approved in the business plan for the site, being developed by the National Seagrass Committee in conjunction with the Project Coordinating Unit. Limited personnel will be hired and trained for the project. Project management strategies will be designed and studied. Implementing agencies will ensure that the activities and finances of the project will be managed properly.

## **Risks**

### *Political Risk*

From previous experiences it's very clear that political will must be there to accomplish the project activities successfully. It is a key condition in fact. Although substantial successes may be achieved at the levels that POs and NGOs operate, at the end the biggest impact is obtained if the legally mandated agency, i.e. the municipal government is supportive and involved.

The clearest signs of ability and commitment that an LGU can give are:

- Proof of past initiatives and pro-active attitude in coastal resource management;
- Allocation of resources (funds and manpower) for coastal resource management in the annual budget.

Donor driven projects often suffer from government agencies "committing" for the sake of acquiring the projects and its funds. All too often active participation during project implementation has been too low to speak of ownership and actual commitment. But since the project include the active participation of all the stakeholders including the community; the project is assured to be sustained as indicated to the output of the project activities.

### *Social and economic risks*

This project contributes to a shift in the paradigm of the fisher folk's view on seagrass habitat. Please state the current view of fisherfolks on seagrass. The past has shown that this is not without risk. In one barangay ten people were killed because of addressing illegal fishing practices. Changes always face resistance, but when food security and basic income are touched, emotional tensions can escalate into violence. This would greatly diminish project impact and the potentials of success. Caution should be taken at all times. The legal aspects in this project are to secure safety and justice.

With respect to livelihood, initiatives will be aimed at financially and environmentally viable enterprises that will need the leverage of buy-in from other investors to make a difference. If not, any new initiative will only marginally contribute to livelihood. Due attention should be paid to marketing products beyond municipal boundaries. The mid-term review should critically evaluate progress made in this respect.

With emphasis given to the strengthening of information, education campaign on the importance of seagrass ecology and its management scheme, the social and economic risks will be minimized due to the conservation, wise utilization and proper disposition and enforcement of related laws and regulations.

### *Natural risks*

Natural risks are maybe the most acceptable ones, as they can't be helped, but can nevertheless be very destructive. Over the years, the following natural threats have been faced:

El Niño has caused great damage, through warm sea currents that passed the Philippines, bleaching the coral reefs. While this is only an intermittent phenomenon, global climate change is probably more worrisome. If sea temperatures continue to rise, many reefs, being extremely sensitive to temperature changes, will die. This would imply the loss of habitat for many marine species that would also die. This risk cannot be avoided, except through global interventions. Philippines can of course do its share.



Another natural calamity, which the Lingayen Gulf region is subject to, is typhoons. They frequently occur and super typhoons can be especially damaging. Fish pens and cages are affected, causing great economic losses. Even young mangroves planted were lost after typhoons struck. Although this can never be fully prevented, great care should be taken that the trees are planted in the right season. It has happened more than once, even during the predecessor of this project, that seedlings were planted late and too close to the typhoon season.

#### *Project management risks*

This project is politically loaded. UPMSI, as a research institute, definitely does not have politics as its main interest, although it continuously moves in political waters. It has the capability to address political concerns, precisely because it is known to be an objective and knowledgeable institute. Yet, project staff will have to be well equipped to face and deal with politics in appropriate manners and pay sufficient attention to issues that are politics-based. The risk for MSI is that it might get too politically involved. It will have to find its balance in accomplishing its (project) mission.

Another risk factor is the qualifications of the project staff. Since the existing manpower at MSI is already overextended, additional staffs to occupy the full-time positions are required. Qualified staff is hard to find but is a crucial factor for success. Due to the long gap between the previous project and this project, most of the previous staff has left for other organizations. Critical functions are the senior project manager and mid-level technical specialists. At least 3 months must be allowed between project approval and field deployment for staff recruitment, selection, orientation and training.

### **15. ESTIMATED BUDGET:**

Total estimated budget of the demonstration site project including

GEF funding:	\$US 134,770.00
Government co-funding in kind:	\$US 163,350.00
Government co-funding in cash:	\$US 4,050.00
Total estimated budget	\$US 302,170.00

#### **15.1 Summary Budget by Activities** (Details described in Appendix 5.1).

Sub-component or activities		Budget in US\$)	GEF	Co-funding		Total
				in kind	in cash	
<b>1</b>	<b>Development and Implementation of Management Plan Based on Comprehensive Data and Information</b>					
1.1	Resource assessment	2,340.00		-	-	2,340.00
1.2	Database Establishment	3,200.00		-	-	3,200.00
1.3	Preparation of Municipal Ordinances	2,300.00		2,300.00	1,200.00	5,800.00
1.4	Survey for Pilot Site Planning	1,640.00		-	-	1,640.00
1.5	Consultation meeting for designing of pilot site	1,600.00		400.00	-	2,000.00
1.6	Implementation of Pilot Site	2,400.00		72,000.00	-	74,400.00
1.7	Assessment of socio-economic impact of Municipal Ordinance	3,400.00		-	-	3,400.00
1.8	Implementation of SeagrassWatch	8,340.00		-	-	8,340.00
<b>2</b>	<b>Information Education Campaign</b>					
2.1	Information campaign for seagrasses	9,100.00		1,000.00	1,000.00	11,100.00
<b>3</b>	<b>Capacity Building</b>					
3.1	Training on seagrass taxonomy and resource assessment	4,500.00		6,000.00	-	10,500.00
3.2	Legal and Paralegal Training	1,000.00		200.00	-	1,200.00
3.3	Training for Seagrass Watch	3,100.00		600.00	-	3,700.00
3.4	Group training	2,500.00		200.00	-	2,700.00
<b>4</b>	<b>Livelihood Skills</b>					
4.1	Piloting of one (1) livelihood approach	12,600.00		900.00	500.00	14,000.00

Sub-component or activities		Budget in US\$)	GEF	Co-funding		Total
				in kind	in cash	
<b>5</b>	<b>Project Management</b>					
5.1	Operation of Management Board	48,800.00	22,650.00	150.00		71,600.00
5.2	Establishment of project office	11,300.00	24,000.00	1,200.00		36,500.00
5.3	Periodic meetings and reporting	9,550.00	17,900.00	-		27,450.00
5.4	Annual audit	600.00	15,000.00	-		15,600.00
5.5	Evaluation at mid term and end of GEF funded phase of project by independent regional expert	5,000.00	-	-		5,000.00
5.6	Exit strategy through workshop	1,500.00	200.00	-		1,700.00
	<b>Grand Total</b>	<b>134,770.00</b>	<b>163,350.00</b>	<b>4,050.00</b>		<b>302,170.00</b>

#### 15.1 Summary Budget by Objects of Expenditure (Details described in Appendix 5.2).

Object of Expenditure	GEF	Co-funding		Total
		In cash	In kind	
<b>1000 Project Personnel Component</b>	<b>59,750.00</b>		<b>114,600.00</b>	<b>174,350.00</b>
1100 Project Personnel	49,250.00		93,000.00	142,250.00
1200 Consultants	9,500.00		21,600.00	31,100.00
1600 Travel on official business	1,000.00			1,000.00
<b>2000 Sub-contract Component</b>	<b>18,820.00</b>			<b>18,820.00</b>
2200 Sub-contract component	18,820.00			18,820.00
<b>3000 Training Component</b>	<b>32,000.00</b>	<b>2,150.00</b>	<b>24,750.00</b>	<b>58,900.00</b>
3200 Group Trainings/ Workshops	15,100.00		1,400.00	16,500.00
3300 Meetings/ Conferences	16,900.00	2,150.00	23,350.00	42,400.00
<b>4000 Equipment Component</b>	<b>8,900.00</b>	<b>1,200.00</b>	<b>24,000.00</b>	<b>34,100.00</b>
4100 Expendable Equipment	2,000.00			2,000.00
4200 Non-expendable equipment	6,100.00	400.00		6,500.00
4300 Premises	800.00	800.00	24,000.00	25,600.00
<b>5000 Miscellaneous Component</b>	<b>15,300.00</b>	<b>700.00</b>	<b>0.00</b>	<b>16,000.00</b>
5100 Operation and maintenance of equipment	800.00			800.00
5200 Reporting cost	7,100.00	700.00		7,800.00
5300 Sundry	1,600.00			1,600.00
5500 Evaluation	5,800.00			5,800.00
<b>Grand Total</b>	<b>134,770.00</b>	<b>4,050.00</b>	<b>163,350.00</b>	<b>302,170.00</b>

### 16. IMPLEMENTATION PLAN

Components / Activities		2005		2006				2007			
		Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
<b>1</b>	<b>Development and Implementation of Management Plan Based on Comprehensive Data and Information</b>										
<b>1.1</b>	<b>Resource assessment</b>										
1.1.1	Subcontract to do survey of species and density (5 persons*7days*50)										
1.1.2	Boat Rental (7days*20)										
1.1.3	Diving equipment rental (7days*5sets*10)										
1.1.4	Field materials										
1.1.5	Transportation Expenses (5persons*20)										
1.1.6	Meeting to identify seagrass areas (20 persons*1 day*10)										
1.1.7	Mapping of seagrass areas (validation from existing references and field surveys) (1 consultant*500)										

Components / Activities		2005		2006				2007			
		Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
<b>1.2</b>	<b>Database Establishment</b>										
1.2.1	Database formulation design (1 consultant 5wm at 500/mo)										
1.2.2	Data gathering										
1.2.3	Database establishment										
1.2.4	Training on database application (10 persons*1 day*20)										
1.2.5	Printing and distribution of compiled seagrass data (in CDs, papers published, area summaries) 200 copies*10										
<b>1.3</b>	<b>Preparation of Municipal Ordinances</b>										
1.3.1	Meeting for drafting of Municipal Ordinance (10 persons*70)										
1.3.2	Meeting for review and consultation (2 days*100 persons*20) half will be shouldered by LGU										
1.3.3	Rental of meeting venue (1 day* 200)										
1.3.4	Prioritisation/ identification of areas for particular uses (fish enhancement, research, conservation, multiple use)										
1.3.5	Meeting to generate stakeholder interest and partnership (1day*50 persons*30)										
1.3.6	Transportation expenses for meeting participants(50 persons*10)										
1.3.7	Rental of meeting venue (1 day* 200)										
1.3.8	Meeting for approval of Municipal Ordinances (1 day*10 persons*70)										
1.3.9	Publication of approved Municipal Ordinances (7days publication in local newspaper*100/day)										
<b>1.4</b>	<b>Survey for Pilot Site Planning</b>										
1.4.1	Detailed survey of the pilot sites (5 persons*7days*50)										
1.4.2	Boat Rental (7 days*20/day)										
1.4.3	Diving equipment rental (7days*5sets*10)										
1.4.4	Field materials										
1.4.5	Transportation Expenses (5persons*20)										
<b>1.5</b>	<b>Consultation meeting for designing of pilot site</b>										
1.5.1	Consultation meeting for zoning, mapping and associated activities agreed upon (30 persons*1 day*20/day)										
1.5.2	Rental of meeting venue (1 day* 200)										
1.5.3	Development of regulation for 3 pilot sites (1 consultant 1wm*500/mo)										
1.5.4	Meeting for consultation and approval of regulations (1 day*50 persons*10/day)										
1.5.5	Rental of meeting venue (1 day* 200)										
<b>1.6</b>	<b>Implementation of Pilot Site</b>										
1.6.1	Training and mobilization of local police and Bantay Dagat on enforcement of regulation in pilot sites (30 persons*30/day*1 day)										
1.6.2	Co-funding for Bantay Dagat membership (24wm/30 persons/100/mo)										
1.6.3	One environmental lawyer as consultant (3wm at 500/mo)										
<b>1.7</b>	<b>Assessment of socio-economic impact of Municipal Ordinance</b>										
1.7.1	One consultant 2wm at 500/mo										
1.7.2	Meeting for assessment of socio-economic impact (1 day* 50 persons*30/day* 2 assessments)										

Components / Activities		2005		2006				2007			
		Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
<b>1.8</b>	<b>Implementation of Seagrass Watch</b>										
1.8.1	Meeting for establishment permanent sampling/ monitoring sites (1day*15 persons*20/day)										
1.8.2	Monitoring of seagrass demo site using SG watch method (4 days*10 persons*30* 8 samplings)										
1.8.3	Boat Rental (4 days*20/day*8 samplings*2 boats)										
1.8.4	Diving equipment rental (4 days*5sets*10*8 samplings)										
1.8.5	Field materials (600/ kit* 3 sites*2)										
<b>2</b>	<b>Information Education Campaign</b>										
<b>2.1</b>	<b>Information campaign for seagrasses</b>										
2.1.1	Pre-implementation survey and assessment of current seagrass knowledge and determination of appropriate strategies through focus group discussion (5 days*60 persons*10)										
2.1.2	One IEC consultant to prepare all information campaign materials (3wm at 500/mo)										
2.1.3	One Research Assistant to work with IEC Consultant (3wm at 300/mo)										
2.1.4	Development of IEC materials ( brochures 200 copies*4/copy; posters 200 copies*2/copy; booklet-type materials 200 copies*7/copy; digital materials 200 copies*2/copy)										
2.1.5	Media delivery (local radio and newspaper)										
2.1.6	Transportation expenses for distribution of IEC materials										
2.1.7	Consultation on impact evaluation of IEC (1 day* 50 persons*20/day* 2 assessments)										
<b>3</b>	<b>Capacity Building</b>										
<b>3.1</b>	<b>Training on seagrass taxonomy and resource assessment</b>										
3.1.1	Workshop on seagrass taxonomy, bio-parameter measurement and associated marine plants and fauna (3 days*50 persons*25/day)										
3.1.2	Workshop materials										
3.1.3	Rental of workshop venue (3 days*200/day)										
3.1.4	Transportation expenses for fieldwork (5 boats*1 day*20/day)										
3.1.5	Experts to develop training strategies and to train the participants (3 persons*4days*150)										
<b>3.2</b>	<b>Legal and Paralegal Training</b>										
3.2.1	Training on Proper Implementation of Municipal Ordinances (30 persons*1 day*20/day)										
3.2.2	Lecturers to develop training strategies on legal and paralegal and to train the participants (2 days*1person*300)										
3.2.3	Rental of meeting venue (1 day* 200)										
<b>3.3</b>	<b>Training for Seagrass Watch</b>										
3.3.1	Preparation of materials to introduce seagrass watch concept										
3.3.2	Membership campaign through ads and radio (7 days announcement)										
3.3.3	Co-funding for community coordinators to spearhead seagrass watch (5 coordinators*100/person*12wm)										
3.3.4	Training on seagrass watch methods for volunteers (30 persons*2 days*20/day)										
3.3.5	Lecturer to train the participants (1 consultant*600)										

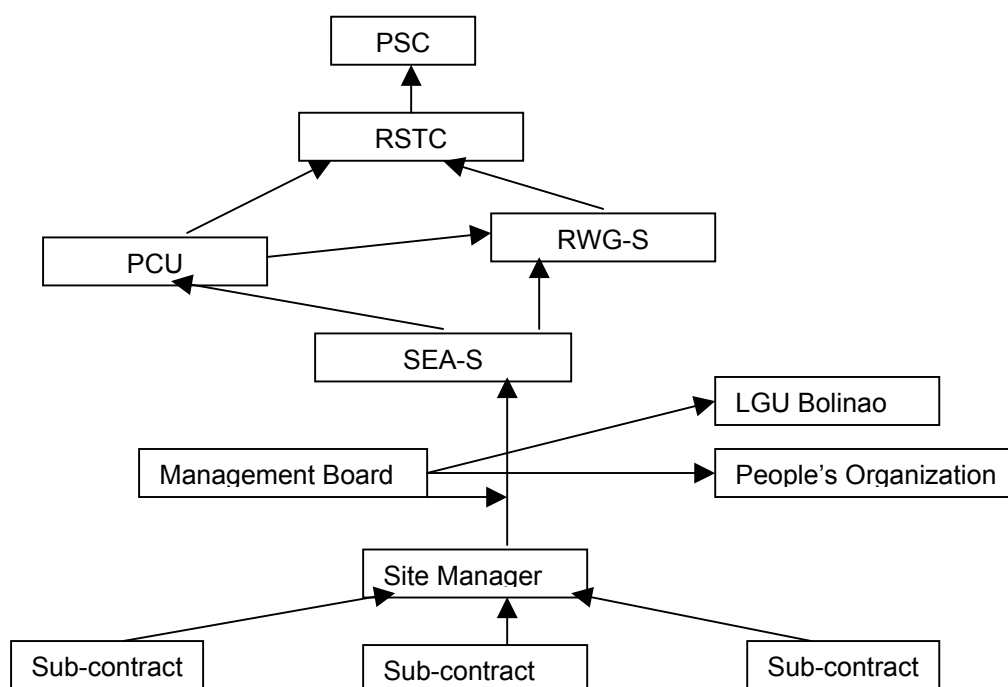
Components / Activities		2005		2006				2007			
		Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
<b>3.4</b>	<b>Group training</b>										
3.4.1	Training on solid waste management (1 day*30 persons*20/day)										
3.4.2	Lecturer to train the participants (1 consultant*600)										
3.4.3	Rental of training venue (1 day*200/day)										
3.4.4	Study tours to MPAs with seagrass meadows as major component (15 participants*20/day*2days)										
<b>4</b>	<b>Livelihood Skills</b>										
<b>4.1</b>	<b>Piloting of one (1) livelihood approach</b>										
4.1.1	One research assistant to do survey of extant skills and strategies (4wm*200/mo)										
4.1.2	Consultant to develop livelihood strategies and train the participants (4wm*500/mo)										
4.1.3	Printing of manuals on sustainable resource-based livelihoods (200copies*4/copy)										
4.1.4	Training on alternative and resource-based livelihood (60 persons*2 days*15/day)										
4.1.5	Rental of training venue (2days*200/day)										
4.1.6	Implementation of alternative livelihood (60 households*200)										
4.1.7	Livelihood participatory assessment										
<b>5</b>	<b>Project Management</b>										
<b>5.1</b>	<b>Operation of Management Board</b>										
5.1.1	Meeting for the establishment of management board (1 day accommodation*15 persons*20/day; half of the expenses to be shouldered by LGU)										
5.1.2	Co-funding for meeting participation (15persons*70)										
5.1.3	Co-funding for experts from MSI to act as consultant to the management board (3 consultants*12 mos*600/mo)										
5.1.4	Transportation expenses for participants coming from Manila (5 persons*20/person)										
5.1.5	Demonstration Site Manager (825/mo*30 mos)										
5.1.6	Travel expenses of Demo Manager (10 trips*100)										
5.1.7	Technical Assistant (380/mo*30 mos)										
5.1.8	Community Coordinator (380/mo*30 mos)										
<b>5.2</b>	<b>Establishment of project office</b>										
5.2.1	Co-funding for rental of office space (30 mos*400/mo)										
5.2.2	Co-funding for rental of laboratory space (30 mos*400/mo)										
5.2.3	Repair and maintenance of office and laboratory premises (half will be shouldered by MSI)										
5.2.4	Office furnitures (half will be shouldered by MSI)										
5.2.5	One unit desktop computer with printer and scanner										
5.2.6	One unit LCD projector and projection screen										
5.2.7	One unit digital camera with underwater casing										
5.2.8	One unit GPS										
5.2.9	Repair and maintenance of office equipment and computer										
5.2.10	Communication expenses for day to day office management										
5.2.11	Postage and freight										
5.2.12	Office supplies										

Components / Activities		2005		2006				2007			
		Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
<b>5.3</b>	<b>Periodic meetings and reporting</b>										
5.3.1	Quarterly meetings of the Management Board (1 day accommodation*15 persons*10 meetings*20/day/person)										
5.3.2	Co-funding for meeting participation of members of the board (70/meeting*15 persons*10 meetings)										
5.3.3	Rental of meeting venue (200/day*10 meetings)										
5.3.4	Transportation expenses of members from Manila (5 persons*20/person*10 meetings)										
5.3.5	Half year meeting of the National Committee (1 day accommodation*12 persons*5 meetings*40/person)										
5.3.6	Co-funding from meeting of committee members (12 persons*70/meeting/5 meetings)										
5.3.7	Rental of meeting venue (200/day*5 meetings)										
5.3.8	Transportation expenses for members from outside Manila (3 persons*150/ person*5)										
5.3.9	End of GEF funding period stakeholder consultation (30 persons*1 day*20/day)										
5.3.10	Transportation expenses for participants from Manila (5 persons*20/ person)										
5.3.11	Rental of meeting venue (200/day*1day)										
5.3.12	Print and submit final project summary report to PCU, including financial statements (50 copies*4/copy)										
<b>5.4</b>	<b>Annual audit</b>										
5.4.1	Auditor's fee (200/year*3 years)										
5.4.2	Finance officer to manage the project funds (30wm*500/mo)										
<b>5.5</b>	<b>Evaluation at mid term and end of GEF funded phase of project by independent regional expert</b>										
<b>5.6</b>	<b>Exit strategy through workshop</b>										
5.6.1	Consultant to prepare document for the workshop (1consultant*500)										
5.6.2	Meeting workshop on turning over of responsibility/ resource management to stakeholders (30 persons*2 days*30/day)										
5.6.3	Transportation expenses for participants from Manila (5 persons*20/ person)										
5.6.4	Rental of meeting venue (200/day*1day)										

#### 17. PROPOSED MANAGEMENT OF THE ACTIVITIES (ARRANGEMENT FOR MANAGEMENT AND COORDINATION AS APPENDIX 6)

A Demonstration Site Manager will be hired to manage day to day activities of the project. A Management Board will be formed to supervise the Demonstration Site Manager together with the National Seagrass Committee. The National Technical Working Group will continue to supervise the over-all implementation of the demonstration site and coordinate among components.

**Figure 1**      **Diagram of Proposed Management of Demonstration Site Activities.**



## 18. INFORMATION ON PROPOSED EXECUTING AGENCY/IES

MARINE SCIENCE INSTITUTE, UNIVERSITY OF THE PHILIPPINES

### *Mandate*

The Marine Science Institute seeks to achieve the following objectives:

- To generate basic information necessary for optimal and sustained utilization, management, and conservation of the marine environment and its resources.
- To provide graduate-level training and extension services to develop human resource requirements in the marine sciences.
- To develop appropriate and environmentally-sound marine-based technologies for industrial and economic development.

### *History*

The University of the Philippines Marine Science Institute (UPMSI) was originally established as the Marine Sciences Center (MSC) with the approval of its charter by the Board of Regents on 28 March 1974. **MSC** served as the University's coordinating base for marine research. In June of the same year, the first Advisory Executive Council of the Center was formed with the appointment of Dr. Edgardo D. Gomez as acting Director.

The Center commenced its operations in February 1975 at the building of the U.P. Natural Sciences Research Institute. With its transformation into an institute on 23 April 1985, **MSI** began offering graduate programs.

It is now tasked to pursue research, teaching, and extension work in marine biology, marine chemistry, physical oceanography, marine geology, and related disciplines.

### *Performance*

in the last 26 years, UPMSI has grown from a complement of less than 10 to about 150 personnel, the majority of whom are professional staffs. Through the years, UPMSI has made a significant contribution to tropical marine science. In 1995, MSI had 1.0 international refereed publication per PhD per year, the highest among academic institutions in the country. At the national level, these

contributions form the bases of policies that guide the research and development programs of the country. In recognition of its achievements in research and instruction, the Institute has received numerous awards from both government and private organizations. On 15 December 1994, UPMSI was designated the "National Center of Excellence in the Marine Sciences" by Presidential Proclamation No.518.

#### *Linkages*

UPMSI undertakes collaborative research with local, national, and international agencies. UPMSI, for example, has served as a major implementing agency in various ASEAN marine science programs. UPMSI is also represented in a number of national and international committees and organizations concerned with marine resources and the marine environment. Many of the staffs are members of professional organizations and editorial boards of local and international journal.

#### **19. EXECUTING AGENCY CONTACT PERSON/S:**

##### **MS. TUTU B. ALMONTE**

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##### **MARCO NEMESIO E. MONTAÑO, Ph.D**

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## APPENDIX 1 FULL SITE CHARACTERIZATION

### 1.1 Site description

**AREA:** Bolinao has 23,320 hectares of land area. It is subdivided into the following: 47.13% agricultural, built-up area 2.02%, infrastructure/institutional 10.84%, pasture land 11.07%, forest area 8.09%, fishpond 2.74%, brushland and open range 16.25%, and rivers and creeks 1.85%.

**ENVIRONMENT:** Cape Bolinao, Pangasinan is located in the northwestern Philippines and is an integral part of the Lingayen Gulf (McManus et al. 1992; Rivera 1997). The geology of the mainland part of Bolinao is basically limestone with its topsoil producing only limited crops, thus agriculture provides only a limited contribution to the town's economy. Most of its livelihood has been heavily dependent on the harvest from the marine environment (McManus et al. 1992). Bolinao has a distinct dry and wet season. The rainy period starts about early May and ends in mid-October (Rollon 1998). Furthermore, the marine water (physico-chemical) profiles are: water quality – light attenuation coefficients varied from clear to relatively turbid water (0.1 to 2.0 m<sup>-1</sup>), temperature range is 32-35 °C during summer months (April-May) while falling to 26-28 °C in July to August and January to February, salinity ranges from 30-35 ‰, sedimentation flux 1.5-10 g dry weight (DW) m<sup>-2</sup> hr<sup>-1</sup> (depending on the site), average water flow velocity > 9 cm s<sup>-1</sup>, and b) sediment condition – grain size composed of very coarse sand (~60-75 % DW), fine sand (20-30 % DW), very fine sand (~5-20 % DW), and silt (from negligible to ~5 % DW) and organic matter ~5 % DW (Rollon 1998).

**HABITAT(S):** The Bolinao area is a fringing coral reef system, also containing mangrove areas and extensive seagrass beds. About 37 km<sup>2</sup> of the 50 km<sup>2</sup> of the total reef flat area are covered by seagrasses, usually mixed beds (Fortes 1989, 1995). There are seven seagrass species recorded in the area: *Enhalus acoroides*, *Thalassia hemprichii*, *Cymodocea rotundata*, *C. serrulata*, *Halodule uninervis*, *Halophila ovalis*, and *Syringodium isoetifolium* (Fortes 1989, 1995). The reef area, particularly the seagrass meadows, is identified as a critical habitat for the spawning and nursery of juvenile stocks of the Gulf such as rabbitfish and sea urchins. Rabbitfish *Siganus fuscescens* juveniles migrate from open sea to the seagrass areas to seek refuge and food habitat while sea urchins (*Tripneustes gratilla*) remain within the bed to forage.

**PRESENT USE:** Bolinao has a population of approximately 80,000 with about 15,000 households. In Bolinao alone, there are about 3,000 fishers, most of whom are totally dependent on fishing for income. The pressure on the reefs is bound to increase, and the need for effective resource management is critical. Mariculture has been increasing and could partially solve the problem, although present unsustainable practices have caused environmental deterioration and socio-economic injustice.

Generally, the fishing area in Bolinao is located in the Caquiputan Channel and South China Sea. There are ten (10) barangays who are engaged in the fishing industry, namely; Germinal, Concordia, Luciente I, Pilar, Victory, Salud, Goyoden, Binabalian, Dewey, and Lucero. About one-third of Bolinao's population depend on fishing to make a living, and the Bolinao-Anda coral reef complex serves as the spawning ground for 90% of Bolinao's fish catch. More than 350 species of vertebrates, invertebrates, and plants are harvested from the reef and appear in Bolinao markets each year. Excess supplies are transported to other places like Urdaneta, Dagupan City and Manila.

In 1998, the Fisheries Code gave fishers and their organizations the sole authority to operate fish pens and fish cages. By 2002, there were about 1,170 units of fish pens and cages in Bolinao alone.

The reef fishery in Bolinao is characterized by a multiplicity and seasonality of gear use. Along the central and southern shoreline, coastal aquaculture has flourished in estuarine habitats (McManus et al. 1992). Milkfish (*Chanos chanos*) is the major culture product in the area. The reef flat also provides year-round fishing areas for the sustenance of fishers because of their close proximity to shore and shallow depths. Major gear includes hook and line, drive-in nets, spears, fish traps, fish corrals, gillnets and illegal implements such as explosives and cyanide poison (McManus et al. 1992). The estimated fish catches are 12 and 3-tonnage km<sup>-2</sup> yr<sup>-1</sup> from the reef flat and slope areas, respectively. Despite heavy exploitation, the reefs have maintained moderate levels of productivity, but with evident signs of degradation and resource depletion. Decreasing species diversity, abundance, mean size and size at sexual maturity has been documented for major fish species in Bolinao.

Out of the 30 barangays of Bolinao, 20 are found on coastal areas whom 22% of the total population is engaged in fishing (Philreefs, 2005). Milkfish aquaculture in Bolinao has now become the major source of income for its inhabitants. Although this practice has made Bolinao the largest producer of milkfish (*Chanos chanos*), studies showed that major fish kills that happened in the area resulted from the overpopulation of fish in the cages.

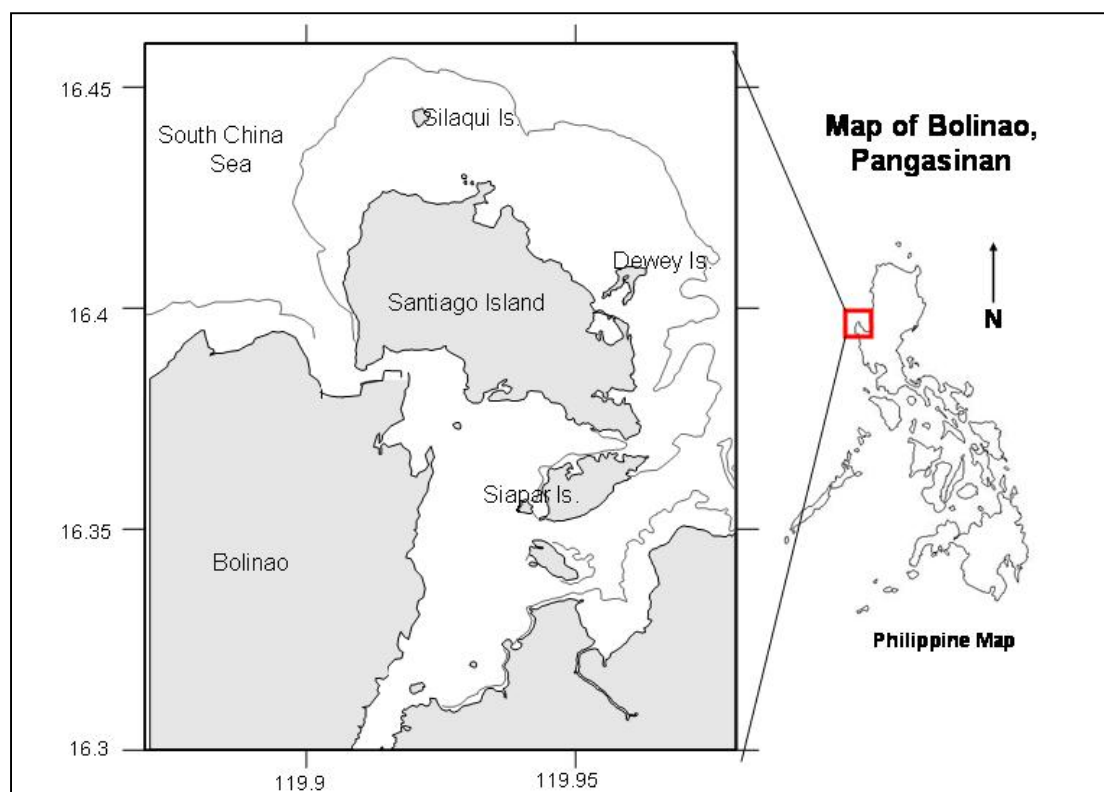
On the other hand, tourism is also fast becoming popular in Bolinao. A few new resorts have been developed in the coastal areas servicing both tourists and locals throughout the year.

## 1.2 Species List

Seagrass Species	Gastropod Species (cont.)	Gastropod Species (cont.)
<i>Cymodocea rotundata</i>	<i>Nassarius albescens albescens</i>	<i>Astrarium calcar</i>
<i>Cymodocea serrulata</i>	<i>Nassarius coronatus</i>	<i>Turbo chrysostomus</i>
<i>Enhalus acoroides</i>	<i>Nassarius limaeniformis</i>	<i>Turbo reevi</i>
<i>Halodule pinifolia</i>	<i>Nassarius margaritiferus</i>	<i>Vassum turbinellum</i>
<i>Halodule uninervis</i>	<i>Natica gualtieriana</i>	<i>Turridrupa cerethina</i>
<i>Halophila minor</i>	<i>Polinices melanostromus</i>	<i>Serpulorbis sp</i>
<i>Halophila ovalis</i>	<i>Polinices tumidum</i>	<i>Dolobella auricularia</i>
<i>Syringodium isoetifolium</i>	<i>Nerita planospira</i>	<i>Anadara maculosa</i>
<i>Thalassia hemprichii</i>	<i>Neritina (Vittoida) variegata</i>	<i>Trachycardium flavum</i>
<b>Gastropod Species</b>	<i>Clithon oaulaniensis</i>	<i>Cardita variegata</i>
<i>Angaria delphinus</i>	<i>Cerithedia cingulata</i>	<i>Mercenaria sp</i>
<i>Cantharus fumosus</i>	<i>Terebralia sulcata</i>	<i>Hormomya mutabilis</i>
<i>Engina alveolata</i>	<i>Pyramidella ventricosa</i>	<i>Modiolus philippinarum</i>
<i>Bulla ampulla</i>	<i>Otopleura auriscati</i>	<i>Crassostrea palmipes</i>
<i>Bursa granularis</i>	<i>Pyrene varians</i>	<i>Chlamys lentiginosa</i>
<i>Conus boeticus</i>	<i>Pyrene punctata</i>	<i>Atrina pectinata</i>
<i>Conus coronatus</i>	<i>Strombus aratum</i>	<i>Atrina sp</i>
<i>Conus ebumeus</i>	<i>Strombus canarium</i>	<i>Pinctada margaritifera</i>
<i>Conus miles</i>	<i>Strombus gibberulus gibbosus</i>	<i>Pinctada martensi</i>
<i>Conus marmorius</i>	<i>Strombus labiatus labiatus</i>	<i>Malleus malleus</i>
<i>Conus parvulus</i>	<i>Cronia (Morula) margariticola</i>	<i>Pteria sp</i>
<i>Conus guercinus</i>	<i>Cronia funiculus</i>	<i>Spondylus candidus</i>
<i>Conus striatus</i>	<i>Druppa grossularia</i>	<i>Spondylus sinensis</i>
<i>Conus virgo</i>	<i>Druppa rubusidaeus</i>	<i>Spondylus squamosus</i>
<i>Cerithium alveolus</i>	<i>Drupella ochrostoma</i>	<i>Anomalocardia squamosa</i>
<i>Cerithium citrinum</i>	<i>Favartia sp</i>	<i>Gafrum spp</i>
<i>Cerithium columna</i>	<i>Morula granulata</i>	<i>Lioconcha sp</i>
<i>Cerithium nodulosum</i>	<i>Thais echinuada</i>	<i>Periglypta chemnitzii</i>
<i>Cerithium tenellum</i>	<i>Thais savignyi</i>	<i>Placamen tiara</i>
<i>Clypeomorus batillariaformis</i>	<i>Nassarius albescens albescens</i>	<i>Meretrix sp</i>
<i>Clypeomorus brevis</i>	<i>Nassarius coronatus</i>	<b>Crustacean Species</b>
<i>Clypeomorus coralium</i>	<i>Nassarius limaeniformis</i>	<i>Pagurus sp</i>
<i>Rhinoclavis vertagus</i>	<i>Nassarius margaritiferus</i>	<i>Hemigrapsus sp</i>
<i>Coralliophila costularis</i>	<i>Natica gualtieriana</i>	<i>Potunus sp</i>
<i>Coralliophila erosa</i>	<i>Polinices melanostromus</i>	<i>Calappa sp</i>
<i>Vexillum (Costellaria) plicarium</i>	<i>Polinices tumidum</i>	Unidentified spider crabs
<i>Vexillum subdivisum</i>	<i>Nerita planospira</i>	<i>Squilla sp</i>
<i>Vexillum virgo</i>	<i>Neritina (Vittoida) variegata</i>	<i>Balanus sp</i>
<i>Cymatium pileare</i>	<i>Clithon oaulaniensis</i>	<i>S corallinus</i>
<i>Cymatium vespaceum</i>	<i>Cerithedia cingulata</i>	<i>S javus</i>
<i>Gyrineum gyrinum</i>	<i>Terebralia sulcata</i>	<i>S vulpinus</i>
<i>Cypraea annulus</i>	<i>Pyramidella ventricosa</i>	<i>Siganus spp</i>
<i>Cypraea arabica</i>	<i>Otopleura auriscati</i>	<b>Sea Urchin Species</b>
<i>Cypraea (Erosaria) erosa</i>	<i>Pyrene varians</i>	<i>Diadema setosum</i>
<i>Cypraea (Erronea) erronea</i>	<i>Pyrene punctata</i>	<i>Echinometra mathaei</i>
<i>Cypraea helvola</i>	<i>Strombus aratum</i>	<i>Echinothrix calamaris</i>
<i>Cypraea (Luria) isabella</i>	<i>Strombus canarium</i>	<i>Echinothrix diadema</i>
<i>Cypraea lynx</i>	<i>Strombus gibberulus gibbosus</i>	<i>Eucidaris metularia</i>
<b>Gastropod Species (cont.)</b>	<b>Gastropod Species (cont.)</b>	<b>Sea Urchin Species (cont.)</b>
<i>Cypraea moneta</i>	<i>Strombus labiatus labiatus</i>	<i>Echinocardium sp</i>
<i>Cypraea talpa</i>	<i>Stombus lentiginosus</i>	<i>Laganum laganum</i>

<i>Cypraea tigris</i>	<i>Strombus luhuanus</i>	<i>Toxopneustes pileolus</i>
<i>Fasciolaria trapezium</i>	<i>Strombus mutabilis</i>	<i>Tripneustes gratilla</i>
<i>Latirus (Latirulus) craticulatus</i>	<i>Strombus urceus urceus</i>	<i>Salmacis sphaeroides</i>
<i>Peristernia ustulatus</i>	<i>Lambis lambis</i>	<b>Holothurian Species</b>
<i>Modulus tectum</i>	<i>Lambis millepeda</i>	<i>Actinopya echinites</i>
<i>Chicoreus brunneus</i>	<i>Terebra areolata</i>	<i>Bohadschia argus</i>
<i>Cronia (Morula) margaritcola</i>	<i>Euchelus atratus</i>	<i>Bohadschia marmorata</i>
<i>Cronia funiculus</i>	<i>Monodonta canalifera</i>	<i>Holothuria atra</i>
<i>Druppa grossularia</i>	<i>Stomatia phymotis</i>	<i>Holothuria fuscocinerea</i>
<i>Druppa rubusidaeus</i>	<i>Tectus fenestratus</i>	<i>Holothuria leucospilota</i>
<i>Drupella ochrostoma</i>	<i>Tectus pyramis</i>	<i>Holothuria pulla</i>
<i>Favartia sp</i>	<i>Trochus maculatus</i>	<i>Holothuria scabra</i>
<i>Morula granulata</i>	<i>Trochus niloticus</i>	<i>Stichopus sp</i>
<i>Thais echinuata</i>	<i>Trochus stellatus</i>	<i>Synapta spp</i>
<i>Thais savignyi</i>	<i>Umbonium costatum</i>	<b>Starfish species</b>
		<i>Archaster typicus</i>

### 1.3 Map of Bolinao Demonstration Site

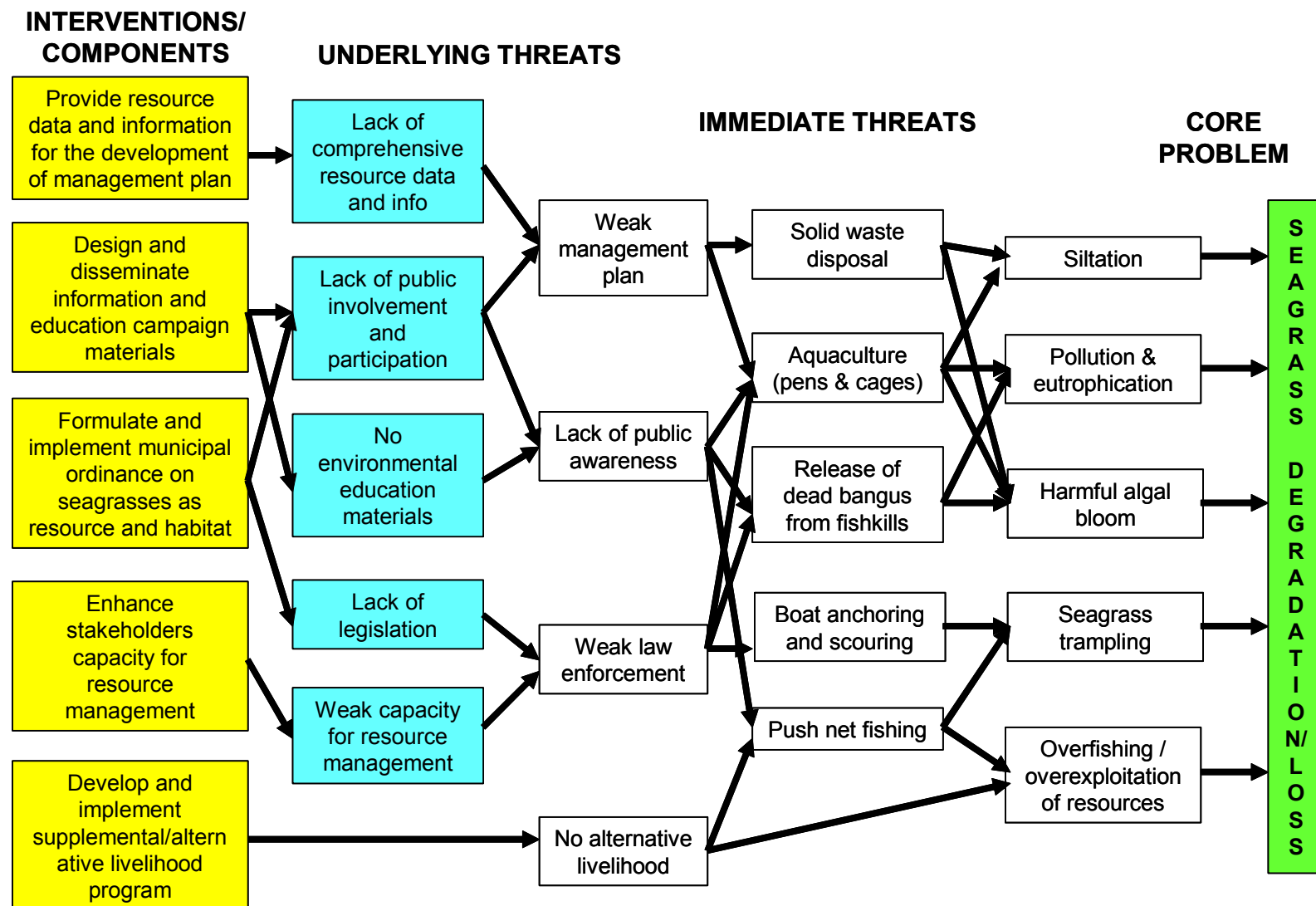


## APPENDIX 2. STAKEHOLDER PARTICIPATION PLAN FOR THE DEMO SITE PROJECT

STAKEHOLDERS	ROLE/ PARTICIPATION
<b>Government Units</b>	
Local Government Unit of Bolinao	Shall provide necessary counterpart funds amounting to at least 10% of the total project investment in terms of manpower, funds, equipment, and facilities to support the implementation of the project; shall designate a fishery technician and municipal agriculturist to assist in the formulation and implementation of the management plan, assist in the drafting and enactment of the municipal ordinances and other current and future activities as may be identified under the project in the municipality; and shall participate in meetings, planning, implementation, monitoring and evaluation of activities, and lastly, ensure overall sustainability of project initiatives through the institutionalisation of the activities sponsored under UNEP/GEF
Municipal Environment and Natural Resources Office (MENRO)	Shall initiate and formulate plans by guiding and supervising the community in the activities set forth for the management and protection of natural resources; collect information and analyse reports pertaining to the environment and resources and recommends measures to address environmental issues and concerns; and shall design and recommend protective measures to assure sustainability of natural resources, to promote equitable access to natural resources and conserve the environment for the future generations
Municipal Agriculture's Office	shall develop plans and strategies on agricultural and fishery programs and implement them upon approval thereof by the Municipal Mayor; shall enforce rules and regulations relating to agriculture and fisheries and exercise such other powers and perform other duties and function as may be prescribed by law or ordinance
Municipal Coastal Resources Management Office	shall deliver basic services and facilities to its constituents, and is responsible for the protection, wise utilization, sustainable use and management of its natural marine resources
Bureau of Fisheries and Aquatic Resources	shall contribute to the development and management of the fishery resources and in providing fisheries livelihood projects; shall expand and strengthen existing extension services to promote various farming technologies on fisheries that are highly productive, cost effective and within the ecological limits of Bolinao; and shall disseminate information through intensified IEC to create public awareness and help empower the private sector to assume primary responsibility for food security and management of its own resources
Fisheries and Aquatic Resources Management Council	shall assist in the preparation and recommendation of the management plan to be submitted to the Municipal Council for enactment of ordinances and resolutions; shall assist in the enforcement of fishery laws, rules and regulations in the municipal waters; and shall perform other functions necessary for the success of the project
<i>Bantay Dagat</i> (Sea Watchers Program)	shall monitor and control illegal fishing activities to reduce damage to fish stock and fish habitats, like coral reefs and seagrass; manage effective monitoring and evaluation system using patrol boats and communications; and shall enforce law and municipal fisheries ordinance

Department of Tourism	shall encourage, promote, and develop tourism as a major socio-economic activity to generate foreign currency and employment and to spread the benefits of tourism to both the private and public sector.
<b>People's Organizations</b>	
KAISA-KA (Kaisahan ng mga Samahan Alay sa Kalikasan or Federation of Organizations for the Environment)	membership: SAMMABAL, SAPA, SAUDI, FEDELA, SAMMAKA, SAMMABI and SMMV maintaining the management of a marine protected area and mangrove reforestation projects
Local Fishers	shall be the subject of researches and surveys and have gained benefit through learning through collaborative management approaches, trainings and information dissemination
Local tourism industry	shall provide local eco-tourism information and promote ecologically-sound tourism practices
<b>Academe</b>	
The Marine Science Institute	shall conduct research on the flora, fauna, and coastal oceanography in the area; shall implement and provide laboratory and office space and expertise to the demo site project; and shall act as the 'environmental watchdog' especially in the northern part of the Philippines based on their scientific results

### APPENDIX 3 CAUSAL CHAIN ANALYSIS



## APPENDIX 4. EVALUATION AND MONITORING PLAN

### 1. Collecting and reporting data on performance indicators

**Environmental Indicators.** Resource assessment shall be done at the start and at the end of the project to know the (1) floral and faunal biodiversity and (2) to evaluate the impact of the project on the ecological health of the seagrass meadows. Database shall be established after the resource assessment for the management and easy analysis of the data. Three pilot sites shall be chosen and the drafted management plan will be implemented to these areas. Seagrass parameters shall be monitored using the SeagrassWatch methods by the trained community volunteers every after three month. The collected data shall be encoded in the database for easy access, retrieval and analysis.

**Socio-economic Indicators.** A survey with the local communities shall be conducted at the beginning and at the end of the project using a mixture of participatory methods and questionnaires. Pre-implementation survey and assessment of current seagrass knowledge shall also be done to determine appropriate information and educational strategies. Aside from these, several trainings and workshop shall be conducted during the entire duration of the project depending on the needs of the community especially on the resource assessment and monitoring for effective resource management.

**Process Indicators.** The impacts of the different activities of the project such as the resource assessment, information and education campaign, livelihood, and others shall be evaluated through participatory approaches during the mid-term and end of the project. This is to assess the community satisfaction and involvement and to which degree the project meets the local needs in terms of managing coastal resources through IEC and sustainable alternative livelihood program. Each participant attending the trainings and workshops shall be obliged to evaluate the output of such activities for future revision and development.

Quarterly financial report shall be prepared by the demo site project manager and sent as report to the donor as required under the terms of agreement. This is needed for the processing and releasing of the next quarter budget request. Progress of the project through the project manager shall also be assessed quarterly as required under the signed terms of agreement.

### 2. Schedule of mid-term review, self evaluation and end-of-project evaluation

Monitoring/Evaluation	2005		2006				2007			
	3	4	1	2	3	4	1	2	3	4
Ecological assessment										
Mid-term review										
Internal evaluation of progress										
End of project evaluation										

Mid-term review of the project shall be conducted eighteen months after the start of the project and three months prior to the termination of the project. An external evaluator shall be hired or sent by the donor to conduct such review. An internal evaluation of activities will also be done. The reviews that focused on the IEC, socio-economic and resource impacts of Municipal Ordinances, and sustainable alternative livelihood shall be scheduled on the third quarter of second year and fourth quarter of third year of the project implementation and these reviews shall involved local communities. Over-all, these project evaluations aim to determine the effectiveness of the strategies and approaches that are utilized for a particular activity to ultimately reverse the degradation trends of seagrasses in the demonstration site.

### **3. Description of how monitoring and evaluation activities will involve participants and stakeholders**

Monitoring and evaluation through participatory approach in the local level shall be the integral part of the project. Stakeholders' interest and support shall be gained in the community-based quarterly monitoring of seagrass parameters using the SeagrassWatch method. Prior to the implementation of the said activity, the volunteers from the local communities or the three pilot sites shall be trained to conduct the monitoring. The trainings involved taxonomy seagrasses and related fauna and flora for resource assessment, and the bio-parameters measurement. Questionnaires and evaluation criteria shall also be developed and answered for each activity to have a feedbacking, which involves consultants and the local communities (stakeholders) as interviewees.

### **4. Resources that will be allocated to monitoring and evaluation**

Five thousand (US\$) shall be allocated for the mid-term and end-of-project evaluation to cover consultancy fees and expenses for external evaluator. For the internal evaluation of the project, US\$ 7,000.00 (US\$ 3,000.00 from UNEP and US\$ 4,000.00 worth of cash and in kind contribution from co-funding) shall be allocated to cover the expenses for the said activity.

### **5. How will monitoring and evaluation results be used in management?**

Key issues shall be highlighted in the progress report for discussion at the project management level. This will help in identifying problems and possible solutions at the project management team prior to the mid-term project evaluation. The issues and problems will be addressed and solutions will be implemented in the succeeding quarters of the project. Final evaluation and final report will be published to help the donor, participants, resource managers, and other interested parties, e.g. World Seagrass Association and SeagrassNet, learn the lessons from the project. Cape Bolinao demo site also plans to evaluate the different components of the project such as IEC, livelihood and resource assessment two times during the entire duration of the project to address particular issues for effective management.



## APPENDIX 5.1 Budget by activities

	Objectives/Components	GEF					CO-FINANCING					GEF	Co-funding		TOTAL
		1000	2000	3000	4000	5000	1000	2000	3000	4000	5000		in kind	in cash	
<b>1</b>	<b>Development and Implementation of Management Plan Based on Comprehensive Data and Information</b>														
<b>1.1</b>	<b>Resource assessment</b>														
1.1.1	Subcontract to do survey of species and density (5 persons*5days*30)	0	750	0	0	0						750			750
1.1.2	Boat Rental (7days*20)	0	140	0	0	0						140			140
1.1.3	Diving equipment rental (7days*5sets*10)	0	350	0	0	0						350			350
1.1.4	Field materials	0	300	0	0	0						300			300
1.1.5	Transportation Expenses (5persons*20)	0	100	0	0	0						100			100
1.1.6	Meeting to identify seagrass areas (20 persons*1 day*10)	0		200	0	0						200			200
1.1.7	Mapping of seagrass areas (validation from existing references and field surveys) (1 consultant*500)	500			0	0						500			500
<b>1.2</b>	<b>Database Establishment</b>											0			0
1.2.1	Database formulation design (1 consultant 4wm at 500/mo)	2,000			0	0						2,000			2,000
1.2.2	Data gathering				0	0						0			0
1.2.3	Database establishment				0	0						0			0
1.2.4	Training on database application (10 persons*1 day*20)			200	0	0						200			200
1.2.5	Printing and distribution of compiled seagrass data (in CDs, papers published, area summaries) 200 copies*5				0	1,000						1,000			1,000
<b>1.3</b>	<b>Preparation of Municipal Ordinances</b>											0			0
1.3.1	Meeting for drafting of Municipal Ordinance (10 persons*70)				0				700			0	700		700
1.3.2	Meeting for review and consultation (2 days*50 persons*20) half will be shouldered by LGU			1,000					1,000			1,000	500	500	2,000
1.3.3	Rental of meeting venue (1 day* 200)								200			0	200		200
1.3.4	Prioritisation/ identification of areas for particular uses (fish enhancement, research, conservation, multiple use)											0			0
1.3.5	Meeting to generate stakeholder interest and partnership (1day*40 persons*20)			800								800			800
1.3.6	Transportation expenses for meeting participants(50 persons*10)			500								500			500
1.3.7	Rental of meeting venue (1 day* 200)								200			0	200		200
1.3.8	Meeting for approval of Municipal Ordinances (1 day*10 persons*70)								700			0	700		700
1.3.9	Publication of approved Municipal Ordinances (7days publication in local newspaper*100/day)										700	0		700	700

	Objectives/Components	GEF					CO-FINANCING					GEF	Co-funding		TOTAL
		1000	2000	3000	4000	5000	1000	2000	3000	4000	5000		in kind	in cash	
<b>1.4</b>	<b>Survey for Pilot Site Planning</b>											0			0
1.4.1	Detailed survey of the pilot sites (5 persons*5days*30)		750									750			750
1.4.2	Boat Rental (7 days*20/day)		140									140			140
1.4.3	Diving equipment rental (7days*5sets*10)		350									350			350
1.4.4	Field materials		300									300			300
1.4.5	Transportation Expenses (5persons*20)		100									100			100
<b>1.5</b>	<b>Consultation meeting for designing of pilot site</b>											0			0
1.5.1	Consultation meeting for zoning, mapping and associated activities agreed upon (30 persons*1 day*20/day)			600								600			600
1.5.2	Rental of meeting venue (1 day* 200)								200			0	200		200
1.5.3	Development of regulation for 3 pilot sites (1 consultant 1wm*500/mo)	500										500			500
1.5.4	Meeting for consultation and approval of regulations (1 day*50 persons*10/day)			500								500			500
1.5.5	Rental of meeting venue (1 day* 200)								200			0	200		200
<b>1.6</b>	<b>Implementation of Pilot Site</b>											0			0
1.6.1	Training and mobilization of local police and Bantay Dagat on enforcement of regulation in pilot sites (30 persons*30/day*1 day)			900								900			900
1.6.2	Co-funding for Bantay Dagat membership (24wm/30 persons/100/mo)						72,000					0	72,000		72,000
1.6.3	One environmental lawyer as consultant (3wm at 500/mo)	1,500										1,500			1,500
<b>1.7</b>	<b>Assessment of socio-economic impact of Municipal Ordinance</b>											0			0
1.7.1	One consultant 2wm at 500/mo	1,000										1,000			1,000
1.7.2	Meeting for assessment of socio-economic impact (1 day* 40 persons*30/day* 2 assessments)			2,400								2,400			2,400
<b>1.8</b>	<b>Implementation of SeagrassWatch</b>											0			0
1.8.1	Meeting for establishment permanent sampling/ monitoring sites (1day*15 persons*20/day)			300								300			300
1.8.2	Monitoring of seagrass demo site using SG watch method (2 days*10 persons*30* 8 samplings)		4,800									4,800			4,800
1.8.3	Boat Rental (2 days*20/day*8 samplings*2 boats)		640									640			640
1.8.4	Diving equipment rental (2 days*5sets*10*8 samplings)		800									800			800
1.8.5	Field materials (300/ kit* 3 sites*2)		1,800									1,800			1,800

	Objectives/Components	GEF					CO-FINANCING					GEF	Co-funding		TOTAL
		1000	2000	3000	4000	5000	1000	2000	3000	4000	5000		in kind	in cash	
<b>2</b>	<b>Information Education Campaign</b>											0			0
<b>2.1</b>	<b>Information campaign for seagrasses</b>											0			0
2.1.1	Pre-implementation survey and assessment of current seagrass knowledge and determination of appropriate strategies through focus group discussion (4 days*50 persons*10)			2,000								2,000			2,000
2.1.2	One IEC consultant to prepare all information campaign materials (3wm at 500/mo)	1,500										1,500			1,500
2.1.3	One Research Assistant to work with IEC Consultant (3wm at 300/mo)	900										900			900
2.1.4	Development of IEC materials (brochures 200 copies*4/copy; posters 200 copies*2/copy; booklet-type materials 200 copies*7/copy; digital materials 200 copies*2/copy)					3,000						3,000			3,000
2.1.5	Media delivery (local radio and newspaper)					1,500						1,500			1,500
2.1.6	Transportation expenses for distribution of IEC materials					200						200			200
2.1.7	Consultation on impact evaluation of IEC (1 day* 50 persons*20/day* 2 assessments)								2,000			0	1,000	1,000	2,000
<b>3</b>	<b>Capacity Building</b>											0			0
<b>3.1</b>	<b>Training on seagrass taxonomy and resource assessment</b>											0			0
3.1.1	Workshop on seagrass taxonomy, bio-parameter measurement and associated marine plants and fauna (3 days*50 persons*20/day)			3,000								3000			3,000
3.1.2	Workshop materials			600								600			600
3.1.3	Rental of workshop venue (3 days*200/day)								600			0	600		600
3.1.4	Transportation expenses for fieldwork (5 boats*1 day*20/day)			100								100			100
3.1.5	Experts to develop training strategies and to train the participants (2 persons*4days*100)			800								800			800
<b>3.2</b>	<b>Legal and Paralegal Training</b>											0			0
3.2.1	Training on Proper Implementation of Municipal Ordinances (30 persons*1 day*20/day)			600								600			600
3.2.2	Lecturers to develop training strategies on legal and paralegal and to train the participants (2 days*1person*200)			400								400			400
3.2.3	Rental of meeting venue (1 day* 200)								200			0	200		200

	Objectives/Components	GEF					CO-FINANCING					GEF	Co-funding		TOTAL
		1000	2000	3000	4000	5000	1000	2000	3000	4000	5000		in kind	in cash	
<b>3.3</b>	<b>Training for Seagrass Watch</b>											0			0
3.3.1	Development and printing of materials to introduce seagrass watch concept					600						600			600
3.3.2	Membership campaign through ads and radio (7 days announcement)			300								300			300
3.3.3	Co-funding for community coordinators to spearhead seagrasswatch (5 coordinators*100/person*12wm)						6,000					0	6,000		6,000
3.3.4	Training on seagrass watch methods for volunteers (30 persons*2 days*30/day)			1,800								1,800			1,800
3.3.5	Lecturer to train the participants (2 days*2 consultants*100)			400								400			400
<b>3.4</b>	<b>Group training</b>											0			0
3.4.1	Training on solid waste management (1 day*30 persons*30/day)			900								900			900
3.4.2	Lecturer to train the participants (1 consultant*200)			200								200			200
3.4.3	Rental of training venue (1 day*200/day)								200			0	200		200
3.4.4	Study tours to MPAs with seagrass meadows as major component (14 participants*50/day*2days)			1,400								1,400			1,400
<b>4</b>	<b>Livelihood Skills</b>											0			0
<b>4.1</b>	<b>Piloting of one (1) livelihood approach</b>											0			0
4.1.1	One research assistant to do survey of extant skills and strategies (4wm*200/mo)	800										800			800
4.1.2	Consultant to develop livelihood strategies and train the participants (4wm*500/mo)	2,000										2000			2,000
4.1.3	Printing of manuals on sustainable resource-based livelihoods (200copies*4/copy)					800						800			800
4.1.4	Training on alternative and resource-based livelihood (50 persons*2 days*15/day)			1500								1500			1,500
4.1.5	Rental of training venue (2days*200/day)								400			0	400		400
4.1.6	Implementation of alternative livelihood (50 households*150)		7,500									7,500			7,500
4.1.7	Livelihood participatory assessment								1,000			0	500	500	

	Objectives/Components	GEF					CO-FINANCING					GEF	Co-funding		TOTAL
		1000	2000	3000	4000	5000	1000	2000	3000	4000	5000		in kind	in cash	
<b>5</b>	<b>Project Management</b>											0			0
<b>5.1</b>	<b>Operation of Management Board</b>											0			0
5.1.1	Meeting for the establishment of management board (1 day accommodation*15 persons*20/day; half of the expenses to be shouldered by LGU)			150					150			150		150	300
5.1.2	Co-funding for meeting participation (15persons*70)								1,050			0	1050		1,050
5.1.3	Co-funding for experts from MSI to act as consultant to the management board (3 consultants*12 mos*600/mo)						21,600					0	21600		21,600
5.1.4	Transportation expenses for participants coming from Manila (5 persons*20/person)			100								100			100
5.1.5	Demonstration Site Manager (825/mo*30 mos)	24,750										24,750			24,750
5.1.6	Travel expenses of Demo Manager (10 trips*100)	1,000										1,000			1,000
5.1.7	Technical Assistant (380/mo*30 mos)	11,400										11,400			11,400
5.1.8	Community Coordinator (380/mo*30 mos)	11,400										11,400			11,400
<b>5.2</b>	<b>Establishment of project office</b>											0			0
5.2.1	Co-funding for rental of office space (30 mos*400/mo)									12,000		0	12000		12,000
5.2.2	Co-funding for rental of laboratory space (30 mos*400/mo)									12,000		0	12000		12,000
5.2.3	Repair and maintenance of office and laboratory premises (half will be shouldered by MSI)				800					800		800		800	1,600
5.2.4	Office furnitures (half will be shouldered by MSI)				400					400		400		400	800
5.2.5	One unit desktop computer with printer and scanner				1,500							1,500			1,500
5.2.6	One unit LCD projector and projection screen				2,500							2,500			2,500
5.2.7	One unit digital camera with underwater casing				1,000							1,000			1,000
5.2.8	One unit GPS				700							700			700
5.2.9	Repair and maintenance of office equipment and computer					800						800			800
5.2.10	Communication expenses for day to day office management					800						800			800
5.2.11	Postage and freight					800						800			800
5.2.12	Office supplies				2,000							2,000			

	Objectives/Components	GEF					CO-FINANCING					GEF	Co-funding		TOTAL
		1000	2000	3000	4000	5000	1000	2000	3000	4000	5000		in kind	in cash	
<b>5.3</b>	<b>Periodic meetings and reporting</b>											0			0
5.3.1	Quarterly meetings of the Management Board (1 day accommodation*15 persons*10 meetings*20/day/person)			3,000								3,000			3,000
5.3.2	Co-funding for meeting participation of members of the board (70/meeting*15 persons*10 meetings)								10,500			0	10500		10,500
5.3.3	Rental of meeting venue (200/day*10 meetings)								2,000			0	2,000		2,000
5.3.4	Transportation expenses of members from Manila (5 persons*20/person*10 meetings)			1,000								1,000			1,000
5.3.5	Half year meeting of the National Committee (1 day accommodation*12 persons*5 meetings*40/person)			2,400								2,400			2,400
5.3.6	Co-funding from meeting of committee members (12 persons*70/meeting/5 meetings)								4,200			0	4200		4,200
5.3.7	Rental of meeting venue (200/day*5 meetings)								1,000			0	1000		1,000
5.3.8	Transportation expenses for members from outside Manila (3 persons*150/ person*5)			2,250								2,250			2,250
5.3.9	End of GEF funding period stakeholder consultation (30 persons*1 day*20/day)			600								600			600
5.3.10	Transportation expenses for participants from Manila (5 persons*20/ person)			100								100			100
5.3.11	Rental of meeting venue (200/day*1day)								200			0	200		200
5.3.12	Print and submit final project summary report to PCU, including financial statements (50 copies*4/copy)					200						200			200
<b>5.4</b>	<b>Annual audit</b>											0			0
5.4.1	Auditor's fee (200/year*3 years)					600						600			600
5.4.2	Finance officer to manage the project funds (30wm*500/mo)						15,000					0	15,000		15,000
<b>5.5</b>	<b>Evaluation at mid term and end of GEF funded phase of project by independent regional expert</b>					5,000						5,000			5,000
<b>5.6</b>	<b>Exit strategy through workshop</b>											0			0
5.6.1	Consultant to prepare document for the workshop (1consultant*500)	500										500			500
5.6.2	Meeting workshop on turning over of responsibility/ resource management to stakeholders (30 persons*1 days*30/day)			900								900			900
5.6.3	Transportation expenses for participants from Manila (5 persons*20/ person)			100								100			100
5.6.4	Rental of meeting venue (200/day*1day)								200			0	200		200
	<b>Total</b>	<b>59,750</b>	<b>18,820</b>	<b>32,000</b>	<b>8,900</b>	<b>15,300</b>	<b>114,600</b>	<b>0</b>	<b>26,900</b>	<b>25,200</b>	<b>700</b>	<b>134,770</b>	<b>163,350</b>	<b>4,050</b>	<b>302,170</b>

## APPENDIX 5.2 Budget by object expenditure.

		2nd Half 2005				1st Half 2006				2nd Half 2006				1st Half 2007				2nd Half 2007				Total years				
		GEF	Co-financing		Total	GEF	Co-financing		Total	GEF	Co-financing		Total	GEF	Co-financing		Total	GEF	Co-financing		Total	GEF	Co-financing		Total	
			in cash	in kind			in cash	in kind			in cash	in kind			in cash	in kind			in cash	in kind			in cash	in kind		
1000	PROJECT PERSONNEL COMPONENT																									
1100	Project Personnel																									
1101	5.1.5 Demonstration Site Manager (30wm*825/mo)	4,950			4,950	4,950			4,950	4,950			4,950	4,950			4,950			4,950	24,750		0	0	24,750	
1102	5.1.7 Technical Assistant (30wm*380/mo)	2,280			2,280	2,280			2,280	2,280			2,280	2,280			2,280			2,280	11,400		0	0	11,400	
1103	5.1.8 Community Coordinator (30wm*380/mo)	2,280			2,280	2,280			2,280	2,280			2,280	2,280			2,280			2,280	11,400		0	0	11,400	
1104	2.1.3 Research Assistant to work with consultant on IEC (3wm*300/mo)				0	900			900				0				0			0	900		0	0	900	
1105	4.1.1 Research Assistant to conduct survey on extant livelihood skills (4wm*200/mo)				0				0	800			800				0			0	800		0	0	800	
1106	1.6.2 Co-funding for Bantay Dagat membership (24wm*30persons*100/mo)				0			18,000	18,000				18,000	18,000			18,000			18,000	0		0	72,000	72,000	
1107	3.3.3 Co-funding for Community Coordinators to spearhead seagrass watch (12wm*5 coordinators*100/mo)				0			1,500	1,500				1,500	1,500					1,500	1,500	0		0	6,000	6,000	
1108	5.4.2 Co-funding for finance officer to manage the project funds (30wm*500/mo)				3,000	3,000			3,000	3,000			3,000	3,000					3,000	3,000	0		0	15,000	15,000	
1199	Total	9,510		0	3,000	12,510	10,410		0	22,500	32,910	10,310		0	22,500	32,010	9,510		0	22,500	32,010	49,250		0	93,000	142,250
1200	Consultants																									
1201	1.1.7 Consultant on mapping of seagrass areas (1wm*500/mo)	500			500				0				0				0			0	500		0	0	500	
1202	1.2.1 Consultant to design and develop seagrass database (4wm*500/mo)	1,000			1,000	1,000			1,000				0				0			0	2,000		0	0	2,000	
1203	1.5.3 Consultant to develop regulations on 3 pilot sites (1wm*500/mo)	500			500				0				0				0			0	500		0	0	500	
1204	1.6.3 Environmental lawyer as consultant on the implementation of pilot sites (3wm*500/mo)				0	1,500			1,500				0				0			0	1,500		0	0	1,500	
1202	1.7.1 Consultant on assessment of socio-economic impact of municipal ordinances (2wm*500)				0				0	500			500				0	500		500	1,000		0	0	1,000	
1205	2.1.2 Consultant on IEC (3wm*500/mo)				0	1,500			1,500				0				0			0	1,500		0	0	1,500	
1206	4.1.2 Consultant to develop livelihood strategies and to train participants (4wm*500/mo)				0				0	2,000			2,000				0			0	2,000		0	0	2,000	
1207	5.1.3 Co-funding for experts from MSI to act as consultant to the Management Board (3 consultants*12 wm*600/mo)				5,400	5,400			5,400	5,400			5,400	5,400					0	0	0		0	21,600	21,600	
1208	5.6.1 Consultant to facilitate workshop on exit strategy (1wm*500/mo)				0				0				0				500			500	500		0	0	500	
1299	Total	2,000		0	5,400	7,400	4,000		0	5,400	9,400	2,500		0	5,400	5,400	1,000		0	0	1,000	9,500		0	21,600	31,100
1600	Travel on official business																									
1601	5.1.6 Travel expenses of Demonstration Site Manager	200			200	200			200	200			200	200			200			200	1,000		0	0	1,000	
1699	Total	200		0	0	200	200		0	0	200	200		0	0	200	200		0	0	200	1,000		0	0	1,000
1999	Component Total	11,710		0	8,400	20,110	14,610		0	27,900	42,510	13,010		0	27,900	40,910	9,710		0	22,500	33,210	59,750		0	114,600	174,350

		2nd Half 2005			1st Half 2006			2nd Half 2006			1st Half 2007			2nd Half 2007			Total years					
		GEF	Co-financing		Total	GEF	Co-financing		Total	GEF	Co-financing		Total	GEF	Co-financing		Total	GEF	Co-financing		Total	
			in cash	in kind			in cash	in kind			in cash	in kind			in cash	in kind			in cash	in kind		
2000	SUB-CONTRACT COMPONENT																					
2200	Sub-contracts - non-profit supporting organizations							0				0					0	0	0	0	0	
2201	1.1.1 Survey of seagrass species and density (5days*5persons*30/day)	750		750			0				0				0		750	0	0	750		
2202	1.1.2 Boat rental for survey of seagrass species and density (7days*20)	140		140			0				0				0		140	0	0	140		
2203	1.1.3 Rental of diving equipment for survey of seagrass species and density (7days*5sets*10/set)	350		350			0				0				0		350	0	0	350		
2204	1.1.4 Field materials for survey of seagrass species and density	300		300			0				0				0		300	0	0	300		
2205	1.1.5 Transportation expenses for survey of seagrass species and density (5persons*20)	100		100			0				0				0		100	0	0	100		
2206	1.4.1 Detailed survey of pilot sites (5days*5persons*30)	750		750			0				0				0		750	0	0	750		
2207	1.4.2 Boat rental for detailed survey of pilot sites (7days*20/day)	140		140			0				0				0		140	0	0	140		
2208	1.4.3 Diving equipment rental for detailed survey of pilot sites (7days*5sets*10/set)	350		350			0				0				0		350	0	0	350		
2209	1.4.4 Field materials for detailed survey of pilot sites	300		300			0				0				0		300	0	0	300		
2210	1.4.5 Transportation expenses for detailed survey of pilot sites	100		100			0				0				0		100	0	0	100		
2211	1.8.2 Monitoring of seagrass pilot sites using seagrass watch method (2days*10persons*30*8samplings)			0	1,200		1,200	1,200		1,200	1,200		1,200	1,200		1,200	4,800	0	0	4,800		
2212	1.8.3 Boat rental for monitoring (2days*20/day*8samplings*2boats)			0	160		160	160		160	160		160	160		160	640	0	0	640		
2213	1.8.4 Diving equipment rental for monitoring (2days*5sets*8samplings*10)			0	200		200	200		200	200		200	200		200	800	0	0	800		
2214	1.8.5 Field materials for monitoring (300/kit*3sites*2)			0	1,800		1,800	0		0	0		0	0		0	1,800	0	0	1,800		
2215	4.1.6 Implementation of alternative livelihoods (50 households*150)			0			0	2,500		2,500	2,500		2,500	2,500		2,500	7,500	0	0	7,500		
2299	Total	3,280	0	0	3,280	3,360	0	3,360	4,060	0	4,060	4,060	0	4,060	4,060	0	4,060	18,820	0	0	18,820	
2999	Component Total	3,280	0	0	3,280	3,360	0	3,360	4,060	0	4,060	4,060	0	4,060	4,060	0	4,060	18,820	0	0	18,820	
3000	TRAINING COMPONENT																					
3200	Group training - study tours, field trips, workshops, seminars.																					
3201	1.2.4 Training on database application (10 persons*1day*20)			0	200		200			0			0			0	200	0	0	200		
3202	1.6.1 Training and mobilization of local police and Bantay Dagat on enforcement of regulations on pilot sites (30 persons*30*1day)			0	900		900			0			0			0	900	0	0	900		
3203	2.1.1 Pre-implementation survey and assessment of current seagrass knowledge and determination of appropriate strategies through focus group discussion (4days*50persons*10)			0	2,000		2,000			0			0			0	2,000	0	0	2,000		
3204	3.1.1 Workshop on seagrass taxonomy, bio-parameter measurement and associated marine plants and fauna (3days*50persons*20)			0	3,000		3,000			0			0			0	3,000	0	0	3,000		
3205	3.1.2 Materials on seagrass taxonomy workshop			0	600		600			0			0			0	600	0	0	600		
3206	3.1.3 Rental of venue for seagrass taxonomy workshop (3days*200/day)			0		600	600			0			0			0	0	0	600	600		



		2nd Half 2005				1st Half 2006			2nd Half 2006				1st Half 2007				2nd Half 2007				Total years					
		GEF	Co-financing		Total	GEF	Co-financing		Total	GEF	Co-financing		Total	GEF	Co-financing		Total	GEF	Co-financing		Total					
			in cash	in kind			in cash	in kind			in cash	in kind			in cash	in kind			in cash	in kind						
3207	3.1.4 Transportation expenses for fieldwork component of seagrass taxonomy workshop (5boats*1day*20/boat)				0	100			100				0				0				0	100	0		0	100
3208	3.1.5 Lecturers to develop training strategies and to train the participants (2persons*4days*100/day)				0	800			800				0				0				0	800	0		0	800
3209	3.2.1 Training on proper implementation of Municipal Ordinances (30 persons*1day*20)				0	600			600				0				0				0	600	0		0	600
3210	3.2.2 Lecturers to develop training strategies on legal and paralegal and to train the participants (2days*1person*200)				0	400			400				0				0				0	400	0		0	400
3211	3.2.3 Rental of venue on legal and paralegal training (1day*200)				0			200	200				0				0				0	0	0	200	200	
3212	3.3.2 Campaign for membership in seagrass watch through ads and radio				0	300			300				0				0				0	300	0		0	300
3213	3.3.4 Training on seagrass watch methods for volunteers (30 persons*2days*30)				0	1,800			1,800				0				0				0	1,800	0		0	1,800
3214	3.3.5 Lecturer to train the participants (2days*2consultants*100)				0	400			400				0				0				0	400	0		0	400
3215	3.4.1 Training on solid waste management (1day*30persons*30)				0				0	900			900				0				0	900	0		0	900
3216	3.4.2 Lecturer to train the participants (1day*200)				0				0	200			200				0				0	200	0		0	200
3217	3.4.3 Rental of venue for solid waste management training (1day* 200)				0				0			200	200				0				0	0	0	200	200	
3218	3.4.4 Study tours to MPAs with seagrass meadows as major component (14 participants*50/day*2days)				0				0	1,400			1,400				0				0	1,400	0		0	1,400
3219	4.1.4 Training on alternative and resource-based livelihood (50 persons*2days*15/day)				0				0	1,500			1,500				0				0	1,500	0		0	1,500
3220	4.1.5 Rental of venue for alternative and resource-based training (2days*200/day)				0				0			400	400				0				0	0	0	400	400	
3299	Total	0	0	0	0	11,100	0	800	11,900	4,000	0	600	4,600	0	0	0	0	0	0	0	0	15,100	0	1,400	16,500	
3300	Meetings/conferences (give title)																									
3301	1.1.6 Meeting to identify seagrass areas (20 persons*1day*10)	200			200				0				0				0				0	200	0		0	200
3302	1.3.1 Meeting for drafting of Municipal Ordinances (10persons*70)				0			700	700				0				0				0	0	0	700	700	
3303	1.3.2 Meeting for review and consultation of Municipal Ordinances (2 days*50persons*20) (half will be shouldered by LGU)				0	1,000			1,000		500	500	1,000				0				0	1,000	500	500	2,000	
3304	1.3.3 Rental of consultation venue (1day*200)				0				0			200	200				0				0	0	0	200	200	
3305	1.3.5 Meeting to generate stakeholder interest and partnership (1day*40persons*20)				0				0	800			800				0				0	800	0		0	800
3306	1.3.6 Transportation expenses for participants to stakeholder meeting (50persons*10)				0				0	500			500				0				0	500	0		0	500
3307	1.3.7 Rental of meeting venue for stakeholder meeting (1day*200)				0				0			200	200				0				0	0	0	200	200	
3308	1.3.8 Meeting for approval of Municipal Ordinances (10persons*70)				0				0			700	700				0				0	0	0	700	700	
3309	1.5.1 Consultation meeting for zoning, mapping and associated activities agreed upon (30persons*1day*20)	600			600				0				0				0				0	600	0		0	600
3310	1.5.2 Rental of meeting venue for consultation on zoning and mapping (1day*200)			200	200				0				0				0				0	0	0	200	200	
3311	1.5.4 Meeting for consultation and approval of regulations (1day*50persons*10)				0	500			500				0				0				0	500	0		0	500
3312	1.5.5 Rental of consultation venue (1day*200)				0			200	200				0				0				0	0	0	200	200	

		2nd Half 2005				1st Half 2006				2nd Half 2006				1st Half 2007				2nd Half 2007				Total years							
		GEF	Co-financing		Total	GEF	Co-financing		Total	GEF	Co-financing		Total	GEF	Co-financing		Total	GEF	Co-financing		Total	GEF	Co-financing		Total				
			in cash	in kind			in cash	in kind			in cash	in kind			in cash	in kind			in cash	in kind			in cash	in kind					
3313	1.7.2 Meeting for assessment of socio-economic impacts of Municipal Ordinances (1day*40persons*30/day*2 assessments)				0				0	1,200				1,200				0	1,200				1,200	2,400		0		0	2,400
3314	1.8.1 Meeting for establishment of permanent sampling/monitoring sites (1day*15 persons*20/day)	300			300				0				0				0		0		300		0		0		0	300	
3315	2.1.7 Consultation on impact evaluation of IEC (1day*50persons*20*2 assessments)				0				0		500	500	1,000				0		500	500	1,000		0	1,000	1,000		1,000	2,000	
3316	4.1.7 Livelihood participatory assessment				0				0				0				0		500	500	1,000		0	500	500		500	1,000	
3317	5.1.1 Meeting for the establishment of Management Board (1day accommodation*15persons*20/day; half of the expenses to be shouldered by LGU)	150	150		300				0				0				0				0	150	150		0		300		
3318	5.1.2 Co-funding for meeting participation (15persons*70)				1,050	1,050			0				0				0				0	0	0		1,050		1,050		
3319	5.1.4 Transportation expenses for participants coming from Manila for meeting on establishment of Management Board (5persons*20)	100			100				0				0				0				0	100		0		0	100		
3320	5.3.1 Quarterly meetings of the Management Board (1day accommodation*15persons*20)	600			600	600			600	600			600	600			600	600			600	3,000		0		0	3,000		
3321	5.3.2 Co-funding for participation on quarterly meeting of the Management Board (15persons*10 meetings*70)				2,100	2,100			2,100	2,100			2,100	2,100			2,100			2,100	2,100		0		0	10,500	10,500		
3322	5.3.3 Rental of venue for quarterly meeting of Management Board (10meetings*200/day)				400	400			400	400			400	400			400			400	400		0		0	2,000	2,000		
3323	5.3.4 Transportation expenses for members attending quarterly meetings of the Management Board from Manila (5persons*20*10meetings)	200			200	200			200	200			200	200			200	200			200	1,000		0		0	1,000		
3324	5.3.5 Half Year meetings of NSC (1day accommodation* 12persons*5meetings* 40/person)	480			480	480			480	480			480	480			480	480			480	2,400		0		0	2,400		
3325	5.3.6 Co-funding for participation on half year meetings of NSC (12persons*5meetings*70)				840	840			840	840			840	840			840			840	840		0		0	4,200	4,200		
3326	5.3.7 Rental of venue for half year meetings of NSC (200/day*5meetings)				200	200			200	200			200	200			200			200	200		0		0	1,000	1,000		
3327	5.3.8 Transportation expenses of NSC members residing outside Manila (3 persons*150*5meetings)	450			450	450			450	450			450	450			450	450			450	2,250		0		0	2,250		
3328	5.3.9 End of GEF funding stakeholder consultation (30 persons*1day*20)				0				0				0				600			600	600		0		0	600			
3329	5.3.10 Transportation expenses for participants on stakeholder meeting from Manila (5persons*20)				0				0				0				100			100	100		0		0	100			
3330	5.3.11 Rental of venue for stakeholder consultation (1day*200/day)				0				0				0						200	200		0		0	200	200			
3331	5.6.2 Meeting/workshop on turning over of responsibility /resource management to stakeholders (30persons*1days*30)				0				0				0				900			900	900		0		0	900			
3332	5.6.3 Transportation expenses for participants from Manila (5 persons*20)				0				0				0				100			100	100		0		0	100			
3333	5.6.4 Rental of venue for stakeholder consultation (1day*200)				0				0				0						200	200		0		0	200	200			
3399	Total	3,080	150	4,790	8,020	3,230	0	4,440	7,670	4,230	1,000	5,640	10,870	1,730	0	3,540	5,270	4,630	1,000	4,940	10,570	16,900	2,150	23,350	42,400				
3999	Component Total	3,080	150	4,790	8,020	14,330	0	5,240	19,570	8,230	1,000	6,240	15,470	1,730	0	3,540	5,270	4,630	1,000	4,940	10,570	32,000	2,150	24,750	58,900				

		2nd Half 2005			1st Half 2006			2nd Half 2006			1st Half 2007			2nd Half 2007			Total years		
		GEF	Co-financing in cash in kind	Total	GEF	Co-financing in cash in kind	Total	GEF	Co-financing in cash in kind	Total	GEF	Co-financing in cash in kind	Total	GEF	Co-financing in cash in kind	Total	GEF	Co-financing in cash in kind	Total
4000	<b>EQUIPMENT &amp; PREMISES COMPONENT</b>																		
4100	<b>Expendable equipment (items under (\$1,500 each, for example)</b>																		
4101	5.2.12 Office supplies	400		400	400		400	400		400	400		400	400		400	2,000	0	2,000
4199	Total	400	0	400	400	0	400	400	0	400	400	0	400	400	0	400	2,000	0	2,000
4200	<b>Non-expendable equipment (computers, office equip, etc)</b>																		
4201	5.2.4 Office furnitures (half will be shouldered by MSI)	400	400	800			0			0			0			0	400	400	800
4202	5.2.5 One unit desktop computer with printer and scanner	1,500		1,500			0			0			0			0	1,500	0	1,500
4202	5.2.6 One unit LCD projector and projection screen	2,500		2,500			0			0			0			0	2,500	0	2,500
4203	5.2.7 One unit digital camera with underwater casing	1,000		1,000			0			0			0			0	1,000	0	1,000
4203	5.2.8 One unit GPS	700		700			0			0			0			0	700	0	700
4299	Total	6,100	400	6,500	0	0	0	0	0	0	0	0	0	0	0	0	6,100	400	6,500
4300	<b>Premises (office rent, maintenance of premises, etc)</b>																		
4301	5.2.1 Co-funding for rental of office space (30mos*400)			2,400		2,400	2,400			2,400		2,400	2,400			2,400	0	0	12,000
4302	5.2.2 Co-funding for rental of laboratory space (30mos*400)			2,400		2,400	2,400			2,400		2,400	2,400			2,400	0	0	12,000
4303	5.2.3 Repair and maintenance of office and laboratory premises (half will be shouldered by UP-MSI)	200	200	400	200	200	400	200	200	400	100	100	200	100	100	200	800	800	1,600
4399	Total	200	200	400	200	200	400	200	200	400	100	100	200	100	100	200	800	800	1,600
4999	<b>Component Total</b>	6,700	600	7,300	600	200	800	600	200	800	500	100	600	500	100	600	8,900	1,200	10,100
5000	<b>MISCELLANEOUS COMPONENT</b>																		
5100	<b>Operation and maintenance of equip.</b>																		
5101	5.2.9 Repair and maintenance of office equipment and computers	100		100	100		100	200		200	200		200	200		200	800	0	800
5199	Total	100	0	100	100	0	100	200	0	200	200	0	200	200	0	200	800	0	800
5200	<b>Reporting costs - publications, maps, newsletters, printing.</b>																		
5201	1.2.5 Printing and distribution of compiled seagrass data (in CDs, papers, 200copies*5)			0			0	500		500			0	500		500	1,000	0	1,000
5202	1.3.9 Publication of approved Municipal Ordinances (7days publication in local newspaper*100/day)			0		700	700			0			0			0	0	700	700
5203	2.1.4 Development of IEC materials (brochures 200 copies*4/copy; posters 200 copies*2/copy; booklet-type materials 200 copies*7/copy; digital materials 200 copies*2/copy)			0	3,000		3,000			0			0			0	3,000	0	3,000
5204	2.1.5 Media delivery as IEC strategy (local radio and newspaper)			0	1,500		1,500			0			0			0	1,500	0	1,500
5205	2.1.6 Transportation expenses for distribution of IEC materials			0	200		200			0			0			0	200	0	200
5206	3.3.1 Development and printing of materials to introduce seagrass watch concept	600		600			0			0			0			0	600	0	600
5207	4.1.3 Printing of manuals on sustainable resource-based livelihoods (200copies*4/copy)			0			0	800		800			0			0	800	0	800
5299	Total	600	0	600	4,700	700	5,400	1,300	0	1,300	0	0	0	500	0	500	7,100	700	7,800
5300	<b>Sundry - communications, postage, freight, clearance, etc</b>																		
5301	5.2.10 Communication	100		100	100		100	200		200	200		200	200		200	800	0	800
5302	5.2.11 Postage and freight	100		100	100		100	200		200	200		200	200		200	800	0	800
5399	Total	200	0	200	200	0	200	400	0	400	400	0	400	400	0	400	1,600	0	1,600

		2nd Half 2005				1st Half 2006				2nd Half 2006				1st Half 2007				2nd Half 2007				Total years			
		GEF	Co-financing		Total	GEF	Co-financing		Total	GEF	Co-financing		Total	GEF	Co-financing		Total	GEF	Co-financing		Total	GEF	Co-financing		Total
			in cash	in kind			in cash	in kind			in cash	in kind			in cash	in kind			in cash	in kind			in cash	in kind	
5500	Evaluation				0				0				0				0				0				
5501	5.3.12 Printing of final project summary report to PCU including financial statements (50copies*4/copy)				0				0				0				0	200			200	200	0	0	200
5502	5.4.1 Auditor's fee (3years*200/year)	200			200				0	200			200				0	200			200	600	0	0	600
5503	5.5 Evaluation at mid-term and end of GEF funded phase of project by independent regional expert				0	2,500			2,500				0				0	2,500			2,500	5,000	0	0	5,000
5499	Total	200	0	0	200	2,500	0	0	2,500	200	0	0	200	0	0	0	0	2,900	0	0	2,900	5,800	0	0	5,800
5999	Component Total	1,100	0	0	1,100	7,500	700	0	8,200	2,100	0	0	2,100	600	0	0	600	4,000	0	0	4,000	15,300	700	0	16,000
9999	Total	25,870	750	17,990	44,610	40,400	900	37,940	79,240	28,000	1,200	38,940	68,140	16,600	100	36,240	52,940	23,900	1,100	32,240	57,240	134,770	4,050	163,350	302,170
	Balance																					134,770	4,050	163,350	302,170

## **APPENDIX 6 ARRANGEMENTS FOR COORDINATION AND MANAGEMENT**

### **Site Level Management**

For the implementation of the Bolinao Demonstration Site, a qualified Demonstration Site Manager shall be appointed. His main responsibility will be to report to the SEA and the National Committee on the activities being conducted at the site and through the SEA to the NTWG. The Demonstration Site Manager shall be included as full member of NTWG.

**The Demonstration Site Manager** shall have responsibility for managing the activities at the demonstration site, under the direction of the Seagrass Demo Site Management Board. Specifically, the Demonstration Site Manager shall be responsible for:

- Executing the implementation plan based on the demonstration site proposal prepared by the Special Executing Agency other tasks decided by the Management Board
- Planning and managing on a day to day basis the demonstration site activities identified in the implementation plan, including annual work plan and timetables;
- Financial responsibility for the approved budget;
- Execution of activities in accordance with the work plan and timetable and schedule of expenditures, initially defined in the proposal and amended from time to time by the Management Board;
- Reporting of activities outcome to the Management Board, the Focal Point of the SEA, and the National Technical Focal Point according to an agreed schedule
- Preparing inputs to the six-monthly expenditure and progress reports and cash advance requests to be submitted to the Project Coordinating Unit through National Focal Point
- Preparing and submitting to the PCU through the National Focal Point technical reports in accordance with the defined outputs of the demonstration site
- Attending such national and regional meetings as shall be determined by the Management Board

**The Management Board** shall have ultimate responsibility and authority for the conduct of activities at the demonstration site. Members of the board will be the major stakeholders in the area such as:

- The Local Government Unit of Bolinao
- Municipal Environment and Natural Resources Office (MENRO)
- Municipal Agriculture Office (MAO)
- Municipal Coastal Resources Management Office
- Bureau of Fisheries and Aquatic Resources
- Fisheries and Aquatic Resources Management Councils (FARMCs)
- Bantay Dagat Volunteers
- Department of tourism
- KAISA-KA (Kaisahan ng mga Samahan Alay sa Kalikasan or Federation of Organizations for Environment
- Local Fishers
- The Marine Science Institute

In addition to the tasks and responsibilities listed in the MoU between UNEP and the SEA, the **National Focal Point for Seagrass** in consultation with the National Seagrass Committee shall provide scientific and technical advice and guidance to the Management Board regarding the execution of the demonstration site activities.

The National Focal Point shall be responsible in liaison:

- Between the Demonstration Site Manager and the PCU regarding the dissemination of experiences and personnel exchange between sites;
- Between the Demonstration Site Manager and the National Technical Working Group, and Regional Working

### **Over-all Coordination of Demonstration Site Activities**

The National Seagrass Committee shall be responsible for coordinating national activities within the seagrass component. The National Technical Working Group, on the other hand shall be responsible for coordinating activities between components.

The Specialized Executing Agency after preparing the Demonstration Site Proposal shall continue to coordinate with other related activities at the national level through the National Seagrass Committee.

The National Technical Working Group shall oversee all activities at the demonstration site in Bolinao.

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